Investigative Report: Ireland

2021

There is *Nothing* Positive about Positivity Rates in Schools.

Investigating the Claim: "Schools Are Safe" During the COVID-19 Pandemic

Authored on behalf of Parents United Ireland
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24th February 2021

Parents United Ireland

Parents Working Together With

Students and Staff

For Safer Schools for All

#United4Choice #ZeroCOVID

In the last 60 days…

There have been over **100,000** cases of COVID-19 reported in Ireland.

Over **12,000** of these were in children, representing **85%** of all cases in children last year.

Approximately **5,000 people have been hospitalised** with COVID-19 since December.

This includes over **120** babies, children, teenagers, and young people.

The incidence rate in Ireland over the last fourteen days is **240** cases per 100,000.

Under the updated CDC guidance for schools, Irish schools are at the **highest risk threshold**.

Current Situation: B.1.1.7 Variant

A new ECDC risk assessment [1] on new SARS-CoV-2 variants (15th February 2021) warns that the UK variant (B.1.1.7), which is now dominant in Ireland is

"much more transmissible" (50-75%),

"associated with an increased risk of hospitalisation",

infects 10-55% more close contacts "across most age groups",

"**associated with increased risk of death**"

Even if the current lockdown restrictions remain in place, the ECDC warns there could be "a **substantial increase in mortality**, even as vaccines are being rolled out" and "more measures or stricter compliance will be needed" to keep transmission under control.

Reopening schools – even partially – under these conditions will pose a significant risk to increasing R above 1 and **will require every possible mitigation measure to be put in place in schools.**

The P1 Brazil Variant is also now in Ireland

Special Education Schools and Classes are Currently Open

Mainstream Schools are Expected to Reopen Next Week

ECDC, WHO and CDC all say Mitigations in Schools Must be Increased

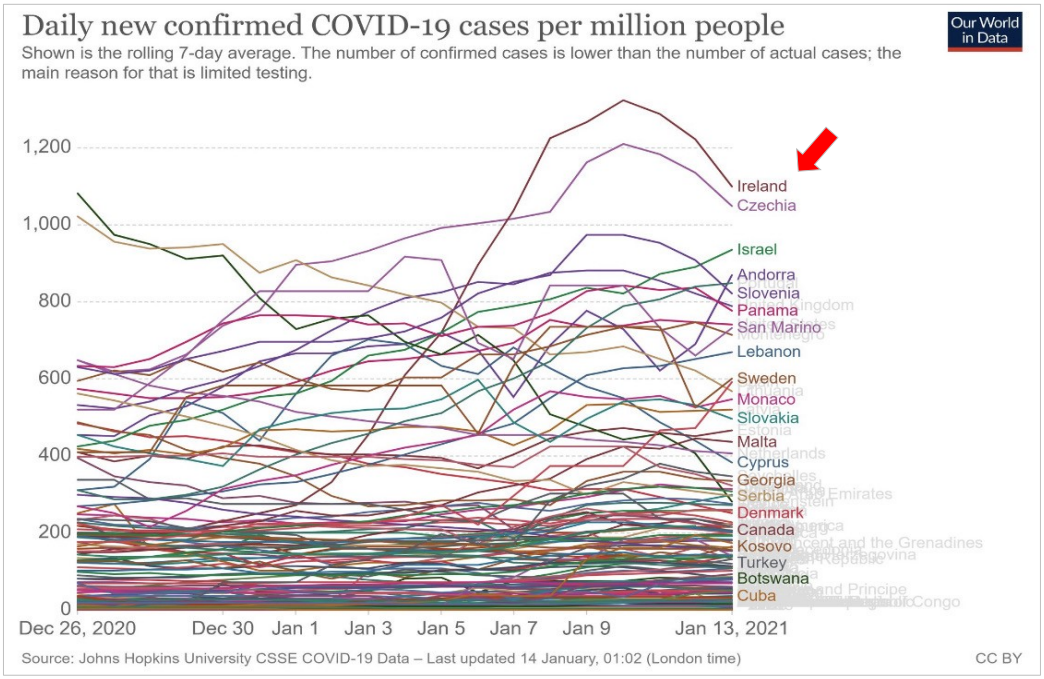
Irish Government Say Schools Are Low Risk Environments

Little to No New Mitigations in Place, Classes Same Size

On the 11th of January 2021, Ireland recorded the

highest number of positive COVID-19 cases per million people.

In the World.



Parents, students and school staff were still told

by the Irish Government

"Schools Are Safe"

This Investigative Report Aimed to Find Out the Truth

Parents United Ireland - Safer Schools for All

Parents United Ireland are a group of parents, school staff and students, united in our concerns regarding the safety of school children, school staff and their families in Ireland during this pandemic. We believe that every person and family should have the choice to do what they feel is best in order to protect themselves from this virus and that every possible safety measure must be put in place in schools to minimise the risk to our children, our educators, our families, and our society.

We are strongly advocating and campaigning for:

1. **Policy and Practice Changes**

Policies relating to the operation and the handling of COVID-19 procedures and data in schools must be aligned with international best practice under the recommendations of the European Centre for Disease Prevention and Control (ECDC), the World Health Organisation (WHO) and, if necessary, the Centres for Disease Control and Prevention (CDC). All policies should be underpinned by the core principles of safe-guarding, autonomy, open disclosure and informed consent. Informed decision making is a right and in order to make the right choices for ourselves and loved ones we need full transparency, while ensuring other fundamental rights are not encroached. The extremely serious concerns raised through media reports and testimonials from staff and children through not being informed that they were in the close vicinity of a confirmed case, warrants immediate investigation.

The serious omissions, flaws, and inconsistencies in the data and reports relating to school staff and school-age children, must be resolved immediately and clarifications given on the numerous queries raised over the past several months. All data must be easily accessible, clear and free from bias or irregularities. Members of the public should not have to pay health authorities hundreds of euro for data that directly concerns them and impacts their lives, data that countries across the globe share and discuss openly. This is extremely concerning given this data is being relied upon to make decisions that may directly impact on people's health and lives. *Our* lives and health.

2. **Mitigation Measures in Schools Increased**

Increased safety measures are needed in schools as a matter of urgency. The safety measures in schools in Ireland must match those in place in the rest of society and follow best international practice. There must be masks for all, physical distancing, reduced class sizes, and proper ventilation to address the risk of aerosol transmission. Currently our overcrowded classrooms and school buses do not allow for physical distancing. Masks are not required for primary school students. No measures - beyond opening windows where possible - have been taken to reduce the risk of aerosol spread of the virus. Secondary students wear masks in classrooms but take them off at lunch times and some do not wear them when travelling to and from school. With the more transmissible B.1.1.7 variant dominant in Ireland – which may also lead to more severe outcomes – every possible safety measure must be put in place in schools.

3. **Choice**

No family should be forced to send their children to attend school in-person during a once-in-a-lifetime global pandemic, particularly as they wait to be vaccinated. There must be an option to continue distance learning/working for all – this would have the added benefit of reducing class sizes, and therefore risk, for those children who do need to or choose to attend in person. Children with very high risk family members who are at high risk of becoming seriously ill or dying if they contract COVID-19 are still being denied access to distance learning. Many school staff who are medically vulnerable have been forced to return to teaching in-person, against advice of their medical practitioners, as the criteria set by the health authorities [HSE] to define what health conditions are considered to be very high risk differs to that used by the WHO and ECDC.

No person should have to compromise safety for education, or compromise safety for work.
Both can be achieved through innovation and technology.
Allow people and families to decide what is best for them.

Advocating for Safer Schools

We all believe that schools should be reopened in a way that is sustainable and safe when community transmission is low and increased safety measures have been put in place in schools.
These are unprecedented times and everything possible should be done to protect our school communities and the wider community to which all students and school staff belong.

Authors

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Alerting Parents of Outbreaks in Schools Ireland

The Facebook group "**Alerting Parents of Outbreaks in Schools Ireland**", in collaboration with Parents United, conducted a survey in February 2021 which received over 2,800 responses - only 17% of people felt schools were safe. Remarkably over one thousand testimonials were received. Many cited concerns and serious issues with regards mitigation measures and close contact tracing in schools. This amazing advocacy group was created in August of 2020, with the purpose of informing parents of COVID-19 cases and outbreaks in schools and childcare settings across Ireland. The group currently has over 127,000 members, made up of ***parents, students and school staff***; it also includes grandparents, HSE staff and journalists. The group was created due to the policy imposed on schools which means that Principals cannot inform parents, students or school staff of a positive case of COVID-19 in their class – until public health contact the school and inform only those they deem to be close contacts.

The *lack of transparency around COVID-19 cases in schools has resulted in huge anxiety and stress* for all parties involved.

The aim of the group is to give parents and school staff – particularly those with high risk family members - the chance *to make an informed decision*; for them to know about possible exposure to confirmed cases in schools so that they could make an informed decision about whether to send their children into school or keep them home. The group is managed by five administrators, all parents who are concerned about safety in schools during the pandemic, who play an important role in the verification of cases submitted to the group, and in the collection of data. The page has (rightly) been praised for increasing the transparency around COVID-19 cases in schools and highlighting the concerns of parents, students, teachers and school staff. We would like to say a special thanks to Eve. C for conducting and compiling all of the research.

We would like to say a special thank you to Isabelle Flanagan – a strong voice for our young people and next generation. Sixth year student, Isabelle, like many other students - especially those in exam years - felt the gravity of this pandemic. Working tirelessly alongside our team, Isabelle reached out to students across Ireland - such as the @LeavingCertStudents2021 Instagram group - to ensure their voices and concerns were heard and shared.

Why Are We Not Told all the Facts? Why Are We Given No Choice?

COVID-19 is a notifiable disease.

It is a notifiable disease for one reason only – to **prevent** the spread of the virus and to **protect** the people.

Yet media reports and written testimonials received from parents, students and school staff across Ireland revealed they were not told about cases of Covid-19 in their classrooms or schools.

If they weren't told they were potentially exposed to the virus, how could they tell anyone? If they didn't know, how would they then access early interventions such as testing or know to restrict their movements to stop the spread of the virus to others in their classes or schools? Or in their home, to their families.

Why weren't they told? Apparently, it was because they were wearing face coverings or there were ventilation or infection prevention measures in place. The European Centre for Disease Prevention and Control, a statutory advisor for Irish health authorities, was explicitly clear – anyone in a classroom for 15 minutes or more with a confirmed case had a **high-risk exposure** [to the virus] and was a close contact. [2]

So, by definition, classrooms **– in schools** – were high-risk areas for potentially contracting the virus.

Yet the Government told us all schools were safe. They *advised* people to go to schools.

Told us that children were lower risk – and apparently that made schools safe.

The Government didn't clearly communicate to the public that **cases in school-age children increased by over 1,000% between schools reopening in August and the end of last year**, or that there were hundreds of outbreaks in schools, with over 1,200 associated cases, in just four months. Nor did they discuss the fact that the **number of outbreaks in schools often surpassed weekly outbreaks in extremely high-risk settings such as hospitals, nursing homes and meat factories**. All happening at a time when cases in children were growing exponentially, in a Level 5 lockdown, and when public health close contact tracing services were so overwhelmed, they were forced to shut down. School principals, teachers, staff left to pick up the pieces.

Our public health and education systems, both grossly underfunded and under-resourced for far too long.

How did anyone think the virus wouldn't spread in packed classrooms (the largest class sizes in Europe), often with little to no room for 1 metre - never mind 2 metres - physical distancing? With no masks for pupils in primary schools, and everyone sharing toilets, yards, canteens and school buses (with children from lots of different houses and different schools, with little supervision, and poor ventilation)?

Still the Government said schools were safe. But they didn't publicise the fact that there had been 1,176 cases in children while schools were closed but an astounding **13,143** cases in children after they reopened – a **ten-fold increase**, in just four short months, representing 92% of all cases in children for the whole year.

They did not highlight the fact that **hospitalisations in school-age children (5-14) with COVID-19 had increased by 161%** after schools reopened, nor did they indicate that young people, teenagers, children (0-25) were *the only age groups* that experienced more hospitalisations after schools reopened than when they were closed. They did not inform us that, of all age groups, ***school-age children (5-14) experienced the highest increase in both cases and hospitalisations after schools reopened.*** Almost identical to the UK.

No. They told us our schools were safe. Over and over again. Despite thousands of students and teachers – who were in these '*safe*' schools every single day– telling them differently.

But we listened. We learned. We cried. We worked together with those affected.

Based on the findings of this investigative report, we are calling on Government to immediately align the policies on schools with international best practice; increase mitigation measures in schools; invest in public health and our education systems - and immediately give all adults, children and families the choice.

The choice to stay safe at home or go into school. In a once in a lifetime pandemic, is that too much to ask?

Part One: Overall Findings

This document was written with, and for, parents, guardians, students, families, all school staff or volunteers and any person(s) or group(s) interested in the topic of the safety of schools during the COVID-19 pandemic.

In so far as possible, the authors have composed this report so that it can be understood clearly.

Where possible, medical or scientific terms have been explained throughout the report.

The data presented in this report are only as good as the HPSC Reports the researchers had access to.

It should be noted that clarification needs to be provided in relation to the figures for tests, cases, not detected cases, facilities tested or facilities with detected cases published in the school's reports.

It is imperative that full transparency and clarity relating to the data on cases in children and schools are provided to the general public, particularly to those who work in or attend schools.

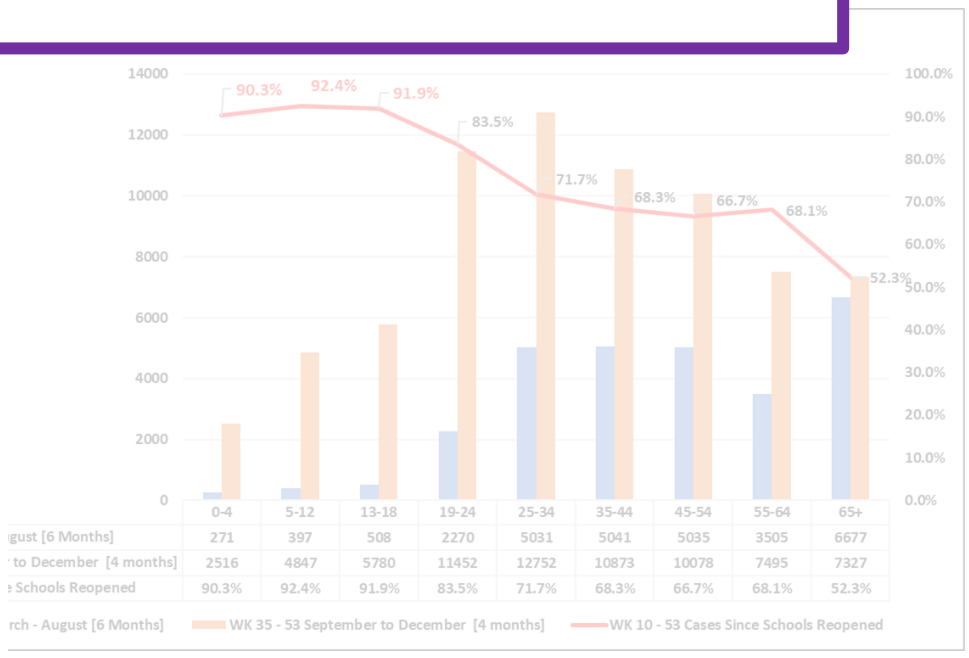


Table of Contents – Overall Findings

These are just *some* of the headlines from the media last year showing the very serious safety issues regarding schools and concerns regarding the lack of access to remote learning during the COVID-19 Pandemic

'School told mask less students were not close contacts with SNA despite 'intimate care level'[1]

"'TURN OFF APP' Teachers in schools with positive COVID-19 cases asked by HSE to turn off contact tracing app while in work" [2]

"Principal '*may have to consider position'* as school forced to open"[3]

"Irish secondary students concerned about schools reopening" [4]

'Teachers struggling to deal with COVID concerns in the classroom[5]',

'Breakdown in Republic's COVID-19 contact tracing system 'won't happen again'[6]

'Fewer than five schools in Ireland a week undergoing COVID-19 inspections'[7]

'Cork school to close for two weeks due to COVID-19 outbreak'[8]

"Should schools be kept open?"[9]

"Crowded Irish School Transport", [10]

"Example of close contacts - a son tested positive,[11]

"Public health unable to keep up with contact tracing"

'54% of COVID-19 cases in children recorded in October'[12]

'COVID-19 fears spark record increase in home-schooling'[13]

'Some schools missing 10 teachers over wait for COVID-19 test'[14]

'Staff rooms a key risk for spread of COVID-19 in schools, health officials warn'[15]

"Flaws in public-health response to cases are major cause for concern, school leaders say[16]

Irish schools could close again as teachers consider strike action over Covid-19 concerns[17]

Concern over confusion surrounding close contacts at Drogheda school[18]

'I can't send my children to school; they're victims of my disease'[19]

'Chronically ill mother to scared to send daughter to school'[20]

Very High-Risk Families & Children No Access to Remote Learning [21]

Vulnerable Teacher Forced to Work in School[22]

School during Covid-19: 'Keeping all the windows open, you're freezing'[23]

List of Irish schools hit with Covid-19 cases this week as several take measures[24]

Covid-19: 15 teachers forced to self-isolate after outbreak in Limerick school[25]

'Teaching union votes for strike action if COVID-19 concerns in schools not met'[26]

'Pupils whose siblings are at 'very-high risk' of COVID-19 not offered remote learning', [27]

Parents and teachers' alarm as classes continue at schools despite confirmed cases of COVID-19"[28]

Quick Reference Guide

Please note:

- Schools in Ireland closed on the 12th of March 2020 and reopened on the 23rd of August 2020.
- References made to the year 2020 relate to the period of time from when the pandemic began in Ireland, 1st March 2020 (Week 10) up to the last epidemiological week (Week 53) which includes the first two days of 2021 (1st/2nd January.)
- Terms or phrases used in this report, such as 'year to date', 'end of the year' are inclusive of Week 53, unless otherwise specified.
- 'School-age children' refers to children 5 to 18 years of age or (due to lack of data) 5 to 14 years of age
- 'Young people' refers to teenagers (13-18 years) and young adults aged 15-24 years old
- When the word 'Report(s)' has a capital 'R' this refers to official documents, and not this report.

Limitations

The Health Protection Surveillance Centre (HPSC) published different datasets for children over different time ranges and did not reveal the full figures for the year; therefore, there were a number of limitations:

1. Daily data for the 5-12 and 13-18 age group was/is not published publicly. Weekly data for these age groups were only published from Week 27 (July) onwards.
2. Annual (YTD) figures of cases for 0-18 year old age groups was only released on November 15th and was published in a table in the HPSC Mass Testing School and Childcare Facilities Report. Cases for adults were not published in this table, despite the fact adults work in schools. This table only included cumulative totals for the year, or the week in question.
3. Weekly/daily hospitalisation and cases figures for school age children 5-12 and 13-18 years old for the year 2020 was not made available.
4. Children aged 15-18 years old were grouped in with adults (15-24 year olds). This meant that 5-12 year olds were grouped differently - as 5-14 year olds. As children in primary schools are ordinarily aged 5-12 and secondary schools aged 13-18, this made it extremely difficult to compare cases in schools to the rest of the population.
5. The only hospitalisation data which could be directly compared against cases in schools were for the 5-14 year olds. It is important to bear in mind that approximately 46% of the 15-24 year old age group includes 13-18 year old children.
6. The HPSC were clear in stating that data published was likely to be changed/validated/de-notified at a later stage; however, when this occurred the HPSC did not publish the dates when data or reports had been changed. For this reason, (unless otherwise specified) the data presented in this report are derived from the day they were published in Reports and/or from the Covid-Hub.
7. It is not clear if cases associated with outbreaks in schools are included in the official school Reports.
8. It appears from a social media post from a HSE public health official that the table entitled 'number of facilities' in the Schools Mass Testing report actually refers to the number of person(s) who had tested positive for the virus and were in school while infectious. No clarification regarding the meaning of 'facilities with detected cases' has been received and, when this was queried, the table was removed from the next report published.

As and when required or requested, any and all personally identifiable data has been redacted.

Age Profile Datasets Used in Ireland

The Department of Health [3] and the HSE [HPSC] [4] published COVID-19 data on a daily/weekly basis using three different (children/young people) age group datasets:

Daily (Gov.ie/COVID-Hub) *(Cases & Hospitalisations)*	**Weekly** *(Cases & Hospitalisations)*	**Weekly (School Report)** *(Tests / Cases)*
0–4 years of age	0-4 years of age	
5-14 years of age	**5-12 years of age**	**0-17 years of age**
15-24 years of age	**13-18 years of age**	**18+ years of age**
25-34 years of age	**19-24 years of age**	
35-44 years of age	25-34 years of age	**Year to Date Cases**
45-54 years of age	35-44 years of age	**0-4 years of age**
65+ years of age **and/*or***	*45-54 years of age*	**5-12 years of age**
65-74 years of age	55-64 years of age	**13-18 year of age**
75-84 years of age	65+ years of age	*(All Population)*
85+	*(Only from Week 27)*	

COVID-19 age profile statistics [e.g., cases, hospitalisations, outbreaks etc.] and research, guidelines and resources were accessed via public health briefings and a number of different platforms:

- COVID-Hub [5]
- Department of Health (National Public Health Emergency Team, NPHET [3]
- Health Protection Surveillance Centre - HPSC [4]
- Health Service Executive – HSE [6]
- Health Information and Quality Authority – HIQA [7]
- Central Statistics Office, CSO [8]

International sources of information (which are mentioned in the Irish Statute Book [9]and NPHET Governance Structure) include:

- World Health Organisation, WHO [10]
- European Centre for Disease Prevention and Control, ECDC [11]

The Three Different Datasets for Children and Young People as Published by the HPSC

Report Name	Frequency		
HPSC School Report	Weekly	0-17 18+	← Age 0 to 17 and up to day before 18th birthday
HPSC Weekly Report	Weekly	0-4	
HPSC School Report	Weekly	5-12	
HPSC 14 Day Report	Cum. 14 Day	13-18	← Age 0 to 18 and up to day before 19th birthday
HPSC Covid-Hub	Daily	0-4	
HPSC Daily Infographic	Daily	5-14	← Age 5-14 up to the day before 15th birthday
		15-24	← Teenagers grouped with adults age up to 25 years old

Difference two years

Difference one year

Can not compare

*ICU and deaths are recorded for all age groups

Table 7 Breakdown of confirmed COVID-19 cases by age group up to WK 53:

Week of Notification	Age Groups			Totals		
	0-4 years	5-12 years	13-18 years	0-18 years	% of 0-4 population	% of 5-18 Population
Week 53	392	689	931	2,012	0.1%	0.2%
Week 10-53	2,787	5,244	6,288	14,319	0.8%	1.3%
Week 35-53	2,516	4,847	5,780	13,143	0.8%	1.2%

* **Note**: % of population was calculated using CSO 2016 '*Census of Population – profile 3 An Age Profile of Ireland*'.

Cases of Covid-19 in Children Ireland 2020

Data Source: HPSC Weekly School Report

	0-4	5-12	13-18	Total Cases in Children
Week 10 - 34	271	397	508	1176
Week 35 - 53	2516	4847	5780	13143
Total Cases in Children in 2020	2787	5244	6288	14319
% of Cases Since Schools Reopened	*90%*	*92%*	*92%*	*92%*

Total Cases Up To and Prior to Schools Reopening **1176** [**6** Month Period] *8%*

Total Cases in Children *Since* Schools Reopened **13143** [**4** Month Period] *92%*

Difference Between Closing & Opening of Schools **11967** **cases, or** **92%** **of all cases in children**

What Key Sources do Irish Public Health Officials Rely on?

As this study focused mainly on Irish schools during the COVID-19 pandemic, and in particular on the time between schools reopening and closing, it was important to investigate the various types of mitigations, interventions, testing and close contact tracing strategies in schools, consider reports by the press and on social media, and cross examine these accounts against policies and procedures nationally and internationally.

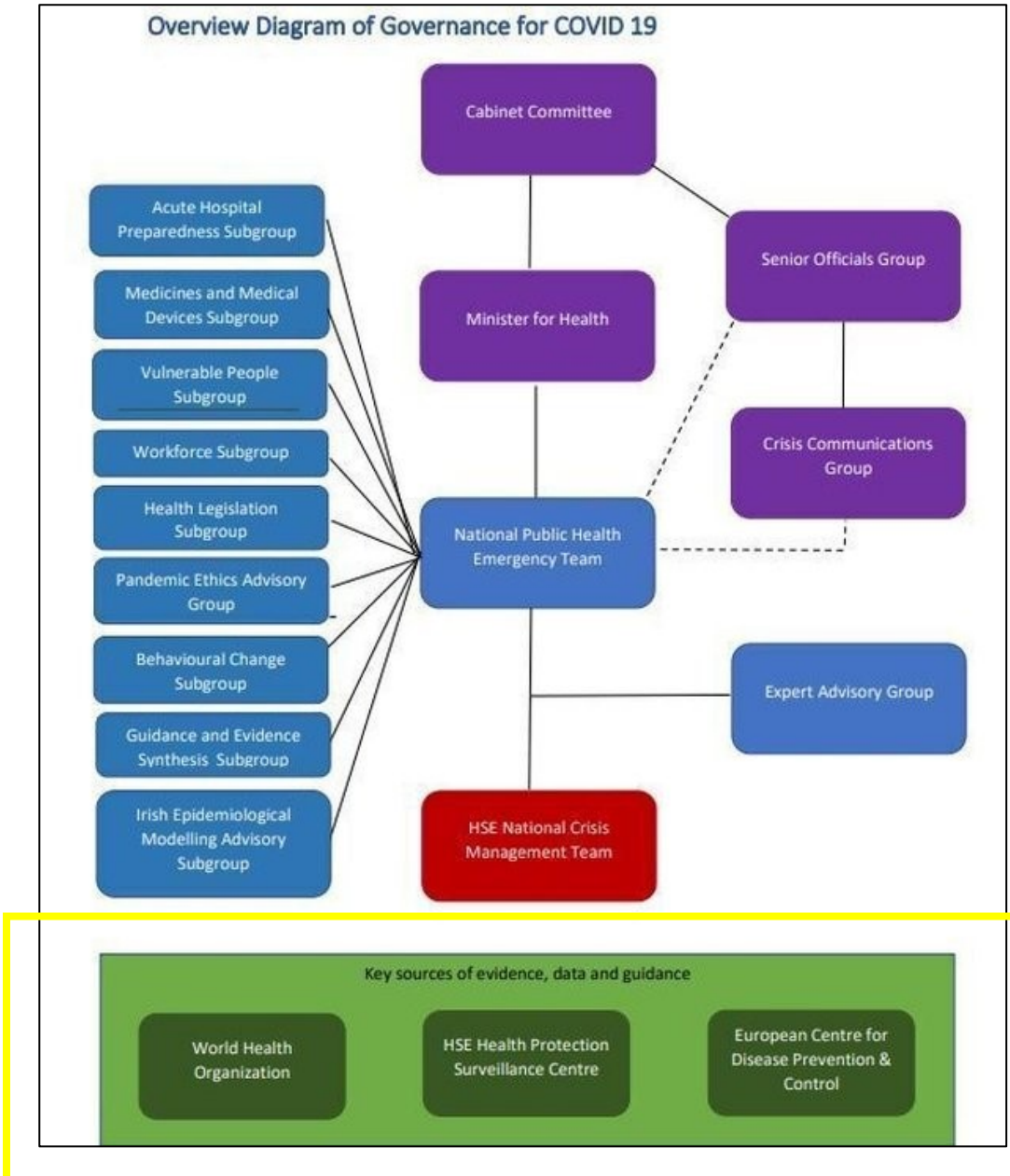


Figure 1: Governance structure of the National Public Health Emergency Team (NPHET)

The governance structure of the National Public Health Emergency Team (NPHET) [12] can be seen above.

A full list of all members are available on the Department of Health's website. [3]

"*The National Public Health Emergency Team (NPHET) oversees and provides national direction, guidance, support and expert advice on the development and implementation of strategies to contain COVID-19 in Ireland. HIQA provides evidence based advice in response to requests from NPHET. The advice provided to NPHET is informed by research evidence developed by HIQA's COVID-19 Evidence Synthesis Team and with expert input from HIQA's COVID-19 Expert Advisory Group (EAG). Topics for consideration are outlined and prioritised by NPHET. This process helps to ensure rapid access to the best available evidence relevant to the SARS-CoV-2 outbreak to inform decision making at each stage of the pandemic. HIQA also support other subgroups such as the Guidance and Evidence Synthesis Subgroup."* [13]

As can be seen in the Governance structure above, all subgroups including HIQA, the HSE and NPHET, have three key sources which they state they use for evidence, data and guidance.

Nationally, they rely on the Health Protection Surveillance Centre (HPSC) [4] who work under the remit of the Health Service Executive (HSE) [6].

Internationally, the data and evidence they rely on to inform Irish policy and guidance comes from the European Centre for Disease Prevention and Control (ECDC) [11] and the World Health Organisation (WHO) [10], who in turn often rely on information from each other and often adapt information and resources from the Centres for Disease Control and Prevention (CDC) [14].

The European Centre for Disease Prevention and Control was established by the EU Parliament and Council, of which Ireland is a member. Both ECDC and the WHO are cited as advisors to Irish Health Authorities in response to the COVID-19 Pandemic, in the Irish Statute Book. [15]

This report reviewed the advice, data and guidance provided to the general public by the Government, NPHET, the HSE and the HPSC, which was underpinned by advice from feedback and advice and research from various subgroups.

This was then cross examined against Irish statistical data (Part Two of this Study See Page 124) and the guidelines, data and advice from ECDC, WHO and CDC (which the NPHET and the HPSC cite in reports as sources).

Collectively, this aided in investigating the large range of issues raised by the public and reported in the media, including:

- Close contact identification, tracing and testing in schools
- Clusters and outbreaks related to schools and activities
- Preventative measures, policies and mitigation provided for schools
- Remote learning education policies for children
- School staff with medical conditions working in schools
- Public health messaging/communications in the community and in schools
- Public policy/messaging in Ireland and internationally
- Timeliness and accuracy of published minutes, statistical and informational reports
- Risk assessments for schools
- International scientific evidence

Please see page 87 for more details on data, reports, policies and information used in this report.

Who Doesn't Want Safer Schools?

Schools need to reopen as soon as possible. This is especially so for children who are particularly vulnerable and/or in need of in-person schooling, and for parents/families who are essential workers or healthcare and emergency front-line workers, who are our main line of defence in this pandemic.

However, the physical safety of all children and adults must be considered as a matter of utmost importance. As hard as it is to hear, COVID-19 has the potential to harm, injure and kill adults and children. It has left hundreds and thousands of adults and children around the world with long-term debilitating symptoms, now known as Long Covid. When schools or any high-volume setting reopens, especially when community transmission is high, this can result it harder, faster and longer lockdowns, which in turn can hinder all chances of keeping children steadily and regularly in school and can delay any chances of businesses reopening and families and people living life normally again.

Substantial statistical, scientific and experiential evidence shows current policies and mitigations in schools in Ireland are not fit for purpose to protect children and adults against the risk of contracting or spreading COVID-19, particularly now that the more transmissible B.1.1.7 variant is dominant in Ireland and there have also been cases of the P1 variant (Brazil).

11 Things We Learned That We Want You to Know

1. The **level of risk in schools is the same as the level of risk in the community**[29] – European Centre for Disease Prevention & Control (ECDC)[30], US Centres for Disease Control & Prevention (CDC)[31], World Health Organisation (WHO)[32]
2. **Children aged 2-16 years are more likely to bring the virus into a household than adults and more than twice as likely as adults to spread COVID-19 in the home**[33] - UK data [SAGE/ONS]
3. **When schools reopened, cases increased more in school-age children than in any other age group**[34]. Hospitalisations in school-age children in Ireland also increased more than any other age group.
4. **Children are more likely to get COVID-19 from other children** their own age[35] – largest COVID-19 study done in the world to date
5. **Children can suffer from Long Covid**[36] **-** 1 in 8 children younger than 12 years and 1 in 7 children/adolescents aged 12-18 years still have symptoms five weeks after being confirmed as having COVID-19[37] – UK data [SAGE/ONS]
6. Children of all ages, including babies, **can get and transmit** COVID-19[38] - (ECDC)[39] (CDC)[40] (WHO)[41]
7. Even if children are less likely to be infected, this does not mean they transmit COVID-19 less than adults, as their role in **transmission depends on both susceptibility and exposure** - children have much higher exposure through more contacts in schools etc and this may outweigh any reduced susceptibility[42]
8. **Reopening schools increases R (reproductive number)** by more than lifting almost any other restriction – consistent finding in several large, respected studies[43]; UK estimated reopening schools may increase R by between 0.2 and 0.5[44] (before the new more contagious variant); NI Chief Medical Officer says reopening schools may increase R by up to 50%[45]
9. **Increased mitigation measures** are needed in schools due to the B.1.1.7 (UK) variant which is dominant in Ireland and which is more transmissible and may be associated with more severe outcomes[46] - ECDC
10. The ECDC **defines a close contact or 'high risk exposure' in a school as anyone who was in a classroom with a confirmed case for 15 minutes** or longer[47]
11. The **true number of children who have had COVID-19 is higher** than the number of reported cases in children[48] – when children are tested for antibodies (seroprevalence studies), often many more have had COVID-19 than had been detected; the Irish study found no difference in percentage of children/adults infected[49]; a German study found that six times more children had had COVID-19 than officially reported[50]

The Real Dangers of the New Variants

The Irish Government is (again) planning to reopen all mainstream schools based on a date rather than on the level of transmission in the community. They intend to do this while community transmission remains stubbornly high, R is hovering just below 1 and there are at least three variants of SARS-CoV-2 in circulation in Ireland – with the dominant B.1.1.7 variant being much more transmissible and possibly leading to more severe health outcomes.

While this independent investigation focused mainly on events in 2020, we also looked at the latest assessment from the European Centre for Disease Prevention and Control (ECDC) on the new variants. Just days ago, the ECDC said "*immediate, strong and decisive public health interventions are essential to control transmission"* due to the more transmissible variants; if not, there will be "*a significant increase in COVID-19-related cases and deaths in the EU/EEA".* The increased mitigation measures it says are urgently required include ***"strengthening in-school mitigation measures***".

The ECDC risk assessment notes that **"Denmark estimates the effective reproduction number (Rt)"** of the UK variant (B.1.1.7) to be 1.14 "**despite strict lockdown since mid-December, including school closures, compared to an Rt of 0.5-0.7 for the other circulating variants."**

In other words, it may not be possible to keep R under 1, **even in lockdown with schools closed.**

Despite these stark warnings and urgent guidance from the ECDC, the most recent publication from the Department of Education and Skills Policy, published in February 2021, has indicated that no further mitigation measures (other than those in place in September 2020) have been deemed necessary to protect children and school staff against new, more contagious variants of COVID-19.

"Public Health has confirmed in discussion with DE and stakeholder representatives that while the Health Protection Surveillance Centre (HPSC) is keeping risk mitigation measures in general under review in the context of emerging new variants that the infection prevention control (IPC) measures in place for schools since September are still considered highly effective for risk mitigation against transmission of COVID-19. The HPSC ***have not advised any change in the infection prevention and control measures in the context of the new variants****"*

The investigators found that this would not be the first time the Government or HSE did not consider or align their policies with guidance from the EU Parliament-established European Centre for Disease Prevention and Control (ECDC), despite the ECDC (and WHO) being cited in the Irish Statute Book and in NPHET's governance structure as advisors to the Minister for Health, all relevant health authorities.

Before schools reopened in Ireland at the end of August 2020, serious concerns around the safety of schools in Ireland were raised publicly by parents, children, students, teachers, SNAs, SETs, school staff and members of the general public. However, these concerns have been continually ignored by Government, the HSE and key policy makers.

Parents, carers, school staff and students in our group, Parents United Ireland, also felt unheard. We decided to reach out to as many people we could. Organisations and groups who became an integral part of this investigation included the 'Alerting Parents of Outbreaks in Schools' Facebook group and the Leaving Cert Students 2021 Instagram Group.

Sadly, many people who participated in this research felt they could not be named for fear of being reprimanded.

This demonstrates the seriousness of the issues surrounding the handling of COVID-19 cases in schools and the lack of adequate safety measures in schools.

What We Learnt…

At the core of much of the frustration and worry of parents, school staff and students has been the Government's claim that Irish "Schools are Safe" – a claim repeated on the day when Ireland reported the highest number of cases per million people in the world. This default 'slogan' has been central to a suite of policies which have led to thousands of adults and children being essentially blocked from any opportunities to work or study from home through the public education system; a policy that, if deployed, would have greatly reduced the sizes of Europe's biggest classrooms, making proper physical distancing a reality and making schools safer.

A policy advised by the ECDC [16], the WHO [10]and the CDC [17].

This claim that 'schools are safe' has been underpinned by statements such as 'children are less likely to transmit, contract or get sick from COVID-19' and 'children are not the drivers of the virus'. Statements which had not been definitively proven by scientific evidence – much of the more recent research from around the world into children and transmission has resulted in very different findings[51] - and some of which had been disproven by the HSE's own seroprevalence study [18] which had found no difference in the percentage of children and adults who had contracted COVID-19. These statements also completely overlooked the fact that adults also attend schools in person.

While making these 'reassuring' statements, Government did not clearly communicate to the public that **cases in school-age children increased by over 1,000% since schools reopened in August last year**, or that there were hundreds of outbreaks in schools, with over 1,200 associated cases, in just four months. Nor did they discuss the fact that **the number of outbreaks in schools often surpassed weekly outbreaks in extremely high-risk settings such as hospitals, nursing homes and meat factories** (and that at this time public health 'close contact' tracing services were so overwhelmed that the HSE were forced to shut them down).

They did not clearly tell the public that 1,176 cases in children (0-18 years) had been reported during the six months when schools were closed, but an astounding 13,143 cases in children were reported in the four months after they reopened – a **ten-fold increase**, representing **92% of all cases in children for the whole year**. They did not highlight that fact that **the number of COVID-19 hospitalisations in school-age children (5-14) had increased by 161% after schools reopened**, nor did they indicate that young people, teenagers and children (0-25 years) were the only age groups who experienced more hospitalisations after schools reopened than when they were closed. They did not broadcast the fact that out of all age groups, **school-age children (5-14 years) experienced the highest increases in both cases and hospitalisations after schools reopened**.

It wasn't as if parents, teachers and students hadn't tried to find this information themselves – they had. But the data on cases and hospitalisations of school age children (15-18 years) were hidden within adult age groups (15-24 years). Public health officials at press briefings included children's cases in what they called 'cases in Women and Men'. **School Reports were not published until four months after schools reopened**. Labelled as 'mass testing reports' these school reports only went up to the age of seventeen – and didn't disclose the number of tests and cases in students and school staff. Stranger again was the fact that **the number of Index cases (first people with confirmed cases) in schools were presented in these Reports as 'Facilities Tested'**. After this particular issue was queried on social media to the HSE, the next Mass Testing in Schools Report published suddenly excluded the table in question, and new statements with clarifications had been inserted.

The Government rarely discussed the weeks where the positivity rate in schools was equal to or higher than the community, nor did they indicate to the public that the best international guidance on making decisions on school closures or openings should not be determined by the positivity rate in schools themselves but rather on the positivity rate and the level of transmission (incidence rate) in the community; and other factors such as the impact on healthcare systems.

Little to no clarity was given by Government or public health officials when questioned by members of the public about errors, miscalculations or duplications in official Reports relating to children and schools.

A Freedom of Information request submitted to the HSE to access data on high risk groups, school-age children and school staff resulted in a charge of €500. A fee one voluntary healthcare advocate could not pay, **for information many other countries provided openly and freely to their citizens.**

People truly thought the HSE were 'mass' testing in schools. Many were shocked when they learned that the only people being tested were those deemed to be close contacts by public health - the definition of close contacts being used in schools being much narrower than for the rest of society. Parents, students and school staff were even more alarmed when RTE reported that a Public Health Consultant for the HSE appeared to want to avoid deeming students in schools as close contacts:

"*Their priority was to try to avoid removing all children from a school in a case of an outbreak of Covid-19 in one."* She said that she *"would not expect to be excluding whole classes and saying that whole class were close contacts."* She said she *"hoped it would be more measured than that*." [19]

This stance was taken despite the fact that the EU Parliament-established European Centre for Disease Prevention and Control had explicitly stated that **everyone who was in a classroom with a confirmed case of COVID-19 for 15 minutes or longer has had high-risk exposure and are close contacts**. [20]

RTE reported that the same HSE Public Health Consultant later said in October 2020: "*If you designate someone a close contact you are automatically excluding them from education (for 14 days) and exclusion is harmful and undesirable." and "If too many teachers are obliged to self-isolate for 14 days – and that is what happens once they are deemed a close contact – then clearly that too has implications for schools."* [21]

Our groups discussed this at length. Why try to avoid removing someone if there was an outbreak? Would it not have been better to *try to find* every close contact so that they could self-isolate and prevent more spread of the virus into the school or community? Was a child accessing education online from their school while isolating *more harmful* than being informed that they may have been exposed to the virus? *More harmful* than accessing early diagnostics and interventions or treatments?

Worryingly, HSE policies seemed to align with public statements. [22] Mitigation measures such as face coverings, ventilation, infection prevention control measures etc. all appeared to be used as reasons to not deem someone to be a close contact of a confirmed case; even though the ECDC had not advised this for schools. [23]

Many parents, students and staff relied solely upon what the Government and public health officials advised them, and in doing so, sent children to school and attended the school setting in person. Many parents, school staff and children were not aware of this policy, nor of the increasing cases or hospitalisations in school-age children after schools reopened. An online survey conducted by the 127,000+ member strong Alerting Parents of Outbreaks in Schools Facebook Group received over 2,800 responses, of which *only 17%* said they felt schools were safe. 2,783 responses were validated as compatible for use in the entire survey. Of these, 1,065 [38%] people said they (or someone they live with) were definitely in a room with a positive case for more than 15 minutes, of which 67% said they were not formally contacted or told by the HSE or their school that they were a close contact of a positive case. More worryingly, of those who said they were in a classroom for more than 15 minutes with a confirmed case and were not deemed to be close contacts, 64 people took it upon themselves to get tested and subsequently tested positive for COVID-19.

Had they not done this what would have happened? Would the virus have spread unknowingly in schools and homes and communities? What about all the people who didn't do this (because they didn't know) - were they were later found to be new 'Index cases' in schools?

Over a thousand written testimonials were submitted as part of the survey from parents, students and school staff who did not know, nor were they made aware, that they would not necessarily be told if there

was a confirmed case in their class or school. The policy of secrecy around cases in schools resulted in accounts of indescribable stress and anxiety in many children and adults – and often lead to stigma amongst those who were diagnosed.

Principals and board members in schools reported that they felt their ethical and moral obligations to protect their staff and students were both challenged and overridden by a policy [24]which did not permit them to tell anyone about probable or confirmed cases in the school - – even those who had been in the same classroom as a confirmed case - until health authorities made contact. Local autonomy to close classes or schools, on foot of a number of positive cases, appeared to be removed from principals and boards. Sometimes they had to wait for days - **while potentially infected people continued to attend the school**. How was this helping to reduce the spread of the virus or protect people in schools?

There were many reports of principals, teachers, SNAs and school staff wanting to resign.

Students reported being terrified going into school each day. Going home, distraught with worry, in case they brought the virus back to their loved ones. *Was this type of stress not harmful to them?*

Who designed this policy and signed off on it? Any why? Was it used as a cost-cutting measure or a reason not to invest in public health teams? The same public health teams who were under immense strain and who didn't appear to have enough qualified specialists to do public health risk assessments for the whole country, never mind the one million people who attended schools.

Surveys and media reports revealed that, even when staff and students did their absolute best to implement measures such as physical distancing, this simply could not be adequately achieved with almost 100% of students attending in-person. The long-term impact of a grossly-underfunded education and school transport system were cited as major contributory factors in the inability to implement even 1 metre physical distancing. The fact that Ireland has the largest class sizes in Europe, combined with our high pupil to teacher ratio, impeded on the best efforts of staff and students, together with a decision not to recommend masks for children under 12 years of age. many said they felt this resulted in unnecessary cases and outbreaks in schools. The ECDC and WHO strongly advised the implementation of remote, blended or hybrid learning for all students to reduce class sizes to allow for physical/social distancing.

The Irish Government did not deploy this strategy.

Many, many parents wanted to protect their child and family and keep them home temporarily with the hope they could access remote learning from their school but were advised they would need to deregister their children from their school's role book – an action, which after assessment, would eventually lead to a child losing their place in their school permanently. Parents would now have to source, fund and provide education themselves and children wouldn't be able to join online classes with their friends or teachers anymore.

Parents (often with serious illnesses or caring duties) and low-income families said they were really struggling. They knew their children could not properly physically distance in schools, that masks were not being worn and they were (justifiably) worried about the virus being brought back into their home or their child or family becoming sick. Parents with temporary jobs were afraid of being let go from work. Torn between education and safety. Torn between putting food on the table and safety.

For the same reasons above, many school staff with underlying conditions wanted to protect themselves but did not meet the criteria for the bespoke HSE 'very-high risk' list and were told they must go to work – the same applied to staff who lived with very high-risk family members.

There were countless testimonials and media reports of school staff who were pregnant and/or diagnosed with multiple serious underlying conditions and who were told by a government-funded organisation that they must attend work in school in-person because, it appeared, they weren't *sick enough*.

Many felt this was an (unusual) form of discrimination.

Reports revealed that people were advised to attend school in person even when the written professional opinion of their own medical doctors advised it would be unsafe for them to do so.

When asked in the Dáil about this, the Tánaiste, Mr Leo Varadker said "*I would have thought that if someone was advised by a doctor to take health and safety leave during pregnancy that would be enough. "Certainly, when I was practicing as a general practitioner, if a pregnant woman came into my surgery and I believed it was appropriate for her to take health and safety leave or sick leave, I would certify it. I have never come across it being second guessed by someone else'.*

Yet this was indeed the policy which existed.

But instead, not only were some of the most effective mitigation measures for reducing the risk of transmission put in jeopardy, many people felt their right to autonomy (to protect themselves or others) had essentially been blocked because of the very real risk that other fundamental rights, such as the right to earn a living or the right to access public education might be taken away.

All of this was happening while Ireland was in a Level 5 national 'lockdown' - a 'lockdown' deemed to be one of the strictest in Europe. [25] A lockdown that had come two weeks too late because the Government ignored their National Public Health Emergency Team (NPHET) and only eventually agreed to introduce Level 5 restrictions because of extremely high community transmission – one of the indicators cited by the ECDC which could put schools at greater risk.

Was it not the goal (and legal obligation under the Infectious Regulation Act 1981) for the Government and HSE to quickly prevent the spread of the virus with the aim of protecting people's health and safety? If so, why then were different mitigation measures implemented in schools than were required in the rest of society? Why were class sizes not reduced? Why were no increased safety measures implemented?

Primary school children were not advised to wear masks, physical distancing was reduced to 1 metre (or sometimes not in place at all), children were assigned to 'pods' (another name for the tables in a classroom) and 'bubbles' (another name for a classroom). While the advice was for 'pods' and 'bubbles' not to mix with others, this all unravelled at break times in yards, during access and egress in the mornings and afternoons; when children went to after-school facilities and mixed with other classes and other schools; and when children travelled on school buses with children from lots of other classrooms, households and schools.

In secondary schools, where masks were worn, students moved from class to class and locker to locker and shared bathrooms with hundreds more. Staffing levels, always an issue in Ireland, meant cleaning regimes could not always be done. Pupils ate lunch in enclosed rooms with no masks on; met in yards with other class years; went to local take ways and shops at lunch breaks – and again, left school on unsupervised buses, often without masks and without accessible windows, mixing with up to 50 other children, from 50 different households and up to three different schools.

Yet the Government told people that children shouldn't meet with others outside of school.

And that parents were at fault for cases because they met at school gates.

For these reasons and more, parents, staff and students were even more concerned.

Why were the same rules that were in place everywhere else not being applied in schools?

Was it the Government's belief that 'children are less likely to transmit, contract or get sick from COVID-19' and 'children are not the drivers of the virus' that led to their claims that schools were safe?

Why did the Ministers for Education and Health not question the significant increase in cases and hospitalisations in school-age children after schools reopened?

How, when one Minister was a teacher prior to becoming elected, and the other Minister had worked in healthcare policy for years, did neither question the very policies they had signed off on?

Why didn't they investigate the data, procedures and guidelines when thousands of parents, students and school staff told them their concerns? They both had the professional capacity to do so.

Why did they keep saying 'children have less risks' in the same sentences as 'schools are safe' when the latest scientific studies told them a different story?

In the context of a forever changing and dangerous pandemic, it appears the 'low probability, high consequence' risk of children or adults picking up the virus at school and getting sick or spreading it to others in their household who may get sick has not been adequately assessed.

Even if we accept, **which we don't**, that the risks of a child picking up the virus in school is low, the potential consequence could be that child's mammy, daddy, sibling or loved one becoming seriously ill.

Or left with life-long symptoms. Or dying.

Or the child themselves becoming seriously ill.

Or left with life-long symptoms. Or dying.

Imagine the insurmountable grief.

The guilt which could be felt by a parent or child, especially if it could have been prevented.

If it is not safe for 30 office workers to spend all day in a small office together without masks or physical distancing, it is not safe to send staff or children into classrooms without masks or physical distancing.

If it is not safe for more than ten people to attend a funeral of a loved one in big wide open space church or at graveyards, even with masks on, then it is not safe to send our school staff or students into the most overcrowded primary and secondary school classes in Europe.

Or on school buses which have little access to windows and little to no physical distancing or supervision.

Children and adults in schools deserve the same safety measures as the rest of society.

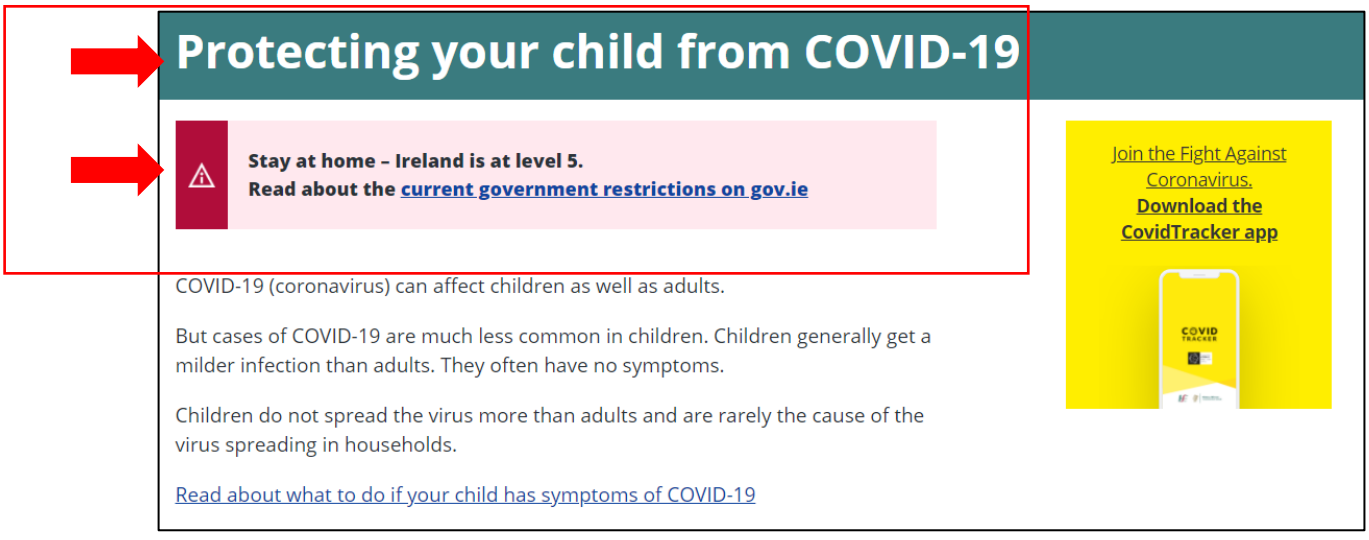
All humans, from babies to adults, can contract and transmit the virus.

Nobody - *nobody* - can know who will pass the virus on.

Nobody knows who will be okay if they get it, and who will not.

This should not feel like a game of roulette.

But for many people in Ireland, that's exactly how it feels.



What Happened When Schools Reopened Last Year?

Last year **28,041** positive cases of COVID-19 were reported in babies, children, teenagers, and young people aged between 0 and 24 years old in Ireland, representing **27.5%** of all cases. [26]

14,319 of these cases were in children aged between 0 - 18 years old. [27]
1,146 of these cases in children were **before** schools reopened in September.
13,143 (92%) of these cases in children occurred only **after** schools reopened.
10,627 (74%) of these were school-age children 5 to 18 years old.

More than **92% of all cases** in children under 18 years of age in Ireland, occurred **after** schools reopened. Of these, **school-age children (5-18 years) experienced ten times the number of cases after schools reopened [+1,079%]**: even more than 19-24 year olds [+489%], adults between 25-74 years of age [+123%] and those over 75 years of age, who, unlike children, actually had **fewer cases after** schools reopened, than before [-24%].

Of those who contracted the virus, **368** babies, children, teenagers and young people aged between 0-24 years old were hospitalised in Ireland, representing **6%** of all hospitalisations. [26]

241 of these hospitalisations were in *young people and teenagers* aged 15-24 years
62 of these hospitalisations were in little *babies, toddlers and pre-schoolers* aged 0-4 years
65 of these hospitalisations were in *primary & secondary school children* aged 5-14 years
Hospitalisations in school-age children (5-14 years) increased by **161%** *after* schools reopened

Last year, many **more** school-age children 5-14 years were hospitalised with COVID-19 **after** schools reopened than when they were *closed*, **unlike** the 0-4 and 15-24 age groups [+78%]. Remarkably, all adults aged 25 and older actually experienced **fewer hospitalisations after** schools reopened, than before [-19.7%]. *It was not possible to extract data for 5-18 year olds*.

Of **1,137 Index cases** ('Facilities Tested') in schools, *at least* **942 of their close contacts** tested positive. [27]

There were **1,234** cases associated with outbreaks in schools. [28] **1 in 3** schools and childcare facilities* identified at least one other close contact who also tested positive for the virus.

At least **1 in 10 children** who tested positive for COVID-19 in Ireland were associated with a school or childcare setting.

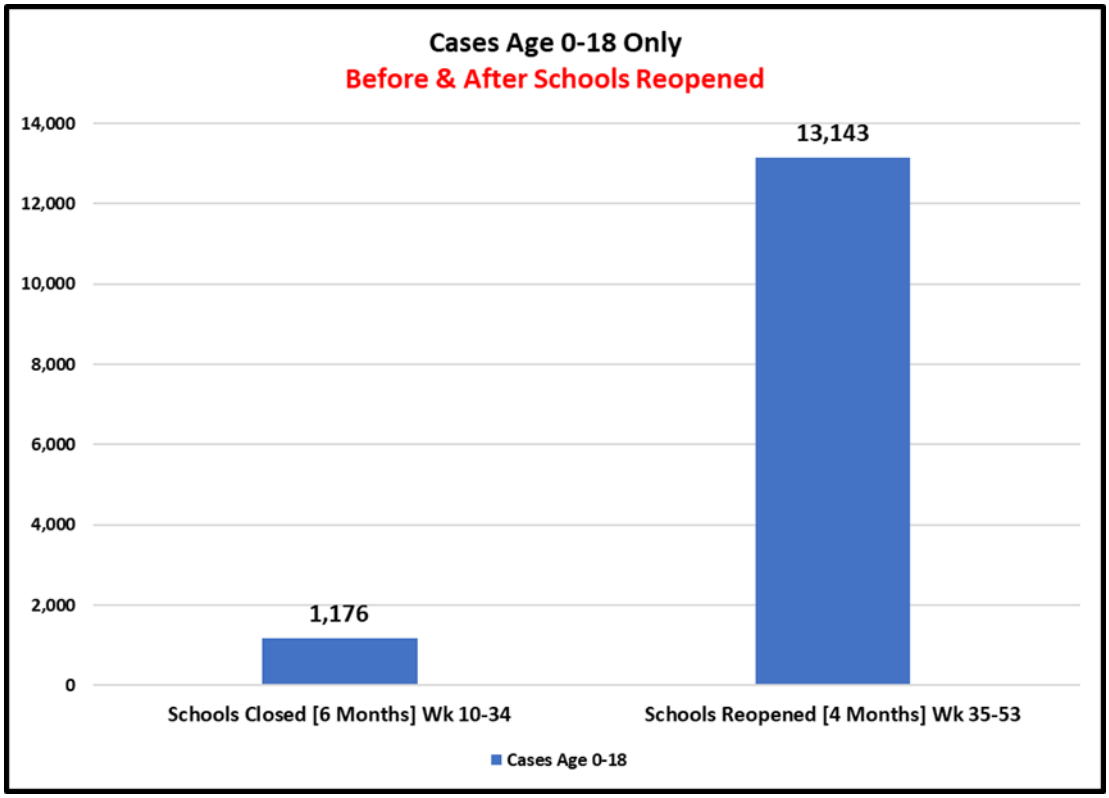
On several occasions the **positivity rate in schools was equal to or higher** than the positivity rate in the community.

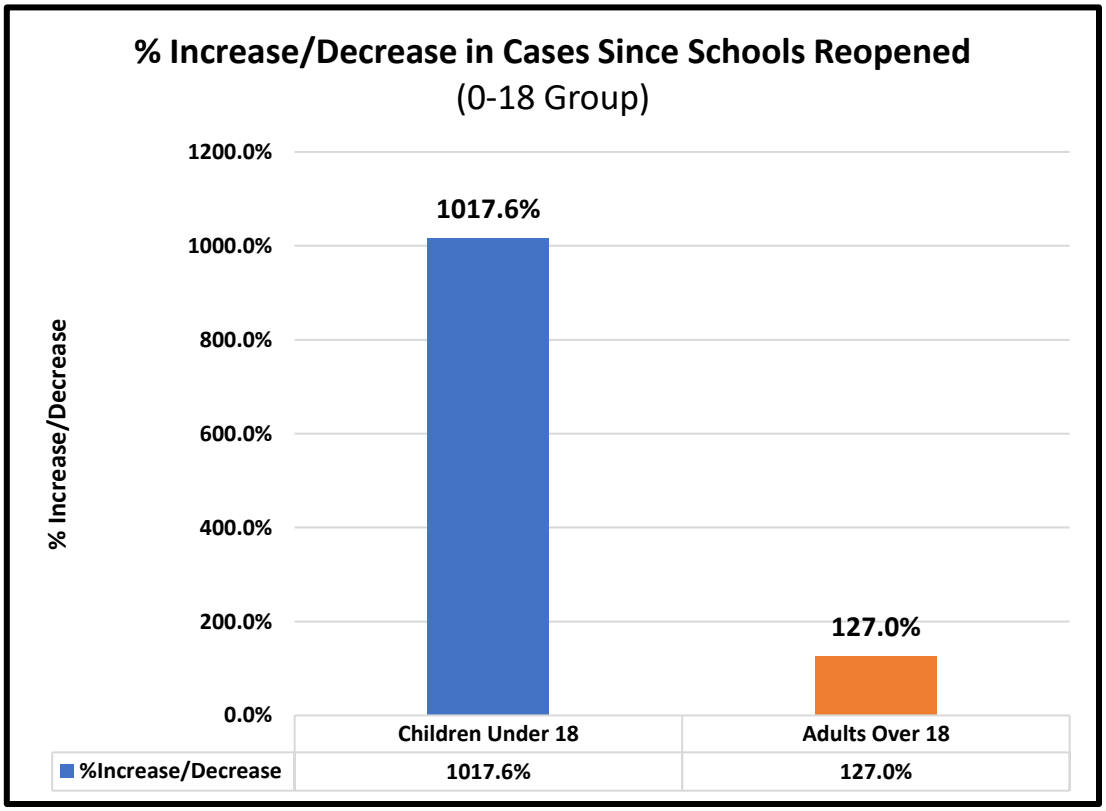
To date, **less than 2%** of the school-going population appears to have been tested - only results from the testing of close contacts were included in the school reports.

Educational facilities had the highest number of outbreaks compared to every other sector [N=492]; the highest number of cases associated with outbreaks [N=2,769] and the highest range of cases in open outbreaks [0-190].

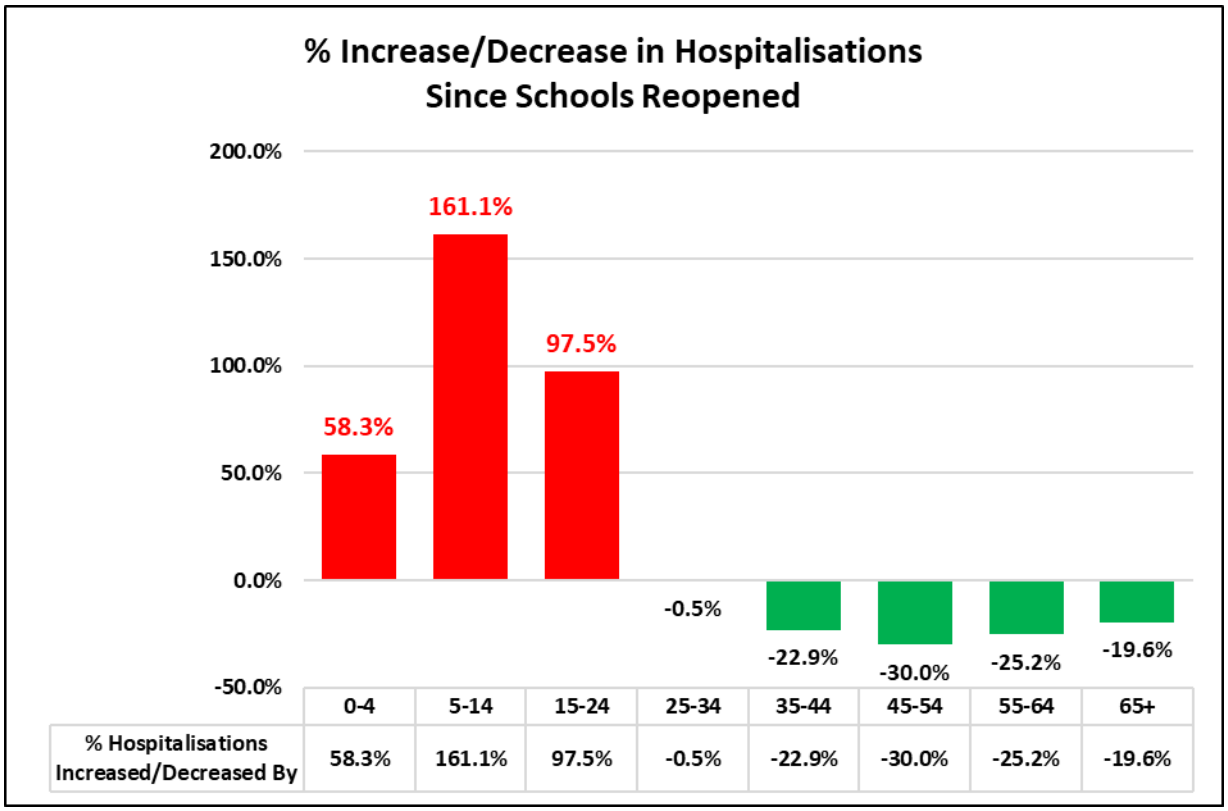
Of these, schools had the highest number of outbreaks [N=295] and **outbreaks in schools *often surpassed* outbreaks in extremely high-risk settings such as hospitals, nursing homes, residential institution**s, emergency, justice and defence services.

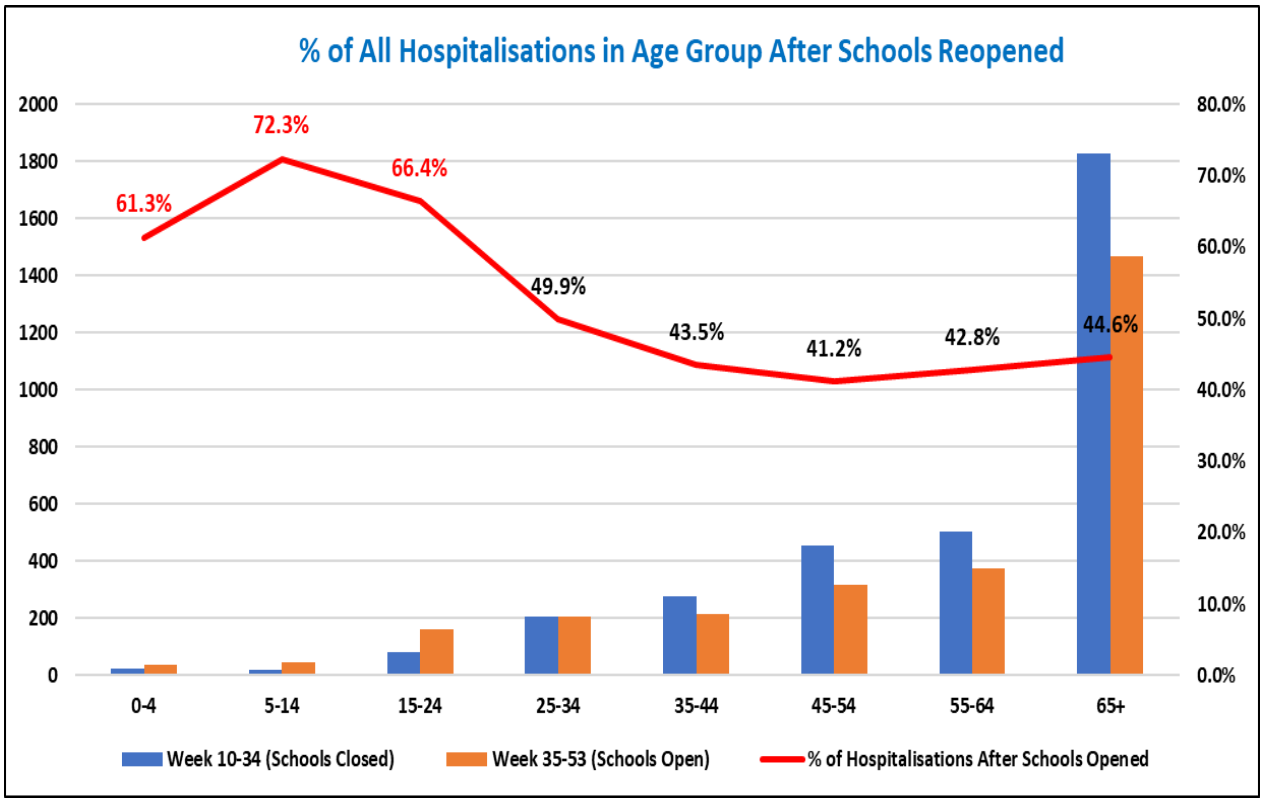
Cases in Children Since Schools Reopened Last August





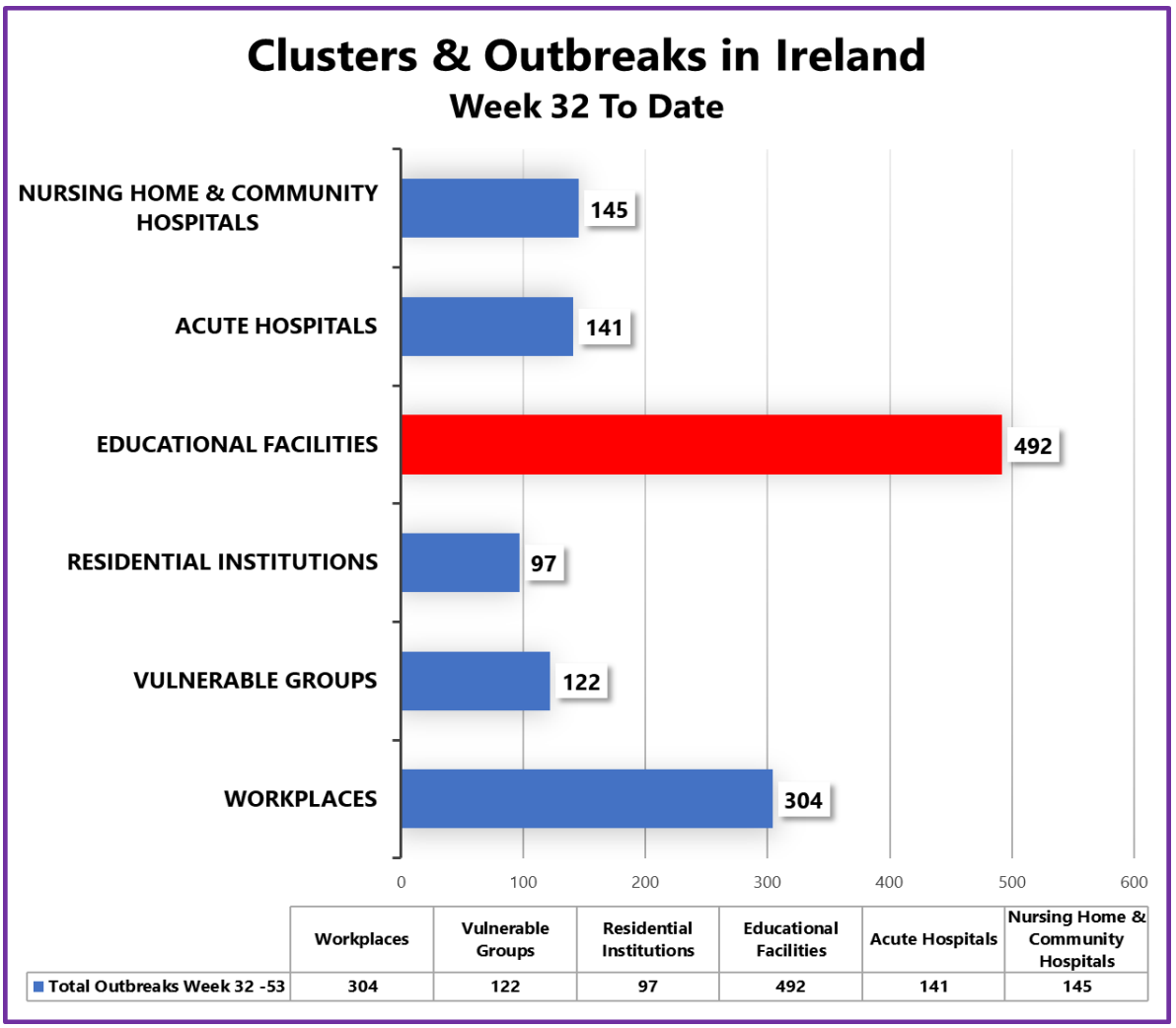
Hospitalisation in Children Since Schools Reopened



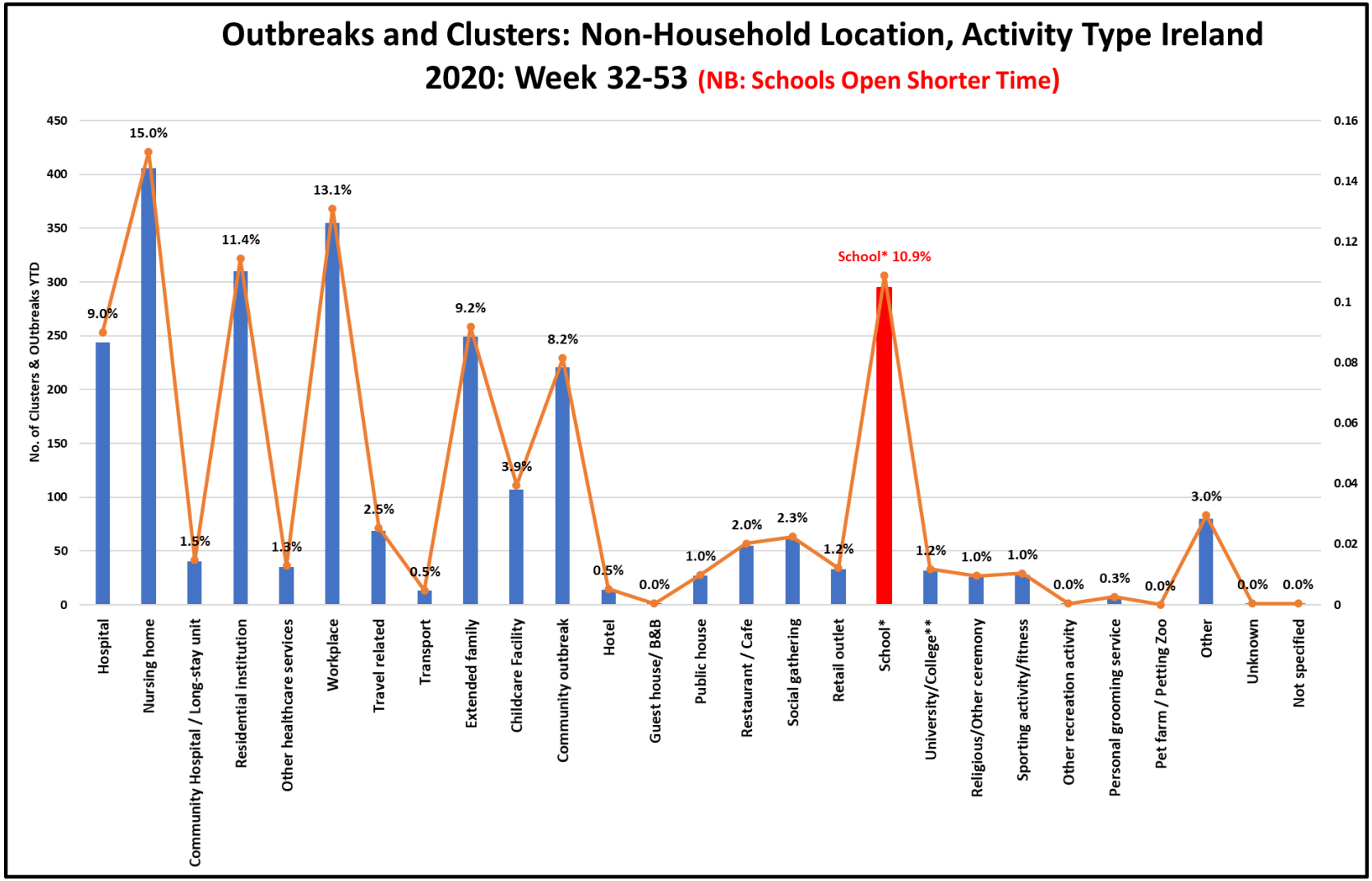


Positivity Rates & Outbreaks: Educational Sector

Positivity Rate - All Population	3.4%	2.8%	2.5%	2.5%	4.2%	6.6%
	↓	↓	↓	↓	↓	↓
All Schools Reported Weekly	**Week 47**	**Week 48**	**Week 49**	**Week 50**	**Week 51**	**Wk 52/53**
Tests Completed*	2384	2178	2368	1774	2852	4234
Positive Tests	31	38	60	62	94	187
Positivity Rate	**1.3%**	**1.7%**	**2.5%**	**3.5%**	**3.3%**	**4.4%**
Schools - Itemised						
Primary School	1.4%	1.8%	3.2%	3.6%	4.0%	4.6%
Under 18	1.5%	1.7%	3.4%	3.7%	4.0%	4.7%
Over 18	0.6%	2.3%	0.6%	3.1%	4.8%	3.8%
Secondary School	1.2%	1.6%	0.8%	3.4%	0.7%	3.3%
Under 18	1.0%	1.8%	1.0%	1.9%	0.3%	3.1%
Over 18	2.3%	0.0%	0.0%	15.0%	2.3%	3.8%
Special Education Schools	0.0%	0.0%	0.0%	1.6%	5.1%	
Under 18	0.0%	0.0%	0.0%	2.6%	7.4%	4.2%
Over 18	0.0%	0.0%	0.0%	0.0%	3.0%	7.7%
Childcare Facilities	1.4%	3.0%	3.4%	1.8%	7.1%	7.2%



Outbreaks in Educational Facilities (Schools = Blue Line)



Testimonials from Parents, Students and School Staff

Many thanks to Eve C. and the Alerting Parents of Outbreaks in Schools Facebook Team, first for **listening to and informing parents, school staff and students, and secondly for conducting this extremely important research**. Below are only a few of the over a thousand testimonials that were shared. As required and when requested all personal identifiable information has been redacted.

Please be aware some of the stories are upsetting and may cause some distress, especially if you have been affected similarly. If you need to talk to somebody, please contact the Samaritans at 116 123. If you want to raise a concern, please email: yoursay@hse.ie or phone 1850 24 1850.
Link to the study and all redacted testimonials here: CLICK HERE TO GO TO STUDY

'Positive case of one of my friends (who I spend classes with and lunch), wasn't deemed close contact, wasn't even told by school who it was (which I guess is understandable). All his teachers were close contacts but not the classmates who actually spend time with him. Seems crazy.'

'There have been 2 cases in my class and while about 30 from my year were deemed close contacts for the first case (October) another case in November only around 5-10 people were considered close contacts' **Authors Note: The definition for close contacts changed on 30th October**

'I know of at least 4 families in my [redacted] class where their child had tested positive. In each of these cases they were regarded as a household transmission and the school were never officially informed. The parents did tell the school themselves, but no action was deemed necessary by the HSE. The preschool nearby ended up being closed a few weeks later due to a number of cases presenting there.'

'I am in [redacted] year. I have a large group of friends and ***at lunch we sit in our assigned places in the classroom "socially distanced" with masks off so we can eat. Three of these girls became a close contact to a positive case yet we were not informed until the following day. When we then took it upon ourselves to ask the principal why we were not informed of 3+ cases in our year and if we were to quarantine. Some of us stayed home for the week of our own accord*** *just in case so that we didn't endanger any staff or students. We were only informed of two Covid cases in our year. We don't get informed of other years. And it is a fact that there has been at least 7+ in my year.'*

'25 positive Covid-19 cases in my school, only 3 of these were deemed close contacts to the first case by HSE. Once a special school has a confirmed Covid-19 case within the walls, every person in the class (pupils and staff) should restrict movements and be tested.'

'Told I was a close contact. Notification from HSE to say I would be contacted within the next day. Five days later ***still no contact*** *from HSE and was never tested'*

'Atrocious. Lies, cover ups. No transparency. Because my [redacted] hadn't been in contact with the positive case 48hrs prior we weren't deemed close contact and weren't told. We heard from my child & then a neighbour confirmed and so we got a test which was positive. We were then told we didn't catch the virus from school!!! We certainly did and my [redacted] still suffers 3 months on. [Redacted] can no longer go cycling or jogging as is out of breath. [Redacted] works from home. The only contact we had was from this positive school case albeit 3 - 4 days previous. But they said it had to be 48hrs prior - this makes no sense. The virus incubates for much longer than, 48hrs & so this child was spreading it in school for about a week prior to becoming a confirmed case.'

'Minimal information, close contacts definition in school different to the rest of the community considering all these children in crowded classrooms with poor ventilation. A child in one of my children's classes was informed by a text from a friend that [redacted] was a close contact but remained in the school for the rest of the day!!!!'

'My [redacted] a first class student was sent home from school in October because somebody in [redacted] class tested positive and the whole class were deemed close contact. When they started the testing there was more, then 15 kids tested positive. 3 weeks off school and the school completely hid it. '

'Notified by contact tracing that child was a close contact 12 days after exposure. No notification from school. I initiated contact with school to confirm that the contact had taken place in school. '

'I think they've been slow in letting parents know of a positive case. Not happy that people (parents and/ or students) with compromised immune systems are not informed, as soon as the school become aware, of even a suspected case. I have a compromised immune system ([redacted] patient), I rang to let the school know and was told that neither my [redacted] ***nor I could be told of any possible Covid case in the school until the entire school body was told*** *and that the case had to be confirmed to them by the HSE.'*

'4 cases in the class, notified of one case. Child never deemed a close contact as didn't sit next to the 4 cases.'

'Our kids were in constant fear of bring Covid home. ***They should have been allowed to do online learning instead of having to risk their lives (and our lives, by default)*** *in those unsafe conditions - without social distancing, spending hours cramped in without ventilation - no wonder there was so much transmission in schools.'*

''I work on school transportation. 3 different schools, one special needs, one mainstream secondary and one mainstream primary with a [redacted] unit. 9 kids. Only 2 wear masks. No social distancing on the bus at all. All seats in use including the ones beside the driver. Travel time is +60 minutes[altered] for the child who gets on first. ***No, I don't feel safe at all****. '*

'My school had 12 positives cases in school resulting in an additional 6 that I know of cases with parents and partners of staff. When the first person tested positive nobody that were in that class were deemed close contacts, even though it was highlighted that we can't social distance and the amount of intimate care etc that goes on. The school was notified on the [redacted] of the positive case and by the following [redacted] we had our third confirmed case. We got mass tested, the first time they brought all staff and pupils into classrooms one of which was the class of the 3 positive cases. This was very traumatic for the children; it was supposed to be done in [redacted]. The HSE later apologised for this. They then said those tests were invalid as they were completed in a contaminated environment and brought everyone back for a second test. This time in a drive through [redacted]. I must note that our school caters for children with [redacted]'

'Management have dealt with situations the best way they can. However, it is very difficult in a small school to ensure distancing at all times. Every space possible has been utilised (including a corridor) to try to keep distancing which is proving impossible'

'As a high risk teacher with long term illness I am terrified of being in school. Kids are coming in with symptoms and nobody is doing anything about it. Students and staff members have tested positive and we haven't been told. I have never been as stressed in my life and do not feel safe at all and am dreading going back. '

'Well in general but the secrecy re positive cases and I have no trust in the close contact definition for a student or the way public health are dealing with positive cases in schools. Also, [redacted] incident before [redacted] has made me think that DES doesn't care about protecting teacher's health and that its all political.'

The Difference Since the Partial Reopening of Special Education Schools…

'Much safer in special schools now with 50% attendance and better access to PPE. This should be done across all schools (maybe less than 50% due to numbers in mainstream classes) when it is deemed safe (genuinely safe) for them to reopen.'

THIS SHOWS THE DIFFERENCE WHEN THERE ARE FEWER PEOPLE IN SCHOOLS

Testimonials from Students

*'I'm [redacted] my class is **squished into a small room everyone** has no masks on during lunch everyone mixing schools should stay shut'*

*'Bad. **I wasn't told about a positive Covid case in my class** '*

*"'We, as students, have not been informed in any way, shape or form as to the status of Covid-19 cases in our school. **I have no idea if any students have tested positive or not'***

*'Horrific, and through **no fault of the school**.'*

*'A student got a text about being a close contact and was picked up immediately, but the teacher would not let the student leave the classroom to go home and tried to make the student explain why they were going home and that a parent must come into the classroom to take them out. Obviously, the student didn't want to announce to the whole class that they were a close contract and embarrassed them. Other cases have not been reported or of student's family members who got it and the students were close contacts. **We all found out from other students'***

'The town knew before the school community'

***'Positive case of one of my friends (who I spend classes with and lunch), wasn't deemed close contact**, wasn't even told by school who it was (which I guess is understandable). All his teachers were close contacts but not the classmates who actually spend time with him. Seems crazy'*

*"Any students that got Covid was kept very secret even so much so that teachers didn't know who got it putting them at risk they were only told it was someone in such a year etc. Nobody was considered a close contact. It turns out **one of the few people who got Covid was in my brothers' class and he sits behind him in a lot of classes. My brother is very high-risk and the fact that he wasn't even considered a close contact is appalling** as if he were to contract Covid it would almost certainly be fatal"*

*"For me, **every day I felt butterflies in my stomach and every day before school, I was terrified walking in the school doors hoping I didn't bring anything home**. I have no high risk people living in my household, but my mother helps my granny to care for my grandad who is high risk. I didn't want to go to school but if I didn't, I knew I wouldn't receive the same level of education. I think a lot of people were in the same position. **In the media I constantly heard that schools were safe, over and over again. I was confused because those journalists writing the articles were not in the school environment everyday like me**…when we went back to school everything seemed brilliant, but then I heard of cases in the school, but no one was deemed a close contact. **I can confirm that for at least 2 of the cases, no one was deemed a close contact…**another thing that confused me was the **Covid app.** A lot of money was spent on this app but I **myself and multiple other students were not getting notifications** from the app, I didn't actually know that you were meant to get notifications from it!"*

Q. Have any changes been made to school buses since schools reopened? e.g., extra space for students, extra buses, one seat per person? #LeavingCertStudents2021

"No literally nothing changed except having to wear a mask ***but that isn't even enforced****"*

"No changes at all"

"I take the bus, the only thing we do is wear a mask, ***no space between students****"*

"Girls in my school had to ***leave class early just to get a seat on the bus*** *because they would only let 50% on and they didn't have a second bus"* ***[Author Note: Trying to adhere; children have no transport]***

"No changes on my bus"

"Not that I'm aware of"

"None whatsoever ***my bus had 50+ people on it*** *and about 80% didn't wear masks"*

"No not from what I've heard"

"Not one bit, ***I had to stop getting the bus****"*

"Yes but no one abides by it"

"Our ***bus is at full capacity****..."*

"Change? What's that never heard of such a thing"

"Not on my bus anyways. ***I'm often one of the only people on the bus even wearing a mask****"*

"My school bus was ***100% capacity*** *the whole time"*

"My ***bus joined with another to save costs****- it's packed"*

Testimonials and Feedback from Teachers & SNAs

Primary School Staffs Perspectives (COVID-19)
School staff have not made outlandish demands about safety in our schools. Staff have been asking for very basic protections since March 2020, the same protections offered to others in the community.

- At least 2 metres Social Distancing
- Masks for everyone
- Reduced numbers indoors
- Proper ventilation system to mitigate against this airborne virus
- Robust test and trace, as offered to other workplaces in the community

At least 2 metres Social Distancing (SD): Minister Joe McHugh suggested that schools might open on a "half in half out" basis to allow for 2 metres SD. Minister Norma Foley decided against that measure for September 2020. We still do not have at least 2 metres social distancing in our schools, sometimes we do not have 2cm. We are advised to maintain 2 metres social distancing everywhere else in the community. **Why aren't school children and staff being kept safe in Ireland?**

Masks for everyone: Masks were not mandated for staff in September 2020. "Face coverings" are mentioned for February 2021. Pupils are not wearing masks in primary schools, so staff and pupils are not protected from those not wearing masks. We are advised to wear a mask if we enter a premises, such as a shop, and even if we are outdoors, yet we still do not have mandated masks for everyone in a primary school. **Why aren't school children and staff being kept safe in Ireland?**

Reduced numbers indoors: Irish primary schools have the largest class sizes in the EU. Schools do not have reduced numbers indoors. We have reduced numbers allowed at weddings and funerals, but no maximum number for classrooms. On 08/09/2020 John Boyle, General Secretary, INTO[52], wrote, "Ireland is home to supersized classes, the largest in the EU. Almost one in five of our primary schoolchildren are in supersized classes of 30 or more. This hindered our ability to reopen and may very well be the reason our schools cannot remain fully open. We simply have to get our class sizes under control, with too many pupils learning in cramped classrooms of more than thirty pupils".
We still have large numbers in classrooms, all unmasked except for staff, despite this Global Pandemic and several new, far more infectious, variants. **Why aren't school children and staff being kept safe in Ireland?**

Proper ventilation system to mitigate against this airborne virus: Open windows is the main protection available - if a window exists in the classroom and if it can be reached to open it. Government have not provided the necessary funding for ventilation systems or CO2 monitors. **Why aren't school children and staff being kept safe in Ireland?**

Robust test and trace, as offered to other workplaces in the community: Schools have struggled with the test and trace rules applied to schools. Sometimes nobody else is tested or traced, if a positive case emerges. Sometimes, the pod is tested, sometimes the bubble. Pods and bubble "*The risk of spread of infection may be reduced by structuring pupils and their teachers into Class Bubbles (i.e., a class grouping which stays apart from other classes as much as possible) and discrete groups or 'Pods' within those class bubbles, to the extent that this is practical*" (p. 14)**. COVID-19 Interim Recommendations for the reopening of schools and educational facilities**[53]

Some school staff have been advised that they aren't deemed to be a close contact of a positive case, because they were wearing a mask. The HSE define a close contact[54] as, "spending more than 15 minutes of face-to-face contact within 2 metres of someone who has COVID-19, indoors or outdoors". There is no mention in that definition that wearing a mask disqualifies you from being a close contact, yet some school staff have been told that they don't need to be tested because they wore a mask.

Reports about school staff being told to turn off Bluetooth while in school, which is needed for the COVID App caused uncertainty. The Echo 24/10/2020 states[55], "There are concerns that teachers and special needs assistants may be being advised to turn off Bluetooth on their phones while at work. In doing so, however, staff would not be notified if they are in close proximity to a confirmed case of Covid-19. In correspondence from a HSE official, seen by The Echo, it is stated: "In regard to teachers and SNAs, I understand that the advice is turn off Bluetooth while they are at work." Cork-based ASTI president Ann Piggott questioned why there were different circumstances regarding the app for different professions. "If the app supposedly works, why are teachers told to ignore it?"
Why aren't school children and staff being kept safe in Ireland?

From these five basic protections, the following twelve key safety asks evolved, to enable schools to safely reopen and to remain open:

Primary Schools: Key Safety Asks:

1. Social Distancing
2. Masks
3. Reduce number of Contacts
4. Airborne Virus and Ventilation: Put safety measures in place to mitigate against the airborne virus COVID-19
5. Test and Trace robustly to identify COVID-19 cases and combat the spread of COVID-19
6. Allow at risk School Staff to Work from Home
7. Cleaning Schools
8. Extra School Staff
9. Vaccination for School Staff
10. Extra Protective Measures Against New Variants of COVID-19
11. School Closure when Community Transmission is High
12. Data Transparency and Clarity

Authors Note: All of the above are recommended by the ECDC, WHO and CDC.

Are parents, school staff and students being unreasonable or irrational?

Is it a reasonable request from the general public to access non-personal identifiable information on a daily basis regarding the numbers for school staff and school age children's tests, cases and hospitalisations – when information is provided for nearly all other age groups and sectors, and countries across the world share this?

Is it rational that the safety measures and guidelines (and laws) for the general public do not apply to those in the school-age population, when in fact all people of all ages can transmit and contract the virus, and get sick and die from the disease?

Is it rational for a student or school staff to be concerned when attending a school with packed classrooms, little physical distancing or no masks, and is it reasonable for them to want to stay at home, access remote learning, and follow the national safety guidelines during a pandemic?

Would it not be rational for the Government to allow for more people to stay at home from school in person in order to help reduce class sizes (large indoor crowded spaces), thus further reducing the potential spread of the virus?

Is it rational for Government to allow hundreds of people enter poorly ventilated, crowded buildings or school transport with limited or no physical distancing and oftentimes wearing no masks, when community transmission is high and new variants are in circulation – all of which are proven to increase the spread of the disease, leading to further lockdowns and restrictions and putting immense strain on our health workers and health systems, and people's businesses and jobs? Especially when ECDC recommend schools increase in all mitigations in light of the new variants? [1]

Which is more important, education or health?

Neither.

They are equally important.

But safety is more important than both.

Schools do need to reopen.

But they should only do so safely.

Our Government has the opportunity to do the right thing.

They know now is not the right time.

But if they must reopen now, then they should only do so if:

→ They change the policies, protocols and procedures
→ They increase the mitigations and safety measures
→ They give all people the choice to work or school from home

Findings: Policies and Practices in Schools

This investigation found that the current policies and mitigation strategies developed by Government and HSE for schools in Ireland were not always in-line with International best practice as advised by the ECDC, WHO or CDC guidelines. (WHO liaise and work with CDC regularly)

- There were a number of serious issues and concerns in relation to the data/reports for tests, cases and hospitalisations in school-age children (5-18) and school staff. Issues such as reports not being published for months after schools reopened, different time-frames on reports, numerous omissions, duplications and errors - and school-age children age groups being grouped in with adults**.** This must all be rectified immediately. [See Page 283]
- ECDC guidelines explicitly state that everyone in a classroom or shared space with a person who tested positive for COVID-19 have had "high risk exposure" and are close contacts; WHO guidelines explicitly state that a person is a close contact if in a room or shared space (indoors or outdoors) with a probable or confirmed case of COVID-19; CDC state cloth face-coverings and PPE should not be used as a means to not determine a member of the general public as a close contact. [29] HSE consider the use of face-coverings, ventilation, PODs, IPC measures when deciding if someone in a school is a close contact. [30] This needs to be rectified immediately.
- All people (children and adults) should have the right to be informed of a potential/possible risk to their health or safety. HSE personnel have indicated that not everyone in a classroom would be deemed as a close or casual contact. Policies and testimonials reveal school principals and Boards of Management were told not to tell anyone in the school about a confirmed case until public authorities gave them permission to do so; and they would decide who the school could tell. Policy revealed Boards of Management were not to close classes or schools unless Public Health Authorities told them to do so. [24] All people have the right to make informed decisions about their health and safety to prevent harm or injury to themselves or others. People can only do this if they have information to make informed decisions i.e., they may not know to self-isolate/get tested if they have not been told there was a positive case in their vicinity.
- **WHO and CDC advise children in primary schools to wear masks/face coverings if and where possible**. [31] Government and NPHET have not recommended masks for children under 12. [32]
- ECDC, WHO and CDC are very firm on physical distancing guidance especially when community transmission is high. 'At least **1 metre distance, all ages, at all times'** WHO [33] They recommend **reducing class sizes through offering remote learning**. People should have the choice to work or study at home, to protect themselves and their loved ones, especially when the safety measures in schools are weaker than those in place for the rest of society. [34] School staff and students in Ireland (who do not meet the narrow criteria for 'very high risk' conditions) cannot do this without the potential of having other rights taken away (e.g., right to stay safe through working from home (earn a living), right to free education (inc. remote learning).
- WHO guidelines state that, if community transmission is high, doctors' letters should be waivered; [34] ECDC and WHO state that people who are high risk should be given the opportunity to work from home or be educated from home; this in turn reduces class sizes. [35] Department of Education policy only allows those self-isolating, those diagnosed with COVID-19 or those on the restrictive 'very-high risk' list as person(s) to work or school from home .
- Government and HPSC have reinforced their claims that "schools are safe" by stating: most children do not get very sick from COVID-19, children are less likely to contract, transmit COVID-19; children are NOT the drivers of COVID-19. It is important to note that children live with adults and adults teach and care for children. For every 20 children in a school, there is at least one adult. Through their own communications, HPSC state that adults can transmit and contract the virus more than children – thus would this not put more children and adults at risk? **In light of the new variants** circulating in Ireland – about which a lot remains unknown, Government and health authorities need to discontinue spreading messages that could lead to potential harm, through people not taking necessary precautions. [36]

Findings: Mitigations in Schools and Related Activities

The investigators found that schools can be made as safe as the community but ONLY when **all mitigations** are put in place; when these mitigations **are fully adhered to** and when these mitigations have been **specifically developed and implemented with the full consideration** of other factors such as local **community transmission**, impacts on **health systems** and **new variants** of the virus. [17]

Same People, Same Virus: Different Rules in Schools

SARS-CoV-2 is a virus which is spread through inhaling droplets and/or breathing in aerosols which can linger in the air indoors or from touching surfaces. If the SARS-CoV-2 virus enters the bloodstream or airways of **any adult or child**, this can lead to a person contracting the disease COVID-19. Many people with COVID-19 do not have any symptoms and may not be aware they have the disease but can still spread it to others. If an infected person is within 2 metres of another person (with or without a face-covering or mask) they are at higher risk of contracting the virus. It is important to note that the virus can spread far beyond 2 metres in closed spaces without sufficient ventilation, and people can be infectious before 48 hours of being diagnosed/becoming symptomatic.

To **prevent** people from contracting or transmitting COVID-19, the current guidelines for all people are:

- Keep 2 metres apart from other people, indoors and outdoors
- Wear a face-covering or mask in public (mandatory on public transport and in shops)
- Advised to wear a face-covering or mask outdoors if near other people
- Open windows and ensure good ventilation in indoor settings
- Do not enter other people's households or gardens
- Avoid crowded spaces and leave if a space becomes crowded
- Stay at home unless required to leave for essential purposes
- Do not travel beyond 5 km unless required for essential purposes
- Only ten people allowed at funerals and weddings
- If a close contact of a confirmed case, restrict movements – use the App

Taking this into account, children and adults who attend preschool, primary and secondary schools **are not offered** the same protection from the virus when they:

- Mix in crowded indoor classrooms, canteens, corridors
    - Within 2 metres of each other – with and without masks
    - Within 1 metres of each other – with and without masks
    - Sit/stand face to face with each other – with and without masks
- Travel on school transport
    - With little to no adult supervision on aisles
    - With and without face-coverings or masks
    - With little to no 2 metres physical distancing
    - Mixing with anything from 5 to 50 people from different households
    - Mix with anything from 5 – to 50 people attending 2-6 different schools
    - With little to no ventilation from windows
- Mix in school yards with no physical distancing and no masks and no supervision
- Are in classrooms/buses where there is not always sufficient ventilation
- Are not always told that they have been within 2 metres of a confirmed case
- Have a different policy from DES on cleaning regimes (less often)
- Are told that masks not always mandatory for adults
- Are told to turn off COVID-APP and/or Bluetooth (staff and students)

Conclusions Based on Findings

In consideration of the findings in this report, and the global scientific evidence, HSE policies and practices for schools should not only be immediately aligned with updated ECDC, WHO and CDC and international guidelines –they must also ensure a person's right to informed consent, bodily autonomy, safeguarding, and access to publicly-funded education are upheld.

Most importantly, all policies and practice must align with **public health legislation** and its overall goal:

To prevent the spread of the virus and to protect the general public, to save lives.

There is an urgent need for clarification on numerous areas of concern, including:

- Little to no increased mitigation measures in school, despite new variants and ECDC guidance
- The close contact definition policy in schools
- Not informing people of confirmed cases in classes/schools (close/casual contacts)
- No masks for primary school children
- No option for all to access remote learning/work from home to reduce class sizes
- Removal of local decision making in schools; communicative authority for school principals
- Unreliable public health messaging to general public about children, schools and school staff
- No/little/confusing statistical reports for school-age children and school staff to the public
- Not communicating to the public, the data regarding children, school staff and schools

In every area covered in our risk assessments, based on the current level of community transmission, the new more transmissible and possibly more deadly variants in circulation, and the overwhelming feedback from school staff, parents and teachers; most schools in Ireland (especially large schools and special education schools) were all deemed as high risk - **WITH** the current mitigations in place.

Our researchers have:

- combined all testimonials received from thousands of staff, students, parents, and
- compared national and international data and policies, and
- reviewed and summarised international research, media reports and the expert opinions of epidemiologists, virologists, and public health experts; and
- considered the current high levels of community transmission and
- considered the more transmissible, possibly more deadly new variant dominant in Ireland, and
- considered the current inadequate mitigations in schools,

In conclusion, after conducting a thorough investigation of all these areas, to the absolute best of our ability with a limited time frame and resources and no funding, it appears that, based on current policy, practice and mitigations in place, the majority of schools in Ireland are not currently safe for students or staff to attend in person.

If the Government wants them to open and remain open, they must immediately act now.

Before it is too late.

Immediate Call to Action

The conclusions drawn in the risk assessments in this report were established through collecting and collating extensive information derived from Irish statistical data, national and international scientific evidence/policies and hundreds of testimonials from school staff, students and parents. In light of updated advice from the ECDC and CDC and considering new (known) variants currently circulating in Ireland, safety mitigation measures need to be immediately upgraded and put in place in all schools currently open in Ireland, and in schools planning to reopen (keeping in mind community transmission in Ireland places in-person schooling at the highest CDC risk threshold [17]).

In summary, we found that there are three areas of concern that must be addressed immediately:

1. Policy – To allow for the proper implementation of policies, immediate investment into public health departments and associated services is required. All policies, procedures and decision-making tools need to align with updated ECDC, WHO and CDC guidelines immediately. In light of the current risks with new variants, mass testing needs to be immediately implemented in schools and childcare facilities that are currently open (i.e., testing all staff and students every week and/or as required). Retrospective and robust contact tracing alongside onward contact tracing needs to take place in all schools and childcare facilities. All people in schools and childcare facilities need to be informed immediately if there is a positive (confirmed) case of COVID-19 in the building, without disclosing the name(s) of the person(s). The safety of adults and children must take priority so people can access early diagnostics, interventions and treatments (if required). All policies, procedures and statistical and scientific data must be communicated to the general public in a clear, open, timely and transparent manner, and include all COVID-19 information regarding school-age children and school staff (e.g., tests/cases/hospitalisations etc.) Any policy developed must not infringe on other important and indivisible rights such as the right to be safe/protect others from harm; right to earn a living (work from home); the right to free public education (remote learning).

2. Choice – To reduce class sizes and allow people to protect themselves and others – **everybody** (regardless of health status) must be given the choice to work from home (to provide remote learning) or study from home (to access remote learning). This is a policy which has been implemented successfully in many countries around the world. Parents, children and school staff must be informed of all policies and procedures BEFORE they decide to attend or not attend school in-person. People must be given the choice to protect themselves or others - they must be supported in their decision to do so and not denied any other fundamental rights. Doctors letters and their professional recommendations for staff or children must take precedence over any list created by the HSE. There are many people with **extremely rare conditions** where data may not exist yet; there are many people with **multiple symptoms who are not yet diagnosed** (and, when diagnosed, may be at severe risk) and there are many people with **multiple comorbidities** – where numerous studies show they are at higher risk of becoming severely ill from the disease.

3. Mitigation – Policy makers need to engage properly with front-line educators and students to understand the reality of the school environment. They need to assess schools AND all school-related activities and implement increased mitigation measures, in consideration of the real risk of aerosol transmission of COVID-19, and the now dominant, more contagious and possibly more severe B.1.1.7 variant. The same mitigation measures that have been deemed necessary for the rest of society must also be put in place in schools, such as 2 metres distancing at all times, masks for all (age 5+), proper ventilation, reduced crowds etc.

Immediate investment is required in schools and public health to ensure all mitigation protocols can be followed through in a safe and timely manner.

What Needs to Happen?

Immediately Invest in Public Health Departments & the Education System

The people working in our regional public health departments have been vocal in calling for government to give them the resources they need, but to no avail. When people are put under insurmountable pressure, with few resources, something is bound to give – mistakes and errors can happen and this in turn can impact all people and patients who access, use or depend on said services. Data has the power to save lives. But if the data being relied upon for decision making is flawed, it can also have the power to destroy them. They need more staff and the right tools and technology to enable them to take the fight against COVID-19 to a new level and to enable them to communicate and validate all information in a clear, transparent and timely manner.

The same applies to all of those working in the education sector. They are trying their absolute best to work with public health teams, with limited staff and limited resources. This Minister for Health and Minister for Education and all key decision makers need to recognise the continued failure of Government to adequately resource and fund our education and public health divisions, a year into a global pandemic. The continued lack of investment in these critical services has and will continue to hamper our country's ability to keep transmission of the virus under control. Retrospective contact tracing – tracing the source of chains of transmission – has also been limited due to lack of resources, despite the NPHET [37] calling for this for months. Schools have been under immense pressure trying to implement almost impossible mitigation measures because of supersized classes. Yet industries such as greyhound racing have been awarded ample amounts of funds. The priorities need to change. And fast.

Change Public Health Messaging

Statements comparing children and adults should never have been used as a reason or rationale to convince people that schools are safe – especially when adults attended schools too. Risks should have been analysed based on the settings, activities, external/internal factors and the competence or abilities of people. The risks in schools were, and are, the same as the risk in the community – so the same mitigation measures should have been put in place in schools as everywhere else. There are new variants circulating in our country, about which much remains uncertain. Therefore, and especially in light of new variants, statements such as:

- Children do not get sick/or as sick as adults **- cannot be made**
- Children contract/transmit the virus less than adults **- cannot be made**
- Children are not the drivers of the virus **- cannot be made**

Telling people that children are essentially 'safe' can result in them not practicing proper distancing or following guidelines. Mixed messages such as **"you can go to school with 30 people in a class without masks"** – yet – **"don't meet with friends outside of school" does not work.**
Public messaging also needs to be clearer and stronger with regards COVID-19 being airborne. This in turn will help people seek and implement better protective measures.

Mitigation Measures in Schools Must be Increased

As recommended by the ECDC, WHO and CDC, class sizes must be greatly reduced, and remote learning needs to be offered to all now. Staff should be allowed to work from home and should be allowed to help with the task of providing remote education. **Masks must be recommended for all children attending schools**. School transport must be one seat per person. Ventilation measures such as CO2 monitors and air purifiers with HEPA filters must be put in place. Recommendation of masks (not just face coverings) must be made. Mass-testing in schools and retrospective and onward tracing needs to be in place [not bulk testing]. All people in a school or childcare facility must be informed of a case in their class or school or school related activity.

When is it Safe to Open or Close Schools?

In Ireland – It is Not Safe to Open Schools Now.

All international organisations [ECDC, WHO and CDC] are explicitly clear - when community transmission is high, in-person schooling is deemed to be higher risk to students, staff, families and communities.

Both the ECDC and WHO often liaise with the CDC. Decisions in relation to school reopening or closures should **not be made based on arbitrary dates**, but instead on the level of national and local community transmission and secondary factors such as the status of the healthcare system.

The new CDC guidance [56]for schools[57] [58]recommends school and state/local officials to:

First, **determine the current level of community transmission**, based on the CDC indicators and thresholds for community transmission of COVID-19 [this should be done weekly and, it is important to note that "*the two measures of community burden should be used to assess the incidence and spread of SARS-CoV-2 in the surrounding community (e.g., county) and not in the schools themselves.*] Second, follow the **phased mitigation recommendations** in how schools should operate, as well as making decisions by regularly monitoring local indicators.

- The CDC says that "local trends and other factors" should be considered by school and local officials when making decisions about in-person learning. *"For example, implementation of mitigation strategies should be intensified if indicators worsen (i.e., moving from low to moderate to substantial to high community transmission)."*
- The CDC also says that *"if increasing trends persist in or plateau in substantial levels, school should transition to hybrid instruction".* Transitioning back to *"full in-person instruction should only be relaxed or lifted after improvements are documented continuously for several weeks, such as decreasing to moderate from substantial levels".*

CDC recommends the use of two measures of community burden to determine the level of risk of transmission: total number of new cases per 100,000 persons in the past 7 days; and percentage of nucleic acid amplification tests (NAATs), including RT-PCR tests that are positive during the last 7 days. The two measures of community burden should be used to assess the incidence and spread of SARS-CoV-2 in the surrounding community (e.g., county) and not in the schools themselves. If the two indicators suggest different levels, the actions corresponding to the higher threshold (in Table 2) should be chosen. The transmission level for any given location will change over time and should be reassessed weekly for situational awareness and to continuously inform planning.

Table 1. CDC Indicators and Thresholds for Community Transmission of COVID-19[1]

Indicator	Low Transmission Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
Total new cases per 100,000 persons in the past 7 days[2]	0-9	10-49	50-99	≥100
Percentage of NAATs that are positive during the past 7 days[3]	<5.0%	5.0%-7.9%	8.0%-9.9%	≥10.0%

[1]If the two indicators suggest different levels, the actions corresponding to the higher threshold should be chosen. County-level data on total new cases in the past 7 days and test percent positivity are available on the County View tab in CDC's COVID Data Tracker.

[2]Total number of new cases per 100,000 persons within the last 7 days is calculated by adding the number of new cases in the county (or other community type) in the last 7 days divided by the population in the county (or other community type) and multiplying by 100,000.

[3]Percentage of positive diagnostic and screening NAATs during the last 7 days is calculated by dividing the number of positive tests in the county (or other administrative level) during the last 7 days by the total number of tests resulted over the last 7 days. Additional information can be found on the Calculating Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Laboratory Test Percent Positivity: CDC Methods and Considerations for Comparisons and Interpretation webpage.

[4]Previously, CDC provided guidance for schools through the Indicators for Dynamic School Decision-Making. The current indicators and thresholds are an update to that document that reflect a focus on the past 7 days, and four (rather than five) categories of community transmission.

The Science: International Research & Expert Analysis

The National Public Health Emergency Team (NPHET), the Irish government, the HSE and public health officials consistently claim that '*schools are safe*' and are 'low risk environments.' This claim, we are told, is based on children being less likely to become infected, children being less likely to transmit the virus to others and schools not being a 'driver' of the pandemic.

However, the expert opinions of epidemiologists, virologists and public health experts, as well as the findings from recent research from around the world on children, schools and transmission, cast doubt on these claims.

> "***It's time to stop denying the overwhelming evidence that points to children playing an important role in transmission. Until we acknowledge this evidence, we will not be able to protect our children, staff, and communities. We need to translate this evidence into policy."***
>
> ***Epidemiologist, Dr Deepti Gurdasani***[59]

1. The level of risk in schools is the same as the level of risk in the community – European Centre for Disease Prevention & Control (ECDC)[60], US Centre for Disease Control & Prevention (CDC)[61], World Health Organisation (WHO)[62]

In Ireland to date, the conversation around the risk of transmission of COVID-19 in schools has been focused almost exclusively on comparing the positivity rate in schools to the positivity rate in the community. However, there appears to be broad scientific consensus that **the risk of transmission in schools mirrors the level of transmission in the wider community**:

- The European Centre for Disease Prevention and Control: "**Incidence of COVID-19 in school settings appear to be impacted by levels of community transmission.**"[63]
- The US Centres for Disease Control and Prevention (CDC) is clear that the level of risk in schools reflects the level of transmission in the wider community: "**Success in preventing the introduction and subsequent transmission of SARS-CoV-2 in schools is connected to and dependent upon preventing transmission in communities**."[64]
- The World Health Organisation says "**Community transmission is reflected in the school setting**. **Public health measures in the community are essential to protect schools from amplifying transmission**."[65] Dr Mike Ryan, Executive Director of the WHO Health Emergencies Programme, has stressed this many times[66].

Both the CDC and their European counterpart, the ECDC, are clear that the risk of transmission in schools reflects the level of transmission in the community. They are inextricably linked. Schools are no safer than the community they are in. A report by the Israeli Ministry of Health on children, schools and transmission warned that "the reopening of schools may accelerate the spread of SARSCoV2, unless community transmission is low[67]".

Therefore, **the key indicators of the level of risk in schools are the incidence rate per 100,000 population in the community and the positivity rate in the community**[68] (the CDC has used these as core indicators of the level of risk in schools for months), not the incidence rate in school-age children or the positivity rate within schools.

[It is worth noting that our analysis of Irish data relating to cases in schools found that, for the five weeks where data was available on the positivity rate in schools, there were several times the

positivity rates in schools were equal to and even higher than the positivity rate in the community during that period].

Professor Anthony Staines[69], an expert in child health with a background in public health and epidemiology said on 3rd Feb 2021:

"**We've had a narrative in Ireland that schools are safe. They are as safe as the community around them, no safer**. So as cases rise in the community, the risks of opening the schools become higher and higher. The secret to opening schools safely is to drive cases down as low as possible, and preferably to zero in the community."

Epidemiologist Dr Zoe Hyde says[70]: "**Schools are clearly neither inherently safe nor unsafe. The risk associated with these settings depends on the level of community transmission and must be continuously evaluated**. Schools must not remain open for face-to-face teaching in the setting of substantial community transmission."

Dr Deepti Gurdasani says[71] "**the evidence that has been used to suggest [the most transmission doesn't happen inside schools] is consistently flawed and cannot be used to make these claims**. It is largely based on symptom-based testing, which hugely underestimates school transmission."

The best way to be able to reopen schools safely, according to Dr Gurdasani is to "minimise background transmission in the community and put in place mitigatory measures in schools."[72]

2. Children aged 2-16 years are more likely to bring the virus into a household than adults and more than twice as likely as adults to spread COVID-19 in the home[73]

The HSE often state: "*Children…are rarely the cause of the virus spreading in households*."[74] However, the most recent research on children, schools and transmission[75] from the Scientific Advisory Group for Emergencies (SAGE) in the UK (17th December 2020) found that:

- **Children under 12 years are almost three times more likely than those aged 17 years and older to bring the virus into a household –** that is, to be the first case in a household. Children aged 12 to 16 years are nearly 7 times as likely to be the first case in their household, compared to those aged 17 and over.

- **Children aged 2-16 years are more than twice as likely to pass on the virus within their household compared to people aged 17 years and older**.

UK epidemiologist, Dr Deepti Gurdasani[76] says of these findings that they "dispel the myth that children transmit less than adults".

She says, "**it's very clear that [primary school children] do contribute to community transmission**"[77] based on the findings that they are much more likely to bring the virus into the home than an adult and almost three times more likely to transmit to members of the household and based on the "evidence of higher infection levels in younger children from the ONS".[78]

Dr Nisreen Alwan, epidemiologist and Associate Professor in Public Health at the University of Southampton, says taking together these findings on children having a "higher likelihood of passing [the virus] to others who might be more susceptible to severe and prolonged disease" and the dominance of "a new variant with higher ability to transmit between people", **a decision to open schools with full class sizes "is absolutely not following the science"**[79].

3. When schools reopened, cases increased more in school-age children than in any other age group[80]

There is clear evidence from Ireland, the UK and Israel that the reopening of schools leads to a significant growth in cases in school-age children. In Ireland, official data [26] revealed the numbers of cases and hospitalisations in school-age children 5-14 years, showing a clear pattern:[81]

- Cases **increased more in school-age children 5-14 years after schools reopened** than they did in any other age group. (August to December 2020)
- Hospitalisations **increased more in school-age children 5-14 years after schools reopened** than they did in any other age group. (August to December 2020)
- In fact, the only age groups who experienced more hospitalisations after schools reopened, compared to when they were closed were young people and children, with school age children **most likely to be hospitalised** than any other age group after schools reopened.
- 93% of all cases for 2020 in Irish school-age children 5-14 years throughout 2020 were recorded in the four-month period after schools had reopened and 65% of hospitalisations in this same age group were recorded after schools reopened.[82]

In the UK, data[83] also shows that there was increased transmission in school-age children when schools reopened and that transmission rates in children closely mirrored the opening and closing of schools. The UK Scientific Advisory Group for Emergencies (SAGE) report[84] of 17th December 2020 on children, schools and transmission acknowledges this:

"**Accumulating evidence is consistent with increased transmission occurring amongst school children when schools are open**…[and] **multiple data sources show a reduction in transmission in children following schools closing for half term, and transmission rates increasing again following the post-half term return to school**."

In fact, UK SAGE went further and acknowledged that schools being open directly impacts transmission in school-age children:

"This pattern is consistent with there being an effect of schools being open on increasing the spread of the virus amongst children…when considered alongside ONS, CIS and SIS data, this indicates a role of schools being open in transmission in children."[85]

No such relationship between schools being open and increased transmission among school-age children has been acknowledged by authorities in Ireland.

Dr Deepti Gurdasani says[86] there is a clear link between schools reopening and increased cases in school-age children in the UK:

"It's very clear that in primary and secondary school children the infections have tracked with school openings and school closures and with half-term[87], suggesting that **there is clear transmission happening within schools, even in primary schools**.

Prevalence in primary and secondary school children was the highest across all age groups in November. Clearly children were spreading to each other, which is why the prevalence got so high among children. When half-term happened, primary school infections dropped."

She concludes: "**The evidence seems to be quite strong that school-age children- both primary and secondary contribute to transmission within schools, and across communities**."[88]

This insight into the true level of infection among children in the UK is made possible through the UK Office of National Statistics infection survey[89], as this is not based on symptoms and is therefore less likely to underestimate cases in children. **There is no equivalent regular random survey of infection in the community in Ireland – this would give a more accurate picture of the level of infection among children as it would not suffer from the biases of symptom-based testing**.

Dr Zoe Hyde, an epidemiologist and biostatistician at the University of Western Australia, agrees:

"**There is a clear temporal association between the rate at which children get infected, and school holidays and closures.**"[90]

Currently in the UK, childcare settings are fully open and primary schools have around 20% attendance and data from the most recent Public Health England (PHE) surveillance reports[91] shows that the **positivity rates in young children aged 0-4 years and 5-9 years are noticeably higher than all other age groups** and outbreaks continue to happen in both settings.[92] This is despite this PHE report underestimating infection in children (as it is based on symptom-based testing).

In both Ireland and the UK, educational facilities have had some of the highest number of outbreaks of all settings. **In Ireland, educational facilities were reported to have had the highest number of outbreaks across all settings from when the second Wave began**[12)]; **and within this sector, schools were reported has having had the highest number of outbreaks and the highest number of cases associated with outbreaks; often rating higher than high risk settings such as hospitals, nursing homes or meat factories.**

In the UK, data shows that "a large proportion of outbreaks" in the UK related to educational settings with "both primary and secondary schools the biggest contributors – in equal share".[93]

In Israel, a report[94] from the Ministry of Health on children, schools and transmission found that "**reopening schools led to a "significant increase" in cases not just in school-aged children but in the general population**" whereas the closing of the education system resulted in "a significant decrease in the rate of verified cases, both among education system age individuals and in the general population."

It warned: "**The reopening of schools may accelerate the spread of SARSCoV2, unless community transmission is low**. **School outbreaks/clusters can spread into the wider community**", citing the example of "a cluster at a primary school which initially involved 5 teachers and 20 students ultimately resulted in 79 people becoming infected."[95] American epidemiologist, Dr Eric Feigl-Ding says: "**School transmission of COVID-19 does occur and increases when cases levels rise—which then further drives school transmission.**"[96]

4. Children are more likely to get COVID-19 from other children their own age[97] – largest COVID-19 study done in the world to date

The HSE has stated: "*Children who do get the virus, usually get it from adults.*"[98]

The **largest epidemiological study of COVID-19 done to date**[99] - often called 'the Princeton study' – was supported by the National Science Foundation and the US Centres for Disease Control and Prevention. It included 84,965 confirmed cases of COVID-19 and 575,071 of their close contacts. It **found that children were much more likely to contract COVID-19 from other children around their own age**[100]. It also found that "**enhanced transmission risk was apparent among children and young adults**". Importantly, **a similar proportion of close contacts were infected, regardless of whether the index case (first person infected) was a child or an adult** and "same-age contacts were associated with the greatest infection risk". In other words, close contacts were more likely to test positive if they were the same age as the index case. The study concludes that **a high proportion of children who are close contacts of other children their age with COVID-19 become infected**: "Although the role of children in transmission has been debated, we identify **high prevalence of infection among children who were contacts of cases around their own age**." The study also found that **children transmitted the virus at rates similar to the rest of the population**[101] **-** children aged 5 to 17 years passed the virus to 18% of close contacts their own age. Other studies have found children passing the virus to other children as well as to adults. For example, a study describing a cluster of cases at an Israeli high school which demonstrates the potential for mass transmission in

the school environment – over 260 people were infected, of which 153 were students and 25 were school staff. A further 87 cases were detected among the contacts of staff and students.[102]

5. Children can suffer from Long Covid[103]

- **1 in 8 children younger than 12 years still have symptoms five weeks after being confirmed as having COVID-19**[104] – UK data
- **1 in 7 children/adolescents aged 12-18 years still have symptoms five weeks after being confirmed to have COVID-19**[105] – UK data

Dr Nisreen Alwan, an epidemiologist and Associate Professor in Public Health at the University of Southampton, described the ONS figures as "quite worrying"[106] and clarified that the ONS data was "based on the ONS COVID-19 prevalence survey which is a survey of a random sample of the population estimating the overall prevalence of infection including asymptomatic, so would not be biased by seeking testing or seeking support".

No data has been released in Ireland yet about the number of children who contract COVID-19 who go on to suffer from Long Covid. However, indications from the first study looking into Long Covid in children and from new data from the UK Office of National Statistics (ONS) are worrying. Initial findings from the first study[107] looking at Long Covid in children were released on 26th January 2021. It is looking at "persistent symptoms" in children who had been diagnosed with COVID-19 and has found that **"more than half reported at least one persisting symptom" 120 days later**. The ongoing symptoms the children continued to experience were similar to those reported in adults suffering from Long Covid, including fatigue, muscle and joint pain, headache, insomnia, respiratory problems and heart palpitations.

The authors of the study warn that "**the evidence that COVID-19 can have a long-term impact on children**", **including those who had had mild symptoms or no symptoms at all when they were initially diagnosed with COVID-19, must be taken into account by "paediatricians, mental health experts and policy makers** [when] implementing measures to reduce impact of the pandemic on child's health."

Yaneer Bar Yam[108], an American scientist and expert in the quantitative analysis of pandemics, has said that although this is first study on Long Covid in children is based on a relatively small sample of 129 children, the initial data from it, showing a significant number of children with persistent symptoms must "change our understanding of what we're doing by exposing children". Similar warnings about children suffering with Long Covid are also emerging from Israel, where the head of the Paediatric Infectious Diseases Unit in Schneider Children's Medical Centre says "post-COVID affects children and teens who had mild or even asymptomatic cases"[109], the symptoms "can range from minor to severe" and "anywhere between 10% to 30%" of children who had COVID-19 may be suffering with Long Covid symptoms.

Doctor Gabriel Scally, president of epidemiology and public health at the Royal Society of Medicine in London, said recently that he is "**very unhappy with the idea – and it may become a more prevalent idea as vaccinations take hold – that it's alright for children to get COVID-19**"[110]. He warned: "**Children seem to suffer less with acute illness, but we still have no idea what the long-term health impacts may be of being infected with the virus. We do know that Long Covid affects some children**. **We must take a precautionary approach**. **We really don't know what else this virus has in store for us. I don't want kids, under any circumstances to get this virus**. **So, I think we have to be very careful about schools opening**."

Similarly, epidemiologist Dr Deepti Gurdasani says: "While a lot of current policy is based on the fact that COVID is less severe in children, there is more and more evidence emerging about multi-inflammatory syndromes and Long Covid in children. This is a new disease we don't know a lot about. Is it fair to expose children to risk?[111]"

6. Children of all ages, including babies, can get and transmit COVID-19[112]

The European Centre for Disease Prevention and Control (ECDC)[113] says **"children of all ages are susceptible to and can transmit SARS-CoV-2"** (the virus that causes COVID-19 disease), as does the US Centres for Disease Control and Prevention (CDC)[114] and the World Health Organisation (WHO).[115] The CDC explains[116] that "most children with COVID-19 have mild symptoms or have no symptoms at all" - although "some children can get severely ill" - but that "**children, like adults, who have COVID-19 but have no symptoms ("asymptomatic") can still spread the virus to others**".

Dr Deepti Gurdasani, an epidemiologist and Senior Lecturer at Queen Mary University of London says **many earlier studies that indicated that children may transmit less than adults were flawed and underestimated children's role in transmission, as they took place when children had less exposure** - during lockdown, while schools were close or only partially open or when community transmission was low. The ECDC accepts that studies undertaken during times like that, when "children had fewer social contacts", cannot be relied upon and says it has "low confidence" in those findings[117] – findings that continue to be cited in Ireland as evidence that children rarely transmit the virus to others. Studies that rely on symptom-based testing underestimate cases in children, according to **Dr Zoe Hyde**, an epidemiologist and biostatistician who works at the University of Western Australia.

This is because they tend to miss cases in children who often have no symptoms or very mild symptoms and can incorrectly identify an adult as being the index case in a household when the real index case may have been a child without symptoms who silently spread the virus[118].

Even very young children and babies can contract and transmit the virus. A study by the US CDC[119] looked at three outbreaks in childcare facilities and found that **12 very young children and babies who had been infected in a childcare facility likely went on to transmit the virus to at least 26% of their contacts at home or in the community**. **Two out of three young children who had no symptoms at all (asymptomatic) were observed to transmit the virus to others**, one of whom infected their mother, who was subsequently hospitalised. **One 8-month-old baby transmitted the virus to both of their parents**.

Dr Nisreen Alwan, an Associate Professor in Public Health and epidemiologist in the UK says the "*transmission of Covid in children and from children to adults"* must be taken seriously[120]. Dr Deepti Gurdasani agrees: "***Children can transmit to others in the community who can get ill***."[121]

7. Even if children are less likely to be infected, this does not mean they transmit COVID-19 less than adults as their role in transmission depends on both susceptibility and exposure (and children have more exposure at school)[122]

Epidemiologist and Senior Lecturer at Queen Mary University of London, Dr Deepti Gurdasani, says that "children and schools have always played an important role in transmission" of COVID-19. The role of children in transmission, she explains[123], is dependent upon three factors:

1. Susceptibility – how likely a child is to get infected when exposed
2. Exposure – how likely a child is to get exposed
3. Transmission – how likely a child is to transmit when infected

Dr Gurdasani says it is important to remember that "**when we measure infection rates in children, this is a combination of susceptibility and exposure**". A common misconception is that **evidence of children possibly having lower susceptibility** – that is, children possibly being less likely to get infected - **has been interpreted as them having lower infection or lower potential for transmission, which is not the case**. She explains[124] that "**children may be individually less susceptible but can still have high rates of infection in situations where contact rates are high**".

Even if children are less likely to get infected - which is by no means certain - this does not mean they are less likely to transmit the virus to others, as children attending school have much higher exposure due to the number of people in a classroom, and this higher exposure likely counteracts or outweighs any reduced susceptibility.

According to Dr Zoe Hyde, an epidemiologist and biostatistician: "**Given similar exposure, children and adults appear equally susceptible to infection, and also appear to transmit at a similar rate**."[125]

Having closely followed the research and science relating to children, schools and transmission, Dr Gurdasani says:

"**Children and schools contribute substantially to community transmission – potentially due to their high number of contacts**. **The evidence around children and schools' role in transmission is widely misunderstood due to flawed study designs. For example, studies that rely on symptomatic transmission are biased when it comes to children, as children often have mild or asymptomatic infection. The primary infection in a household may be falsely identified as an adult**."[126]

Many recent studies have found that children can transmit the virus similarly to adults:

- The largest study on COVID-19 to date[127], run by Princeton University and supported by the CDC, looked at over half a million close contacts of confirmed cases; it found that **children transmitted the virus similarly to adults**[128]. Children aged 5-17 years passed the virus to 18% of close contacts their own age.
- A recent CDC study[129] looked at how the virus spread within households and found that "**transmission of SARS-CoV-2 among household members was frequent from either children or adults**". A similar percentage of other members of a household were infected when the first case in the house was a child as when the first case in the house was an adult.
- Another recent study[130] in The Lancet Infectious Diseases journal looked at around 57,000 households in Wuhan, China and found that children and adolescents younger than 20 years old were one and a half times more likely to be infectious to others than adults aged over 60 years and had higher infectivity than those aged 20-39 years and 40-59 years.
- An Israeli Ministry of Health report[131] on children, schools and transmission found that between 51% and 70% of confirmed cases in children had no symptoms (asymptomatic) and warned: "**Asymptomatic children constitute a reservoir for infection among children and for the entire population**."

In fact, the UK Scientific Advisory Group for Emergencies (SAGE) had warned the UK government in a document[132] on 30th July 2020 about the risk school transmission could have on the pandemic and about outbreaks from schools spreading into the community. The ECDC says that children who contract the virus "shed equivalent amounts of SARS-CoV-2 [virus] as adults".[133] Many studies have found that children have a similar amount of virus in their nose and throats as adults – for example:

- A study[134] in The Journal of the American Medical Association (JAMA) found that children aged 5-17 had a similar viral load to adults, but young children (<5 years) had levels that were 10-100 times higher. The "amount of viral RNA detected in swabs from symptomatic children was similar to (or higher than) that of adults." The study concluded:

"**Young children can potentially be important drivers of SARS-CoV-2 spread in the general population…Behavioural habits of young children and close quarters in school and day care settings raise concern for SARS-CoV-2 amplification in this population**."

- Another study[135] in The Journal of Paediatrics found that, despite generally having mild symptoms, children who tested positive had a viral load in their upper airway that was similar to adults with severe COVID-19. There was "no age correlation with viral load, indicating that infants through young adults can carry equally high levels of virus". It concluded that there is "significant risk" that "**children could carry the virus into the home, exposing adults who are at higher risk of developing severe disease**".

8. Reopening schools increases R (reproductive number) by more than lifting almost any other restriction

There appears to be a scientific consensus that reopening schools increases the reproduction number (R) by more than lifting almost any other restriction (often referred to as non-pharmaceutical interventions). This has been a consistent finding across several large, respected studies and has also been acknowledged by the leading scientific and health advisors in the UK.

In other words, **schools being open significantly increases the level of overall transmission in the community**. Epidemiologist Dr Deepti Gurdasani says "seeing this consistent pattern again and again and across multiple countries strongly suggests a causal link".[136] Another epidemiologist, Dr Zoe Hyde, agrees: "**The evidence suggests that reopening schools could increase the spread of the virus, both in the school and the wider community**."[137]

- A large study[138] in The Lancet looked at the effect of introducing and lifting various restrictions in 131 countries, in relation to their effect on R. It found that **reopening schools was associated with an increase in R of around 24% after 28 days**, the second-largest increase in R of any measure, after lifting bans on gatherings.
- Another large study[139] of 79 territories looked at more than 6,000 non-pharmaceutical interventions (NPIs) – it found that **closing educational institutions had the second largest impact on reducing R** out of all interventions studied. Importantly, **the effect was comparable across pre-school, primary and secondary schools** and was consistent across all methods.
- A US study[140] found that the statewide closures of schools were associated with a 62% reduction in daily cases and 58% reduction in deaths.
- The **UK Scientific Advisory Group for Emergencies** (SAGE) estimated that reopening schools may increase R by between 0.2 and 0.5[141], more than any other single measure (not taking into account the new more contagious variant).
- The **Chief Medical Officer in Northern Ireland** recently estimated that reopening schools may increase R by up to 50%.[142]
- A **new UK study[143] from the Centre for Mathematical Modelling of Infectious Diseases** – not yet peer reviewed – suggests that "reopening all schools could increase R from an assumed baseline of 0.8 to between 1.0 and 1.5, or to between 0.9 and 1.2 reopening primary or secondary schools alone". Epidemiologist, Dr Deepti Gurdasani says this study shows "**in almost all scenarios, opening schools at this point in England without additional mitigation results in R rising above 1, and exponential rises in cases resuming"**,[144] **whether opening primary or secondary schools or both**.

It is important to note that the new more contagious UK variant (B.1.1.7)[145] which is now dominant in Ireland means that keeping R below 1 has become much more difficult.

A **new report from the ECDC**[146] says that "Denmark estimates the effective reproduction number (Rt)" of the UK variant (B.1.1.7) to be 1.14 "despite strict lockdown since mid-December, including school closures, compared to an Rt of 0.5-0.7 for the other circulating variants."

In other words, **it may not be possible to keep R under 1, even with schools closed**. Even if the current lockdown restrictions remain in place, the ECDC warns there could be "a substantial increase in mortality, even as vaccines are being rolled out" and "more measures or stricter compliance will be needed" to keep transmission under control. Reopening schools – even partially – under these conditions will pose a significant risk to increasing R above 1 and will require every possible mitigation measure to be put in place in schools.

In Ireland, however, no estimate or analysis has been released of the likely significant increase in R that would result from reopening schools.

9. Increased mitigation measures are needed – including in schools - due to the more contagious and more deadly B.1.1.7 'UK' variant which is now dominant in Ireland[147]

A new ECDC report[148] (15th February 2021) warns that the UK variant (B.1.1.7), which is now dominant in Ireland

- is "much more transmissible" (50-75%)
- "is associated with an increased risk of hospitalisation and death"
- infects 10-55% more close contacts "across most age groups"
- is "associated with increased risk of death"

Neil Ferguson, an epidemiologist and scientific adviser to the British government says there is a "40% to 60% increase in hospitalization risk, and risk of death" with this new variant.[149] Tomás Ryan, Associate Professor in the School of Biochemistry and Immunology at Trinity College Dublin and member of the Independent Scientific Advocacy Group, has described the rise of the UK variant as "a pandemic within a pandemic".[150]

An article in the **British Medical Journal**[151] (BMJ) on 9th February 2021 warned of a **new, concerning trend in several countries where of increasing infections in younger children with new variants** of COVID-19 – including in Israel, Italy and the UK. Examples of this worrying trend of increased infections in young children are being reported in many countries:

- **UK**: The positivity rate in babies and young children aged 0-9 years has been higher than for any of age group for the past four weeks in a row[152]. Childcare in the UK is fully open and primary schools have around 20% in-person attendance. This data is based on the Office of National Statistics infection survey which is less likely to miss cases in children as it is not based on symptoms.
- **Italy**: On 3rd February 2021, 10% of the total population of the Italian village of Corzano (140/1,400) had tested positive for the B.1.1.7 variant of the virus[153]. 60% of cases were young children of childcare or primary school age and the BMJ reported that "many of these children are believed to have infected other family members".[154]
- **Israel**: The Israeli Association of Paediatrics has said the greatest spike in cases has been in children between the ages of 6 and 9 years.[155] Cyrille Cohen, an expert in immunotherapy and member of Israel's national COVID-19 vaccine clinical trial advisory committee said data shows that "**since the emergence of the UK variant B1.1.7 in Israel in mid-December, the proportion of new daily cases accounted for by children aged under 10 had risen by nearly a quarter (23%)**." He went on to say that education should be reopened gradually, "until we understand better the infection pattern of this new variant".

- **Denmark**: Outbreaks in two schools – 69 cases so far - and eight childcare facilities – 20 cases so far - in the municipality of Kolding[156] related to the UK B.1.1.7 variant have led Danish experts to question whether the variant may be spreading more in children. **Viggo Andreasen, an associate professor at Roskilde University and epidemiologist queries whether there is "something going on with the infection of [the UK variant] B.1.1.7 among children that we have not seen with the old coronavirus**". If there are further similar outbreaks, he says, "then we must ask ourselves whether it is too risky to open the schools to the little ones". Likewise, Professor Allan Randrup Thomsen, a virologist who advises the government questions whether there can be a partial reopening of society in Denmark on March 1.
- **Austria**: An outbreak of 32 cases (so far) in an Austrian kindergarten went from 10 cases at the start of the week (Monday 15th February 2021) to 32 cases just two days later. In total, so far, cases have been confirmed in 20 children and 12 adults and care givers.[157]
- **Belgium**: Infections recorded in young children aged 0-9 years increased by 84% in a week, after increased testing in primary schools following an increasing number of outbreaks. Infections in younger children are "really shooting up", whereas the increase is "much more limited among the 10-19 year olds".[158]

The ECDC says[159] "immediate, strong and decisive public health interventions are essential to control transmission" due to the more transmissible variants; if not, there will be "a significant increase in COVID-19-related cases and deaths in the EU/EEA". The increased mitigation measures it says are urgently required include "**strengthening in-school mitigation measures**".

If it is shown that the UK variant is more transmissible in children, the ECDC says[160] "this could have implications for the effectiveness of intervention measures in school settings, and of potential school closures, in countries where there are high rates of circulation of this variant" – such as Ireland.

Professor Isabella Eckerle, a virologist and a professor at the Geneva Centre for Emerging Viral Diseases, says increased mitigation measures are needed in schools due to the new more contagious variants that are circulating[161] – reopening as before will not work – including:

- Regular mass testing in schools using rapid antigen tests, including testing any children with mild symptoms every morning.
- If anyone in a school tests positive, the entire school must be retested a few days later
- Smaller classes
- Separate cohorts
- Masks
- No aerosol-producing activities
- Reducing the curriculum to core subjects
- Transparent handling of positive cases
- Clear and binding rules [definition of close contacts]
- Protection of teachers, parents and children who are at higher risk

The US CDC guidance on mitigation measures needed in primary schools includes the "universal" wearing of masks and physical distancing of at least 2 metres. Wearing masks and distancing of at least 2 metres are two of the CDC's 'five key mitigation strategies' to reduce transmission of the virus in schools.[162] Primary school children wear masks in Italy, France, Spain, Greece, Italy, Portugal, parts of Switzerland and much of the US. Neither of these safety measures have been put in place in Irish primary schools.

The WHO guidance on mitigation measures schools[163] says it is important to "**limit the number of students per class**" through

- Increase number of teachers or volunteers to allow for fewer students per classroom
- Alternate shifts (morning, afternoon) to accommodate fewer students at a time
- Alternate distance learning with physical presence in schools

Ireland has not implemented any measure to limit the number of students in a classroom.

As discussed previously, schools are no safer than anywhere else in the community. As such, Dr Deepti Gurdasani says[164] "**schools should be made as safe as workplaces**". In other words, the same mitigation measures must be put in place in schools as deemed necessary in all other indoor settings. She says schools "were contributing a lot to community transmission in England" and if they are reopened without additional safety measures there will again be a "surge in transmission in children and then in the community".[165]

Experts are stressing the need for mitigation measures in schools to address the risk of the aerosol transmission of the virus based on the widespread acknowledgement that the virus can be inhaled in tiny droplets called aerosols that linger in the air indoors:

- UK epidemiologist, Dr Deepti Gurdasani says: "I would like to see [primary school children] encouraged to wear masks…And I would like to see air filtration devices, air purifiers in schools with carbon monoxide monitors that meet the standards of the CDC. The CDC also recommends that primary school children wear masks. This is in line with current evidence."[166] She also

believes we should "[use] empty spaces for larger classrooms, [have] smaller class sizes" and "asymptomatic screening".[167]

- Dr Nisreen Alwan, Associate Professor in Public Health and epidemiologist, says the mitigation measures in schools must include "acknowledging the airborne transmission of Covid and resourcing schools to have radical ventilation and distancing solutions so that they don't close again".[168]
- Linsey Marr, Engineering Professor at Virginia Tech with expertise in the airborne transmission of viruses says "**the balance is incorrect in putting so much emphasis on cleaning surfaces and almost no emphasis on cleaning the air, given what we know about how the virus spreads**.[169] She believes there should be "portable HEPA air cleaners in ALL classrooms[170]".
- Professor of Primary Care at the University of Oxford, **Trish Greenhalgh** says "to ignore airborne precautions in schools, puts a generation of kids at risk".[171]
- **Dr Eric Feigl-Ding**, an American epidemiologist, public health scientist and Senior Fellow at the Federation of American scientists says[172] that for schools to reopen safely, we need to "address the highly contagious airborne transmission" of the virus by ensuring the mitigation measures put in place in schools include all children wearing masks and proper ventilation to include "air cleaning with HEPA filters per classroom".
- The Independent Scientific Advisory Group for Emergencies in the UK says, to reopen schools "without leading to a loss of control over infection rates", mitigation measures in schools should include "use of outside spaces, adequate ventilation in all classrooms [and] free provision of good quality face coverings for all pupils at primary and secondary levels."[173]

In terms of when schools should be reopened, the Independent Scientific Advisory Group for Emergencies in the UK has said: "**The timing of the reopening [of schools] should…not be tied to arbitrary dates but be based on explicit public health criteria.**"[174]

The adoption of an aggressive suppression strategy with the goal of no community transmission, as proposed by the Independent Scientific Advocacy Group (ISAG) would create the safest environment for the reopening of Irish schools.

10. The European Centre for Disease Prevention and Control defines a "high-risk exposure (close contact)" in a school as anyone who was in a classroom with a confirmed case for 15 minutes or longer[175]

The European Centre for Disease Prevention and Control (ECDC) guidance on schools defines a "high-risk exposure (close contact)" or close contact in a school[176] as

- anyone who had face-to-face contact with a COVID-19 case within two metres for more than 15 minutes over the course of 24 hours (even if that 15 minutes was not consecutive)
- anyone who was in a closed environment (e.g., classroom) with a COVID-19 case for more than 15 minutes

The ECDC says anyone who has had a high-risk exposure (close contact) "should be quarantined".

In Ireland, the definition of a "close contact" in a school that is used is[177]:

- "Any person who has had face to face contact for <1m with a confirmed case of COVID-19 for >15 minutes in a school day."
- "Any person who has been between 1 and 2 metres from a confirmed case of COVID-19 for >15 minutes in a school day with consideration of other mitigation measures e.g. face-coverings, pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA)"

Dr Deepti Gurdasani, in line with experts in the aerosol transmission of viruses, says that assuming that a child or teacher is not a close contact when they were in an enclosed space with a confirmed

case – because, for example, they were more than 2 metres away - ignores the risk of aerosol transmission: "**Often only children with desks around the infected child are required to isolate. This is out of step with evidence on airborne transmission in poorly ventilated settings**."[178]

11. The true number of children who have had COVID-19 is higher than the number of reported cases in children[179]

During a webinar[180] run by the Department of Education, in conjunction with public health, on 18th January 2021, school staff working with children with special needs were told that children are less likely to be infected with SARS-CoV-2 (the virus that causes COVID-19 disease) than adults. This same claim has been made regularly at NPHET and Department of Health press briefings and by government ministers. The ECDC[181] acknowledges "there is known under-detection…particularly [in] those with a milder course of infection or no symptoms". As most children who contract COVID-19 either have no symptoms at all or very mild symptoms, the official number of recorded cases in children underestimate the true number of children who have been infected.

One of the best ways to find out the true number of children who have previously been infected with COVID-19 is to test their blood for antibodies to the virus that causes it (SARS-CoV-2) – studies that use this method to find out the number of people in a population who have had COVID-19 are called **seroprevalence studies**. **Many** – but not all - of these **seroprevalence studies have revealed that the true number of children who had previously contracted COVID-19 is much larger than the number officially identified through testing and contact-tracing**, even though swabs and serology are less sensitive in children[182]:

- The **Irish seroprevalence study**[183], published just days before Irish schools reopened, found **no difference in the prevalence of COVID-19 infection across age groups** (the study was based on a representative sample of people aged between 12 and 69 years). **Our own seroprevalence study showed a similar percentage of children had contracted COVID-19 as adults**.
- A **German seroprevalence study**[184] of over 11,000 children in Bavaria **found that the true rate of infection in children was six times higher than had been reported**, reflecting the difficulty in detecting cases in children. Younger and older children were equally likely to have been infected.
- In **Sweden**, where schools largely remained open, a seroprevalence study[185] found no significant difference between the percentage of young people aged 0-19 years who had previously been infected with the virus (6.8%) and adults aged 20-64 years (6.4%). A lower incidence rate was found in those over 65 years, who had been told to 'shield'.
- A national seroprevalence study in **Israel**[186] found that a higher percentage of children (7.1%) had previously been infected with the virus than adults (1.7%-4.8%). The positivity rate in children in Israel from January to September 2020 was also higher in children (8%) than in adults (6%).
- An important seroprevalence study done in **Belgium**[187] tested primary and secondary school children in two regions – one with high levels of community transmission and one with low levels of community transmission. In the area with high community transmission a similar percentage of primary school children (13.3%) and adolescents (15.4%) had previously been infected – indicating **primary and secondary school children were equally susceptible and, when community transmission is high, children of all ages are more likely to contract the virus**. In the region with low levels of community transmission, 8.9% of adolescents had antibodies and none of the primary school children had.

The ECDC[188] acknowledges that "from surveillance data it is not possible to determine whether younger children <12 years of age are less likely to be infected by SARS-CoV-2 or are simply less likely to become a confirmed COVID-19 case (e.g., due to clinical presentation and/or testing strategies)."

Safety Comes First, Always

Dr Tyler Black[189] is a suicidologist and an expert in child and adolescent emergency psychiatry. He is the Medical Director at one of North America's only dedicated psychiatric emergency units for children and adolescents (in Vancouver). Dr Black gave his expert opinion on school closures and children in an important thread regarding the importance of safety on Twitter on 24th of July 2020.[190]

School Closure and Kids

I am an expert in child and adolescent EMERGENCY psychiatry. This is my expert opinion: It's complex, and it is not easy to answer.

COVID = BAD Education = GOOD In person schooling in a deadly pandemic = GOOD + BAD

First, the pandemic is bad for people. Without mitigation strategies, it tears through the public and grandmothers, fathers, children die. So far, 640k people have died WITH mitigation strategies, which is (at 6 months) nearly matching the WORLD'S YEARLY SUICIDE RATE.

Second, death is traumatic. While it may be true (?) that kids less likely to spread COVID, it's certainly true that kids are less likely to die from the disease. But grandma? Mom? Teacher? If we don't control the spread of disease, children will be exposed to more death.

Third, education is good for kids. Education exposes us to new ideas, important skills, social situations, and real-world training for being an adult. Education comes in all forms. Camps. Schools. Sports. Peers. Parents. Public Announcements. Television. Vidya Games. Fourth, social interaction is good for kids. Though neurodiversity changes the importance of this, most kids benefit from rich social lives, where they can meet people from diverse background and share/develop social skills.

And finally, in-person schools are the way that our farming-based economy evolved kids: daycare + education + social experience all in one. Perfectly designed? No. Right for every kid? Definitely not. But a societal solution to kid's needs. But is in person school "good for kids?"

***Benefits: -** professional teachers - social experience - academic standards - child care - sports and leisure activities - chances to expand world - pathway to good employment - parental pride / source of support*

***Risks: -** bullying - psychiatric distress and suicide rates increase - hours of operation not compatible with youth brains - not safe for everyone - introduces expectations + "mould-fitting" in diverse kids - source of in-home conflict (homework, wakeups, marks)*

*Any paediatric emergency department member or child psychiatrist who has worked for at least 12 months consecutively will tell you, flat out, that school days cause more distress than non-school days. See, school is both a pathway to personal and social success, and **one of the major causes of stress**. It's the kids "full time job."*

We put SO much pressure on kids:
** attendance * marks + competition * social expectations * extracurricular activities etc.*
FREQUENTLY, as an expert in emergency child and adolescent psychiatry, I have to use the phrase:

"School doesn't matter right now (short term), we need to focus on safety, security, and the things that will make you healthy". That never means I think school is bad or they should never go, and I certainly think that education, social experiences, and adult-guided childhood development are very important. But it DOES MEAN when safety is on the line, school is less important.

If a mother and child are fighting over bedtime, and the fight results in the child locking themselves in the bathroom and ingesting a bunch of Tylenol, guess what instantly doesn't matter all of a sudden? That's right: the frickin' bedtime.

It's not about the bedtime.

It's about safety.

Creatively solving things. Ensuring that the kid can handle the stress and the mother can handle the kids stress. Ensuring that safety planning and precautions are in place. THEN: gradual return to school expectations. I now see this being played out on a world-wide stage with MILLIONS (no joke) of lives on the line. While there are some kids that flourish because of school structure, there are others that do not. Some kids get into great social structures, others do not. Some kids experience positive role modelling, others are exposed to bigotry, racism, and exclusion.

*And from the science end, there is NO convincing evidence that * creative non-school based education * technical skills learning * home education * distance education * hiking-based education is INFERIOR to school. In conclusion, if you are media or a politician, please:*

1) don't cite science as supporting "schools reopening is best for kids"
2) recognize that saving lives is likely the most trauma-supported thing we can do for kids
3) be creative in supporting learning
4) if you ever use the phrase "but underprivileged kids receive [food, support, etc] at school!!"

I want you to take a long hard look at yourself and consider whether or not this might be an opportunity for you to MATERIALLY SUPPORT UNDERPRIVILEGED PEOPLE.
5) pandemics/disasters ALWAYS disproportionately affect marginalized people. To get VERY political: white rich abled kids from loving homes will be FAR more "protected" going to school than kids of color, kids with disability, and kids with neglectful parents.

Now is a world moment to both PROTECT our kids and NOURISH their well-being. There is NO reason to REQUIRE IN SCHOOL EDUCATION to accomplish those things, there are many ways to do it.

So, maybe take a page out of the Dr. Black playbook:

"School doesn't matter right now, we need to focus on safety, security, and the things that will make you healthy".

In a letter addressed to the Irish Chief Medical Officer of the Department of Health and Chairperson of the NPHET, Zara Flynn, an Irish Chartered Counselling Psychologist writes:

24th of November 2020

"*As a concerned parent and mental health professional, I must address the following in relation to the educational and mental health needs of school-going children with a vulnerable family member in their household. Many parents with children in primary schools have applied to home-school their children during the Covid-19 pandemic because they have a high-risk family member in their household. They have subsequently been contacted by Tusla to have their children taken off the school's register. This does not consider the psycho-social and emotional wellbeing of children who are already in difficult circumstances with sick family members. Instead, this causes further distress to an already fragile family system and creates further uncertainty for the child by removing the structure and support of education and the familiarity of their teachers and classroom network.* ***The potentially catastrophic risks of sending a child to school in such circumstances outweigh the benefits of school attendance.***

A recent study in the Journal of Psychiatry Research (Singh et al., 2020) highlights the many vulnerability factors for children and adolescents including educational status, socioeconomic status, pre-existing mental health conditions, and fear of Covid-19 infection. It is argued that there needs to be an elaborate and evidence-based plan of action to cater to the psycho-social and mental health needs of vulnerable children and adolescents during the pandemic. There is a serious need to ameliorate children and adolescent's access to the appropriate educational resources and mental health support services during the current crisis. ***Our children in post primary education should not be labelled "school refusers" when they are simply trying to keep their loved ones safe from harm.***

Children with ill parents or siblings are already enduring and coping with significant stress as they manage and come to terms with severe illness within their family. ***This is compounded by the additional stress of sending the child into a school environment with the potential for transmitting Covid-19, a virus with many adverse implications, including possible death for a member of their family****. It is important that a child's need to be acknowledged and involved in a family member's support and/or care is clearly recognised by educational and healthcare professionals (e.g., Romer et al., 2002; Diareme et al., 2007; Eide et al., 2020). The relevant guidelines and routines are significantly lacking for children within families with a high-risk parent, sibling and/or grandparent. These aspects need to be given careful consideration and urgent priority in order to support children's needs and promote health and wellbeing for the whole family.*

Supporting children with Special Educational Needs (SEN) was outlined in the DES document, Roadmap for Full Return to Schools, ***to include supporting their wellbeing, reducing potential anxiety and planning learning experiences. Our children are missing out on all these positive experiences that could be provided with the resources already made available in many schools,*** *through access to SeeSaw, remote learning and/or the live streaming of lessons, via Microsoft Teams or Google Classroom, where possible. There is a significant gap in Covid-19 policies as implemented by the DES and subsequently by schools throughout the country.*

Our children and families are falling into these voids and this could be resolved by implementing a V/HR friendly policy for access to online/live streamed education. Policies need to balance the need to protect the public, while also protecting vulnerable individuals (Fong, V. & Larocci, G., 2020).

There are pathways already in existence with the DES that provide the necessary educational supports for children with significant medical conditions that could be transferable to children with a high risk family member, for example, the HTMED1 Form, which provides detailed criteria and relevant planning for re-integration of students back into their school after a period of home tuition.

However, with the successful implementation of online learning in schools throughout the country, educational resources can now be provided directly by the children's schools and teachers without the need for actual Home Tuition, thus with little to no further time or labour costs to schools.

I appreciate you taking the time to consider my concerns and the struggles of many during what is already a very distressing time for the people of Ireland."

Best regards

Zara Flynn

Counselling Psychologist,

Chartered Psychologist, C. Psychol., Ps.S.I.

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Risk Assessment for Schools and School Related Activities in Ireland [Based on Findings]

Risk Assessment - Policy (Protocols, Processes, Programmes and Guidelines)

Airborne Virus: Public Messaging	**Risk Assessment: High**
The HSE, HPSC, the WHO, CDC and ECDC have all acknowledged that COVID-19 is airborne – that it can be inhaled in tiny droplets called aerosols that hang around in the air indoors. Other than opening windows (where accessible and possible), no additional safety measures have been incorporated into the schools' re-opening plan to mitigate against an airborne virus. There is little to no mention of COVID-19 being airborne at press briefings or in public advertisements.	It is vital that the NPHET, HSE and all public health officials and Government departments take a strong stance and communicate clearly to the population the risk of aerosol transmission of the virus, even if they believe the risk of transmission through this mode is low. This can help people make better choices with regards mitigations such as restricting movements, choice of face-covering/masks; physical distancing; hygiene; ventilation etc.

School Opening and Closure: Decision Making	**Risk Assessment: High**
Schools should not be reopened based on a date (as is done in Ireland) but instead based on the number of cases per 100,000 population and/or the positivity rate in the local and national community. The HSE, NPHET and Department of Health have all stated that schools are more at risk when community transmission is high (albeit they only cite mobility as the reason, even though CDC, WHO and ECDC all explicitly say the level of risk in schools is the same as the level of risk in the community, no safer).	The CDC have produced clear and robust guidelines with regards the level of risk of transmission in schools, from low to high, based on cases and positivity rates in the community – not the positivity rate in schools nor the cases in students/staff. The ECDC and WHO have clearly stated schools are at higher risk when community transmission is high. This framework needs to be embedded in all decision-making processes in Ireland. The CDC also include other key indicators to be considered in making decisions about opening and closing schools and whether to have a mixture of distance and in-person learning – this includes the risk to healthcare systems (e.g., number of hospital beds or ICU beds occupied with patients suffering from COVID-19). A number of schools are opened in Ireland currently. It is important to note, based on the CDC indicators, schools in Ireland are currently in the high risk threshold.

Definition for a Close Contact in a Class/School	**Risk Assessment: High**
The current definition of a close contact in schools used in Ireland is as follows: *"Any person who has had face to face contact for <1m with a confirmed case of COVID-19 for >15 minutes in a school day"* and *"Any person who has been between 1 and 2 metres from a confirmed case of COVID-19 for >15 minutes in a school day* ***with consideration*** *of other mitigation measures e.g., face-coverings, pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA)".* [30] Testimonials reveal that this policy has been implemented in schools in Ireland. ECDC are explicitly clear and state that any person who was in a classroom, transport or any shared closed environment with a positive case – irrelevant of mitigations – for more than 15 minutes is high-risk exposure close contact. [38]	If there is a confirmed positive case of COVID-19, in a classroom, or in any closed environment (including school transport) where other staff and students have been for fifteen minutes or more – and even before the 24/48 hour infectious period - they must be immediately notified and deemed as close contacts, and all necessary protocols advised. International guidelines explicitly state that a person in a classroom with a confirmed positive case is deemed to have had a high-risk exposure and is a close contact – even if they were wearing a face-covering/mask **and** regardless of any ventilation, Infection Prevention Control measures hygiene or any other measures in place in the facility. The HSE policy needs to be immediately updated to reflect best international practice.

Retrospective and Robust Contact Tracing / Test and Trace	**Risk Assessment: High**
Policy currently states that people in schools may be deemed to be close contacts if they were near a person within the 24/48 hours prior to them being tested/diagnosed with COVID-19 [i.e., infectious period]. It is important to note that the most up-to-date scientific data shows that people can be infectious longer than twenty-four or forty-eight hours prior to testing/diagnosis; that all people, but especially children, can be asymptomatic (and still spread the virus), and that the key to identifying all probable/possible cases is through robust retrospective contact tracing. The HSE, NPHET, ECDC, WHO and CDC have stated that children are more likely to be asymptomatic; evidence suggests the infectious period may be longer than the 24/48 hour period; and global scientific communities - including the ECDC, the WHO and CDC – all highlight the absolute importance of retrospective (backward) contact tracing (beyond the 24/48 infectious period). This is not currently in place in schools in Ireland. Test and trace as offered to other workplaces in the community should be offered to those in schools. Schools have struggled with the testing and tracing rules that have been applied to schools. Sometimes nobody else is tested or identified as a close contact when a positive case in a school emerges.	• The current onward contact tracing policy in schools must be supported by robust retrospective contact tracing, beyond 24/48 hours to 1) find other potential sources of infection (e.g., index cases) 2) aim to prevent the spread of the virus from potentially asymptomatic person(s) 3) aim to protect people who have been potentially exposed 4) to allow students and staff to make informed decisions to protect themselves and others through accessing early diagnostics (testing) and preventative interventions (e.g., restrict movements, quarantine etc.) and 5) to gather better and more reliable information on the level of transmission in schools • Public health teams need to be immediately resourced and funded, to allow for the implementation of robust retrospective and onward contact tracing and regular mass testing (not targeted testing) in all schools. Recruitment drives (admin, testers, tracing) required asap • Contact tracing teams need to listen to what they are being told by patients in relation to the categorisation of Index cases, close contacts and confirmed cases (e.g., if the person honestly believes it was a school transmission, then this should be logged etc.)

Reporting Bias	**Risk Assessment: High**
HIQA cited reporting bias as a concern. [39] Reporting bias can go both ways. It can depend on the person giving the information to the HSE and the way that information is interpreted and input into the reports. *"Recall and reporting biases are particular issues in relation to the investigation and reporting of SARS-CoV-2 clusters. Hence, clusters may have been over-reported in certain settings, and under-reported in others. The findings are also time-sensitive; as time progresses, a different picture of where clusters occur may emerge, particularly given the wide scale adoption of testing and infection, prevention and control measures in settings previously identified to be high risk."* The HPSC, HSE, the NPHET and Dept. of Health all regularly cite the 'low case' numbers in schools; however, it has been noted that close contact tracing in schools differs to that in the community and the Index case in schools was left out of these reports. When clusters and outbreaks are high (in comparison to other sectors/activities) this was not reported by the Dept. of Health, instead references made to other sectors. HPSC School reports were only published from November 15th. Schools opened on the 23rd of August. NPHET rarely report on children's cases unless questioned.	• There have been numerous accounts of people who believe to have contracted the virus in school, having their transmission logged as household and community transmission • It is extremely important that all facts and figures are shared with the public. This includes the actual figures related to all clusters and outbreaks (e.g., citing the percentage of schools, along with the percentages of others) and sharing the breakdown of age groups, especially school-age children (5-18) on the Gov.ie website daily. • It would also be important to share information regarding clusters in schools such as: o ratio of school staff/students infected o secondary home/community transmissions from the school o sizes of clusters and outbreaks/close contacts & index cases o clusters associated with school transport and associated school activities

Understanding How Infection is Acquired (Transmission)	**Risk Assessment: High**
ECDC: Key messages included in their publications: ***"****It was noted that both in Ireland and internationally, the majority of clusters are reported in household settings, emphasising the high risk of transmission once infection gets into the home. There is some uncertainty as to where the index cases is acquiring the infection, but it is noted that this may be impacted by the level of community transmission and the range of restrictive public health measures that are in place at the time. Understanding where people are acquiring the infection in the household setting in the first place."* [40] ECDC *"School closures can contribute to a reduction in SARS-CoV-2 transmission, but by themselves are insufficient to prevent community transmission of COVID-19 in the absence of other non-pharmaceutical interventions (NPIs) such as restrictions on mass gathering." "Transmission of SARS-CoV-2 can occur within school settings and clusters have been reported in preschools, primary and secondary schools. "Incidence of COVID-19 in school settings appear to be impacted by levels of community transmission."*	• Uncertainties with regards to household transmission need to be addressed urgently, and as HIQA acknowledged, knowing this information could help further protect and inform the public. How likely would it be that children or teachers who tested positive did not transmit it in their home; especially in consideration of the fact that HIQA have found that community transmission could contribute to this? • It is important to remember that schools are in the community. This is a serious concern. Evidence shows that children can often be asymptomatic and spread the virus to others. If they are in school, surrounded by large groups of children/adults, with inadequate ventilation, little to no social distancing and/or no face coverings; these risks greatly increased for the child and everyone in the home • Serious and immediate investment is required in close contact tracing and the reporting and recording of outbreaks and clusters

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Activities and Settings at Higher Risk of Transmission	**Risk Assessment: High**
HIQA published a report for the NPHET entitled "Advice to the National Public Health Emergency Team: "What activities or settings are associated with a higher risk of SARS-CoV-2 transmission?" [7]. (See HIQA's Protocol and Evidence Summary [58] [59]) "*The main factors found to contribute to transmission risk include indoor environments, crowds, and prolonged and intense contact with others. Other important factors may include the level of ventilation, speaking volume, insufficient use of face coverings, along with the viral load of the index case. In particular, activities involving dining, drinking, exercising, singing or shouting, prolonged face-to-face conversation, especially in indoor crowded environments, were associated with an increased risk of transmission in several studies." "A range of effective infection prevention and control (IPC) measures may mitigate some of the transmission risk associated with these settings and activities." "Specifically in relation to occupational settings, additional factors found to be associated with an increased risk of transmission include: working despite symptoms ('presenteeism'); higher proportions of individuals from lower socioeconomic groups, ethnic minorities and those with migrant status; lack of access to hand-washing facilities; inadequate or inappropriate use of personal protective equipment (PPE); exposure to multiple clients; face-to-face contact; congregation; shared accommodation and transportation; and exposure to fomites (such as tools)."*	• Almost all of the settings and activities listed as factors found to contribute to transmission are associated with schools, yet proper mitigations have not yet been put in place – and no increase in mitigations have been included in updated Department guidance/policy. All of the following areas need to be identified for what they are: high risk areas in schools ○ indoor environments, crowds, and prolonged and intense contact with others. ○ Prolonged face-to-face conversation, especially in indoor crowded environments (primary schools) ○ ventilation, speaking volume, ○ insufficient use of face coverings, along with the viral load of the index case. Higher risk - inadequate or inappropriate use of personal protective equipment (PPE) ○ exposure to multiple clients ○ face-to-face contact ○ congregation ○ shared transportation (school transport) ○ exposure to fomites (such as tools).

Choice (Autonomy and Mitigation)

Informed Consent, Decision Making	**Risk Assessment: High**
This investigation revealed that thousands of parents and school staff did not know they would not necessarily be told if there was a probable or confirmed case in their school or classroom, and that this has caused indescribable stress, anxiety and has sometimes appeared to have led some to receive late diagnosis, which in turn led to increased spread of the virus. Principals and board of managements said that their local autonomy to close classes/schools was overridden by public health policy.	• All staff and students must be given all the facts in relation to the benefits, and all of the risks of in-person schooling, especially in the context of a pandemic. Information contained within policies and guidance documents must be based on the most-up-to-date scientific guidance, and not on biased or local opinions or outdated, unreliable data. Having this information would allow parents, staff and students (as is their legal right) to decide if the benefits of attending in-person outweigh the risks (or vice versa) **before** they decide to attend or send a child to school in person. If a person decides that the potential risk to their (or their child's) health or safety from in-person schooling are greater than the benefits, then they must be allowed to decide not to attend, and this must be done without removing other rights, such as rights to access education from public schools (which is currently provided to some through remote learning). All guidelines and policies must include clear, easy to understand and detailed information informing them of the full process of dealing with a confirmed case in a class, school/or school related activity. • If a person chooses to stay at home from school, they should be offered the opportunity to a) work from home [staff] b) access remote learning from school [student] • All staff and students must be immediately informed – by the principal or other school official - if there is a confirmed positive case or a probable case of COVID-19 in their classroom or any shared closed environment and advised to restrict movements until further clarification is received from public health. This should include siblings and other family members of the confirmed case. Teachers and SNAs, SETS etc should be included in the public health risk assessments, as they may know more about students/staff's activities. This helps safeguard students and staff.

Medically Vulnerable Populations	**Risk Assessment: High**
Data shows that all people of all ages can be at risk of severe illness from COVID-19. While some illnesses and age groups and have been identified as being at higher risk than others and may need more protection, it does not mean the risks are non-existent for others. This needs to be clearly communicated by Government and public health officials. Legislation and HSE policy states that all people have the right to choose what is best for them to protect their own and others health; however, current policy and subsequent procedures are impeaching on people's rights to decide what is in their best (health and safety) interests.	• The categorisation of a person's health condition (or age) should not mean they are offered less protection than others, nor should medical practitioners' letters or recommendations be overridden by any other person(s). Policy needs to change immediately, and doctors' recommendations should be used in work/school attendance assessments. This applies to both children and adults. Many people reported that they were not deemed as 'not sick enough' to warrant them working from home, this included diseases such as cancer, high blood pressure, heart disease – conditions cited in HSE's own data on conditions people who died from COVID-19 had. • Children who live with high-risk or very high-risk family members or loved ones should be allowed to stay at home from school to help protect their loved ones and themselves. Children in these situations should be given immediate access to remote learning from their schools, as should any child who wants to stay safe at home during the pandemic. • Pregnant women working in schools were not allowed to work from home, despite having doctors' letters advising them that it would be unsafe for them to work in school. While this has changed somewhat, it is only interim guidance – this needs to be altered immediately. • It is critically important to highlight that certain populations are always at higher risk from illness. Some of the main groups that can be affected by this include ethnic minority groups, people with disabilities, people with mental health conditions, people with addictions, people who are homeless, people in prisons, asylum seekers, migrants, refugees, people in domestic abuse/violence situations, people on low income/temporary low paying jobs and LGBTQ+ groups

Mitigation

Reduce Mobility and Movement	**Risk Assessment: High**
Children from one class go out to play in their school yard where they mix with children from different 'pods' and sometimes other classroom 'bubbles'. They are together in corridors (access/egress) and share bus transport and after-school facilities with children who go home to lots of different homes and sometimes from many different schools. They eat together in the same room without masks. Adults working in schools are also in these rooms, in these yards, and on transport. Not addressing the risks associated with any of these mixing activities while continuing to claim that 'schools are safe' is not good enough. Most of these activities are unavoidable when attending school. Many people believe that children are contracting the virus from playing or 'hanging out' in their local communities, however the exact same risks apply in school yards, after-school facilities and buses as they do elsewhere. Parents and adult school staff are often blamed for spreading the virus to children, which in turn leads to distress within families and guilt. This is despite evidence from multiple studies that children often contract the virus from other children (e.g., largest epidemiological study in the world to date, COVID-19, conducted by Princeton University in conjunction with CDC).	• By reducing class sizes through offering remote learning options for all, school related mobility and movement will reduce. This must immediately be implemented if schools are reopening.

Physical/Social Distancing	**Risk Assessment: High**
The WHO have stated that when community transmission is high all people of all ages MUST at all times be at least 1 metre apart. The ECDC have stated that all mitigation and preventative measures in schools need to be immediately upgraded in response to the new more contagious variants. In light of the scientific evidence which suggests that, even if children may be slightly less susceptible to contracting COVID-19, they may still play an important role in transmission due to their increased number of contacts – the mitigations in place for wider society now need to be put in place in schools – especially when community transmission is high and in light of the new variants of SARS-CoV-2.	• Physical/social distancing must be aligned to that mandated in the community (e.g., 2 metres). CDC guidelines for schools have been updated and now recommend 2 metres distancing - or more - at all times in schools, and one seat per person on school transport.

PPE - Face Coverings and/or Masks	**Risk Assessment: High**
Pupils are not wearing face-coverings or masks in primary schools, so staff and pupils are not protected. We are advised to wear a mask if we enter a premises, such as a shop, and even if we are near others outdoors, yet in Ireland masks are still not have mandated for everyone in primary schools. Children in many countries around the world have been wearing masks at primary school level for many months. HIQA's [32] COVID-19 Evidence Synthesis Team and COVID-19 Expert Advisory Group (EAG) undertook an evidence synthesis [66] to provide advice to the National Public Health Emergency Team (NPHET) [47] on the following policy question: 'What evidence is available to indicate that routine wearing of face masks in the community reduces the transmission of SARS-CoV-2?'	• "To mitigate the increased risk of transmission, consideration should be given to extending recommendations for face mask use to crowded settings or where physical distancing cannot be maintained; this applies to both indoor and outdoor settings." HIQA Findings • Masks must be recommended for all staff and primary and secondary school children who can wear them. This in in accordance with both WHO and CDC guidance. The type of face covering, or masks worn should in line with at least the ECDC and WHO recommendations. • The American Academy of Paediatrics Interim Guidance states: "**Children ages 2 years and older can and should wear cloth face coverings** when not able to physically distance, including while in schools, childcare and other group settings" and "Cloth face coverings can be safely worn by all children 2 years of age and older, including the vast majority of children with underlying health conditions, with rare exception." [68] • The World Health Organisation (WHO) COVID-19 **guidance on children and masks indicates that it may be appropriate for children aged 6 – 11 years** to wear masks if there is "widespread transmission in the area where the child resides". It outlines other factors that should also be considered, including whether the child can use a mask appropriately. [67] • All staff must be provided with the PPE THEY feel they need to wear to keep them safe; and all guidance should be based on international best practice; this should include aprons, eye protection, gloves etc.)

Reduced Numbers Indoors/Outdoors:	**Risk Assessment: High**
Irish primary schools have the largest class sizes in the EU. No attempts have been made to reduce the number of students in a class, despite this being one of the key mitigation measures to reduce the risk of the virus spreading. These large class sizes also result in more crowded school yards and on school transport. We have reduced the numbers allowed at weddings and funerals, but still have classrooms of 30 children, without masks, in primary schools. Almost one in five of primary schoolchildren are in supersized classes of 30 or more.	• Measures must be taken – such as allowing those who choose to continue distance learning or having half-in half-out per CDC suggestions - to reduce class sizes and a maximum number set for the number of pupils/adults allowed per room. It is important to note that students do not wear masks in primary schools and the more contagious, more deadly B.1.1.7 variant is now dominant in Ireland.

Ventilation	**Risk Assessment: High**
Indoor air quality meters – such as CO2 monitors - were not provided to schools. No additional mitigation measures to reduce the risk of aerosol transmission of the virus and address poor ventilation in schools were implemented in schools. An enhanced heating grant was not provided to combat open windows in cold, Irish weather. Opening windows during break/lunch times does not work when pupils eat their lunch in the classroom, particularly during wet days when they cannot go outdoors; It does not work if classrooms do not have windows or if the windows are inaccessible. Government have not provided the necessary funding for ventilation systems or CO2 monitors.	• Proper ventilation systems are required in schools to mitigate against this virus which can be inhaled in aerosols that hang around in the air indoors, especially in the context of new more contagious variants of COVID-19. Ventilation measures in schools need to go beyond just opening windows.

COVID App	**Risk Assessment: High**
Reports about school staff being told to turn off Bluetooth while in school, which is needed for the COVID App, caused uncertainty. Public health said that their own risk assessment overrode the close contact notifications of the COVID App and while this may be true, the fact remains that people should have been allowed to be informed that they were possibly a close contact.	• This COVID App must be promoted (and in good working order) for all staff and students (of age) in schools to ensure they are informed of the possibility that they may be a close contact, and to allow them to make decisions with regards restricting movements, testing, informing public health etc. Bluetooth should be left on in schools.

School Transport	**Risk Assessment: High**
Currently - based on survey results, feedback from school staff and students, and media reports - most school buses/vehicles are not able to meet the criteria of 'one seat per child'. Many modern buses do not have windows at the seats (air conditioning used); bus aisles are not supervised; children under 12 do not have to wear masks, and children over 12, while advised to wear masks on buses, often do not adhere to this rule. Many children and bus/van drivers are reporting that they feel extremely stressed on school transport.	• The WHO guidance on school transport states: "Organize only one child per seat and ensure physical distancing of at least 1 metre between passengers in school buses, if possible. This may require more school buses per school. If possible and safe, keep the windows of the buses, vans, and other vehicles open." School transport needs immediate investment and guidelines from the WHO, ECDC, CDC need to be immediately applied.

Cleaning & Hygiene; Shared Facilities	**Risk Assessment: High**
"Each school setting should be cleaned at least once per day" (emphasis in report) – yet in all workplaces it states twice a day. *"Additional cleaning if available should be focused on frequently touched surfaces – door handles, handrails, chairs/arm rests, communal eating areas, sink and toilet facilities*" – Department of Education and Skills Covid 19 Response Plan February 2021. This level of cleaning would require cleaning staff on site all day to ensure that this level of cleaning be adequately carried out. The enhanced grants do not and could not finance this at minimum wage rates. *Communal school toilets may be used by over 30 children numerous times per day, yet in most cases, will only be cleaned after school. In contrast, the HSA cleaning protocols for cleaning and disinfection require employers to clean at least twice a day and in the case of washrooms "whenever they are visibly dirty".* Ineffective sanitisers were recommended to schools; these were since recalled	To ensure all cleaning and hygiene policy and protocols can be achieved to standard to ensure both staff and students are safe and allow for teaching staff to continue educating (as opposed to wasting hours on cleaning), investment in this area must be immediately granted.) This includes hiring cleaning staff. All cleaning products must be safe and effective for use before they are recommended to schools, staff or students More advertisements for children should be shown to help children and young people and adults learn more tips on hygiene and cleaning

Staffing Levels	**Risk Assessment: High**
School staff understood in March 2020 that extra school staff would be needed to cover absences due to COVID-19, and other absences that normally occur such as maternity leave etc. A limited "Supply Panel" for Teachers was announced by the DES. Not all schools have access to this Panel and, when they do have access, it is shared with approximately 25 other schools. No such panel exists for SNAs.	• Supply panels have worked well where operational but are completely inadequate to provide the cover required during this pandemic. With transmission still high in the community and the new variants more "potent", additional staffing must be sourced now. A mass recruitment campaign is needed for teachers and SNAs to cover: 1. Reducing class size to facilitate adequate physical distancing 2. Absences • In the event of shortage of potential recruits, positions could now be offered to final year B.Ed. students, PMEs and SNAs in the final stages of completing their qualifications. • In the event there are staff shortages and adult-to-child ratios are affected, Board of Managements must have the autonomy to close the school temporarily until the required staff have been resourced.

Vaccination for Staff	**Risk Assessment: High**
School staff are in the 11th priority group out of 15 for vaccination. Recent claims that school staff would now be vaccinated in the first third of the population means there has been no change. "*The Department of Education has engaged with the Department of Health on the vaccination schedule who have confirmed that those essential to Education are estimated at this time to be in the first one third of the population captured by the Vaccine Allocation Strategy. The Department has further engaged with the Department of Health requesting that consideration is given to school community as the vaccination programme is rolled out in order to accommodate front line school staff (i.e., those working with SEN students) within the vaccination programme at the earliest possible opportunity*"	*As part of a mitigation strategy to prevent the spread of the virus and protect essential workers (and children) staff (and children when available) should be vaccinated as a priority. This is especially necessary while current evidence shows the required mitigation measures are not properly in place in schools. Vaccination programmes should not be put at risk through unsafe school reopening.*

Communications and Data	**Risk Assessment: High**
Data related to school age children is not shared daily, nor shared clearly. HSE do not publish the number of tests and cases in students and staff, nor do they clarify if cases associated with outbreaks in schools are index cases, close contacts in schools or cases which spread to homes or the community. There are a number of what appear to be errors, miscalculations, duplications and omissions. Public health messaging is not strong enough with regards aerosol transmission and there have been numerous issues with regards 'mixed messaging'.	• COVID-19 data must be shared with the public and all information and reports regarding age groups must be aligned with one another (e.g., school age children 0-4 years, 5-12 years, 13-18 years, etc.) • All reports relating to cases, tests and clusters/outbreaks in schools should be easily accessible, easy to understand and easy to disseminate. • Any statements in relation to children being at "lower risk" of transmitting, contracting or getting ill from COVID-19 needs to be immediately stopped as there is not enough data on the new variants in relation to children, and there is enough scientific evidence on the first variant to show this is not the case. • Any changes to reports relating to cases, tests and clusters/outbreaks in schools should be dated and clarity is provided regarding changes made to reports (currently changes are made to previously-published reports without any clear record of what has been changed or why – it has only been possible to identify these changes by regularly automatically downloading all school-related reports and checking to see if previous reports have had changes made to them) • Any errors in reports notified by the public should be immediately changed and clarity given in relation to errors. • Stronger messaging to the public in relation to the risk of aerosol transmission needs to begin immediately.

Risk Assessment Using the Three C's: How do Irish Schools Rate?

The World Health Organisation cited a study of an outbreak in a school in Japan which showed how a "Three Cs" [41] cluster could start in over-crowded school settings. Excerpt from the WHO:

Based on analysis of the shared characteristics of clusters, Japanese authorities developed a concept called the "Three Cs" to denote high-risk places and situations: *1) Closed spaces with poor ventilation. 2) Crowded spaces with many people; and 3) Close contact (crowds, face to face etc.)*

In Ireland, remote learning, which could have substantially reduced class sizes to allow for physical distancing was not offered to children in high risk groups who did not want to attend out of fear for their own health and safety, or those who lived with very-high risk/high risk family members, care givers or parents. In fact, children were told they must attend school in person or deregister from their public school and apply for home-schooling or home tuition. Many principals, teachers and school staff reported they could not allow for 1 -2 metre (desk-to-desk) distancing of students and/or teachers. Students and teachers had prolonged contact with each other in classrooms, and, in some instances, direct physical contact with others when caring/working with children in special educational settings. Many schools reported that students could hardly implement physical distancing measures of 1 metre, often stating that children were measured eye-to-eye and desk-to-desk apart – and in some cases, none at all. Despite having a 'Pod' system in primary schools, children could easily turn around in chairs and be in face to face with students in other pods and they played with other 'Pods' in their school yards with no distancing. Secondary school children did not wear masks in yards and mixed with other years. Students (all ages) were still required to move in groups in corridors (access/egress/change of class) and a number of reports emerged showing the difficulties students had trying to maintain physical distancing in queues, hallways and corridors. School buses were also crowded indoor environments, and many continued to operate at the same capacity before the pandemic began.

Despite WHO and CDC recommendations [33], no changes were made to seating arrangements in school buses. HPSC and the Dept. of Education reported school buses as being 'controlled environments.' Many of the newer buses operating did not have windows, nor were they supervised in the aisles. Children in primary schools are not advised to wear masks (>13) and it was not mandatory for school staff to wear masks. It was/is not mandatory for anybody to wear masks outdoors (school yards etc.) In special education schools, staff or students were not always able to wear masks due to hindering communication and/or physical restrictions (not possible or safe for the person to do so (e.g., age, ability, medical condition etc.) Teachers and school staff were advised to wear a mask within 1 metre of a child but 2 metres with an adult – and no rationale was given for this.

It is important to note that public health guidelines have often stated that a mask protects others: in this instance, how would the child or teacher be protected? Schools in Ireland were (and still are) greatly underfunded, lacking both teaching and practical resources, and as a result have led to some of the most overcrowded classrooms in Europe [42]. Despite every effort made by school management teams and school staff members across the country, it was reported by many students and staff that very few schools were physically able to significantly reduce class sizes. When schools reopened in September 2020, funding from Government was provided to schools to help rearrange rooms and infrastructure, and provisions were made for PPE, sanitisers [many which were later recalled], cleaning equipment, training and resources. As reported by numerous public representatives and unions, ventilation was poor in most schools, with the DES and HSE only recommending the opening of windows.

It appears as if most Irish schools have failed the Three 'C's' risk assessment.

Detailed Findings: Alerting Parents of Outbreaks in Schools

Results show that only 17% respondents felt confident that schools were safe during the pandemic in the school year 2020/2021. Of those who said they did not believe schools were safe, 70% were school staff, 60% were students, and 55% were parents. The least confident group were those with 2 or more roles (e.g., parents who are also school staff). 2,783 responses were validated as compatible for use in the survey analysis. Of these, 1,065 [38%] people said they (or someone they live with) were definitely in a room with a positive case for more than 15 minutes, and 640 said they weren't sure. Of those who said yes, 709 [67%] said they were not formally contacted or told by the HSE or their school that they were a close contact of a positive case. 153 respondents said they or someone they lived with had received a positive COVID-19 test while symptomatic in school. Of these, 65% [N=99] were told their case was not associated with a school. **Fifty-four per cent of respondents [N=1,517] said they found out from someone else (not through official school or HSE communication) that there was one (or more) positive case(s) in their school**. Asked if this had resulted in them being tested for COVID-19, 39% [N=585] said they had, and 4% [N=64] said this had resulted in a positive case. 1,517 respondents said they were told about positive cases in their school through non-official connections with the school. At least 142 parents said they were told directly by their child about positive cases in their class or school.

There are numerous detailed testimonials highlighting the stress and anxiety for children and adults in these situations. Respondents were given the opportunity to include their experiences of close contact tracing and safety in schools – in total over one thousand written [N=1,111] testimonials were submitted. **Testimonials revealed hundreds of serious concerns and issues related to students, parents and staff not being informed of positive cases in their classroom or school; many found out about cases in their class or school from informal sources, and some later tested positive for COVID-19 themselves (having not been deemed to be a close contact)**.

Detailed Findings: School Staff Survey

A survey conducted in July 2020 by Voice for Teachers, resulted in 6,100 responses in a 24-hour period, a phenomenal number of responses. This is the link to the full survey: https://voiceforteachersblog.wordpress.com/

74% (4,472) of respondents disagree with the DES disregarding HSE social distancing guidelines: This is stark: ¾ of respondents understand that social distancing is vital for a safe re-opening of our schools. Teachers (and all school staff) are legally entitled to a safe place in which to work, which must include social distancing during this Pandemic. A very large number of respondents (5.817 / 95.8%) expressed that they were concerned that DES would not plan for adequate substitute teachers to cover teacher absences. Respondents voiced the serious concerns they have about staffing issues throughout the survey and in the additional comments they made to question 40. **Respondents were/are extremely concerned about Ireland's very large class sizes in Ireland – the highest in the entire EU.** 4,135 (68%) of respondents were in favour of checking staff temperatures each morning. While such checks may not identify all COVID-19 cases, it is one of a range of possible mitigating actions open to schools. **School staff have traditionally presented for work despite being ill, knowing that the DES would not provide for substitution in many cases, or that substitute teachers are nigh on impossible to source, (due to pay inequality, non-payment of allowances for upskilling, and general decline in terms and conditions since 2011).** However, for the coming school year, school staff will/are mandated to stay at home if they experience any COVID-19 symptoms. 56.7% of respondents (3,450) said yes, school staff should be given a free, priority COVID-19 test in school every week, like care home staff receive. A further 1,370 (28.6%) replied that it might be a good action to take. 61.9% (3,757) agreed that pupils should also be given a free, priority COVID-19 test before they return to school in September. An additional 22.6% (1.370) felt that it could be a good thing to do.

Detailed Findings: Confirmed Cases & Close Contacts in Schools

Policies, testimonials, and survey results have revealed that many students and staff in classrooms have not been deemed to be close contacts of a positive case or informed of a positive case in their classroom/school, even though official guidelines from the European Centre for Disease Prevention and Control (ECDC) state that **all people who were in a classroom or school transport with a confirmed case of COVID-19 are deemed to have had a high-risk exposure and to be a close contact**. [20] This is a view supported by the World Health Organisation (WHO) and cited by the Centres for Disease Control and Prevention (CDC), an organisation the ECDC and the WHO closely liaise and work with when developing policy. [29] It is important to note that both the ECDC and the WHO are cited in the Irish Statute Book under the new Amended Act of 1947 (re: Infectious Disease/COVID-19) as advisors to the Minister for Health and the NPHET. [9]

Testimonials, media reports [28] and HSE policy documents reveal that if someone is wearing a face-covering/mask in classrooms or schools that this will be taken into consideration when public health are determining if someone should be designated as a close contact in a school. [43]**The ECDC, and CDC make it explicitly clear that face coverings or PPE should not be used in this context**, [29] as the general population are not usually trained in the proper use of such and PPE therefore only provides partial protection. [20] It should be noted that only cloth masks are typically worn by school staff and secondary students, not medical masks, although updated guidelines say staff *may* wear them.

An examination of the policies in place [24] revealed that school principals and/or designated persons were told **not to inform staff or students** if a person was symptomatic of COVID-19 in their school, and that - if a positive case was identified - they must wait for public health to authorise them to inform students or staff of this positive case. Unless otherwise specified, it appeared that only students or staff deemed to be close contacts by public health could be informed. School authorities and boards of management were not allowed (and denied) the opportunity to close their schools even when a large percentage of students/staff tested positive in the school or when community transmission locally was high. [3]

Guidelines from the Office of the Clinical Director for Public Health, HSE were extracted and included in teachers' unions document, and stated [24]: "*No blanket policy for testing entire classes*"; "*It will not be automatically assumed that a whole class will be deemed as close contacts."* In the case of symptomatic persons (possible/probable case): "*Schools do not need to inform other students and/or their parents/guardians*" and "*Other students do not need to be removed from the class. The HSE/Department of Public Health will take action if the person has confirmed COVID-19 and will provide advice and guidance to schools on what must be communicated and who must communicate it. The school authorities are expected to await and act on this advice."* "*Whether all students from a class"/year are removed whilst* [a person] *is undergoing testing, or whether they remain in school, will be determined by the risk assessment". In secondary settings, where there is social distancing, close contacts will be determined by proximity and interaction with the index case; class placement; classroom structure; common travel; social networks and friendship groups etc."* School authorities were told in the case of a confirmed case of COVID-19: "*Any decision to close, or partially close, an educational facility will be made by public health and **not by** the school authorities. That decision will be based on the best approach to control the spread of COVID-19"*

Testimonials show parents, students and staff said they *were not aware* of any policy stating that they or their children may not be informed about positive cases of COVID-19 in their classroom (or any other shared spaces in schools), nor that they may not be deemed as close contacts if in a room/vehicle with a positive case. A HSE document entitled 'A Parent's guide to Close Contacts' [44] does not state anything about parents or students not being told of cases in their school or class.

Many people said they were led to believe that "schools were safe" because the Government reiterated this over and over again. They attended schools on this advice.

Repeated terms and phrases from surveys from over 1,000 parents, students and staff included "Secrecy"; "Positive case"; "Not Informed" "Not Safe" "Lack of Transparency"; "Vulnerable"; "Hidden" "Failed" "Lied to".

In August, as schools reopened, a Public Health Consultant for the HSE, was reported by RTE [19] as saying: "*their **priority was to try to avoid** removing all children from a school in a case of an outbreak of Covid-19 in one. She said that she would not expect to be excluding whole classes and saying that whole class were close contacts. She said she hoped it would be more measured than that."*
Link: https://www.rte.ie/news/2020/0827/1161653-schools-coronavirus/

In October, RTE reported that the HSE [21] "*freely acknowledged that public health officials are being **deliberately conservative** when it comes to who is deemed a close contact in a school setting."*

The HSE Public Health Consultant said:

"If you designate someone a close contact you are automatically excluding them from education (for 14 days) and exclusion is harmful and undesirable"

and

"If too many teachers are obliged to self-isolate for 14 days - and that is what happens once they are deemed a close contact - then clearly that too has implications for schools."

Link: https://www.rte.ie/news/2020/1031/1175008-schools-covid/

In October at midterm break, the HSE were under so much pressure the HSE had to shut down close contact tracing services. [45] At this time, **outbreaks in schools surpassed outbreaks in high-risk settings such as hospitals, residential institutions, nursing homes and meat factories**. [28]

Just before schools reopened in October, the HSE redefined [and seemingly ***refined***] the definition of close contacts in schools:

"*A new national definition of cases and contacts within the educational setting has been agreed:*

1. Any person who has had face to face contact for <1m with a confirmed case of COVID-19 for >15 minutes in a school day,

and

*2. "Any person who has been between 1 and 2 metres from a confirmed case of COVID-19 for >15 minutes in a school day **with consideration of** other mitigation measures e.g., face-coverings, pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA)"* (See Page 218)

[Authors Note: Essentially, this means that a staff member or student in a school may not be deemed as a close contact if: they were wearing a face-covering in a classroom or other closed environment with a someone who is subsequently confirmed to have COVID-19; if there is adequate ventilation; if children are in pods (tables in classrooms); if there are infection prevention control measures and if someone was compliant with mitigation measures. [There is substantial evidence this policy has been followed in practice as seen in hundreds of testimonials and media reports].]

Discussion, Concerns and Conclusion: Close Contact Definitions in Schools

Both policy and testimonials from students, parents and staff have revealed that not all people in a classroom may be deemed as a close or casual contact, and many were unaware that this would be the case before they made an informed decision as to whether they attend schools in person or not.

While it is true that '*excluding anyone from education'* can be harmful and undesirable; why should the Health Service Executive (or anyone else) **determine that for any person** - is it not a person's right to decide that and to be informed of all risks which could prevent incidences or prevent harm to that person or that person's family? It does not seem reasonable or rationale that 'missing out on in-person education for two weeks' is riskier than 1) self-isolating at home while accessing remote learning [a policy which was in place] or 2) potentially contracting or transmitting a potentially deadly disease such as COVID-19.

It appears that local health authorities and the Health Service Executive (HSE) did not ask for, or receive, individual written consent from parents or students confirming that they understood and agreed that when children were in school that they may not be told if they have been in a classroom or other closed environment with someone who tested positive for COVID-19 in their school or classroom. It appears the same applied to many school staff – many were upset that principals and designated persons did not tell them about positive cases in their school and did not realise that principals were explicitly told not to tell anyone until 'public authorities' told them to.

Parents, children and school staff could possibly have avoided contracting or transmitting the virus had they been told they were in an enclosed space with a confirmed case in a class or school – they could have taken necessary precautions or accessed diagnostics. But they did not know because they weren't told

Thousands of written and verbal testimonials were received from parents, children, students and school staff. The stories shared told of *immense stress, anxiety, fear and anger amongst young and old,* mostly in relation to not being informed of confirmed cases in their classes and schools. Many reported that they took it upon themselves to get tested – after not being deemed a close or casual contact - and many found out they were positive for COVID-19. Many of these people were asymptomatic and had been in the school while infectious but had not been deemed to be close or casual contacts.

Teachers, SNAs, SETs, bus drivers, canteen workers, cleaners and many other school staff discussed experiences of **extremely poor mitigation** in schools and on school transport – often not through the fault of the staff who tried to implement the policies set out by the Department of Education, but because Irish classes are the largest in Europe and the education sector has been grossly underfunded and under resourced for years.

Principals and boards of management reported that they were dismayed that local autonomy and decision making appeared to have been overridden by HSE policies; oftentimes they felt at a loss as to how to protect their staff and students. Some of the braver ones told stories of how they ignored these policies, and decided to tell everybody, including the media about cases in their schools – a strategy whose sole purpose was to create awareness in their communities to try to prevent the spread of the virus. Often, they were reprimanded by unions and public health officials alike.

Parents, children and school staff could possibly have avoided contracting or transmitting the virus had they been told they were in an enclosed space with a confirmed case in a school – they could have taken necessary precautions or accessed diagnostics. But they did not know because they weren't told.

It is not clear why all students and staff in classrooms were not deemed as close or casual contacts when international guidelines from the European Centre for Disease Prevention and Control explicitly stated that anyone in a classroom for more than 15 minutes with a confirmed case had a high-risk exposure to the virus and would be deemed a close contact. [20] This was a guideline which also extended to associated activities such as school yards, school transport, canteens and shared facilities etc; and a guideline which did not consider the wearing of face-coverings, masks, ventilation etc as a reason to not deem someone a close contact in a classroom or school related activity. CDC are explicitly clear that face coverings which are used by general public should not be used in the determinations of close contacts. [29]

A number of serious questions and concerns were noted.

- How would people know to restrict their movements or request a referral for a test or access early treatments if they did not know they were possibly exposed to the virus?
- If people were not informed that they could have been potentially exposed to the virus, could this possibly lead to more cases of the virus in their homes or communities, and what if, as a consequence, somebody was physically harmed, or died?
- If medical officers/doctors come to learn of information of which could potentially harm or injure a person or patient who is within their care or remit, should they not share this information with the person(s) in question in a timely and open manner? This is to ensure the person(s) can make an informed decision and/or access proactive measures such as requesting and accessing early diagnostics (e.g., testing) or take protective measures (e.g., restrict movements). In turn, this person(s) actions could potentially protect and prevent harm to others also.
- Why weren't principals (or school designated officers) allowed to tell people in their school or community about confirmed cases? Surely this may have helped reduce the spread of the virus? Why were principals and Board of Management told not to close schools unless advised by public health, especially if their reason was for health and safety (not public health) reasons (i.e., not enough staff for pupils)?

Detailed Findings: Official Reports and Data

Government officials regularly cited statistical data to support their claim that schools were/are safe places. Many of the results in their Reports were used by Government and the HSE to reassure the public that schools were safe, and the public relied upon their communications to make informed decisions.

- Data and information related to school-age children (5-18) were not provided for the full year 2020. [A small cumulative table in the School Report showed details related to Week 10-53 (full year) and Week 35-53 (schools open to end of year). Only through manually subtracting these from each other were the cases revealed for the period when schools were closed, thus a comparative analysis could be achieved)]
- Children aged 15-18 were grouped with adults aged 19-24 in daily reports, making it impossible to identify how many school-age children cases/hospitalised were reported
- Data related to hospitalisations of children aged 5-18 were included in 14 day reports (difficult to break down)
- Three different datasets with three different timeframes were used consistently for school-age children's age groups, making it difficult to compare and calculate. [See 118]
- No information was provided in relation to tests and cases for students/school staff
- At press briefings and on the Department of Health's website, all children's cases were included in 'Women's and Men's Cases' (children are NOT women or men)
- School Reports were not published until approximately four months after schools and childcare facilities reopened
- School Reports said they 'include grind schools' but they did not clarify the type of schools, nor were these in a separate table *(important because many private school perform their own tests – and often conduct mass testing, unlike the HSE, who perform bulk/target testing in schools)*
- The weekly totals in School Reports did not correlate with the cumulative totals for any week – often resulting in what appeared to be overreported and underreported tests/cases/not detected cases/facilities tested.
- The age groups used in the School Reports were 0-17 and 18+ years meaning it was difficult to compare cases in school-age population against national 0-18 age group information
- School Reports were labelled as 'mass testing' in schools; however, policy documents revealed that the HSE "does not blanket test' or 'assume whole classes are close contacts'. Public health only get in touch with schools when they are notified that a confirmed case was present in the school during their infectious period. This meant the results in these reports only included the outcome of targeted/bulked testing of those deemed to be the close contacts of confirmed cases in schools by public health. Testimonials, social media posts and media reports showed many people believed the HSE were testing hundreds of schools every week randomly.
- The term 'facilities' in these reports is understood to be the number of 'people' who were Index Cases (i.e., the first person known to have been infectious in the school). This was first identified when a Public Health Consultant revealed this on social media. It is unclear what 'facilities with detected case' means. When the HSE were questioned about this on social media by our researchers, the summary table which included this information was removed

in the next published report and a new paragraph was included eluding to the fact the test/cases in the report were only close contacts.

- Graphs and bar charts in the School Reports did not match the totals in the tables in these same reports.
    - An online webinar held by the Department of Education and Public Health HSE revealed another bar chart showing all tests/cases since schools reopened (information which was not made available to the public prior to this) The figures in this graph did not match the figures in the tables or other graphs in the report.
    - This graph also revealed that there were no cases in childcare facilities up to week 35, however there was a reported outbreak in a childcare facility (how could there be an outbreak with no cases?)
- The publisher name of the HPSC Mass Testing School and Childcare Facilities Report did not appear to be that of the HSE but of a third-party consultant firm. [From a patient safety and data protection perspective, official reports which are used in serious decision making processes (such as reopening/closing of schools) should only ideally only be completed by those who are experts in their fields – our public health specialists and consultants.]
- In the Outbreaks Reports, it was unclear if 'cases associated with outbreaks in schools' were included the School Reports or not.
- There were clauses in the Outbreaks Reports which said not all cases were definitely associated with outbreaks in schools, however this was not said for other sectors.
- No breakdown of staff/student's cases were in the Outbreak Reports.
- Two of the Outbreaks reports showing information for schools were replicated meaning one week's data was missing.
- Upon learning of such issues, the investigators contacted the HSE and HPSC via a number of channels (including social media and email) requesting clarification, however no response was received.
- A Freedom of Information request was submitted to the HSE asking for this information and data related to students; school staff; and underlying conditions, however our researchers were asked to pay **€500** for this information – even though countries across the world share this with their citizens.

Discussion/Concerns Raised Regarding Data for School-Age Children and School Staff

When investigators of this study questioned a statement made on social media by a HSE Public Health Consultant regarding the figures on a summary table in one of the school reports (the 'Mass Testing in Schools' report), the next report which was published **excluded** this summary table and a new statement had been inserted. [See page 283] This statement clarified that these 'Mass Testing' reports in fact only included figures relating to the testing of close contacts of cases in schools. The same Public Health Consultant had also mentioned the number of Index cases in schools. This number matched the same figure given which was entitled as 'Facilities Tested' in the reports.

It is unclear who fulfils, published or writes all of the HPSC reports and what aspects of the reporting process are automated, or paper based. Clarity on the multiple issues and questions around these reports, which the authors submitted to the HSE weeks ago, is urgently required.

The investigators have concluded that there is low confidence in the data and reports which were provided to the public. This is especially so with regards data and figures for school age children and school staff (tests, cases, rates, hospitalisations etc.) and data related to tests, cases and outbreaks in schools and associated activities.

The conclusion is drawn upon a number of significant findings.

Serious concerns and issues in relation to the communication and reporting of statistical, informative and scientific data were found. This included the lack of publicly available data for school-age children for the year and on a daily basis; the use of three different age datasets for children (and using different time variables); the use of opaque, confusing terms and phrases which did not align with a plain reading of the terms/phrases or the facts or the processes; the timing/delay of published reports on cases in children, staff and schools; lack of clarity; and what appear to be duplications, errors and miscalculations in statistical reports, to name but a few. The HPSC school reports were not published until the 15th of November 2020, almost four months after schools reopened, yet Government and health authorities cited information about the incidence rates to bolster the statement 'schools were safe'. These statements were made, but the public had no means to see them for themselves.

It is critically important that all data is clear, transparent, factual and easy to understand; especially when this data is being used to determine outcomes, projections, interventions or risks, all of which impact on the general public.

When an investigator of this study sought public data from the HSE through a Freedom of Information request relating to school-age children, data related to high risk categorisations, and figures for cases/tests in students and staff in schools, she was asked to pay €500 or this could be reduced if she asked for less information. Nearly every other country, including the UK, had continually provided this to their citizens throughout the pandemic. However, the HSE told the investigators (a parent of school going children and a voluntary healthcare advocate) that *they would need to pay €500* if they wanted to access this information in full.

Detailed Findings: Policies and Practices in Schools

In an attempt to protect themselves and their loved ones, many school staff and children with health conditions (and even without health conditions) have reported that they did not want to attend school in-person – this was mainly due to the fact **that they were aware 1-2 metres physical distancing would not be possible, that masks in primary schools were not promoted and large volumes of people would be in crowded classrooms and travelling on school transport**.

They asked why different rules should apply to them when the national guidelines stated:

"Stay at Home", "Avoid Crowded Spaces", "Keep 2 Metres Apart", "Wear a Face Covering"

Many high-risk school staff (including pregnant women) were told they were not allowed to work from home, despite having letters from their medical practitioners, and despite the Tánaiste saying that a doctor's letters should suffice for health and sick leave.

Parents of children (many of whom lived with extremely medically vulnerable family members) felt forced into deregistering their children from their public schools, as they too did not meet the strict HSE criteria. Many of these families were already vulnerable and they said they depended on public schools – they could not afford home-schooling. Many with caring duties or who were unwell themselves said they struggled they would not be able to provide the time needed for home-schooling as they were not physically or practically able to do so, thus many felt forced to send their children to school. Many said they were low-income families, and felt they had to choose education over safety – when in fact the education could have been provided at all times from their public school through remote or distance learning.

This investigation found that the WHO (in coordination with UNESCO and UNICEF) recommend that all doctors letters for schools to be waivered when community transmission is high and say all high-risk individuals should be protected. They also clearly state that **remote and distance learning should be implemented especially when classes are overcrowded** (which they are in Ireland) [46]

However, the Irish Government has not implemented this.

Discussion, concerns and conclusion

In Ireland, if a child lives with an extremely medically vulnerable parent/guardian/sibling, the child is also NOT entitled to access remote learning and, in fact, the parent is asked to deregister their child from the role book in their public school if they choose to stay at home to protect their loved ones. This can eventually lead to the child permanently losing their place in their school.

The same applies to school staff – they are not allowed to work from home to provide remote learning – even if they are in the high risk category or live with someone at high risk. Children, parents and school staff are, and have been, extremely stressed and anxious. The mental health impacts of school closures are often (rightly) cited, yet the mental health impacts on others who do not want to attend in-person due to understandable concerns about contracting or transmitting the virus is just as real, and valid. Had schools been given the proper resources and an option to choose remote/hybrid learning been activated to reduce class sizes so physical distancing could be enforced, this may have helped reduce the number of people would contracted the virus.

Investigators noted the extremely valid reasons for people not wanting to attend the school setting. This was especially so in the context of high community transmission in Ireland, the new more contagious variants of SARS-CoV-2 in Ireland, and in light of guidance provided to people in both high risk and very high risk groups. [47] and in fact, the overall guidance given to the general public:

"Stay at Home", "Avoid Crowded Spaces", "Keep 2 Metres Apart", "Wear a Face Covering"

They felt they should not have different rules applied to them, and this holds true. Despite almost a year of advocating, with issues raised in the Dáil [22], independent reports and letters from staff, parents and young children and teenagers pleading for access to remote learning, staff and students in Ireland do not have the automatic option to choose distance learning through their schools during this global pandemic.

Parents who choose to keep children home from school due to safety concerns, and or when community transmission was/is high, have been told that they will be automatically reported to TUSLA after 20 days absence and, after that, are advised to register to home school, potentially losing their child's place in their public school (where they wish to return when the pandemic is over or herd immunity through vaccination has been reached). The Department of Education and TUSLA guidelines stated children who did not meet the highly restrictive 'very-high risk' criteria must attend school. Even though TUSLA also were charged with the overall responsibility to ensure ALL children were protected and safeguarded, while highlighting the importance of the family unit. [48] [49] It was found that 'Safeguarding' by definition meant to 'protect something or someone to prevent something undesirable'; and as explained by the Oxford dictionary *"there were multiple safeguards* ***to prevent*** *the* ***accidental release of a virus***" [50] or by the Cambridge dictionary "*the protection of children and adults who could be easily* ***hurt emotionally and physically***" [51]

Safeguarded was also cited under the new amended [15] Amended Act of 1947, Health (Preservation and Protection and other Emergency Measures in the Public Interest) Act 2020 "it is expedient in the public interest that extraordinary measures should be taken to **safeguard human life** and public health". [52] However, it appears that the authorities have deemed that in-person schooling is safer for nearly all children than access to remote learning in the safety of their home.

Many school staff feel terrified every single day going into workplaces, where classrooms are packed, and no masks are worn. How are they being properly safe-guarded?

In totality, the policy in relation to adults or children not wishing to attend school in-person, raises questions in relation to a number of fundamental human rights laws (and even constitutional rights)

- All people and children have the fundamental right to health and safety and the right to protect one's self or others (autonomy/safeguarding)
- All people have the right not to be discriminated against (Important to note that discrimination by association may include the denial of access to public schools because a family unwell/has a disability, in coherence with laws designed to protect the family unit – noting, family rights are inscribed in human rights laws)
- The right to free public education (constitutional and EU law)
- The right to informed decision making and informed consent

Detailed Findings: Official Public Messaging and Communications

Underpinning the Government's stance that '*schools are safe'* [53] were statements such as:

"Children are less likely to transmit; children less likely to contract the virus; children less likely to get sick from the virus; children are not the drivers of the virus". [36]

As seen in this report:

- New research and data in the UK has found that younger children (2-16 years) are more likely to bring the virus into a household than adults and more than twice as likely to spread it to others in a household than adults. (See Page 41)
- The true number of children who have had COVID-19 is often higher than officially reported, due to the difficulty of detecting cases in children. Studies that test children for antibodies to the virus – seroprevalence studies – often find higher numbers of children have been infected. Our own Irish seroprevalence study found no difference in the percentage of children and adults who had contracted COVID-19. (See Page 51)
- The role that children play in transmission depends both on their susceptibility (how likely they are to become infected) as well as their exposure. Many epidemiologists have questioned the claim that children transmit less, saying that any reduced susceptibility in children is likely outweighed by the increased exposure they have (in school, etc). (See Page 45)
- Reopening schools increases R by more than lifting almost any other single restriction (See Page 47)
- Children can suffer from Long Covid – initial data and research on this is only starting to emerge on this, so public health experts say we must take a precautionary approach to children being infected with the virus. (See Page 44)
- With the more contagious B.1.1.7 variant now dominant in Ireland, increased mitigation measures (masks, physical distancing, reduced class sizes, etc) are needed in schools and reopening schools without increasing R above 1 will be risky. (See Page 48)

Discussion, Concerns and Conclusion

It is extremely important that risk assessments are not based on the level of transmission between people (young and old) but are based on the setting, activity and external/internal factors and the competence or ability of a person(s).

Risk assessments should also consider the test which is: "low risk, high consequence."

Airline companies use this test – which is why they have so many safety measures, protocols and checks. The risks of a plane crash are currently low, but if it was too happen, the outcome would be a disaster. Without the proper safety measures, both the risk and consequence would be high.

But even if the risk was lower, what impact would it leave if it were to happen?

With regards COVID-19 the impact could mean somebody could become extremely sick, be left with long terms symptoms (Long Covid) or, sadly a person could die. Not just the person who contracted the virus, but the person they potentially transmitted it to.

In this instance, the person could be a child and the person affected could be their mammy, daddy, sibling or loved one. That is an extremely serious consequence.

Secondary impacts would be life-long grief and potential life-long guilt, if the child felt they brought the virus home from school.

Further (and wider) consequences include the impact on the community. When cases rise and more outbreaks occur (as can be seen when schools reopen) more people are infected, and more lockdowns occur.

Public communications need to change immediately.

When people are aware of the very real dangers to them, they can make informed decision to make better choices in how to protect themselves.

This was seen in the first wave of the pandemic in Ireland. Cases dropped to almost zero.

As restrictions lifted and public health messaging continued to say, 'children are lower risk', more people met with others.

When children were allowed to attend large classrooms without masks and buses without masks and eat without masks – why would they not think they could do this at home?

Further to this point, public health messaging needs to be far clearer on the risks associated with aerosol (airborne) transmission. Again, people can become more aware about the importance of face-coverings, physical distancing and ventilation.

Findings: Mitigation in Schools

Ireland has the largest class sizes in Europe. [54]

Due to class sizes alone, it is not possible for most schools in Ireland to adhere to the 1 metre physical distancing rule, and almost impossible to adhere to a 2 metre rule – yet this is the rule that applies to all other settings.

Allowing parents and students to **choose** to continue distance learning would help to reduce class sizes – and therefore reduce risk – for those who do need to or choose to attend in-person.

The ECDC, WHO and CDC [17]guidelines all recommend a reduction in class sizes and opportunities for those in high risk (not just very-high risk) groups to work or school from home, if it is currently not safe to attend schools in-person at this time. The reason for a reduction in class sizes is to allow for better physical distancing of 2 metres between students. This recommendation is not just dependent on community transmission in an area. However, the Department of Education do not provide for this, and Tusla specifically state on their website it is only provided for children who meet the 'very risk' category for the HSE. [49]

Guidance from the WHO:

"In areas with community transmission of COVID-19, maintain a distance ***of at least 1 metre between all individuals of all age groups, for any schools remaining open****. This includes increasing desk spacing and staging recesses, breaks and lunchbreaks; limiting the mixing of classes and of age groups; considering smaller classes or alternating attendance schedules and ensuring good ventilation in classrooms."* [55]

Social Distancing of at least 1 metre or 2 metres in schools or related activities is recommended in Ireland, however reports show that nearly all schools and classes were at maximum capacity from September to December 2020. This indicates that proper physical/social distancing measures is not possible either most of the time or all of the time in most schools in Ireland.

A detailed report provided in this document, (See page 177) highlights the number of areas where mitigations have not been provided in schools. This puts both staff and children (and the community at risk)

Discussion, Concerns and Conclusion: Mitigation in Schools

- Lack of resources/investment in the education system: Ireland has some of the most overcrowded classrooms in Europe. This directly impacts on the ability of students and staff to safely social distance some and/or all of the time. This puts both students and staff at higher risk of contracting the virus.
- Lack of investment in educational, resource, administrative and cleaning staff in schools detrimentally impacts on the ability of many schools to operate safely during the pandemic. Extra staff would allow for extra classes to run and a reduction in class sizes and could also allow for staff to offer remote learning to students at home.

- A lack of cleaning staff at any time, but especially in the context of a pandemic, can directly impact on health and safety in schools, and impact on educational teaching hours if teachers etc. must fulfil these roles. This in turn impacts on the ability to reduce class sizes.
- Lack of resources/investment in school transport has led to many school buses/vans running at maximum capacity, often meaning students cannot safely socially distance and adhere to the 'one person per seat' guidelines, as recommended by WHO, ECDC and the CDC. Most school transport services are not provided with supervision roles in the aisles; modern buses do not have windows at seats (ventilation); children under 12 do not wear masks/and there is no supervision to ensure mask wearing for those over 12 years of age. Children can mix with 30+ other children from 30 different households and different schools.
- Masks are not recommended for children under 12 years of age in Ireland.

In the context of the issues arising from overcrowded classrooms and lack of social distancing; reports of new variants of the virus circulating in Ireland and across the globe; the latest scientific evidence in relation to aerosol transmission referred to by both the CDC and the WHO, it cannot be deemed safe for people to attend school in person if they cannot at all times physically distance at least 1 meters and without wearing face coverings or masks.

Primary school children wear masks in Italy, France, Spain, Greece, Portugal, UAE, Vietnam parts of Switzerland, much of the US and in many other countries around the world.

Occurrence and Impact of COVID-19 in the School Going Population

There was no data available for school staff attending schools in-person in 2020. There was incomplete data for hospitalisations and cases in 5-18 years olds in 2020.

In the six months before schools reopened there were 1,146 cases in children aged 0-18 years of age; in the short four months after schools reopened, 13,143 children had contracted the virus, representing 92% of all cases for the entire year. Cases in school age children aged 5-18 years old increased by 1,165% after schools reopened, rating higher than any other age group.

Hospitalisations in children increased by 161% since schools reopened, compared to when they were closed – rating the highest out of all age groups. The only age groups where more hospitalisations occurred after schools reopened than before when they were closed, were in children, and of these, hospitalisations in school age children (5-14) rated the highest out of every other age group. In fact, there were fewer hospitalisations in adults aged over 25 years in the period after schools reopened than thee had been in the 6 months prior to schools reopening.

Since the 1st of January 10,770 children aged 0-18 years of age have contracted the virus, of which 282 children, babies, teenagers and young people were hospitalised – 59 were little toddlers, pre-schoolers and babies under four years of age (childcare remained open) and 39 were primary school and secondary school children aged 5-14 (schools were closed). [No weekly data is available for 5-18 year olds]

Parents United Ireland asked for the help of the 125,000 member strong Facebook group **'Alerting Parents of Outbreaks in Schools and Preschools Group'**. One of the members, Eve. C created and shared a survey asking parents, teachers and students about their experiences of close contact tracing in schools and their opinions regarding the safety of schools during the pandemic.

Within 2 days, over 2,800 people had responded. The results showed that only 17% respondents felt confident that schools were safe during the pandemic in the school year 2020/2021. Of those who said they did not believe schools were safe, 70% were school staff, 60% were students, 55% were parents. The least confident group were those with 2 or more roles (e.g., parents who are also school staff.

2,783 responses were validated as compatible for use in the entire survey. Of these, 1,065 [38%] people said they (or someone they live with) were definitely in a room with a positive case for more than 15 minutes, and 640 said they weren't sure. Of those who said yes, 709 [67%] said they were not formally contacted or told by the HSE or their school that they were a close contact of a positive case. 153 respondents said they or someone they lived with had received a positive COVID-19 test while symptomatic in school. Of these, 65% [N=99] were told their case was not associated with a school.

Fifty four per cent of respondents [N=1,517] said they found out from someone else (not through official school or HSE communication) that there was one (or more) positive case(s) in the school. Asked if this had resulted in them being tested for COVID-19, 39% [N=585] said they had, and 4% [N=64] said this had resulted in a positive case.

1,517 respondents said they were told about positive cases in their school through non-official connections with the school. At least 142 parents said they were told directly by their child about positive cases in their class or school.

Another survey from July 2020, conducted by Voice for Teachers, resulted in 6,100 responses in a 24-hour period, a phenomenal number of responses. This is the link to the full survey: https://voiceforteachersblog.wordpress.com/

74% (4,472) of respondents disagree with the DES disregarding HSE social distancing guidelines: This is stark: ¾ of respondents understand that social distancing is vital for a safe re-opening of our schools. Teachers (and all school staff) are legally entitled to a safe place in which to work, which must include social distancing during this Pandemic. A very large number of respondents (5.817 / 95.8%) expressed that they were concerned that DES would not plan for adequate substitute teachers to cover teacher absences. Respondents voiced the serious concerns they have about staffing issues throughout the survey and in the additional comments they made to question 40.

Respondents were/are extremely concerned about Ireland's very large class sizes in Ireland – the highest in the entire EU.

4,135 (68%) of respondents were in favour of checking staff temperatures each morning. While such checks may not identify all COVID-19 cases, it is one of a range of possible mitigating actions open to schools. **School staff have traditionally presented for work despite being ill, knowing that the DES would not provide for substitution in many cases, or that substitute teachers are nigh on impossible to source, (due to pay inequality, non-payment of allowances for upskilling, and general decline in terms and conditions since 2011).** However, for the coming school year, school staff will be mandated to stay at home if they experience any COVID-19 symptoms.

56.7% of respondents (3,450) said yes, school staff should be given a free, priority COVID-19 test in school every week, like care home staff receive. A further 1,370 (28.6%) replied that it might be a good action to take. 61.9% (3,757) agreed that pupils should also be given a free, priority COVID-19 test before they return to school in September. An additional 22.6% (1.370) felt that it could be a good thing to do.

Towards the end of October, close contact tracing services were forced to shut by the HSE due to the sheer volumes of close contacts from confirmed cases being reported.

This was at the time when almost 83% of cases in children for the year were reported. It was almost at this time when outbreaks in schools surpassed the number of weekly outbreaks in extremely high-risk settings and high-volume settings such as hospitals, nursing homes, residential institutions, emergency services and meat factories.

Despite what was communicated to the public, positivity rates in schools were often equal to or the same as positivity rates in the community. Despite the repeated references that were made to 'school mass testing' less than 2% of the school population were tested since schools reopened, and it appeared that only close contacts of cases (as chosen by public health officers) were tested in schools. Many cases associated with outbreaks in schools were logged in a separate report, indicating the numbers of cases associated with schools were much higher than communicated to the public.

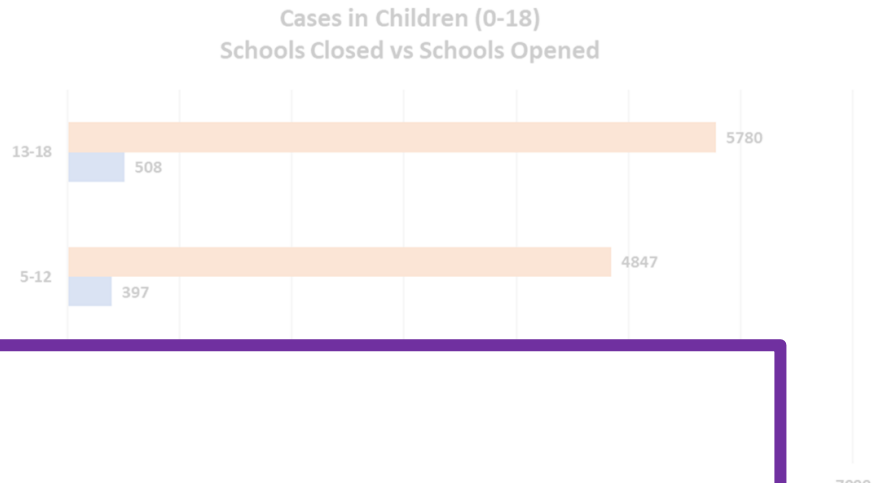
It cannot just be a coincidence that the rapid increase in cases and hospitalisations in children occurred from the time period when schools reopened?

While many members of the public and governmental officials referred to the reopening of wet pubs as possible reasons for transmission to children from adults; cases in children had begun increasing in school age children long before wet pubs reopened on the 21st of September.

Parents or guardians bringing or collecting children from and to school were also mentioned as reasons for an increase in cases in children; however, school age children experienced a far higher increase in cases than ALL adults and experienced the highest increase in hospitalisations from August to December.

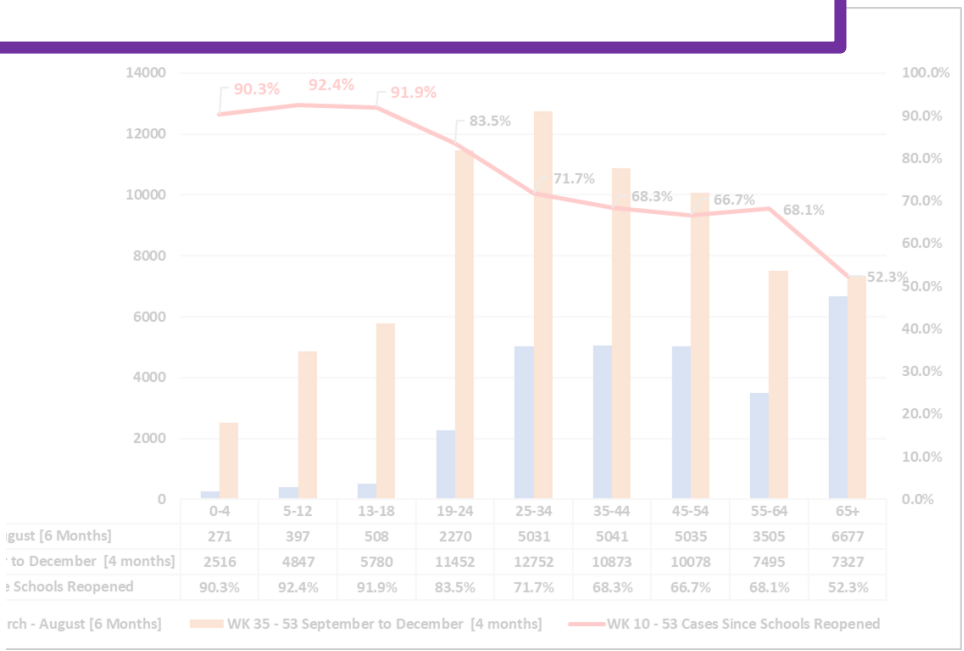
If parents and guardians were the original source of infection, would the statistics not have been the other way around – especially considering that children were more likely to be asymptomatic, and were less likely to be hospitalised?

Furthermore, many parents or guardians would not be travelling on school transport, and would bring children to school by foot, in their own vehicles and or on controlled public transport. While parents were cited as accumulating at school gates, how was the fact that adults and children were sitting in doors with thirty or more in poorly ventilated rooms, oftentimes with no masks overlooked? Or the fact that they played or gathered in school yards together (after leaving their PODS or BUBBLES?)



Part Two: References and Comparative Analysis

This part of the report includes all of the details which led to the overall findings.



Why we did what we did…

Before schools reopened and after the first lockdown in Ireland, serious concerns were publicly raised by parents, children, students, teachers, SNAs, school staff and members of the public about the safety of schools in Ireland.

However, these concerns appeared to be ignored by Government and key decision makers. As parents, carers, school staff, children and students ourselves, we all felt unheard.

We set out to listen, involve, engage, include and work with people in these situations while at the same time investigating the data, policies, guidelines and campaigns in Ireland and comparing to what was advised internationally. Applying the principles and core values of Public Involvement [41], the authors of this paper engaged, participated and collaborated with school staff, parents and students asking them to become involved in this study so that they could learn about and share their lived experiences, opinions and include any materials which might aide in this investigation.

Organisations and groups involved in the study included 'Alerting Parents of Outbreaks in Schools and Preschools' Facebook group; Leaving Cert Students 2021 Instagram Group, to name but a few. We decided not to name any individuals who helped with this report as several said they were fearful of being reprimanded by authorities. We thank them for their input and advice.

Feedback from parents, staff and students showed there were serious issues and concerns in relation to:

- Policies, definitions, timeliness and identification of close contacts in schools
- Lack of resources provided by Government to allow schools to enforce and adhere to mitigation measures such as safe social/physical distancing, wearing of face-coverings, reduction in class sizes, safe school transport, cleaning and hygiene, administrative supports
- Lack of/no protections for high risk groups (or those who wanted to protect themselves) as there was no provision for remote learning/opportunities to work from home
- Lack of transparency and mixed/conflicting communications in relation to data, scientific studies and research and policies
- Lack of engagement from Government with front line educational workers and students

The aim of this report was to collate and share relevant information to help identify if the Government's claim that Irish "Schools are Safe" could be supported with the available data and information to hand.

While data in relation to all educational facilities, and children's age groups will be investigated in this study, the primary focus will be on schools - simply due to the fact that all children in Ireland must legally receive a primary form of education.

In simple terms, many students did and do not have a choice but to attend a school - and during a global pandemic this has caused a great amount of anxiety and fear. Hundreds, if not thousands of teachers, principals, SNA's, and staff in schools, even those with serious underlying medical conditions, feel forced to go to work, or face the consequences. Parents, guardians, family members and loved ones who are extremely medically vulnerable do not want to send their children back to school – because they want to be safe.

There were a number of limitations in this study, mostly due to restricted (and oftentimes conflicting) statistical data and information provided to the general public from the HSE.

References

Please note:

- Schools in Ireland closed on the 12th of March 2020 and reopened on the 23rd of August 2020.
- References made to the year 2020 refers to the period of time when the pandemic began in Ireland, 1st March 2020 (Week 10) up to the last epidemiological week (Week 53) which includes the first two days of 2021 (1st/2nd January.)
- Terms or phrases used in this report, such as 'year to date', 'end of the year' are inclusive of Week 53, unless otherwise specified.
- School age = 5-18 years of age. Primary School: 5-12 (+/-) Secondary School: 13-18 (+/-)
- Young people refers to teenagers and young adults aged 19-24 years old
- When the word 'Report(s)' has a capital 'R' this refers to official documents, and not this report.

Limitations

HPSC published different datasets over different time ranges; and did not reveal the full figures for the year, therefore, there were a number of limitations.

1. Daily data for the 5-12 and 13-18 age group was not published publicly. Weekly data for these age groups was only published from Week 27 (July) onwards.
2. Annual (YTD) figures of cases for 0-18 year old age groups was only released on November 15th and was published in a table in the HPSC Mass Testing School and Childcare Facilities Report. Cases for adults was not published in this table, despite the fact adults work in schools. This table only included cumulative totals for the year, or the week in question.
3. Weekly/daily hospitalisation and cases figures for school age children 5-12 and 13-18 years old for the year 2020 was not made available.
4. Children aged 15-18 years old were grouped with adults (15-24 year olds). This meant that 5-12 year olds were grouped differently as 5-14 year olds. As children in primary schools are ordinarily aged 5-12 and secondary schools aged 13-18, this made it extremely difficult to compare cases in schools to the rest of the population.
5. The only hospitalisation data which could be directly compared against cases in schools were for the 5-14 year olds. It is important to bear in mind that approximately 46% of the 15-24 year old age group includes 13-18 year old children.
6. HPSC are clear in stating that data published was likely to be changed/validated/de-notified at a later stage, however when this occurred, HPSC did not publish the dates of when these may have arisen. For this reason, (unless otherwise specified) the data presented in this report, are derived from the day when they were published in Reports and/or from the Covid-Hub.

As and when required or requested, any and all personal identifiable data is redacted.

Timeline of Events & Significant Findings

Up to the point of writing this report, several members of the Irish Government and public health authorities have definitively declared that Irish '*schools are safe'* during the COVID-19 Pandemic.

This claim was even made the same day Ireland had the highest number of cases per million people - ***in the entire world*.** [56]

Logically, these two statements just did not seem to align with one another. So we decided to find out if schools really were as safe as authorities have continually said they are, by looking back on the events of last year.

The first case of COVID-19 in Ireland was reported on the 29th of February 2020 (Leap Year).[191]

Official reporting of COVID-19 began on the 1st of March 2020. From that point on, in accordance with the Infectious Disease Regulations of 1981, weekly epidemiological reports would begin on a Sunday and end on a Saturday. The first week of the pandemic in Ireland was Week 10 of the epidemiological calendar. The last week for the year 2020 was Week 53 and included the first two days of January.

On the 12th of March 2020, the Government announced an official 'Stay at Home' order (referred to colloquially as a 'lockdown'). Amongst many other restrictions, this included specific advice for very-high risk groups and older people to 'cocoon' (i.e., stay at home at all times) and the closure of all non-essential businesses, childcare facilities and schools.[192]

As the months rolled on, cases and hospitalisations quickly started to rise.

Those most severely affected were the elderly and those living/staying in nursing homes, however many healthcare workers in hospitals and workers in meat factories were affected too.

During this time, referrals for COVID-19 testing were mostly limited to people who experienced a specific set of symptoms; those who were frontline/essential workers and people who were recognised as being at higher risk of serious illness from COVID-19. This strict testing criteria may have led to a lot of children and young people not being tested for the disease at this time, especially when research indicated that children and young people were more likely to be asymptomatic (i.e., not have symptoms).

Eventually, towards the end of May 2020, testing criteria changed and this allowed for any person or child with symptoms, or close contacts of a positive case, to be referred for testing also.[193]

On the 29th of June 2020, most restrictions from the first Lockdown were lifted.[194]

Amongst other things, sports and youth clubs and *childcare facilities* reopened.

Schools remained closed.

Up to this point only 505 cases [26] had been reported in children aged 0-14 years of age.

As people started leaving their homes, cases started to increase across all age groups.

During this time - with childcare reopened but schools still closed - cases in children four years of age and younger increased by 54%, more than all other age groups. This was closely followed by 5-14 year olds [+51%] and from age 15 to 65 years and up, cases increased by an average of 10.8%. Approximately 2,443 cases were reported in total for all ages between the 5th of July and 22nd of August 2020, representing just 37% of all cases for the year up to that point.

At the end of June, the NPHET published their governance structure[195]. The overall responsibility resided with the Cabinet and the Minister for Health; and numerous subgroups reported directly to NPHET.

Two such groups were the Emergency Advice Group [EAG] [57]and the Evidence Synthesis Group; both of whom worked alongside the Health Information and Quality Authority [HIQA] [7].

The European Centre for Disease Prevention and Control [established by the EU Parliament] and the World Health Organisation were included in the Governance Structure and included in the Irish Statute Book, as advisors to the Minister for Health and health authorities. [15]

The second wave of the pandemic was later reported to have started around the 2nd of August 2020.

Open discussions about schools began. Would they reopen? And, if so, how? Would they be safe?

Thousands of parents, caregivers, students and school staff began expressing their concerns about how safe Irish schools would be in the midst of the COVID-19 pandemic. RTE reported: "S*urveys showed 1 in 3 parents said they were 'extremely' or 'very' concerned about the ability of their child's school to provide a safe environment in the context of Covid-19. Reports showed that 6% of parents did not intend to send their child to either pre-school, primary school, or secondary school due to their concerns."* [19]

Oftentimes these concerns were **not** referring to the ability of the school staff themselves to keep schools safe: it was because schools in Ireland were reported as being greatly underfunded and overcrowded – having some of the largest classes in Europe. [54] Parents just did not understand

how it would be possible for their children to do 2 metre physical distancing in Irish schools, or on school transport – which too, was overcrowded and under resourced, and especially when young children did not wear masks and people would all eat together in the same room without masks [58].

These were valid concerns – especially as the guidelines that had been given to the rest of the population and the mitigation measures required in all other settings were not going to be applied in schools: mixing with many other households, going into crowded rooms without masks, etc.[196]

Many teachers, SNAs, principals and school staff felt the same way as parents. Many members of school staff reported having serious health conditions, many female workers were pregnant, and some were caring for extremely vulnerable family members.

Just weeks before schools reopened, and after months of asking for reassurances, principals and staff eventually received new reopening plans from the Department of Education.

But disappointment followed –the same protections offered to other sectors would not be put in place in schools.

The plans appeared to indicate that it would not be necessary for adults to wear masks around children, yet they were being advised to wear them around each other. Adults were advised to keep 2 metres apart from each other but could go as close as 1 metre with children (how was this protecting children?). Other than opening windows and doors, there appeared to be no proper ventilation guidance or allocated resources, and there were no references to mitigations to reduce the risk of aerosol transmission. Children under 12 were not advised to wear masks. While the Department recommended for people to eat outdoors, eating indoors with no masks (or proper social distancing), was acceptable in schools.

Young children would be assigned to 'pods' (essentially seated around a table in their classroom, just as before, with sometimes less than 1 metre between them). A quick turn of the head to say hello and these little children would be directly facing their little friends in the 'pod' beside them.

Classrooms were renamed 'bubbles', however as soon as children went out to their school yards and mixed with other classes, these 'bubbles' would, metaphorically speaking, burst.

The same applied when coming and going to school - mixing with up to 30 different children from different homes, on school buses - often with no windows (only air conditioning) and with little to no supervision in the aisles. Many children did not wear masks.

Essentially buses had the potential to become high-risk hubs for virus transmission.

The Department of Education called school transport 'controlled environments.'

Yet many bus drivers were fearful that they would get this virus.

Physical distancing was definitely not going to work in practice when small classrooms were filled with thirty students or more, and *(with the exception of the few students who met the strictest 'very-high risk' category*) the Department were not offering the option of remote learning to reduce class sizes.

It became apparent that there were different rules – and weaker safety measures - for children and staff in schools than for the rest of society.

In a world where less than ten people could attend a funeral in wide open airy churches, hundreds of people could attend overcrowded schools, with no masks, no distancing and poor ventilation.

Strangely, most of the Department's policies for schools seemed underpinned by statements such as: '*Children have less cases than adults/do not get as sick as adults/do not transmit the virus as much as adults'* and '*Children are not the drivers of the virus'* or '*Children are not likely to show symptoms'*. Many of these claims that children transmitted the virus less were based on flawed studies that had been conducted at a time when most countries were in lockdowns or their schools were closed or only partially open with very small in-person attendance, and when children were not tested as much as adults; in other words, during times when children didn't have the same high levels of exposure as they do when attending school.

These statements have never changed, even though the science has moved on and more recent research from around the world on children, schools and COVID-19 has come to very different conclusions.

Even the HSE's own research did not match these claims about children.

On the 20th of August 2020, three days before schools officially reopened, the HSE published findings of their Irish seroprevalence (antibody) study which was conducted on *children* age 12-18 years and adults aged 18 and over. [59] [60]

In their own words, the HSE said: '*No statistical differences were identified in the prevalence by age group, or between males and females*.' In other words, *children and adults had the same rates of infection with Covid-19 up that point*.

So why did the Department continue to use 'reassuring' statements in their communications and website such as, '*COVID-19 (coronavirus) can affect children as well as adults, but cases of COVID-19 are much less common in children*." [61] Their own study had found that children were as susceptible as adults – so why not tell people this, or at the very least indicate on their website what age groups of children they felt were 'less at risk'? Why say the word 'cases' when this could only be determined on the basis of a positive test result, and we knew children were not tested as much as adults?

Why did the HSE continue to make definitive statements such as '*children transmit the virus much less than adults'* when so many respected studies[197] from across the world had emerged showing that this was not necessarily the case?

But most importantly, why compare children to adults?

All children could transmit the virus. **All** *adults could* transmit the virus.

Adults worked in schools. Adults worked in schools with children. Children went home to adults. Teachers and school staff went home to adults and children.

Was it not obvious that transmission from homes to schools *and back into* other homes was bound to happen? Why was it that children could contract the virus more playing on the street with friends but apparently couldn't contract it from playing with classmates in the school yard?

The new Minister for Education, Ms Norma Foley was charged with the responsibility of overseeing the policies for schools during the pandemic. Her predecessor had made it very clear: "*Government would be drawing up the risk assessment for schools, not NPHET or anyone else*"[198]. However, Minister Foley (a former practising teacher herself, who would have understood the realities and practicalities of the school environment and children's needs) decided not to give students any option to stay at home and access remote learning from their schools. Even children who themselves had underlying health conditions, but in the eyes of the Department of Education appeared to not be 'sick enough'.

The Department didn't allow children who lived with extremely medical vulnerable family members who were cocooning, the option of remote learning. Children who wanted to protect their mammies, daddies and siblings – many of whom had life limiting and extremely serious conditions.

The same applied to school staff in similar situations – they were told they had to go to work.

Countless testimonials and media reports revealed accounts of school staff who were pregnant and/or diagnosed with a series of underlying conditions and who were told by a government-funded occupational health assessment organisation that they must attend for work in school because their health conditions did not meet the HSE criteria. Reports revealed that people were advised to attend school in person even when the written professional opinion of their own medical doctors advised it would be unsafe for them to do so. Even when the Tánaiste said "*I would have thought that if someone was advised by a doctor to take health and safety leave during pregnancy that would be enough. Certainly, when I was practicing as a general practitioner, if a pregnant woman came into my surgery and I believed it was appropriate for her to take health and safety leave or sick leave, I would certify it. I have never come across it being second guessed by someone else'.*[199]

Yet this was the policy which existed.

School staff who did not want to go attend work in schools in person, as they wanted to try to protect themselves and/or their loved ones from contracting the virus, often reported they had to seek alternative options such as family leave; parental leave; carers leave; or sick leave, if it applied. For many staff members, after their initial leave ran out and after a certain period of time, pay would be reduced, dependant on the contract they had – and that was only if they had a contract. When leave ran out entirely, many school staff reported they felt they either had to return to work under duress or resign.

This appeared to differ from WHO and ECDC and CDC guidelines, who all recommended high risk persons be given the opportunity to stay at home and that reducing class sizes would help to make schools safer.

In the Department of Education policies (and even the latest versions) the normal 2 metre physical distancing rule was changed to 1 metre – and for some children, none at all – leaving most buses and classrooms at maximum capacity, during a deadly global pandemic.

In August just before schools reopened, with the aim of supposedly reassuring parents and school staff, a Public Health Consultant for the HSE was reported by RTE as saying: "*their **priority is to try to avoid** removing all children from a school in a case of an outbreak of Covid-19 in one. She said that she would not expect to be excluding whole classes and saying that whole classes were close contacts."* [1]

This was confusing: why would anyone **try to avoid** removing someone from a school if there was a confirmed case of COVID-19? Was it not the goal to remove potentially infectious persons to *avoid* the spread of the virus?

Maybe this was a mistake?

Departmental policies, guidelines and documents sent to teachers' unions, appeared to reiterate this view:

*"There is **no blanket policy to test** entire classes or years"* and *"It will **not be automatically assumed** that a whole class will be deemed as close contacts." "**Onward** testing strategy will be determined by information from the initial risk assessment*" and in the case of a person being symptomatic of COVID-19 school staff were advised to "*wait on the advice of public health authorities"* before removing students from classes or telling other staff or students they may have been in contact with someone who had symptoms of COVID-19. [24]

This did not seem to be in-line with the international guidelines from the European Centre for Disease Prevention and Control (ECDC)[200] (who are cited as official advisors to the Minister for Health and the NPHET in Irish Statutory Law [15]).

The ECDC explicitly stated: ***"high-risk exposure (close) contacts are students and staff who have shared a classroom with the confirmed case and during the same time period."*** [16]

It appeared that the ECDC had essentially confirmed that a classroom could be a high risk setting.

The NPHET's own Expert Advisory Group, [57]supported by research conducted by HIQA, [62] also issued advice regarding the importance of *"ongoing, robust surveillance and contact tracing (including **retrospective** contact tracing or source finding) across settings".* [13]

Policies showed that school principals and designated persons were told **not** to inform students or staff if people were symptomatic of COVID-19 and not to tell students or staff of positive cases without first getting clearance from public health authorities. They were told they had no authority to close schools or tell students or staff to go home in the situation where there was a positive or probable case – instead, they would have to wait on public health to authorise same; often this left principals in a situation where they could not inform teachers or classmates that they had been in a room with a confirmed case for days and had to leave them continuing attending school until public health made contact (often several days later at times when cases were high). This was a policy that

many principals and teachers felt went against their core values, ethics and moral obligations to the staff and children in their care.

Schools were given templates by the Department of Education which they could send to parents in advance of starting schools. These templates **did not state at all or in any clear way** that public health authorities may not tell all children/parents that there were confirmed cases in classes or schools.

Just three weeks after the second wave had begun, and principals, teachers and school staff had done everything they could to make their schools safe; schools reopened on the 23rd of August 2020.

Department templates were sent to parents, students and staff.

A pre-planned midterm school break was scheduled from the 23rd of October to the 31st of October 2020.

As the weeks went by, cases climbed up and up. Teachers, parents and students became more and more concerned. Many stories made national headlines.

Overcrowded classrooms. Remote learning denied to many. No proper ventilation. No masks.

Teachers shared stories of not being deemed as close contacts because they had worn a homemade cloth mask; parents shared stories of children becoming symptomatic and testing positive for COVID-19 even though they hadn't been deemed to be a close contact of a confirmed case in their class. Teachers reported they were told to turn off the Bluetooth-activated close contact tracing CovidApp. Students reported they were not getting notifications from the App. [63]

Parents shared stories of their children being denied access to education from public schools. [19]

Hundreds of parents and school staff publicly reported that they were not contacted by the HSE when they had been in a room with someone who had tested positive for COVID-19. Many were not told that they had been in a room with a probable (symptomatic) case. More reported that they themselves had not been anywhere other than in school and had tested positive for COVID-19 but had been classified by public health as being household or community transmission. More felt the need to go for private testing and didn't know whether these results would be added as cases in schools when they tested positive. Many sadly reported that they became extremely sick from Covid-19 themselves. More testified that they felt extreme guilt for unknowingly transmitting the disease to their loved ones and people in their villages and towns.

Many reported that the HSE had not gotten in touch with them for days after reporting cases.

Thousands of parents, students and school staff said they didn't know they wouldn't be told if there were confirmed cases in their schools, nor were they aware they may not be deemed as close contacts of people in their classes. Reports revealed the shock and fear they felt upon learning of this, *after deciding* to attend school.

The Minister for Education and Minister for Health were made aware of this at all times. [64]

Yet they didn't change the policies. And they didn't properly resource our public health teams which could have allowed them to retrospectively test and trace all potential close contacts and index cases, instead of having to create 'bespoke' systems to fit within Government remit.

Outbreaks and clusters in schools started soaring and, within a few weeks, hundreds of outbreaks had been reported in schools – **some weeks there were more outbreaks in schools than in extremely high-risk environments such as hospitals, nursing homes, manufacturers, emergency and defence forces, residential institutions, meat factories**, construction, retail and more. [65]

After six months of lockdown and school closures, it took less than five weeks after schools reopened for the Government to be advised by the National Public Health Emergency Team [NPHET] to re-commence national Level 5 Restrictions (Lockdown) (4th of October) [66].

But the Government said **no**.

Instead, they opted for local (county) restrictions in areas that had high incidence rates; and a variation of different restrictions across the country (Level 1-3).

On the 15th of October 2020, the Minister for Education said: *"Everything that we know to date and everything that has been confirmed to us again today in terms of public health is telling us that our schools can remain open and that they are essentially safe spaces for the entire school community*." [4]

Declarations like this, of which there were plenty, were underpinned by statements such as '*children are less likely to transmit, contract or get sick from COVID-19' and 'children are not the drivers of the virus'*. Statements that had not been definitively proven by scientific evidence; some of which were disproven by the HSE's own scientific studies; and all of which appeared to have overlooked the fact that adults also attended schools in person.

While making these 'reassuring' announcements, Government and public health officials did not appear to discuss the fact that **cases in school-age children were increasing exponentially**.

As reported at a later stage by the Irish Examiner: "O*fficial statistics produced on a daily basis by the Health Protection Surveillance Centre, showed some 54%, or 3,163, of cases involving children aged 14 and under were recorded in October, the second month for which schools were open following the first wave of the virus." [12].*

The public conveyed their concerns to the HSE that they found it hard to access information about children, and in particular school-age children. This was because data relating to cases and hospitalisations in school age children (5-18 years) were not published on a daily basis, and for months into the pandemic, were not even published on a weekly basis.

In fact, daily and weekly reports showed that children aged 15-18 years were being grouped in with adults aged 19-24 years, making it impossible for the general public to easily see trends in relation to cases of COVID-19 in school-age children. The Central Statistics Office also used different datasets (different age groupings). Official reports outlining tests/cases in schools only included data for children aged 0-17 years of age (excluding those attending secondary schools who had had their 18th birthday) and did not include test numbers or cases for students and staff in schools.

Officially named 'Mass Testing in School' Reports by the HSE, it was subsequently revealed that these reports in fact only included the number of tests and cases of close contacts of confirmed cases in schools, and that close contacts were in fact chosen or 'target tested' by public health medical officers.

It was later revealed on social media by a HSE Public Health Consultant for Schools that the number of **Index cases in schools added up to the same number presented in the report for 'Facilities Tested'.** [After this interaction on social media, the next official HPSC school report excluded the summary table which had been referred to by a member of the public, and a new statement had been added, clarifying that the data only related to testing of close contacts]

It was also noted that the **official school reports were not published until almost four months after schools reopened** – yet the positivity rates in these reports were cited as a reason to keep schools open (e.g., schools are safe). On weeks where the weekly ***positivity rate in schools was equal to or higher than the community***, this was rarely discussed by Government officials.

Little to no clarity was provided by Government or public health officials when questioned by members of the public about errors, miscalculations or duplications in official reports relating to cases in children and schools; nor was any information provided in relation to additional case figures which were associated with outbreaks in schools - the same outbreaks in schools which have often

surpassed the number of outbreaks in high-risk settings such as hospitals, nursing homes and meat factories.

Upon accessing an image of an official graph of tests/cases in schools which had been displayed by a public health official during an online Department webinar, it was noted that there was **one outbreak logged in a childcare facility, yet no cases** in childcare facilities had been logged.

When daily cases were reported on television by public health officials, **children's cases were included in what were called 'Cases in Women and Men'**. Journalists and members of the public asked health authorities to discontinue doing this, but they didn't (and still haven't).

Many parents, students and staff solely relied upon what the Government and public health officials advised them, and in doing so, sent children to school and attended the school setting in person, having been told unequivocally that "schools are safe".

Eventually, just a week before the planned midterm break in schools, and seven weeks since schools reopened, on the 21st of October, with cases and hospitalisations soaring, the Government agreed to initiate a Level 5 national 'lockdown' in Ireland.

During this second lockdown, the pre-planned one-week midterm break went ahead.

Data at the time [26] revealed that up to the end of October 2020, 86% of all cases in school-age children aged five to fourteen years of age, had occurred in the short period since schools reopened – a higher percentage of cases than for any other age group**. Children aged 5-14 years old experienced *almost five times the number of cases in their age group*, an increase of 494% compared to when schools were closed. This was followed closely by 0-4 year olds [+326%]** and 15-24 year olds [+249.8%], doubling and tripling their cases in this time. Adults aged 25-34 years of age experienced only a slight increase [15.3%] in cases. Remarkably, all adults aged over 35 years old reported fewer cases [-15.5%] in their age group from after schools reopened compared to when they were closed.

Remarkably, **the *only* age group who experienced an increase of hospitalisations during this time were school-age children 5-14 years old [+33%]**; whereas all other age groups reported fewer hospitalisations after schools reopened: 0-4 years [-12%]; 15-24 years old [-37%] and in all adult age groups over the age of twenty five years old, there were significantly fewer [-72%] hospitalisations compared to children and young people, since schools had reopened compared to when they were closed. Essentially, it appeared, even though young people *of all ages* were out and about, **school age children appeared to be experiencing exponential growth in cases, and worryingly, a trend of increasing hospitalisations**. Surely, this cannot have solely been due to 'outside school' activities?

Just before the midterm break had commenced, contact tracing services broke down – in fact, they were **shut down** by the CEO of the HSE. [45]

At the time, the HSE said *"it aimed to **have its processes strengthened** by the time schools return after next week's midterm break and that teams of support people were being put in place to be direct points of contact for schools."* [65]

And so, the guidelines and definitions for close contacts in schools changed. [67] But instead of ensuring more people were being contacted and tested in schools, the new HSE policy appeared to **further** reflect the comments made by the Public Health Consultant from August and further **restrict** the definition of a closed contact in schools:

*"Any person who has been between 1 and 2 metres from a confirmed case of COVID-19 for >15 minutes in a school day **with consideration** of other mitigation measures e.g., face-coverings, pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA)"*

This was despite the fact that the ECDC had stated masks/face coverings only gave partial protection and people could contract the virus through other means **and** the Centre for Disease Control [CDC] explicitly stated that PPE or face coverings should not be used as a reason to not deem someone in the *general public* a close contact.

This was a view supported by the WHO and ECDC, two of the organisations that NPHET included as their main sources of advice in their own governance structure documents, [12] [15])

On the 31st of October 2020, RTE reported that "*many teachers and others are greatly concerned that cases of Covid-19 are being missed as a result of a too-narrow measuring of what constitutes a class contact in a school setting. They worry that this could be endangering students and staff."*[201]

In this same article, it was reported that one of the lead HSE Public Health Consultants for schools 'freely acknowledged that public health officials are **being deliberately conservative** when it comes to who is deemed a close contact in a school setting.' ***"If you designate someone a close contact you are automatically excluding them from education (for 14 days) and exclusion is harmful and undesirable."***

"You might determine that all of the class should be considered close contacts", the Public Health Consultant had said, however Emma O'Kelly from RTE reported it was clear from the context that

this was a step they would only take if deemed absolutely necessary, and that the CEO Mr Paul Reid had reinstated this view: *"It is absolutely key that we do all in our power to keep schools open".*

Many parents, teachers and students took to social media and asked questions; many of these were reflected in testimonials received in this report.

"Define harmful (more harmful than being at home with parents/guardians?) All children in that situation? More harmful than contracting a virus that could kill somebody? Or spread throughout communities unknown and cause businesses to close. More harmful than the guilt a child may feel if it was brought to the home to a vulnerable member; or a child left with long term implications? It is the parent who has the ultimate right over what is best for their child – not the HSEs or anyone else's." [Anon]

Teachers cited Tusla's own guidelines: *"Best practice in child safeguarding starts with clearly setting out your intention to keep children safe from harm."*

Emma O'Kelly reported: '*Very many teachers and others working in schools agreed [that education was important], however their main stipulation was that they wanted their facilities to be'* "safe for their members". [21]

There was plentiful evidence that education was extremely important for health and wellbeing, however not a lot of evidence that in-person schooling was better than being informed that a person was in contact with a potentially deadly infection that could harm them, their loved ones and other people in society.

The Public Health Consultant was cited as saying, "*If too many teachers are obliged to self-isolate for 14 days - and that is what happens once they are deemed a close contact - then clearly that too has implications for schools."* [21]

It appeared to many that keeping a teacher home from school or a child missing two weeks of in-person schooling was *more important* and *more harmful* than being told they may have been exposed to COVID-19, and had they been told, they would have to protect themselves through self-isolation and possibly further prevent the virus from spreading by accessing testing on time.

This second lockdown proceeded. It was reported as being one of the strictest in Europe [13].

With the exception being that schools would remain open. With no changes to mitigation plans.

And all the while being told, 'schools are safe'.

Many parents, students and school staff were scared at the time.

Cases and hospitalisations dipped temporarily and then began to soar again. In what appeared to be an attempt to convince people why children should go to schools, the Taoiseach [Irish Prime Minister] addressed the nation saying:

"We cannot and will not allow our children and young people's futures to be another victim of this disease". In a further attempt to encourage people to adhere to the guidelines he continued by saying: *"If we pull together over the next six weeks, we will be able to celebrate Christmas in a meaningful way."*

Advertisements on television followed. Showing young children hugging their grandparents tightly on Christmas Eve. On radio, promotions called for people to eat out and support local businesses.

Many public health experts felt a six-week lockdown would not be enough, and Ireland end up in yet another lockdown by February 2021. [14]

Little did they know that it would happen much sooner than that.

On the 23rd of December, with schools open the entire time, Ireland once again entered a Level 5 national lockdown, just three short weeks after restrictions had been lifted. NPHET had projected that this might happen. On the 11th of January 2021, and despite "Europe's strictest lockdown' measures, Ireland recorded the highest number of cases per million people.

In the world.

The Irish Government still believed schools were safe. Were they?

Discussion

Through conducting this investigation and engaging with parents, students and staff a number of questions and serious concerns arose.

What happened to open disclosure - a person's legal right to be informed by a medical officer of something which could have prevented harm or injury to them (or others), and which, had they known of, could have led to them accessing early diagnostics, interventions or treatments to potentially reduce the harm or injury? How could people know to restrict their movements, self-isolate or be referred for testing if they didn't know they were a close contact in the first place?

"How would the people who care for them know?" [Anon]

What happened to child protection – a child's *legal* right to have their health and physical condition *safeguarded*? [52] Safeguarded, by definition, '*A measure taken to protect someone or something or to prevent something undesirable*."

Or, as the Oxford dictionary explains: *"there were multiple safeguards to* ***prevent the accidental release of a virus****."* [68]

What happened to Tusla's key principles of safeguarding, where "*the safety and welfare of children is everyone's responsibility; the best interests of the child should be paramount; the overall aim in all dealings with children and their families is to intervene proportionately to* ***support families to keep children safe from harm*** *and early interventions are key to obtaining better outcomes."?* [48]

It appeared that a child being informed they were a close contact and missing out on two weeks of in-person schooling and accessing education from their school through remote learning from the safety of their home while self-isolating, was an undesirable outcome, even if it prevented the virus from spreading, and even though this was something they were entitled to under the Department of Education's own policies.

It appeared that in-person schooling was more important than a person being told they may have contracted a very infectious, dangerous novel virus, a virus that school staff and children could contract and become sick from themselves and (unknowingly) transmit it to their mammies, daddies, siblings, grandparents, carers, family, and friends in their communities. It appeared that teachers attending work or children having to go to school in person was more important than a person being told to isolate or restrict their movements.

An intervention aimed to prevent a deadly virus spreading more throughout Ireland.

Aimed to prevent some of the strictest national restrictions in Europe.

Rolling lockdowns causing businesses to close and open, over and over again. Rolling lockdowns leading to people suffering from immense mental health issues caused by isolation, loneliness, financial difficulties and more. Rolling lockdowns forcing people into staying in their homes, oftentimes left in extremely dangerous domestic violence and abusive situations.

The very same rolling lockdowns that forced schools to open and close continually.

What happened to autonomy and informed consent – a policy authored by the HSE '*they must respect people's right to self-determination'; 'the right to control one's own life and decide what*

happens to their own body?' The HSE stated *"People at high risk for COVID-19 have the right to make their own decisions and the responsibility to look after their own health and the health of others."* [47]

Many wanted to keep their children home to protect them and often to protect extremely medical vulnerable family members in their household. They wanted to be responsible. They knew if class sizes were smaller, they would also be protecting others who did attend school in person.

The HSE knew that this right also extended to those who were not in high-risk categories.

Was it not everyone's right to make their own decisions and to have the right to look after their own health and the health of others, as the HSE had said in their policies?

But even for those in high-risk groups, it seemed that if a child wanted to uphold this right and stay safe in their homes instead of attending school in person (with the aim of protecting themselves or their loved ones from the virus) another right would be taken away. The right to free education from their primary or post-primary school. [69]

The only children who could access remote learning from their school were those who met the HSE's stringent criteria for being 'very-high' risk; those deemed to be close contacts of a positive case of COVID-19; or those sick with COVID-19. The Department of Education's policy and TUSLA said they would not allow anyone else access to remote learning from their schools unless they met one of these criteria. Many parents felt their children were discriminated against because the health conditions their children or family members had, weren't **serious enough**.

The HSE's very-high risk group didn't include a lot of conditions which were included by other countries in Europe; nor did it include heart disease, high blood pressure or diabetes, even though these ranked highest in the HPSCs own data on people who had passed away or hospitalised. Many teachers and school staff, including vulnerable pregnant women, who were told by their own medical professionals it would be unsafe for them to go to work in a school, were told they had to go to work.

Overruled by a company funded by the Government.

Despite the fact the World Health Organisation stated that anyone who is high risk should be given the option to stay home from school.

Principals and board of managements who reported high numbers of cases in their schools and within their local communities were told by public health authorities that they were not allowed to close their schools. Many teachers, school staff and principals said they wanted to resign. [70]

With no options, and oftentimes going against their own parental gut instincts, many parents felt they had no choice but to send their children to school. Many others, who kept children home to protect them from the virus, were told they would have to deregister their children from their beloved lifelong public schools. Parents were left on their own to try and figure out how to fund and manage home-schooling.

All of this during a time when *"**Confirmed cases of Covid-19 among children of school-going age increased exponentially across the month of October and into Novembe**r. A total of 85% of cases in children in that cohort have been noted by the HPSC since September. However, the HSE and NPHET insisted that transmission in schools is negligible."* [71]

Why were the Government so adamant that all children should attend school in-person when HSE's own advice stated "*COVID-19 (coronavirus) can affect children as well as adults.*"[202]

The HSE had determined that the risks were *lower* in children. **Not** non-existent, just *lower*.

Insurance companies frequently use the term '*low probability, high consequence events*'.

'These events are accidents that occur rarely and are unexpected when they arise; however, when they do happen the outcome is severe or catastrophic in terms of loss of human life, severe injuries to people and/or damage to the environment.'

At what point did Government conduct a risk assessment using the above criteria?

In other words, Government *were aware* that there were risks to children, that children could get sick, children could transmit it to others, some of whom would end up seriously ill or even dying, **but** decided *all* children should attend school because the risks were apparently lower than in adults; and in-person schooling seemed more important.

Just because the risks were deemed lower did not mean the consequences could not be catastrophic.

How would a child feel if they brought the virus home and somebody became extremely ill. Or died.

As a consequence of being told they should go to school because the risks were that bit lower?

Government was aware that all adults could become extremely sick and could transmit the virus.

Adults work in schools. Adults work in schools with children. Children go home to adults.

It seems basic logic should have been applied.

But the Government seemed to apply a different logic.

They had kept the schools open in the middle of the second wave – at a time when we had a national incidence rate in the Republic of Ireland of +/-200 per 100,000, and where schools in Northern Ireland were closing down due to high numbers of cases.

How many were victims of the disease?

1) What happened when schools reopened in Ireland?

In the six months before schools reopened there were **1,146** cases in children aged 0-18 years of age; in the short four months after schools reopened, **13,143** children had contracted the virus, representing 92% of all cases for the entire year. Cases in school age children age 5-18 years old increased by **1,165%** after schools reopened, rating higher than any other age group. Hospitalisations in children increased by **165%** since schools reopened, compared to when they were closed – the highest increase in hospitalisations out of all age groups. The only age groups where more hospitalisations occurred after schools reopened than before when they were closed, were in children, and of these, hospitalisations in school age children (5-14) increased more than every other age group. In fact, there were fewer hospitalisations in adults aged over 25 years in the period after schools reopened than there had been in the 6 months prior to schools reopening. Since the 1st of January 10, 770 children aged 0-18 years of age have contracted the virus, of which 282 children, babies, teenagers and young people were hospitalised – 59 were little toddlers, pre-schoolers and babies under four years of age (childcare remained open) and 39 were primary school and secondary school children aged 5-14 (schools were closed). *[No weekly data is available for 5-18 year olds]*

Table of Contents

Background & Scope

1) Purpose

This investigative report examined were 'schools safe' in Ireland, as has been claimed by numerous governmental and public health officials; and repeated on or around the time when Ireland was reported as having the highest positive cases of COVID-19 per million people in the world[203]. The rationale for initializing this investigation was based on the many concerns and questions regarding the safety of schools during the pandemic, as raised by parents, guardians, children, families, students, school staff and members of the general public.

2) Aim

The primary objective of this research was to listen, engage, involve, and include parents, guardians, students, children, school staff and members of the public so that they could share their experiences and concerns. In doing so, the secondary and subsequent objectives became clear. This investigative study aimed to obtain and examine quantitative and qualitative data relating to the 1) prevalence of COVID-19 and risks for children, and specifically school age children 5-18 years old attending school settings in person 2) the prevalence of COVID-19 and risks for staff working in the school setting 3) the prevalence of COVID-19 on local communities when people attended schools in person and 4) the official governmental and public health communications, advice and policies relating to schools in Ireland. National and international policies, guidelines, scientific research, and other reputable sources were sourced and compared for observational purposes. All data was explored and correlated to establish if there were any significant findings which might indicate the safety status of schools in Ireland during the pandemic.

3) Methods and Process

This study mainly centered on the periods of time between when schools closed from the beginning of the pandemic on the 12th of March 2020, and the time from when they reopened again on the 23rd of August 2020. Applying the principles and core values of Public Involvement [41], the Researchers of this study engaged, participated, and collaborated with school staff, parents and students asking them to become involved in this study so that they could learn about and share their lived experiences, opinions and include any materials which might aide in this investigation. Numerous polls and surveys were conducted online through various social media domains, and with the help of the Alerting Parents Facebook group, Leaving Cert 2021 Students Instagram Group.

Teachers, SNAs, SETS, school staff, parents, students, and members of the public were involved in the collation, collection and formation of this report. The analytical component of this investigation involved collecting, collating, calculating, and analysing official figures in Ireland, as provided to the public by governmental and official public health sources in Ireland. Data was initially categorized by age groups, and subsequently correlated in accordance with their respective results (e.g., cases, tests etc.) Clusters and outbreaks, underlying conditions, and periods of time when schools opened and closed, or as indicated by data sources, were also closely examined. The descriptive component of this report entailed reviewing advice, guidelines, procedures, and studies both in Ireland and internationally; and gathering experiential data as published by the media and general public. All statistical data sets were validated against official reports which were published on the days in question. All personable identifiable information of participants was redacted on request, or as required.

4) Limitations

The statistical comparative analysis of data in Ireland and COVID-19 regarding school age children, school staff and schools was challenging. This was mainly due to three separate variations of datasets for children and young people's age group, all of which used different time-line variations [e.g., monthly, daily, year to date]. A weekly analysis of cases for the 0-18 age group and an overall year to date of hospitalisations in this age group could not be verified. For this reason, the second dataset was used, with a primary focus on the 5-14 age group. HPSC School Mass Testing reports [30] were not published until four months after schools reopened and a separate age dataset (0-17, 18+) was used. No data were provided in relation to the number of students or staff who acquired COVID-19; nor were there data provided in relation to the Index cases in schools. Frequently, lack of clarity was provided in the Reports when interpreting data. Numerous clauses were attached to HPSC Reports, this was especially observed in the School Mass-testing Reports; and it was noted these same clauses did not apply in other sectors. What appeared to be clerical errors (e.g., duplicated/replicated data) were encountered in the Reports; one in particular delayed the publishing of this report by several weeks. Some HPSC Reports published data from the beginning of the pandemic (March 2020) whereas others began at later stages (August/November) and others provided detailed figures within reports using different starting points. A detailed section is available at the end of this document [3)] which underlines both limitations and observations.

5) Findings

Despite what many would have been led to believe, since schools reopened, cases in school age children increased more than the 19-24 year old age group, 25-65 years old, and the 65 year old plus age groups. The age group who experienced the highest increase in cases since schools reopened, compared to when they were closed were school going children, aged 5-18 years old – a ten-fold increase in less than four months. In fact, adults aged over 75 years of age experienced less cases after schools opened than when they were closed. Hospitalisation data for 0-18 year old children for the year in question was not made publicly available. Instead, hospitalisation data for 15-18 year old children was grouped with adults aged over 18 and up to 24 years old. For this reason, researchers could only summarise the results of school age children age 5-14 years old.[1] Upon analysing the available COVID-19 hospitalisation data, it was found that the same pattern as seen in cases of school age children appeared to correlate with hospitalisations of their age group. Children aged 5-14 years old acquired an astonishing increase of 161% more hospitalisations in the *four months after schools reopened* than the six months when they were closed; representing of all hospitalisations in their age group for the year. This was followed closely by the 15-24 year old age group and 0-4 year old. Remarkably, this was not the case in adults; in fact, there were *less* hospitalisations in all adults aged 25 years of age and older *after schools reopened* than before, when schools were opened. This suggests that many children who tested positive for COVID-19 after schools reopened, were more symptomatic and became severely ill. It also suggests that more children contracted COVID-19 and became sicker with COVID-19 since schools reopened.

6) Conflict of Interests

No conflict of interests declared

[1] *Approximately 46% of the 15-24 age group are school age children aged 13-18 years old.*

Resources and Sources of Information

1) Epidemiological Calendar Year

'Week numbers' are used during an epidemic or pandemic in-line with the Infectious Disease Regulations 1981, and as such, may differ from the normal calendar year. [2]

'Pandemic Weeks' start on Sunday and end on Saturday.

2) Main Week Numbers Used in this Investigation

Week 10 = first week reporting of pandemic in Ireland began (schools closed a few days after this)

Week 27 = many restrictions lifted from the first lockdown (e.g., childcare reopened)

Week 32 = beginning of 2nd 'Wave' (many HPSC reports show totals from Week 32)

Week 35 = Schools official reopening date in Ireland, since the beginning of the pandemic

Week 48 = beginning of 3rd "Wave" (new HPSC reports only show totals from Week 48)

Week 53 = the last epidemiology calendar year in 2020 (this includes the last five days of December and the first two days of January Dates: 28th Dec to the 2nd of January 2020

Below is a reference guide to week numbers used in this document.

Week Numbers and Dates	**Reference**
Week 10: 1st March 2020 to 7th March 2020	Pandemic Began in Ireland (1st Epidemiology Week)
Week 11: 8th March 2020 – 14th March 2020	Schools Officially Closed due to Pandemic
Week 13 - 27: 27th March 2020 to 28th June 2020	1st Official Lockdown
Week 27: 28th June 2020 – 4th July 2020	Childcare Facilities Reopened
Week 32: 2nd August 2020 – 8th August 2020	Beginning of 2nd Wave
Week 28 – 34: 5th July 2020 – 22nd August 2020	1st Lockdown Restrictions Lifted/Before Schools Reopened
Week 11 - 34: 8th March 2020- 22nd August 2020	Time Period when Schools were Closed
Week 35: 23rd August 2020 – 29th August 2020	Schools Officially Reopened
Week 43: 18th October 2020 – 24th October 2020	2nd Official Lockdown
Week 44: 25th October 2020 – 31st October 2020	Pre-planned Midterm Break in Schools
Week 48: 22nd November – 28th November 2020	Beginning of 3rd Wave
Week 49: 29th November 2020 – 5th December 2020	2nd Lockdown Restrictions Lifted
Week 52: 20th December 2020 – 26th December 2020	Preplanned Christmas School Holidays
Week 52: 20th December 2020 – 26th December 2020	3rd Lockdown (24th December 2020)
Week 53: 27th December 2020 – 2nd January 2021	Last epidemiology week of 2020

[2] It is to be noted that some official Reports from the Department of Health / HSE do not use the epidemiological year. It is unclear why this is.

3) Abbreviations and Acronyms Identified

- **HPSC** - Health Protection Surveillance Centre [4]
- **HSE** - Health Service Executive [6]
- **DoH or Dept. of Health** - Department of Health in Ireland [3]
  - **CMO** – Chief Medical Officer of DoH & Chairperson of the NPHET [72]
- **NPHET** - National Public Health Emergency Team [73]
- **HIQA** - Health Information and Quality Assurance [7]
  - **EAG** - HIQA's COVID-19 Expert Advisory Group EAG [57]
- **CSO** - Central Statistics Office, Ireland [8]
- **COVID-19 Hub** - Database of COVID-19 Statistics [5]
- **ISAG** - Independent Scientific Advisory Group [74]
- **SAGE** – Scientific Advisory Group for Emergencies (UK) [75]
- **CDC** – Centre for Disease Control and Prevention [76]
- **ECDC** - European Centre for Diseases Prevention and Control [11]
- **DES** – Department of Education and Skills Ireland [77]
- **HSA** – Health & Safety Authority

4) Terms and Phrases Used in this Report

- **'Report'** with a capital 'R' refers to official government or public health reports and not this document.
- **'Researcher(s)'** refers to the researchers involved in this investigation.
- **'Case'** or **'Cases'** refers to a positive [detected] test result of COVID-19.
- **'Detected Cases'** refers to tests which indicate the person has contracted COVID-19. These may be referred to as **'Positive'** Cases or Tests.
- **'Reopening of schools'** refers to when schools in Ireland reopened on, or after, the 23rd of August 2020 [Week 35] after closing down when the Pandemic first came to Ireland in March 2020. Unless specified it does not refer to reopening of schools after planned holiday terms.
- **'Children'** refers to all people within the 0-18 age group datasets. It is recognised that many students are over this age, and for those aged between 19 and 25, they will be referred to as **'young people.'**
- **'Wave'** refers to the curve of an outbreak, reflecting a rise and fall in the number of cases. It is often seen on graphs and charts as a line, that represents the shape of waves as numbers or values go up and down.
- **'Incidence Rate'** refers to the risk of developing a particular disease during a given period of time; (e.g., the numerator of the rate is the number of new cases during the specified time period and the denominator is the population at risk during the period.)
- **'Epidemiology'** refers to the branch (area) of medicine which deals with the incidence, distribution, and possible control of diseases and other factors relating to health
- **'YTD'** refers to figures for the year to date. Note that this may not be for the full epidemiology year (2020) as it may depend on when an activity commenced or when sector reopened. When this is the case, it will be referenced in the document.

5) CDC Definitions (Appendix A – Glossary of Key Terms) [29]

Case Investigation & Contact Tracing

Fundamental activities that involve working with a patient who has been diagnosed with an infectious disease to identify and provide support to people (contacts) who may have been infected through exposure to the patient. This process prevents further transmission of disease by separating people who have (or may have) an infectious disease from people who do not.

Close Contact

Someone who was within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period* starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to test specimen collection) until the time the patient is isolated.

* Factors to consider when defining close contact include proximity (closer distance likely increases exposure risk), the duration of exposure (longer exposure time likely increases exposure risk), whether the infected individual has symptoms (the period around onset of symptoms is associated with the highest levels of viral shedding), if the infected person was likely to generate respiratory aerosols (e.g., was coughing, singing, shouting), and other environmental factors (crowding, adequacy of ventilation, whether exposure was indoors or outdoors). Because the general public has not received training on proper selection and use of respiratory PPE, such as an N95, the determination of close contact should generally be made irrespective of whether the contact was wearing respiratory PPE. At this time, differential determination of close contact for those using fabric face coverings is not recommended.

Confirmed COVID-19 Case

Report of person with COVID-19 and meeting confirmatory laboratory evidence.

Contact Elicitation Window

The timeframe when the case was likely infectious and not under isolation. This is the time period for which possible contacts should be elicited.

Exposure

Having come into contact with a cause of, or possessing a characteristic that is a determinant of, a particular health problem. Principles of Epidemiology in Public Health Practice.

First-responder

Garda, fire services, emergency medical services, and emergency management officials.

Healthcare workers/personnel

All paid and unpaid people serving in healthcare settings who have the potential for direct or indirect exposure to patients or infectious materials, including body substances; contaminated medical supplies, devices, and equipment; contaminated environmental surfaces; or contaminated air. Potential Exposure at Work.

Incubation period

Period of time between exposure to an infection and onset of symptoms

Isolation

The separation of a person or group of people known or reasonably believed to be infected with a communicable disease and potentially infectious from those who are not infected to prevent spread of the communicable disease. Isolation for public health purposes may be voluntary or compelled by federal, state, or local public health order.

Multigenerational Household

Households that consist of more than two generations living under the same roof. Many researchers also include households with a grandparent and at least one other generation.

Probable COVID-19 Case

Report of person meeting clinical AND epidemiologic evidence of COVID-19 but without confirmatory laboratory evidence.

Quarantine

The separation of a person or group of people reasonably believed to have been exposed to a communicable disease but not yet symptomatic from others who have not been so exposed to prevent the possible spread of the communicable disease. Quarantine may be voluntary or compelled by federal, state, or local public health order.

6) Official Main Reports Identified and Used for Statistical Analysis of Data

HPSC Daily Report [78] = Daily infographic which presents an overview of daily statistics

Formal Title: COVID-19 Cases in Ireland, Daily Infographic **Type:** Statistical

Note: These are published the day after they are produced. Previous daily infographics are not available when new infographics are published [Can be accessed through archives/cache]

HPSC 14 Day Report [79] = Overview of COVID-19 statistics over the past 14 days in Ireland

Formal Title: COVID-19 14-day Epidemiology Reports **Type:** Statistical

Note: No records available prior to September 2020

HPSC Weekly Report [80] = Weekly Overview of COVID-19 Statistics

Formal Title: Epidemiology of COVID-19 in Ireland Weekly Reports **Type:** Statistical

Note: No records available prior to 8th November 2020

HPSC Clusters & Outbreaks Report [81] = Weekly Overview of Clusters & Outbreaks

Formal Title: Epidemiology of COVID-19 Outbreaks/Clusters Weekly Report **Type**: Statistical

Note: No records available prior to 23rd August 2020. Formatting changed from 6th December 2020 onwards. Totals (per sector) are only from when new 'waves' occur.

HPSC Weekly School/Childcare Report [30]: Weekly Overview of Testing Schools and Childcare

Formal Title: Weekly COVID-19 Mass Testing for Schools and Childcare Facilities **Type:** Statistical

Note: No record available prior to 15th November 2020. Includes 0-18 Cumulative Totals in Ireland

HPSC Underlying Conditions Report [82]**:** People with underlying conditions and COVID-19

Formal Title: Report on underlying conditions in confirmed cases of COVID-19 **Type:** Statistical

Note: Not updated since 12th of December 2020 [HPSC say this is due to surge.] No record on website, though reporting began 31st of October [Records were previously filed by Research Team]

Dept. of Health & NPHET Statements [83] = Daily figures published/during bi-weekly public briefings

Type: Statistical and Informational

Note: Daily age figures not been published here since January 2021

NPHET/DoH/HSE Communications [37] = Includes minutes of meetings and correspondence between various departments/organisations/public within Ireland and overseas

Type: Statistical and Informational

HIQA / EAG Reports [7] = Includes publications and research related to COVID-19 in Ireland

Type: Statistical and Informational

Processes, Limitations and Observations

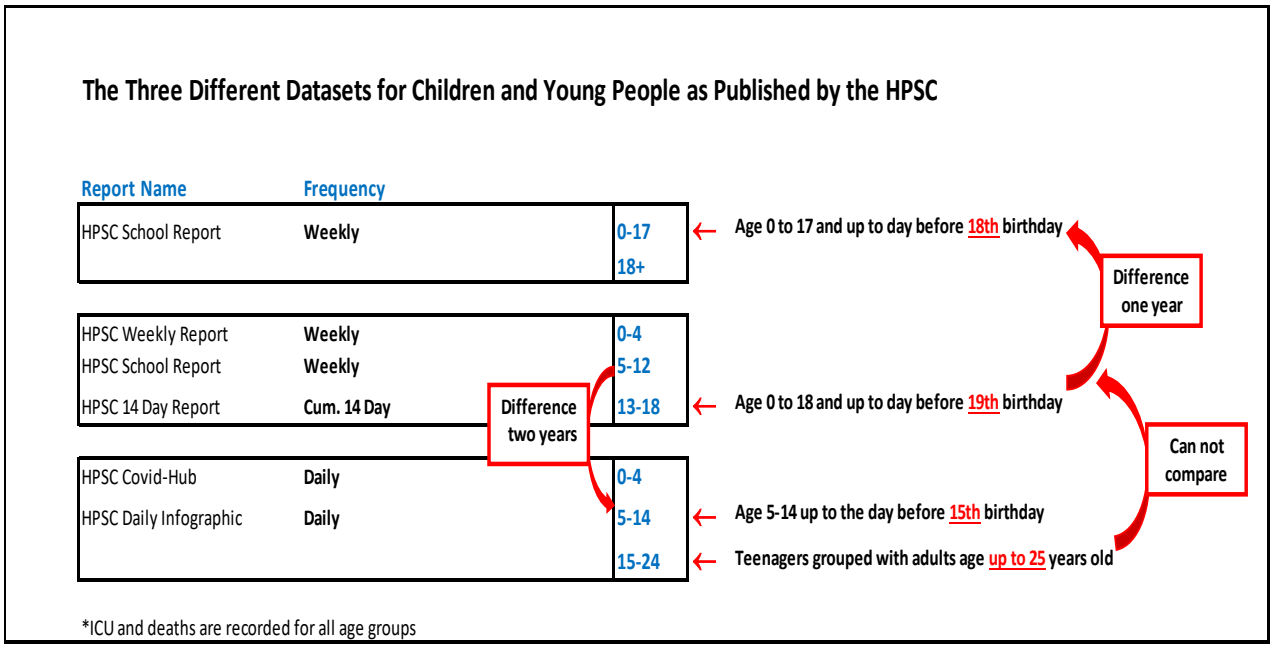
7) Accessing School Age Data Sets

The average school going ages in Ireland are 5-12 years old for primary school and 13-18 years old for post-primary schools. It was extremely important to be able to investigate the school going population in detail; and also compare these statistics with the rest of the general population.

There appears to be no week-by-week or day-by-day data made available to the public for the 0-18 age group which could be used within the timeframes for this comparative analysis (March – December). However, some HPSC reports produced (daily) age group information in the 0-4; ***5-14*** and ***15-24*** age groups format, and other reports showed weekly totals for the: 0-4; ***5-12*** and ***13-18*** year groups.

Figures for tests, positive cases and hospitalisations in school ages (5-18) were not published on a daily basis [i.e., age groups are categorised as 5-14 and 15-24 years old, instead of 5-12 and 13-18 year olds], making it difficult when comparing reports/timelines/ages with one another. Additionally, weekly or daily information for school age groups appeared to only be available from Week 27; and not from the beginning of the pandemic in Ireland [Week 10].

The HPSC School Report structure their dataset as 0-17 and 18+. This meant anyone aged 0-17 up to their 18th birthday were included in the younger people age groups in the school reports, but anyone aged 18 up to the day before their 19th birthday were excluded in the younger age group; and instead, grouped with all adult ages.



While age groups (<17 & 18+) were made available in these reports it was important to note that:

- many students in post-primary schools and PLC courses are over the age of 18
- some children may start school before the age of 5
- some children may not start attending post primary school until they are 13+
- some children use schools and childcare (afterschool)
- some students/adults may be attending 3rd level and post-primary school
- some adults may be attending post-primary school and 3rd Level education

Adding to the complexity in calculating this data, there were numerous duplications and what appeared to be miscalculations of figures in some of the HPSC reports:

- In the HPSC school report, the numbers in the bar graphs did not match totals in their tables.
- Weekly totals did not correlate with the new cumulative figures – often it appeared tests, facilities and detected cases were underreported or overreported.
- HPSC do have a clause stating that the totals for detected cases may not add up; interestingly when cross examined against cumulative figures these figures changed from week to week (Ranges: -30 → +207). It was unclear if verified results were in the new weekly figures.
- Testing/positivity rates per specific age groups per facility type for the year were not made readily available in the reports.
    - Upon further investigation:
        - it was found that there was information on the CSO [8] however this could not be used as the CSO as they used the calendar year (Monday – Sunday) as opposed to the epidemiological year (Sunday – Saturday).
        - A webinar held by the Department of Education and supported by the Department of Health and the HSE revealed a PowerPoint presentation slide which included the total number of tests and cases in schools and childcare facilities every week since reporting in had begun [Week 35 – Week 2]. The results of this table, as presented by the Department of Health's Public Health Consultant on the day, are shared in this report and cross examined/validated against the results in the reports.
- It is unclear if cases in the HPSC School report include any of the cases which were reported to be associated with clusters and outbreaks in schools as reported in the HPSC Clusters & Outbreaks Reports.

8) Analysing HPSC Mass Testing School & Childcare Facilities Reports

- The HPSC Mass Testing in School and Childcare Facilities Reports were not published until the 15th of November 2020 [Week 47], almost four months after schools reopened.
- Cumulative figures (e.g., cases, tests etc.) were provided in the reports from when schools reopened [Week 35] however, detailed data for Weeks 35-46 could not be attained.
- The number of school staff or students with detected/not detected cases or tests were not published in these reports, nor were the numbers for specific schools or facilities.
- Several figures in the HPSC reports did not calculate or correlate with another, subsequently delaying the completion of this study by three weeks.
- There is no known data available to the public in relation to the number of staff and students who were tested or tested positive/negative.
- It appears that the 'Index Case' (the person first infected) is included in the reports, thus indicating that cases may be higher than they actually are
- This YTD Cumulative table in the HPSC Schools and Childcare Facilities Mass Testing Report did not include any adults age groups (18+), even though adults work and volunteer in schools and childcare facilities. It is unclear why adult age groups were not included.

9) Analysing HPSC Weekly Outbreaks and Clusters Reports

- Previous reports showed clusters/outbreaks per week however these do not correlate with numbers in the recent reports [Schools N= -48]. CSO Data reveal Cumulative totals for clusters/outbreaks and cases, however this only date up to the 11th of December. The figures in previous weekly clusters and outbreaks reports do not match figures in recent reports, yet the increase/decrease columns remain as if they do.
- The reports include the cumulative totals per sector, location or group from Week 32 onwards, however not from the beginning of the pandemic [Week 10].
- HPSC Clusters and Outbreaks Reports for Week 50 and Week 51, the information in relation to educational facilities (e.g., schools etc.) are identical to one another
- HPSC Clusters and Outbreaks Reports have recently changed format. While there is now more information available to the public, the new reporting style has made it more difficult for people in the general public to compare figures across settings, locations and groups.
- It is unclear if cases in the HPSC School report include any of the cases associated with cases in schools reported in the HPSC Clusters & Outbreaks Reports.

10) Analysing HPSC Weekly/Daily Reports

- Case/hospitalisation and ICU numbers on the COVID-Hub may not match the HPSC Weekly Incidence Rate reports. While this is most likely due to validations and/or denotifications, it is important to highlight this with regards the Tables presented in this report.
- It is noted that previously reported Incidence Rate Heat Maps seem to have changed their colour coding system and/or changed the rates at a later stage.

11) Analysing Day-to-Day Reporting, Public Briefings and Policies

- HPSC use the number '<5' in all reports if the numbers of cases, hospitalisations etc. are lower than 5. This makes it difficult to conclude the actual numbers. The rationale provided for this is reasonable as it intends to protect a person from being identifiable, especially when or if cases/figures are low across the country or in a locality.
- HSE/HPSC have many (often reasonable) caveats and disclaimers in their reports; however, some lack clarity and others appear to treat different locations/activities different to other environments. Schools are the only sector in the HPSC Clusters & Outbreaks Report which have a clause stating: "Not all outbreaks have been confirmed as being associated with a school setting".
- Initially, there was confusion regarding the total case numbers reported on the Gov.ie website as all COVID-19 cases were referred to as 'women and men'. It was later found that children's cases were included in these figures. HPSC referred to cases as 'male and female'. It is unclear why the terms women and men are used, when children are ordinarily deemed as boys and girls.

(*Validation of data at the HPSC has resulted in the denotification of 34 confirmed cases. The figure of 155,591 confirmed cases reflects

Of the cases notified today:

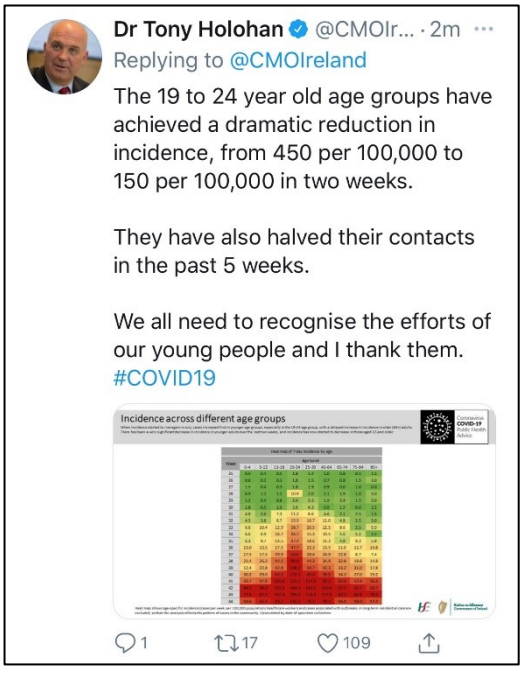
- 1,425 are men and 1,642 are women
- 54% are under 45 years of age
- the median age is 42 years old
- 604 cases are in Galway, 574 in Dublin, 466 [illegible] Mayo, 187 in Co Limerick and the remaining 1,117 cases are spread across all o

	Total (week 10-week 53)	
	Number	Percent
Total number of confirmed cases	101,887	
Incidence rate of confirmed cases per 100,000 population	2139.6	
Number of cases hospitalised	6,230	6.11
Number of cases admitted to ICU	681	0.67
Number of deaths among confirmed cases	2,003	1.97
Case fatality ratio (CFR %)	1.97	
Incidence rate of confirmed deaths per 100,000 population	42.06	
Number of cases associated with clusters	45,095	44.26
Number of imported cases	709	0.70
Number of cases in healthcare workers	13,398	13.15
Males	48,526	47.63
Females	53,265	52.28
M:F ratio	0.91	
Median (years)	38	
Mean age (years)	40	
Age range (years)	0 - 108	

12) Analysing Stable and Unstable Data

During the process it was observed that some datasets (especially in relation to age groups) were too unstable to use in this study. This was because a number of values/figures in the Reports would change at a later stage. While this more than likely was due to validations and notifications, little clarity was provided in relation to when these may have happened; and oftentimes reclassification of the 'Unknown Ages' was not made clear.

- Incidence rate reports continually change; sometimes as far back as five weeks. These tables were the only initial source of information for the 0-18 age group. The first time the researchers noticed the 0-18 age group dataset were being recorded was on the 5th of November 2020 when the Chairperson of NPHET and CMO of the Dept. of Health, Mr Tony Holohon posted a screenshot of an incidence report on Twitter. Prior to this there was no daily or information released for the 0-18 age group. This incidence report could not be used due to grouping of age groups did not match the COVID-Hub (i.e., 25-39; 40-64; 75-84 etc. as opposed to 25-34; 35-44 etc.)
- New weekly reports began being published on Week 46: 08th to the 14th of November and did include age groups in the incidence rate tables in the correct formats, however, as stated above, are liable to subsequently change.
- These reports also included a table with the weekly breakdown of the 0-18 age groups; for this reason, these tables will be classed as 'stable data' and used in this study.
- The data on the COVID-Hub is a stable dataset, thus will be used in this study.
- Outbreaks and clusters reports have also changed after the initial reports have been published; only through cross examining weekly reports against one another can one see the differences. All differentials will be highlighted in this report.



The Data

Statistical Data in Ireland

COVID-19 and Children Age 0-18

1) Cases of COVID-19 in Children Age 0-18 Before and After Schools Reopened

The dataset (below) was one of only very few known resources published publicly, which offered some insight into COVID-19 cases in children aged 0-18 years of age from March to December 2020. This was extracted from the HPSC Mass-Testing School and Childcare facilities Report [49]

Notwithstanding this, this report included the YTD cumulative (overall yearly) totals for children's cases in Ireland (not just in schools); a breakdown of the week's cases; the percentage rate per age population; and an overview of COVID-19 cases in children prior to Week 35 (the week schools reopened). This table, which is in the HPSC Schools and Childcare Facilities Mass Testing Report did not however include any adults age groups (18+) even though adults work and volunteer in schools and childcare facilities. It is unclear why adult age groups were not included.

Aside from this, the table was especially useful for this study as it revealed information which could be applied when comparing the periods of time from when schools closed, to when they reopened.

Table 7 Breakdown of confirmed COVID-19 cases by age group up to WK 53:

Week of Notification	Age Groups			Totals		
	0-4 years	5-12 years	13-18 years	0-18 years	% of 0-4 population	% of 5-18 Population
Week 53	392	689	931	2,012	0.1%	0.2%
Week 10-53	2,787	5,244	6,288	14,319	0.8%	1.3%
Week 35-53	2,516	4,847	5,780	13,143	0.8%	1.2%

* **Note**: % of population was calculated using CSO 2016 '*Census of Population – profile 3 An Age Profile of Ireland*'.

As can be clearly seen 14,319 children under the age of 18 contracted COVID-19 in Ireland from the 1st of March 2020 (Week 10) to the 2nd of January 2021 (Week 53).

Remarkably, over 2,000 (14%) of those cases were in the last week of 2020 alone.

Simply by switching the dataset around[3], the new table (below) clearly revealed that in the first *six* months of the pandemic **1,176** children had contracted COVID-19, but in the last *four* months (since schools reopened) **13,143** children had contracted the virus – an increase of **11,967** cases or **92%** of all cases in children, for the whole year.

Cases of Covid-19 in Children Ireland 2020 *Data Source: HPSC Weekly School Report*

	0-4	5-12	13-18	Total Cases in Children
Week 10 - 34	271	397	508	1176
Week 35 - 53	2516	4847	5780	13143
Total Cases in Children in 2020	2787	5244	6288	14319
% of Cases Since Schools Reopened	*90%*	*92%*	*92%*	*92%*

Total Cases Up To and Prior to Schools Reopening	**1176**	[**6** Month Period]	*8%*
Total Cases in Children *Since* Schools Reopened	**13143**	[**4** Month Period]	*92%*

Difference Between Closing & Opening of Schools **11967** **cases, or** **92%** **of all cases in children**

Table 1: Dataset 0-18 (Based on HPSC YTD Cases in School Report)

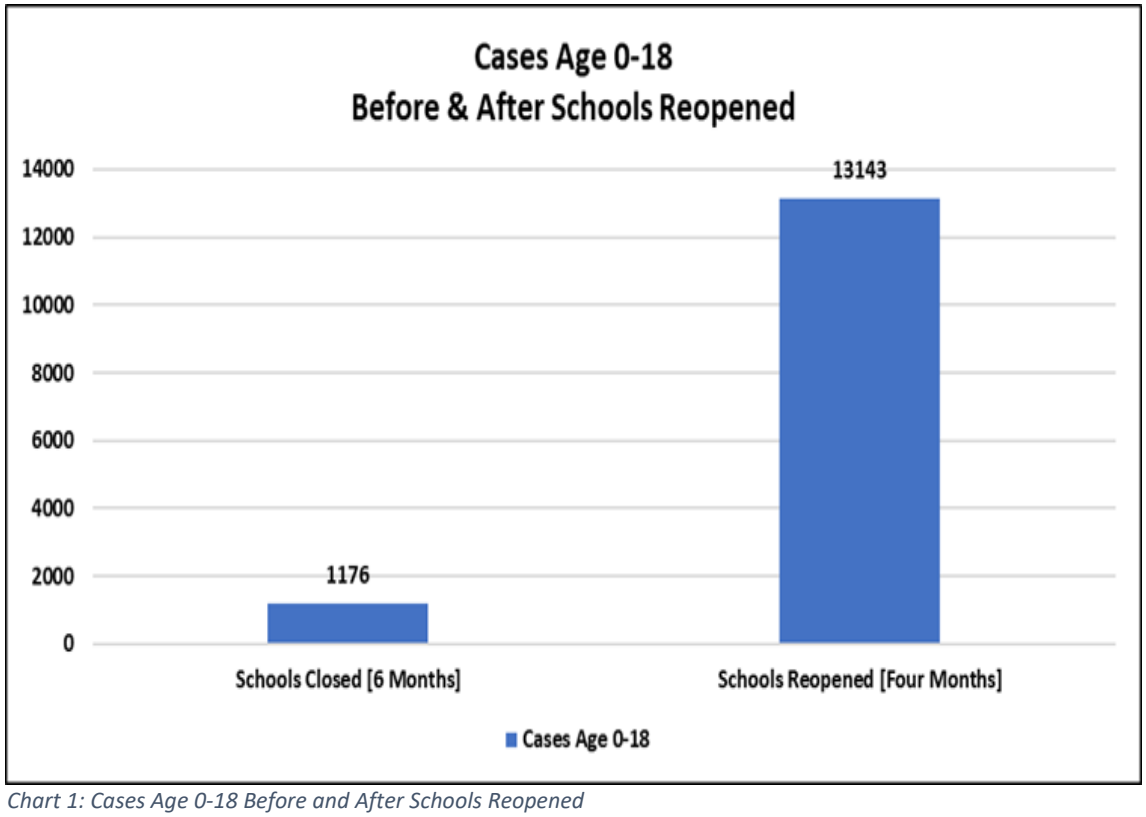


Chart 1: Cases Age 0-18 Before and After Schools Reopened

[3] Calculated Data: Through subtracting the total year values (Week 10-53) in the HPSC School Report from Week 35-53, this revealed the figures for Weeks 10-34 (1st of March to 22nd of August – the period of time when schools were closed.)

2) Comparative Analysis of Cases in Children (0-18)

Although there were several limitations (and more than a few challenges) to access and assess statistical data for 0–18-year-olds in Ireland, the information which was available did reveal some interesting findings - allowing for the cross examination of children against other age groups who had tested positive for COVID-19 in Ireland.

It was revealed that cases in children under 18 years old represented approximately **14%** of all cases across all age groups over the whole year; however, prior to schools reopened (6 months), they only represented 4.2% of all cases; and after schools reopened (four months), they represented **17.8%** of all cases across all age groups. It is worth noting that the 0-18 age group represent approximately 26.3% of the total population in Ireland. Of all cases in the 0-18 year old age group for the year, 80.9% [N=10,627] were of school going age. 5-12 years old represented 36.9% of cases; 13-18 year olds, 44% of cases; and 19.1% [N=2,516] of the remaining cases were in children age (0-4) of childcare and preschool age. (Chart 2)

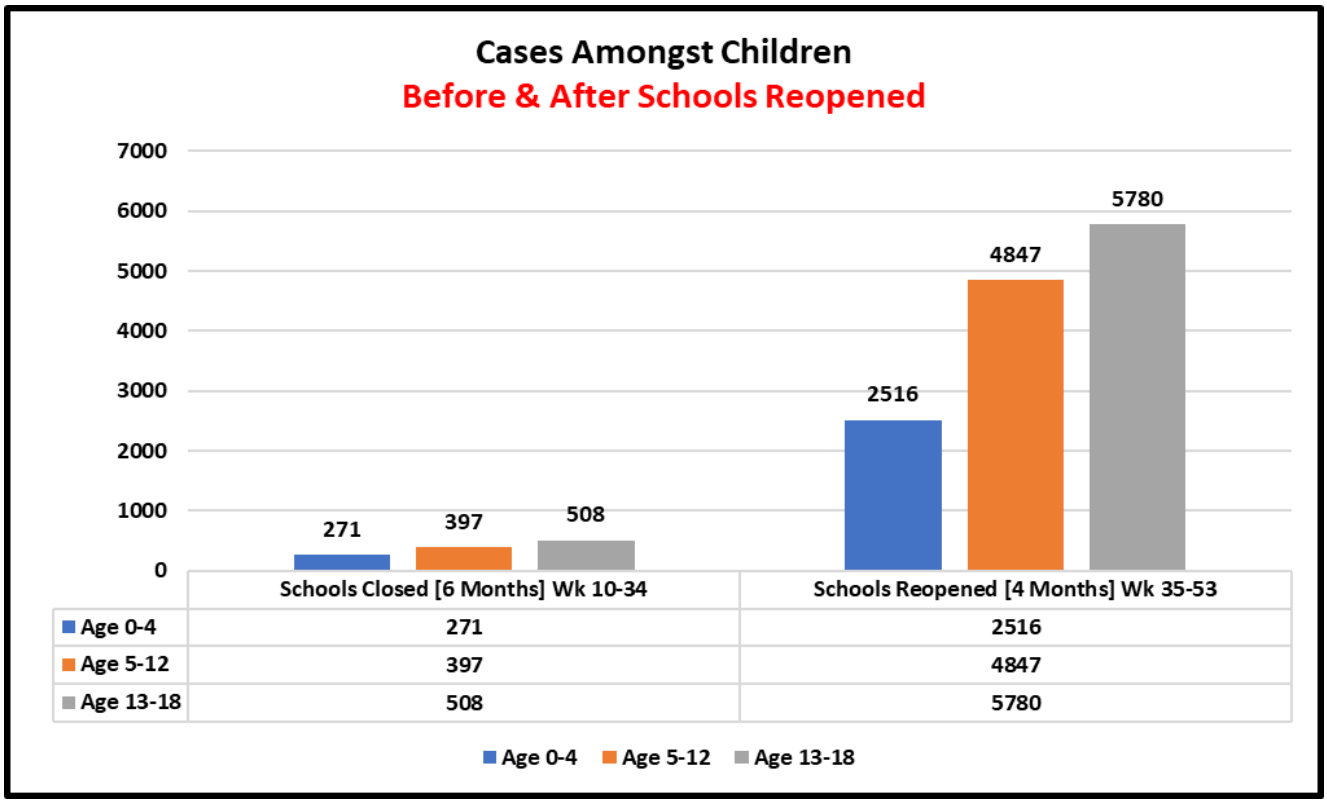


Chart 2: Breakdown of 0-18 Age Groups Before & After Schools Reopened

Point of Interest:

In the USA and up to the 28th of January, children represented 12.7% of all cases. [124]

Cases in children in Ireland last year represented 14% of all cases, 1.3% more than in the US. However, cases in children from when schools reopened to the end of 2020 represented17.8% of all cases.

Compared to when schools were closed, when schools reopened on the 23rd of August 2020 to the end of the year, cases in 5-12 year olds increased by 1,120% (a ten-fold increase), followed by the 13-18 age group [1,037%] and 0-4 age group [+828%]– all much higher than all other age groups; including the 19-24 year old age group [+489%] and the average increase for adults over 25 years old was +84%. It has been widely reported in the public domain that young people between the ages of 19-24 years of age have consistently had higher cases than other age groups.

While this is true, remarkably, their cases numbers did not increase more than younger school-age children's after schools reopened.

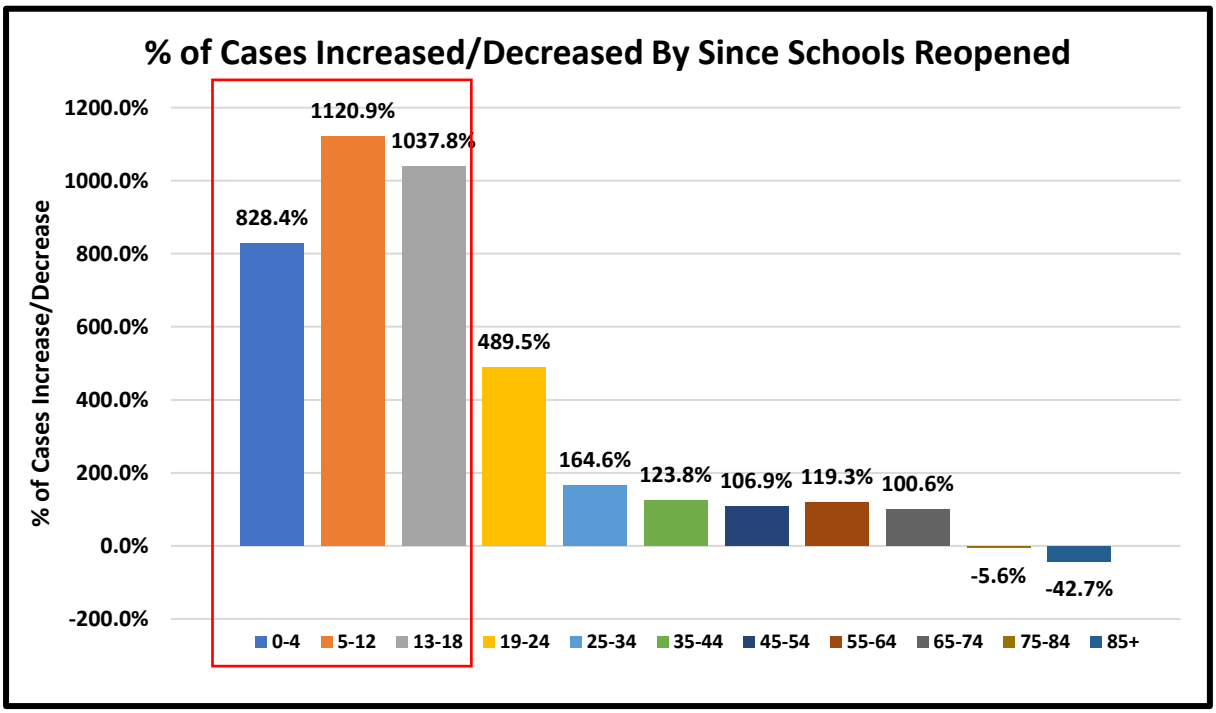


Chart 3: Percentage Increase/Decrease Since Schools Reopened

Point of Interest: The majority of 19-24 year olds were attending colleges and universities via remote learning since 3rd Level Institutions reopened in August and September.

Cases in Teenagers and Young People Age 15-24

Weekly Cases Week 10-53

WK. NO	Row Labels	Sum of 0-4	Sum of 5-14	Sum of 15-24	Sum of 25-34	Sum of 35-44	Sum of 45-54	Sum of 55-64	Sum of 65+	Sum of UNKNOWN	TOTALS
Week 10	01/03/2020 - 07/03/2020	0	0	0	0	0	0	0	0	0	0
Week 11	08/03/2020 - 14/03/2020	0	0	0	0	0	0	0	0	0	0
Week 12	15/03/2020 - 21/03/2020	5	16	69	166	165	158	117	139	1	836
Week 13	22/03/2020 - 28/03/2020	10	13	102	282	302	309	243	372	6	1639
Week 14	29/03/2020 - 04/04/2020	9	7	116	372	435	440	337	718	7	2441
Week 15	05/04/2020 - 11/04/2020	24	31	311	827	855	905	714	894	7	4568
Week 16	12/04/2020 - 18/04/2020	36	94	402	910	987	1131	773	1365	3	5701
Week 17	19/04/2020 - 25/04/2020	13	29	236	512	541	583	382	1613	1	3910
Week 18	26/04/2020 - 02/05/2020	12	33	224	394	382	392	250	657	-2	2342
Week 19	03/05/2020 - 09/05/2020	12	35	144	282	297	230	171	283	3	1457
Week 20	10/05/2020 - 16/05/2020	11	12	117	298	253	191	116	146	-2	1142
Week 21	17/05/2020 - 23/05/2020	14	22	76	95	118	79	55	97	1	557
Week 22	24/05/2020 - 30/05/2020	8	18	33	59	64	70	46	96	-2	392
Week 23	31/05/2020 - 06/06/2020	8	11	29	25	35	42	25	37	1	213
Week 24	07/06/2020 - 13/06/2020	5	2	14	19	18	19	7	22	-1	105
Week 25	14/06/2020 - 20/06/2020	3	3	10	13	17	11	7	13	-1	76
Week 26	21/06/2020 - 27/06/2020	1	1	8	14	11	7	6	11	0	59
Week 27	28/06/2020 - 04/07/2020	4	3	11	23	13	16	8	10	1	89
Week 28	05/07/2020 - 11/07/2020	4	6	38	25	19	3	4	2	-1	100
Week 29	12/07/2020 - 18/07/2020	4	1	20	37	18	19	12	23	-1	133
Week 30	19/07/2020 - 25/07/2020	5	5	16	32	23	21	9	10	0	121
Week 31	26/07/2020 - 01/08/2020	18	26	53	70	45	40	12	17	0	281
Week 32	02/08/2020 - 08/08/2020	21	27	80	157	113	86	43	22	0	549
Week 33	09/08/2020 - 15/08/2020	18	47	122	107	88	80	43	41	0	546
Week 34	16/08/2020 - 22/08/2020	26	57	165	159	116	92	65	31	1	712
Week 35	23/08/2020 - 29/08/2020	22	63	195	153	126	111	60	58	1	789
Week 36	30/08/2020 - 05/09/2020	35	78	201	172	142	113	76	96	1	914
Week 37	06/09/2020 - 12/09/2020	60	132	254	255	203	158	124	126	0	1312
Week 38	13/09/2020 - 19/09/2020	68	161	458	305	285	285	191	196	0	1949
Week 39	20/09/2020 - 26/09/2020	44	164	525	396	287	264	182	190	2	2054
Week 40	27/09/2020 - 03/10/2020	83	184	760	550	472	424	321	252	-2	3044
Week 41	04/10/2020 - 10/10/2020	121	308	1241	771	601	591	438	419	5	4495
Week 42	11/10/2020 - 17/10/2020	220	592	2050	1271	1041	960	727	577	-2	7436
Week 43	18/10/2020 - 24/10/2020	294	719	1706	1052	965	953	786	692	2	7169
Week 44	25/10/2020 - 31/10/2020	209	564	991	697	689	704	493	517	1	4865
Week 45	01/11/2020 - 07/11/2020	149	345	551	590	540	484	308	424	2	3393
Week 46	08/11/2020 - 14/11/2020	97	260	453	395	379	358	231	338	0	2511
Week 47	15/11/2020 - 21/11/2020	116	283	528	399	407	349	205	270	1	2558
Week 48	22/11/2020 - 28/11/2020	76	208	337	258	280	246	150	224	1	1780
Week 49	29/11/2020 - 05/12/2020	94	254	302	321	298	270	175	280	-6	1988
Week 50	06/12/2020 - 12/12/2020	80	245	294	333	313	305	188	201	0	1959
Week 51	13/12/2020 - 19/12/2020	118	351	540	577	565	469	383	351	1	3355
Week 52	20/12/2020 - 26/12/2020	238	517	1251	1253	1043	912	718	656	1	6589
Week 53	27/12/2020 - 02/01/2021	392	885	3409	3157	2363	2233	1799	1518	2	15758
	Grand Total	2787	6812	18442	17783	15914	15113	11000	14004	32	101887

Figure 1: Data Extracted Covid Hub Week 10-35 (2020) Cases

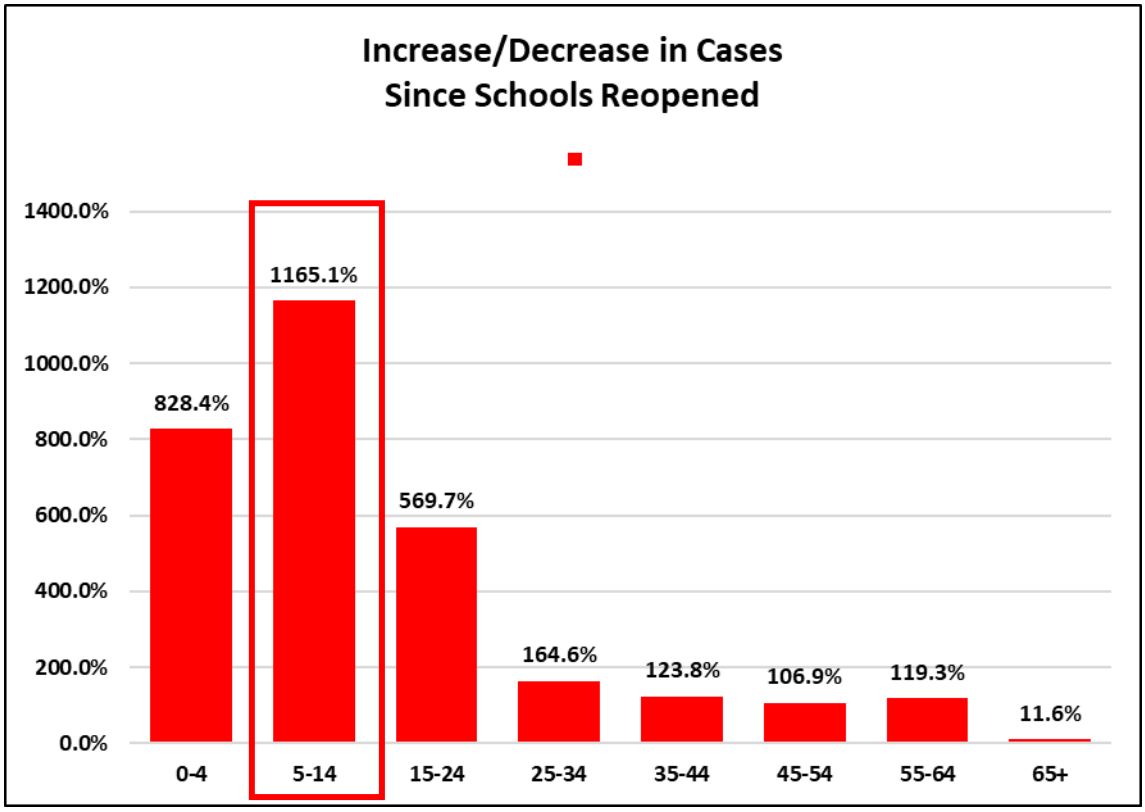
As previously mentioned, due to lack of detailed and time restricted information published by the HPSC, (seen on page 73) it was not possible to compare and contrast hospitalisations and cases for the school-going age group 5-18 for the year. Nonetheless, it was feasible to extract data from the NPHET's daily statements [83] and the COVID-Hub [26], which included the 5-14 age group (school going age).

It is important to note that this is not representative of all school age children in Ireland, thus the figures are (as seen in the 0-18 study) much higher. It is estimated that approx. 46%+/- of cases in the 15-24 year old age group are school-age 15-18 years old.

In total, there were 28,041 cases in the 0-24 year old age group, representing 27.5% of all cases of all age groups for the year. Compared to when schools were closed [11.3%], this age group represented **33.7%** of all cases when schools reopened.

It can be seen that school age children aged 5-14 experienced the highest increase of cases *after* schools reopened, more than *every* other age group.

Before schools reopened, there were 499 cases of COVID-19 in 5-14 year olds, however after schools reopened **6,313** children in this age group contracted the virus: an increase of 5,814 cases – within just four months. In the 0-4 year old age group, 271 babies, toddlers and pre-schoolers contracted the virus prior to schools reopening, however there were a further 2,516 cases in this age group since both childcare and schools reopened [+828%].



Point of Interest: There are no data available for cases or hospitalisation for adults who work in schools (e.g., teachers, SNAs etc. thus this cohort of the school population cannot be evaluated.

Hospitalisations in Children and Young People: Before and After Schools Reopened

Weekly Hospitalisations Week 10-53

WK.NO	Row Labels	Sum of 0-4	Sum of 5-14	Sum of 15-24	Sum of 25-34	Sum of 35-44	Sum of 45-54	Sum of 55-64	Sum of 65+	Sum of Unknown	TOTALS
Week 10	01/03/2020 - 07/03/2020									0	0
Week 11	08/03/2020 - 14/03/2020										0
Week 12	15/03/2020 - 21/03/2020	2	2	14	31	26	42	37	85	0	239
Week 13	22/03/2020 - 28/03/2020	1	1	7	26	35	65	64	205	2	406
Week 14	29/03/2020 - 04/04/2020	0	4	14	36	50	81	90	345	0	620
Week 15	05/04/2020 - 11/04/2020	8	-2	9	32	39	84	96	318	0	584
Week 16	12/04/2020 - 18/04/2020	2	2	6	18	38	50	62	245	0	423
Week 17	19/04/2020 - 25/04/2020	1	1	4	17	38	30	47	214	0	352
Week 18	26/04/2020 - 02/05/2020	4	4	4	16	10	31	27	120	0	216
Week 19	03/05/2020 - 09/05/2020	0	5	7	2	3	22	13	106	0	158
Week 20	10/05/2020 - 16/05/2020	1	0	5	9	8	16	21	69	0	129
Week 21	17/05/2020 - 23/05/2020	0	0	1	6	2	9	20	59	1	98
Week 22	24/05/2020 - 30/05/2020	0	0	1	5	5	12	4	34	0	61
Week 23	31/05/2020 - 06/06/2020	1	1	0	-1	4	2	10	19	0	36
Week 24	07/06/2020 - 13/06/2020	0	-1	-3	3	3	0	0	-45	-1	-44
Week 25	14/06/2020 - 20/06/2020	1	-1	1	-3	3	0	-2	7	0	6
Week 26	21/06/2020 - 27/06/2020	0	0	-1	-1	1	0	3	7	0	9
Week 27	28/06/2020 - 04/07/2020	1	1	3	1	2	3	0	5	0	16
Week 28	05/07/2020 - 11/07/2020	1	0	2	0	6	0	3	9	0	21
Week 29	12/07/2020 - 18/07/2020	0	0	2	1	1	2	2	6	-1	13
Week 30	19/07/2020 - 25/07/2020	0	1	0	0	0	0	1	1	0	3
Week 31	26/07/2020 - 01/08/2020	0	0	3	2	1	4	1	2	0	13
Week 32	02/08/2020 - 08/08/2020	1	0	-2	0	0	-1	1	6	0	5
Week 33	09/08/2020 - 15/08/2020	0	0	4	3	2	2	3	9	0	23
Week 34	16/08/2020 - 22/08/2020	0	0	0	4	2	2	0	3	0	11
Week 35	23/08/2020 - 29/08/2020	2	1	0	1	1	0	2	-5	0	2
Week 36	30/08/2020 - 05/09/2020	0	1	2	1	-2	3	0	22	0	27
Week 37	06/09/2020 - 12/09/2020	3	-1	2	3	0	6	5	12	0	30
Week 38	13/09/2020 - 19/09/2020	2	0	4	0	4	9	8	40	0	67
Week 39	20/09/2020 - 26/09/2020	-2	1	3	5	8	8	18	18	0	59
Week 40	27/09/2020 - 03/10/2020	5	7	11	13	10	10	12	27	0	95
Week 41	04/10/2020 - 10/10/2020	5	5	4	7	8	11	21	82	1	144
Week 42	11/10/2020 - 17/10/2020	2	1	13	18	16	18	27	80	0	175
Week 43	18/10/2020 - 24/10/2020	2	4	4	9	13	27	35	119	0	213
Week 44	25/10/2020 - 31/10/2020	2	5	8	12	16	22	29	107	0	201
Week 45	01/11/2020 - 07/11/2020	3	4	11	18	22	30	29	136	0	253
Week 46	08/11/2020 - 14/11/2020	4	3	8	7	17	21	18	129	0	207
Week 47	15/11/2020 - 21/11/2020	3	1	12	10	11	19	23	103	0	182
Week 48	22/11/2020 - 28/11/2020	2	0	7	10	14	19	18	89	0	159
Week 49	29/11/2020 - 05/12/2020	1	1	1	12	5	9	15	76	0	120
Week 50	06/12/2020 - 12/12/2020	1	1	8	10	2	9	14	58	0	103
Week 51	13/12/2020 - 19/12/2020	-1	4	9	7	16	22	26	87	10	180
Week 52	20/12/2020 - 26/12/2020	1	4	26	19	25	28	39	126	-10	258
Week 53	27/12/2020 - 02/01/2021	3	5	27	44	29	48	37	164	0	357
	Grand Total	62	65	241	413	494	775	879	3299	2	6230

Figure 2 Data Extracted Covid-Hub Week 10-53 2020 Hospitalisations

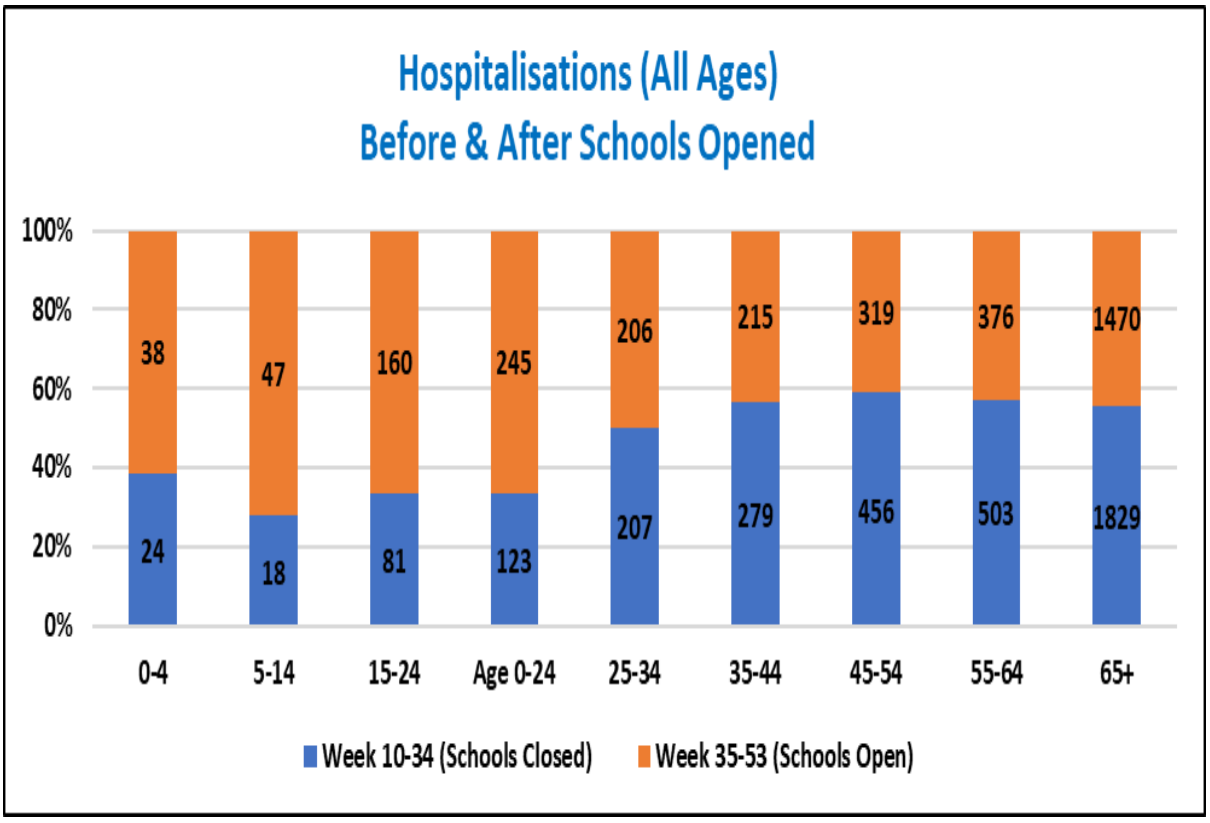
It has been well documented that the data in relation to hospitalisations of COVID-19 patients is one of the most reliable indicators in a pandemic or epidemic, especially if testing for the virus is restricted in a country or locality. Hospitalisation data can help public health specialists 1) understand the overall health status of COVID-19 patients 2) evaluate the proportion of the overall population (and those diagnosed) who could be at greater risk of severe illness from COVID-19 and 3) help plan and prepare health, welfare and social systems.

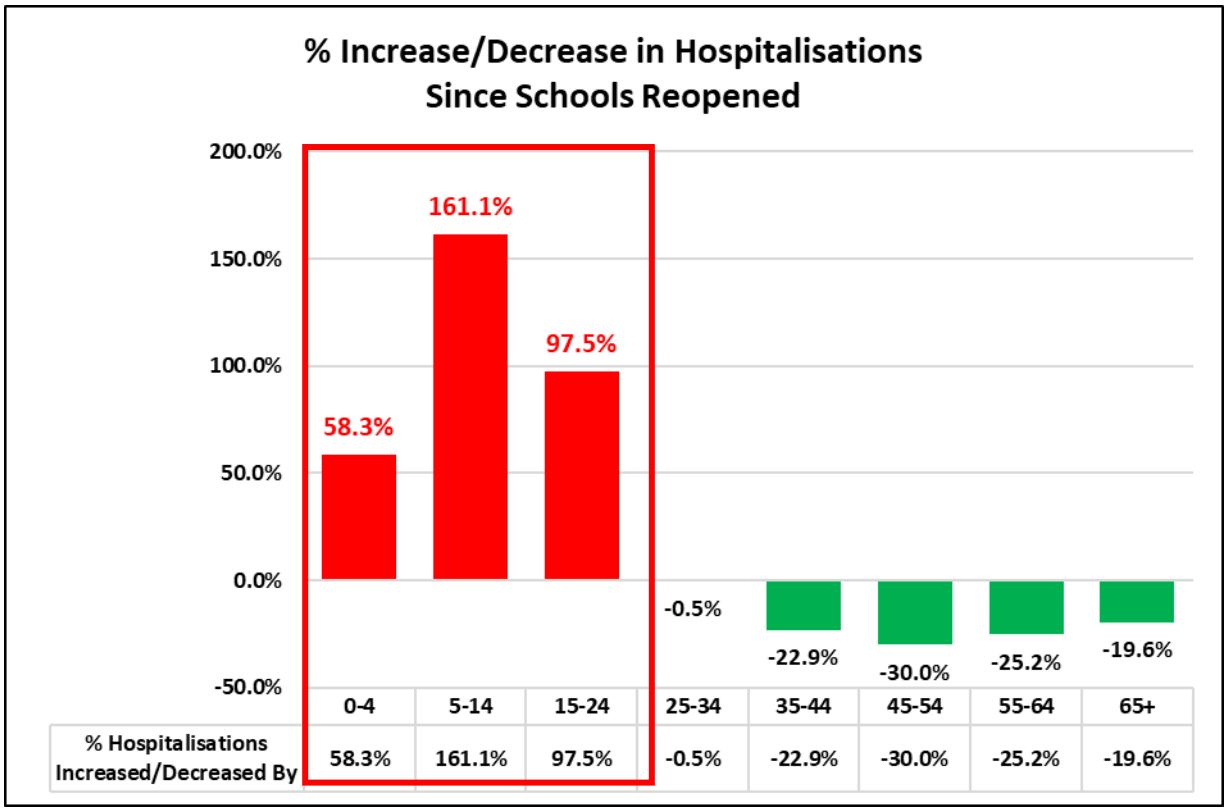
A critical element of this study was to cross examine and compare the number of hospitalisations and cases within young people and children, before and after schools reopened – and against all other age groups who had contracted COVID-19 in Ireland.

As the primary focus of this study was on school going children and the prevalence of COVID-19 before and after schools reopened, the 5-14 year old group were observed and evaluated against all other age groups. Please bear in mind, that the following figures are not representative of all school going children due to restrictions on datasets [i.e., there is no available data for 15-18 years olds].

Children and young people up to the age of 24 years of age, experienced more hospitalisations [66.6%] after schools opened than when they were closed, whereas adults over the age of 25, experienced *less* hospitalisations after schools opened than when they closed [44.1%].

The data from the COVID-Hub [26] clearly shows that the 5-14 year old age group experienced the *highest increase* of hospitalisations (+161%), out of all other age groups after schools reopened – this was followed by the 15-24 year olds [+97%] and 0-4 year olds [+59%]; whereas hospitalisations *after* schools reopened for all adults aged over 25, *decreased* on average by 21%.

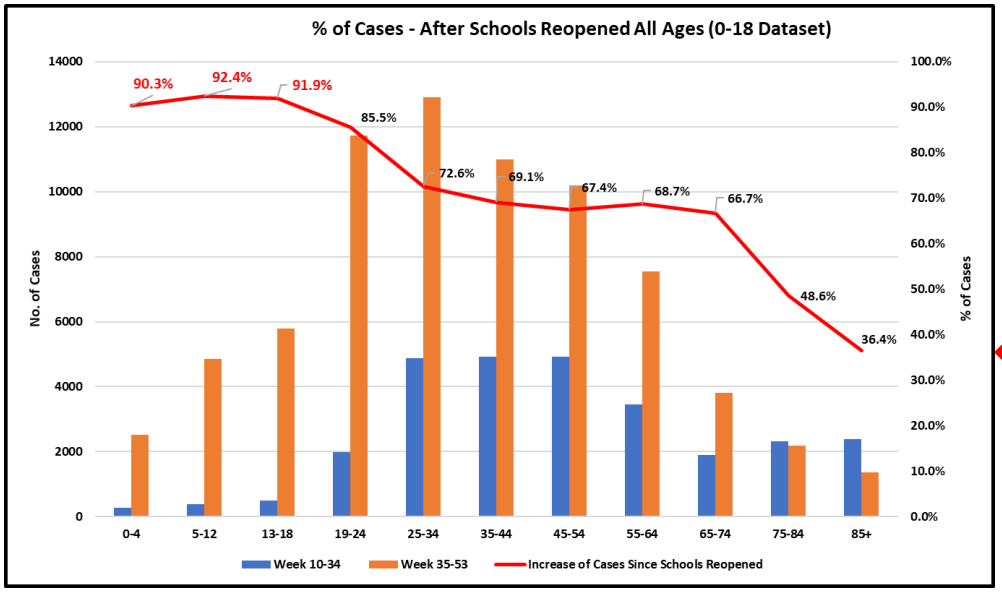




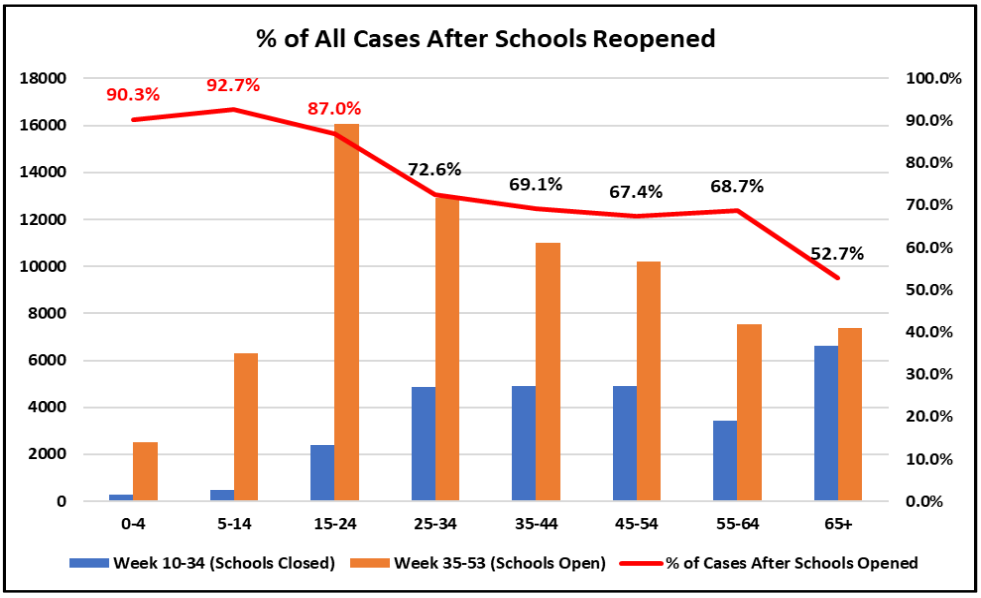
Points of Interest: Children experienced more cases and hospitalisations within a much shorter time frame (4 months, as opposed to six months when schools were closed).

Point of Interest: Young people aged 0-24 (inclusive of school going children, teenagers and babies) represented approximately 6% of all hospitalisations last year. More than 2% [2.2%] of babies and children between birth and four years old, who contracted COVID-19 were hospitalised.

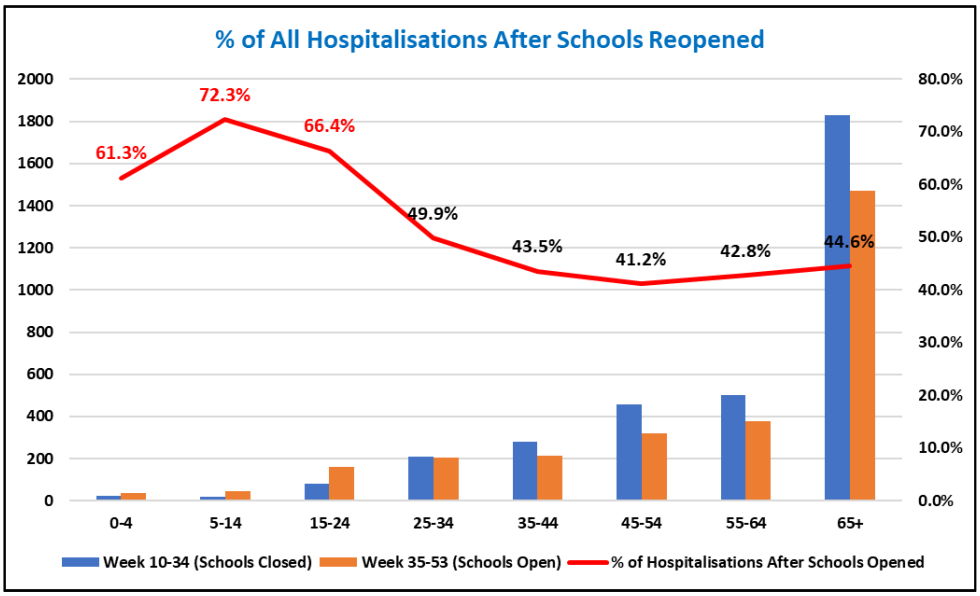
Point of Interest: Astonishingly, all adults over the age of 25 years old, experienced less hospitalisations after schools reopened, than when they were opened. The age group who experienced the highest increase of hospitalisations since schools reopened were school age children 5-14 years of age.



Dataset:
Age 0-18
5-12 & 13-18
Highest Increase in Cases Since Schools Reopened



Dataset:
Age 0-24
5-14 and 0-4
Highest Increase in Cases Since Schools Reopened



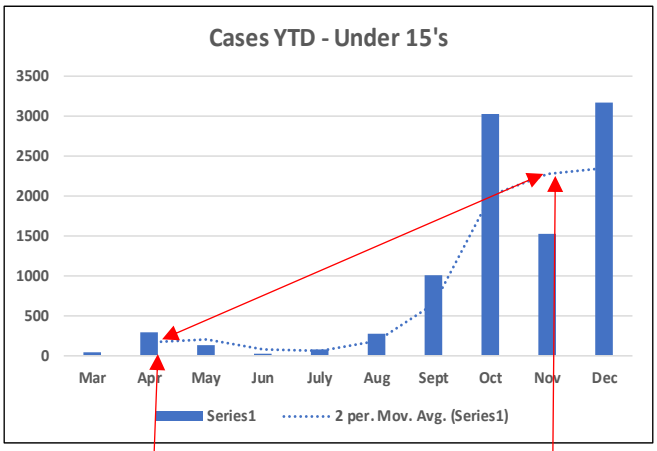
Dataset:
Age 0-24
5-14

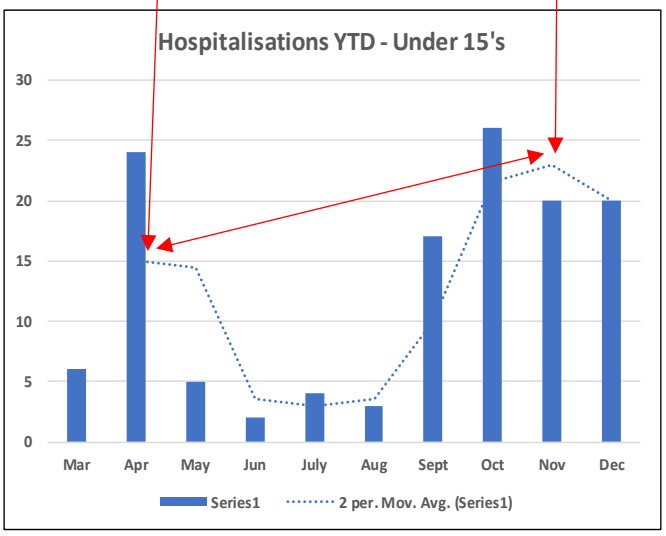
Highest Increase in Hospitalisations Since Schools Reopened

Figure 3

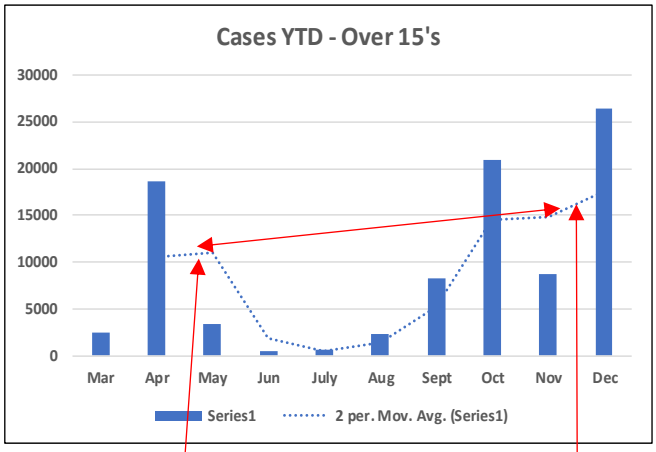
Hospitalisations are one of the main indicators used in public health to determine 1) how the population are coping with the virus and 2) how many who test positive with the virus become unwell and 3) when testing is retricted how many in the population become sick with the virus.

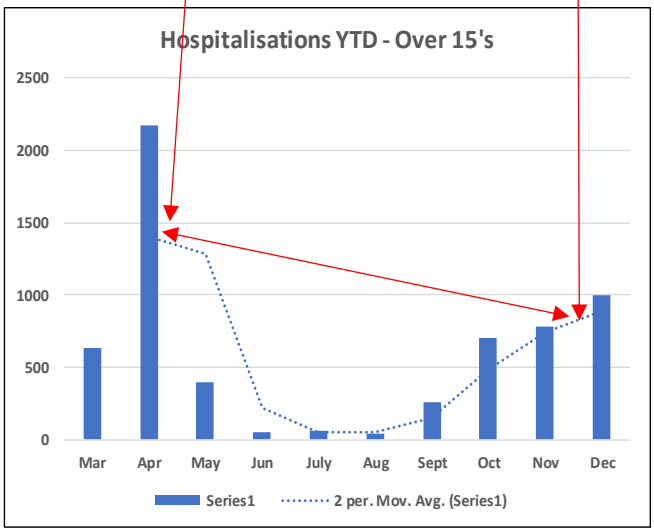
Under 15's





Over 15's





It can clearly be seen that a number of children were hospitalised in the first wave, however cases appear low and this is more than likely because not as many were tested at the time, due to targeted testing criterias in place. When children are not tested, it may appear that a larger number of those who contract COVID-19 are hospitalised. **This is why testing is important**. However, the data shows that more school age children were hospitalised after schools reopened, than when they were closed, unlike all people over age 25, who experienced less hospitalisations when schools were open. This indicated that not only did children in the school age group test positive for COVID-19; much more became sicker after than before schools had reopened.

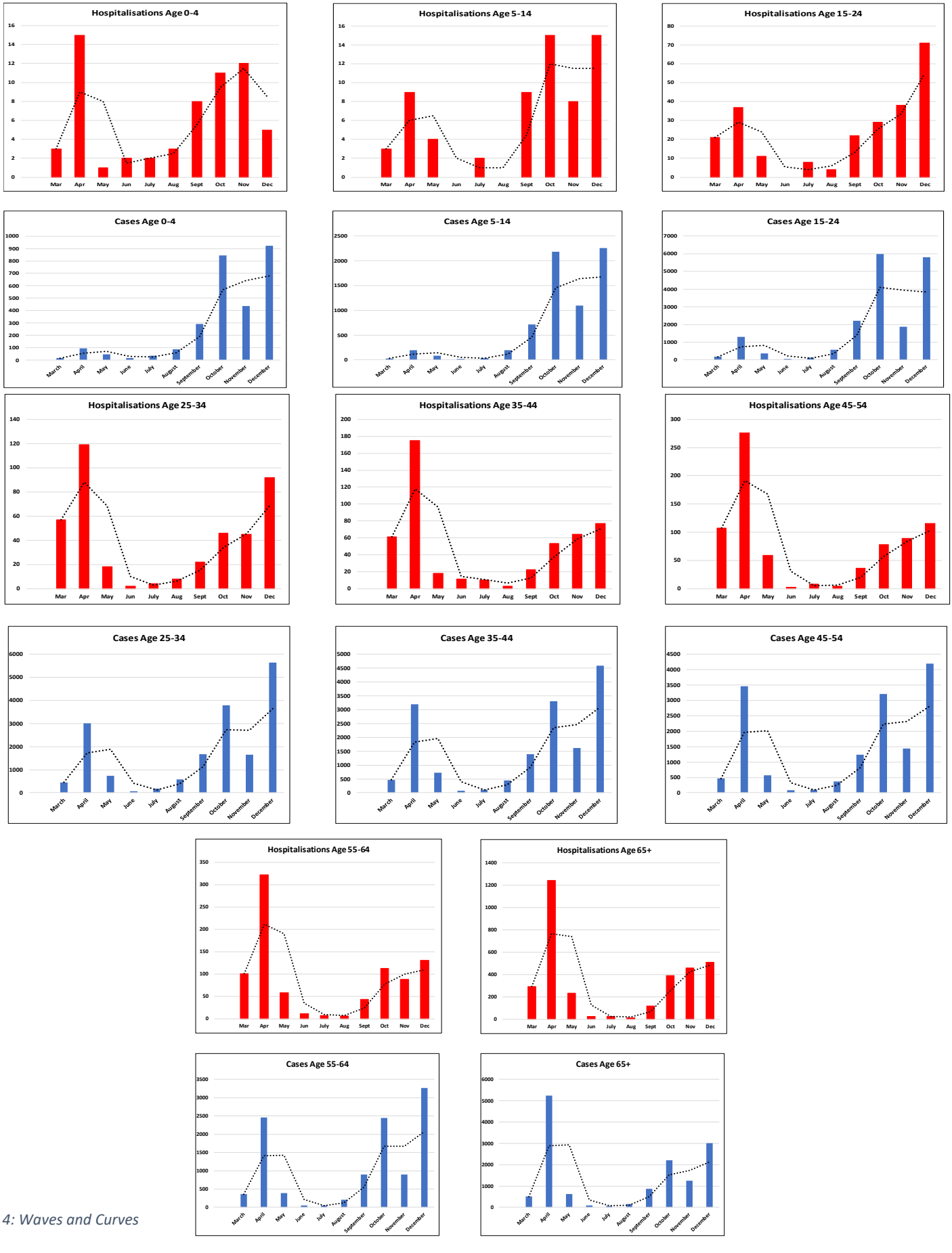
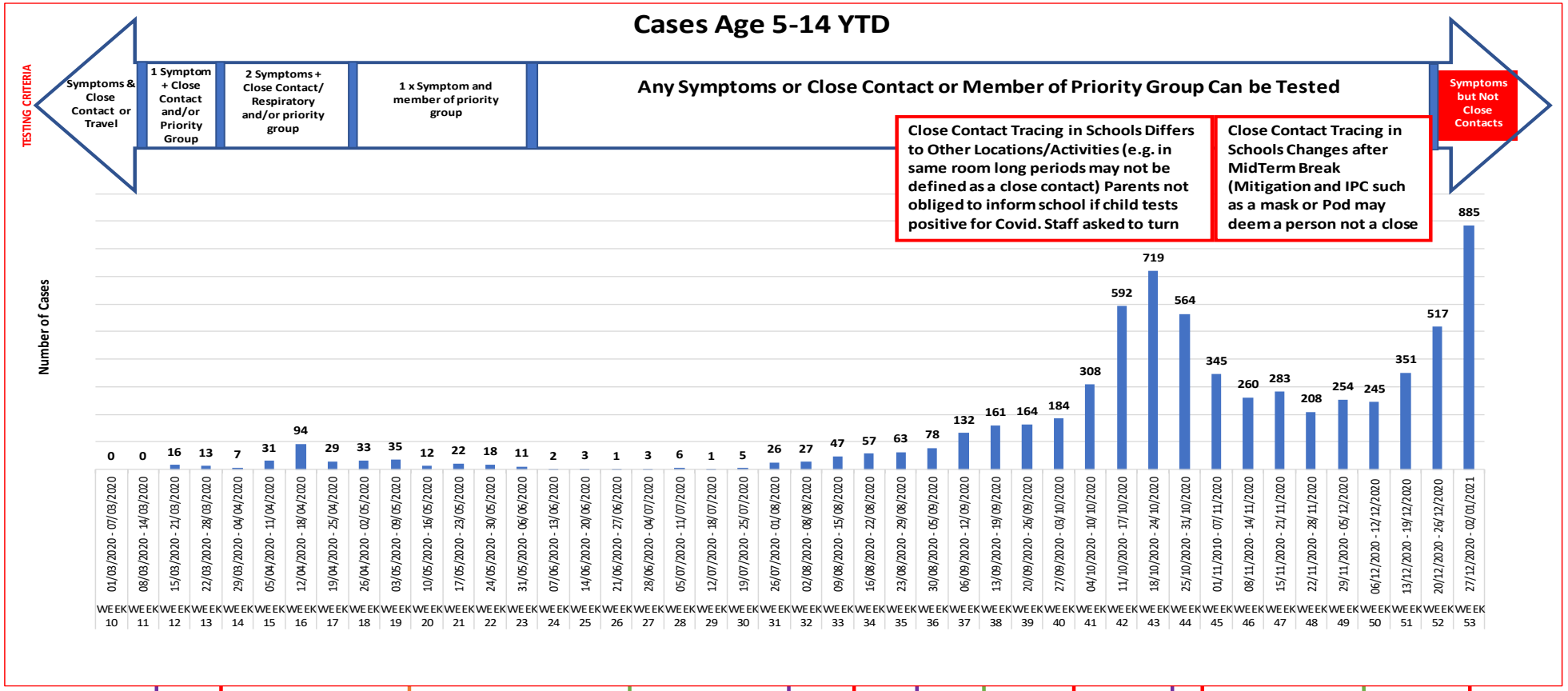


Figure 4: Waves and Curves



Schools, Creches, 3rd Level Close.

Tourist Attractions. Int. Matches, Parade Cancelled. Most non

1st Lockdown Begins
Closed/Restrictions
- Schools/Creches/3rd Level
- All non-essential businesses inc. retail, hospitality, hair, beauty
- Museums, tourist attractions
- 2 KM/5km travel restrictions
- Sports/Youth Clubs
- No Gatherings
- Restrictions on numbers attending personal events
- Stay at Home Order

1st Lockdown Restrictions Eased
Reopen:
- Sports Clubs
- Some non-essential businesses

Closed:
- Schools
- Pubs (without food)

5km restriction still in place

1st Lockdown Restrictions Eased Further
Reopen:
- Creches
- Sports/Youth Clubs
- Nonessential businesses

Closed:
- Schools

Creches Reopen
Schools Closed
Universities Closed

Regional Restrictions Kildare, Laois,

Schools Reopen

Regional Restrictions Lifted: Kildare, Laois, Offaly

Regional Restrictions Dublin Donegal

Schools Midterm Break

2nd Lockdown Begins
- Most non-essential businesses close
- 5Km travel restrictions
- Schools, Creches remain open

2nd Lockdown Restrictions Eased
Reopen:
- Nonessential businesses

3rd Lockdown Begins
- Most non-essential businesses close
- 5Km travel restrictions
- Schools, Preeschool closed until the 11th January

Graph 1:

Cases Age 5-14 Timeline of Events

3) Investigating the Period Between Lockdown and Schools Reopening

As part of this study, it was also important to try to understand what happened during the time between when the first lockdown was lifted (Week 28) and the time just before schools reopened (Week 35). Graph 5 (above) shows the number of cases in the 5-14 age group for the year, and highlights some of the various measures, mitigations and interventions which took place in Ireland since the beginning of the pandemic. As can be seen (blue arrow at the top of the graph) early on in the pandemic when community transmission was high, testing criteria for COVID-19 was limited to people with specific symptoms, and/or close contacts and/or vulnerable groups up until the end of May. After this any person, of any age, **including children** could be referred for testing for COVID-19 if they had symptoms of COVID-19 or if they were a close contact. This meant that testing for children was not restricted from May onwards. Cases (in all ages) continued to decrease/remain low until the period of time when restrictions were lifted (Week 28). When restrictions were lifted close contact sports were allowed, a number of sports and youth clubs and summer camps also reopened. As revealed in the table above, when restrictions lifted in late June/early July, there were still cases across all age groups, however the 5-14 age group only incurred 2.5% of all their cases during this time, much like the 15-24 [2.7%] but lower than adults aged 25-34 [3.3%]. Worryingly, the 0-4 age group incurred the highest number of cases between the time when restrictions were lifted and schools reopening [3.4% of cases] – it is important to remember that childcare facilities had opened up at this time also. After schools reopened, the 5-14 age group incurred the highest increase in cases [1,165%], followed closely by the 0-4's [828%] and the 15-24 year olds [570%].

Remarkably, this same pattern is visible in relation to hospitalisations in the 5-14 age group and 0-4 age groups. When restrictions were lifted, out of all young people, the 5-14 year old group incurred the lowest number of hospitalisations in that time [1.5%] whereas the 15-24 year olds incurred 3.7% of all hospitalisations during this time and 3.2% of 0-4 year olds were hospitalised during this time. **After schools reopened the only age groups which incurred the highest number of hospitalisations, from when restrictions were lifted and compared to when schools were closed, were the 0-4 year olds [58.1%], 5-14 year olds [70.8%]and 15- 24 year olds [62.7%]** - bearing in mind that approximately 46% of this age group are children aged 13-18. Since the lifting of restrictions the only age group which experienced the **highest increase of cases and hospitalisations were the school going ages, 5-14 year old**s. After Week 35, when schools reopened, it was clear that the number of cases in all age groups, but especially so, the 5-14 year old age group grew. In the space of six weeks (reopening up to midterm break) 2,401 school going age children had contracted COVID-19, compared to 499 in the entire six months prior to schools reopening.

Please read before moving on to the next section

The next section is in relation to the HPSC School and Childcare Facilities Mass Testing Reports [30] relating to tests and cases of students and staff in schools and children. However, the conclusions must be viewed while taking into consideration the following (updated) findings:

- These Reports were only published four months after schools reopened. The first report, on the 15th of November [Week 47] did not include detailed information regarding previous weeks, which was important for this investigation. Access to some of this information was later located, during a webinar hosted by the Department of Education; and presented by a Public Health Consultant for the Department of Health.
    - A graph outlining all of the tests and cases per week were shown in the webinar.
    - The figures in this graph did not align with the figures in the weekly reports.
    - Figures within the weekly reports themselves did not align with one another.
    - Cumulative totals and weekly totals did not align for any week in any area
- The 'Index Case' (the first person who was in the school in infectious period) was not included in the total cases in schools – thus the cases shown in the tables below ONLY refer to close contacts. Clarity in relation to this was provided in the Week 3 report.
- It is now known that the "Number of Facilities" in the reports, appears to be the "Number of people who initially had tested positive. Many people and members of the public believed 'facilities' referred to the number of schools called upon for 'mass testing'. Unlike targeted testing, many people were/are of the understanding that mass testing is pre-planned testing of a certain population in a certain location/activity based role over or within a defined period of time (e.g., calling on schools randomly for testing, with or without notification of a positive case). It appears the HPSC school reports are in fact tests/cases of JUST close contacts of a person who tested positive while in a school during their infectious period.
- Since this issue was raised on social media by one of the Researchers, the latest Week 3 School Report does not anymore include the table reporting the number of facilities with detected cases. A new statement was also added: "*The data presented in this report are the results of the close contact testing undertaken in educational and childcare facilities following notification to Departments of Public Health of a confirmed case of COVID-19 who had attended a facility during the infectious time period."* This infers that tests/cases results are close contacts.
- Unless specified, there will be an Asterix (*) beside data/statements made in this section where concerns arise. The full details of the following are at the end of this document in Appendix 1.

Testing in Schools & Childcare Facilities

PLEASE READ PAGE 54 WHILE CONSIDERING THE DATA IN THIS SECTION

1) Testing - in Schools: Week 35-53

The HPSC Mass Testing School and Childcare Facilities Report [27] stated that a total of 34,654* students or staff in schools were tested for COVID-19 since schools reopened in August 2020.

According to HPSC data, 942* students or staff in schools tested positive for COVID-19. It was unclear if any cases (N=1,234*) associated with outbreaks or clusters in schools (as stated in the HPSC Outbreaks Reports) were included in the HPSC School reports or not. It was also initially unclear if the figures for the Index case (first person known to have a reported positive case in a school) was included in these reports.

School Population

At least 1,031,789* attend or work in schools on a daily basis in Ireland [84] [85]. Less than 3.4% [N: 33,643*] of those who use or work in schools were tested for COVID-19 since they reopened.

There are at least 8,405* schools and childcare facilities* altogether in Ireland; however, this does not include private or non-Government funded facilities [84]. It appeared that 1,527* schools' facilities* were tested for COVID-19, indicating that only 18% of all schools or childcare facilities in Ireland were visited for testing. Notwithstanding this, HPSC report there were 445* detected cases in schools and childcare facilities. This indicated that at least 29.1%* or ***one in three*** facilities tested were found to have had at least one person with a positive case of COVID-19 on site. [Note: The Table which included the number of facilities with detected cases has since been excluded from the new reports, from Week 3 onwards. It is unclear what these figures now relate to].

Table References: (1) Childcare Facilities only include ECCE (2) Primary Schools only include those funded by DSE; mainstream classes/fulltime staff (3) Secondary (Post-Primary) Schools only include those funded by DES (4) Special Education Schools are those funded by DES; and all 'other' staff as reported by DES are included in this group (5) For the Week 47-53 Age Analysis, PLC course are deducted (a) Every week the total amount of Tests Completed, Tests Positive and Tests Negative does not add up. HPSC state this is due to pending/invalid results (b) These only include staff (fulltime) and students funded by the DES (c) These only include schools and childcare [ECCE] funded by the DES (d) HPSC reports do not calculate correctly - please see Observations 1 Tab (e) HPSC do not give details per facility regarding positive tests (f) Ordinarily only children aged between 0-18 use childcare/schools, although some may be +/- (g) Childcare includes 0-12 (afterschool); Primary Age 5-12 +/-; Second Level 13-18 +/-; Special Education 5-18 +/- *Special Education Schools has residential institutions included (all 'other' DES staff included in this figure)

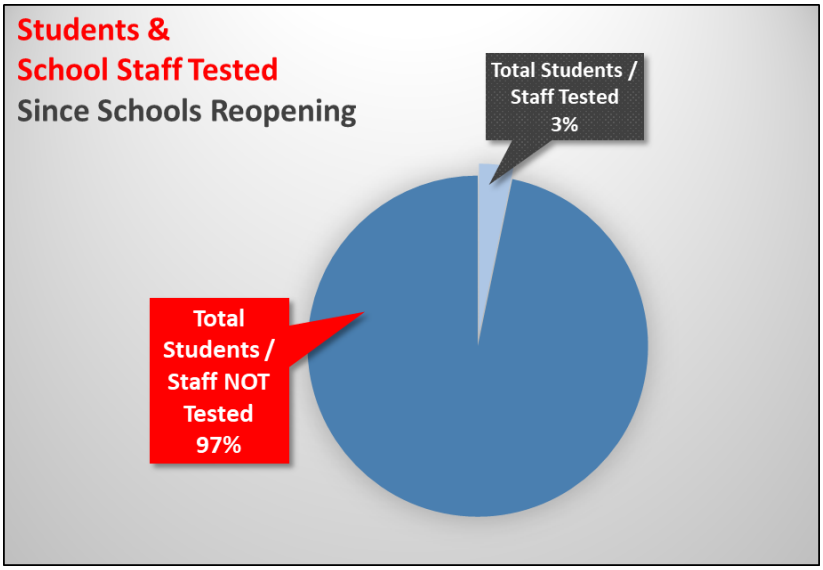
PLEASE READ PAGE 54 WHILE CONSIDERING THE DATA IN THIS SECTION

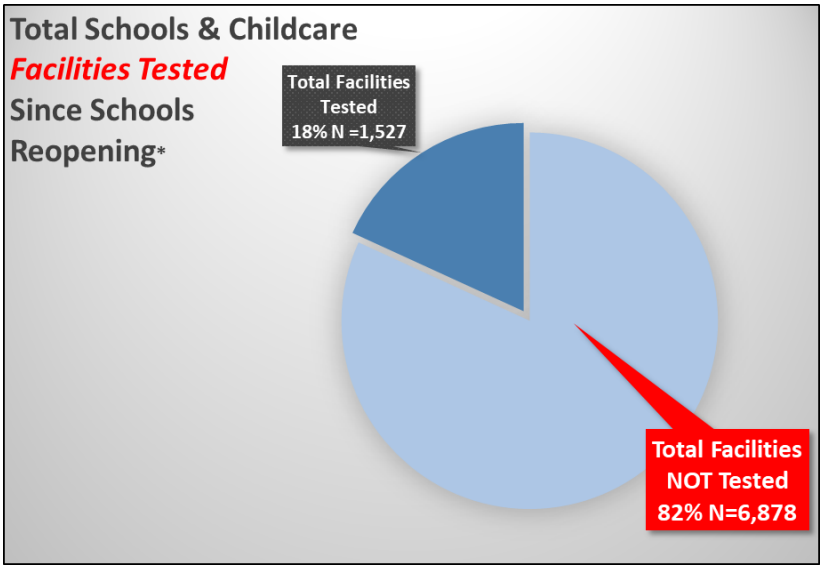
Mass Testing in Schools & Childcare Facilities Ireland

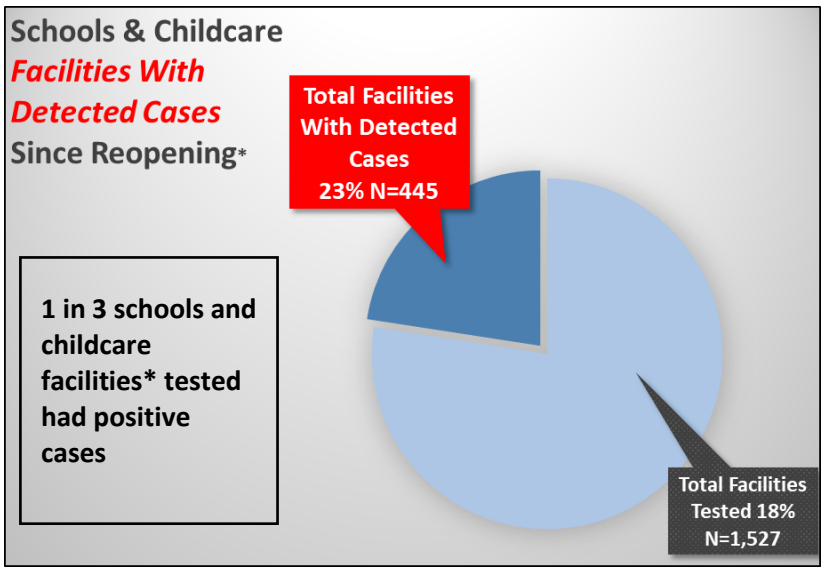
Week 32-53 (2020)	Childcare Facilities (1)	Primary School (2)	Secondary School (3)	Special Education Schools (4)	Schools Total	Total Schools & Childcare
Tests & Cases						
Total Tested in Schools and Childcare Facilities	8,774	24,094	9,226	1,334	34,654	43,428
Total Detected (Positive Tests) [Week 35 - 53]	404	720	174	48	942	1,346
Total Not Detected 'Negative' Cases [Week 35-53]	8,351	23,326	9,034	1,283	33,643	41,994
Pending/Invalid Tests (a)	*19*	*48*	*18*	*3*	*69*	*88*
Overall Positivity Rate (Wk 35 - 53)	*4.6%*	*3.0%*	*1.9%*	*3.6%*	*2.8%*	*3.1%*
Population Working or Attending Schools/Childcare						
Total [Est.] No. People Who Attend or Work in Educational Settings (b)	142,000	582,335	427,735	23,220	1,033,290	1,175,290
% of People Tested Who Work/Attend Schools or Childcare Facilities	*6.2%*	*4.1%*	*2.2%*	*5.7%*	*3.4%*	*3.7%*
No. of School/Childcare Facilities in Ireland (c)						
Total [Est.] No. of Schools/Childcare Facilities in Ireland	4,300	3,242	723	140	4,105	8,405
No. of Facilities Tested (d)	390	724	364	49	1,137	1,527
% of Schools & Childcare Facilities Tested	*9.1%*	*22.3%*	*50.3%*	*35.0%*	*27.7%*	*18.2%*
No. of Facilities With Detected Case (e)	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	445
% Positivity Rate per No. of Facilities	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*29.1%*
WEEK 35 - 53 [September to Christmas]						
Total Under 18 Years of Age Tested Positive for Covid in IRELAND	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	13,143
Total Positive Tests (Cases) Under 18 in Schools/Childcare	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	1,135
% of Children Who Contracted Covid-19 Assoc. with Schools/Childcare	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*8.6%*

Table 2: Tests and Cases Schools and Childcare Facilities Week 35-53

PLEASE READ PAGE 54 WHILE CONSIDERING THE DATA IN THIS SECTION







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2) Testing in Schools: Weeks 47-53

HPSC only began publishing their Mass Testing in Schools and Childcare Facilities Weekly Reports in Week 47 (15th November); for this reason, a great deal of specific data regarding testing, ages of positive cases per facility etc., is not available prior to this tui. For this reason, this next part of the report will focus on what is available from Week 47 – Week 53 (15th November – 02nd January 2021)

Children (Under 18) in Schools and Childcare Facilities

At least 1,020,983* children and students attend schools or childcare facilities every day.

HPSC report 17,378* children or students under age 18 were tested in schools or childcare facilities between Weeks 47-53. This indicates that **only 1.5%** of children who attend schools or childcare facilities were tested through public health referrals between Weeks 47-53. *

In Ireland, during this same time, 5,615 children under 18 in Ireland contracted COVID-19.

At least 571 [10.2%] * of these children who contracted COVID-19, were associated with a school or childcare facility. This indicates that of those who contracted COVID-19 under the age of 18, that ***1 in 10*** children's cases were associated with a school or childcare facility.

Of these, and during this time, 1,121* children in Ireland aged 5-12 contracted COVID-19. Of these, at least, 16.7% [N=363] * of children who tested positive for COVID-19 were associated with primary schools.[4]

Adults (Over 18) in Schools and Childcare Facilities

Approximately 105,985* adults over 18 work in or attend school/childcare facilities every day.
It was reported that 2,563* of adults were tested in a school/childcare facility for COVID-18 between Weeks 47-53. It appears that only 2.2% of adults who work in a school or childcare facility, were tested for COVID-19 in their workplace. A total of 28,557* adults over 18 in Ireland contracted COVID-19 between Weeks 47 and 53. At least 98 adults over 18 who work in or attend school/childcare facilities contracted COVID-19 between Weeks 47-53.

At least 0.3% adults over 18 who contracted COVID-19 worked in or attended a school of childcare facility between Weeks 47-53.

[4] Children <18 in primary schools are ordinarily aged between 5-12 years old +/-. Please see Appendix 2

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Mass Testing in Schools and Childcare Week 47-53 [November to December 2020]

Comparative Analysis: Children/Population	Childcare Facilities (1)	Primary School (2)	Secondary School (5)	Special Education Schools (4)	Schools Total	Total Schools & Childcare
	0-12	5-12	13-18	5-18	5-18	TOTAL
Children & Students						
Est. No. of Children/Students Attend Schools or Childcare Facilities (b)	105,978	559,365	347,289	8,351	915,005	1,020,983
No. of Children/Students Tested in Schools/Childcare	3,482	10,703	2,986	207	13,896	17,378
Est. % of Children Who Attend Schools/Childcare Tested in Schools/Childcare	*3.3%*	*1.9%*	*0.9%*	*2.5%*	*1.52%*	*1.7%*
No. of Cases per Children's Age Group in Ireland (Wk 47 - 53)	3,295	2,174	2,320	4,494	4,494	5,615
No. of Cases Under 18 Associated with Schools/Childcare (Wk 47-53) (f) (g)	153	363	45	10	418	571
Est. % of Children (<18) Who Contracted Covid Associated with School/Childcare	*0.0%*	*16.7%*	*1.9%*	*0.2%*	*9.3%*	*10.2%*
						1 in 10
Comparative Analysis: Adults/Population						
Educational Staff/Adults						
Est. Adults/Staff Work or Attend Schools or Childcare Facilities (Wk 47-53)	36,022	22,970	32,124	14,869	69,963	105,985
Adults/Staff Tested in Schools or Childcare Facilities (Wk 47-53)	669	1,135	538	221	1,894	2,563
% of Adults Staff Tested Overall	*1.9%*	*4.9%*	*1.7%*	*1.5%*	*2.71%*	*2.4%*
Cases						
No. of Adults in Total in Ireland who Contracted Covid-19 (Wk 47-53)	28,557	28,557	28,557	28,557	28,557	28,557
No. of Adults (>18) Contracted Covid-19 (Wk 47-53) in School/Childcare	44	31	17	6	54	98
No. of Adults (>18) Contracted Covid-19 (Wk 47-53)	*0.2%*	*0.1%*	*0.1%*	*0.0%*	*0.19%*	*0.3%*

Table 3: Tests and Cases in Schools and Childcare Facilities Week 47-53

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3) "If You Don't Test, You Don't Have Cases."

It is estimated that at least 1 million people [N=1,033,290*] attend or work in primary, post-primary and special education schools every day in Ireland[5]. Over the year, it was estimated by the CEO of the HSE, Mr Paul Reid, that 3,000,000 million[204] tests have taken place, equating to just 1.2% of tests in schools. Since schools reopened, it was reported that 34,654* children or adults who work in or attend schools in Ireland, were tested for COVID-19. This indicates that only *3.4%** of all students or staff were tested for COVID-19 through 'mass testing'* in schools in this time. It is important to compare detailed testing/cases per week in schools against the general population from when schools reopened however this is not possible because the HPSC only began publishing detailed school mass testing reports in November (Week 47). For this reason, the data from the HPSC School Reports dating from Week 47 to Week 53 (November – December) was instead utilised and applied, and as can be seen in the table below, within a six-week period, approximately 10.4% [N=389,177*] of people in the community/population were tested for COVID-19, compared to just 1.1% [N=11,556] * in the school community during the same time.

Testing & Cases per Population and Schools

Week 47 - Week 51 Sample Size

Population in Ireland^	**4,761,865**
Population Work/Attend Schools*	**1,033,290**
Population Exc. School Staff/Students	**3,728,575**
Total Tested Population (Wk 47-51)	**389,177**
% Tested per Population (Exc. Schools)	***10.4%***
School Students/Staff	**1,033,290**
Total Tested School Population (Wk 47-51)	**11,556**
% Tested Who Work/Attend Schools	***1.12%***
Difference in Testing	**-9.32%**

^ CSO 2016

**Minimum Figures (Only Includes Staff/Students Funded by DES)*

Table 4: Tests and Cases Population and School Population

[5] This only includes DES funded fulltime staff; students who attend DES funded schools (Data was limited)

PLEASE READ PAGE 54 WHILE CONSIDERING THE DATA IN THIS SECTION

The result of this short and simple assessment appeared to demonstrate that staff and students in schools were not being tested enough; and it appeared that in fact, targeted testing, as opposed to mass testing, was underway. To put this into context – there are over 430,000* people working in or studying in secondary schools, yet less than 2% [N =9,226] * were tested since schools reopened. In the community, there were almost 390,000* tests conducted over a five-week period; yet less than 12,000* tests were conducted in schools during the same time. To allow for a fair comparative, testing in schools should be on an equal par with the community; this would mean 20,000 tests per week in schools should be attempted (it is understood public health need investment to do this.)

4) Positivity Rates in Schools

NPHET and Government regularly quote "low positivity rates" in schools compared to that of the community. The detection or 'positivity' rate means the number of people who tested positive for COVID-19 out of all tests completed. [6] At first glance, Table 11 (below) does in fact support their position - the cumulative positivity rate every week in schools is lower than that of the community; and in fact, has remained the same for weeks on end.

Cumulative Positivity [Detection] Rates (YTD)

						Schools Closed	
	Week 47	**Week 48**	**Week 49**	**Week 50**	**Week 51**	Week 52	Week 53
Population (Week 13-53)							
Tests	1,870,430	1,941,872	2,017,421	2,098,511	2,187,171	2,202,952	2,437,779
Cases	73,943	75,720	77,936	79,968	83,690	90,681	112,775
Positivity Rate	**4.0%**	**3.9%**	**3.9%**	**3.8%**	**3.8%**	**4.1%**	**4.8%**
Population Excluding Schools						**Wk 52/53**	
Tests	1,849,300	1,918,526	1,991,742	2,070,908	2,156,672	2,168,298	
Cases	73,442	75,182	77,338	79,307	82,935	89,739	
Positivity Rate	**4.0%**	**3.9%**	**3.9%**	**3.8%**	**3.8%**	**4.1%**	
All Schools (Week 35-53)						**Wk 52/53**	
Tests	21,130	23,346	25,679	27,603	30,499	34,654	
Cases	501	538	598	661	755	942	
Positivity Rate	**2.4%**	**2.3%**	**2.3%**	**2.4%**	**2.5%**	**2.7%**	

Table 5: Cumulative Positivity Rates Community versus Schools

So how is this possible when community transmission has increased so rapidly everywhere else in Ireland? Had schools found a perfect mitigation plan which could be replicated elsewhere (such as restaurants, public houses etc.?) These questions lead to the next part of this report – investigating and comparing specific schools and age groups to one another; on a week-by-week basis.

[6] There are numerous ways to determine positivity rates; this is just one example.

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There is Nothing Positive about the Positivity Rates in Schools

The following Table reveals that, in fact, when school tests and case results are explored on a week-by-week basis that schools can often have *higher* positivity rates than in the community for that week; and when school types or age groups are explored individually, that their positivity rates can sometimes almost triple that in the general population.

In one instance, amongst secondary school adults, a *15%** positivity rate was reported.

Weekly Positivity Rates [Week 47-53]

Ireland - Weekly	Week 47	Week 48	Week 49	Week 50	Week 51	*Schools Closed* Week 52	*Schools Closed* Week 53
Tests Completed	79,091	76,376	75,549	81,090	88,627	106,347	143,786
Positive Tests	2,511	2,126	1,867	2,032	3,722	6,988	27,083
Positivity Rate - All Population	**3.4%**	**2.8%**	**2.5%**	**2.5%**	**4.2%**	**6.6%**	**18.8%**

All Schools Reported Weekly	Week 47	Week 48	Week 49	Week 50	Week 51	Wk 52/53
Tests Completed*	2384	2178	2368	1774	2852	4234
Positive Tests	31	38	60	62	94	187
Positivity Rate	**1.3%**	**1.7%**	**2.5%**	**3.5%**	**3.3%**	**4.4%**
Schools - Itemised						
Primary School - Overall	1.4%	1.8%	3.2%	3.6%	4.0%	4.6%
Under 18	1.5%	1.7%	3.4%	3.7%	4.0%	4.7%
Over 18	0.6%	2.3%	0.6%	3.1%	4.8%	3.8%
Secondary School - Overall	1.2%	1.6%	0.8%	3.4%	0.7%	3.3%
Under 18	1.0%	1.8%	1.0%	1.9%	0.3%	3.1%
Over 18	2.3%	0.0%	0.0%	15.0%	2.3%	3.8%
Special Education Schools - Overall	0.0%	0.0%	0.0%	1.6%	5.1%	5.7%
Under 18	0.0%	0.0%	0.0%	2.6%	7.4%	4.2%
Over 18	0.0%	0.0%	0.0%	0.0%	3.0%	7.7%
Childcare Facilities - Overall	1.4%	3.0%	3.4%	1.8%	7.1%	7.2%
Under 18	1.1%	3.4%	2.5%	1.2%	6.5%	7.0%
Over 18	2.5%	0.0%	6.7%	5.4%	10.9%	8.6%

Schools Closed Week 52 & 53

Cases - General Population (Exc. Schools)	Week 47	Week 48	Week 49	Week 50	Week 51	Wk 52/53
Population Tests (Exc. Schools)	76,707	74,198	73,181	79,316	85,775	102,113
Population Positive Cases (Excludes Schools)	2,480	2,088	1,807	1,970	3,628	6,801
Positivity Rate	**3.2%**	**2.8%**	**2.5%**	**2.5%**	**4.2%**	**6.7%**
Schools Positivity Rate	**1.3%**	**1.7%**	**2.5%**	**3.5%**	**3.3%**	**4.4%**

**Excludes cases associated with clusters/outbreaks and excludes the Index Case*

PLEASE READ PAGE 54 WHILE CONSIDERING THE DATA IN THIS SECTION

It could be argued that the overall positivity rate of all schools matters most, however, public health officials often cited concerns regarding specific age groups (e.g., older people etc.), locations (e.g., meat factories, public houses etc.) or activities (e.g., close contact sports etc.) which showed higher positivity rates than the general population.

Take for instance, special education schools.

In Week 51 the overall positivity rate in the community was 2.5%*; whereas in children in special education schools that same week the positivity rate reached 7.2%*.

When the lower detection rates in adults in special education schools for that week [3.0%] were included, the overall total automatically decreased, and the balance accrued to 5.2% (still double that in the community at 2.5%*).

This is exactly what happens when the cumulative totals of tests/positive cases completed to date are presented – which is why it appeared that positivity rates in schools were always lower than the community.

Should it not be the case (much like in the general population) that the number of positive cases per location/age group should be considered on a weekly basis?

It appeared that the Index Case[7] was not included in the figures[8], however one hypothesis was that the number of facilities tested, were possibly the figures for the first person with COVID-19 in the school which triggered the mass testing. [This has since been validated]

Furthermore, in a separate HPSC Weekly Clusters and Outbreaks Report [28] 1,234 cases are reported by the HPSC as being associated with schools and a further 1,006 cases associated with childcare, however but there are no indicators whether these are students, staff or non-school related persons.

[7] Index Case is the first known person in a location with a positive case
[8] It is unclear if the cases associated with clusters/outbreak in schools are included in the Schools report

Targeted, Bulk or Mass Testing?

There has been much debate about the definition of mass testing versus 'targeted/bulk testing'.

HSE began COVID-19 testing in schools as soon as they reopened in late August.

They have since referred to it as 'mass testing'.

Mass testing is, generally understood by people to be planned regular testing of a large cohort of people who are: living, attending, or working in a particular setting/area; involved in a particular high-risk activity; part of a particular vulnerable group (medically, socially or by profession).

Targeting or bulk testing, however, is normally understood to be only testing a number of people under a set of specific conditions or circumstances (e.g., testing someone if they are symptomatic, if they are a close contact and *not* testing them if they are not).

While the HSE state in their reports that they are 'mass testing' in schools, testing is carried out under a specific set of circumstances, such as a student or staff member testing positive and who were on the school premises during their infectious period of 24-48 hours. This is targeted testing.

It is important that correct definitions are used, as otherwise this could cause confusion within the general public, school staff, students and parents or guardians, and they may think they should all be tested regularly.

Outbreaks & Clusters

1) Outbreaks and Clusters in Educational Facilities

Since Week 35, the HPSC have published a weekly Epidemiology of Clusters and Outbreaks Report [27]. These reports once included the total number of clusters and outbreaks from the beginning of the Pandemic [Week 10], however more recently the weekly figures for clusters and outbreaks per location or activity or group are totalled from Week 32 onwards.

Reporting formats have changed as time has gone by and new locations/activities have been included as new clusters and outbreaks have occurred.

The HPSC reports share insights into certain locations/activities or groups, and this includes the weekly/total number of outbreaks [Week 32-53]; the range of cases associated with a single outbreak/cluster; the number of cases associated with clusters/outbreaks and hospitalisations, ICU admissions or deaths associated with clusters and outbreaks.

Household transmissions (clusters/outbreaks) continue to remain the highest source of clusters/outbreaks (N=6,532, 77%) however detailed information is not provided in relation to these.

In Ireland, educational facilities (schools, childcare and 3rd level institutions) rated the highest for clusters & outbreaks across all other settings, locations, and activities.[9]

At least 492 clusters and outbreaks were associated with educational facilities; of which 295 (60%) were in schools and 107 (22%) were in childcare facilities.

Educational facilities also recorded the highest number of *cases* associated with clusters and outbreaks, across all other settings, activities, and groups.

Last year, there were 2,769 positive COVID-19 cases associated with clusters and outbreaks in educational facilities, of which 1,234 (45%) cases were associated with schools and 529 (19%) connected to childcare facilities.

This indicates that 26.3% (over a quarter) of people who contracted COVID-19 in Ireland through a cluster or outbreak, was associated with an educational facility.

[9] Household transmissions are not included in this section as HPSC do not include these in the sector reports. Household transmissions has always rated the highest for clusters and outbreaks, across all settings.

Of these, 11.7% of cases were causally linked to clusters and outbreaks schools.

It was reported that between 2 and 190 people were affected by open clusters or outbreaks in educational facilities: again, the highest out of all other sectors.

In Ireland and since Week 32 (July) at least 259 people in Ireland were hospitalised due to a cluster or outbreak in all sectors/settings. At least 23 of these were associated with a cluster or outbreak in educational facilities. From this, it appears that almost 9% (8.9%) of all hospitalisations associated with clusters & outbreaks, were associated with an educational facility. There were less than 5 ICU admissions associated with a cluster or outbreak in an educational facility. It appears that no deaths have been reported as being associated with a cluster or outbreak in an educational facility.

It is important to note that in Week 50 and Week 51, the figures for schools, childcare and third level institutions (i.e., Educational Facilities) was not updated and instead reduplicated; thus, the actual number of clusters and outbreaks may be higher than reported.

Notwithstanding this, it is of notable interest that after outbreaks in households, Educational Facilities (Schools, Childcare & Third Level) made up 38% of all clusters and outbreaks - the highest number of clusters and outbreaks in Ireland (and over a shorter period of time).

Educational facilities (N=492) incurred much higher outbreaks than most other workplaces.

The workplaces section in the Report includes the construction industry, office and commercial work, meat factories and food/beverage manufacturing sectors, and 'other' workplaces which are not named. They have had 304 clusters since Week 32.

Educational facilities also have higher clusters and outbreaks than acute hospitals (141); nursing homes and community homes (145); residential institutions (97) and vulnerable population groups (122) since Week 32.

Furthermore, Educational Facilities also recorded the highest number of cases associated with clusters and outbreaks [26%, N=2,769] and, more worryingly, the greatest range of cases associated with an open cluster or outbreak [0-190]. Over the Christmas period, 172 clusters and outbreaks in Educational Facilities were reported as still being 'open'.

Notably, the total numbers of clusters and outbreaks for all locations/activities only include Weeks 32 – Weeks 53. With the exception of childcare facilities, schools and third level institutions only reopened in Week 35/36, indicating that they had more outbreaks than all other sectors – in a shorter space of time.

Considering that many of the other sectors are essential services and have been reporting clusters since the beginning of the pandemic (or at least from Week 27/32), would it not be expected that these sectors (who mainly comprise of adults) would have much higher clusters and outbreaks than Educational Facilities?

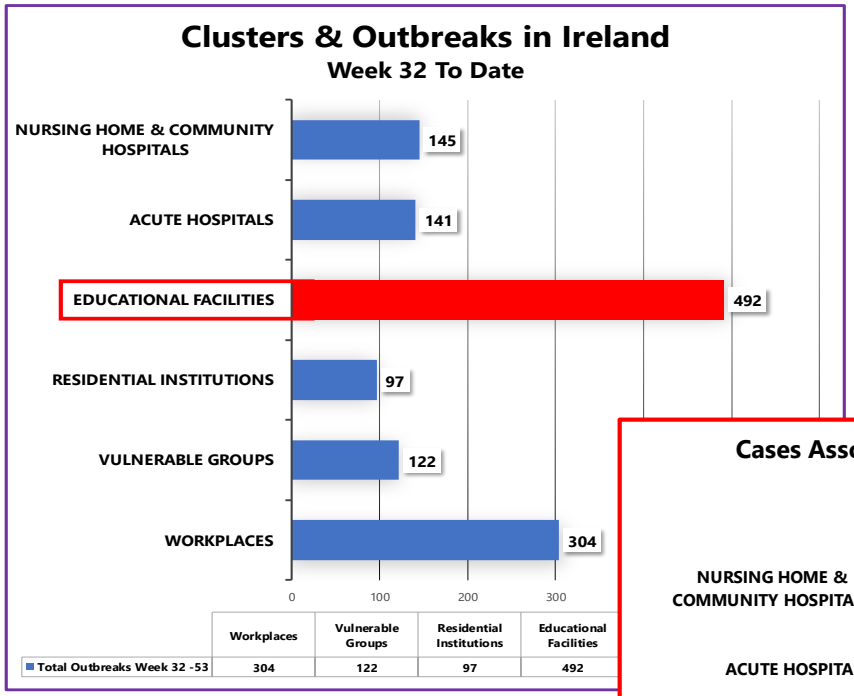
It would be reasonable to compare the Education Sector to other sectors with regards the number of people who use/attend/travel to them on a daily basis. Considering that the entire construction industry, meat factories, manufacturing industry, commercial industry; health and community care sector, there are most likely more than one million people working in or attending these locations on a daily basis – roughly the same as those who attend or work in Educational Facilities.

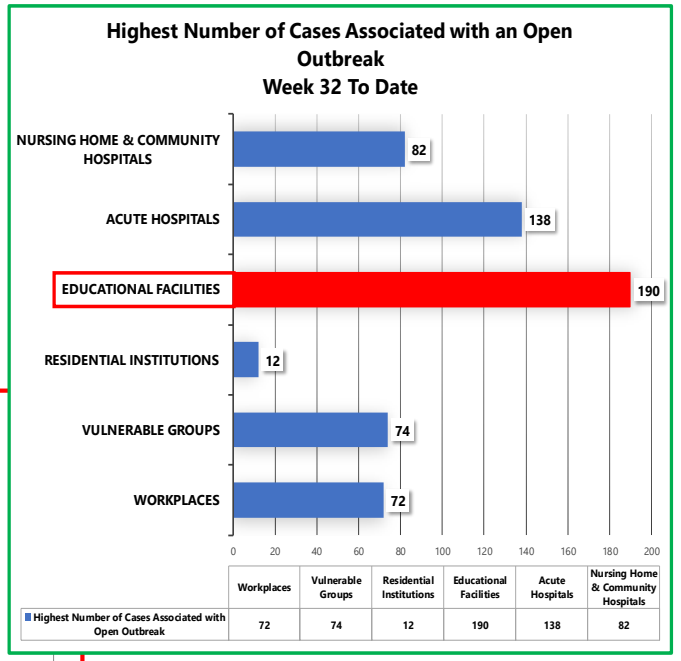
Three Important Factors for Clusters & Outbreaks

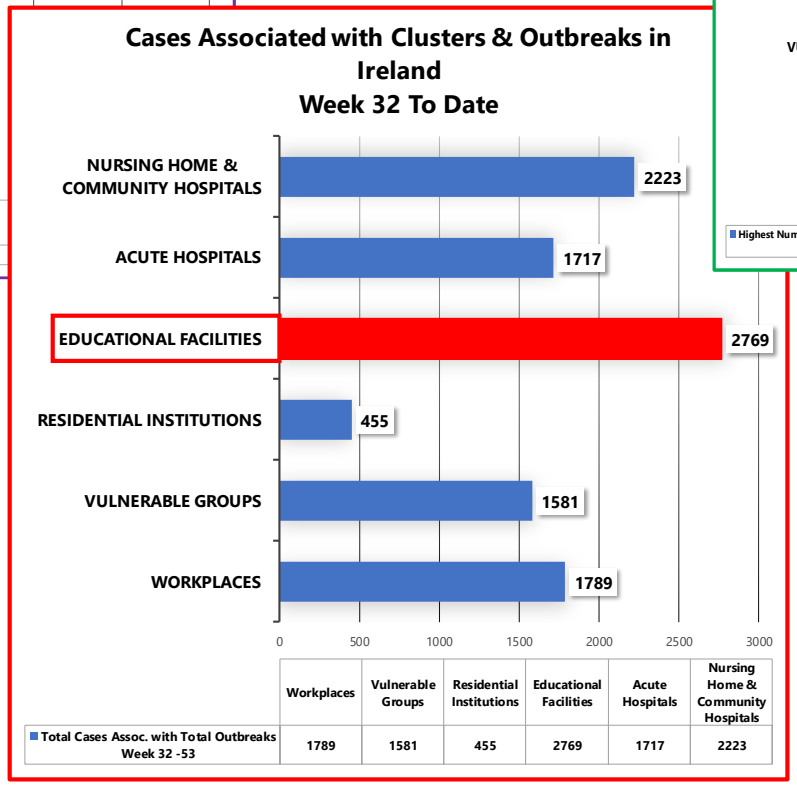
When comparing clusters and outbreaks across various settings or activities, the top three factors which must be considered are 1) the amount of outbreaks over a given period of time 2) the number of cases associated with the outbreaks in question and 3) the amount of people who contracted COVID-19 due to the outbreak.

As can be seen below, Educational Facilities had the highest numbers of outbreaks (N=492]; they had the highest number of positive cases of COVID-19 associated with clusters and outbreaks (N=2,769) and they also had the highest range of numbers in an open outbreak [N: 2 -190]

This is despite the fact that schools and 3rd Level Institutions did not reopen until Week 35/36 (four weeks later than others) and many of the other industries remained open during lockdowns as they were essential services Clusters & Outbreaks in Schools

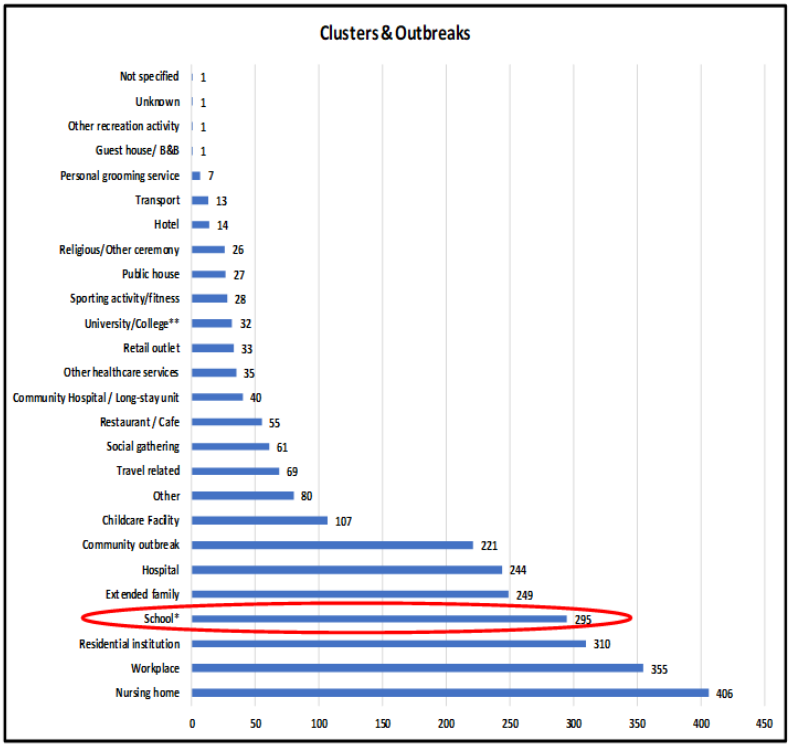

Clusters & Outbreaks in Ireland
Week 32 To Date
NURSING HOME & COMMUNITY HOSPITALS
145
ACUTE HOSPITALS
141
EDUCATIONAL FACILITIES
492
RESIDENTIAL INSTITUTIONS
97
VULNERABLE GROUPS
122
WORKPLACES
304
0
100
200
300
Workplaces
Vulnerable Groups
Residential Institutions
Educational Facilities
Total Outbreaks Week 32 -53
304
122
97
492

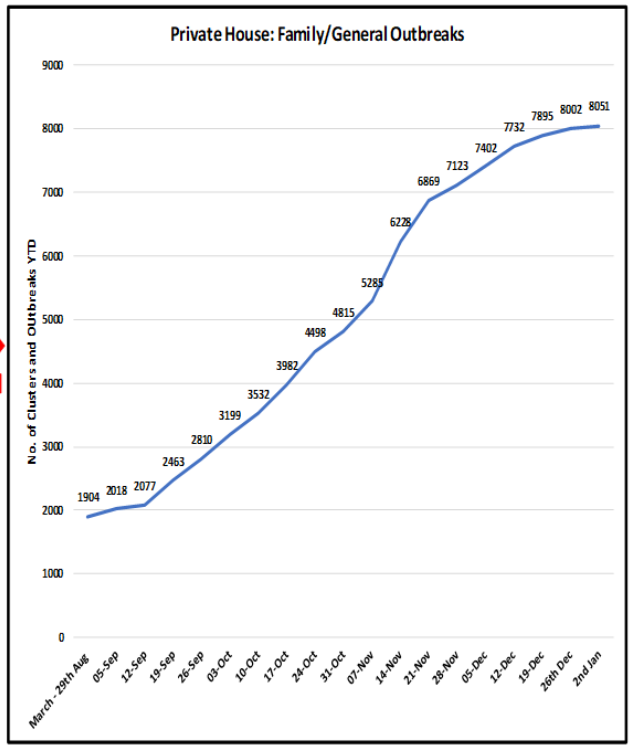

Highest Number of Cases Associated with an Open Outbreak
Week 32 To Date
NURSING HOME & COMMUNITY HOSPITALS
82
ACUTE HOSPITALS
138
EDUCATIONAL FACILITIES
190
RESIDENTIAL INSTITUTIONS
12
VULNERABLE GROUPS
74
WORKPLACES
72
0
20
40
60
80
100
120
140
160
180
200
Workplaces
Vulnerable Groups
Residential Institutions
Educational Facilities
Acute Hospitals
Nursing Home & Community Hospitals
Highest Number of Cases Associated with Open Outbreak
72
74
12
190
138
82


Cases Associated with Clusters & Outbreaks in Ireland
Week 32 To Date
NURSING HOME & COMMUNITY HOSPITALS
2223
ACUTE HOSPITALS
1717
EDUCATIONAL FACILITIES
2769
RESIDENTIAL INSTITUTIONS
455
VULNERABLE GROUPS
1581
WORKPLACES
1789
0
500
1000
1500
2000
2500
3000
Workplaces
Vulnerable Groups
Residential Institutions
Educational Facilities
Acute Hospitals
Nursing Home & Community Hospitals
Total Cases Assoc. with Total Outbreaks Week 32 -53
1789
1581
455
2769
1717
2223

Covid-19 Clusters & Outbreaks in Educational Facilities in Ireland

Week 32-53	Childcare & Preschool	Third Level	Schools (All)	Total
Total No. of Clusters/Outbreaks in Educational Facilities (Wk 32 - 53)	107	90	295	492
Cases Associated with Clusters & Outbreaks in Educational Facilities	529	1,006	1,234	2,769
Total Cases Associated with Clusters/Outbreaks (All Settings)	529	1,006	1,234	10,534
% of Cases from Outbreaks Associated with Educational Facilities	*5.0%*	*9.6%*	*11.71%*	*26.3%*
Max. Range of People Associated with Cluster/Outbreak	0-22	2-190	0-48	2-190
No. of People Hospitalised (All Settings) Assoc. with Cluster/Outbreaks	*N/A*	*N/A*	*N/A*	259
No. of People Hospitalised Associated with Cluster/Outbreak	3	12	8	23
% Hospitalised Associated with Oubtreak in Educational Facility				*8.9%*
Ranking in Number of Clusters/Outbreaks in Total	9	17	5	
ICU Admissions Associated with Outbreak in Educational Facility	*N/A*	*N/A*	<5	<5
Deaths Associated with Cluster or Outbreak in Educational Facility	*N/A*	*N/A*		0





2) Outbreaks in Schools

Outbreaks in schools have rated the highest on numerous occasions across all locations, activities, and groups - often reporting equal to, or more numbers of clusters and outbreaks than extremely high-risk settings or activities such as hospitals, nursing homes, residential institutions, defence, justice and emergency services, construction, manufacturing, and meat factories.

This is despite the fact that, in comparison, they have been opened the shortest time (16 weeks vs 20 - 43 weeks); they have been closed for midterm break and most other sectors (as mentioned above) were essential services; meaning they did not close during lockdown periods.

During the Christmas period (when schools were closed) schools continued to place in the top five settings for the most recorded number of clusters & outbreaks across all locations, groups, or activities.

Since schools have reopened, HPSC have reported that schools have at least 1,234 cases associated with clusters and outbreaks – rating higher in case numbers than sectors such as emergency, defence, justice services; residential institutions; prisons; community long-stay hospitals; construction industry; food/beverage factories; direct provision centres; third level institutions and childcare; meat/poultry factories; commercial and office-based services; manufacturing and many other workplaces in hospitality and retail.

It has been argued that over 1 million people use schools every day, however the same could be said in relation to all of the people that work in, attend or travel on a daily basis to the aforementioned industries. Taking this into consideration, would it not be considered fair to compare educational facilities with all other sectors?

Clusters & Outbreaks in Ireland Week 32-53 (2020)

Location, Activity or Group	Total Outbreaks	Total Cases	Total Hospitalised Cases	Total ICU Cases	Total Number of Deaths*	Open Outbreaks: Range in No. of Cases #
Meat / Poultry Production and Processing	35	636	9	<5	<5	3-72
Other Food / Beverage Production and Processing	21	182	<5	<5	<5	0-37
Construction Industry**	51	186	<5	<5	<5	0-11
Commercial	82	358	<5	<5	<5	0-10
Manufacturing	31	154	5	<5	<5	0-14
Office-Based	41	133	<5	<5	<5	0-22
Defence / Justice / EmergencyServices	19	71	<5	<5	<5	0-6
Other Workplace	24	69	<5	<5	<5	2-6
Total Workplaces	304	1789	14	<5	<5	0-72
Roma Community	9	149	9	<5	<5	3-74
Irish Travellers	80	1193	53	<5	<5	0-66
Direct Provision Centres	21	158	<5	<5	<5	2-29
Homeless	7	15	<5	<5	<5	2
People with Addictions	2	33	<5	<5	<5	N/A
Prisons	3	33	<5	<5	<5	9
Total Vulnerable Groups	122	1581	69	8	<5	0-74
Centre for Disabilities	62	304	11	<5	<5	0-11
Children's / TUSLA Residential Centre	11	25	<5	<5	<5	0-2
Mental Health Facility	10	77	<5	<5	<5	N/A
Other Residential Institution	9	33	<5	<5	<5	0-12
Not Specified Residential Institution	5	16	<5	<5	<5	N/A
Total Residential Units	97	455	21	<5	<5	0-12
Schools	295	1234	8	<5	0	0-48
Childcare	107	529	3	<5	0	0-22
3rd Level	90	1006	12	<5	0	2-190
Total Educational Settings	492	2769	23	<5	0	0-190
Acute Hospital	141	1717	N/A	35	135	0-138
Total Acute Hospital	141	1717	-	35	135	0-138
Nursing Home	135	2126	116	<5	160	0-82
Community / Long Stay Hospital	10	97	3	<5	3	1-54
Total Nursing Home & Community Long Stay Hospital	145	2223	119	<5	163	0-82
Total or Maximum No. (Week 32-53)*	1301	10534	259	43	298	2-190

**Some settings, locations, activities not on this table (see separate breakdown) Total numbers may be higher, as >5 may indicate numbers*

Ranking	Clusters & Outbreaks	Total	Reported Up To : Week 53		
			No. of Cases	% Cases per Cluster	Weeks Reporting
1	Private House: General Outbreaks	8051			
2	Nursing home	406	2126	19.1%	43
3	Workplace	355	1789	19.8%	43
4	Residential institution	310	1717	14.2%	43
5	**School***	**295**	**1234**	**23.9%**	**16**
6	Extended family	249	1006	3.2%	14
7	Hospital	244	529	20.2%	26
8	Community outbreak	221	455	68.1%	43
9	Childcare Facility	107	97	41.2%	43
10	Other	80			
11	Travel related	69			
12	Social gathering	61			
13	Restaurant / Cafe	55			
14	Community Hospital / Long-stay unit	40			
15	**Other healthcare services**	**35**			
16	Retail outlet	33			
17	University/College**	32			
18	Sporting activity/fitness	28			
19	Public house	27			
20	Religious/Other ceremony	26			
21	Hotel	14			
22	Transport	13			
23	Personal grooming service	7			
24	Guest house/ B&B	1			
25	Other recreation activity	1			
26	Unknown	1			
27	Not specified	1			
	Totals	**10762**			

Schools = 295 outbreaks, 1,234 cases since Week 37

Hospitals = 244 outbreaks; 1,717 cases since Week 32

Workplaces = 355 outbreaks; 1,789 cases since Week 32

Nursing Homes = 406 outbreaks; 2,216 cases since Week 32

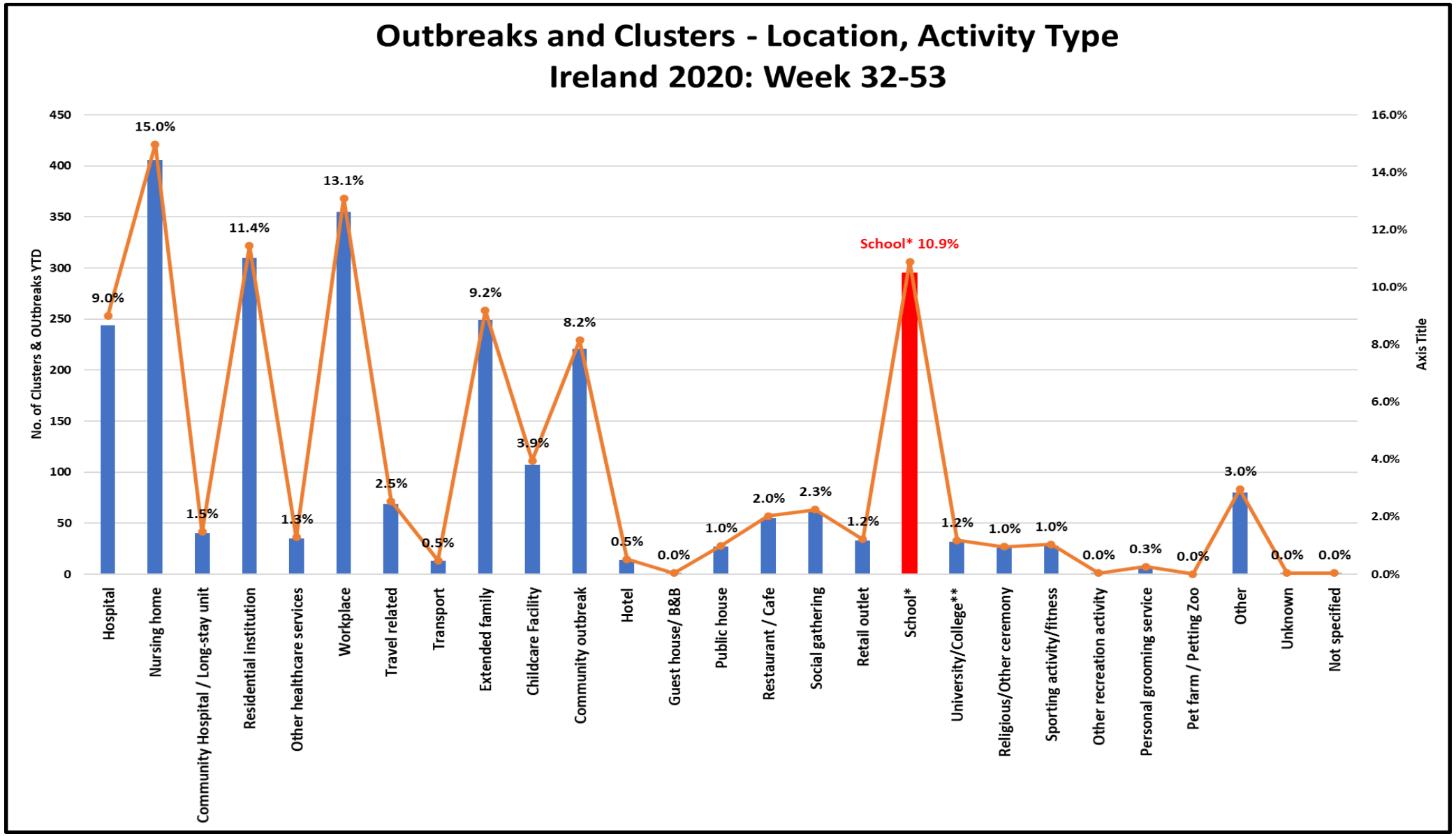
Residential Instit. = 310 outbreaks; 455 cases since Week 32

Childcare = 107 outbreaks; 529 cases since Week 32

Schools Closed For Midterm: +/- 26th Oct - 30th Nov 2020

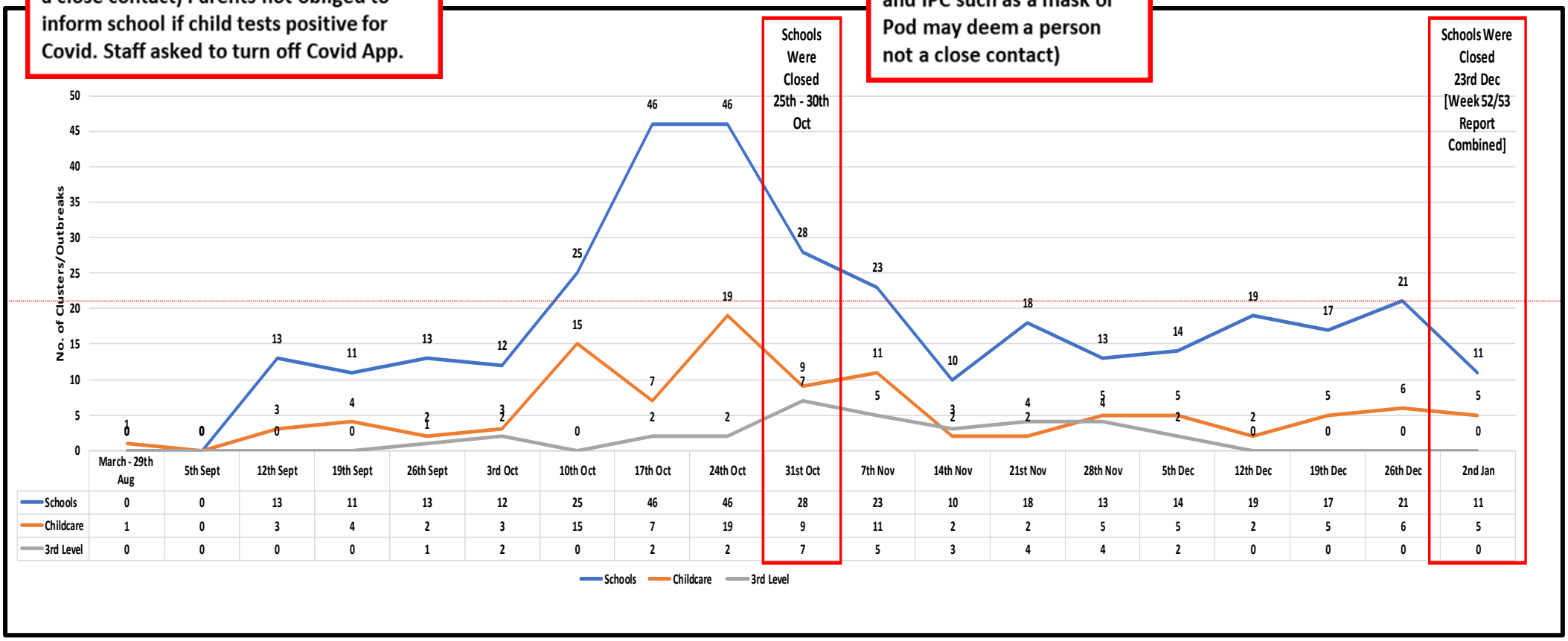
Schools Closed for Christmas: +/- 23rd Dec; Ongoing

Contact tracing guidelines in schools change in October 2020


Outbreaks and Clusters - Location, Activity Type
Ireland 2020: Week 32-53
No. of Clusters & OUtbreaks YTD
Axis Title
450
400
350
300
250
200
150
100
50
0
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
9.0%
15.0%
1.5%
11.4%
1.3%
13.1%
2.5%
0.5%
9.2%
3.9%
8.2%
0.5%
0.0%
1.0%
2.0%
2.3%
1.2%
School* 10.9%
1.2%
1.0%
1.0%
0.0%
0.3%
0.0%
3.0%
0.0%
0.0%
Hospital
Nursing home
Community Hospital / Long-stay unit
Residential institution
Other healthcare services
Workplace
Travel related
Transport
Extended family
Childcare Facility
Community outbreak
Hotel
Guest house/ B&B
Public house
Restaurant / Cafe
Social gathering
Retail outlet
School*
University/College**
Religious/Other ceremony
Sporting activity/fitness
Other recreation activity
Personal grooming service
Pet farm / Petting Zoo
Other
Unknown
Not specified

Close Contact Tracing in Schools Differs to Other Locations/Activities (e.g. in same room long periods may not be defined as a close contact) Parents not obliged to inform school if child tests positive for Covid. Staff asked to turn off Covid App.

Close Contact Tracing in Schools Changes after MidTerm Break (Mitigation and IPC such as a mask or Pod may deem a person not a close contact)



	March - 29th Aug	5th Sept	12th Sept	19th Sept	26th Sept	3rd Oct	10th Oct	17th Oct	24th Oct	31st Oct	7th Nov	14th Nov	21st Nov	28th Nov	5th Dec	12th Dec	19th Dec	26th Dec	2nd Jan
Schools	0	0	13	11	13	12	25	46	46	28	23	10	18	13	14	19	17	21	11
Childcare	1	0	3	4	2	3	15	7	19	9	11	2	2	5	5	2	5	6	5
3rd Level	0	0	0	0	1	2	0	2	2	7	5	3	4	4	2	0	0	0	0

3) Clusters and Outbreaks in Educational Facilities: Timeline of Events and Close Contact Tracing

The Tables and graphs above and below demonstrate the timeline and number of clusters and outbreaks in schools, childcare facilities and third level institutions since they reopened in Ireland from August 2020.[10]

As can be seen, clusters and outbreaks in schools (blue line -) rapidly inclined from September to October.

During this time (and oftentimes since this) schools have ranked the highest for clusters and outbreaks, remarkably surpassing hospitals, and nursing homes.)

As clusters and outbreaks increased in schools, so did community transmission in Ireland.

Close contact tracing services also became under severe pressure during this time.

After October, when schools had closed for midterm break, clusters and outbreaks naturally began to decline in most places, including schools.
However, in November and coming up to December a familiar pattern was beginning to present itself.

However, it is important to note that it was also at this time when the HSE decided to update their guidance for close contact tracing in schools.

Close contact tracing in schools was always different to that in other sectors, locations, and groups; and guidelines stated that not all people (students or staff) would be tested even if they were in the same classroom for many hours in a day. Teachers and staff were reportedly told to turn off their Covid-19 Close Contact Apps and a national Public Health Consultant, leading out on the Schools Mass testing programme strongly indicated that the HSE were deliberately conservative about testing in school.

On October 30th 2020, a new definition of close contacts was published by the HSE which said other mitigations such as PPE, 'PODS' and infection prevention control measures would also deem a person not a close contact. In relation to how this might impact statistical data; if people are not tested as much then there may be appeared to be less cases. This does not mean that people do not have Covid-19.

[10] HPSC Reports do not calculate correctly – the numbers presented above are currently in HPSC Weekly Reports, and such have been included in this graph.

Clusters & Outbreaks Heat Map 2020

As Reported Weekly

Covid-19 Pandemic Ireland

	05-Sep	12-Sep	19-Sep	26-Sep	03-Oct	10-Oct	17-Oct	Schools Closed 24-Oct	31-Oct	07-Nov	14-Nov	21-Nov	28-Nov	05-Dec	12-Dec	19-Dec	Schools Closed 26th Dec	2nd Jan
Hospital	1	3	2	4	5	8	7	5	8	11	9	15	10	7	9	9	10	22
Nursing home	2	4	4	5	7	11	5	15	8	3	6	5	6	5	4	8	13	21
Community Hospital / Long-Stay Unit	0	0	0	2	0	1	1	1	0	0	1	2	0	0	1	2	1	1
Residential Institution	3	7	2	11	6	6	8	13	16	7	7	5	4	7	2	5	5	10
Other Healthcare Services	0	0	0	1	1	1	4	2	4	7	1	1	1	0	3	3	2	2
Workplace	6	22	18	16	17	23	18	25	11	15	20	20	21	8	11	5	9	11
Travel Related	1	3	3	2	1	0	0	0	0	3	1	1	1	1	2	3	3	0
Transport	0	0	0	0	1	2	1	1	1	0	3	1	0	1	0	0	2	0
Extended Family	7	12	11	9	6	22	17	5	5	9	12	18	8	9	12	11	10	7
Childcare Facility	0	3	4	2	3	15	7	19	9	11	2	2	5	5	2	5	6	5
Community Outbreak	0	17	1	9	5	27	24	9	6	21	15	17	6	1	7	6	6	0
Hotel	0	0	1	0	0	1	4	1	0	1	0	1	0	0	1	0	2	0
Guest House/ B&B	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Public House	0	0	2	1	1	4	8	1	1	0	1	0	1	0	0	0	1	3
Restaurant / Cafe	0	3	3	8	2	7	3	1	2	3	1	2	0	0	0	0	4	7
Social Gathering	0	0	0	5	9	4	11	2	2	0	2	3	1	0	3	0	4	1
Retail Outlet	0	1	2	2	2	1	2	5	2	2	1	0	2	4	0	0	1	1
School*	0	13	11	13	12	25	46	46	30	24	10	19	12	14	19	17	21	11
University / College**	0	0	0	1	2	0	2	2	7	5	3	4	4	2	0	0	0	0
Religious / Other Ceremony	0	0	0	0	2	1	0	4	0	1	1	2	1	0	1	3	2	2
Sporting Activity / Fitness	0	0	0	1	3	3	9	1	1	2	1	0	0	0	2	0	0	0
Other Recreation Activity	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personal Grooming Service	0	0	0	0	0	0	2	1	1	0	1	0	0	0	0	1	1	0
Pet Farm / Petting Zoo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	3	8	13	23	11	8	6	0	6	4	2	2	2	0	-4	5	3	0
Unknown	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Not Specified	0	1	2	0	0	0	2	0	40	0	2	0	1	0	-1	1	0	-1
Private House (All)	122	61	391	349	395	352	461	521	320	443	954	652	262	288	330	163	107	49

Monthly Cumulative [Clusters & Outbreaks]

Outbreaks >100

		DATE	March - 29th Aug	05-Sep	12-Sep	19-Sep	26-Sep	03-Oct	10-Oct	17-Oct	24-Oct	31-Oct	07-Nov	14-Nov	21-Nov	28-Nov	05-Dec	12-Dec	19-Dec	26th Dec	2nd Jan	Total Clusters Since 29th August
		Hospital	107	108	111	113	117	122	130	137	140	148	158	166	179	189	194	203	212	222	244	137
		Nursing home	277	279	283	287	291	296	306	311	328	337	339	345	348	354	360	364	372	385	406	129
		Community Hospital / Long-stay unit	30	30	30	30	32	31	32	33	33	32	32	33	35	34	35	36	38	39	40	10
		Residential institution	191	194	201	203	214	217	221	229	243	258	265	272	278	282	288	290	295	300	310	119
Started	26-Sep	Other healthcare services	0	0	0	0	1	2	3	7	8	13	20	21	23	25	25	28	31	33	35	35
Started	12-Dec	Private house: Family/General Outbrea	1904	2018	2077	2463	2810	3199	3532	3982	4498	4815	5285	6228	6869	7123	7402	7732	7895	8002	8051	6147
		Workplace	79	85	107	125	139	157	180	198	226	237	253	273	293	313	319	330	335	344	355	276
		Travel related	42	43	46	49	51	52	53	53	53	53	56	57	58	60	61	63	66	69	69	27
Started	03-Oct	Transport	0	0	0	0	0	1	2	3	4	5	5	9	10	10	11	11	11	13	13	13
		Extended family	50	57	69	80	90	98	119	133	139	143	152	167	187	197	209	221	232	242	249	199
		Childcare Facility	1	1	4	8	11	14	29	36	55	63	74	77	80	84	89	91	96	102	107	106
		Community outbreak	22	22	40	41	50	56	92	118	128	134	157	172	196	202	202	209	215	221	221	199
		Hotel	2	2	2	3	3	3	4	8	9	9	10	10	11	11	11	12	12	14	14	12
Started	17-Oct	Guest house/ B&B	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
		Public house	5	5	5	7	7	10	14	21	21	22	22	23	22	23	23	23	23	24	27	22
		Restaurant / Cafe	5	5	9	12	22	22	29	32	33	35	38	39	42	42	44	44	44	48	55	50
Started	03-Oct	Social gathering	0	0	0	0	5	13	30	41	43	46	47	50	53	53	53	56	56	60	61	61
		Retail outlet	7	7	8	10	12	15	16	18	23	24	26	26	25	27	31	31	31	32	33	26
Started	12-Sep	School*	0	0	13	23	36	48	73	118	126	156	179	187	202	212	227	246	263	284	295	295
Started	26-Sep	University/College**	0	0	0	0	1	3	4	6	9	16	21	22	26	30	32	32	32	32	32	32
Started	03-Oct	Religious/Other ceremony	0	0	0	0	0	2	7	6	11	11	13	14	16	18	18	19	22	24	26	26
Started	26-Sep	Sporting activity/fitness	0	0	0	0	1	5	9	19	20	21	24	26	26	26	26	28	28	28	28	28
Started	26-Sep	Other recreation activity	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Started	17-Oct	Personal grooming service	0	0	0	0	0	0	0	2	3	5	4	5	5	5	5	5	6	7	7	7
Started	19-Dec	Pet Farm / Petting Zoo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Started		Other	19	22	30	43	66	73	71	75	72	77	76	76	74	76	76	72	77	80	80	61
		Unknown	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1
		Not specified	0	0	1	3	2	2	0	2	1	41	8	10	1	2	2	1	2	2	1	1
		TOTALS	**2741**	**2878**	**3036**	**3500**	**3962**	**4443**	**4957**	**5590**	**6228**	**6703**	**7266**	**8311**	**9062**	**9401**	**9746**	**10150**	**10397**	**10610**	**10762**	**8020**

According to reports, the criteria for 'close contacts' in schools did not appear to be in-line with definitions of close contacts in other similar settings, nor in-line with ECDC guidelines for educational settings, and was subsequently updated on the 30th of October by the HSE [67]

As was seen during the early stages of the pandemic, when testing was restricted based on symptoms, activity based roles or contacts, it resulted in lower case numbers, even if people were in fact actually infected (as seen in hospitalisation numbers).

For this reason, it was worth investigating what changes to contact tracing in schools occurred in the lead up to and during the 2nd Wave. In early October 2020 public health officials advised a second lock-down in Ireland [86], however the Government did not agree and instead implemented local (county) level restrictions. While the Government did not respond immediately to the NPHET's advice, when they did, they said this time schools would remain open.

54% of all cases in children that year were recorded in October alone [71].

Towards the end of October in Ireland, community transmission in Ireland was so high that contact tracing administration broke down and the positivity rate in the community rose to 10%. [45] [25] The CEO of the HSE, admitted to suspending close contact tracing services. [45]

With children being home from school for one week during the midterm break, alongside a second lockdown, cases across the country fell. Interestingly, and unlike the pattern seen from August to October, cases in school going children did not increase exponentially in November, even though they had been at home and '*more than likely mixing with local friends and family members*' [it was often reported in the media/social media that the reason cases in children soared was because of social activities *outside* of the school and/or their parents meeting at school gates and/or teachers eating in lunch rooms].

Lived Experiences of Parents, Staff and Students

Parents United Ireland asked for the help of the 125,000+ member strong Facebook group 'Alerting Parents of Outbreaks in Schools and Preschools Group'. One of the members, Eve. C created and shared a survey asking parents, teachers and students about their experiences of close contact tracing in schools and their opinions regarding the safety of schools during the pandemic.

Within 2 days, over 2,800 people had responded. The results showed that only 17% respondents felt confident that schools were safe during the pandemic in the school year 2020/2021. Of those who said they did not believe schools were safe, 70% were school staff, 60% were students, 55% were parents. The least confident group were those with 2 or more roles (e.g., parents who are also school staff.

2,783 responses were validated as compatible for use in the entire survey. Of these, 1,065 [38%] people said they (or someone they live with) were definitely in a room with a positive case for more than 15 minutes, and 640 said they weren't sure.

Of those who said yes, 709 [67%] said they were not formally contacted or told by the HSE or their school that they were a close contact of a positive case.

153 respondents said they or someone they lived with had received a positive COVID-19 test while symptomatic in school. Of these, 65% [N=99] were told their case was not associated with a school.

Fifty four per cent of respondents [N=1,517] said they found out from someone else (not through official school or HSE communication) that there was one (or more) positive case(s) in the school. Asked if this had resulted in them being tested for COVID-19, 39% [N=585] said they had, and 4% [N=64] said this had resulted in a positive case.

1,517 respondents said they were told about positive cases in their school through non-official connections with the school. At least 142 parents said they were told directly by their child about positive cases in their class or school.

Respondents were given the opportunity to include their experiences of close contact tracing and safety in schools – in total over one thousand [N=1,111] testimonials were submitted. Testimonials revealed hundreds of serious concerns and issues related to students and staff not being informed of positive cases in their classroom or school, of which, when they found out from informal sources, many later tested positive for COVID-19 themselves.

School Staff Survey

Another survey from July 2020, conducted by Voice for Teachers, resulted in 6,100 responses in a 24-hour period, a phenomenal number of responses. This is the link to the full survey: https://voiceforteachersblog.wordpress.com/

74% (4,472) of respondents disagree with the DES disregarding HSE social distancing guidelines: This is stark: ¾ of respondents understand that social distancing is vital for a safe re-opening of our schools. Teachers (and all school staff) are legally entitled to a safe place in which to work, which must include social distancing during this Pandemic. A very large number of respondents (5.817 / 95.8%) expressed that they were concerned that DES would not plan for adequate substitute teachers to cover teacher absences.

Respondents voiced the serious concerns they have about staffing issues throughout the survey and in the additional comments they made to question 40.

Respondents were/are extremely concerned about Ireland's very large class sizes in Ireland – the highest in the entire EU.

4,135 (68%) of respondents are in favour of checking staff temperatures each morning. While such checks may not identify all COVID-19 cases, it is one of a range of possible mitigating actions open to schools. **School staff have traditionally presented for work despite being ill, knowing that the DES would not provide for substitution in many cases, or that substitute teachers are nigh on impossible to source, (due to pay inequality, non-payment of allowances for upskilling, and general decline in terms and conditions since 2011).** However, for the coming school year, school staff will be mandated to stay at home if they experience any COVID-19 symptoms.

56.7% of respondents (3,450) said yes, school staff should be given a free, priority COVID-19 test in school every week, like care home staff receive. A further 1,370 (28.6%) replied that it might be a good action to take. 61.9% (3,757) agreed that pupils should also be given a free, priority COVID-19 test before they return to school in September. An additional 22.6% (1.370) felt that it could be a good thing to do.

Respondents were given the opportunity to share their thoughts See Page

Defending the 'Schools Are Safe' Stance…

But Positivity Rates in Schools are Lower than the Community…

There were several occasions where the positivity rate in schools in Ireland was equal to and higher than that in the community[11]. For instance, from the 29th – 5th of November the positivity rate in schools and the community was 2.5%; and from the 6th-12th December the positivity rate was higher in schools [3.5%] than in the community [2.5%]. Some weeks, positivity rates within settings were far higher than others – for instance between the 6th-12th December, a 15% positivity rate amongst adults over 18 in secondary schools was reported. (See Page 146) Most importantly, and in accordance with CDC, it was found that the positivity rate in schools was not the correct indicator for deciding to open or close schools nationally/locally, it was in fact based on the positivity rate and/or the number of cases per 100,000 population in the community, and a number of secondary factors. (See Pages 198, 200, 203)

But Mass Testing Results in Schools Say Schools Are Safe…

Although some of the reports on cases in schools have referred to "mass testing in schools", it turns out that this was just the testing of close contacts of confirmed cases, as is done in the wider community (but with a much narrower definition of close contacts used in schools). Public health authorities did not visit schools unless they were informed of a confirmed case who was in the school within the infectious period (24 hour/48 hours prior to diagnosis).

But Children Do Not Get Very Sick From COVID-19

Children do get sick from COVID-19; children diagnosed with COVID-19 are admitted to hospital and ICU, and sadly children do die from COVID-19. While the risks appear to be (currently) lower in children than adults, it is to be noted that these risks are **not** non-existent, nor have they been studied in the context of the new variant. It was found that in the last few months there has been a significant increase in hospitalisations of children with COVID-19 and emerging reports of children suffering long term implications from what is known as LongCovid. The UK Office of National Statistics [ONS] released a report on the 21st of January 2021 which said that *"13% of children aged 2-10 years who contracted COVID-19 still had symptoms 5 weeks after testing positive. 15% of children aged 12-16 years who contracted COVID-19 still had symptoms 5 weeks after testing positive."* [87] Statements like '*children don't get as sick'* or they are '*less likely to get sick'* does not give anyone the right to purposefully put them at risk of potentially becoming sick or potentially transmitting it to family members/friends.

Children can also transmit the virus to their family and loved ones and are more likely to bring the virus home than adults. 41

There is also not enough data with regards new variants thus assumptions should not be made that children will not get sicker from the virus. See Page 40

But 19-24 Year Olds Were Driving Up the Cases…

Maybe so, however cases and hospitalisations in young people aged 19-24 years of age did not increase at the same rate as children under 18 years of age after schools reopened.

But Parents are Giving it To Their Children…

Maybe so, but it is important to ask the question - why were the highest increase of cases in children, and more so in school age children? Why too were children the only age groups who experienced more hospitalisations from when schools were opened, compared to when closed, and all adults experienced less hospitalisations in the same time periods? [26]

[11] HPSC School Reports were only published on Week 47

But There Were No Cases in My School…

HSE Policy was explicitly clear – school principals and designated persons were advised not to tell [24] students, staff or parents about any people who were symptomatic or who tested positive until authorised to do so by public health officials, and only close contacts would be informed, unless otherwise specified. It is important to note that the definition for a close contact in a school is very refined – and not all people in a classroom would necessarily be classified as a close contact.

But Principals Did Not Tell Me There Were Cases in The School

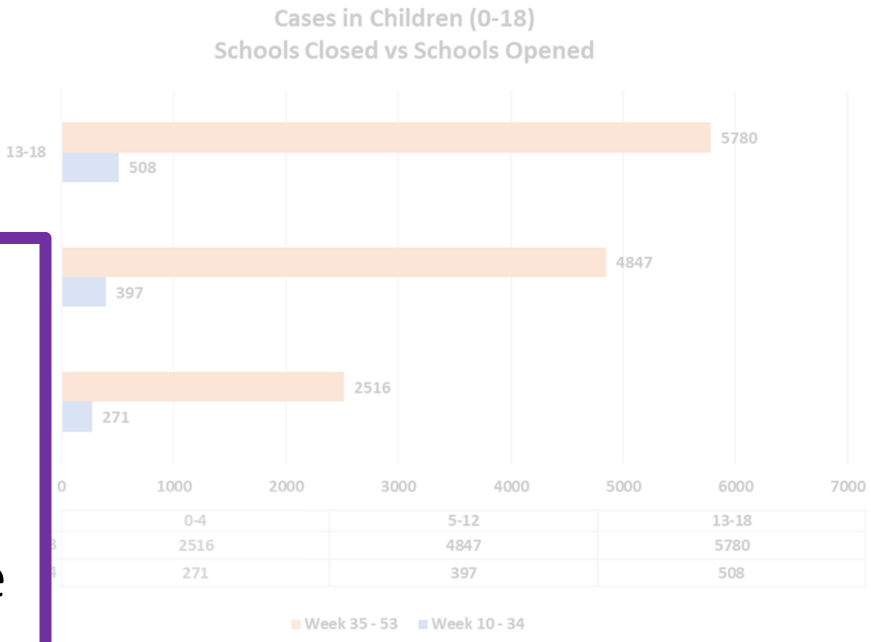
Again, this was not their fault. HSE policy explicitly [24]stated that they should not tell anyone unless authorised to do so. There is evidence that many principals were extremely stressed about this situation and were afraid that they might lose funding/reprimanded (which in turn affects everybody in the school). There is evidence that other principals decided to tell people; but this cannot have been without worry and concern also. Many principals and board of managements who wanted to close schools when there were a high number of cases, were told by public health officials that they should reopen – this was said even when schools did not meet the proper adult to child ratios.

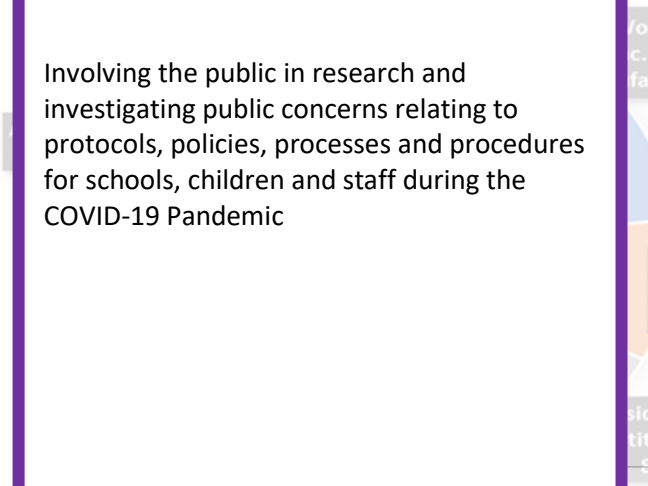
But Children Were Not Tested, that is Why Cases Increased

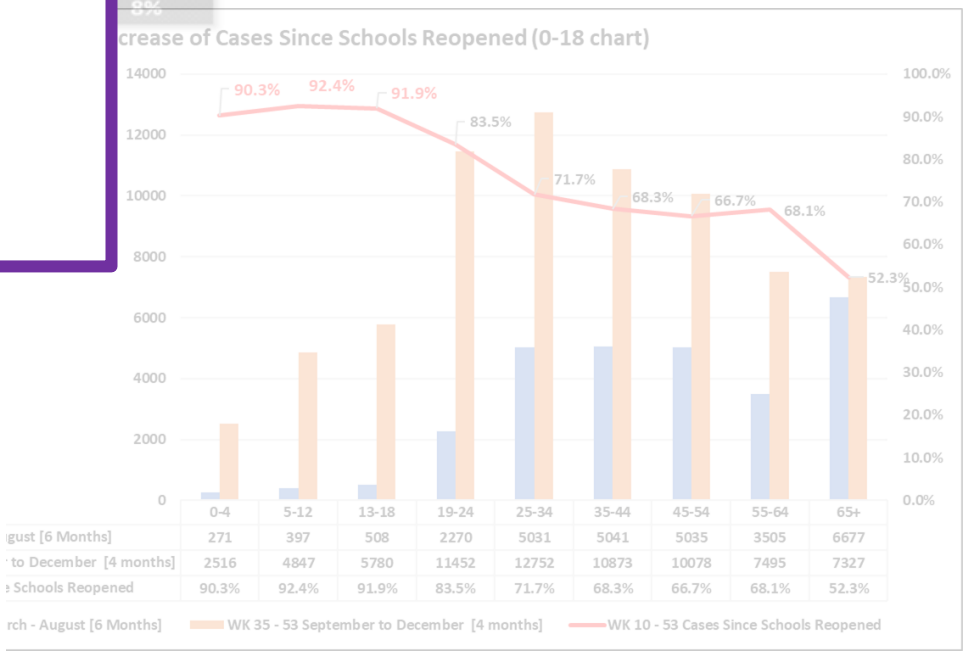
It is important to note that between the months of March and April strict testing criteria was in place, however this relaxed towards the end of May, thus allowing all children and adults with symptoms or close contacts to be referred for testing, if necessary. Cases in all age groups increased when restrictions were relaxed (July – August). Furthermore, it was found that an Irish seroprevalence (antibody) study published in August and conducted on 12-18 year old children and adults aged 18 and over, showed "*No statistical difference between age groups*". In other words, the same amount of (secondary school) children contracted COVID-19 as adults. See Page 40

The Policies & Science

Involving the public in research and investigating public concerns relating to protocols, policies, processes and procedures for schools, children and staff during the COVID-19 Pandemic







Public Involvement in Research

Applying the principles and core values of Public Involvement [88], the Researchers of this study engaged, participated and collaborated with school staff, parents and students asking them to become involved in this study so that they could learn about and share their lived experiences, opinions and include any materials which might aide in this investigation.

Across every group, one theme stood out:

*School staff, children, students, parents and families were experiencing **immense stress and anxiety** associated with concerns of contracting or transmitting the virus from or in school buildings or from participating in school related activities (i.e., travelling, access/egress, lunchbreaks etc.)*

1) Background and Context

Prior to the pre-planned midterm break in schools, and between September and October 2020, a number of serious issues were raised by school staff, students, parents and members of the public.

It was reported that teachers and school staff were told to turn off their Covid-19 App (the official Bluetooth Covid-19 close contact identifier app in Ireland) and many students reported the app had stopped sending notifications. [43] Many school principals and school staff said they had been left to phone students deemed as 'close contacts' themselves, and many staff/children took private tests (it is unknown if these were logged by the HPSC) [41]. School staff reported that colleagues were not deemed as close contacts because they were wearing a face-covering/mask. Government defended policies where parents did not have to inform schools if their children were close contacts and where school administrators did not have to inform teachers or students of confirmed case.

After a one week (pre-planned) midterm break, the Government informed parents that children had to return to schools during a Level 5 lockdown. As the 2nd Wave of COVID-19 cases was felt by the nation, so too was the impact of a new set of guidelines by the HSE [23]. Principals, teachers, SNAs and school staff highlighted that the definition for close contacts in schools had changed, and this time other factors such as child being in a 'Pod' (children designated at one table) or certain infection control measures may also deem a student or staff not a close contact. Surveys showed 75% of school staff did not believe the enhanced teaching/staffing allocation provided as a result of Covid-19 was sufficient; there was uncertainty around the definition of close contacts in schools and the lack of consistency and clarity in this regard was causing "severe stress and anxiety"; and that teachers and school staff were medically deemed as high risk still had to attend to work; and even those in the very high risk categories were told they had to attend.

Parents, Students and Staff Experiences

Parents United Ireland asked for the help of the 125,000+ member strong Facebook group 'Alerting Parents of Outbreaks in Schools and Preschools Group'. Within 2 days, over 2,800 people had responded. There were numerous detailed testimonials which highlighted the stress and anxiety for children in these situations. Respondents were given the opportunity to include their experiences of close contact tracing and safety in schools – in total over one thousand [N=1,111] testimonials were submitted. Testimonials revealed hundreds of serious concerns and issues related to students and staff not being informed of positive cases in their classroom or school, of which, when they found out from informal sources, many later tested positive for COVID-19 themselves.

Testimonials of Lived Experiences

Most mentioned terms/phrases

- Close contacts 430
- Positive Case 221
- Not informed 48
- Not safe 37
- Ventilation 36
- Lack 28
- Transparency 21
- Vulnerable 16
- Hidden 9
- Failed 2

*"My son was sent home from school in October because somebody in his class tested positive and the whole class were deemed close contact. When they started the testing there was more than **15** kids tested positive. 3 weeks off school and the school completely hid it."*

*"'School informed me my child was a close contact entire class had to restrict movements for 2 weeks start of December. Never heard from school how many subsequent cases arose from the initial first case. Heard from other people **6** further students tested positive.'*

'We were informed of 1 case in our school. By the time we received the official notification we knew that 2 other students and 1 member of staff were positive cases, and a number of staff were self-isolating. We never received any further information beyond the initial case.'

'I know of at least 4 families in my daughter's class where their child had tested positive. In each of these cases they were ***regarded as a household transmission*** *and the school were never officially informed.* ***The parents did tell the school themselves, but no action was deemed necessary by the HSE.*** *The preschool nearby ended up being closed a few weeks later due to a number of cases presenting there.'*

'…The HSE has failed to inform schools and caused a needless school outbreak, which has left lasting affects to families I know who have caught it from a preventable outbreak. "Schools are Safe" is the mantra when we already know that is not the case. The one positive is I believe the school staff and board of management are doing everything they can, despite failures in support from government, department, and the HSE. I'm frankly quite angry at how badly mishandled this has all been.'

'My child tested positive as they were ill. Found out that ***three kids in her class has tested positive*** *the week before and no commination from the school or parents. I posted an anon post on a FB group only to find out that 10 other pupils also tested positive. Our school is yet to acknowledge this. It makes me so mad. My child was very ill for two weeks '*

'My son contacted COVID 19 in school in October as the child he sat beside was a positive case. His whole family tested positive. It ***took 7 days before*** *I was informed his pod was in contact with a positive case. I got an email and then a phone call from the school. 3 days later my son got a test and was positive.* ***All the other children where allowed back*** *to class the following day after we were told…"*

'I don't have a problem with the school, but my son travels on a packed bus everyday with 3 different secondary schools on it. Only about 4 kids on the whole bus wear masks. They are not allocated seats or even made to stay seated on the journey. I feel we were lied to last September to make us send our kids back and promised safe transport at 50 percent and allocated seats. I have not heard of one case where the children on the bus were deemed as close contacts and I know my son travelled with ***kids who had a positive case in their family****. My son won't be returning until either 0 cases or proper transport arranged and schools should be allowed to demand negative test results for any child with symptoms before allowing them back to school'*

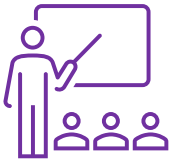
Students Experiences Attending School In-Person

Over 200 students also took part in both primary and secondary schools completed a number of qualitative surveys across various platforms. The following statements are anonymised letters from secondary school students across the country and their experience since schools reopened in Ireland.

"For me, every day I felt butterflies in my stomach and every day before school, I was terrified walking in the school doors hoping I didn't bring anything home. I have no high risk people living in my household, but my mother helps my granny to care for my grandad who is high risk. I didn't want to go to school but if I didn't, I knew I wouldn't receive the same level of education. I think a lot of people were in the same position. In the media I constantly heard that schools were safe, over and over again. I was confused because those journalists writing the articles were not in the school environment everyday like me. A couple of things happened that made me question whether schools were safe or not and Norma Foley handling of the situation. For example, even before schools reopened my school received donations of wipes and hand sanitizer from a local factory to help them keep up. When we went back to school everything seemed brilliant, but ***then I heard of cases in the school, but no one was deemed a close contact. I can confirm that for at least 2 of the cases, no one was deemed a close contact.*** *Why, was my first thought, if Norma Foley was sitting beside Leo Varadkar for six hours and tested positive for COVID-19, would Leo get tested? Spoiler, the answer is YES! But why weren't schools treated the same? Something happened in school that really alarmed me, we didn't stay in the same room so after each class we had to clean the tables and chairs with wipes. So, I went into a classroom thinking my table and chair had been wiped down, but it turns out it hadn't, and I don't know who was sitting in the chair before me. Another thing that confused me was the Covid app. A lot of money was spent on this app but I myself and multiple other students were not getting notifications from the app, I didn't actually know that you were meant to get notifications from it!*

"We ran out of wipes one day. ***Any students that got Covid was kept very secret even so much so that teachers didn't know who got it putting them at risk they were only told it was someone in such a year*** *etc.* ***Nobody was considered a close contact****. It turns out one of the few people who got Covid was in my brothers' class and he sits behind him in a lot of classes. My brother is very high-risk and* ***the fact that he wasn't even considered a close contact is appalling as if he were to contract Covid it would almost certainly be fatal****"*

'I am in 6th year. I have a large group of friends and at lunch we sit in our assigned places in the classroom "socially distanced" with masks off so we can eat. Three of these girls became a close contact to a positive case yet we were not informed until the following day. When we then took it upon ourselves to ask the principal why we were not informed of ***3+ cases*** *in our year and if we were to quarantine. Some of us stayed home for the week of our own accord just in case so that we didn't endanger any staff or students. We were only informed of two Covid cases in our year. We don't get informed of other years.* ***And it is a fact that there has been at least 7+ in my year****.'*



School Staff: Mitigations & Policy & Experience

1) Concerns Raised by Teachers Prior to Schools Reopened Last August

School Staff Facebook Group

The Voice for Teachers Facebook Group did a survey which was conducted in July, just before schools reopened last year. Within 24 hours the survey received 6,100 responses; the volume of replies in itself indicated that there were huge concerns among teachers. The survey was posted in response to concerns expressed by many teachers at the lack of clear guidance and information regarding re-opening school buildings and a number of media surveys and commentary that pointed the finger of blame at teachers for that lack of clarity. Teachers have never been to blame, and schools are still in the dark as to re-opening plans. This incredible advocacy group has over 56,000 followers, built up since 2013. The seven Administrators are practising primary school teachers who set up this Facebook page to give a voice to teachers. VFT also has a Twitter and WordPress account. It is of no surprise to the members of Parents United that many of the concerns last year, still exist for educators in Ireland – the education system has been grossly underfunded and under-resourced for years on end. The Government have repeatedly ignored the concerns and fears of the very people educating the children of our future.

*"There will be **31 children in our 6th class. 8 will fit in the classroom with 2m social distancing**. You are putting lives at risk. It is not fair! Medical staff have full PPE, teachers have none. This is absolutely unbelievable that full re-opening without masks/ PPE is even being considered. I'm in disbelief. There will be 450 people in our building. No social distancing, no masks. This is insane. Does my life, or my children's lives matter less? If those 31 children in our 6th class wanted to Take a bus for 10 min, they'd have to wear face coverings and stay distanced. there can't be more than 10 of them in a house even for 10 min. But we can have 31 in a classroom for 5.5 hours. How is that ok? How is it even being considered?!!! If we are forced to work in those conditions, it won't be for long as we will get sick.*

I hope too many of us don't die."

"Give specific guidance in relation to PPE, distancing, hygiene procedures. Make it mandatory to wear masks in the vicinity of the school building. Provide funds for duty cleaners to wipe down desks, door handles, surfaces which have been touched by adults or children. Stop believing in the myth that children don't transmit COVID. If that were the case, they would never have been stopped from hugging their grandparents..."

2) Key Concerns Raised Since Schools Reopened

The following section was compiled by teachers, special needs educators and assistants and staff working in schools. It outlines the various concerns, risks and policies in Ireland for schools – and compares all policies against previous DES policies; and in contrast with HSE/HPSC and WHO guidelines.

Abbreviations Used in This Section:
Special Needs Assistant (SNA); Special Education teacher (SET); MEDMARK (Occupational Health Service)[205]
INTO (Irish National Teachers Union)

Primary School Staffs Perspectives (COVID-19)
School staff have not made outlandish demands about safety in our schools. Staff have been asking for very basic protections since March 2020, the same protections offered to others in the community.

- At least 2 metres Social Distancing
- Masks for everyone
- Reduced numbers indoors
- Proper ventilation system to mitigate against this airborne virus
- Robust test and trace, as offered to other workplaces in the community

At least 2 metres Social Distancing (SD): Minister Joe McHugh suggested that schools might open on a "half in half out" basis to allow for 2 metres SD. Minister Norma Foley decided against that measure for September 2020. We still do not have at least 2 metres social distancing in our schools, sometimes we do not have 2cm. We are advised to maintain 2 metres social distancing everywhere else in the community. Why aren't school children and staff being kept safe in Ireland?

Masks for everyone: Masks were not mandated for staff in September 2020. "Face coverings" are mentioned for February 2021. Pupils are not wearing masks in primary schools, so staff and pupils are not protected from those not wearing masks. We are advised to wear a mask if we enter a premises, such as a shop, and even if we are outdoors, yet we still do not have mandated masks for everyone in a primary school. Why aren't school children and staff being kept safe in Ireland?

Reduced numbers indoors: Irish primary schools have the largest class sizes in the EU. Schools do not have reduced numbers indoors. We have reduced numbers allowed at weddings and funerals, but no maximum number for classrooms. On 08/09/2020 John Boyle, General Secretary, INTO[206], wrote, "Ireland is home to supersized classes, the largest in the EU. Almost one in five of our primary schoolchildren are in supersized classes of 30 or more. This hindered our ability to reopen and may very well be the reason our schools cannot remain fully open. We simply have to get our class sizes under control, with too many pupils learning in cramped classrooms of more than thirty pupils".
We still have large numbers in classrooms, all unmasked except for staff, despite this Global Pandemic and several new, far more infectious, variants. Why aren't school children and staff being kept safe in Ireland?

Proper ventilation system to mitigate against this airborne virus: Open windows is the main protection available - if a window exists in the classroom and if it can be reached to open it. Government have not provided the necessary funding for ventilation systems or CO2 monitors. *Why aren't school children and staff being kept safe in Ireland?*

Robust test and trace, as offered to other workplaces in the community: Schools have struggled with the test and trace rules applied to schools. Sometimes nobody else is tested or traced, if a positive case emerges. Sometimes, the pod is tested, sometimes the bubble. Pods and bubble "The risk of

spread of infection may be reduced by structuring pupils and their teachers into Class Bubbles (i.e., a class grouping which stays apart from other classes as much as possible) and discrete groups or 'Pods' within those class bubbles, to the extent that this is practical" (p. 14)**. COVID-19 Interim Recommendations for the reopening of schools and educational facilities**[207]

Some school staff have been advised that they aren't deemed to be a close contact of a positive case, because they were wearing a mask. The HSE define a close contact[208] as, "spending more than 15 minutes of face-to-face contact within 2 metres of someone who has COVID-19, indoors or outdoors". There is no mention in that definition that wearing a mask disqualifies you from being a close contact, yet some school staff have been told that they don't need to be tested because they wore a mask.

Reports about school staff being told to turn off Bluetooth while in school, which is needed for the COVID App caused uncertainty. The Echo 24/10/2020 states[209], "There are concerns that teachers and special needs assistants may be being advised to turn off Bluetooth on their phones while at work. In doing so, however, staff would not be notified if they are in close proximity to a confirmed case of Covid-19. In correspondence from a HSE official, seen by The Echo, it is stated: "In regard to teachers and SNAs, I understand that the advice is turn off Bluetooth while they are at work." Cork-based ASTI president Ann Piggott questioned why there were different circumstances regarding the app for different professions. "If the app supposedly works, why are teachers told to ignore it?"
Why aren't school children and staff being kept safe in Ireland?

From these five basic protections, the following twelve key safety asks evolved, to enable schools to safely reopen and to remain open:

<u>Primary Schools: Key Safety Asks:</u>

13. Social Distancing
14. Masks
15. Reduce number of Contacts
16. Airborne Virus and Ventilation: Put safety measures in place to mitigate against the airborne virus COVID-19
17. Test and Trace robustly to identify COVID-19 cases and combat the spread of COVID-19
18. Allow *at risk* School Staff to Work from Home
19. Cleaning Schools
20. Extra School Staff
21. Vaccination for School Staff
22. Extra Protective Measures Against New Variants of COVID-19
23. School Closure when Community Transmission is High
24. Data Transparency and Clarity

Each of these twelve key safety asks are summarised in Table 1 and more detail is supplied in Table 2, followed by explanations and References.

3) Table 1: Key Safety Measure Requests from School Staff

Key Asks		What we Need in Schools
1	Social Distancing	2 metres Social Distancing, together with limiting contacts, may mean half in and half out attendance. So be it. It must be achieved.
2	Masks	Everyone in school, including pupils, need to wear masks. It must be mandated. Quality, safe masks must be provided for school staff.
3	Number of Contacts Definition of close contacts	Teachers have far too many contacts in school, this cannot continue. In line with ECDC
4	Airborne Virus and Ventilation	Put safety measures in place to mitigate against the airborne virus COVID-19
5	Test and Trace	The same test and trace rules as the rest of society must be applied to school communities
6	At risk categories	Staff facilitated to work from home
7	Cleaning	Extra cleaning grant as Levels 1-5 rise
8	Extra Staff	Extra teachers and SNAs and Cleaners
9	Vaccination	Vaccinate staff
10	New variants	Extra protective measures against new variants of COVID-19
11	School closures	If community transmission rises schools close
12	Data	More transparency and clarity around school /household / community transmission

When can schools reopen?

It is unwise to aim for a date, rather it must depend on the situation in Ireland. We cannot reopen when community transmission is so high. People think that schools are safe. **Certainly, school BUILDINGS are safe, but when people are IN the building, schools are NOT safe.**

Schools are not the magical, safe places that parents have been led to believe they are. The issues that made schools unsafe have **still not been rectified**. Some childcare facilities reopened in January 2021, after the Christmas break. The Irish Times[210] reported the following on 07/02/2021, "A total of 51 Covid-19 cases were detected in childcare facilities in the week up to January 30th. In total, 407 tests were carried out across 43 such centres with a positivity rate of 12.5 per cent. This is up slightly on the previous week's 10 per cent and significantly above the average recorded since last August (5.7 per cent)". The following Table 2 outlines the reality in our schools during September 2020; November 2020; February 2021 and March / April 2021.

4) Table 2: Changes to Mitigations in Schools After Concerns Raised

Concerns	In place at Level 1 in most primary schools Sept 2020	In place at Level 5 in most primary schools Nov 2020 ANY CHANGE?	In place at Level 5 in most primary schools Feb 2021 "interim period" when special schools & classes open ANY CHANGE?	In place at Level 5 in most primary schools March/April 2021 when all primary schools might re-open ANY CHANGE?
1. Social Distancing				
2 metres social distancing	X No	X Still No	X Still No	X Still No?
1m social distancing	3rd to 6th class "if possible". If not possible due to large class / small room, then zero metres SD	X Still No	X Still No	X Still No?
Zero metres social distancing	For Junior Infants; Senior Infants; 1st Class; 2nd Class; Also very difficult for pupils attending – SET or Special class or Special schools	X Still No	X Still No	X Still No?
2. Masks				
Masks for teachers	No, masks could hinder communication. Visors will do	Varies.	Surgical masks advised for SNAs and SETs "if wanted"	?
Masks for pupils	X No	X Still No	X Still No	X Still No?
Masks for staff at lunchtime	X No	X Still No	X Still No	X Still No?
Masks for pupils at lunchtime	X No	X Still No	X Still No	X Still No?
PPE grant to cover ALL PPE needed	X No Shortfall in many schools. Some bought their own masks	X No 40% less grant for Jan 2021	X Still No	X Still No?
3. Reduce the Number of Contacts in Schools				
Smaller class size	X No	X Still No	X Still No	X Still No?
Half in / half out	X No	X Still No	Half in / out for special schools during "the interim" yes, special classes no.	X Still No?
4. Airborne Virus and Ventilation				
Accept that COVID is an airborne virus	X No	X Still No ?	? "under certain circumstances"	X Still No?

Mitigation in place for an airborne virus	X No	X Still No	X Still No	X Still No?
Ventilation system	X No	X Still No	Open the window.	X Same?
5. Test and Trace				
Test everyone in the room, staff & pupils, if a positive case is detected, as defined by ECDC	X No?	X Some?	X ?	X ?
Staff tested before return	X No	X Still No	X Still No	X Still No?
Pupils tested before return	X No	X Still No	X Still No	X Still No?
Regular testing for everyone at school	X No	X Still No	X Still No	X Still No?
6. Allow at Risk School Staff to Work from Home				
Pregnant staff	X No	X Still No Jan 21 HSE issued new guidelines. Pregnant HCWs to work from home.	Timebound flexibility "In the interim" between 11th Feb and full reopening. Must apply to MEDMARK.	? Timebound flexibility over?
High-Risk	X No	X Still No	As per pregnant staff.	As per pregnant staff.
Very High-Risk	Only if MEDMARK agree that person is Very High-Risk	X Same	X Same	X Same?
7. Cleaning Schools				
Extra cleaning grant	Yes.	X Still Same	X Still Same	X Still Same?
Extra cleaners	Only if grant covers?	X Still Same	X Still Same	X Still Same?
Extra cleaning grant to cover extra cleaning for Level 5	n/a	X No Teachers and SNAs doing lots of cleaning	X Still Same	X Still No?
Sanitisers	Some. Several brands withdrawn in October 2020.	X Still Same	X Still Same	X Still Same?
8. Extra School Staff				
Extra temporary teachers to cover absences	X ? Some schools have access to a Supply Panel. Most panels cover approx. 25 schools. Sub shortage nationwide.	X Still Same	X Still Same	X Still Same?

Extra temporary SNAs to cover absences and help with SD	X No	X Still No	X Still No	X Still No?
9. Vaccinations for School Staff				
Vaccination for staff	n/a	11th/15 on priority list	Staff now placed "in the top one third". Same as 11th /15.	X Same?
Staff vaccinated before return to school	n/a	X No	X Still No	X Still No?
Pupils vaccinated before return to school	n/a	X No	X Still No	X Still No
10. Extra Protection against new variants of COVID 19				
Extra protection against several new variants	n/a	n/a	X No	X Still No?
11. School Closures				
Schools must close when community transmission is high	n/a	X No	X No	X Still No?
12. Data				
Transparency and clarity around school /household / community transmission	X No	X No	X No	X Still No?

5) Research Group 3: Part 3 - Comparative Analysis of Department of Education, HPSC and International Guidelines

1. Social Distancing

2 metres social distancing is recognised as being vitally important in protecting people from the COVID-19 virus. However, the Government of Ireland did not deem it to be important in our schools when they wrote, "...the principle of distancing can be usefully applied in the school setting, allowing for some flexibility when needed whilst noting that it must be applied in a practical way, recognising that the learning environment cannot be dominated by a potentially counterproductive focus on this issue" (p. 13). **Irish Public Health Advice Roadmap for the Full Return to School, July 2020.**[211]

The 2 metres social distancing recommended for the rest of Irish society became 1m for schools, but even that was not a prerequisite. "A distance of 1 metre should be maintained between desks or between individual pupils. It is recognized that younger children are unlikely to maintain physical distancing indoors.

Therefore, achieving this recommendation in the first 4 years of primary school, is not a prerequisite to reopening a primary school for all pupils… If a class is divided into Pods, there should be at least [1m distance] between individual Pods within the Class Bubble and between individuals in the pod, whenever possible" (p. 14). **COVID-19 Interim Recommendations for the reopening of schools and educational facilities** [212]

Pods and bubbles can't keep anyone safe. The children and staff are potentially in a room with an airborne virus. Pods are tables, where the children have always sat. No change. Bubbles are simply their class. No change. Teachers in Special schools and classes, along with Special Education Teachers (SET) [used to be called Resource Teachers] have very little social distancing to protect them. "For children with special educational needs (SEN) maintaining physical distancing in many instances will not be practical or appropriate to implement" (pgs. 29-30). **COVID-19-Response-Plan-for-Primary-and-Special-Schools-V3-February-2021**[213]

Such an approach leaves children and school staff unprotected. Safety is an illusion, a myth under the current "plan". We [school staff] need all of the "X's" in Table 2 to be ticks and all of those "X Still No" to be updated with increased safety measures.

2. Masks:

Masks for School Staff:

Teachers have been given conflicting advice around the wearing of masks. Advice from June (HPSC) and July (DES) resulted in many teachers wearing a visor when schools reopened in September 2020, instead of a mask. HPSC provided advice on facial coverings on 24/06/2020 to the effect that a visor is a viable alternative to a facial covering. *"In general, face coverings should not be required for school staff if physical distancing is possible and is practiced appropriately. Wearing a face covering will conceal facial expression and can make communication difficult. The wearing of a visor as an alternative to a facial covering may be considered where there is a concern that there will be prolonged close contact and that exposure to fluid/respiratory droplets is likely e.g., where there are behavioural issues with problems such as spitting"* (p. 23).
COVID-19 Interim Recommendations for the reopening of schools and educational facilities[214]

The DES position (27/07/2020) on face coverings was in line with the public health advice quoted above when schools reopened in September 2020. The DES Reopening document states the following: *"This Roadmap set outs how schools will reopen for all students from the end of August*

and what the operation of our schools will look like and be sustainable in a COVID-19 context. It has been developed in line with public health advice issued by the Health Protection Surveillance Centre (HPSC), the Roadmap for Society and Business" (p. 4). **Reopening Our Schools: Roadmap for the Full Return to School**[215]

The words Public Health Advice on this DES document is a live link leading to the HPSC document referenced above. Therefore, the DES are "in line with" the HPSC advice which stated that face coverings are not generally required in schools and staff should consider a visor as an alternative to a facial covering. This DES document (citing HPSC advice) resulted in many school staff wearing a visor instead of a mask.

The position in Post-Primary schools was slightly clearer. "*Teachers, SNAs and other staff and students attending post primary schools are required to wear a face covering when a physical distance of 2 metres from other staff and students cannot be maintained*" **(Section termed "What is meant when you hear about class bubbles and pods: Post primary").** [216]

Staff were still not mandated to wear a mask, the term "face covering" was still used and visors were also recommended for consideration. "*In certain situations, in schools, the use of clear visors should be considered for staff interacting with students with hearing difficulties or learning difficulties*". **(Section termed "What is meant when you hear about class bubbles and pods: Post primary").**[217]

The HPSC provided advice about face coverings again on 06/08/2020. "*Cloth face coverings are now recommended in the community in certain settings for example where it is not possible to maintain a physical distance of 2 metres from others and when using public transport. Cloth face-coverings act as a barrier to help prevent respiratory droplets from traveling into the air and onto other people when the person wearing the cloth face covering coughs, sneezes, talks, or raises their voice*" (p. 2). **HPSC: COVID-19 Interim Guidance for the use of face-coverings in childcare and educational settings.** [218]

However, the advice provided for childcare settings and schools was still markedly different to the advice for the rest of the community. "*In childcare and educational settings, the implementation of mandatory face-covering usage is challenging, as it is known that children will have a lower tolerance and ability to use the face covering properly and use of face-coverings by teachers and staff caring for very young children may cause undue stress to the children"* (p. 2). **HPSC: COVID-19 Interim Guidance for the use of face-coverings in childcare and educational settings.**[219]

The HPSC acknowledged that a face covering is safer than a visor, but still recommend a visor as follows "*It is challenging for staff caring for young children in pre-school settings to wear a face-covering, as this may cause undue stress and anxiety for the children. While a face covering is likely to be a more effective barrier, in this scenario a clear visor can be worn*" (p. 2). **HPSC: COVID-19 Interim Guidance for the use of face-coverings in childcare and educational settings.**[220]

On 7th August 2020, John Boyle, General Secretary INTO: "*We welcome today's announcement from the Department of Education that teachers who are unable to maintain two metres social distancing in their classrooms are advised to wear face masks or visors as appropriate. Schools will have the option of ordering face coverings centrally on the newly established government procurement portal."*

On the 21st of September 2020, HPSC published **"Use of Face Coverings by the General Public",**[221] which gave the general public the advice that visors are a face covering option. "*Change to title to refer to face coverings rather than masks to reflect the subject matter more correctly. Revision of working to make it clear that wearing a face covering is now a requirement in Ireland in certain settings. Revision to include visors as a face covering option*" (p. 1). Pages 5 to 8 describe the different types of face coverings available in detail and how to use and treat them. This information would have been useful to school staffs. Page 6 advises: *"Cloth face coverings may make it very difficult to communicate with some people and this is one reason why visors are preferred in some situations".*

On 10th of November 2020, HPSC again gave advice on face masks, this time giving preference to face coverings or masks over visors. *"Face coverings or masks are superior to visors as a measure for prevention of transmission of COVID-19*". [222] *"Cloth face coverings should be of multiple layers of suitable fabric and correctly applied". "In the limited scenarios above where visors may be used, they should cover the entire face (above the eyes to below the chin and wrap around from ear to ear) and be correctly applied".*

Was this passed on to school staff? The DES did not increase the PPE grant to allow schools to purchase better, multi-layered masks, as described by the HPSC, for staff. No, there was no increase. In fact**, the PPE grant to schools was reduced by 40% in money terms**. On the 7th of January 2021 HPSC updated their recommendation as follows: "*Revised HPSC guidelines for SNAs published on 7 January 2021 recommended surgical grade masks for all SNAs 'Guidance for Schools Regarding*

Special Needs Assistants (SNAs) Supporting Children and Young People with Additional Care Needs in the Context of COVID-19'. The Department is confirming this level of PPE should be provided for all Special Education teachers also" (p. 5). **Appendix 1 Framework SEN 030221** [223]

The HPSC gave advice about surgical masks a full four months prior to the above Appendix. *"There is some evidence that if everyone uses surgical masks in public places that this may reduce spread of virus similar to the virus that causes COVID-19" (p. 5).*[224] School leaders and staff are not mask experts. The advice about "surgical masks" would have been very welcome in September 2020. Has the DES provided increased funding so that schools can purchase surgical masks? No.

In February 2021, INTO said that new return to school 2021 will give medical grade masks if we "want them", [225]

Masks for pupils:

The advice from DES and the HPSC has been similarly confusing.

06/08/2020: HPSC: *"It is not recommended that children attending primary school or preschool/childcare settings wear face-coverings" (p. 2).* **HPSC: COVID-19 Interim Guidance for the use of face-coverings in childcare and educational settings.**[226]

27/07/2020: The DES quote Public Health Advice as stating, *"Non-medical masks may reduce transmission from individuals who are shedding the virus. However, the extent of this benefit is unknown (especially in children) and would only be potentially beneficial if done properly. It is not practical for many students to wear a mask properly for the duration of a school day.* ***Cloth face coverings are not suitable for children under the age of 13"*** (p. 18) and *"Older students should not be requested to wear a facial covering but those who may wish to wear a facial covering where physical distancing is difficult to maintain should not be discouraged" (p.18).* **Reopening our Schools. The Roadmap for the Full Return to School.**[227]

21/09/20: HPSC advise, ***"Do not wear a cloth face covering if you are under 13 years of age (unless specifically advised to do so by a healthcare provider)"*** (p. 8). **Use of Face Coverings by the General Public** [228] **It is to be noted that French pupils wear masks in class from age** 6. [229]

Masks for staff and pupils at lunchtime:

At primary children eat without masks because they don't wear masks at all in school. At 2nd level, they eat without masks. Staff supervise unmasked pupils. Teachers eat lunch in the staffroom

without masks, those rooms are usually small (if they exist) and may be the general-purpose room / office OR staff might choose to eat their lunch in their classroom (airborne virus) or outdoors OR in their car (pupils don't have that choice, they eat together, unmasked). When doing break supervision, teachers may not get to eat their lunch at all. The only choice is to unmask and eat in the classroom with perhaps 30+ unmasked pupils.

PPE grant to cover ALL PPE needed:

Did the DES PPE grant cover all of the PPE needed in schools? Did staff purchase their own PPE, including masks? It appears so. *"Staff and students are likely to have their own face coverings for use in schools. The department has advised schools that they should have additional disposable face coverings available for students, teachers and staff in case a back-up face covering is needed during the day" (Section termed "What is meant when you hear about class bubbles and pods: General"*).[230] PPE funding was given to schools depending on the number of pupils in the school (Circular 0045/2020). The second tranche was expected for January 2021. However, the DES issued a letter to schools on 23/12/2020 informing them that the next tranche of the PPE grant would be 40% less in money terms.

3. Reduce the Number of Contacts in Schools:

Schools operated at full capacity from late August to December. To reduce contacts for teachers and children partial attendance/ significant reduction of class size is necessary. All staff and pupils should not be on site at the same time. The acquisition of additional physical capacity and a mass recruitment campaign of teachers is necessary if we are to emulate the type of reopening model used by Denmark from last Spring (however, their use of 1 metre physical distancing would be better if 2 metres social distancing was used, as per the rest of Irish society).
See **Educational facilities mid-term review – a focus on primary and post primary schools. The public health perspective. Office of the Clinical Director of Health Protection** October 2020 page 3[231]

Guidance from WHO[232]: **"In areas with community transmission of COVID-19, maintain a distance of at least 1 metre between all individuals of all age groups, for any schools remaining open. This includes increasing desk spacing and staging recesses, breaks and lunchbreaks; limiting the mixing of classes and of age groups; considering smaller classes or alternating attendance schedules, and ensuring good ventilation in classrooms."**

4. Airborne Virus and Ventilation:

Airborne Virus:

The Department's re-opening plan for September 2020 was based on the false premise that the COVID-19 virus is not airborne. The DES / HPSC wrote: "Remember the virus is spread by droplets and is not airborne so physical separation is enough to reduce risk of spread to others even if they are in the same room" (p. 23). **HPSC Interim Recommendations for the Reopening of Schools** [233]

This was later revised to - "*SARS-COV-2 - the virus which causes COVID-19 - is a new virus. Although the main route of transmission is considered to be via secretions such as saliva and respiratory secretions or respiratory droplets, which are expelled when an infected person coughs, sneezes, talks or sings, there is now increasing evidence which suggests the possibility of airborne transmission via smaller droplet nuclei particles* ***or aerosols which can remain suspended in air over long distances and time"*** (p.2). **Interim Guidance for the use of face-coverings in childcare and educational settings, HPSC/HSE August 2020.**[234]

However, no additional safety measures were incorporated into the DES schools' re-opening plan for September 2020 to mitigate against an airborne virus.

In January 2021, the DES again acknowledged that airborne transmission "may occur". However, no additional safety measures were given to schools to combat this danger or to protect children or staff. *"Under certain circumstances, airborne transmission may occur (such as when aerosol generating procedures are conducted in health care settings or potentially, in indoor crowded poorly ventilated settings elsewhere)"* (p. 4). **Appendix 2 Health Protection Surveillance Centre (HPSC) guidance on the re -opening of schools Reopening of Schools January 2021 with initial focus on special schools and special classes.**[235]

Ventilation:

WHO 29/07/2020: As early as July 29th 2020, the WHO advised that *"Ventilation is an important factor in preventing the virus that causes COVID-19 from spreading indoors".* **Coronavirus disease (COVID-19): Ventilation and air conditioning in public spaces and buildings**[236] In July 2020, the Irish DES wrote that COVID-19 was not airborne.

14/10/2020: The HPSC provided advice on the importance of ventilation for schools on October 14 2020, updated on 22/01/2021. The document states, *"Poor ventilation in crowded indoor spaces is*

associated with increased risk of COVID-19 transmission; ensuring adequate and appropriate ventilation may mitigate some of this risk" (p. 2). It goes on to advise specifically about schools -
"In schools that rely on natural ventilation (i.e., opening windows), the following additional suggestions are made: Open windows as much as possible during school time, weather and comfort permitting; Use an indoor air quality meter to monitor CO2 levels, and ventilate the room when indicated" (p. 2). **Guidance on non-healthcare building ventilation during COVID-19 V2.0** [237]

Indoor air quality meters were not provided to schools. Extra mitigation to combat this airborne virus and poor ventilation in schools were not provided to schools. An enhanced heating grant was not provided to combat open windows in cold, Irish weather.

30/11/2020: The Irish DES' approach to ventilation in schools is summarised as – *"In summary, the overall approach for schools should be to have windows open as fully as possible when classrooms are not in use (e.g., during break-times or lunch-times (assuming not in use) and also at the end of each school day) and partially open when classrooms are in use. It is worth noting that windows do not need to be open as wide in windy/colder weather in order to achieve the same level of airflow into the classroom. This will assist in managing comfort levels in classrooms during periods of colder weather"* (p. 1). *"The Department considers the above practical steps are sufficient to ensure good ventilation practices in school while at the same time ensuring an appropriate balance between ventilation and comfort"* (p. 2). **Practical Steps for the Deployment of Good Ventilation Practices in Schools** [238]

Unfortunately, opening windows during break/lunch times does not work when pupils eat their lunch in the classroom, particularly during wet days when they cannot go outdoors. It does not work if classrooms do not have windows or if the windows are inaccessible.

5. Test and Trace:

Irish public health has adopted a much more limited definition of what constitutes a close contact in schools. This has quite a far-reaching impact on who should restrict their movements and the amount of testing that takes place following notification of a case.
HPSC definition of close contact in school setting[239]

- Any person who has had face to face contact within less than 1 metre with a confirmed case of COVID-19 for >15 minutes in a school day.
- Any person who has been between 1 and 2 metres from a confirmed case of Covid-19 for >15 minutes in a school day with consideration of other mitigation measures e.g., face-coverings,

pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA)

- Contacts are assessed from contact with a confirmed case of Covid-19 during their infectious period – 48 hours before the onset of symptoms if symptomatic, or 24 hours before the test for Covid-19 was taken in those who are asymptomatic.

ECDC Definition of close contact in school setting. High- risk exposure (close contact) includes:
A person who was in a closed environment (e.g., household, classroom, meeting room, hospital waiting room etc.) with a COVID case for more than 15 minutes

The rationale behind deliberately conservative definition was revealed by [redacted] HSE Public Health briefing on 29 October 2020. *"If you designate someone a close contact you are automatically excluding them from education for two weeks and exclusion is harmful and undesirable."*

INTO has sought regular serial testing be arranged for all school staff (into.ie, newsroom, 4/1/2021) testing of staff and students prior to their return to work/school (into.ie, newsroom, 7/1/2020)
The current position of the HSE is that serial antigen or PCR testing[240] is not recommended as a public health measure to keep schools safe.

6. At Risk Categories of Staff:

High-Risk[241] and Very High-Risk[242] categories are assessed by MEDMARK[243] (the Occupational Health Service). School staff deemed to be Very High-Risk must complete an online form and return it, together with report(s) to MEDMARK who will complete a risk assessment and "advises whether he/she is at a very high risk of serious illness from contracting COVID-19" (p. 7). **Circular 0049/2020** [244]

High-Risk school staff must attend school. ***"An employee in the 'high risk' group who is not ill must attend the workplace, unless advised otherwise by the OHS"*** (p. 7). **Circular 0049/2020**[245]

Pregnancy (in and of itself) has not been deemed by the DES to fit into any risk category and pregnant staff were instructed to attend school as normal. On 13/01/2021, the HSE updated their Guidelines for pregnant healthcare workers, stating that they have "Completely updated to reflect new emerging evidence of increased risks of COVID 19 in pregnancy" (p. 1). The new evidence encouraged the HSE to implement new safety measures for pregnant colleagues. *"Pregnant HCWs, with no other risk factors, should be deemed High Risk and should work from home if possible"* (p. 6).

"The Royal College of Physicians of Ireland's, Institute of Obstetricians & Gynaecologists (IOG) have provided guidance for pregnant HCWs in the 'Workforce Consideration' section of the **COVID-19 Infection Guidance for Maternity Services**. Following updated research pregnant women are at no greater risk of contracting infection than their HCW colleagues *but may be at greater risk of severe illness, as a result of COVID-19 infection"* (p. 6). HSE: **Guidance on Fitness for Work of Healthcare Workers in the Higher Risk Categories**[246]

Pregnant school staff had no such safety procedures in September 2020, or in January 2021. As a result of the HSE change in protocol to protect pregnant workers, the DES issued this in February 2021:
"Following the issuing of sectoral guidance specific to healthcare workers by the HSE in relation to pregnant healthcare workers who may be deemed at High Risk or Very High Risk, and with an increased occupational risk of exposure to COVID-19, an expert group is working to develop sectoral guidance for education sector workers to inform the occupational health service's approach to categorise the risk of pregnant workers in different roles within the education sector" (p. 4).
Information Note TC 0001/2021[247]
During "the interim" period between 11th Feb 2021 and full reopening, the DES outline the following:
"A pregnant teacher who feels they may be at higher risk from COVID-19 can submit an application for COVID-19 Health Risk Categorisation or re-categorisation to MEDMARK. While that is being processed, the teacher should continue to work remotely temporarily during this period" (p. 4).
Information Note TC 0001/2021[248]

A pregnant teacher must FEEL at higher risk and must apply to MEDMARK but may work remotely while MEDMARK processes their application. This does NOT give safety, certainty or peace of mind to pregnant school staff.

Similarly, for High-Risk staff, temporary, time-bound arrangements apply.

"An employer must put in place adequate staffing arrangements to support on-site provision for pupils attending school during this period of partial re-opening. An employer may, where a teacher has been categorised by the Occupational Health Service (MEDMARK) as at High Risk of serious illness if he/she contracts COVID-19, during this phase and on a temporary basis, facilitate more flexible working arrangements made possible by the presence of significantly reduced pupil attendance. A teacher who is over 60 years of age may also be temporarily facilitated by these arrangements. This may include

reassignment of a teacher to other duties within the school or at home. This may include the reassignment of teacher roles within the complement of teachers available to the school" (p. 3). **Information Note TC 0001/2021**[249]

The DES repeats more than once that such arrangements are temporary and time-bound flexibility arrangements for "the interim" period between 11th Feb 2021 and full reopening.
"Temporary time-bound staffing arrangements 25. In recognition of the reduced attendance of pupils in in-school provision at any one time during the first and second interim phase of reopening (special schools and special classes), DE has set out the temporary flexibilities that may be utilised by schools to provide for the provision of remote learning to pupils at home by staff working remotely from their home. This in no way constitutes a precedent for high risk or other staff being facilitated for remote working in subsequent phases" (p. 6). **Appendix 1 Framework SEN 030221**[250]

"All arrangements made under this section are temporary measures and are in place only for this partial re-opening period where, to minimise movement in the State, schools are not in a position to re-open fully" (p. 4). **Information Note TC 0001/2021**[251]

DES puts the onus on each school to provide appropriate PPE and fully implement their COVID-19 Response Plan when they state*, "At all other times, teachers must be available in the normal way to support pupils as required, provided that they are given appropriate PPE and that the school is fully implementing their COVID-19 Response Plan"* (p. 4). **Information Note TC 0001/2021**[252]

7. Cleaning Schools:

*"Each school setting should be cleaned **at least once per day** (emphasis in report). Additional cleaning if available should be focused on frequently touched surfaces – door handles, hand rails, chairs/arm rests, communal eating areas, sink and toilet facilities"* (p. 27). **Covid 19 Response Plan February 2021**[253] This level of cleaning would require cleaning staff on site all day to ensure that this level of cleaning be adequately carried out. The enhanced grants do not and could not finance this at minimum wage rates. Communal toilets may be used by over 30 children numerous times per day, yet in the vast majority of cases, will only be cleaned after school. In contrast the HSA cleaning protocols for cleaning and disinfection require employers to clean at least twice a day and in the case of washrooms "*whenever they are visibly dirty*".[254] It is shocking that different standards are applied to schools.

8. Extra Staff:

School staff understood in March 2020, that extra school staff would be needed to cover absences due to COVID-19, and other absences that normally occur such as maternity leave etc.
A limited "Supply Panel" for Teachers was announced by the DES. All schools do not have access to this Panel and when they do have access, it is shared with approximately 25 other schools. [255]

No such panel exists for SNAs.

Supply panels have worked well where operational but are completely inadequate to provide the cover required. With transmission still high in the community and the new variants more "potent", additional staffing must be sourced now. A mass recruitment campaign is needed for teachers and SNAs to cover:
1. Reducing class size to facilitate adequate physical distancing
2. Absences

In the event of shortage of potential recruits, positions could now be offered to final year B.Ed. students, PMEs and SNAs in the final stages of completing their qualifications.

9. Vaccination for Staff:

School staff are placed at 11 out of 15 for vaccination. Recent claims that school staff would now be vaccinated in the first one third of the population means there has actually been no change.

"*The Department of Education has engaged with the Department of Health on the vaccination schedule who have confirmed that those essential to Education are estimated at this time to be in the first one third of the population captured by the Vaccine Allocation Strategy. The Department has further engaged with the Department of Health requesting that consideration is given to school community as the vaccination programme is rolled out in order to accommodate front line school staff (i.e., those working with SEN students) within the vaccination programme at the earliest possible opportunity"* (p. 4). **Appendix 1 Framework SEN 030221**[256]

10. Extra Protective Measures against New variants of COVID-19:

February 2021: Incredibly, no further mitigation measures (other than those in place in September 2020) are deemed necessary to protect children and school staff against new, highly infectious variants of COVID-19. *"Public Health has confirmed in discussion with DE and stakeholder*

representatives that while the Health Protection Surveillance Centre (HPSC) is keeping risk mitigation measures in general under review in the context of emerging new variants that the infection prevention control (IPC) measures in place for schools since September are still considered highly effective for risk mitigation against transmission of COVID-19. The HPSC have not advised any change in the infection prevention and control measures in the context of the new variants" (p. 4). **Appendix 1 Framework SEN 030221**[257]

There are high rates of COVID-19 in the community and several new, highly infectious variants of the virus circulating in Ireland.

However, **Appendix 2 HPSC guidance on the re-opening of schools. Reopening of schools January 2021 with initial focus on Special Schools and Special Classes** states that HPSC advice in February 2021 does not materially differ to the original guidance issued in June 2020. Appendix 2 also states that the HPSC stated that their guidance does not have to be followed to the letter and that school staff should use compassion, good sense and a reasonable judgment of the level of risk in most situations.

Here is the full quote from page 3.

"*Specific Advice relating to the work of SNAs in close contact settings and mitigation measures to be observed in those settings Specific advice has been provided by the HPSC for the work of SNAs (updated January 2021) and it is intended that while directed to SNAs it can also be applicable to all school staff who work delivering personal care or attention within 2 metres to a pupil. This advice does not materially differ to the original guidance issued in June 2020 but as it is recently provided by HPSC with a particular focus on special education settings, it is set out below."* It notes that the *"guidance is not a rulebook that must be followed to the letter. The appropriate use of this guidance requires the use of compassion and good sense and a reasonable judgment of the level of risk in most situations. If the general principles of this guidance are implemented, the risk that any given pupil or staff member in the educational setting on any given day has infectious COVID-19 is very low. All additional measures are applied as practical to the context with a view to further lowering the risk of transmission to staff or pupils in the event that a person with infectious COVID-19 is at school".* "(p. 3).

Appendix 2 HPC guidance on the re-opening of schools. Reopening of schools January 2021 with initial focus on Special Schools and Special Classes.[258]

<u>11. School Closure when Community Transmission is High:</u>

Between September and December 2020, several schools were forced to close due to COVID-19 outbreaks. School Boards of Management have historically made such decisions to close their school due to for example inclement weather, infectious disease etc. However, the Irish DES ordered schools to reopen, despite the Board decision to close for safety reasons.

One such school was Tarbert Community School:
https://www.irishtimes.com/news/education/school-ordered-to-reopen-after-closing-due-to-covid-19-fears-1.4386387
Another was Claremorris NS https://www.midwestradio.ie/index.php/news/43602-claremorris-boys-ns-to-reopen-reluctantly-on-monday-2

In February 2021, the DES removed the decision to close from the school Board of Management, by stating that schools may not close, if issues arise, unless the Board receives permission to close from the DES and on the advice of Public Health. *"If an issue arises a school may only temporarily cease on site provision with the permission of DE and on the advice of PH"* (p. 10). **Appendix 1 Framework Plan for phased return of primary school education.**[259]

The Board of Management is tasked with bearing huge responsibility in schools. They must be allowed to retain the authority to close if it is deemed to be unsafe to remain open. Clear guidance must be available about the circumstances under which in person education must be suspended. We have no NPHET/HSE produced indicators and thresholds for COVID-19 risks in schools. Work has been done on this by the US Centre for Disease Control [Please see Page 203] Parents United in Britain, on expert advice from the Independent SAGE group, have produced the following guidance on levels of infection and safe forms of education. https://www.parentsunited.net/traffic-lights

12. Data Transparency and Clarity:

Concerns remain that experiences on the ground do not tally with figures produced by public health on the COVID-19 infection rates in school? On 19th of October the INTO sought the publication of the exact number of school staff who have tested positive since September 2020 categorised by school type – primary/special school and by staff roles – mainstream class teacher, special education teacher, other non-class teachers, SNA, school secretary, caretaker etc… As reported on INTO website, the union representatives were informed at the stakeholder meeting 13/11/2020 that a weekly report will be provided – it is not possible to breakdown by school staff role. Public Health Position on 22/01/2021 **Appendix 1 Framework SEN 030221** [260]

Page 2: *"The Deputy Chief Medical Officer at the Joint Oireachtas Committee on Health, on 22nd January, clarified that a percentage of up to 5% of the national total school population returning to on-site provision is an acceptable amount of movement in the population and will not have any adverse impact on community transmission rates".* Question: Are teachers, SNAs, Principals, Bus drivers, Cleaners, Parents included in that 5% of the population, or did they only count the pupils?

Pages 2 and 3: *"Weekly reports provided by the HSE on the results of mass testing of close contacts in schools consistently show low detection rates in adults in schools for COVID-19. In the last report before the Christmas break for week 51, overall, 2,852 tests were carried out on close contacts in school communities, of these 4% (100) were on adults (18+) in 3 special education settings and less than 5 of those tests detected COVID-19, a positivity rate of 3%. These reports will continue to be produced and published in line with the phased reopening of schools".*

Observation: "Mass testing" is regularly mentioned, giving the impression that whenever there is a COVID-19 case in a school, the entire school, pupils and staff, are "mass tested". That rarely happens.

These are some of the headlines in the media related to schools in Ireland and Government or public health press releases:

Covid: 1 in 3 parents concerned over school environment[261]

Irish schools worst funded", [262]

"Procedure for Covid-19 cases in Irish primary schools"[263]

"Home Schooling Facts Ireland" [264]

Covid-19: Cabinet agrees to keep schools closed for January in 'most challenging phase of all' [265]

"Children should attend school with a cold" 24th August 2020[266]

"Only Transmission in 10 Schools Ireland"[267] 28th October 2020

"When it comes to testing in schools…different rules apply." [268] 31st October 2020

"Irish schools to remain open during Level 5 restrictions"[269] 19th October 2020

HSE chief Paul Reid says schools shouldn't close early for Christmas after outbreak at Kerry primary school[270]

What Key Sources of Evidence, Data, Guidance and Groups do Irish Public Health Officials Rely on?

As this study focused mainly on schools during the COVID-19 pandemic, and in particular between the time schools opened and closed in Ireland, it was important to investigate the various types of mitigations, interventions, testing and close contact tracing strategies in schools and children while considering reports by the press, and on social media, and cross examining these accounts against policies and procedures nationally, and internationally.

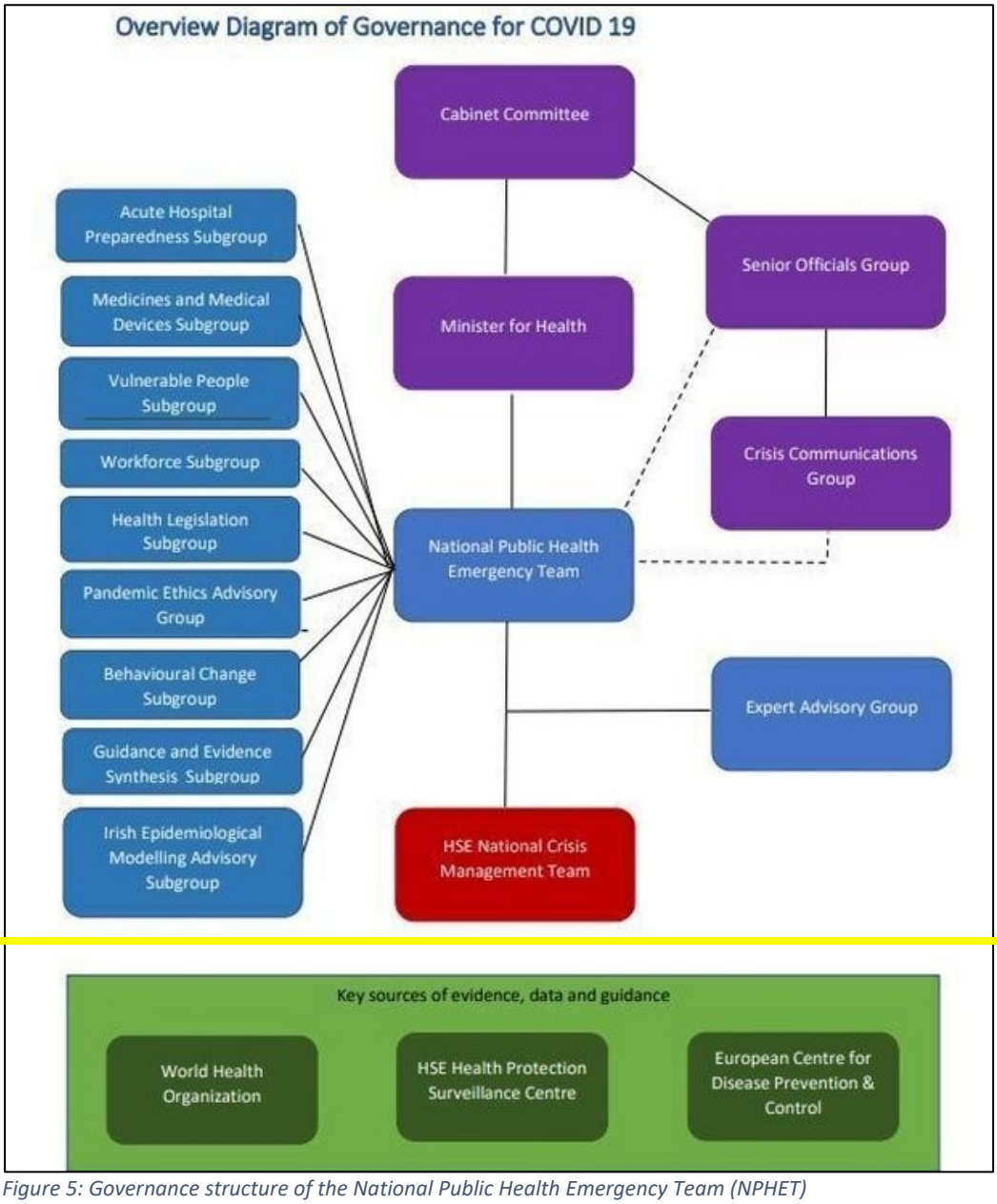


Figure 5: Governance structure of the National Public Health Emergency Team (NPHET)

The governance structure of the National Public Health Emergency Team (NPHET) [12] can be seen above (Figure 3). A full list of all members are available on the Department of Health's website. [3]

"*The National Public Health Emergency Team (NPHET) oversees and provides national direction, guidance, support and expert advice on the development and implementation of strategies to contain COVID-19 in Ireland. HIQA provides evidence based advice in response to requests from NPHET. The advice provided to NPHET is informed by research evidence developed by HIQA's COVID-19 Evidence Synthesis Team and with expert input from HIQA's COVID-19 Expert Advisory Group (EAG). Topics for consideration are outlined and prioritised by NPHET. This process helps to ensure rapid access to the best available evidence relevant to the SARS-CoV-2 outbreak to inform decision making at each stage of the pandemic. HIQA also support other subgroups such as the Guidance and Evidence Synthesis Subgroup."* [13]

As can be seen in the Governance structure above, all subgroups including HIQA, the HSE and NPHET, have three key sources which they state they use for evidence, data and guidance. Nationally, they rely on the Health Protection Surveillance Centre (HPSC) [4] who work under the remit of the Health Service Executive (HSE) [6]. Internationally, the data and evidence they rely on to inform Irish policy and guidance comes from the European Centre for Disease Prevention and Control (ECDC) [11] and the World Health Organisation (WHO) [10], who in turn often rely on information from each other and often adapt information and resources from the Centre for Disease Control and Prevention (CDC) [14].

The next part of this report reviewed the advice, data and guidance provided to the general public by the Government, NPHET, the HSE and the HPSC, of which was underpinned by advice from feedback, advice and research from various subgroups. This was then cross examined against Irish statistical data (Part One of this Study) and the guidelines, data and advice from ECDC, WHO and CDC; of which the NPHET and the HPSC cited in reports as sources. Collectively, this aided in investigating the large range of issues raised by the public and reported in the media, including:

- Close contact identification, tracing and testing in schools
- Clusters and outbreaks related to schools and activities
- Preventative measures, policies and mitigation provided for schools
- Remote learning education policies for children
- School staff with medical conditions working in schools
- Public health messaging/communications in the community and in schools
- Public policy/messaging in Ireland and internationally
- Timeliness and accuracy of published minutes, statistical and informational reports

Clusters, Outbreaks & Close Contacts in Schools: Definition, Tracing and Testing

On the 18th of November 2020, HIQA published a report for the NPHET entitled "*Advice to the National Public Health Emergency Team: "What activities or settings are associated with a higher risk of SARS-CoV-2 transmission?"* [13]. (*See* HIQA's Protocol and Evidence Summary [40] [39])

In consultation with the EAG, HIQA advised the National Public Health Emergency Team [NPHET] of the following:

"*The main factors found to contribute to transmission risk include indoor environments, crowds, and prolonged and intense contact with others. Other important factors may include the level of ventilation, speaking volume, insufficient use of face coverings, along with the viral load of the index case. In particular, activities involving dining, drinking, exercising, singing or shouting, prolonged face-to-face conversation, especially in indoor crowded environments, were associated with an increased risk of transmission in several studies." "A range of effective infection prevention and control (IPC) measures may mitigate some of the transmission risk associated with these settings and activities." "Specifically in relation to occupational settings, additional factors found to be associated with an increased risk of transmission include: working despite symptoms ('presenteeism'); higher proportions of individuals from lower socioeconomic groups, ethnic minorities and those with migrant status; lack of access to hand-washing facilities; inadequate or inappropriate use of personal protective equipment (PPE); exposure to multiple clients; face-to-face contact; congregation; shared accommodation and transportation; and exposure to fomites (such as tools)."*

Limitations: It was noted in the HIQA report that clusters and outbreaks in schools did not appear to be significant however, it was noted that: *"The relatively low certainty of the included data and the potentially limited relevance to the Irish setting were noted as limitations. The context is important for the interpretation of these data, in that the activities that occur in a specific setting in one country may be different to activities that occur in the same setting in Ireland."*

Amongst other significant findings, the researchers also observed: "*Recall and reporting biases* are particular issues in relation to the investigation and reporting of SARS-CoV-2 clusters. Hence, clusters may have been over-reported in certain settings, and under-reported in others. The findings are also time-sensitive; as time progresses, a different picture of where clusters occur may emerge, particularly given the wide scale adoption of testing and infection, prevention and control measures in settings previously identified to be high risk."

- The transmission pattern of SARS-CoV-2 appears to be highly overdispersed with a small proportion of cases potentially seeding the majority of local transmission. Indoor, high occupancy, poorly ventilated environments, where there is shouting and singing, insufficient use of face coverings, and prolonged contact present the highest risk of SARS-CoV-2 transmission.
- To mitigate the additional risk of transmission, the required range and or intensity of public health measures may need to differ for activities and settings conducive to superspreading. These settings include, but are not limited to, health and social care settings, meat and food processing plants, cruise ships, prisons, shopping malls, religious settings, bars, nightclubs and restaurants, gyms, offices, weddings and large shared accommodation.
- Data regarding the types of settings where clusters have occurred are time-sensitive and potentially subject to under or over-reporting. As time progresses, a different picture may emerge of where clusters occur, particularly given the wide scale adoption of public health measures (testing and infection prevention and control (IPC) measures) in settings previously identified to be at high risk.
- Irish data regarding settings and activities associated with increased risk of SARS-CoV-2 transmission are required to better understand national risk and mitigation factors. Consideration should be given to undertaking retrospective (or backward) contact tracing, and well-designed case-control studies.
- As there is a higher relative risk of onward transmission in household settings, there is a clear rationale for the application of self-isolation guidelines within households. To facilitate better compliance, consideration should be given to the types of supports required for those unable to safely self-isolate at home. Specific supports to enable compliance with self-isolation and restriction of movement guidelines may also be required for those sharing households with individuals categorised as extremely medically vulnerable.
- When implementing public health measures to mitigate risk, the relative importance of the settings and activities to the individual and to society as a whole should be considered.
- Communication campaigns should focus on the:
    - characteristics of the settings and activities conducive to transmission
    - concept that there are different levels of risk
    - potential to mitigate risk using a range of effective infection prevention and control (IPC) measures
    - importance of adherence to guidelines for self-isolation and restriction of movements
    - availability of supports to enable people to adhere to self-isolation guidance.

Figure 6: HIQA's advice to the National Public Health Emergency Team

1) European Centre for Disease Prevention and Control – ECDC Guidelines

The **European Centre for Disease Prevention and Control (ECDC)** issued guidance to public health experts working in school settings and public health authorities in EU/EEA countries around the identification and testing of cases in schools. [23] [20] [20] [11]

ECDC: Key messages included in their publications:

- → *School closures can contribute to a reduction in SARS-CoV-2 transmission, but by themselves are insufficient to prevent community transmission of COVID-19 in the absence of other non-pharmaceutical interventions (NPIs) such as restrictions on mass gathering.*
- → Transmission of SARS-CoV-2 can occur within school settings and clusters have been reported in preschools, primary and secondary schools.
- → *Incidence of COVID-19 in school settings appear to be impacted by levels of community transmission. *
- → *"There is a general consensus that the decision to close schools to control the COVID-19 pandemic should be used as a last resort."*
- → *"Children of all ages are susceptible to and can transmit SARS-CoV-2. Younger children appear to be less susceptible to infection, and when infected, less often lead to onward transmission than older children and adults."*
- → *"This report does not consider the epidemiology of COVID-19 in relation to new variants of SARS-CoV-2, for which robust evidence on the potential impact in school settings is not yet available, such as one recently observed in the United Kingdom."*

This ECDC guidance document [20] defines a close contact/high-risk exposure in a school setting as a person who was in a closed environment with a COVID-19 case for more than 15 minutes. This includes classrooms. Updated guidance issued by the ECDC in December 2020 [16] on COVID-19 in children and the role of school settings in transmission noted that "*the general consensus that the decision to close schools to control the COVID-19 pandemic should be used as a last resort.".*

However, it also stated that "*children of all ages are susceptible to and can transmit SARS-CoV-2*" and noted that ECDC guidance on schools has not yet "*consider[ed] the epidemiology of COVID-19 in relation to new variants of SARS-CoV-2, for which robust evidence on the potential impact in school settings is not yet available*".

The ECDC report noted that:

- *"Transmission of SARS-CoV-2 can occur within school settings and clusters have been reported in preschools, primary and secondary schools."*

- *"Incidence of COVID-19 in school settings appear to be impacted by levels of community transmission."*

Table 1. Classification of a contact based on level of exposure [10]

High-risk exposure (close contact)	Low-risk exposure
A person: • having had face-to-face contact with a COVID-19 case within two metres for more than 15 minutes; • having had physical contact with a COVID-19 case; • having had unprotected direct contact with the infectious secretions of a COVID-19 case (e.g. being coughed on); • who was in a closed environment (e.g. household, classroom, meeting room, hospital waiting room, etc.) with a COVID-19 case for more than 15 minutes; • travelling together (less than 2 metres proximity) with a COVID-19 case in any mode of transport for more than 15 minutes.	A person: • having had face-to-face contact with a COVID-19 case within two metres for less than 15 minutes; • who was in a closed environment with a COVID-19 case for less than 15 minutes; • travelling together (less than 2 metres proximity) with a COVID-19 case in any mode of transport for less than 15 minutes.

Longer duration of contact is assumed to increase the risk of transmission; the 15-minute limit is arbitrarily selected for practical purposes. Public health authorities may consider some persons who have had a shorter duration of contact with the case as having had high-risk exposure, based on individual risk assessments.

In the context of school settings, high-risk exposure (close) contacts are defined as follows:

- Students and staff who have shared a classroom with the confirmed case and during the same time period.
- Other students and staff with whom the confirmed case has spent time, according to the definition in Table 1 'High risk exposure' (e.g. students with whom the confirmed case have been in close proximity during breaks or sport activities, in the cafeteria, gym or school playground).
- Students and staff in boarding schools/residential schools - also those sleeping in the same room or sharing a common kitchen, social space and/or bathroom.

2) World Health Organisation [WHO] Guidelines

In September 2020, the World Health Organisation issued a number of guidelines '

The principles underlying the considerations for school-related public health measures to prevent and minimize SARS-CoV-2 transmission in school settings are as follows:
Ensuring continuity of safe, adequate and appropriate educational and social learning and development of children

- *Minimizing the risk of SARS-CoV-2 transmission within school and school-associated settings among children, teachers and other school staff*
- *Guarding against the potential for schools to act as amplifiers for transmission of SARS-COV-2 within communities*
- *Ensuring school-related PHSM are integrated into and support the wider measures implemented at the community level*

They also stated:

Contact Definition*: A contact is a person who has had any one of the following exposures to a* ***probable or confirmed*** *case:*

- *face-to-face contact with a* ***probable or confirmed*** *case within 1 meter and for at least 15 minutes.*
- *direct physical contact with a probable or confirmed case*
- *direct care for a patient with probable or confirmed COVID-19 disease without the use of recommended PPE; or*
- *other situations as indicated by local risk assessments.*

In scenarios where it may not be feasible to identify, monitor and quarantine all contacts, prioritization for follow-up should be given to **contacts at a higher risk of infection based on their degree of exposure, and contacts at a higher risk of developing severe COVID-19**.

The following groups of contacts can be prioritized for identification, follow-up and supported quarantine: Household contacts; **Contacts made in crowded or closed settings** (e.g., long-term living facilities, prisons, shelters, hostels, gyms and meeting rooms), **especially in settings with poor ventilation**. **This can include 'proximate contacts' who were further than 1m away from a case but were in the same closed space for an extended amount of time without PPE.**

The WHO advises that schools should *"Inform parents about the measures the school is putting in place and* ***ask for cooperation to report any cases of COVID-19 that occur in the household****. If*

someone in the household is suspected of having COVID-19, all children in the household should stay at home and keep schools informed."

To respond to school-based cases, prompt isolation of cases and contact tracing and quarantine of contacts should be implemented while maintaining confidentiality.

This should also include: "***Decontamination of relevant areas of schools; contact tracing and risk assessment before considering class or school closures***. Depending on the national policy, consider isolation of a classroom or a group within a classroom if contact has been limited to specific groups rather than moving school closure."

Screening and management of sick students, teachers and other school staff

• Enforce the policy of "staying at home if unwell" for students, teachers or school staff with potential COVID-19 infection and connect them with local healthcare providers for assessment, testing and care. If possible, connect with local organizations to provide home care support and ensure communication between home and school.

• Create a checklist for parents/students /staff to decide whether they can go to school, with due consideration for the local epidemiology of COVID-19. The checklist should include:

– underlying medical conditions and vulnerabilities, to protect the student/staff

– recent illness or symptoms suggestive of COVID-19, to prevent spread to others

– special circumstances in the home environment, to tailor support as needed.

• Waive the requirement for a doctor's note to excuse absences when there is community transmission of COVID-19.

• Consider daily screening for history of fever or feeling feverish in the previous 24 hours upon entry into the building for all staff, students and visitors to identify persons who are sick.

• Ensure students who have been in contact with a COVID-19 case stay home for 14 days. School officials should notify public health authorities in the event of a positive COVID-19 case among students or staff. Other key points:

- The extent to which children contribute to transmission of SARS-CoV-2 remains incompletely understood.
- Documented transmission among children and staff within educational settings is limited because so many countries closed schools and children have largely remained at home during intense periods of community transmission.

- Studies in educational settings suggest that the introduction of the virus generally started with infected adults. **Staff-to-staff transmission was more common** than staff to student transmission, and student-to-student transmission was rare
- Based on analysis of the shared characteristics of clusters, Japanese authorities developed a concept called the "Three Cs" to denote high-risk places and situations: 1) Closed spaces with poor ventilation; 2) Crowded spaces with many people; and 3) Close contact, such as from intimate conversations, loud cheering, singing, or exercise within a short distance from other persons.
- Considering that most countries are only slowly lifting restrictions on activities and social gatherings, the longer-term effects of keeping schools open on community transmission are yet to be evaluated. **This underscores the importance of rigorous implementation of preventive measures when SARS-CoV-2 is circulating in the community.**

3) US Centres for Disease Prevention and Control [CDC] Indicators

The **US Centres for Disease Prevention and Control (CDC)** provided indicators [17] which could be used to determine the level of risk of transmission in schools in order to help determine when it was safe to reopen schools. The CDC was clear that the level of risk in schools would reflect the level of transmission in the wider community:

> *"Success in preventing the introduction and subsequent transmission of SARS-CoV-2 in schools is connected to and dependent upon preventing transmission in communities."*

It outlined a number of Core and Secondary Indicators for determining the risk of transmission in schools.

The Core Indicators:

CDC indicators and thresholds for risk of introduction and transmission of COVID-19 in schools

INDICATORS	Lowest risk of transmission in schools	Lower risk of transmission in schools	Moderate risk of transmission in schools	Higher risk of transmission in schools	Highest risk of transmission in schools
CORE INDICATORS					
Number of new cases per 100,000 persons within the last 14 days*	<5	5 to <20	20 to <50	50 to ≤ 200	>200
Percentage of RT-PCR tests that are positive during the last 14 days**	<3%	3% to <5%	5% to <8%	8% to ≤ 10%	>10%
Ability of the school to implement 5 key mitigation strategies: • Consistent and correct use of masks • Social distancing to the largest extent possible • Hand hygiene and respiratory etiquette • Cleaning and disinfection • Contact tracing in collaboration with local health department Schools should adopt the additional mitigation measures outlined below to the extent possible, practical and feasible.	Implemented **all 5** strategies correctly and consistently	Implemented **all 5** strategies correctly but inconsistently	Implemented **3-4** strategies correctly and consistently	Implemented **1-2** strategies correctly and consistently	Implemented **no** strategies

Two of the Core Indicators were the 14-day incidence rate per 100,0000 people in the community and the 14-day positivity rate in the community.

The CDC stresses that:

> *"The two measures of community burden should be used to assess the incidence and spread of SARS-CoV-2 in the surrounding community (e.g., county)* ***and not in the schools themselves****. Currently, CDC does not recommend using these core indicators as measures of burden within the school."*

In other words, the incidence rate and positivity rate that should be used to assess the level of risk in schools are those relating to the wider community, not to those within the school itself.

The key mitigation measures mentioned include the **use of masks in schools**, **social distancing** to the largest extent possible, hand hygiene, cleaning and **contact tracing** in collaboration with local public health department. Secondary Indicators include the percentage of in-patient beds and intensive care beds that are occupied, the percentage of in-patient beds that are occupied by patients with COVID-19 and the existence of localised community/public setting outbreaks.

As seen below, the CDC also outlined the level of risk associated with different learning modalities.

Higher risk:

- Full sized, in-person classes, activities, and events
- Students minimally mix between classes and activities
- Students and teachers share some objects
- Students, teachers, and staff follow some steps to protect themselves and others at all times such as proper use of face masks, social distancing, hand hygiene and respiratory etiquette
- Irregular cleaning and disinfection of frequently touched surfaces

Highest risk:

- Full sized, in-person classes, activities, and events
- Students mix freely between classes and activities
- Students and teachers freely share objects
- Students, teachers, and staff do not/are not required to follow steps to protect themselves and others such as proper use of face masks, social distancing, hand hygiene and respiratory etiquette
- Irregular cleaning and disinfection of frequently touched surfaces

These guidelines were updated on the 12th and 18th of February 2021 (see below).

All international organisations [WHO, ECDC and CDC] are explicitly clear - when community transmission is high in-person schooling is deemed as high risk to students, staff, families and communities. Decisions in relation to school reopening or closures should not be made on dates, but instead the level of national and local community transmission and secondary factors such as the status of the healthcare system. The new CDC guidance [271]for schools[272] [273]recommends school and state/local officials to: First, **determine the current level of community transmission**, based on the CDC indicators and thresholds for community transmission of COVID-19 [this should be done weekly and, it is important to note that "*the two measures of community burden should be used to assess the incidence and spread of SARS-CoV-2 in the surrounding community (e.g., county) and not in the schools themselves*.] Second, follow the phased mitigation recommendations in making decisions by regularly monitoring local indicators.

- The CDC says that "local trends and other factors" should be considered by school and local officials when making decisions about in-person learning. *"For example, implementation of mitigation strategies should be intensified if indicators worsen (i.e., moving from low to moderate to substantial to high community transmission)."*
- The CDC also says that *"if increasing trends persist in or plateau in substantial levels, school should transition to hybrid instruction".*
- Transitioning back to *"full in-person instruction should only be relaxed or lifted after improvements are documented continuously for several weeks, such as decreasing to moderate from substantial levels".*

CDC recommends the use of two measures of community burden to determine the level of risk of transmission: total number of new cases per 100,000 persons in the past 7 days; and percentage of nucleic acid amplification tests (NAATs), including RT-PCR tests that are positive during the last 7 days. The two measures of community burden should be used to assess the incidence and spread of SARS-CoV-2 in the surrounding community (e.g., county) and not in the schools themselves. If the two indicators suggest different levels, the actions corresponding to the higher threshold (in Table 2) should be chosen. The transmission level for any given location will change over time and should be reassessed weekly for situational awareness and to continuously inform planning.

Table 1. CDC Indicators and Thresholds for Community Transmission of COVID-19[1]

Indicator	Low Transmission Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
Total new cases per 100,000 persons in the past 7 days[2]	0-9	10-49	50-99	≥100
Percentage of NAATs that are positive during the past 7 days[3]	<5.0%	5.0%-7.9%	8.0%-9.9%	≥10.0%

[1]If the two indicators suggest different levels, the actions corresponding to the higher threshold should be chosen. County-level data on total new cases in the past 7 days and test percent positivity are available on the County View tab in CDC's COVID Data Tracker.

[2]Total number of new cases per 100,000 persons within the last 7 days is calculated by adding the number of new cases in the county (or other community type) in the last 7 days divided by the population in the county (or other community type) and multiplying by 100,000.

[3]Percentage of positive diagnostic and screening NAATs during the last 7 days is calculated by dividing the number of positive tests in the county (or other administrative level) during the last 7 days by the total number of tests resulted over the last 7 days. Additional information can be found on the Calculating Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Laboratory Test Percent Positivity: CDC Methods and Considerations for Comparisons and Interpretation webpage.

[4]Previously, CDC provided guidance for schools through the Indicators for Dynamic School Decision-Making. The current indicators and thresholds are an update to that document that reflect a focus on the past 7 days, and four (rather than five) categories of community transmission.

New CDC school indicators

18th February 2021: https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/indicators.html

12th February 2021: **Operational Strategy for K-12 Schools through Phased Mitigation**, https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/operation-strategy.html#indicators

The new CDC guidance for schools[274] recommends school and state/local officials to

- first, **determine the current level of community transmission**, based on the CDC indicators and thresholds for community transmission of COVID-19 [this should be done weekly and, it is important to note that "the two measures of community burden should be used to assess the incidence and spread of SARS-CoV-2 in the surrounding community (e.g., county) and not in the schools themselves.]
- second, follow the **phased mitigation recommendations** in making decisions by regularly monitoring local indicators.

The CDC says that "local trends and other factors" should be taken into account by school and local officials when making decisions about in-person learning. "For example, **implementation of mitigation strategies should be intensified if indicators worsen** (i.e., moving from low to moderate to substantial to high community transmission)."

The CDC also says that "**if increasing trends persist in or plateau in substantial levels, school should transition to hybrid instruction**".

CDC recommends the use of two measures of community burden to determine the level of risk of transmission: total number of new cases per 100,000 persons in the past 7 days; and percentage of nucleic acid amplification tests (NAATs), including RT-PCR tests that are positive during the last 7 days. The two measures of community burden should be used to assess the incidence and spread of SARS-CoV-2 in the surrounding community (e.g., county) and not in the schools themselves. If the two indicators suggest different levels, the actions corresponding to the higher threshold (in Table 2) should be chosen. The transmission level for any given location will change over time and should be reassessed weekly for situational awareness and to continuously inform planning.

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[2]Total number of new cases per 100,000 persons within the last 7 days is calculated by adding the number of new cases in the county (or other community type) in the last 7 days divided by the population in the county (or other community type) and multiplying by 100,000.

[3]Percentage of positive diagnostic and screening NAATs during the last 7 days is calculated by dividing the number of positive tests in the county (or other administrative level) during the last 7 days by the total number of tests resulted over the last 7 days. Additional information can be found on the Calculating Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Laboratory Test Percent Positivity: CDC Methods and Considerations for Comparisons and Interpretation webpage.

[4]Previously, CDC provided guidance for schools through the Indicators for Dynamic School Decision-Making. The current indicators and thresholds are an update to that document that reflect a focus on the past 7 days, and four (rather than five) categories of community transmission.

Transitioning back to "full in-person instruction should only be relaxed or lifted after improvements are documented continuously for several weeks, such as decreasing to moderate from substantial levels".

In making these decisions, the Secondary Indicators previously published by the CDC can also be consulted – these are available in the CDC's prior Indicators for Dynamic School Decision Making[275].

The CDC says that "**to reduce the risk of transmission in schools, schools should fully implement and strictly adhere to recommended layered mitigation strategies, especially universal and correct masking and physical distancing**". These mitigation measures are needed even if the level of community transmission is low.

There are **two 'phased mitigation strategies' for schools to consult, depending on whether or not the school offers regular screening testing of all staff and students.**

Phased mitigation in schools that do not implement screening testing

The mitigation plan for schools that do not conduct regular screening testing of all students and staff, "emphasizes mitigation at all levels of community transmission, with **particular emphasis on school policies that require universal and correct use of masks**."

Table 2. Recommended Implementation of Mitigation Strategies and K-12 School Learning Modes by Level of Community Transmission for Schools That Do Not Implement Expanded Screening Testing

Low Transmission[1] Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
All schools: Universal and correct use of masks is required; physical distancing; handwashing and respiratory etiquette; cleaning and maintaining healthy facilities; contact tracing in combination with isolation and quarantine. **Diagnostic testing[2]:** Symptomatic students, teachers, and staff and close contacts referred for diagnostic testing			
K-12 schools open for full in-person instruction Physical distancing of 6 feet or more to the greatest extent possible[3]		Elementary schools in hybrid learning mode or reduced attendance[4] Physical distancing of 6 feet or more is required	
		Middle and high schools in hybrid learning mode or reduced attendance Physical distancing of 6 feet or more is required	Middle and high schools in virtual only instruction unless they can strictly implement all mitigation strategies, and have few cases; schools that are already open for in-person instruction can remain open, but only if they strictly implement mitigation strategies and have few cases[5]
Sports and extracurricular activities occur; physical distancing of 6 feet or more to the greatest extent possible[6]	Sports and extracurricular activities occur with physical distancing of 6 feet or more required	Sports and extracurricular activities occur only if they can be held outdoors, with physical distancing of 6 feet or more required	Sports and extracurricular activities are virtual only

[1]Levels of community transmission defined as total new cases per 100,000 persons in the past 7 days (low, 0-9; moderate, 10-49; substantial, 50-99; high, ≥100) and percentage of positive tests in the past 7 days (low, <5%; moderate, 5-7.9%; substantial, 8-9.9%; high, ≥10%).

[2]Diagnostic testing for SARS-CoV-2 is intended to identify occurrence of SARS-CoV-2 infection at the individual level and is performed on individuals with or without suspected COVID-19 infection in accordance with the test's authorization and labeling.

[3]If physical distancing of at least 6 feet among all students, teachers, and staff within a class, cohort, or pod is not possible at all times, schools should ensure physical distancing between classes, cohorts, and pods.

[4]Hybrid learning or reduced attendance is intended to maximize physical distance between students. Schools may consider hybrid learning models or instructional modes where substantial percentages of students are in virtual only instruction. At all levels of community transmission, schools should provide families the option to participate in virtual learning if a student or family member is at risk of severe illness from COVID-19.

[5]Strict implementation of mitigation strategies refers to policies that require consistent and correct use of masks, physical distancing of at least 6 feet, all other key mitigation strategies.

[6]School officials should implement limits on spectators and attendees for sports, extracurricular activities, and school events as consistent with recommendations for masking and physical distancing for each phase.

Phased mitigation in schools that implement screening testing

This is "an operational plan for schools that offer screening testing either on premises or through a collaboration with a community service or department of public health". As with the plan where schools are not doing screening testing, the plan "**emphasizes mitigation with particular emphasis on school policies that require universal and correct use of masks**".

Table 3. Recommended Implementation of Mitigation Strategies, Testing, and Safe K-12 School Learning Modes by Level of Community Transmission for Schools that Implement Expanded Screening Testing

Low Transmission[1] Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
All schools implement 5 key mitigation strategies: Universal and correct use of masks required; physical distancing; handwashing and respiratory etiquette; cleaning and maintaining healthy facilities; contact tracing in combination with isolation and quarantine. **Diagnostic testing[2]:** Symptomatic students, teachers, and staff and close contacts referred for diagnostic testing			
Screening Testing			
Routine screening testing of teachers and staff offered once per week			
No screening testing for students	Routine screening testing of students offered once per week[4]		
School Status			
K-12 schools open for full in-person instruction Physical distancing of 6 feet or more to the greatest extent possible[5]		K-12 schools in hybrid learning mode or reduced attendance[6] Physical distancing of 6 feet or more is required	
Sports and extracurricular activities occur; physical distancing of 6 feet or more to the greatest extent possible[7]	Sports and extracurricular activities occur with physical distancing of 6 feet or more required	Sports and extracurricular activities occur only if they can be held outdoors, with physical distancing of 6 feet or more required	Sports and extracurricular activities are virtual only

[1]Levels of community transmission defined as total new cases per 100,000 persons in the past 7 days (low, 0-9; moderate, 10-49; substantial, 50-99; high, ≥100) and percentage of positive tests in the past 7 days (low, <5%; moderate, 5-7.9%; substantial, 8-9.9%; high, ≥10%).

[2]Diagnostic testing for SARS-CoV-2 is intended to identify occurrence of SARS-CoV-2 infection at the individual level and is performed when there is a reason to suspect that an individual may be infected, such as having symptoms or suspected recent exposure.

[3]Screening testing is intended to identify infected asymptomatic individuals who may be contagious so that measures can be taken to prevent further transmission.

[4]Schools may consider testing a random sample of at least 10% of students or may conduct pooled testing of cohorts/pods for screening testing in areas of moderate and substantial community transmission.

[5]If physical distancing of at least 6 feet among all students, teachers, and staff within a class, cohort, or pod is not possible at all times, schools should ensure physical distancing between classes, cohorts, and pods.

[6]Hybrid learning or reduced attendance is intended to maximize physical distance between students. Schools may consider hybrid learning models or instructional modes where substantial percentages of students are in virtual only instruction. At all levels of community transmission, schools should provide families the option to participate in virtual learning if a student or family member is at risk of severe illness from COVID-19.

[7]School officials should implement limits on spectators and attendees for sports, extracurricular activities, and school events as consistent with recommendations for masking and physical distancing for each phase.

A phased mitigation approach to learning modes and testing for K-12 schools relies on several core concepts.

- **K–12 schools should be the last settings to close after all other mitigation measures in the community have been employed, and the first to reopen when they can do so safely.** This implies that decision-makers and communities should prioritize schools for reopening and remaining open for in-person instruction over nonessential businesses and activities including indoor dining, bars, social gatherings, and close contact sports as community transmission is controlled.
- **In-person instruction should be prioritized over extracurricular activities including sports and school events, to minimize risk of transmission in schools and protect in-person learning**. Prolonged periods of remote or virtual learning can have negative effects on educational progress for students, potentially slowing or reversing academic gains. Students from low-resourced communities, English learners, and students with disabilities may disproportionately experience learning loss due to limited access to remote learning technology and fewer learning support systems and services outside of schools. Safe in-person schooling can also offset the negative social, emotional, and mental health impacts of prolonged virtual learning. Minimizing the risk of spread during extracurricular activities and social gatherings outside of school can help maintain in-person instruction. Some close-contact sports may not be able to be implemented at any level of community transmission given the risk of transmission and the inability to implement mitigation strategies[22].
- **Lower susceptibility and incidence among younger children compared to teenagers suggests that younger students (for example, elementary schools) are likely to have less risk of in-school transmission due to in-person learning than older students (middle schools and high schools).** In addition, younger children may benefit more from in-person instruction and are less independent than older students. For these reasons, a phased mitigation approach emphasizes in-person learning modes for younger students throughout all levels of community transmission.
- **Families of students who are at increased risk of severe illness (including those with special healthcare needs) or who live with people at high risk should be given the option of virtual instruction regardless of the mode of learning offered**.
- **Schools are encouraged to use cohorting or podding of students**, especially in moderate (yellow), substantial (orange), and high (red) levels, to facilitate testing and contact tracing, and to minimize transmission across pods.

Schools that do not implement expanded screening testing: Learning modes and phased mitigation

"For schools that do not implement expanded screening testing, recommended learning modes vary to minimize risk of SARS-CoV-2 transmission in school by emphasizing layered mitigation, including school policies requiring universal and correct mask use."

- **Low (blue) and moderate (yellow) community transmission**: Elementary, middle, and high schools are open for full in-person learning with all 5 key mitigation strategies. Universal and correct use of masks is required. Physical distancing is maintained to the greatest extent possible. Schools may benefit from using pods or cohorts to facilitate testing protocols and contact tracing and minimizing risk of transmission. If physical distancing of at least 6 feet among all students, teachers, and staff within a class, cohort, or pod is not possible at all times, schools should ensure physical distancing between classes, cohorts, and pods.

- **Substantial (orange) community transmission**: Elementary, middle, and high schools transition to hybrid instruction to maximize physical distancing and reduce risk of transmission. Schools may consider hybrid learning models or instructional modes where substantial percentages of students are in virtual only instruction. All 5 key mitigation strategies are implemented. Universal and correct use of masks and physical distancing are required.

- **High (red) community transmission**: Elementary schools continue hybrid instruction with all 5 key mitigation strategies in place. Universal and correct use of masks and physical distancing are required. For middle schools and high schools, transition to virtual instruction is recommended. Some middle schools and high schools may consider opening or remaining open if mitigation strategies are consistently implemented, school policies requiring universal and correct use of masks are in place and monitoring of cases in school suggests limited transmission. In communities with high levels of transmission, high prevalence of COVID-19 in the community could also result in many teacher and staff quarantines due to exposures in the community, limiting the ability of schools to remain safely open.

Schools that implement expanded screening testing: Learning modes and phased mitigation

"Relying on these core concepts, a phased approach takes into account levels of community transmission and presents options for learning modes and testing strategies based on the risk of SARS-CoV-2 transmission in school."

- **Low (blue) community transmission**: Elementary, middle, and high schools are open for full in-person learning with all 5 key mitigation strategies in place. Universal and correct use of masks is required. Schools may benefit from using pods or cohorts to facilitate testing protocols and contact tracing and minimizing risk of transmission.

- **Moderate (yellow) community transmission**: Elementary, middle, and high schools are open for full in-person learning with all 5 key mitigation strategies in place, using pods or cohorts. Universal and correct use of masks is required.

- **Substantial (orange) community transmission**: Elementary, middle, and high schools transition to hybrid instruction to maximize physical distancing and reduce risk of transmission. Schools may consider hybrid learning models or instructional modes where substantial percentages of students are in virtual only instruction. All 5 key mitigation strategies are implemented. Universal and correct use of masks is required; physical distancing is maintained.

- **High (red) community transmission**: Elementary, middle, and high schools continue hybrid instruction with all 5 key mitigation strategies in place. In communities with high levels of transmission, high prevalence of COVID-19 in the community could result in many teacher and

staff quarantines due to exposures in the community, limiting the ability of schools to remain safely open. Universal and correct use of masks is required; physical distancing is maintained.

[Recommendations about high risk staff and staff who live with high risk family members:]

"At all levels of community transmission, employers should provide reassignment, remote work, or other options for staff who have documented high-risk conditions or who are at increased risk for severe illness from COVID-19 to limit the risk of workplace exposure. When these conditions are disabilities under the Americans with Disabilities Act, employers must provide reasonable accommodation subject to undue hardship. Options for reassignment may include but are not limited to telework, virtual teaching opportunities, modified job responsibilities, environmental modifications, scheduling flexibility, or temporary reassignment to different job responsibilities. These options should likewise be extended to staff who have a household member with a high-risk condition or who are at increased risk for severe illness from COVID-19. Policies and procedures addressing issues related to teachers and other staff at higher risk of serious illness and the application of reassignment, remote work or other options for mitigation should be made in consultation with occupational medicine and human resource professionals with knowledge of the specific situation, keeping in mind Equal Employment Opportunity (EEO) and other potential legal concerns."

[All guidance may be updated based on the new variants that are now circulating.]

CDC definition of close contact: https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/student-becomes-sick-diagnosis-flowchart.html

Quote: "While risk of exposure to SARS-CoV-2 in a school may be lower when indicators of community spread are lower, this risk is also dependent upon the implementation of school and community mitigation strategies, including requiring universal and correct use of masks, physical distancing handwashing and respiratory etiquette, cleaning and maintaining healthy facilities, and contact tracing in combination with isolation and quarantine. Success in preventing COVID-19 in schools begins with and is connected to preventing transmission in communities."

4) ECDC Risk Assessment - New Variants

A new ECDC risk assessment on new COVID-19 variants[276] (15th February 2021) warns that the UK variant (B.1.1.7), which is now dominant in Ireland

- is "much more transmissible" (50-75%)
- "is associated with an increased risk of hospitalisation and death"
- infects 10-55% more close contacts "across most age groups"
- is "associated with increased risk of death"

The ECDC says[277] "immediate, strong and decisive public health interventions are essential to control transmission" due to the more transmissible variants; if not, there will be "a significant increase in COVID-19-related cases and deaths in the EU/EEA". The increased mitigation measures it says are urgently required include "**strengthening in-school mitigation measures**". The ECDC risk assessment notes that "Denmark estimates the effective reproduction number (Rt)" of the UK variant (B.1.1.7) to be 1.14 "despite strict lockdown since mid-December, including school closures, compared to an Rt of 0.5-0.7 for the other circulating variants." In other words, **it may not be possible to keep R under 1, even with schools closed**.

Close Contacts: Guidelines & Policy in Ireland and Internationally

In the HIQA report, the EAG [57] strongly recommended: "***Ongoing, robust surveillance and contact tracing (including retrospective contact tracing or source finding)*** *across settings is critical to identify how, where, and when clusters occur and* ***to inform the most appropriate policy measures to control the spread of SARS-CoV-2****, especially in the potential presence of overdispersion as observed with this virus".*

On the 30th of October 2020, the HSE [43] guidelines for Close Contact Definition in Educational Settings stated the following: "*A* ***new*** *national definition of cases and contacts within the educational setting has been agreed: Any person who has had face to face contact for <1m with a confirmed case of COVID-19 for >15 minutes in a school day, and "Any person who has been between 1 and 2 metres from a confirmed case of COVID-19 for >15 minutes in a school day with consideration* ***of other mitigation measures e.g., face-coverings, pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place*** *(assessed through clinical PHRA)" (See Page 299)*

In a document sent to the Teachers Union of Ireland named: '*Guidance for TUI members based on advice from the Office of the Clinical Director, Health Protection, HSE**', it was stated there was:

- ***"No blanket policy for testing entire classes"***
- ***"A student develops symptoms of COVID-19 in school. Must I advise other students and/or their parents/guardians?'*** *HSE advised:* ***'No, this is not a requirement. Schools do not need to inform other students and/or their parents/guardians.'***
- ***A student develops symptoms of COVID-19 in school. Should I remove all other students from that student's class?*** *HSE responded:* ***No. Other students do not need to be removed from the class****. The HSE/Department of Public Health will take action if the person has confirmed COVID-19 and will provide advice and guidance to schools on what must be communicated and who must communicate it. The school authorities are expected to await and act on this advice"*
- *If one of my students has tested positive for COVID-19, will my school be advised? COVID-19 test results remain confidential as per doctor/patient relationship. No other child, parent, family or teacher will be informed of the student's COVID-19 test results. However, parents/guardian (or the student, if aged 18 or over) should be advised, at the point of testing that their child's swab test result (or their own swab test result if aged 18 or over), will most likely need to be shared with the school if COVID-19 is detected.*

However, these guidelines did not appear to be in-line with that of the European Centre for Disease Prevention and Control - ECDC [11] guidelines, the WHO or CDC guidelines. On December 2020, ECDC published guidelines: *"COVID-19 in children and the role of school settings in transmission -*

first update" [first version was published in August 2020] [20]. ECDC defined a close contact with high-risk exposure in a school setting as:

*"A person who was in a closed environment (e.g., **a classroom** etc.,) with a COVID-19 case for more than 15 minutes",* and *"Other students and staff with whom the confirmed case has spent time (e.g., students with whom the confirmed case have been in **close proximity during breaks or sports activities, in the cafeteria, gym or school playground**."* They also stated that a high risk exposure for a close contact was any person: ***"travelling together (less than 2 metres proximity) with a COVID-19 case in any mode of transport for more than 15 minutes."***

ECDC did not appear to have any stipulations or clauses in relation to the guideline above.

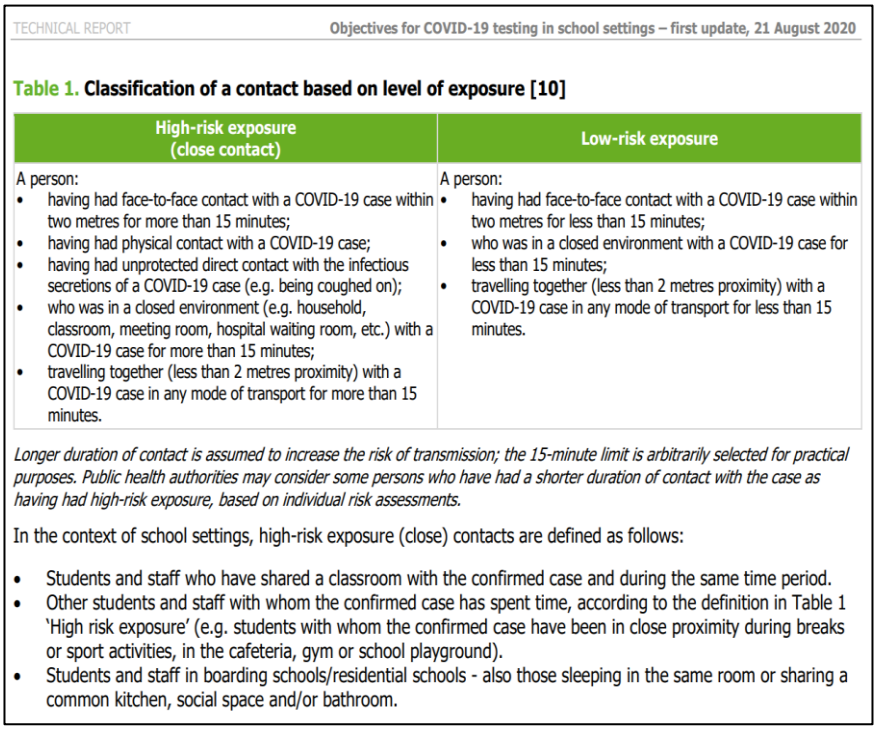
This is significant to the statistical part of this study because if close contacts are not being tested, due to a specific criterion being set– and some of them are asymptomatic and positive cases, then there is no record of them being a COVID-19 case and/or no record of there being a cluster or outbreak.

ECDC also stated: "*The wearing of face masks by the general public is advised mainly as a means to limit transmission to others, i.e., as source control…effect may be lower when the face mask is not worn properly at all times. Furthermore, face masks do not protect from transmission through other routes. The use of face masks by either the case or the contact, or both, could be one factor that may be taken into consideration on a case by case basis in determining the contact classification, together with other factors outlined above such as duration of exposure and the environment where the exposure occurred*."

This means the use of face masks as a means not to include/exclude someone as a close contact, should not be used – especially when children or teachers have not been trained/capable of using them properly. However, HPSC guidelines for school's state that mitigations such as PPE (face coverings) can be taken into account, when considering who is a close contact.

Furthermore, ECDC state: "*Having contact with a case over a closer distance and over a longer duration increases the risk of transmission; the 15-minute limit is arbitrarily selected for practical purposes. Repeated shorter encounters over a 24-h period should also be considered, and public health authorities may classify persons who have had a shorter duration of contact with the case as having had high-risk exposure, based on individual risk assessments. Other factors that should be considered during a risk assessment which are associated with increased risk of infection include: household contacts; if the contact with the case was around the onset of the symptoms in the case; if*

the case was likely to be generating droplets/aerosols (e.g., coughing, singing, shouting, exercising); specific environmental factors ***(crowding, poor ventilation, indoor exposure)****."*



TECHNICAL REPORT — Objectives for COVID-19 testing in school settings – first update, 21 August 2020

Table 1. Classification of a contact based on level of exposure [10]

High-risk exposure (close contact)	Low-risk exposure
A person: • having had face-to-face contact with a COVID-19 case within two metres for more than 15 minutes; • having had physical contact with a COVID-19 case; • having had unprotected direct contact with the infectious secretions of a COVID-19 case (e.g. being coughed on); • who was in a closed environment (e.g. household, classroom, meeting room, hospital waiting room, etc.) with a COVID-19 case for more than 15 minutes; • travelling together (less than 2 metres proximity) with a COVID-19 case in any mode of transport for more than 15 minutes.	A person: • having had face-to-face contact with a COVID-19 case within two metres for less than 15 minutes; • who was in a closed environment with a COVID-19 case for less than 15 minutes; • travelling together (less than 2 metres proximity) with a COVID-19 case in any mode of transport for less than 15 minutes.

Longer duration of contact is assumed to increase the risk of transmission; the 15-minute limit is arbitrarily selected for practical purposes. Public health authorities may consider some persons who have had a shorter duration of contact with the case as having had high-risk exposure, based on individual risk assessments.

In the context of school settings, high-risk exposure (close) contacts are defined as follows:

- Students and staff who have shared a classroom with the confirmed case and during the same time period.
- Other students and staff with whom the confirmed case has spent time, according to the definition in Table 1 'High risk exposure' (e.g. students with whom the confirmed case have been in close proximity during breaks or sport activities, in the cafeteria, gym or school playground).
- Students and staff in boarding schools/residential schools - also those sleeping in the same room or sharing a common kitchen, social space and/or bathroom.

ECDC also stated: "*The wearing of face masks by the general public is advised mainly as a means to limit transmission to others, i.e., as source control…****effect may be lower when the face mask is not worn properly at all times.*** *Furthermore,* ***face masks do not protect from transmission through other routes.*** *The use of face masks by either the case or the contact, or both, could be one factor that may be taken* ***into consideration on a case-by-case basis in determining the contact classification, together with other factors outlined above such as duration of exposure and the environment*** *where the exposure occurred."* [2]

In reality, this meant that the use of face masks as a means not to deem someone as a close contact, should not be used – especially when children may not be able to wear them properly and when the risk assessment already stated that a classroom was a high risk exposure environment.

However, the HPSC guidelines for school's stated that mitigations such as face coverings could be considered for a close contact; and that not all people in a classroom would necessarily be tested.

However, the HPSC guidelines for school's stated that mitigations such as face coverings could be considered for a close contact; and that not all people in a classroom would necessarily be tested.

Face masks

The wearing of face masks by the general public is advised mainly as a means to limit transmission to others, i.e. as source control [39,40]. Experimental studies in animal models [41] and humans [42], observational studies [43,44] and epidemiologic investigations [45,46] indicate that face masks provide partial protection against the transmission of SARS-CoV-2. This effect may be lower when the face mask is not worn properly at all times. Furthermore, face masks do not protect from transmission through other routes. The use of face masks by either the case or the contact, or both, could be one factor that may be taken into consideration on a case by case basis in determining the contact classification, together with other factors outlined above such as duration of exposure and the environment where the exposure occurred.

It was also of notable interest that an "*ECDC systemic review suggested that the proportion of cases that have asymptomatic infection is around 31%."*

In other words, a child or adult could be in a classroom with no symptoms and still have and/or test positive for COVID-19. ECDC continued by saying *"transmission from an infectious person who has no symptoms…is difficult to quantify"*; however public health officials in Ireland have continually stated that transmission in children is low AND they are more likely to be asymptomatic.
This appears to be a contradiction in itself.

A recent estimate from a systematic review suggests that the proportion of cases that have asymptomatic infection is around 31% (95% CI 26%–37%) [16]. Asymptomatic transmission, i.e. transmission from an infectious person who has no symptoms throughout the entire course of the infection, is difficult to quantify as most studies are not designed to estimate asymptomatic transmission and estimates are prone to selection bias.

Figure 7: ECDC Contact Tracing Guidelines in Schools

Annex 1. Contact tracing in different settings

Setting	Initiation of contact tracing	Classification of contacts	Testing
School Link to the ECDC guidance	Contact tracing should begin following identification of a **confirmed case**. Due to the high circulation of influenza that usually occurs amongst children during the flu season, contact tracing should not be undertaken for probable or possible cases.	High-risk exposure (close) contacts: • Students and staff who were in the same classroom at the same time as the confirmed case; • Other students and staff with whom the confirmed case has spent time, according to the criteria in **Table 1** (e.g. students with whom the confirmed case have been in close proximity during breaks or sport activities, in the cafeteria, gym or school playground). • For students and staff in boarding schools/residential schools this may also include those sleeping in the same room or sharing a common kitchen, social space and/or bathroom. Low-risk exposure contacts: • Other students and staff with whom the confirmed case had contact, according to relevant the criteria in Table 1.	As per section 'Contact follow up' above.

Figure 8: HPSC/HSE Refine Close Contact Definition on the 30th of October

COVID-19 Educational Settings cases and close contacts definitions

A new national definition of cases and contacts within the educational setting has been agreed (see below). This definition takes into consideration the findings of the Public Health Risk Assessment (PHRA), which is undertaken in all educational facilities where a confirmed case has attended whilst infectious. The PHRA assesses many different aspects of disease transmission as laid out in the Schools Pathway document.

Definitions of cases and close contacts within the Educational Setting (Child care facilities, Primary, Post- Primary and Special Educational Needs sector)

Version 1.0

Case - A confirmed case of COVID-19 notified to the Medical Officers of Health, HSE.

Contact - As per current HPSC close contacts guidelines a clinical Public Health Risk Assessment (PHRA) will be undertaken for all educational settings where a confirmed case has attended whilst infectious. This PHRA will determine the close contacts. It is assumed because of the length of the school day, they will have been within a closed space for at least two hours.

Close contacts definition:

- Any person who has had face to face contact for <1m with a confirmed case of COVID-19 for >15 minutes in a school day.
- Any person who has been between 1 and 2 metres from a confirmed case of COVID-19 for >15 minutes in a school day with consideration of other mitigation measures e.g. face-coverings, pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA)

Contacts are assessed from contact with a confirmed case of COVID-19 during their infectious period - 48 hours before the onset of symptoms if symptomatic, or 24 hours before the test for COVID-19 was taken in those who are asymptomatic.

Last updated: 30 October 2020

Definition of Close Contacts and Risks of Exposure

HPSC [43] October 31st - YTD	Close Contact Definition: Educational Settings: "Any person who has had face to face contact for <1m with a confirmed case of COVID-19 for >15 minutes" and "any person who has been between 1 and 2 metres from a confirmed case of COVID-19 for >15 minutes in a school day **with consideration of other mitigation measures e.g., face-coverings, pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA)"**
ECDC [20] December 2020 - YTD	Close Contact Definition High Risk Exposure "A person: having had face-to-face contact with a COVID-19 case within two metres for more than 15 minutes; having had physical contact with a COVID-19 case; having had unprotected direct contact with the infectious secretions of a COVID-19 case (e.g., being coughed on); who was in a closed environment (e.g., household, **classroom**, meeting room, hospital waiting room, etc.) with a COVID-19 case for more than 15 minutes; **travelling together (less than 2 metres proximity) with a COVID-19 case in any mode of transport for more than 15 minutes**.
WHO September 2020 - YTD	Contact Definition (All): A contact is a person who has had any one of the following exposures to a probable or confirmed case: 1. face-to-face contact with a *probable or confirmed case* within 1 meter and for at least 15 minutes. 2. direct physical contact with a *probable or confirmed case*. 3. direct care for a patient with probable or confirmed COVID-19 disease without the use of recommended PPE; or 4. other situations as indicated by local risk assessments. In scenarios where it may not be feasible to identify, monitor and quarantine all contacts, prioritization for follow-up should be given to contacts at **a higher risk of infection based on their degree of exposure**, and contacts at a higher risk of developing severe COVID-19. The following groups of contacts can be prioritized for identification, follow-up and supported quarantine: Household contacts; Contacts made in crowded or closed settings (e.g., long-term living facilities, prisons, shelters, hostels, gyms and meeting rooms), **especially in settings with poor ventilation**. **This can include 'proximate contacts' who were further than 1m away from a case but were in the same closed space for an extended amount of time without PPE**. • Contacts made during an index case's period of greatest infectiousness (2 days before symptom onset and up to 7 days after); • Contacts made during an event or setting that has already led to other cases, identified through a case investigation.
CDC [29] October 21st 2020 - YTD	Close Contact Definition (General/all): Someone who was within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period* starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to test specimen collection) until the time the patient is isolated. * Individual exposures added together over a 24-hour period (e.g., three 5-minute exposures for a total of 15 minutes). Data are limited, making it difficult to precisely define "close contact;" however, 15 cumulative minutes of exposure at a distance of 6 feet or less can be used as an operational definition for contact investigation. Factors to consider when defining close contact include proximity (**closer distance likely increases exposure risk),** the duration of exposure (**longer exposure time likely increases exposure risk**), whether the infected individual has symptoms (the period around onset of symptoms is associated with the highest levels of viral shedding), if the infected person was likely to generate respiratory aerosols (e.g., was coughing, singing, shouting), and other environmental factors (**crowding, *adequacy of ventilation*,** whether exposure was indoors or outdoors). **Because the general public has not received training on proper selection and use of respiratory PPE, such as an N95, the determination of close contact should generally be made irrespective of whether the contact was wearing respiratory PPE. At this time, differential determination of close contact for those using fabric face coverings is not recommended.**

Findings:

HPSC state "any person who has been between 1 and 2 metres from a confirmed case of COVID-19 for >15 minutes in a school day **with consideration of other mitigation measures e.g., face-coverings, pods, ventilation, IPC measures or uncertain compliance with mitigation measures in place (assessed through clinical PHRA**)". This does not appear to be in-line with international guidelines for the general population (including schools); and references to using PPE and/or mitigations as a means to include/exclude a person as a close contact mainly refer to trained professionals (e.g., healthcare or emergency workers etc.). All international agencies, HIQA and the EAG cite the importance of timely, retrospective and complete contact tracing, especially for those in high risk exposure areas.

Face-Coverings & Masks in Irish Schools

All students and staff share bathroom facilities, and may remove face coverings, potentially exposing ceramic, plastic and metal surfaces to the virus. It has been noted that it is often not feasible (lack of resources) to fully clean bathroom facilities or sink areas every time a person has used them. Teachers, SNAs and school staff also share staff rooms, oftentimes with limited space to ensure proper social distancing.

Primary Schools

Primary school children in Ireland (<13) are not mandated to wear face coverings in schools, nor are staff. This means that large groups of people are indoors together, without face coverings for long periods of time, oftentimes with little to no social distancing. Lunchbreaks are also generally indoors without masks – frequently supervised by teachers/SNAs in the class - who too if eating lunches there, will not have face-coverings or masks.

Secondary Schools

Many secondary school children leave school at breaks to go to local shops or takeaways, again, not wearing masks outdoors and mixing with other classes. Other teenagers may accumulate in the school yards eating their lunches without face coverings or masks and mixing with other classes.

Special Educational Schools & Childcare/Preschool

Some school staff teach or care for children with learning difficulties and disabilities and oftentimes will be in direct close contact when providing personal care. Many children with special educational needs cannot wear face coverings, and many staff cannot wear them as this may hinder communications. This puts staff in special educational schools at extremely high risk. Even if the staff member is wearing a face-covering, it is worth remembering that this mainly protects the other person (e.g., the child) and not the worker themselves. Oftentimes too, many children with special educational needs may not be able to communicate how they are feeling (e.g. symptoms) to parents or caregivers, which again adds an additional risk. This too applies to those working in childcare facilities with younger children. It is to be noted, that the public messaging and international research indicates that wearing face coverings or masks mainly protects others, and not just the person wearing it. In consideration of this, and with regards to school staff in schools where children do not wear masks, this can deem their workplace much higher risk than others.

HIQA: Face Mask Use

HIQA's [7] COVID-19 Evidence Synthesis Team and COVID-19 Expert Advisory Group (EAG) undertook an evidence synthesis [89] to provide advice to the National Public Health Emergency Team (NPHET) [37] on the following policy question: *'What evidence is available to indicate that routine wearing of face masks in the community reduces the transmission of SARS-CoV-2?'* Amongst other findings, which generally supported the beneficial effect of masks/face-coverings in reducing SARS-CoV-2 transmission, HIQA's EAG found:

"To mitigate the increased risk of transmission, consideration should be given to extending recommendations for face mask use to crowded settings or where physical distancing cannot be maintained; this applies to both indoor and outdoor settings."

They also find that communication campaigns in relation to face mask usage should focus on the following aspects:

- → **With respect to children, clarification of the age from which face mask usage is required**
- → characteristics of the settings and activities with high levels of SARSCoV-2 transmission
- → concept of the continuum of risk, that is, that there is currently always some level of risk of SARS-CoV-2 transmission, and that **this risk is greater in certain settings and circumstances**, and for certain individuals
- → the **possibility of aerosol transmission in certain scenarios, including high risk settings**
- → the potential to mitigate risk through use of face masks, in addition to other public health measures, in settings where there is higher risk of transmission
- → importance **of adherence to good practice guidelines in terms of appropriate levels of face coverage as well as mask selection, hygiene and disposal**.

World Health Organisation: 20th of August 2020

The World Health Organisation (WHO) COVID-19 guidance on children and masks indicates that it may be appropriate for children aged 6 – 11 years to wear masks if there is *"widespread transmission in the area where the child resides"*. It outlines other factors that should also be considered, including whether the child can use a mask appropriately. [278] [90]

Figure 9: WHO Guidance on Face-Coverings and Children

WHO and UNICEF advise that the decision to use masks for children aged **6-11** should be based on the following factors:

- Whether there is widespread transmission in the area where the child resides
- The ability of the child to safely and appropriately use a mask
- Access to masks, as well as laundering and replacement of masks in certain settings (such as schools and childcare services)
- Adequate adult supervision and instructions to the child on how to put on, take off and safely wear masks
- Potential impact of wearing a mask on learning and psychosocial development, in consultation with teachers, parents/caregivers and/or medical providers
- Specific settings and interactions the child has with other people who are at high risk of developing serious illness, such as the elderly and those with other underlying health conditions

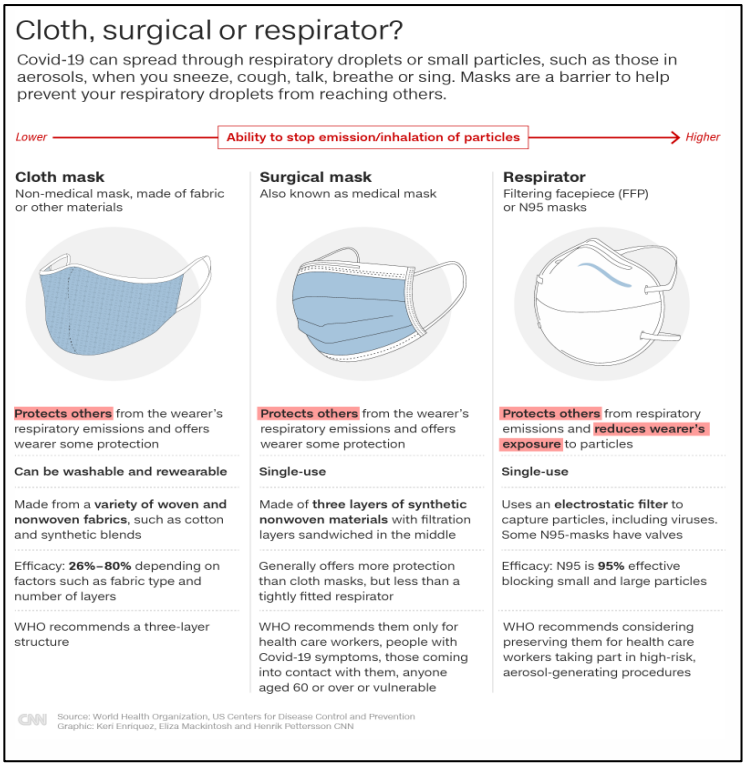
WHO and UNICEF advise that children aged **12 and over** should wear a mask under the same conditions as adults, in particular when they cannot guarantee at least a 1-metre distance from others and there is widespread transmission in the area.

More on the types of masks, how to choose them, and how to wear them is available here: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks

American Academy of Paediatrics: 13th August 2020

The American Academy of Paediatrics Interim Guidance states:

"Children ages 2 years and older can and should wear cloth face coverings when not able to physically distance, including while in schools, childcare and other group settings" and *"Cloth face coverings can be safely worn by all children 2 years of age and older, including the vast majority of children with underlying health conditions, with rare exception."* [91]



Based on the Policies & Guidelines: Are Irish Schools as Safe as We're Told They Are?

When 'schools' and all their associated activities are considered during a global pandemic; the risk of transmission from child to child, child to adult or adult to child may be very high.

When schools reopened in late August many members of school staff reported that there were not enough mitigations in place to ensure a safe working environment for them and the children attending schools.

Close contact tracing in schools was reported as being different to that in other sectors – one of the main differences cited was that a student or staff member may not be deemed as a close contact even if they were in the same room as a person with a positive case for hours at a time. [34]

Parents/guardians were not obliged to inform the school if their child had tested positive for the virus. School authorities were not obliged to tell teachers of positive cases in their schools, as per public health and Department of Education guidelines [35]

It was widely reported in the media that teachers were asked by public health officials to turn off or 'mute' their COVID-19 close contact tracing App [29].

Hundreds of students and other staff reported that their App was not sending them notifications about whether they were or were not in close contact with someone who had tested positive for the virus.

Many people reported that students/teachers deemed as close contacts in schools were not contacted by the HSE from 2 – 5 days after the infected person was diagnosed. Many more reported having to get tested privately (it is unclear if these tests were logged with the HSE and/or if positive if they were logged as close contact case in a school).

It is important to highlight that not all aspects of 'schools' are controlled, supervised environments.

The following tables show just some examples of areas in and around schools and unavoidable school related activities which can increase risks of exposure of COVID-19.

These tables (risk assessments) are high level examples of some of the risks and some of the differences in policy in Ireland compared to International guidelines, with specific focus on ECDC guidelines; as this organisation is mostly cited by the HPSC, HSE and the Department of Health.

Ireland: School or Public Transport **Risk: High**	**Possible Preventative Measures, Advice & Resources**
• *There are not many adults available to supervise children to ensure they are wearing face coverings on school transport.* • *Children <13 not mandated to wear masks in schools* • *Most school buses/vans cannot comply with social distancing measures and are at maximum capacity.* • *School buses/vans are oftentimes poorly ventilated, and many newer models do not have windows at seats* • *Primary school children <12 are not mandated to wear face coverings in schools, or elsewhere, in Ireland.* • *There may be prolonged contact and duration of time on school transport, depending on the length of the journey (oftentimes >15 minutes)* • *Groups of children mixing with together from various households and accumulating in an enclosed space; without masks, proper supervision or proper ventilation.* • *Oftentimes students and staff must wait in queues for periods of time, with no supervision.*	• *Promote face coverings for primary school children* • *Promote other forms of transport e.g., walking, cycling etc.* • *Provide additional school transport, to allow for better social distancing.* • *Aim for house pick-ups and drop-offs relatively close geographically* • *Ensure ventilation systems on school transport are up to required standards* • *Open all windows when possible* • *Provide sanitising stations and promote good hand hygiene, coming on and off bus/vans etc.* • *Transport cleaned thoroughly after/before use*

School Transport

School Transport Scheme services operated by Bus Éireann on behalf of the Department will fully operate as normal, in line with public health advice, when schools re-open for the 2020/2021 school year.

In planning for normal resumption of school transport services consideration has been taken of the fact that school transport somewhat differs to public transport in that:

- School transport services are controlled environments.
- Each transport service carries the same children on a daily basis to their school of attendance.
- It is a restricted group of transport users which will facilitate contact tracing if required.

Observing hygiene requirements will be a key priority and clear communication to all parents of children or to older students using school transport services will set out the following requirements for those travelling on school transport:

- Not to use school transport if they are displaying symptoms.
- To maintain physical distancing while waiting for transport.
- To always sit in pre-assigned seating and next to a sibling or child from their class group (this should be the same child at all times).
- To use hand sanitiser on boarding the bus.
- To observe respiratory etiquette at all times while waiting for and on-board transport services.
- To disembark the bus one by one in an orderly fashion; and
- With the exception of those children who for medical or special educational needs reasons are not in a position to wear a facemask or face covering, all other students travelling on the post-primary scheme are required to wear facemasks while waiting for and on-board transport services.

Additional funding of €11.3 million has been provided as part of the package today to support hygiene, PPE and cleaning requirements.

Ireland: Dining **Risk: High**	**Possible Preventative Measures, Advice & Resources**
• *Students/staff eating in classrooms, staff rooms or canteens with no face coverings. [Coughing and sneezing with no masks on is very high]* • *Children/staff offered the opportunity to eat outside* • *Most lunchbreaks 30 minutes long, meaning students/staff in rooms are at greater risk. Added to this, social distancing in most classes is reported at 1 metre distance (or less in some instances).* • *Older children (teenagers) going to local cafes, takeaways or shops to buy food – no supervision of masks when walking outside, mixing with children from other schools* • *People mixing with together from various households and accumulating in a space where proper (1-2 metre) social distancing may not be possible; without masks, and sometimes no proper ventilation.* • *Oftentimes students and staff must wait in queues for periods of time, with no supervision.*	• *Ensure all children at least 2 metres apart when eating indoors or outdoors* • *Aim to promote and provide outdoor covered eating areas – put Perspex screen in quadrants on picnic benches etc. Provide heaters if possible* • *When community transmission is high aim to temporarily pause visits to local shops/cafes/takeaways etc* • *Keep siblings (where possible) together where possible* • *Ensure ventilation systems in school buildings are up to required standards* • *Open all windows when possible* • *Provide sanitising stations and promote good hand hygiene/rubbish disposal* • *Eating areas cleaned thoroughly after/before use*

Ireland: Mobility Associated with School **Risk: High**	**Possible Preventative Measures, Advice & Resources**
• *Students/staff moving between classrooms / staff rooms / yards / entrances and exits e.g., large crowds in hallways, corridors and entrances, exits – primary school children do not wear face coverings; may come face to face with students/staff* • *Children in school yards mixing with other children from other classrooms – no masks* • *Children attending lockers or using shared bathrooms* • *Older children (teenagers) going to local cafes, takeaways or shops to buy food – no supervision of masks when walking outside, mixing with children from other schools* • *Parents/guardians in large crowds at school gates* • *People mixing with together from various households and accumulating in a space where proper (1-2 metre) social distancing may not be possible; without masks, and sometimes no proper ventilation.* • *Oftentimes students and staff must wait in queues*	• *All people wear face-coverings* • *Ensure one class moves at a time* • *Staggered starting (morning) and closing (afternoon) times for different classes* • *Keep siblings (where possible) together* • *Aim to promote and provide outdoor covered eating areas – put Perspex screen in quadrants on picnic benches etc. Provide heaters if possible* • *When community transmission is high aim to temporarily pause visits to local shops/cafes/takeaways etc* • *Ensure ventilation systems in school buildings are up to required standards* • *Open all windows when possible* • *Provide sanitising stations and promote good hand hygiene/rubbish disposal* • *Eating areas cleaned thoroughly*

Based on the **Global Science**: Are Irish Children and Schools Lower Risk?

1) Expert Opinions

In this section, we have compiled some of the most important and well-researched Twitter threads and commentary from experts in virology, epidemiology, public health and suicidology in relation to children, schools and COVID-19.

1. Dr Zoe Hyde, Epidemiologist and Biostatistician, University of Western Australia

Twitter thread, 9th December 2020:
https://twitter.com/DrZoeHyde/status/1336612124835995648?s=20)

[Embedded tweets or threads have been inserted with the tweet they were quoted in.]

1. Updated thread on children & #COVID19, summarising recent research.

Summary: **further evidence children and adults are equally susceptible, and similarly likely to transmit**. Schools have been a driver of the second wave in Europe, Canada, and elsewhere.

2. First, a recap. **Given similar exposure, children and adults appear equally susceptible to infection, and also appear to transmit at a similar rate**. School transmission has been increasing in many countries.

…**the risk associated with schools is largely dependent on community transmission**. If it is low (for example, at a level contact tracing can handle) then schools are low-risk (although precautionary measures are still needed). **Schools can only reopen safely if community transmission is low, otherwise outbreaks will occur**.

First, a recap, showing that child-to-child and child-to-adult transmission of #SARSCoV2 occurs, and that cases in children are being missed (which will affect the findings of some studies published to date). Summary: **both child-to-child and child-to-adult transmission has occurred; cases in children are being missed**.

Studies in this sub-thread show that children are probably as likely as adults to be infected given sufficient exposure, and can shed infectious virus. There is growing evidence that children and adults are at equal risk of infection with the novel coronavirus. Some studies which have suggested otherwise have some important caveats.

This study from China found that children were less likely to be infected than adults in households. However, all household members were promptly quarantined away from their home when a case was detected. Study of 105 #COVID19 cases and 392 household contacts (100 children, 292 adults) in China. The secondary attack rate was 4% in children and 20.5% in adults (27.8% in spouses). These results are interesting, but not generalisable. Read on...
https://academic.oup.com/cid/article/71/8/1943/5821281

The authors state that: "All the family contacts were quarantined immediately after the index cases were confirmed for 14 days in special places designated by the local governments and monitored everyday by the health service personnels." Removing people from their households will dramatically reduce their chances of being infected. It's also highly likely that close contact with a

case increases the likelihood of the virus being transmitted. This appears to be reflected in the fact that spouses were more likely to be infected (27.8%) than other non-spouse adults in the household (17.3%). Children may have had less contact with the index case than adults in the household, reducing their chance of infection. Their prompt quarantine would have further reduced their risk. Thus, while children were less likely to be infected than adults under the conditions described in this study, this may not be true in other settings. As such, these results should be interpreted with caution.

More recent studies show that in the absence of strict quarantine measures, children and adults seem to be at a similar risk. Data from China showing no difference in the proportion of children and adults infected with the novel coronavirus: Study of 4 family #COVID19 clusters in Beijing, with 24 people (inc. 8 #children aged 9 months to 10 years). 22 (92%) became infected. All children in all families were infected, except one 7-year-old. Most children were asymptomatic or had mild symptoms. Each family had 1 index case (introducing the virus to the family), so that means 18 of 20 (90%) susceptible family members became infected. Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7177072/

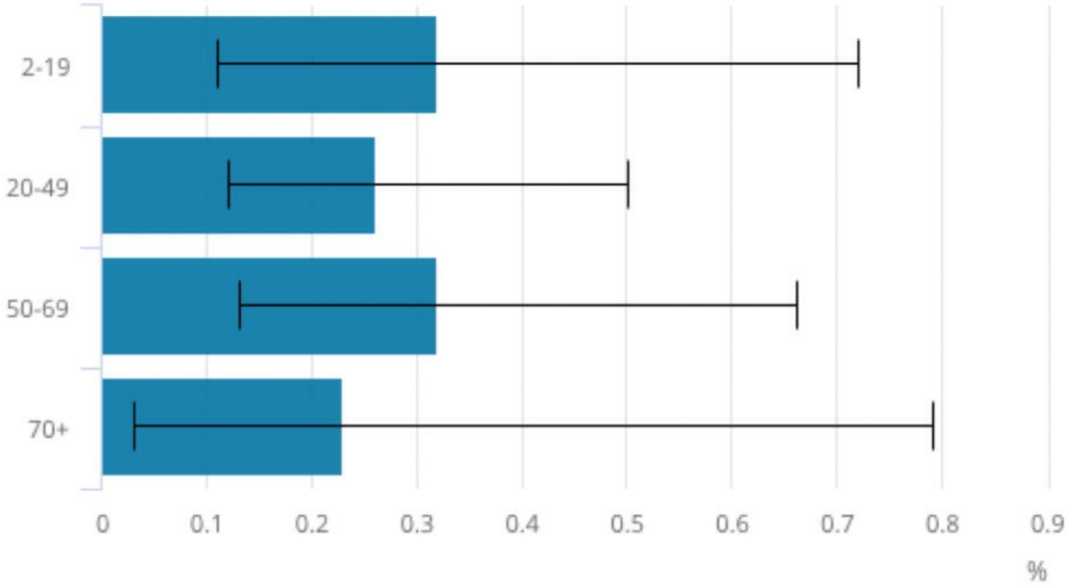
Data from Switzerland showing no difference in the proportion of children and adults infected with the novel coronavirus: Pre-print study (not yet peer-reviewed, interpret cautiously) in which a representative Swiss sample tested for #SARSCoV2 antibodies. No significant difference between % of #children and adults with antibodies. Estimated 9.7% of Geneva exposed. Link: https://www.medrxiv.org/content/10.1101/2020.05.02.20088898v1

Data from Germany showing no difference in the proportion of children and adults infected with the novel coronavirus. Pre-print study (not yet peer-reviewed; interpret cautiously) investigating #SARSCoV2 infection in a German town associated with a super-spreading event. Of 919 people, 15.5% infected. Children and adults were equally likely to be infected. Link: https://www.ukbonn.de/C12582D3002FD21D/vwLookupDownloads/Streeck_et_al_Infection_fatality_rate_of_SARS_CoV_2_infection2.pdf/%24FILE/Streeck_et_al_Infection_fatality_rate_of_SARS_CoV_2_infection2.pdf

Data from the UK showing no difference in the proportion of children and adults infected with the novel coronavirus: Pilot survey data from the UK suggesting that between 27 April and 10 May, 148,000 people in England (0.27% of the population) were infected with #SARSCoV2. There was no difference between the proportion of children & adults who tested positive. Link: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveypilot/england14may2020

Figure 3: There is no evidence of differences in the proportions of individuals testing positive for COVID-19 between different age categories

Estimated percentage testing positive for the coronavirus (COVID-19), by age bands, England, 2020



We have also witnessed the emergence of a new Kawasaki-like illness (now called paediatric inflammatory multisystem syndrome - #PIMS) in children. Data from the UK show that the Kawasaki-like illness affecting children likely results from infection with the novel coronavirus: Case series of first 8 UK #children with Kawasaki-like illness; 5 male, 1 died. Most were negative for #SARSCoV2, but later found antibody positive. Thought to be new syndrome affecting previously asymptomatic children with #COVID19. More than 20 now seen. Link: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31094-1/fulltext

The incidence of Kawasaki-like illness in children has increased 30-fold in Bergamo, Italy: Study from Bergamo, Italy, showing a 30-fold increased incidence of #Kawasaki-like illness (#PIMS) in #children. Cardiac involvement more common; 80% were #SARSCoV2 antibody positive. Outbreaks expected elsewhere in #COVID19 hotspots. Link: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31103-X/fulltext . It's very important to note that this syndrome appears to be rare. However, it does show that we don't yet fully understand all of the risks associated with the novel coronavirus.

While it now seems likely that children and adults are at equal risk of infection with the novel coronavirus, we don't yet know how readily children transmit the virus to others. Previous research (linked to at the start of this thread) has shown this is possible however. In regions where there is ongoing community transmission of the novel coronavirus, **the evidence suggests that reopening schools could increase the spread of the virus, both in the school and the wider community**. It would therefore seem sensible to first ascertain that the risk of community transmission is low (for example, by random testing of th

e population), before considering reopening schools. If schools reopen in regions with a low risk of community transmission, measures should be taken to protect teachers and students. This could include wearing masks, rearranged seating, increased ventilation, and staggering of classes.

In a study of household transmission in Israel, fewer children than adults were infected. However, children appeared to be nearly as infectious as adults. Pre-print modelling study (not yet peer-reviewed, interpret cautiously) of household transmission of #SARSCoV2 in #Israel. Children were less likely than adults to be infected (25% vs. 44%). However, children 85% as infectious as adults. Interestingly, very young children (<1 year) appeared more vulnerable to infection than children aged 1-4 years. The authors hypothesise children might have partial immunity to #SARSCoV2 due to recent exposure to other coronaviruses which cause the common cold. Link: https://www.medrxiv.org/content/10.1101/2020.06.03.20121145v1

Analysis of data from Germany continues to show no meaningful difference in viral load between children and adults: The #SARSCoV2 viral load data from Germany has been reanalysed, and continues to suggest no meaningful difference between the viral load of children and adults. There's a lot to discuss in this paper. Link: https://virologie-ccm.charite.de/fileadmin/user_upload/microsites/m_cc05/virologie-ccm/dateien_upload/Weitere_Dateien/Charite_SARS-CoV-2_viral_load_2020-06-02.pdf

First, two different testing systems were used. Data from the system used early in the epidemic for community screening (which best reflects people with early symptoms and who those who are pre-symptomatic) show no difference in viral load between children and adults. Data from the system used later in epidemic when household & contact testing reduced show a small difference between children & adults (children had lower levels). However, children tested more likely to be hospitalised (later in course of infection when viral loads lower). The difference observed between children and adults with the two systems therefore likely represents a difference in the patient groups that were selected for testing, rather than a real difference between the viral load of children and adults. Furthermore, **any observed difference between children and adults may not be clinically meaningful. It is also vital to consider social and behavioural differences between these groups, such as the fact that children may have many more contacts than adults. The authors state that "unlimited re-opening of kindergartens and schools would re-establish behavioural traits that facilitate virus transmission through contact**" and "opening of these facilities should be carefully monitored by pre-emptive diagnostic testing." I'd encourage everyone to have a read of this paper. The authors have done a great job of explaining why some of the apparent differences between children and adults are more likely attributable to social factors rather than biological differences.

There was also **no correlation between viral load and age in children in this study from South Korea**: https://wwwnc.cdc.gov/eid/article/26/10/20-2449_article

Viral load study in 12 children aged 27d-16y from South Korea with mild #COVID19 (3 were asymptomatic). Positive test in nasopharyngeal swabs (100%), faeces (92%), saliva (73%), urine (17%), & plasma (8%). No correlation between viral load & age. Symptomatic children had higher viral loads in nasopharyngeal swab specimens than asymptomatic children. However, symptomatic and asymptomatic children did not differ with regard to viral load in faeces or saliva. Levels of viral RNA declined rapidly in saliva (80% positive in week 1, 33% in week 2, 11% in week 3), slower in nasopharyngeal swabs (75% in week 2, 55% in week 3), and were prolonged in faecal samples. Viral load in faecal samples was higher than nasopharyngeal swabs. The authors only measured #SARSCoV2 viral RNA, and did not assess whether infectious virus was present. However, the authors state their findings "suggest the necessity for children to wear masks, especially in schools,

where children would talk in close proximity." Infectious virus has been isolated in faecal samples from adult patients. Given prolonged shedding of viral RNA is observed in children, precautions to avoid faecal-oral transmission should be taken, including appropriate hygiene in toilets and when changing infants.

Importantly, child-to-child and child-to-adult transmission has now been shown to occur. Case series of 64 #COVID19 cases in children in Chicago. In 15 households with transmission data, 73% adult-to-child, 13% child-to-child, & 13% child-to-adult. Almost all cases occurred when schools closed; less opportunity for children to introduce virus. Link: https://academic.oup.com/jpids/article/9/5/519/5849922

Why, then, do some studies appear to show that children are less likely to be infected than adults? One possibility is that children have had less opportunity to be infected. In many countries, adult travellers initially seeded outbreaks. Another is that children had fewer (or no) symptoms and weren't tested, or the tests were false negatives. RT-PCR tests for the novel coronavirus can give false negatives. Some people who have the virus might actually test negative: Modelling study of accuracy of #SARSCoV2 RT-PCR tests. Probability of a false negative decreased from 100% on the day of infection to 38% on the day of symptom onset (day 5), and was lowest 3 days after symptom onset (20%), before rising again. Link: https://www.acpjournals.org/doi/10.7326/M20-1495

Here's what performing a nasopharyngeal swab looks like. It's a bit uncomfortable, and this may be difficult for young children in particular. This may affect the accuracy of the test. Link: https://www.nejm.org/doi/full/10.1056/NEJMvcm2010260?query=featured_coronavirus

In this study of children with exposure to a known case, 24% who tested negative were subsequently determined to be probable cases after a CT scan was performed. Study of 158 #children in Wuhan investigated for #COVID19 owing to exposure to case. Of 108 who tested negative (twice), 26 (24%) had CT scans which were similar to the 50 children who had tested positive. Most also had fever (81%) or cough (73%). Link: https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-020-01596-9

This retrospective study of blood samples taken from children who'd been admitted to a Seattle hospital (for any reason) found that **some children who weren't thought to be cases had antibodies to the virus**. Pre-print study (interpret cautiously) of children seen at a Seattle hospital in Mar-Apr. **Retrospective testing found children with #SARSCoV2 antibodies; most hadn't been tested or PCR test was negative. Suggests cases in children often missed**. Link: https://www.medrxiv.org/content/10.1101/2020.05.26.20114124v1

Cases in children aren't always obvious. In this study, two children with the virus had no respiratory symptoms, but infectious virus was detected in their nasopharyngeal swabs. Study of a German #COVID19 family cluster. Father (index case) and mother tested positive. Two of 3 children (2- and 5-year-old) positive; no respiratory symptoms, but infectious virus cultured from nasopharyngeal swabs. Secondary attack rate of 75%. Parents were symptomatic, viral RNA detected in nasopharyngeal swabs but not stool. Gastrointestinal symptoms predominant in children. One child only briefly symptomatic. Viral RNA detected in children's nasopharyngeal swabs (shed for <=7 days), & stool (shed for >4 weeks). Link: https://academic.oup.com/jpids/article/9/3/362/5842074

In conclusion, everyone is at risk. We need to build testing and contact tracing infrastructure to prevent transmission, and we should make schools safer for children and teachers. We could take tips from South Korea: https://www.washingtonpost.com/education/2020/05/26/pictures-say-it-all-how-south-korean-schools-are-reopening/

This contact tracing study from South Korea shows that children can and do transmit the virus to others in practice, and to a meaningful degree: https://wwwnc.cdc.gov/eid/article/26/10/20-1315_article. Household contacts of index cases aged 10-19 years were more likely to have #COVID19 than any other age group (18.6% vs. 11.8% overall). Suggests children at least as likely as adults to transmit #SARSCoV2. Where younger children (0-9 years) were the index case, 5.3% of household contacts had #COVID19. Younger children were slightly less likely to transmit the virus than adults in households, but this is clearly possible. Outside the household, the proportion of contacts with #COVID19 for each age group of index cases was as follows:

0-9: 1.1%

10-19: 0.9%

20-29: 1.1%

30-39: 0.9%

40+: 2.0-4.8%

Children appear to transmit #SARSCoV2 at a similar rate to younger adults. A further point. Schools were closed at the time. The authors note: "Although the detection rate for contacts of preschool-aged children was lower, young children may show higher attack rates when the school closure ends, contributing to community transmission of COVID-19."

Children shed infectious virus just like adults. Study of 23 children with #COVID19. Infectious virus successfully isolated from 12 (52%); probably an underestimate because leftover, reduced-quality samples used. Youngest child 7 days old. Viral load was similar to adults. Children shed infectious virus. Link: https://wwwnc.cdc.gov/eid/article/26/10/20-2403_article?deliveryName=USCDC_333-DM32083

This study describes a #COVID19 cluster at a high school in Israel, demonstrating the potential for mass transmission in the school environment: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.29.2001352. Over 260 people were infected, of which 153 were students (attack rate: 13.2%) and 25 were staff (AR: 16.6%). Demonstrates potential for mass transmission in the school setting.

Epidemiological investigation data, COVID-19 outbreak, Israel, May 2020 (n=1,316[a])

Group	Number of persons	Number tested	Males		Confirmed cases		Males, of confirmed cases		Median age in years (cases)	Symptoms	
			n	%	n	Rate (%)	n	%		n	%
7th grade	197	197	106	53.8	40	20.3	25	62.5	13	19	47.5
8th grade	197	197	102	51.8	34	17.3	19	55.9	14	15	44.1
9th grade	187	187	94	50.3	61	32.6	32	52.5	15	30	49.2
10th grade	200	200	110	55.0	9	4.5	6	66.7	16	2	22.2
11th grade	195	194	98	50.5	6	3.1	3	50.0	17	0	0
12th grade	188	186	87	46.8	3	1.6	1	33.3	18	0	0
All students	1,164	1,161	597	51.4	153	13.2	86	56.2	15	66	43.1
Staff	152	151	51	33.8	25	16.6	9	36.0	40	19	76

COVID-19: coronavirus disease.

[a] Overall 1,312 members of the school community were tested: 1,161 students and 151 staff.

The school reopened on 18 May after 2 months closure. Masks were mandated, but between 19-21 May, a heatwave occurred and students were exempted from having to wear masks for these 3 days. Classrooms were crowded, and social distancing was not possible. Two cases were detected on 26 May and 27 May in two children. The cases were not epidemiologically linked. Both students had attended school on the days where face masks were not required to be worn. Over the following days, almost all students and staff were tested, and **153 of 1,161 students (13.2%) and 25 of 151 staff (16.6%) tested positive**. A further 87 cases were detected among the contacts of staff and students.

Following school reopening, new cases surged in the district. Prior to reopening, cases in persons aged 10-19 years accounted for 19.8% of #COVID19 cases in Jerusalem. After reopening schools, cases in this age group accounted 40.9% of the total. The authors made a number of recommendations: small class sizes, minimising student mixing, use of face masks, not attending school if any sign of illness, outdoor classes, and avoiding the three Cs: closed spaces with poor ventilation, crowded places, and close contact.

This study describes **a #COVID19 cluster at a K12 school (kindergarten to year 12) in Chile. Like the outbreak in Israel, the virus spread rapidly through the school community after being introduced**. Study of #SARSCoV2 antibody prevalence in a school community following an outbreak in Chile (the first cluster in the country). 10% of students and 17% of staff tested positive. Of these, 40% of students and 18% of staff were asymptomatic. Link: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa955/5869860

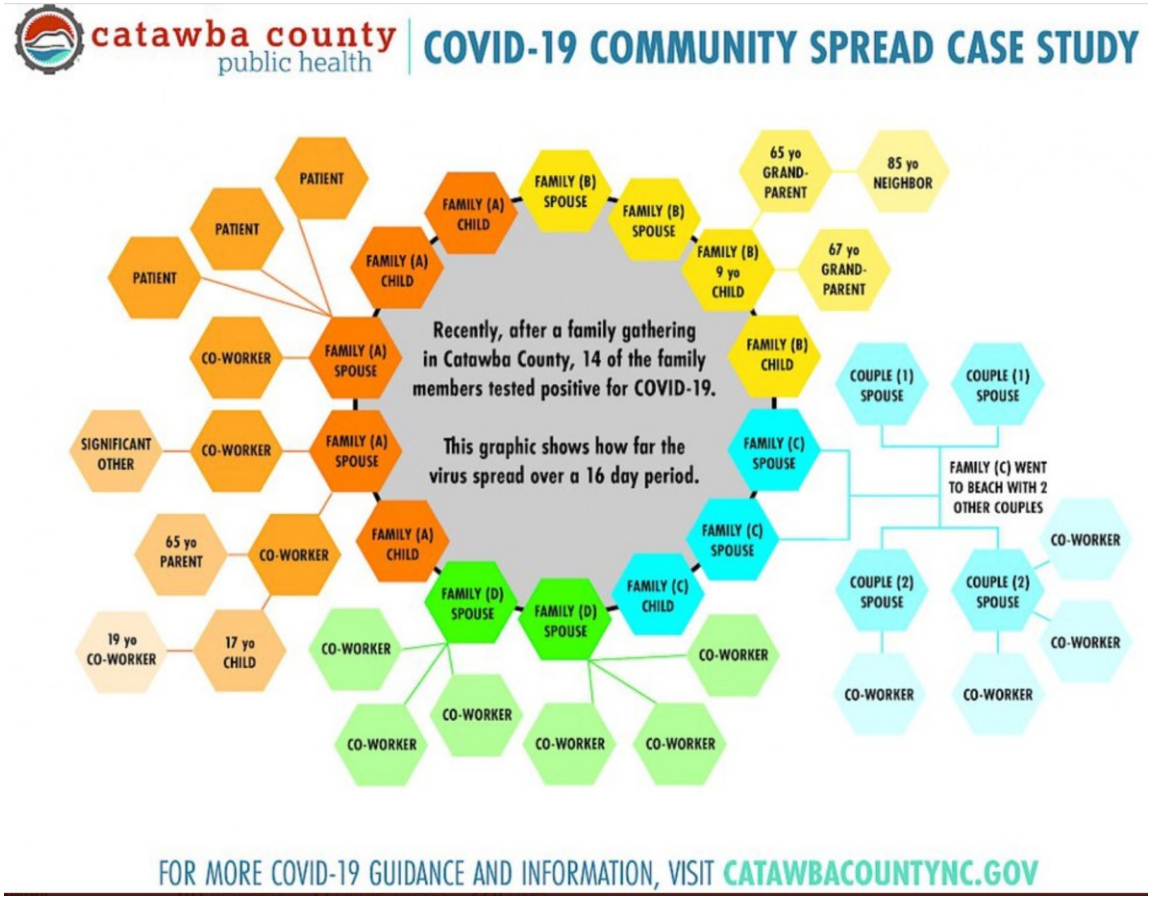
The index case(s) were thought to be adults in this cluster. **The school year had only just begun and the school closed within 2 days of the first cases being detected, demonstrating that #SARSCoV2 can spread rapidly within the school environment**. I would not be surprised if some false positives were observed here, and I suspect the correct proportion of asymptomatic cases may actually be a little lower. Nonetheless, it suggests that asymptomatic infections in children are substantial. It is also possible that some cases may have been missed in this cluster - particularly in children - as people with mild illness are less likely to produce detectable antibodies. So expect a few false negatives, too.

I previously reported this #COVID19 cluster in a French high school. Notable is the effect of the holiday period. New cases dropped markedly after school holidays began. Pre-print study (not yet peer-reviewed, interpret cautiously), describing a #COVID19 cluster in a French high school. A comparable % of students and staff were infected. New cases dropped when school holidays began, and again after community restrictions. Link: https://www.medrxiv.org/content/10.1101/2020.04.18.20071134v1

Clusters have also been observed in childcare centres. Here, a #COVID19 cluster in a childcare centre in Tokyo is described. Report of a #COVID19 cluster in a childcare centre in Tokyo, comprising 2 adults and 20 children: https://www3.nhk.or.jp/news/html/20200711/k10012510511000.html

A cluster in a childcare centre in Melbourne began after a child introduced the virus to the centre. Details about the #COVID19 cluster at the Clever Kids Childcare centre in Ashburton, Melbourne. **Eight out of 11 staff were infected after one child with the virus visited the centre. 21 cases in the cluster in total**. Link: https://twitter.com/i/status/1286221704654516224

Although children experience more mild disease than adults, their ability to transmit the virus to others is important. In this cluster, most children did not transmit the virus, but two did. One of these transmitted the virus to their grandparents. Report of a #COVID19 cluster beginning with a family gathering & subsequently affecting 41 people in 9 different families & 8 different workplaces. Of note is transmission from one 9-year-old child to grandparents and subsequently to an elderly neighbour. Link: https://catawbacountync.gov/news/covid-19-in-catawba-county-a-case-study/



Even if most children do not seem to become seriously ill with #COVID19, they likely play a role in community transmission. Children may have many more contacts than adults (particularly at school) which might offset any reduced tendency to transmit the virus.

But what to make of some studies which suggest children pose a lower risk than adults, or even that children are less likely to be infected? **Many such studies have important limitations** (not least of which is that schools were often closed at the time of the study). When reading a study, it's vital to think about the context in which it was conducted. For example, if a study shows that few cases occurred in schools, you should ask whether community transmission was low at the time, because it almost certainly was. **Such studies mean that schools are low-risk *only* when community transmission is low. Nothing more**. That's still an important finding however, and should motivate us to eliminate community transmission of the virus so that schools can reopen safely.

I'll briefly mention **some of the other common problems in studies of children and schools**, so you can spot these important limitations and get a better feel for what the study really means. Many studies do not take into account that adult travellers initially seeded epidemics. Because schools were often closed around this time, the potential for spread among children was reduced. Children did not have the opportunity to be infected. In some countries, cases were quickly identified and quarantined in designated centres away from home. This reduced the likelihood of household transmission, and hence the risk to children. Where cases did occur in households, did parents attempt to shield their children at any stage? One could also ask whether children have been shielded by parents in general.

Children are more likely to have mild disease than adults, and are frequently asymptomatic. What was testing like in the study? Were all people tested, or only those with symptoms? **Sometimes, only those with symptoms were tested. Because children are more likely to be asymptomatic, index cases in children may be missed. Children may only be tested after an adult (whom they may have previously infected) develops symptoms**. **In this scenario, the child may incorrectly be thought to be a secondary case (i.e., transmission from child-to-adult was missed, and instead thought to be the other way around)**. The case may even go completely undetected because the child's viral load may have declined. And finally, sometimes testing in children isn't good, leading to false negatives. [One] really important issue with testing for #SARSCoV2 in children - In at least some settings, false negative tests may be more likely in children than adults due to poor swab technique.

Importantly, the problems I have described cannot be fixed by attempting to adjust for various factors during the analysis stage. If these problems are in the data to begin with, the conclusions of the study are likely flawed. What does this all mean for schools? The key point is that the studies in this thread show that substantial school outbreaks have occurred. They will continue to occur if community transmission is not suppressed. **Ultimately, schools are as safe as the communities in which they are in. If there is community transmission, then outbreaks will occur. Community transmission must be eliminated before schools can open safely**. Video clip of Dr Mike Ryan of the WHO: https://twitter.com/i/status/1283052534253473792

Once the real problem of community transmission has been addressed, changes to the school environment must be made. The aim is to ensure that a large outbreak does not occur if the virus is introduced to a school. This doesn't require high-tech solutions. Interventions could include the wearing of masks and face shields, staggering of classes, and improving ventilation - perhaps even holding classes outside. Link (measures in place in schools in Thailand): https://www.bangkokpost.com/thailand/general/1944116/schools-reopen-across-thailand-with-temperature-checks-masks

Once community transmission has been eliminated or reduced to very low levels, relatively simple environmental and behavioural changes can allow schools to reopen with low risk, as seen in East Asia in particular. Link: https://www.straitstimes.com/asia/east-asia/back-to-school-how-life-for-pupils-resumes-amid-covid-19-outbreak-across-east-asia

Addendum: These comprehensive guidelines from Harvard T. H. Chan School of Public Health provide advice on how to manage the risks associated with reopening schools. Link: https://schools.forhealth.org/wp-content/uploads/sites/19/2020/06/Harvard-Healthy-Buildings-Program-Schools-For-Health-Reopening-Covid19-June2020.pdf

Another large antibody study has shown that children and adults are similarly likely to be infected. Importantly, young children and teenagers were just as likely to be infected. **Study of #SARSCoV2 antibody prevalence in >25,000 people in Brazil in May & June**. Children & adults equally likely to have been infected in May. In June, children & adults aged 60+ similar, while adults 20-59 higher - associated with leaving home. In May, 1.3-1.6% of children and 0.6-1.9% of adults had been infected. In June, 1.9-2.2% of children had been infected, compared to 2.9-3.7% of adults aged 20-59, & 2.1-2.5% of adults 60+. **In both surveys, young children & teenagers equally likely to have been infected**. Link: https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(20)30387-9/fulltext

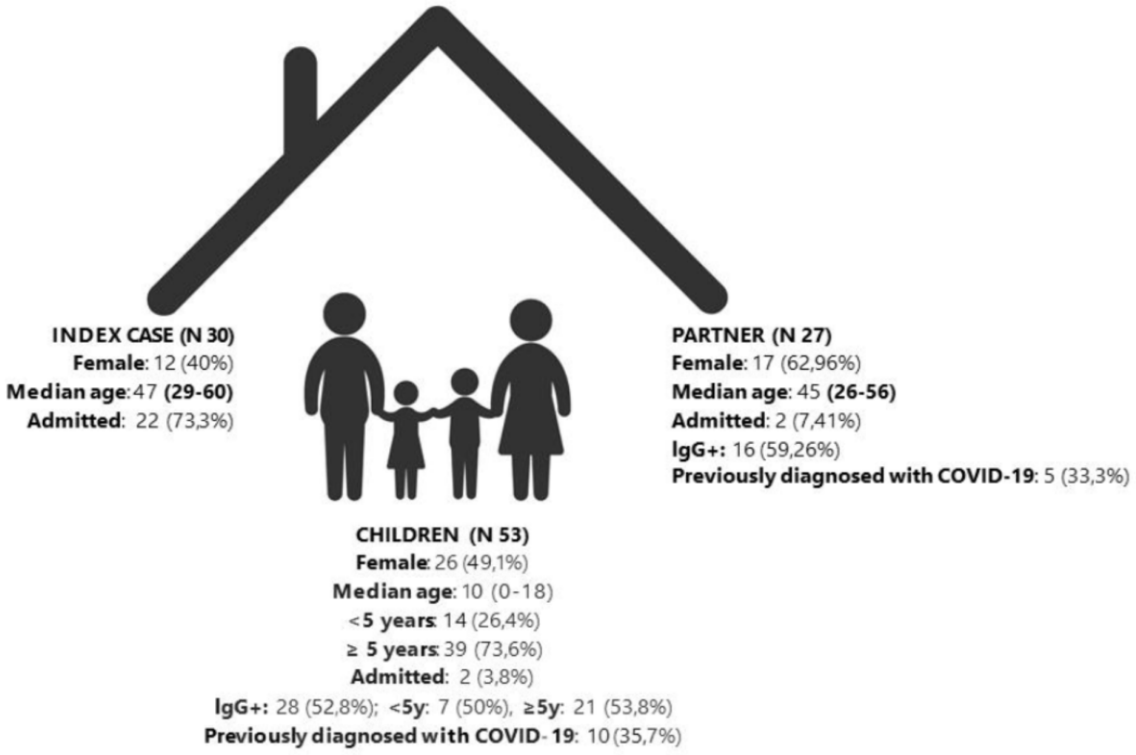
This is similar to recent data from Italy. In this household contact study in which people were tested for antibodies, there was no difference between very young children and older children: https://www.medrxiv.org/content/10.1101/2020.08.10.20169912v1. Pre-print household contact study (interpret cautiously) from Italy showing **a similar proportion of adults & children (including young children) were infected with #SARSCoV2**.

Overall: 55%

Adult partners: 59%

Children >=5 years: 54%

Children <5 years: 50%



This hasn't been seen in all studies. Here, younger children were less likely to be infected: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1166/5893024. Circumstantial factors probably underlie such differences. In this study, children were more likely to be infected if they were children of the index case. Study of household transmission of #SARSCoV2 in the US in March to April. Extremely thorough investigation by the CDC showing an equal attack rate for children and adults, among other things. Lots to discuss here..

The investigation took place in Utah and Wisconsin. These states were chosen because of the low #COVID19 prevalence at the time, reducing the risk of additional exposure to household members. Index patients were identified via outpatient testing. After this, a list of households to which index patients belonged was established.

A total of 58 households were investigated, each with one index patient. There were 188 household contacts. Households were visited at least twice, separated by 14 days. Both swab testing and blood (antibody) testing of all household members was performed at each visit. Each household member completed a symptom diary. If a person developed symptoms, an extra visit was scheduled, during which all household members were tested. In each household, a primary case was identified. The primary case was the first person to show symptoms. This was not always the same as the index case which had been picked up initially. Overall, the secondary attack rate (SAR) was 28%. Notably, the use of both RT-PCR and antibody testing picked up an extra 8 cases. Using RT-PCR data alone, the SAR would have been 23%.

Children (aged <18 years) of the primary case had the highest SAR (42%), followed by adult children (>=18 years) of the primary case (35%), and partners of the primary case (33%). For children aged under 10 years, the secondary attack rate was:

18% when they were a child of the primary case;

0% when they were not a child of the primary case.

For children aged 10-17 years, the secondary attack rate was:

58% when they were a child of the primary case;

8% when they were not a child of the primary case.

This could suggest that the risk to children in the household is largely dependent on whether the person caring for them is infected. That is, if a parent has the virus, children are much more likely to be subsequently infected than if the virus is introduced to the household by a different family member. This may be one reason why the results of household contact studies differ with regard to the risk posed to children (some saying equal risk, and some saying less). Similarly, the attack rate was particularly high in spouses/partners of the primary case. This probably reflects increased proximity to cases and increased duration of contact.

Overall, the secondary attack rate in children and adults was essentially the same:

19/68 children = 27.9%

33/120 adults = 27.5%

However, younger children were less likely to be secondary cases than older children:

3/29 children aged under 10 years = 10.3%

16/39 children aged 10-17 years = 41.0%

Household contacts with diabetes were more likely to be secondary cases than contacts without diabetes (SAR: 80% vs. 26%). Household contacts of male primary patients were more likely to be secondary cases than those of female primary patients (36% vs. 18%). Household contacts of primary patients who were immunocompromised were more likely to be secondary cases (88% vs. 25%), possibly due to increased or prolonged viral shedding by the primary case. In conclusion, this study suggests that children can be at a similar risk of being infected in the household compared to adults, but this may depend on who introduces the virus (with parents seemingly conferring greatest risk in this study). It also suggests that men may be more likely to transmit the virus to others than women in a household setting, and that people with diabetes are at increased risk of infection (not just getting more sick if they do become infected).

Emerging data continue to suggest that children are as infectious as adults. **In the largest contact tracing study to date, a similar proportion of the contacts of child index cases and the contacts of adult index cases were infected**.

Study of 84,965 #COVID19 cases and 575,071 contacts in India. 70.7% of cases did not transmit virus. Contacts of child index cases and contacts of adult cases similarly likely to be infected. Contacts more likely to test positive if same age as index case. Link: https://science.sciencemag.org/content/370/6517/691

This supports previous work from Italy, showing that the contacts of children were more likely to be infected than the contacts of adults. Pre-print study (interpret carefully) of contact tracing in Trento, Italy. Children aged 0-14 slightly less likely to be infected than adults (attack rate: 8.4% vs. 13.3% overall), but more likely to transmit virus (22.4% vs. 13.2% overall). Link: https://www.medrxiv.org/content/10.1101/2020.07.16.20127357v1

Table 2. Contagiousness of index cases by age and gender, Province of Trento - March-April 2020.

Characteristic of case	Cases	#of contacts	# of contacts who became cases	Contagiousness
Age, years (n=1,489)				
0-14	14	49	11	22.4%
25-29	118	475	62	13.1%
30-49	446	2,361	250	10.6%
50-64	477	2,222	303	13.6%
65-74	181	559	85	15.2%
75+	253	909	155	17.1%
Gender (n= 1,442)				
Women	727	3,427	414	12.1%
Men	715	2,973	416	14.0%

Many of the children who transmitted the virus were aged under 10. The authors suggested that high transmission in children could be attributable to the difficultly of isolating a child with the virus. Adults may adhere to isolation precautions more readily than children.

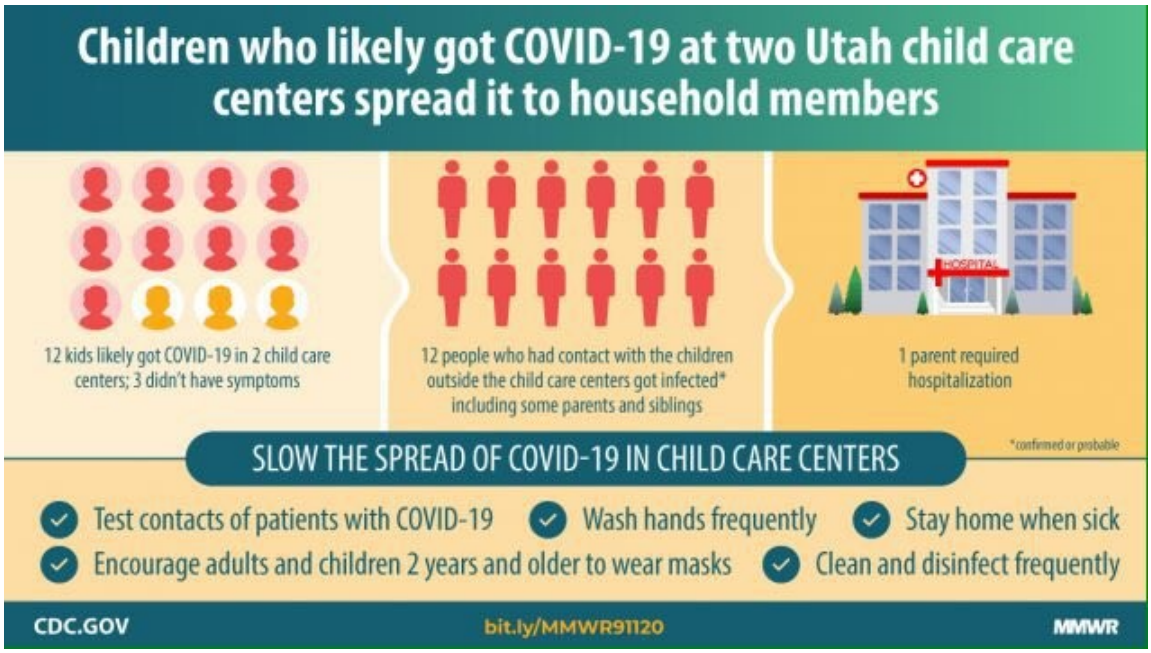
The study has some limitations. Not all contacts were tested; in many instances the development of symptoms plus a link to a known case was relied upon to determine if someone had become infected.

Our study has several limitations. First, becoming infected and being identified as a case are not synonymous. Contacts were not routinely tested and in most instances, determining if they had become a case was based on symptoms plus an epidemiological link. It could be, for example, that children and young adults may be less likely to have symptoms than adults and we may have under-estimated secondary attack rates in the younger age groups. Second, in our evaluation of contagiousness, the

Because children generally have more mild disease than adults, more cases in children could have been missed than in adults. The effect of this would be to underestimate the vulnerability of children to infection. **The authors suggest a "policy of maximum caution with respect to the reopening of children's communities and primary schools."** Addendum: I think the category "25-29" in the table is a typo and should read "15-29".

Although it's not possible to say with certainty who infected whom in these studies, they strongly suggest that children do transmit the virus at clinically meaningful rates.

Even the youngest children can transmit the virus. In this study, young children transmitted the virus to one-quarter of their household contacts. Two out of three completely asymptomatic children transmitted the virus. Study of #SARSCoV2 transmission by children. **12 children infected in childcare transmitted the virus to at least 12 of 46 (26%) contacts at home or in the community. One parent was hospitalised. Transmission by 2 of 3 asymptomatic children was seen**. Link: https://www.cdc.gov/mmwr/volumes/69/wr/mm6937e3.htm?s_cid=mm6937e3_w



This was a retrospective study of outbreaks that occurred at 3 childcare centres. The index cases in all 3 clusters were staff members. Two of the 3 staff had a household contact with confirmed or probable #COVID19, and had gone to work while this person was symptomatic. A total of 22 #COVID19 cases were reported at the 3 childcare centres. Twelve cases (54%) were in children.

The number of cases in each facility was as follows:

A: 2 cases (0 children) / 12 persons (17%)

B: 5 cases (2 children) / 5 persons (100%)

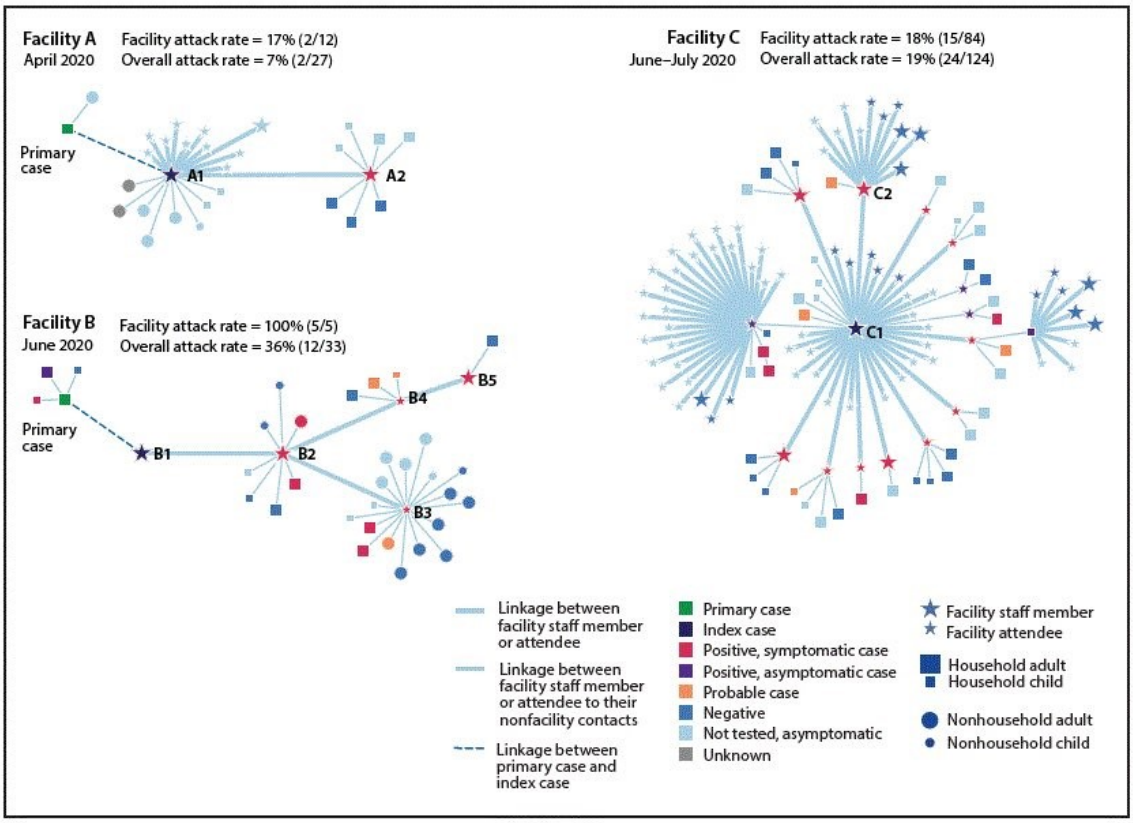
C: 15 cases (10 children) / 84 persons (18%)

The number of confirmed or probable #COVID19 cases in contacts linked to the facility was as follows:

A: 0 cases / 25 contacts (0%)

B: 7 cases / 28 contacts (25%)

C: 9 cases / 109 contacts (8%)



However, not all contacts were tested. The proportion of asymptomatic contacts who were not tested was as follows:

A: 80%

B: 29%

C: 61%

It's possible that more transmission occurred than was reported. Daily temperature checks were required at facility A and B, and were requested at facility C. Daily symptom screening was required at facility A, and was requested at facility C. Staff wore masks at A and B. Masks were not worn at C. This suggests that temperature screening alone is insufficient to detect cases before they are infectious. Masks may have been helpful.

The 12 infected children had mild or no symptoms (3 were asymptomatic), demonstrating the difficulty of detecting cases in children. However, transmission from them to adults and other children occurred. Importantly, transmission was observed in 2 of 3 asymptomatic children, one of whom infected their mother, who was subsequently hospitalised.

Transmission was also observed in very young children. One child who was 8 months old transmitted the virus to both parents.

The authors noted that while #COVID19 is less severe in children than in adults, they can still play a role in transmission. This demonstrates the importance of testing children, both to prevent transmission, and also to better understand how the virus spreads.

This is not surprising, because **studies continue to show that children and adults have a similar viral load**.

Here, the amount of viral RNA detected in swabs from symptomatic children was similar to (or higher than) that of adults. Study of viral load in symptomatic children and adults with #COVID19. **Children aged 5-17 had similar viral load to adults, but young children (<5 years) had levels 10-100 times higher**. May be high risk that symptomatic children will transmit virus. Link: https://jamanetwork.com/journals/jamapediatrics/fullarticle/2768952

This study has an important limitation. Children have more mild disease than adults, & asymptomatic people were not studied. Therefore, it's unclear if these results apply to all children, or only to those with symptoms. In figure, lower CT values = more viral RNA detected.

Similar amounts of viral RNA were also detected in the swabs of children and adults in this study. Importantly, no difference was seen in viral load between symptomatic and asymptomatic cases (which included both adults and children). Study of viral load in people with mild-to-moderate #COVID19. Infectious virus persists for ~10 days. No difference in viral load or infectious virus by age, or between symptomatic and asymptomatic cases. Suggests asymptomatic people may transmit virus. Link: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.32.2001483

Age group in years	Number of cases	Ct value		Virus isolation		Asymptomatic cases	
		Geometric mean	95% CI	Estimated % culture-positive	95% CI	%	95% CI
0–20	14	28.81	26.50–31.33	57.8	26.7–83.8	14.3	3.0–47.3
21–40	81	30.81	29.77–31.90	43.2	30.7–56.5	17.5	10.0–28.9
41–60	140	30.83	30.03–31.65	37.7[a]	27.8–48.7	13.6	8.6–20.8
61–80	40	29.87	28.42–31.38	41.3	24.4–60.5	17.5	7.8–34.6
81–100	49	29.09	27.84–30.41	32.1	18.8–49.2	40.8	27.4–55.7

In this study of mostly adults, asymptomatic and symptomatic cases were also found to have a similar viral load. Study of 303 people with generally mild #COVID19 from South Korea. The amount of viral RNA detected in the upper and lower respiratory tract did not differ between symptomatic and asymptomatic cases. Suggests asymptomatic cases may be equally infectious. Link: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2769235

This suggests children are likely to have a similar viral load to adults, even if they are asymptomatic. This is important, because children appear much more likely to have an asymptomatic infection than adults.

In this antibody study of the children of healthcare workers in the UK, 50% of infections were asymptomatic. Additionally, young (<10 years) and older (>=10 years) children were equally likely to have been infected (6.6% vs. 7.1%). Important pre-print study (interpret cautiously) of 992 UK children showing 6.9% had #SARSCoV2 antibodies, suggesting they are at similar risk of infection as adults, & that young and older children are similarly susceptible. 50% were asymptomatic. Link: https://www.medrxiv.org/content/10.1101/2020.08.31.20183095v1

The sample comprised 1,007 children of healthcare workers aged 2-15 years at the time of recruitment (16 April to 3 July). Blood samples were obtained from 992. Half the sample (49%) were aged under 10 years and 51% were male. The proportion of children who tested positive for #SARSCoV2 antibodies was 6.9% (95% confidence interval 5.4 to 8.6%). The proportion was lowest in Belfast (0.9%) and highest in London (11.6%). The proportion of children with antibodies against

#SARSCoV2 (6.9%) was similar to that for people aged 16 years and older in the general population (6.3%; 95% confidence interval 5.0% to 7.8%). Link: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveypilot

Half of the children (50%) who had antibodies against #SARSCoV2 were asymptomatic (although this may be subject to recall bias). **The most common symptoms were fever (31%), gastrointestinal symptoms such as diarrhoea and vomiting (19%), and headache (18%)**.

	Complete Data N(%)	Without SARS-CoV-2 Antibodies N(%)	With SARS-CoV-2 Antibodies N(%)	Odds Ratio (95% CI)	P Value
Median age (years)	992(100)	10.1(5.8)	10.2(6.9)	-	0.481
Aged 10 years and over	992(100)	472(51)	36(53)	1.1(0.6 to 1.8)	0.802
Male gender	991(99.9)	468(51)	41(60)	1.5(0.9 to 2.5)	0.133
Parents (patient contact)	992(100)	789(85)	52(76)	0.6(0.3 to 1.1)	0.055
Confirmed household contact	960(97)	63(7)	30(44)	10.9(6.1 to 19.6)	<0.0001
Fever	962(97)	102(11)	21(31)	3.5(1.9 to 6.2)	<0.0001
Gastrointestinal Symptoms	962(97)	31(3)	13(19)	6.6(3.0 to 13.8)	<0.0001
Headache	962(97)	34(4)	12(18)	5.4(2.4 to 11.4)	<0.0001
Lethargy/fatigue	962(97)	8(1)	9(13)	16.8(5.5 to 51.9)	<0.0001
Cough	962(97)	90(10)	7(10)	1.03(0.38 to 2.3)	1.000
Change in sense of smell/taste	962(97)	7(1)	5(7)	10.0(2.4 to 37.8)	<0.0008
Myalgia/arthralgia	962(97)	21(2)	5(7)	3.3(0.94 to 9.4)	0.031
Sore throat	962(97)	41(5)	5(7)	1.7(0.5 to 4.4)	0.367
Shortness of breath	962(97)	13(1)	3(4)	3.1(0.6 to 11.8)	0.098
Coryza	962(97)	27(3)	1(1)	0.5(0.0 to 3.0)	0.715
Rash	962(97)	10(1)	1(1)	1.3(0.0 to 9,5)	0.556
Conjunctivitis	962(97)	1(0)	0(0)	0.0(0.0 to 508.7)	1.000

Only 38% of children who tested positive had fever, cough, or changes in smell or taste. Therefore, the majority of children did not meet criteria for #COVID19 testing in the UK. Current testing strategies will fail to diagnose most cases in children.

There was no association between age and the presence of antibodies. The proportion of children with antibodies was similar for children under 10 years (47%) and for those aged 10 years and older (53%).

A strength of the study is that it was prospective. Children were followed up to see if they would become infected, meaning that this study is more representative than many others. A limitation of the study is that the participants were children of health care workers, who may be more likely to be exposed to the virus than the general population. In conclusion, **this study shows that the children of healthcare workers in the UK were similarly likely to be infected with #SARSCoV2 as members of the general population aged 16 years and older (6.9% vs. 6.3%), and that young and older children are similarly susceptible**.

The proportion of children with antibodies in the entire sample was:

Under 10 years: 32/484 = 6.6%

10 years and older: 36/508 = 7.1%

Young and older children were similarly susceptible.

Infections in children may be hard to detect. In this study from South Korea, 66% of symptomatic children with #COVID19 had symptoms which were mild enough to go unrecognised. Only 9% were diagnosed at the time of symptom onset. Study of 91 children with #COVID19 from South Korea, showing that symptom screening will fail to identify the majority of cases in children, and that viral RNA can be detected for an unexpectedly long time. Link: https://jamanetwork.com/journals/jamapediatrics/fullarticle/2770150

Children were tested if they had a history of close contact with a known case, had an epidemiological link to an outbreak, had arrived from abroad, or had symptoms suggestive of #COVID19. This means the study is likely representative, as few cases are missed in South Korea.

Approximately one-fifth of children (22%) were asymptomatic. Of the children who were symptomatic, 66% had symptoms which went unrecognised before they were tested. Only 6 children (9%) were diagnosed at the time of symptom onset. Of the children with symptoms, 60% had respiratory symptoms (including cough and runny nose), and 18% had gastrointestinal symptoms (including diarrhoea). Loss of smell or taste was reported by 16%.

Viral RNA was detected for an average of 14 days in asymptomatic cases, 19 days in children with upper respiratory tract infections (URTI), and 20 days in those with lower respiratory tract infections (LRTI). Infectious virus was likely shed for a shorter time, however.

There may be little difference in symptoms between children with #COVID19, and those with other respiratory illnesses, as seen in this study. The presence of fever or cough was not sufficient to distinguish between them. Very important viral load & susceptibility study of 192 children (49 positive for #SARSCoV2, 18 with MIS-C, 125 negative). Despite having generally mild symptoms, children who tested positive had a viral load similar to adults with severe #COVID19. Link: https://www.jpeds.com/article/S0022-3476(20)31023-4/fulltext

ACE2 gene expression was examined in all children, and was higher in children who tested positive for #SARSCoV2 and those with MIS-C, than in children who tested negative. However, ACE2 expression did not correlate with viral load. This suggests that increased ACE2 expression may be associated with increased susceptibility to infection. However, once infected, children have a similar viral load despite any differences in ACE2 expression. Children less than 10 years old had lower ACE2 expression compared with older children. This suggests younger children may be less susceptible to infection than older children, and that more exposure may be required for them to become infected.

The authors wrote: "children can carry high levels of virus in their upper airways, particularly early in an acute SARS-CoV-2 infection, yet they display relatively mild or no symptoms." They noted: "there was no age correlation with viral load, indicating that infants through young adults can carry equally high levels of virus." The authors concluded: "[f]rom an infection-control perspective, it is critical to identify infected children early for quarantine purposes." **With regard to schools, the authors wrote that screening children based on symptoms or their temperature will likely be ineffective**.

There was generally very little difference in symptoms between the children who had mild #COVID19, and the children who were evaluated for other respiratory illnesses (the children who tested negative). Instead, "infection control measures should minimize the possibility of viral spread, with focus on strategies including social distancing precautions, mask use, and/or remote learning." "Moreover, **schools could screen all students for SARS-CoV-2 infection and establish routine**

screening protocols." "Without infection control measures such as these, there is significant risk that the pandemic will persist, and children could carry the virus into the home, exposing adults who are at higher risk of developing severe disease."

"Although transmissibility was not assessed in this study, children with high viral loads and non-specific symptoms including rhinorrhea and cough can likely transmit SARS-CoV-2 as easily as other viral infections spread by respiratory particles." "If schools were to re-open fully without necessary precautions, it is likely that children will play a larger role in this pandemic." Summary: in this study, despite having generally mild symptoms, children infected with #SARSCoV2 had a viral load similar to adults with severe #COVID19. Viral load did not differ by age, although young children may be less susceptible to infection.

This suggests it will be difficult to identify schoolchildren with #COVID19, and that schools will be an ideal environment for the virus to spread because of the number of close contacts that children have.

Although many cases in schools have been reported, there have been fewer superspreading events than was initially feared. However, this doesn't mean that children don't transmit the virus or that schools are a low-risk environment.

Two recent studies have shown that about 70% of infected people don't seem to transmit the virus to anyone. See the study below, and also the study described previously… Study of #COVID19 in Hong Kong from January to April, showing that the epidemic was characterised by superspreading events. Just 19% of infections were responsible for 80% of secondary cases, and 69% of people did not infect anyone. Link: https://www.nature.com/articles/s41591-020-1092-0. However, interventions in place included school closures, some people working from home, bans of mass gatherings, and near-universal mask wearing. Had these interventions not been in place, even more superspreading may have occurred.

The majority of cases (51%) were linked to one of 137 clusters. The largest cluster (106 cases) was associated with 4 bars, the 2nd largest (22 cases) to a wedding, and the 3rd largest (19 cases) to a temple. Musicians are thought to have spread the virus between the bars. Because people are often infectious before they develop symptoms, isolating confirmed cases may only be of limited benefit. However, **quarantining the contacts of known cases was highly effective in breaking transmission chains**.

Exactly why [about 70% of infected people don't seem to transmit] is unclear. Possible reasons include the timing of infection, (lack of) opportunity to transmit, environmental factors that enhance transmission, and individual characteristics. However, **the frequency of transmission can be expected to be linked to the level of community transmission. Higher levels of community transmission mean a greater probability of the virus being introduced to schools**.

During a period of low community transmission in Germany, there was limited school transmission. However, precautions were taken, including reducing class sizes by 50%, and regular ventilation of classrooms. Study of within-school transmission of #SARSCoV2 in Baden-Württemberg, Germany. During a period of low community transmission, and with risk-reduction measures in place in schools, limited transmission occurred. Link: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.36.2001587

Risk-reduction measures, which included reducing group sizes by 50% and regular ventilation of classrooms, are shown below. Additionally, **the authors recommend the use of face masks by primary and high school children both in and outside the classroom**.

Infection control measures for the prevention of SARS-CoV-2 transmission in schools and childcare facilities in Baden-Württemberg, Germany, May–July 2020

Infection control measure	Childcare facilities	Primary school	Secondary school[a]
Group sizes reduced by 50%	Yes	Yes	Yes
Cleaning of contact surfaces	Yes	Yes	Yes
Regular and interim ventilation of rooms	Yes	Yes	Yes
Exclusion of sick children	Yes	Yes	Yes
Individual hygiene (hand hygiene, cough etiquette)	Yes	Yes	Yes
Face mask in classroom	No	No	No
Face mask outside classroom	No	Some	Some
Physical distancing between children	No	No	Yes
Cancelling singing and use of wind instruments during music lesson	Some	Yes	Yes
Cancelling physical education	NA	Yes	Yes

NA: not applicable; SARS-CoV-2: severe acute respiratory syndrome coronavirus 2.

[a] Including vocational school.

White backgrounds indicate measures which will remain unchanged after reopening following the 2020 summer holidays; light blue backgrounds indicate measures that will be cancelled after the 2020 summer holidays; dark blue backgrounds indicate measures that will be established (mask outside classroom) or should be established in the authors' opinion (ventilation and mask in classrooms).

In the UK, the number of #COVID19 clusters in educational settings has surged since schools reopened. The number of #COVID19 cases linked to educational settings in England has surged since schools reopened. Since reopening in week 36, a total of 156 clusters (>=2 cases) were reported in high schools. 134 were reported in primary schools. Link: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921561/Weekly_COVID19_Surveillance_Report_week_39_FINAL.pdf

Figure 20: Number of COVID-19 incidents by institution from week 27, England

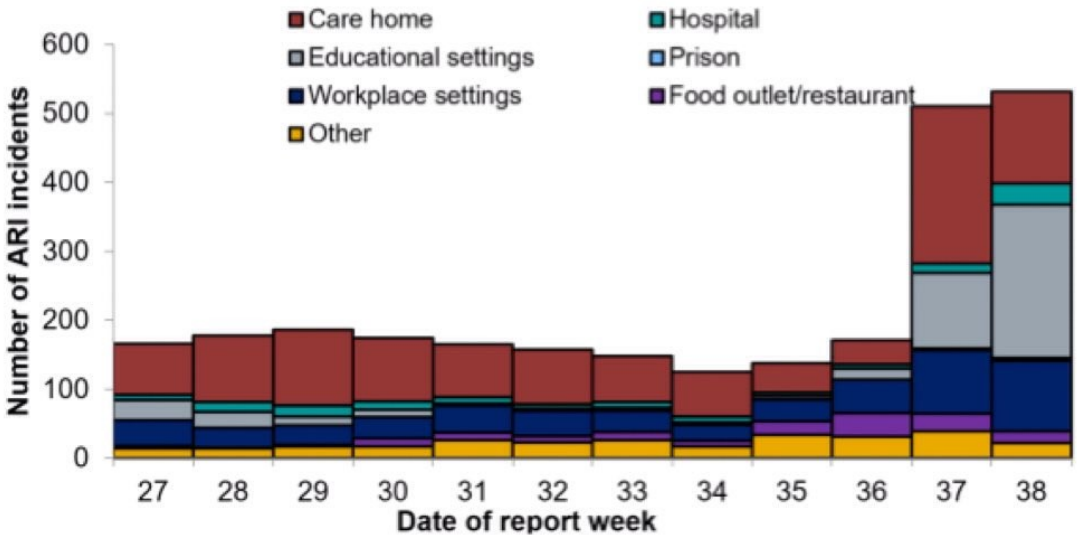
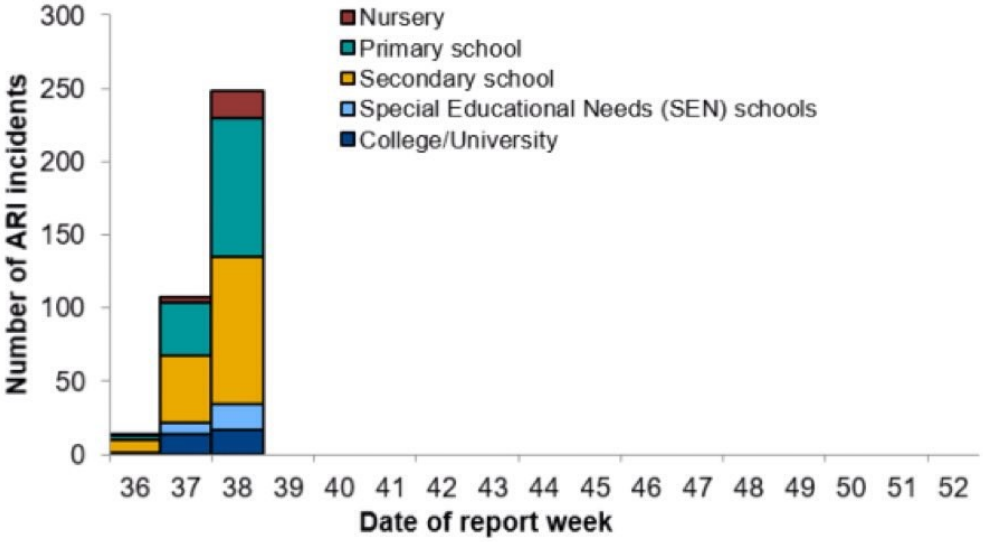


Figure 21: Number of COVID-19 confirmed clusters or outbreaks by type of educational setting, England

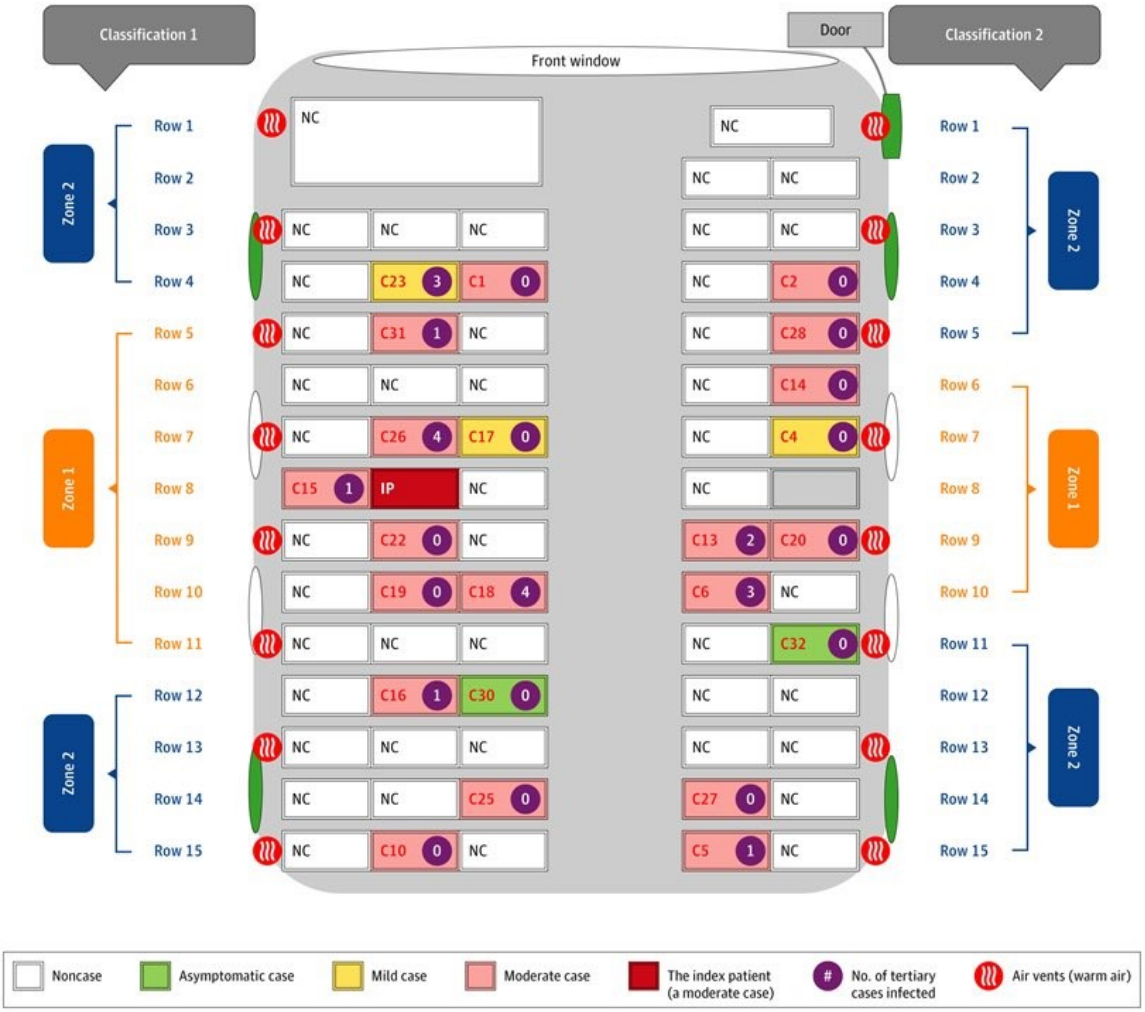


Similarly, in France, clusters in schools and universities account for one-third of those currently under investigation. Clusters in educational settings now outnumber those occurring in the workplace. Link: https://www.lemonde.fr/education/article/2020/09/26/covid-19-un-tiers-des-clusters-concerne-l-ecole-et-l-universite_6053758_1473685.html

Measures must be taken to reduce community transmission, and also to reduce the risk of transmission in schools. At a minimum, this should include the use of face masks by staff and students (including both primary and high school students), and increasing ventilation.

Evidence continues to emerge of aerosol transmission being a major route. This means that physical distancing - while important - is not sufficient. Improving ventilation, wearing face masks, and reducing class sizes (if possible) are key.

Study providing strong circumstantial evidence for airborne transmission of #SARSCoV2. 35% of passengers on a bus with an index case were infected. Those seated far away also affected. Air conditioning (on recirculating mode) may have contributed. Link: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2770172



There's growing evidence that masks protect the wearer from becoming infected, as well as preventing onward transmission. Importantly, the kind of mask doesn't seem to matter too much, but it does have to be worn consistently. Case-control study of 1,050 contacts of #COVID19 cases in 3 clusters in Thailand, showing that wearing a mask was associated with reduced risk of becoming infected. The type of mask worn did not matter, but it did have to be worn consistently. Link: https://wwwnc.cdc.gov/eid/article/26/11/20-3003_article

Physical distancing, shorter contact duration, hand washing, and wearing a mask always when in contact with a case (but not just sometimes) was associated with reduced risk of becoming infected. Sharing dishes, cups, and cigarettes was associated with increased risk. Wearing a mask was not associated with a false sense of security. People who wore a mask were more likely to maintain physical distance and to practice hand hygiene than those who did not wear a mask. The authors noted that "no single protective measure was associated with complete protection from COVID-19.

All measures, including mask-wearing, handwashing, and social distancing, can increase protection against COVID-19 in public settings."

If a school-aged child can safely wear a mask, they should. Many Asian countries already require schoolchildren to wear masks, such as Singapore. It is a simple intervention with minimal, if any, harms, as the Asian experience has shown.

On the other hand, if children are told they do not need to wear a mask in school and that they are unlikely to transmit the virus there, how can we expect them to behave outside school? It seems unlikely they will follow precautionary measures. Advice must be consistent!

Even though children are far less likely than adults to become seriously ill, they can transmit the virus. If we want to control the virus, we can't overlook the role of children in transmission. Link: https://theconversation.com/children-might-play-a-bigger-role-in-covid-transmission-than-first-thought-schools-must-prepare-144947

We can't ignore any section of the population. **The virus doesn't remain confined to specific age groups**. **In the US, a rise in cases in young adults was shown to precede cases in older people by about 9 days on average**. Study showing that an increase in #COVID19 cases in young adults in the US preceded an increase in cases in those aged 60 years and older by an average of 9 days. Infections in young people are important. The virus does not stay in this age group. Link: https://www.cdc.gov/mmwr/volumes/69/wr/mm6939e1.htm?s_cid=mm6939e1_w

Schools remain an overlooked site of risk in many countries in this pandemic. But guidelines to improve school safety have been developed. If these guidelines (or those of a higher standard) aren't yet implemented in your region, ask why not. Link [Harvard T. H. Chan School of Public Health – 'Risk Reduction Strategies for Reopening Schools']: https://schools.forhealth.org/wp-content/uploads/sites/19/2020/06/Harvard-Healthy-Buildings-Program-Schools-For-Health-Reopening-Covid19-June2020.pdf

2. **Dr Nisreen Alwan: Associate Professor in Public Health at the University of Southampton; Honorary Consultant in Public Health, University Hospital Southampton NHS Foundation Trust. Public Health. Epidemiology, MBE PhD FFPH MRCP MSc MPH.**

Twitter thread, 9th Feb 2021:
https://twitter.com/Dr2NisreenAlwan/status/1359249799971807239?s=20

'Caution' doesn't mean just hand gel. It means **acknowledging the airborne transmission of covid and resourcing schools to have radical ventilation and distancing solutions** so that they don't close again. Link: "Experts have warned that schools must be reopened with caution, amid emerging evidence from Israel and Italy that more young children are being infected with new variants of covid-19",
https://www.bmj.com/content/372/bmj.n383?utm_source=twitter&utm_medium=social&utm_term=hootsuite&utm_content=sme&utm_campaign=usage

Twitter, 7th Feb 2021: https://twitter.com/Dr2NisreenAlwan/status/1358439327802490887?s=20

What I'm most anxious about is not having adequate control measures in schools & colleges when they fully open. Back to status quo is not good enough. There's hardly any official attention given to this.

Dr Deepti Gurdasani: Senior Lecturer at Queen Mary University of London, qualified in epidemiology, statistical genetics, machine learning

LinkedIn profile: https://www.linkedin.com/in/deepti-gurdasani-0031b9a5/?originalSubdomain=uk

Twitter thread, 5th January 2021:
https://twitter.com/dgurdasani1/status/1346362159446577154?s=20

I've been a hearing a lot about how children are more infectious *now* & contribute to transmission because of the B117 variant, but didn't before. This is a myth. Children & schools have always played an important role in transmission. Time to lay this to rest. Thread.

A few concepts. **The role played by children in transmission depends upon 3 factors:**

1. Susceptibility (how likely a child is to get infected when exposed)

2. Exposure (how likely a child is to get exposed)

3. Transmissibility (how likely a child is to transmit when infected)

When we measure *infection* rates in children, it's worth remembering that this is a combination of susceptibility AND exposure. **For example, children may be *individually less susceptible*, but can still have high rates of *infection* in situations where contact rates are high**.

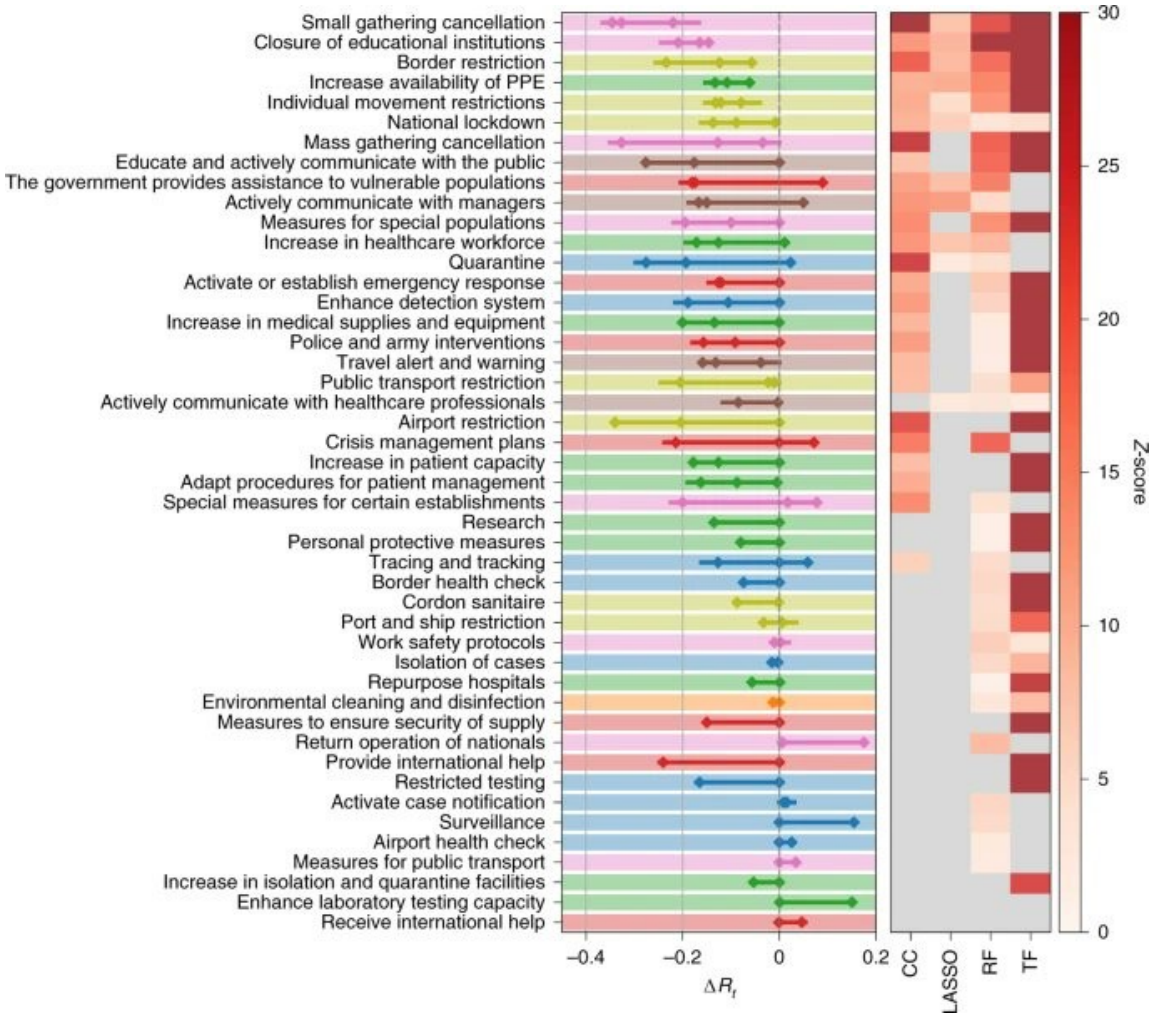
It's worth emphasising this because it's something that's been widely misunderstood by experts, where at point evidence suggestive of lower *susceptibility* has been interpreted as lower *infection* or even more puzzlingly, lower potential for *transmission*.

Transmission from children is a combination of *infection* (a combination susceptibility AND exposure) as well as *transmissibility* and *level of contact with others*. So there is an interplay of many factors that ultimately determine the role children play in transmission.

Different studies have examined different aspects of this. While teasing out these different aspects is important, understanding the role schools play in transmission doesn't require us to tease out these factors.

Studies that have looked at the impact of schools at population level are very clear & consistent in their evidence. I'm going to present just a few here. These are studies that look at the time at which different interventions were carried out & the impact they had on R. So essentially the association is temporal (based on when schools were closed) & geographical (where they were closed). While this is not strictly causal evidence, **seeing this consistent pattern again & again and across multiple countries strongly suggests a causal link**.

Here is a study carried out across >200 countries that showed that among all interventions studied, closing educational institutions was the 2nd most effective. Importantly, the impact on R was similar for pre-school, primary & secondary school settings. Link:
https://www.nature.com/articles/s41562-020-01009-0


Small gathering cancellation
Closure of educational institutions
Border restriction
Increase availability of PPE
Individual movement restrictions
National lockdown
Mass gathering cancellation
Educate and actively communicate with the public
The government provides assistance to vulnerable populations
Actively communicate with managers
Measures for special populations
Increase in healthcare workforce
Quarantine
Activate or establish emergency response
Enhance detection system
Increase in medical supplies and equipment
Police and army interventions
Travel alert and warning
Public transport restriction
Actively communicate with healthcare professionals
Airport restriction
Crisis management plans
Increase in patient capacity
Adapt procedures for patient management
Special measures for certain establishments
Research
Personal protective measures
Tracing and tracking
Border health check
Cordon sanitaire
Port and ship restriction
Work safety protocols
Isolation of cases
Repurpose hospitals
Environmental cleaning and disinfection
Measures to ensure security of supply
Return operation of nationals
Provide international help
Restricted testing
Activate case notification
Surveillance
Airport health check
Measures for public transport
Increase in isolation and quarantine facilities
Enhance laboratory testing capacity
Receive international help
−0.4
−0.2
0
0.2
ΔR_t
CC
LASSO
RF
TF
30
25
20
15
10
5
0
Z-score

Another study of >131 countries showed that among different interventions studied, one of the highest changes in R (R ratio) between introducing an intervention & lifting it was for school closures. Link: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30785-4/fulltext

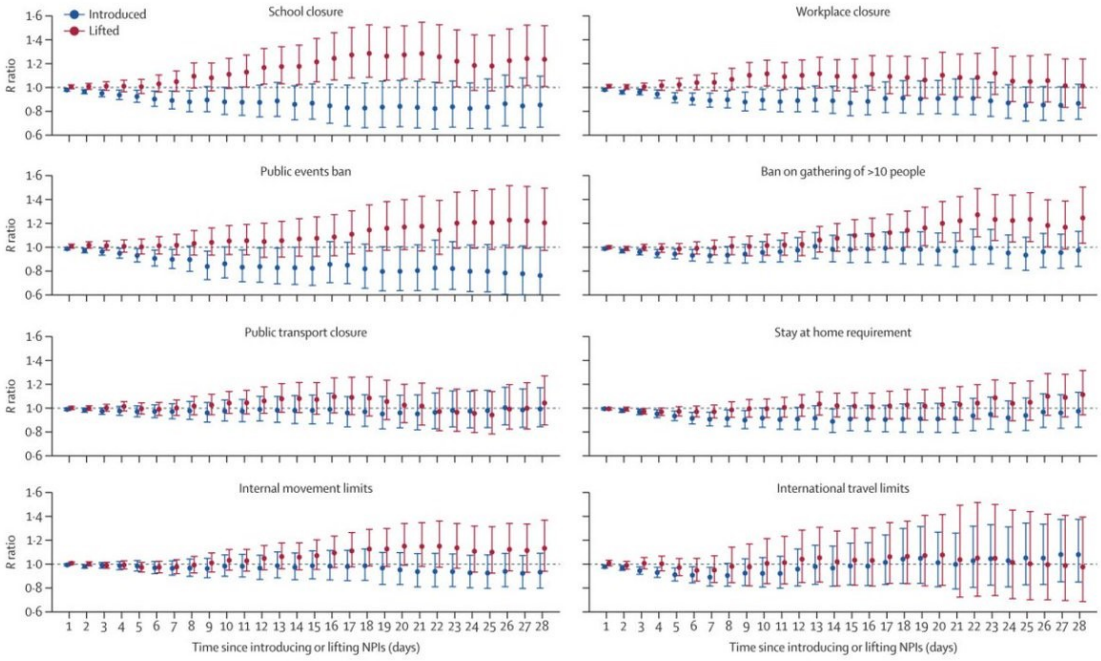


Figure 3 Change over time in the *R* ratio following the introduction and relaxation of individual NPIs

Here's a study from the US that linked statewide school closures to *60%* reductions in both new cases of COVID-19 & COVID-19 mortality. Link: https://jamanetwork.com/journals/jama/fullarticle/2769034

How about England? **The recent SAGE report on schools** - as many of us reported at the time, SAGE reading of evidence **concurs that infection rates among children dropped over half-term & increased again following this in Oct. This is before the new variant was dominant**.

Role of children, young people and schools in transmission
These statements are new or have been updated with new data and analyses:

- Overall, accumulating evidence is consistent with increased transmission occurring amongst school children when schools are open, particularly in children of secondary school age (high confidence): multiple data sources show a reduction in transmission in children following schools closing for half term, and transmission rates increasing again following the post-half term return to school (medium confidence). It is difficult to quantify the size of this effect, and it remains

Important to note that most of the evidence presented here isn't recent. The important roles schools play in transmission has been known for a long time & pre-dates the emergence of this variant. So how do we explain how this has been so widely misunderstood- even by experts? There are many reasons for this. Let's look at some.

Studies that have tried to look at susceptibility have often focused on transmission within households. These look at how often children get infected when exposed to an index case (secondary attack rate).

Transmissibility studies look at how often contacts get infected when exposed to a child who is the index case*. Most studies looking at both of these use **symptom-based testing to determine case status. This is flawed - because children are often asymptomatic & infect adults silently. This means contacts of children are often wrongly identified as the index case as initial testing is based on symptoms. If contacts are then tested, it's possible the child would then be considered as a secondary infection, or not infected at all** (if swab -ve by this point).

The second issue is that many of earlier studies on infection were carried out during lockdowns & periods where schools were either closed or attendance was much lower. This will have a huge impact on inferences, as infection in children depends on *susceptibiliy* & *exposure*.

An example of one such study was the **study by PHE** that was widely reported, even by experts as evidence that schools didn't contribute significantly to transmission. This study **was based on symptom-based testing & carried out when only 7% of children were attending schools**.

Another study that provided false assurance (the OpenSAFELY study) suggested that although parents of secondary school children had a significantly higher risk of infection than similarly aged non-parents, the rate of death was similar in both groups. This study is extremely flawed, and was widely misinterpreted as evidence that school transmission didn't put parents or communities at risk. I've previously explained what the limitations of this study are here:

For example, results from the study show that after correcting for factors in the study, non-COVID-19 deaths are much lower in parents than non-parents. This suggests that these groups are intrinsically not comparable, as deaths are overall lower in parents for other reasons. This means that health behaviours or other factors that have not been accounted for in the study are driving many of the outcomes. In fact, the study shows that parents of school children are more likely to be infected than non-parents, despite these groups not being comparable.

It's time to stop denying the overwhelming evidence that points to children playing an important role in transmission. Until we acknowledge this evidence, we will not be able to protect our children, staff, and communities. We need to translate this evidence into policy.

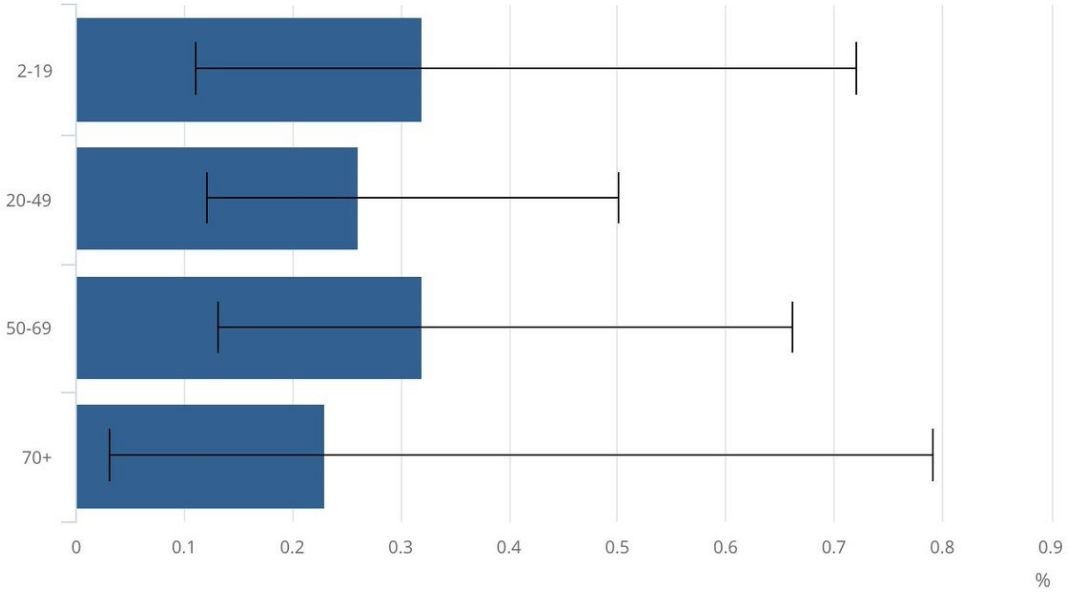
While a lot of current policy is based on the fact that COVID is less severe in children, there is more & more evidence emerging about multi-inflammatory syndromes & long COVID in children. This is a new disease we don't know a lot about. Is it fair to expose children to risk?

Ultimately, if we want to protect children's education, the best way to do this is minimise background transmission in the community, and put in place mitigatory measures in schools. At the moment absenteeism due to COVID-19 is increasing in schools - 600K children were absent for COVID-19 related reasons last week. The current system isn't working. We need to do better.

Despite all this, just **simple infection prevalence data from the ONS survey very early on showed that in random community testing the infection rates among children were not different from those of adults**.

Figure 3: There is no evidence of differences in the proportions of individuals testing positive for COVID-19 between different age categories

Estimated percentage testing positive for the coronavirus (COVID-19), by age bands, England, 2020



Seroprevalence (antibody) studies have shown mixed results- some showing slightly lower seroprevalence among children or equal (often depending on context- schools open or not). And we need to remember that this is despite **swab and serology** being **less sensitive in children**.

Recent analyses from the ONS suggest that 2-12 yr olds are *2x* and 12-16 yr olds *7x* more likely to be the index case in a household compared with adults. And both 2-12yr olds & 12-16 yr olds are *2x* more likely to transmit to contacts in the household compared to adults.

Regarding the susceptibility questions- this is a difficult one, but modelling evidence & recent evidence from the ONS suggests possibly lower relative susceptibility to infection (hard to be sure given lower sensitivity of tests in these groups). But **important to note that lower susceptibility & playing an important role in transmission are certainly not mutually exclusive - and the evidence clearly shows the important role children & schools play in transmission, which is crucial for policy around schools**.

Given the vast swathes of evidence around this that has been available for months, it's amazing that government & some experts have continuously claimed that children don't contribute significantly to transmission. Link: https://adc.bmj.com/content/105/7/618

This denial of clear evidence has hugely impacted policy in the UK, and directly led us to exactly where we are now - needing to move schools to remote teaching. Had we made schools safer over the many months we had to do this, we may well not be here. Paradoxically, it's the very people who talk about children's wellbeing and the need for undisrupted education have supported narratives which have led to policies that have hugely impacted children & families & the wider community.

What is even more worrying than what's happened, is the fact that in yesterday's briefing by the PM, there was absolutely no mention of schools being made safer. It looks like we went straight from the msg that 'schools are safe' to school closures for most children. There seems to have been no acknowledgement that schools are important for onward transmission & urgently do need to be made safer. What will happen after schools re-open? Are there any plans at all for this? If we don't learn from these mistakes now, we never will.

And it's the children who everyone says they want to protect who will suffer the most as a result. So this is an appeal to govt and to scientists - please acknowledge past failures, and let's move forward and ensure schools are really safe. Or at least much safer.

[*Error fixed per Dr Gurdasani's later tweet:

"Sorry, error in earlier tweet discussing transmissibility:

Transmissibility studies look at how often children get infected when exposed to an 'index case'.

should be

Transmissibility studies look at how often contacts get infected when exposed to a child who is the index case."]

3. **Dr Deepti Gurdasani, Twitter, 10th February 2021:**
   https://twitter.com/dgurdasani1/status/1359433657388306434?s=20

Documents from the 29/30th July released by the govt on the 5th of Feb where SAGE warns the govt about the risk of school transmission on the pandemic. The documents warn about outbreaks from schools spreading into the community. Why were these released 6 mnths after publication?

When particularly worries SPI-M-O?

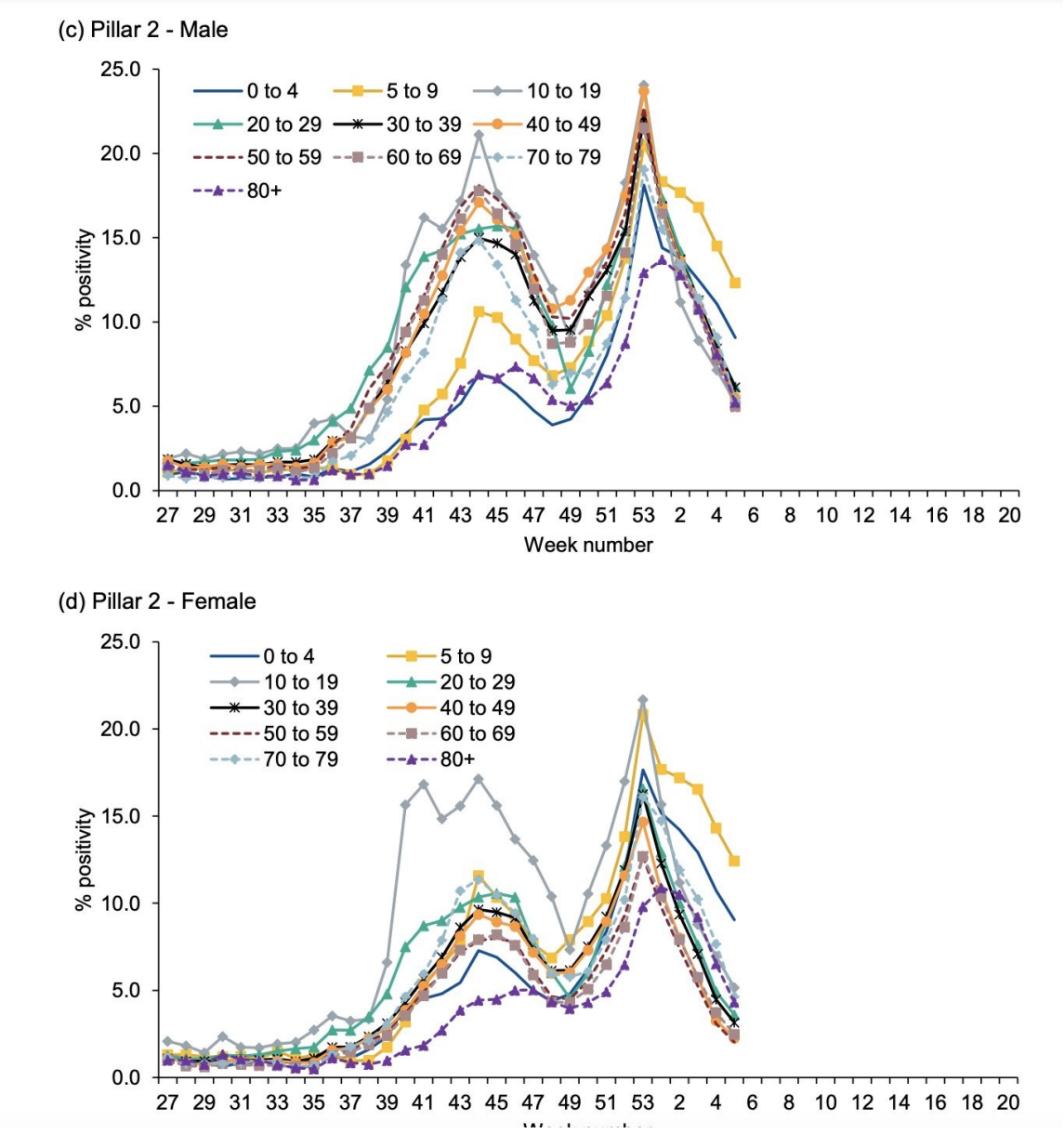
- Reopening schools and further education colleges in September is expected to increase transmission because people (including children) will mix more outside of their homes, resulting in great contacts between households. Outbreaks in educational establishments will be more common in parts of the country with higher incidence, will often be identified through symptomatic teachers, and will be more common in colleges and high schools than primary schools. While schools in Scotland will return in mid-

August, low incidence at present will mean the impact of their return may not become apparent by the start of the school term in England. Outbreaks will spread back into the local community, particularly those in high schools and colleges.

Given the warnings from SAGE about transmission from schools spreading back into the community, why were not mitigations considered in schools then- mitigations that could have prevented tens of thousands of cases, and deaths? And why do we still not have these in place? Link: https://www.gov.uk/government/publications/spi-m-o-reasonable-worst-case-planning-scenario-30-july-2020

Dr Deepti Gurdasani, Twitter, 12th February 2021:
https://twitter.com/dgurdasani1/status/1360184559489454080?s=20

Worrying data from the most recent PHE surveillance yesterday - despite these data really underestimating infection in children (as they are based on symptom based testing), positivity rates appear highest in early year settings (fully open) & primary schools (20% attendance).



The real differences are likely to be greater, given that much of infection is asymptomatic in children. Also worth noting the steep drop initially after school closure, which then plateaus to become more gradual after school re-openings.

Infection among children closely tracks school openings and closures (as we saw even during october half term), and level of attendance (trends in secondary schools where attendance is much lower are different). Again in line with substantial transmission occurring in schools.

Will be interesting to see how the ONS data to be released to aligns with all this. But we can't possibly be talking about opening schools without looking at real-world data which all points to needing better mitigatory measures in schools. Not just 3 wks later, but right now.

4. **Professor Isabella Eckerle: Professor at the Geneva Centre for Emerging Viral Diseases, virologist, MD, Diploma in Tropical Medicine and Hygiene**

A Twitter thread posted by Professor Isabella Eckerle outlining the mitigation measures needed in schools in light of the new variants.

Twitter thread, 31st January 2021:
https://twitter.com/EckerleIsabella/status/1355982050092867585?s=20

Professor Eckerle's thread in English translated from German by Google Translate:

Translated from German by Google

To clarify: I think school closings & all other contact-reducing measures are the right approach at the moment, partly because of the #SARSCoV2#COVID19 Variants. But successful control needs concepts for afterwards: "continue as before" will not work

Translated from German by Google

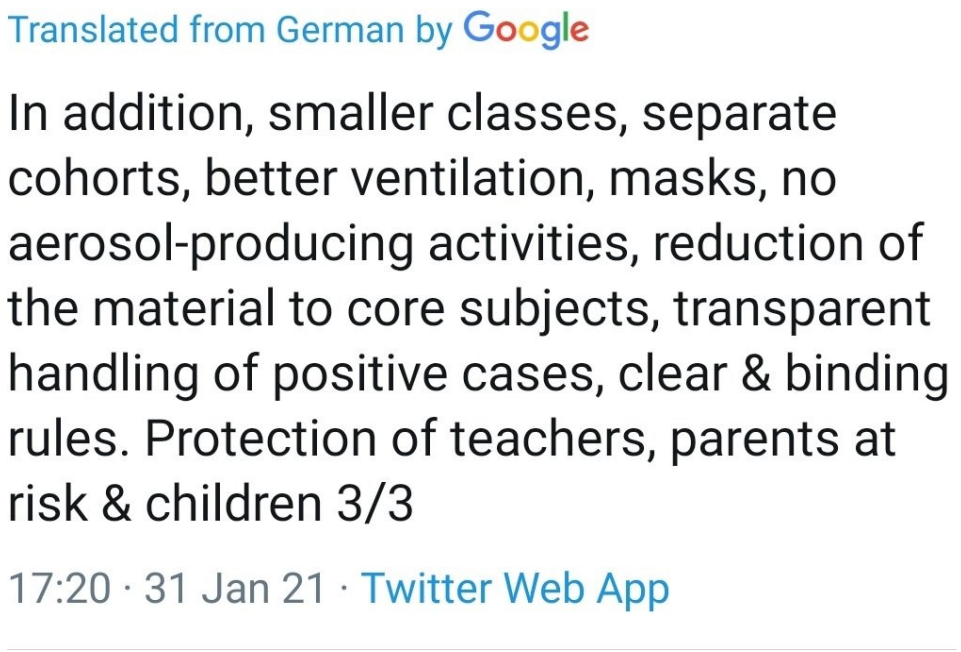
Reliable #SARSCoV2#COVID19 Rapid antigen tests have been available since Oct. 2020. Why don't we now have a trained person at every school / institution who can immediately test and test entire classes on site? Including mildly symptomatic children in the morning? 1/3

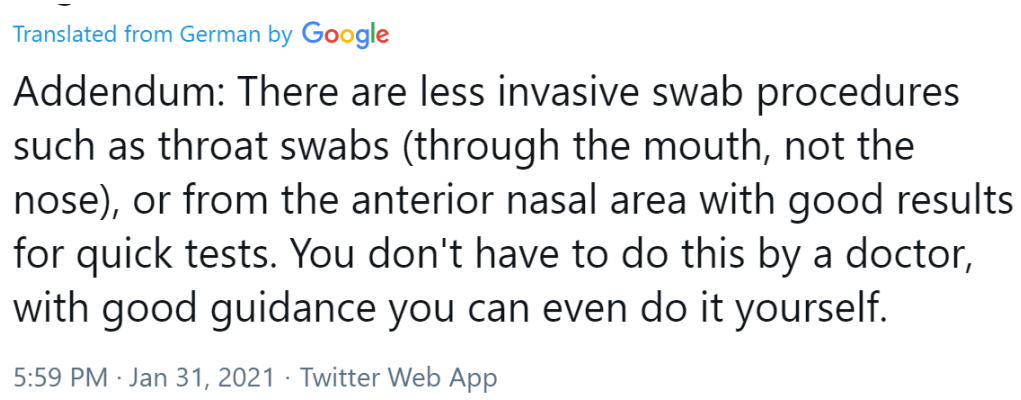
17:20 · 31 Jan 21 · Twitter Web App

Translated from German by Google

Result in 15 minutes. All positive ones immediately (including the entire household) go into isolation, contacts into quarantine. Retest in the entire school environment after a few days. For me, this would look like a building block to enable school lessons in a pandemic 2/3

17:20 · 31 Jan 21 · Twitter Web App





5. **Dr Noor Bari: infectious diseases, MBBS BSc Hons Infectious Diseases Univ. London**

Twitter, 11th February 2021: https://twitter.com/NjbBari3/status/1359919128962756611?s=20

Schools, hospitals and public buildings need ventilation and filtration set up. This pandemic will not be ended by vaccination alone.

2) Prevalence, Incidence and Transmission of COVID-19 in Children [UK]

In the UK, the Government's official Scientific Advisory Group for Emergencies (SAGE) produced an updated report [92] on 17th December 2020 on children, schools and transmission.

NB: The findings in this report had not *considered the new 'UK variant'* (VOC 202012/01; variant B.1.1.7) at this time.

The updated report was based on a range of inputs, including the latest updates on prevalence from the ONS COVID-19 Infection Survey (CIS); updated analysis from the University of Manchester on children and household transmission; first results from the UK COVID-19 Schools Infection Survey (SIS) and positive tests amongst teachers and pupils.

Key findings from this UK SAGE report of 17th December 2020 were that:

- Accumulating evidence is consistent with increased transmission occurring amongst school children when schools are open, particularly in children of secondary school age (high confidence): multiple data sources show a reduction in transmission in children following schools closing for half term, and transmission rates increasing again following the post-half term return to school (medium confidence).
- Children can transmit within households as well as in educational settings.
- Children and young people are more likely to bring the virus into the household than those aged 17+. They are also less likely to catch the virus within the household.
- Young people (aged 2-16) are much more likely than those aged 17+ to be the first case in their household.
- Those aged 12 to 16 are nearly 7 times as likely to be the first case in their household, compared to those 17+.
- Two to 16 year olds are more than twice as likely to pass on the virus within their household compared to people aged 17+.

- This is based on data up to the 2nd December 2020
- This analysis shows that children and young people are more likely to bring the virus into the household than those aged 17+. They are also less likely to catch the virus within the household. This is consistent with previous analysis of household transmission (14 October).
- **External exposure** shows how likely someone is to be the first case in their household. Young people (aged 2-16) are much more likely than those aged 17+ to be the first case in their household. In particular, those aged 12 to 16 are nearly 7 times as likely to be the first case in their household, compared to those 17+.
- **Transmissibility** shows how likely someone is to pass the virus on within the household, if they are the first positive case. The analysis shows that 2 – 16 year olds are more than twice as likely to pass on the virus within their household compared to people aged 17+.
- **Susceptibility** shows how likely someone is to catch the virus, if someone else in their household has brought it in. Children aged 16 or under are less likely to get the virus from someone within their household compared to people aged 17+.

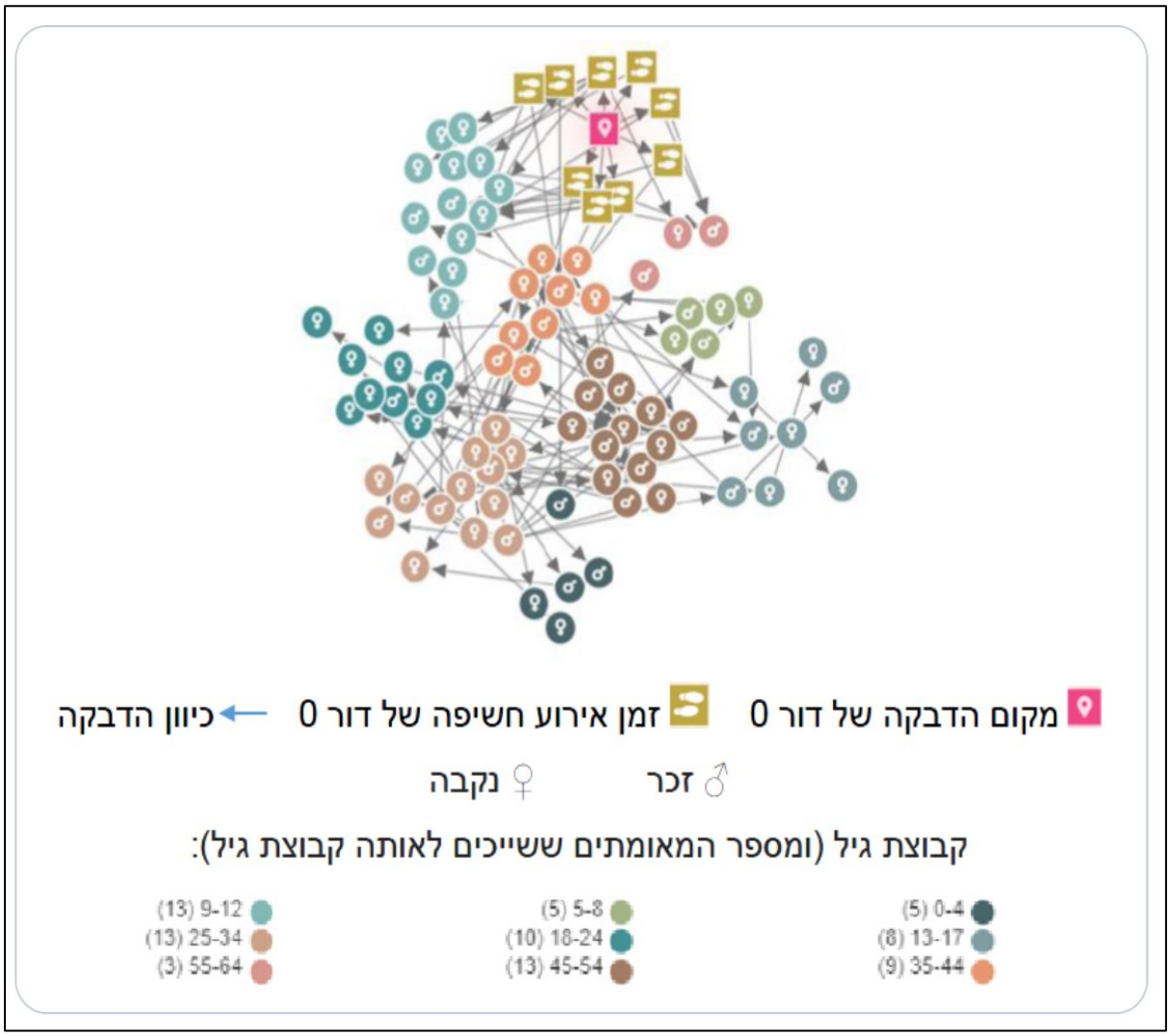
Figure 10: From the UK SAGE report section on household transmission risk

3) Susceptibility of Children to COVID-19: Israel

In October 2020, the **Israeli Ministry of Health** produced a report [93] on the susceptibility of children to SARS-CoV-2 infection, "*whether it is possible to identify infected children, and what the behavioural characteristics of children that can affect infection are".*

The key findings in the Israeli report were that:

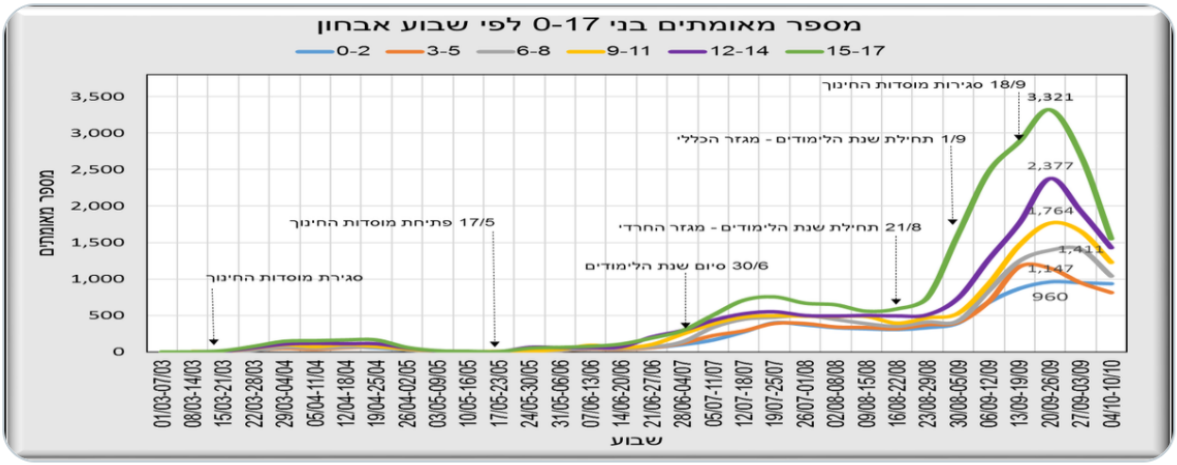
- The positivity rate (from January to September 2020) was higher in children (8%) than in adults (6%).
- A national seroprevalence study, undertaken between June and September 2020, also found that a higher percentage of children (7.1%) had previously been infected with SARS-CoV-2 than adults (1.7%-4.8%).
- "*51%-70% of all verified infected children are asymptomatic. Asymptomatic children constitute a reservoir for infection among children and for the entire population."* Children of pre-school & primary school age were more likely to be asymptomatic than older children.
- A "*transmission chain analysis*" indicates that when children become infected, this leads to further transmission on to different age groups and different geographic locations.
- **School outbreaks/clusters can spread into the wider community.** The diagram below shows a cluster at a primary school which initially involved 5 teachers and 20 students, but which ultimately resulted in 79 people becoming infected



- **Reopening schools let to a "*significant increase*" in cases not just in school-aged children but in the general population**:

"*Data from the date of opening of the education system (September 1, 2020) shows a significant increase in the rate of verified cases both at education system age and in older populations, whereas the closing of the education system…indicated a significant decrease in the rate of verified cases, both among education system age individuals and in the general population*."

The diagram below shows the significant rise in new cases after schools reopened on 1st September. Cases had already been rising in the oldest age group (15-17 years) – this may be related to the fact that schools for the Ultra-Orthodox community reopened on 21 August, slightly before the rest.



- Children can be super spreaders: Across Israel, 350 people who infected at least 10 others were identified. Of these super spreaders, 17 (5%) were children. Seven children each infected 10 people, three children each infected 12 people, and one child infected 24 people.
- **The authors of the report conclude that the reopening of schools may accelerate the spread of SARSCoV2, unless community transmission is low**. The authors recommend the return to schools be gradual.

Seroprevalence Studies: Children vs Adults

Seroprevalence studies have been undertaken in numerous countries since the pandemic began. These studies look at the number of people in a population who have had COVID-19, based on a blood test (serology). Those who have previously contracted SARS-CoV-2 are identified based on the presence of antibodies to SARS-CoV-2 in the blood sample given, as this is an indication of having previously been infected with COVID-19. In relation to children, many of these seroprevalence studies have revealed that the true number of children who had previously contracted SARS-CoV-2 is much larger than the number that had been officially identified through testing and contact-tracing.

This highlights the difficulties in identifying cases in children, as they often have no symptoms or very mild symptoms that can go unnoticed.

1) Seroprevalence Study: Ireland

HSE Seroprevalence Study of Covid-19 [18]

Link: https://www.hse.ie/eng/services/news/media/pressrel/hse-announces-results-of%C2%A0seroprevalence-study.html

Excerpt HSE Press Release, Thursday 20th of August 2020

"Thursday, 20th August, the HSE published results of the Study to Investigate COVID-19 Infection in People Living in Ireland (SCOPI): A national seroprevalence study, June-July 2020. This study, the first of its type in Ireland, measured antibodies to SARS-CoV-2 virus, which are an indication of past infection with COVID-19."

"A representative sample of 1,733 people aged **12** to 69 years in Sligo and Dublin participated in the study carried out by the Health Protection Surveillance Centre (HPSC) and the National Virus Reference Laboratory (NVRL) study in June/July this year."

"No statistical differences were identified in the prevalence by age group, or between males and females."

An Irish seroprevalence study [59] [60], results of which were published on 20th August 2020, was based on a representative sample of people aged between 12 and 69 years; it therefore did not provide any data on the prevalence of COVID-19 in children younger than 12 years. However, it did show that the estimated prevalence of COVID-19 for those aged 12-19 years (1.4%) was similar to that for the adult population aged 30-69 years; those aged 20-29 years had the highest prevalence at 2.3%.

Table 2. Estimated COVID-19 seroprevalence in the 12-69 years population in Ireland, June-July 2020

Group		Estimated prevalence in Irish population 12-69 years		
		Number seropositive	Weighted prevalence (%)	95% CI
Sex	Females	20	1.8	1.1-2.9
	Males	13	1.5	0.8-2.7
Age	12-19 years	3	1.4	0.3-4.3
	20-29 years	7	2.3	0.8-5.1
	30-39 years	5	1.4	0.4-3.5
	40-49 years	7	1.8	0.7-3.7
	50-59 years	5	1.5	0.5-3.6
	60-69 years	6	1.7	0.6-3.8
All	**Population 12-69 years**	**33**	**1.7**	**1.1-2.4**

Table 6: Table from the Irish seroprevalence study showing estimated COVID-19 seroprevalence by age:

2) Seroprevalence Study: Italy

In Italy, a seroprevalence study [94] (pre-print) was undertaken where children who had had known exposure to adults with SARS-CoV-2 were tested for antibodies. Out of 80 household contacts of index patients, 44 (55%) were found to have been previously infected with SARS-CoV-2. A similar proportion of close contacts who were adults (59%) and close contacts who were children (<5 years 50%, >5 years 54%) had been infected.

The report concluded:

> "Interestingly, **our report shows that household transmission of SARS-CoV-2 is high in both adults and children, with similar rates of SARS-CoV-2 IgG in all age groups, including the younger children**… Since this evidence of high rate of IgG in children exposed to SARS-CoV-2 has public health implications, with this comment we highlight the need of establishing appropriate guidelines for school opening and other social activities related to childhood."

:

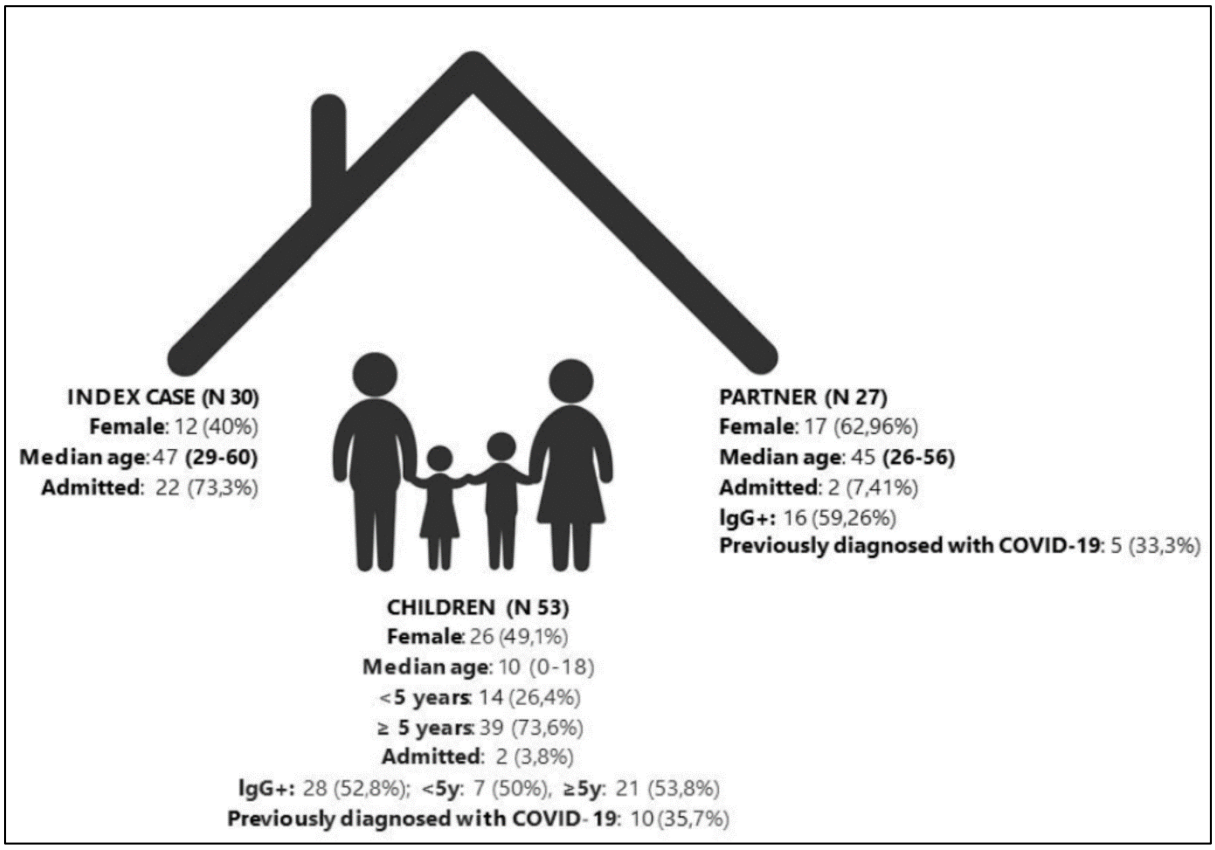


Figure 11: Infographic from the Italian study

3) Seroprevalence Study: Spain

A nationwide Spanish seroprevalence study [95] of over 60,000 people was undertaken between April and May 2020. The results found that 3.4% of children and teenagers had antibodies against SARS-CoV-2, as measured by a point-of-care test, compared with 4.4-6.0% of adults. According to epidemiologist Dr Zoe Hyde [96] this could suggest that children are slightly less susceptible to infection than adults but may alternatively reflect the fact that Spain's schools had closed in March and children were being shielded at home.

Another Spanish seroprevalence study [97] looked at 381 households that were "*under strict home confinement*", each of which had one adult index case and at least one child under 15 years of age. The results showed that child and adult contacts were equally susceptible to infection (17.6% versus 18.7%). It also showed that younger children were as susceptible to infection as teenagers. The study concluded that "Children appear to have similar probability as adults to become infected by SARS-CoV-2 in quarantined family households but remain largely asymptomatic once infected."

Variable	Total No.	No. Positive	Prevalence rate (95% CI)
Family households	381	127	33.3 (28.6-38.3)
Contact groups			
Children contacts (aged <15 yr.)	672	118	17.6 (14.8-20.7)
Adult contacts (aged ≥18 yr.)	412	77	18.7 (15.0-22.8)
Contact age groups			
< 1 yr.	35	6	17.1 (6.6-33.6)
1-4 yr.	297	57	19.2 (14.9-24.1)
5-14 yr.	340	55	16.2 (12.4-20.5)
15-24 yr.	32	5	15.6 (5.3-32.8)
25-34 yr.	48	13	27.1 (15.3-41.8)
35-44 yr.	230	36	15.7 (11.2-21.0)
45-54 yr.	87	19	21.8 (13.7-32.0)
≥ 55 yr.	15	4	26.7 (7.8-55.1)

Figure 12: Taken from the Spanish Study

4) Seroprevalence Study: Sweden

In Sweden, where schools largely remained open, a seroprevalence study [98] found no significant difference in the percentage of young people aged 0-19 years who had previously been infected with SARS-Cov-2 (6.8%) and adults aged 20-64 years (6.4%). A lower incidence rate was found in those over 65 years, who had been told to 'shield'.

5) Seroprevalence Study: Brazil

In Brazil, a seroprevalence study [99] of more than 25,000 people was undertaken in May and June 2020 when, according to the study, Brazil was "a hotspot for COVID-19 globally". Children younger than one year were excluded from the study. The findings showed that, in May, children (1.3-1.6%) and adults (0.6-1.9%) were similarly likely to be infected. In June, children (1.9-2.2%) and adults aged 60 years and older (2.1-2.5%) were similarly likely to be infected, while adults 20-59 years (2.9-3.7%) had a higher level of infection. Interestingly, in both May and June, young children and teenagers were equally likely to have been infected.

	First survey			Second survey			p values for comparisons over time	
	Positive tests	Adjusted for sampling design (estimate [95% CI])	Adjusted for sampling design and test validity (estimate [95% CI])	Positive tests	Adjusted for sampling design (estimate [95% CI])	Adjusted for sampling design and test validity (estimate [95% CI])	Unadjusted	Adjusted
Region		p<0·0001	p<0·0001		p<0·0001	p<0·0001		
Northeast	46/6552	0·7% (0·5–1·0)	0·8% (0·5–1·1)	273/9801	2·8% (2·4–3·2)	3·2% (2·8–3·7)	p<0·001	p<0·001
North	272/5064	5·4% (4·7–6·1)	6·3% (5·4–7·2)	419/5449	7·7% (6·9–8·5)	9·0% (8·0–10·1)	p<0·001	p<0·001
Centre-west	0/2477	0% (0·0–0·1)	0%	13/3565	0·4% (0·2–0·6)	0·4% (0·2–0·7)	*	*
Southeast	22/5833	0·4% (0·2–0·6)	0·4% (0·2–0·7)	45/7778	0·6% (0·4–0·8)	0·6% (0·4–0·9)	p=0·099	p=0·177
South	7/5069	0·1% (0·0–0·4)	0·1% (0·0–0·6)	3/4569	0·1% (0·0–0·2)	0% (0·0–0·3)	p=0·281	p=0·476
Sex		p=0·16	p=0·27		p=0·095	p=0·16		
Female	189/14464	1·3% (1·1–1·5)	1·5% (1·2–1·8)	461/18155	2·5% (2·3–2·8)	2·9% (2·6–3·3)	p<0·001	p<0·001
Male	158/10531	1·5% (1·3–1·8)	1·7% (1·4–2·0)	292/13007	2·2% (2·0–2·5)	2·6% (2·3–3·0)	p<0·001	p<0·001
Age, years		p=0·22	p=0·42		p=0·0015	p=0·0056		
0–4	6/432	1·4% (0·5–3·0)	1·6% (0·6–3·5)	11/573	1·9% (1·0–3·4)	2·2% (1·1–4·0)	p=0·520	p=0·563
5–9	8/681	1·2% (0·5–2·5)	1·3% (0·5–2·9)	16/983	1·6% (0·9–2·6)	1·9% (1·0–3·1)	p=0·448	p=0·522
10–19	31/2287	1·4% (0·9–1·9)	1·5% (1·0–2·2)	52/2856	1·8 (1·4–2·4)	2·1% (1·5–2·8)	p=0·190	p=0·225
20–29	55/3866	1·4% (1·1–1·9)	1·6% (1·2–2·2)	118/4761	2·5% (2·0–3·0)	2·9% (2·3–3·5)	p<0·001	p=0·002
30–39	58/3834	1·5% (1·2–1·9)	1·7% (1·3–2·3)	122/4668	2·6% (2·2–3·1)	3·0% (2·5–3·6)	p<0·001	p=0·001
40–49	63/3972	1·6 (1·2–2·0)	1·8% (1·4–2·4)	155/4885	3·2% (2·7–3·7)	3·7% (3·1–4·4)	p<0·001	p<0·001
50–59	67/4016	1·7% (1·3–2·1)	1·9% (1·4–2·5)	133/5019	2·6% (2·2–3·1)	3·1% (2·5–3·7)	p=0·002	p=0·005
60–69	33/3382	1·0% (0·7–1·4)	1·1% (0·7–1·6)	79/4264	1·9% (1·5–2·3)	2·1% (1·7–2·7)	p=0·002	p=0·005
70–79	22/1797	1·2% (0·8–1·8)	1·4% (0·8–2·1)	49/2262	2·2% (1·6–2·9)	2·5% (1·8–3·4)	p=0·025	p=0·040
≥80	4/728	0·5% (0·1–1·4%)	0·6% (0·1–1·6)	18/891	2·0% (1·2–3·2)	2·3% (1·4–3·7)	p=0·018	p=0·045

Figure 13: Taken from Brazilian Study

6) Seroprevalence Study: Germany

A German serologic (dual antibody assay) study [100] of more than 11,000 children found a six-fold higher rate of infection in children than had been reported (0.87%). Nearly half of the children who had previously been infected with SARS-CoV2 had had no symptoms. Younger and older children were equally likely to have been infected.

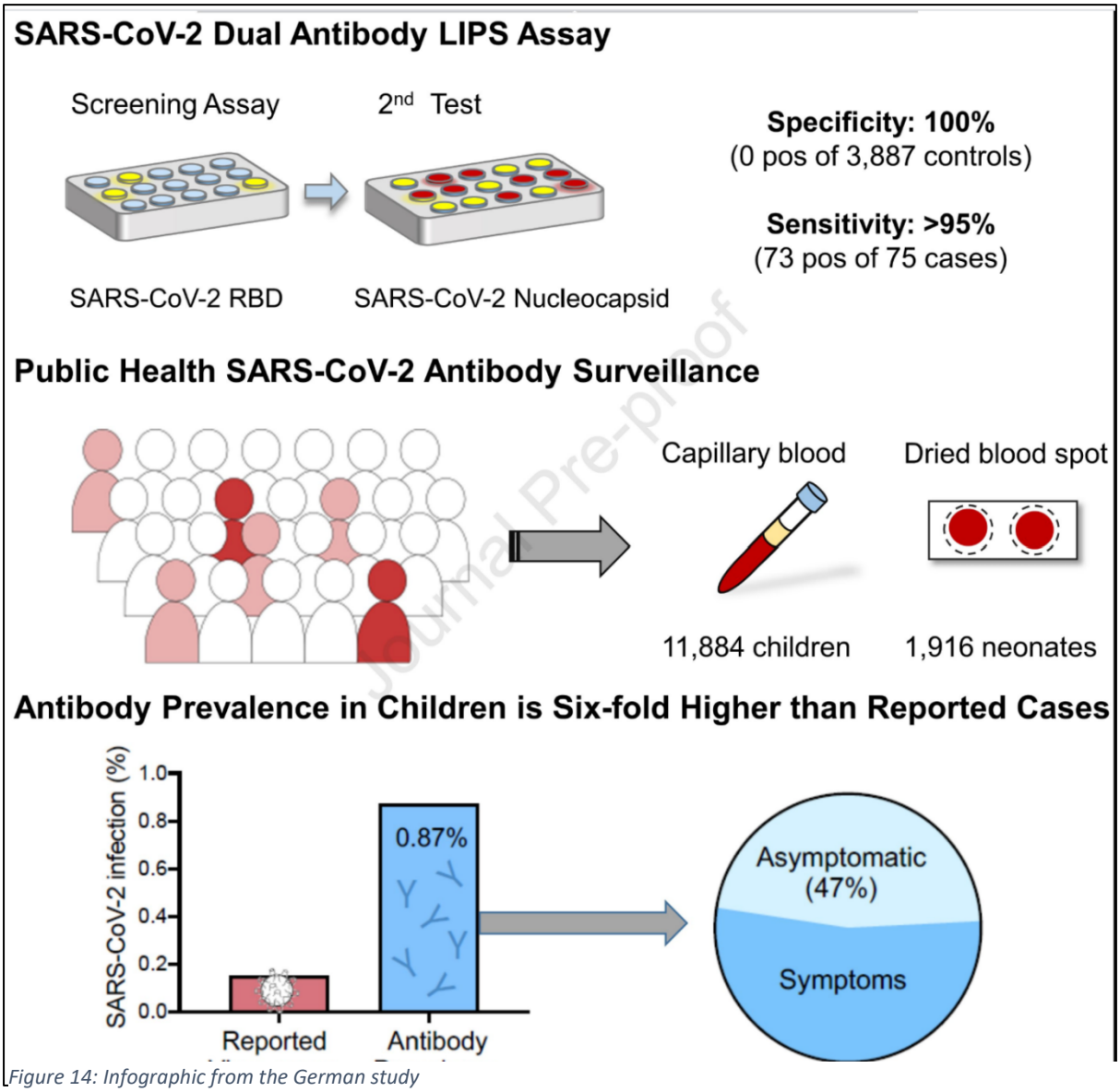


Figure 14: Infographic from the German study

7) Seroprevalence Study: Belgium

In Belgium, a seroprevalence study [101] looked at children in primary school and those in the first three years of secondary school in two different regions – one region (Alken) that was a 'hotspot' with high levels of community transmission (18.2 cases per 1,000 population) and one region (Pelt) with low levels of community transmission (3.3 cases per 1,000 population). In Alken, the hotspot, a similar percentage of primary school children (13.3%) and adolescents (15.4%) had previously been infected. In Pelt, the region with low levels of community transmission, 8.9% of adolescents had antibodies and none of the primary school children had. The study concludes:

> "Our study shows that if circulation in the community is high, children will also become infected. Moreover, the fact that in Alken no difference was noted between children of primary school and adolescents in secondary schools suggests that they are equally susceptible."

This study is important as it shows that when community transmission is high in an area, children of all ages are more likely to contract SARS-CoV-2.

	Primary school	Secondary school	Total
Alken	12/90 **13.3 %** (5.2) (3.2 – 23.5%)	14/91 **15.4 %** (3.5) (8.6 – 22.2%)	26/181 **14.4 %** (3.1) (8.2 – 20.5%)
Pelt	0/91 **0 %** (-) (0 – 4.1%)*	8/90 **8.9 %** (3.4) (2.1 – 15.7%)	8/181 **4.4 %** (1.9) (0.7 – 8.1%)

Figure 15: Table from Belgian Study

Contact-Tracing Studies: Susceptibility

Contact-tracing studies are another way of estimating the susceptibility of children to SARS-CoV-2 infection.

1) Contact Tracing and Susceptibility: The Princeton Study, India

The largest epidemiological study of COVID-19 done to date [102], often referred to as 'The Princeton Study', looked at 84,965 confirmed cases of COVID-19 and 575,071 of their close contacts in India. It had two key findings: firstly, that "*superspreading predominated, with 5% of infected individuals accounting for 80% of cases*"; secondly, that "*enhanced transmission risk was apparent among children and young adults, who accounted for one-third of cases*". Another interesting finding was that "*same-age contacts were associated with the greatest infection ris*k"; in terms of children, this means that children are most likely to contract SARS-CoV-2 from other children the same age.

The key findings from the Princeton Study relating to children were that

- A similar proportion of the contacts of child index cases and the contacts of adult index cases were infected – in other words, a similar percentage of close contacts were infected, regardless of whether the first infected person was a child or an adult.
- Close contacts were more likely to test positive if they were the same age as the index case.
- Children and young adults – who made up one-third of the COVID-19 cases - were found to be especially key to transmitting the virus – especially within households – than previous studies had identified. One of the study's authors said: "*Kids are very efficient transmitters in this setting, which is something that hasn't been firmly established in previous studies."*
- Even young children transmit the virus at meaningful rates. These were the attack rates by the age of the index case (the percentage of close contacts who tested positive):

0-4 years: 6.3%

5-17 years: 7.3%

18-29 years: 6.5%

30-39 years: 7.3%

40-49 years: 8.0%

50-64 years: 8.2%

65-74 years: 7.2%

75-84 years: 8.5%

>=85: 8.1%

The study concludes that a high proportion of children who are close contacts of other children their age with COVID-19 become infected:

> *"Although the role of children in transmission has been debated, we identify high prevalence of infection among children who were contacts of cases around their own age; this finding of enhanced infection risk among individuals exposed to similar-age cases was also apparent among adults. School closures and other nonpharmaceutical interventions during the study period may have contributed to reductions in contact among children. Nonetheless, our analyses suggest that social interactions among children may be conducive to transmission in this setting."*

> "*Serological surveys in other settings have demonstrated that case-based surveillance may lead to underestimation of SARS-CoV-2 infection prevalence among children; therefore, it remains crucial to establish whether the role of children in transmission is underestimated in studies such as ours using case-based surveillance to identify index infections*."

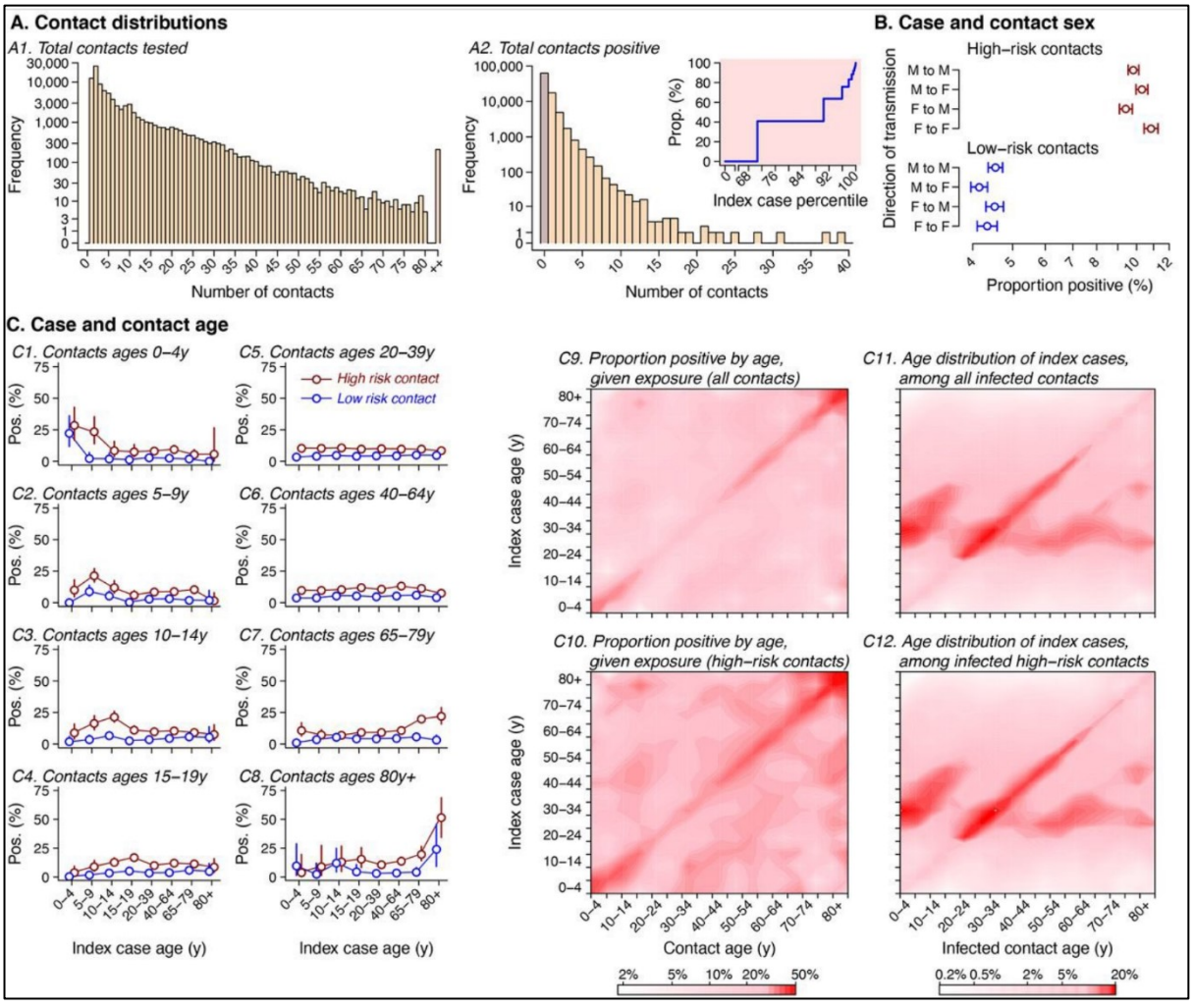


Figure 16: Diagrams from the Princeton Study

2) Contact Tracing and Susceptibility: South Korean Study

The second-largest COVID-19 contact-tracing study was done in South Korea, a country with one of the best contact-tracing capabilities and systems in the world [103]. The South Korean study [104] included 5706 index cases and 59,073 close contacts. It found that:

- 11.8% of household contacts became infected and that rates were higher for contacts of children than for contacts of adults. This may have been due to "*transmission dynamics during school closure"*.
- Non-household contacts of child index cases (1.0%) were as likely to be infected as contacts of young adult index cases (1.1%).
- Within households, the contacts of child index cases (younger than 10 years old) were less likely to become infected than those of adults (an attack rate of 5.3% versus 11.7%). However, the study says: "*the number of cases might have been underestimated because all asymptomatic patients might not have been identified*".
- The percentage of contacts of older children and teenagers who became infected (18.6%) was higher than that of any other group.

The South Korean study found that children younger than 10 years may transmit to others less often than adults do, but they do still transmit the virus; and children aged 10 to 19 years can spread the virus as well as adults do. Subsequently, the authors noted that almost all the child index cases had shared the same exposure as their adult contacts.

So, even though the children had developed symptoms first, it is possible that some of them may not have been true index cases within the household.

3) Contact Tracing and Susceptibility: USA - CDC

There are also contact-tracing studies that show that even very young children and babies can contract and transmit SARS-CoV-2.

A contact-tracing study by the US Centres for Disease Prevention and Control (CDC) [105] looked at three outbreaks in childcare facilities in Salt Lake City, Utah between April and July 2020.

Contact tracing data from the outbreaks was reviewed "*to explore attack rates and transmission patterns*".

In these three outbreaks, 54% of the cases linked to the childcare facilities were children.

The CDC study found that 12 children who had been infected in a childcare facility likely went on to transmit the virus to at least 12 out of 46 (26%) of their contacts at home or in the community.

Two out of three children who had no symptoms at all (asymptomatic) were observed to transmit the virus to others, one of whom infected their mother, who was subsequently hospitalised.

One 8-month-old baby transmitted the virus to both of their parents.

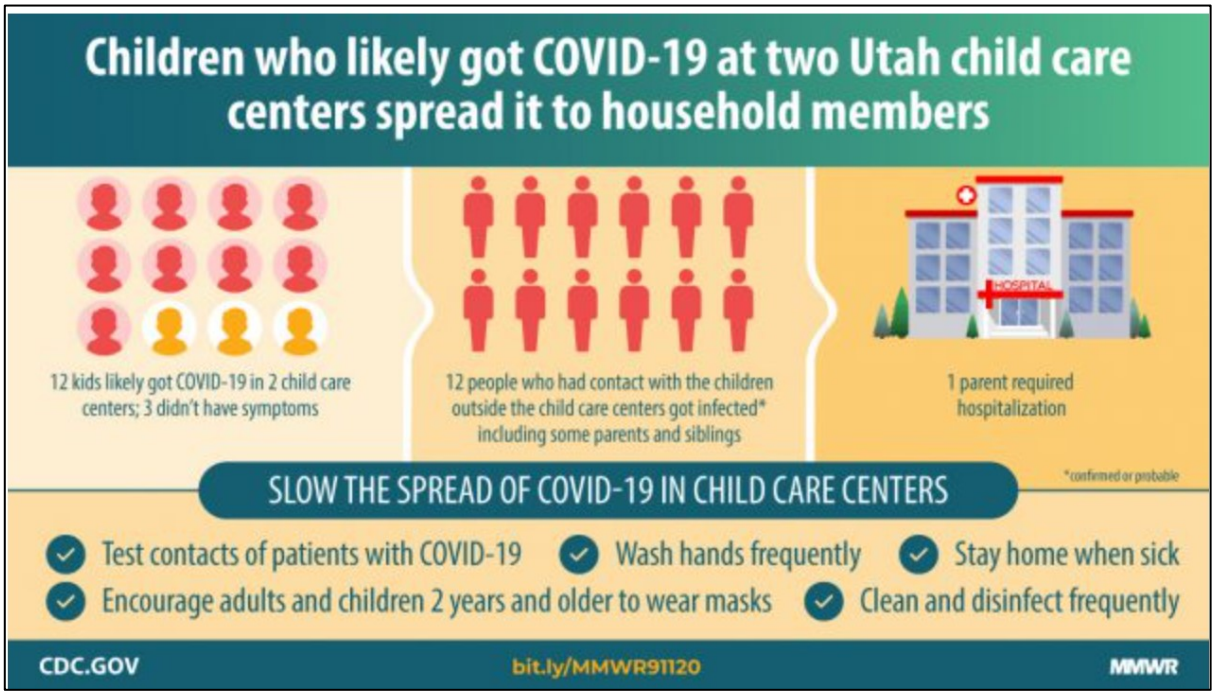


Figure 17: Infographic CDC Study on Outbreaks in Childcare Facilities

The study concludes by asking

"*What are the implications for public health practice*?" and suggests that the "*testing of contacts of laboratory-confirmed COVID-19 cases in childcare settings, including children who might not have symptoms, could improve control of transmission from childcare attendees to family members*".

It also notes that, as "*not all contacts were tested…it is possible that more transmission occurred than was reported"*

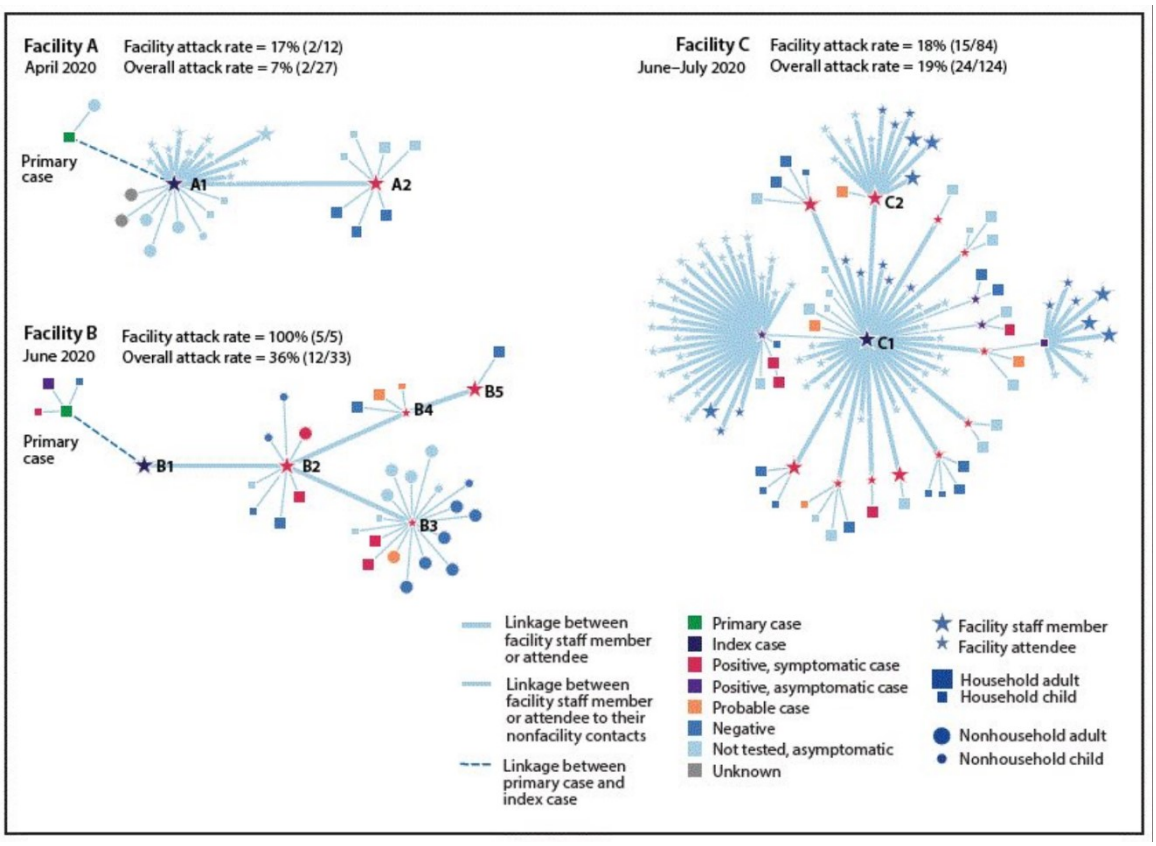


Figure 18: Infographic 2 from the CDC study, showing the outbreaks in childcare facilities

Another US CDC study [106] looked at the transmission of SARS-CoV-2 within households and concluded that transmission of SARS-CoV-2 to other household members was frequent from both children and adults.

In other words, the study suggests that children and adults are similarly likely to transmit SARS-CoV-2. The secondary attack rates by the age of the index case were:

- <12 years: 53%
- 12-17 years: 38%
- 18-49 years: 55%
- >=50 years: 62%

Studies on How Non-Pharmaceutical Interventions (inc. School Closures) Reduce *R*

One of the ways researchers have tried to determine how much schools contribute to the overall transmission in the community, is by studying the effects of various non-pharmaceutical interventions (NPIs) - including the closure of schools - on R (the basic reproduction number).

1) Reducing the Reproductive Number (R): The Lancet Study

A large study in The Lancet [107] looked at the effect of introducing and lifting various non-pharmaceutical interventions in relation to the reproduction number (R) across 131 countries.

It found that closing schools resulted in the second largest reduction in R of any single measure. Other measures included bans on public events, bans on public gatherings of more than ten people, requirements to stay at home, and internal movement limits.

Reopening schools was associated with a 24% increase in the reproduction number (R) after 28 days.

This was the second-largest increase in R of any measure, after lifting bans on gatherings (which resulted in an increase in R of 25%).

A research article in Science Magazine [108] in December 2020 looked at the effectiveness of different non-pharmaceutical interventions on transmission.

These NPIs included ranging limiting gathering sizes, business closures, closure of educational institutions and stay-at-home orders.

It concluded that closing schools and universities reduced R by 38%, a finding it said was "*remarkably robust*".

Limiting gatherings to fewer than 10 people resulted in a reduction in R of 42%. In relation to the effect of closing schools and universities on the reproduction number, the research said:

> "*We found a large effect for closing schools and universities in conjunction, which was remarkably robust across different model structures, variations in the data, and epidemiological assumptions.*"

The "*recent resurgence of cases in European countries*", the research article said: "*has been concentrated in the age group corresponding to secondary school and higher education (especially the latter) and is now spreading to older age groups as well as primary-school-aged children.*"

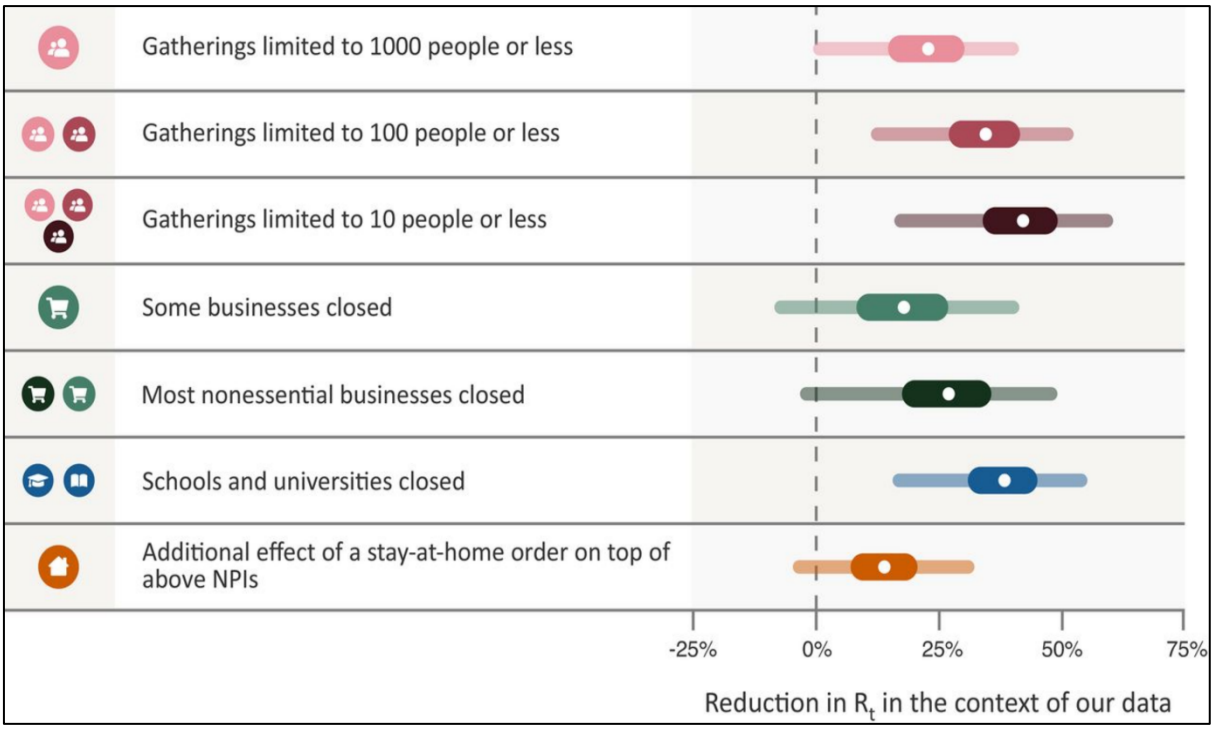


Figure 19: Figure 2 from the Science Magazine research article

2) Reducing the Reproductive Number (R): UK SAGE Study

Closer to home, various guidance documents produced by the UK Scientific Advisory Group for Emergencies (SAGE) have acknowledged that schools may significantly contribute to the reproduction number (R).

A document published by SAGE on 21st September [109] states that *"If schools are to remain open, then a wide range of other measures will be required"*.

Another set of SAGE documents [110] estimates the likely impact on COVID-19 transmission of each of a range of non-pharmaceutical interventions.

It estimated that closing schools may reduce R by between 0.2 and 0.5 - more than any other single measure.

Extract from a BBC article[279] discussing these SAGE recommendations and estimations:

> **One set of Sage documents** reveals how much individual policies may cut the R number by:
>
> - Close all bars, pubs, cafes and restaurants could reduce R by 0.1-0.2
> - Close all indoor gyms and leisure centres could reduce R by up to 0.1
> - Closing non-essential retail would have "minimal impact" on transmission
> - Stopping people mixing in homes could reduce R by 0.1-0.2
> - Working from home reduce R by 0.2-0.4
> - Closing all schools could reduce R by 0.2-0.5

Figure 20

Studies on Viral Load in Children

A number of studies have looked at the viral load of SARS-CoV-2 in children in order to try to assess their contribution to transmission. Many such studies have concluded that children and adults have a similar viral load.

1) Viral Load in Children: JAMA Paediatrics Study

A study in JAMA Paediatrics [111] found that children aged 5-17 had similar viral load to adults, but young children (<5 years) had levels that were 10-100 times higher.

The "*amount of viral RNA detected in swabs from symptomatic children was similar to (or higher than) that of adults*."

The research determined that "*children younger than 5 years with mild to moderate COVID-19 have high amounts of SARS-CoV-2 viral RNA in their nasopharynx compared with older children and adults".*

However, the study had an important limitation which was that asymptomatic cases were not studied.

As many children have mild symptoms "*it's unclear if these results apply to all children, or only to those with symptoms".*

The study concluded:

> *"Young children can **potentially be important drivers** of SARS-CoV-2 spread in the general population, as has been demonstrated with respiratory syncytial virus, where children with high viral loads are more likely to transmit. Behavioural habits of young children and close quarters in school and day care settings raise concern for SARS-CoV-2 amplification in this population as public health restrictions are eased. In addition to public health implications, this population will **be important for targeting immunization efforts as SARS-CoV-2 vaccines become available**."*

2) Viral Load in Children: Eurosurveillance [ECDC]

A study in ECDC's Eurosurveillance Journal [112] found no difference in viral load or infectious virus by age, or between symptomatic and asymptomatic cases.

It said, "*Asymptomatic persons represent a source of transmissible virus*". Similar amounts of viral RNA were detected in swabs taken from children and adults.

Importantly, no difference was seen in the viral load of symptomatic versus asymptomatic cases (which included both adults and children).

3) Viral Load in Children: Journal of Paediatrics

Another study, in the Journal of Paediatrics [113] found that, despite generally having mild symptoms, children who tested positive had a viral load similar to adults with severe COVID-19.

The study concluded that:

- "*Children may be a potential source of contagion in the SARS-CoV-2 pandemic despite having milder disease or a lack of symptoms"*
- *"Children can carry high levels of virus in their upper airways, particularly early in an acute SARS-CoV-2 infection, yet they display relatively mild or no symptoms."*
- *"There was no age correlation with viral load, indicating that infants through young adults can carry equally high levels of virus."*
- *"From an infection-control perspective, it is critical to identify infected children early for quarantine purposes."*
- ***"Schools could screen all students for SARS-CoV-2 infection and establish routine screening protocols…Without infection control measures such as these, there is significant risk that the pandemic will persist, and children could carry the virus into the home, exposing adults who are at higher risk of developing severe disease**."*

Risks to Children, Staff and Medically Vulnerable Groups

Thousands of school staff (e.g., teachers, special needs assistants [SNAs] etc.) have serious underlying conditions; many of whom must go to work in schools every day as they do not meet the stringent occupational health conditions to allow them to work remotely from home. The criteria to be allowed to work from home, is set out on the HSE 'Very High Risk' group list.

The aim of this section is to highlight statements made by HSE; findings from HIQA reviews (of which are given to NPHET) and queries and concerns raised and comparing to concerns in relation to schools and school related activities. It is important for public health bodies to review and respond to these queries and concerns; especially in relation to the categorisation and advice given to both very high and high-risk groups, in the context of schools and school related activities.

Show Table: Table 8 Profile of COVID-19 Patients with Underlying Conditions up to and including Friday December 11 2020

Table 8: Profile of COVID-19 Patients with Underlying Conditions up to and including Friday December 11 2020 [1, 4]

	Total Confirmed Deaths [2]	Median Age of Deaths	Total Confirmed Cases [3]	Median Age of Cases
Total	1,739	83	19,653	54
Profile of the confirmed cases with underlying conditions follows:				
Sex				
Female	821	85	10,701	52
Male	918	81	8,950	55
Not Specified	0	0	..	..
Age				
0-24	..	..	2,219	21
25-44	15	38	4,654	35
45-64	106	58	6,255	54
65-79	509	75	3,341	73
80+	1,108	87	3,180	86
Not Specified	..	..	..	..
Underlying Conditions				
1 underlying condition	905	83	12,541	54
2 underlying conditions	516	83	4,327	73
3 or More underlying conditions	318	84	2,785	78
Count of Underlying Conditions				
Chronic heart disease	771	84	3,865	71
Hypertension	364	84	3,941	63
Chronic kidney disease	221	82	921	73
Chronic liver disease	35	74	293	64
Chronic neurological disease	602	85	1,837	80
Chronic respiratory disease	339	80	4,955	54
Cancer/malignancy	295	78	1,323	70
Diabetes	286	81	2,265	64
BMI >= 40	36	63	341	52
Other co-morbidity	1,065	83	8,135	62

[1] Table includes data as of 16th December 2020 for events created on CIDR (Computerised Infectious Disease Reporting) up to midnight Friday 11th December 2020 and is subject to revision

[2] Data is defined by date of death

[3] Data is defined by epidemiological date case which is the earliest of onset date, date of diagnosis, laboratory specimen collection date, laboratory received date, laboratory reported date, event creation/notification date

[4] '..' Indicates a cell number < 5 or a cell number < 5 can be identified

Open in Excel: COVID-19 Deaths and Cases Series 18 - Table 8 (XLS 13KB)

HPSC (HSE) Statement	Queries and Concerns
"People at high risk for COVID-19 ***have the right to make their own decisions and the responsibility to look after their own health*** *and the health of others."*	• This document refers to **all high-risk groups**. • Teachers in high risk groups have '*the right 'to make their own decisions'* taken away from them indirectly. E.g., if Occupational Health assessors decide they must go to school the only option is for a teacher/SNA etc. to take sick leave on reduced pay – they are essentially punished for their decision; feel forced to resign; or feel unsafe by going into work. • Oftentimes, children in high risk groups have their equal status access to education rights taken away from them if they (or their parents) choose for them stay at home. • Individual circumstances must be considered for assessments related to education and workplaces. People have a right to protect their health and feel safe; and this right must not impact on other rights.
"There is almost no chance of you catching COVID-19 at home ***if people who are infectious with COVID-19 do not come to your home****."*	• If children must go to school, they also must go home to their families. If teachers must go to work, how they protect vulnerable family members at home? How can this be prevented?
*"****People almost always catch COVID-19 by sharing space for 15 minutes or more with a person who is infectious****."*	• School classes in secondary schools are, ordinarily, 30-40 minutes long. Primary school classes are all day (together). Social distancing in majority of schools is 1 metre or less in both sets of schools.
*"****People are more likely to catch infection indoors or in another enclosed space*** *like a car or* ***a bus****."*	• School buses are not properly ventilated nor are proper social distancing measures in place. Bus drivers cannot be expected to ensure all children are wearing masks all times & primary school children are not expected to, and oftentimes do not, wear masks.
"It is usually not desirable and not practical for people in a family household to avoid contact with each other at home. ***If everyone in the household is careful when out of the house that helps to keep everyone safe****."*	• A young child cannot be expected to 'be careful' with regards hand hygiene etc. School going children are mixing with many other students (without masks) during lunch breaks, on school buses etc. thus cannot control this. • Medically vulnerable parents, guardians or siblings cannot be expected to not have physical contact with each other.
"If anyone in the house gets symptoms of COVID-19 or is told they are a COVID-19 Contact they **should avoid all contact with others in the house immediately."**	• How can a medically vulnerable parent be expected to care for a child with COVID19?
"You are at increased risk ***if you need to be*** *or choose to be in a place where there are people from outside of your household,* ***whether for work or for social or personal reasons****."*	• This statement clarifies again the risks for vulnerable groups if they leave the home
"The ***higher the current level of the Framework for Restrictive Public Health Measures nationally or in your area at the time the greater the risk of being out and about and of having anyone visit or do work in your home"***	• At Level 5 restrictions in October children and staff were expected to continue to go to school; this increases the risk of transmission into the home

Options for VHR/HR When Schools Are Open

Stay at Home

and

Reduce Your Contacts

This is what the HSE, the Department of Health and the NPHET tell all members of the public.

No person be they an essential worker, a non-essential worker, a care-giver, a parent, a guardian, a student, a child or any member of the general public (regardless of whether they do or do not have an underlying condition) should be forced to leave the safety of their homes during the Covid-19 pandemic. Nobody should feel they have to interact with large groups of people, indoors or outdoors.

There should not be one set rules of one group in society and another set of rules for everyone else.

Specific policy and guidance needs to be developed for high risk students; students who live with high risk families and school staff who are in the same situation, as a matter of urgency.

The same applies

Stakeholder engagement with these groups needs to be enacted as soon as possible, not just by Government or public health officials but also by children rights and advocacy organisations. On this note, many parents and teachers have put together a number of suggestions, with an aim to work with decision makers to help children and families and school staff during these times.

- A large number of schools are already providing remote learning to children who are self-isolating or who have contracted COVID-19 or who are in the very-high risk category (as per DES guidelines). This type of learning is usually done through Microsoft teams and/or Zoom (pointed at the wall/blackboard) thus does not breach GDPR guidelines. Most schools ensure software and associated activities related to remote learning is approved by local Gardai and Child Protection Agencies. This could easily be rolled out to include children who themselves are high-risk or who live with medically vulnerable people in their home.
- Home tuition has always been available for children who have disabilities, learning difficulties or who are medically vulnerable, however there is extremely strict criteria in place to access this programme.
- Hybrid learning could be provided to decrease class sizes (albeit this is still high risk)

- → A separate room(s) could be made available in schools for children – and they could log into their classrooms remotely from this room.
- → High-risk teachers at home could remotely teach high-risk students who are at home
- → High-risk teachers at home could teach their own classes remotely
- → For any schools/teachers who cannot access the Internet, teachers who have internet (working from home) could be willing to work on their behalf if needs be (e.g. they could record lessons on Zoom etc. and share them with classes as needed)
- → For students who do not have Internet, RTE/TV3 etc. could provide a slot each morning for teachers to teach all subjects to make sure no subject is left out
- → For students who do not have Internet, local community/youth groups could set up a small, safe, distanced space in local libraries, family resource centres, youth clubs etc. (many which are not in use at this time) This would also benefit these groups.
- → For children who live in busy households (e.g., lots of children etc.) they too could benefit from accessing remote learning from local libraries etc. This would also mean they can talk to and see (but are not in close perimeter/physical contact) with other children in these very controlled settings, while supervised by local volunteers or community workers.

Appendix 1: HPSC SCHOOL REPORT ISSUES

The HSE have been questioned on the issues raised in these sections, investigators still awaiting response.

1) Timing and Publishing of School Reports

The HPSC only began publishing their Mass Testing in Schools and Childcare Facilities Reports in Week 47 (15th November 2020) even though schools were open since August 23rd, 2020 (more than three later). The HPSC/HSE had many months (especially when community transmission was so low in Ireland) to plan for the publication of these reports, thus it is unclear what they delay was.

→ The only information published in this first report were the cumulative totals from the 23rd of August to the 15th of November (Week 35-47). In the first report published, a great deal of extremely specific weekly data regarding tests, cases, ages of positive cases per facility etc., dates etc. (from August to the beginning of November) was not made available. For example, specific details regarding positivity rates and age groups could not be accessed, nor could the comparison of weekly positivity rates against community positivity rates in those time periods be attained.

→ This information is crucial for the general public (e.g., school staff, students, families etc.,) to be able to access so that they can make informed decisions for themselves; it is also important for local school authorities, so they too can take proactive action if required.

→ During the last two weeks of the epidemiological calendar year (Week 52/53) both of these weeks in the School Report were calculated as one. This is not good practice; and again, when cumulative totals are added up, any lower numbers could bring the total positivity rate down (i.e., affecting the overall positivity rate). The Week 52/53 School Report was published at a time when Ireland was being reported as having some of the highest positive cases of COVID-19 in the world per million – and when the Government wanted to keep schools open; but school staff, students and families were very worried about their safety.

2) Caveats and Disclaimers

→ The HPSC School Report includes a caveat which states "*Note: Tables in this report detail resulted data only (detected/not-detected) and do not detail tests pending/invalid accounting for the differences in the overall total amounts."* This is understandable as all tests (in the community and elsewhere) go through a validation process. However, there is no column in these charts to show pending/invalid cases which makes it difficult to calculate results outstanding. Furthermore, when comparing weekly and cumulative totals in some weeks there have been sometimes over 115 "not detected" results not accounted for; and it is unclear when or if these tests are added/deducted from the next weeks totals.

→ In some instances, **it appears that there are more undetected cases/detected cases than actual tests completed.** This is concerning. It is important to note that the "positivity rate" is often cited by public health officials and specialists as an indicator as to whether schools stay open or closed; the difference in cases/tests completed can significantly alter the results.

3) Issues with the HPSC School Reports

→ In the Week 47 and Week School 49 reports, the HPSC state *"As of 21st November, the mechanism by which results are matched to referrals in the IT database has been improved to avoid duplicate results being reported where multiple referrals exist for an individual. This has resulted in a **reduction** of 36 in the overall number of detected results reported."* It appears to be unusual t**hat for three consecutive weeks in a row that the number of detected tests "36"** remains the same.

→ More worryingly, when the cumulative and weekly figures were compared with one another, they did not match the over total in the tables in the report; every week there were discrepancies and oftentimes: tests; not detected cases; facilities tested; and facilities with detected cases, were either over reported or underreported. Interestingly the number of completed and detected tests was seldom wrong.

→ The process of trying to calculate all HPSC data in the School Reports, while not realising that the data itself was flawed, delayed this report for over four weeks.

→ There were small bar charts within the report, which had data labels, and the research team then used these to aide in sourcing the incomplete data from reported – the bar charts included the number of tests done per week in schools and childcare facilities. However, these also did not match cumulative totals for the year to date.

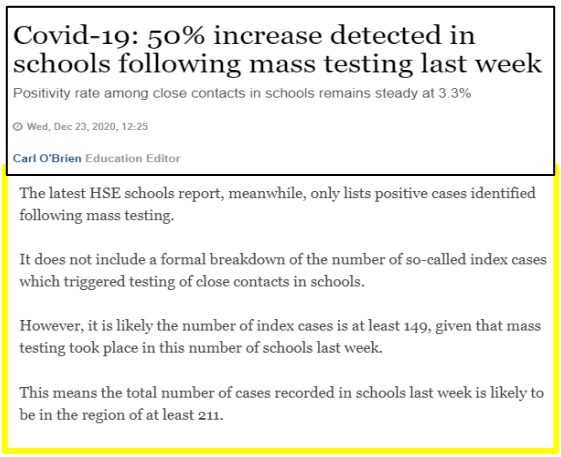
→ On the 18th of January 2020, a webinar regarding the reopening of schools for children with special educational needs was held by the Department of Education and Skills and included a presentation from a public health consultant for the HSE, [redacted]. In this presentation, she presented another bar chart – this one included tests and cases per week in schools and childcare facilities. When these figures were compared against the totals in the School Reports and the other bar graphs in the school reports, again they did not match. The cumulative totals in the School Reports surmounted to 43,428; whereas the webinar chart totalled to 43,465.

→ For this reason, the data presented in this report, is only as good as the HPSC Reports of which the researchers had to hand. It should be noted that it is unclear what the true figures of tests, cases, not detected cases, facilities tested or facilities with detected cases are. It is imperative that full transparency and clarity is provided to the general public, and especially those who work in or attend schools.

4) The Index Case in Schools

The HPSC have not given any clarity in their reports about the number of tests, cases etc. relating to the Index case in schools (e.g., the first person known to have a positive case in the school).

This topic was raised by several prominent journalists in Ireland on numerous occasions [114].



Covid-19: 50% increase detected in schools following mass testing last week

Positivity rate among close contacts in schools remains steady at 3.3%

Wed, Dec 23, 2020, 12:25

Carl O'Brien Education Editor

The latest HSE schools report, meanwhile, only lists positive cases identified following mass testing.

It does not include a formal breakdown of the number of so-called index cases which triggered testing of close contacts in schools.

However, it is likely the number of index cases is at least 149, given that mass testing took place in this number of schools last week.

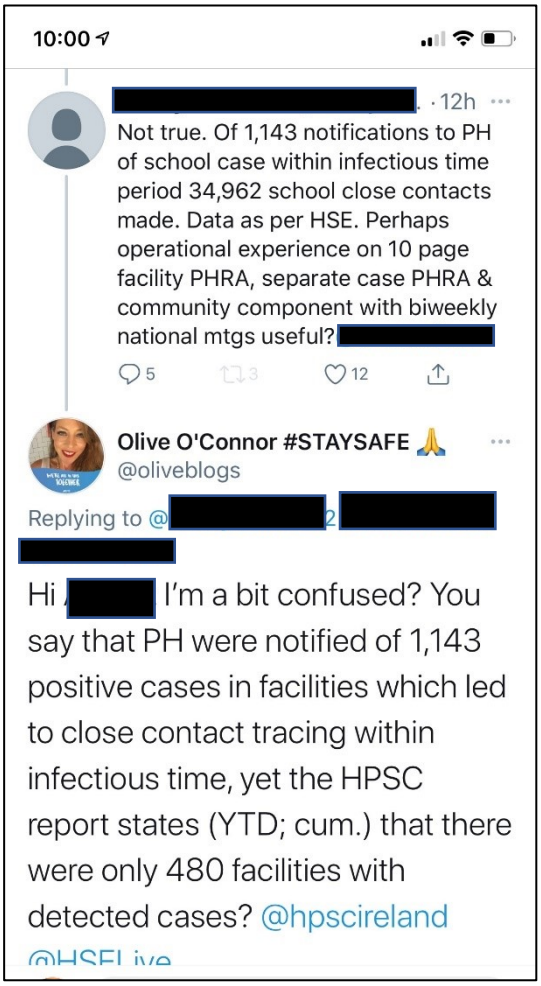
This means the total number of cases recorded in schools last week is likely to be in the region of at least 211.

→ The questions around this topic became more confusing when a Public Health Consultant for who had spoken at the Department of Education webinar stated:

"When we're notified of a confirmed case, that individual is already out of the school environment, and that's really important to remember. And were they to have been in the school environment, ***within their infectious time period, which is 48 hours before they had symptoms,*** *or 24 hours before they had a positive test if they were tested as a close contact for example…So* ***were they to have been in the school environment****, then we in public health come in and we undertake our risk assessment."*

However, on the 24th of January 2021, in a 'fact checking' response on Twitter to another public health specialist in the private sector, she said:

"…of 1,143 notifications to PH [public health] of school case within infectious time period 34,962 school close contacts made. Data as per HSE…"



Olive O'Connor – [an author of this study, known as @oliveblogs on Twitter] responded to the statement (tagging the HSE and HPSC) asking for clarification on the numbers she presented.

Ms O'Connor noticed that the **"1,143" positive cases** that the HSE public health consultant had referred to was actually the same **value as that of the 'No. of Facilities'** tested in the HSE School Report for that time [Week 3]; and the cumulative totals on the report further said that only 480 *'facilities'* had detected cases.

Table 1 Results Summary for Schools Testing YTD: Schools Only

Facility Type	No. Facilities	No. Tested	No. Detected	Detected %	No. Not Detected
Primary	726	24,138	726	3.0%	23,376
Post Primary*	364	9,230	175	1.9%	9,039
Special Education	53	1,594	57	3.6%	1,534
Total	**1,143**	**34,962**	**958**	**2.7%**	**33,949**

Ms O'Connor received no response from the public health consultant.

This is significant because, in the first instance – while the HPSC school reports state 'facilities tested', the public health consultant claimed this is actually the number of positive cases (e.g., students/staff) in the school *which* ***led to 'mass' testing***.

It is now unclear if the Index cases were included/excluded from the HPSC tests results.

Despite the Author not receiving a response from the Public Health Consultant since the online engagement, the HPSC since updated their latest Schools Report; removing the cumulative table which included facilities with detected cases (of which the Ms O'Connor had questioned); and releasing a statement at the top of the Report which had not been there before:

"The data presented in this report are the results of the close contact testing undertaken in educational and childcare facilities following notification to Departments of Public Health of a confirmed case of COVID-19 who had attended a facility during the infectious time period."

With relevance to this study and last year's YTD reports, this indicates that at least 1,134 students/children or staff who had tested positive for COVID-19 were in a school while they were infectious.

It also appears to conclude in the first instance, the Index case is assumed to not have contracted COVID-19 in the school; and that the HSE are not in fact carrying out mass testing, but instead only testing schools or childcare facilities when notified of a positive case. This is called 'Targeted/Bulk Testing' (Please see Section for more details)

The Authors of this study had completed their data analysis upon learning of this news. For this reason, the tables and charts below depict what was stated on the reports at the time of publishing; and with the understanding at the time that "Facilities" were related to school buildings, and not as is now known, people with positive cases of COVID-19.

Notwithstanding this, the data in this section did reveal a lot of information which was useful for the purposes of this study.

5) Duplicated Figures in Two Outbreaks Reports

Table 7: Number of COVID-19 outbreaks associated with school children (+/- staff), universities/colleges/third level students and childcare facilities notified to midnight on 12/12/2020 and laboratory confirmed cases‡ linked to these outbreaks.

Outbreak location	Number of outbreaks notified					Laboratory confirmed cases linked to outbreaks (week 32-50)				
	Week 50	Week 50 outbreaks: Range in no. of cases#	Week 32-50	Number open	Open outbreaks: Range in no. of cases#	Cases notified in week 50	Total cases	Total hospitalised cases	Total ICU cases	Total number of deaths
School*	19	0-13	246	103	0-27	41	987	5	<5	<5
University/college/third level students**	1	0-1	88	40	1-187	<5	994	12	<5	<5
Childcare facility	2	0-4	91	39	0-16	11	434	<5	<5	<5
Total	**22**	**0-13**	**425**	**182**	**0-187**	**52**	**2415**	**20**	**<5**	**<5**

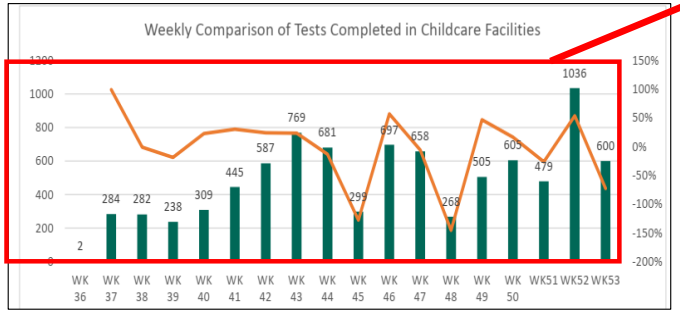
*These outbreaks are outbreaks associated with school children +/or school staff. Transmission of COVID-19 within the school has not necessarily been established in these outbreaks
**These outbreaks also include outbreaks among third level students that may have occurred in other locations, such as private houses or social gatherings, and may not be directly linked to a University/college location
#n/a is used where there were no outbreaks or where there are no confirmed cases currently linked to an outbreak
‡Case numbers less than 5 are not presented here

Table 7: Number of COVID-19 outbreaks associated with school children (+/- staff), universities/colleges/third level students and childcare facilities notified to midnight on 19/12/2020 and laboratory confirmed cases‡ linked to these outbreaks.

Outbreak location	Number of outbreaks notified					Laboratory confirmed cases linked to outbreaks (week 32-51)				
	Week 51	Week 51 outbreaks: Range in no. of cases#	Week 32-51	Number open	Open outbreaks: Range in no. of cases#	Cases notified in week 51	Total cases	Total hospitalised cases	Total ICU cases	Total number of deaths
School*	19	0-13	246	103	0-27	41	987	5	<5	<5
University/college/third level students**	1	0-1	88	40	1-187	<5	994	12	<5	<5
Childcare facility	2	0-4	91	39	0-16	11	434	<5	<5	<5
Total	**22**	**0-13**	**425**	**182**	**0-187**	**52**	**2415**	**20**	**<5**	**<5**

*These outbreaks are outbreaks associated with school children +/or school staff. Transmission of COVID-19 within the school has not necessarily been established in these outbreaks
**These outbreaks also include outbreaks among third level students that may have occurred in other locations, such as private houses or social gatherings, and may not be directly linked to a University/college location
#n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6)
‡Case numbers fewer than 5 are not presented here

6) Figures in Graphs and Tables Not Matching in School Reports



Childcare Tests Completed Graph

WK 35	
WK 36	2
WK 37	284
WK 38	282
WK 39	238
WK 40	309
WK 41	445
WK 42	587
WK 43	769
WK 44	681
WK 45	299
WK 46	697
WK 47	658
WK 48	268
WK 49	505
WK 50	605
WK 51	479
WK 52	1,036
WK 53	600
	8744
	8,774

5251 TOTAL WEEK 35-47

Diff: 9

OverReported Tests

THESE WERE PUT TOGETHER IN WK 52/53

Total in Graphs

Reported in YTD for Childcare

OverReported Test Results **Diff. 30**

Facility Type	No. Facilities	No. Tested	No. Detected	Detected %	No. Not Detected
Childcare	233	5260	215	4.1%	5,025
Primary	494	13863	348	2.5%	13,472
Post Primary	259	6322	121	1.9%	6,179
Special Education	36	945	32	3.4%	912
Total	1,022	26,390	716	2.7%	25,588

* Note: Tables in this report detail resulted data only (detected/not-detected) and do not detail tests pending/invalid accounting for the differences in the overall total amounts.

This is the YTD Report for Week 47

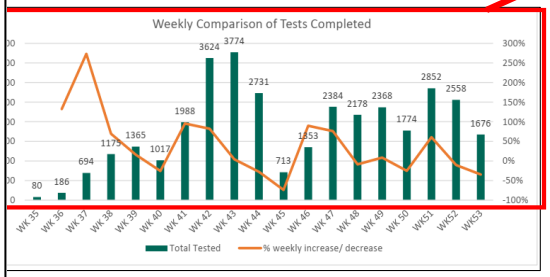
Table 2 Results Summary for Schools and Childcare Testing YTD (All Facility Types)

Facility Type	No. Facilities	No. Tested	No. Detected	Detected %	No. Not Detected
Childcare	390	8,774	404	4.6%	8,351
Primary	724	24,054	720	3.0%	23,326
Post Primary*	364	9,226	174	1.9%	9,034
Special Education	49	1,334	48	3.6%	1,283
Total	1,527	43,428	1,346	3.1%	41,994

* Table Notes:

- Tables in this report detail resulted data only (detected/not-detected) and do not detail tests pending/invalid accounting for the differences in the overall total amounts.
- Post primary school figures includes data from grind schools.

Schools Tests Completed Graph



Week 35	80	
Week 36	186	
Week 37	694	
Week 38	1175	
Week 39	1365	
Week 40	1017	
Week 41	1988	
Week 42	3624	
Week 43	3774	
Week 44	2731	
Week 45	713	
Week 46	1353	
Week 47	2384	21,164
Week 48	2178	-34 Diff
Week 49	2,368	
Week 50	1,774	
Week 51	2,852	
Week 52	2,558	
Week 53	1,676	
	34490	**Total in Graphs**
	34,654	Reported in YTD for Schools

UnderReported

OverReported Test Results 164 Diff.

Total Schools
24094
9226
1334
34654

Facility Type	No. Facilities	No. Tested	No. Detected	Detected %	No. Not Detected
Childcare	233	5260	215	4.1%	5,025
Primary	494	13863	348	2.5%	13,472
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This is the YTD Report for Week 47

Table 2 Results Summary for Schools and Childcare Testing YTD (All Facility Types)

Facility Type	No. Facilities	No. Tested	No. Detected	Detected %	No. Not Detected
Childcare	390		404	4.6%	8,351
Primary	724	24,094		3.0%	23,326
Post Primary*	364	9,226	174	1.9%	9,034
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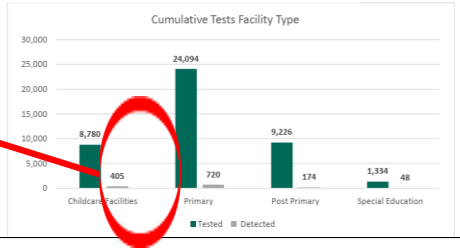
* Table notes:

- Tables in this report detail resulted data only (detected/not-detected) and do not detail tests pending/invalid accounting for the differences in the overall total amounts.
- Post primary school figures includes data from grind schools.

4.4 Facility Type and Detection Figures (YTD):

The graph below provides a summary of the cumulative tests by type including Childcare Facilities. Primary schools had the highest number of tests completed at 24,094 and Special Education had the lowest number of tests completed at 1,334.

Table 14 Cumulative Tests and Detected Cases by Facility Type



Undereported Detected Tests

Summary	Cumulative Testing YTD	Week 52 & 53 (20/12/2020 – 02/02/2021)
Number Tested	43,428	5,870
Number of Detected Cases	1,346	305
Detection Rate %	3.1%	5.2%
Detected 0-17	1,135	262
Detected 18+	211	43
No. of Facilities Tested	1,527	414
Facilities with Detected Case	445	103

Table 2 Results Summary for Schools and Childcare Testing YTD (All Facility Types)

Test No.'s From the Chart Above DO NOT MATCH EITHER

Childcare Facilities	8780
Primary Schools	24094
Post Primary Schools	9226
Special Education	1334
Total Amount on the Chart	43434
Tests on the YTD Cumulative Testing	**43428**
-6	*Diff.*

Table 2 Results Summary for Schools and Childcare Testing YTD (All Facility Types)

Facility Type	No. Facilities	No. Tested	No. Detected	Detected %	No. Not Detected
Childcare	390	8,774	404		8,351
Primary	724	24,094	720	3.0%	
Post Primary*	364	9,226	174	1.9%	9,034
Special Education	49	1,334	48	3.6%	1,283
To	1,527	43,428	1,346	3.1%	1,594

* Table Notes:

- Tables in this report detail resulted data only (detected/not-detected) and do not detail tests pending/invalid accounting for the differences in the overall total amounts.
- Post primary school figures includes data from grind schools.

Difference Between Weekly Totals and Cumulative Totals

Week 47	Facilities Tested	Tested	Positive	Negative	*Unaccounted Test Results*
Childcare	0	0	0	0	*0*
Primary	0	0	0	0	*0*
Post Primary	0	0	0	0	*0*
Special Education	0	0	0	0	*0*
Total	**0**	**0**	**0**	**0**	***0***

Week 48	Facilities Tested	Tested	Positive	Negative	*Unaccounted Test Results*
Childcare	-9	-2	0	-9	*7*
Primary	-46	-43	0	-3	*-40*
Post Primary	-24	5	1	1	*3*
Special Education	-1	0	0	0	*0*
Total	**-80**	**-40**	**1**	**-11**	***-30***

Week 49	Facilities Tested	Tested	Positive	Negative	*Unaccounted Test Results*
Childcare	-5	-30	0	9	*-39*
Primary	-33	35	0	17	*18*
Post Primary	-30	6	0	4	*2*
Special Education	0	-6	0	0	*-6*
Total	**-68**	**5**	**0**	**30**	***-25***

Week 50	Facilities Tested	Tested	Positive	Negative	*Unaccounted Test Results*
Childcare	-12	31	0	0	*31*
Primary	-34	-124	-1	-3	*-120*
Post Primary	-23	-13	0	0	*-13*
Special Education	-5	-13	0	0	*-13*
Total	**-74**	**-119**	**-1**	**-3**	***-115***

Week 51	Facilities Tested	Tested	Positive	Negative	*Unaccounted Test Results*
Childcare	0	-104	-1	-17	*-86*
Primary	-43	30	0	-53	*83*
Post Primary	-24	-81	0	-68	*-13*
Special Education	-6	7	0	0	*7*
Total	**-73**	**-148**	**-1**	**-138**	***-9***

Week 52/53	Facilities Tested	Tested	Positive	Negative	*Unaccounted Test Results*
Childcare	-32	84	0	-10	*94*
Primary	-100	40	0	-32	*72*
Post Primary	-68	27	0	-2	*29*
Special Education	-8	12	0	0	*12*
Total	**-208**	**163**	**0**	**-44**	***207***

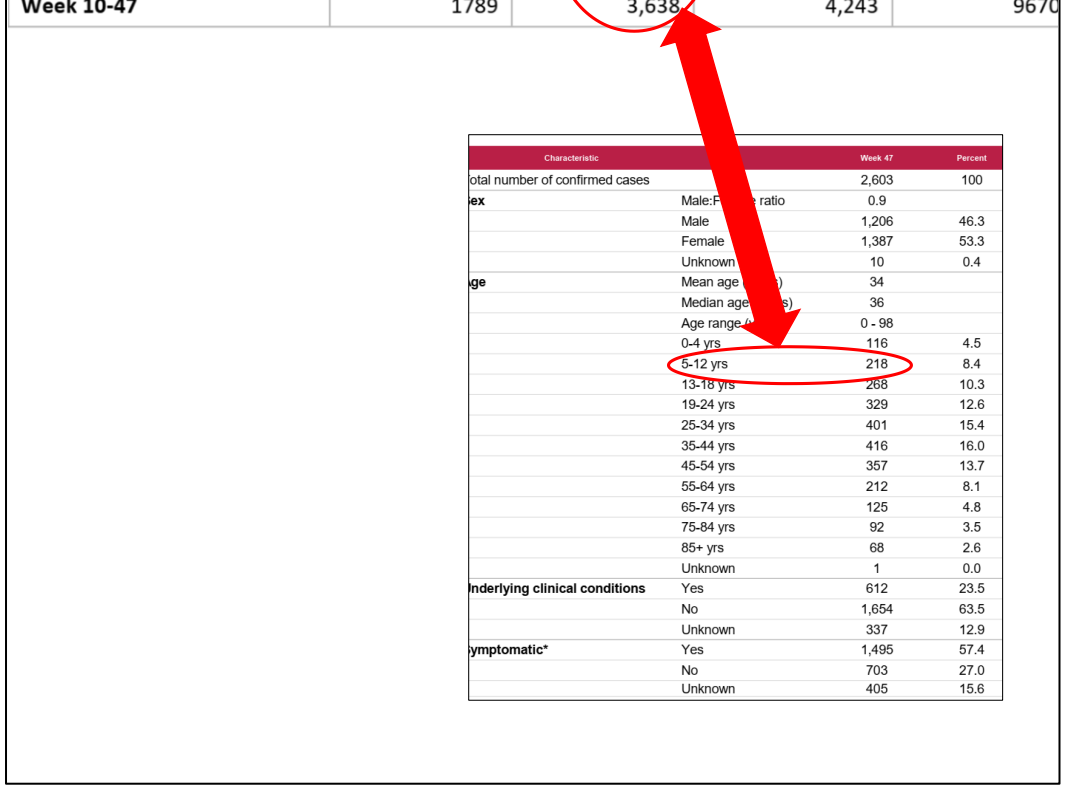
Cum. YTD Report	-503	139	1	166	-28
	UnderReported	*OverReported*	*OverReported*	*OverReported*	*UnderReported*

2.4 Confirmed Covid Cases by Age Group

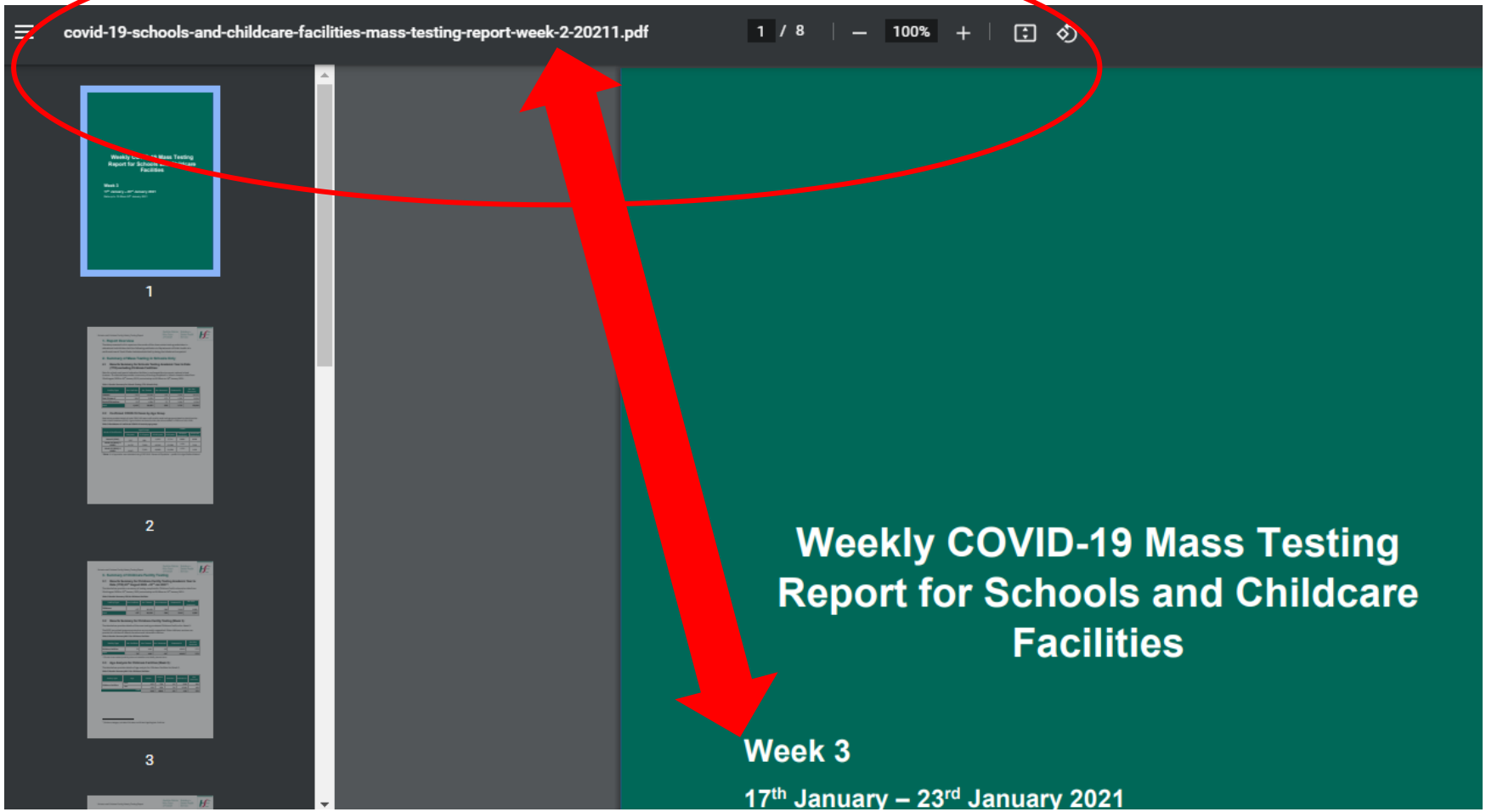
The data below provides details of total Covid cases confirmed by week and age group based on data from the Public Health database (CIDR).

Table 6 Breakdown of confirmed COVID-19 cases by age group and week

Week of notification	Age groups			
	0-4 years	4-12 years	13-18 years	0-18 years
Week 47	116	241	268	625
Week 35-47	1518	3,186	3,735	8439
Week 10-47	1789	3,638	4,243	9670



Characteristic		Week 47	Percent
otal number of confirmed cases		2,603	100
ex	Male:F ratio	0.9	
	Male	1,206	46.3
	Female	1,387	53.3
	Unknown	10	0.4
ge	Mean age ( )	34	
	Median age (s)	36	
	Age range (	0 - 98	
	0-4 yrs	116	4.5
	5-12 yrs	218	8.4
	13-18 yrs	268	10.3
	19-24 yrs	329	12.6
	25-34 yrs	401	15.4
	35-44 yrs	416	16.0
	45-54 yrs	357	13.7
	55-64 yrs	212	8.1
	65-74 yrs	125	4.8
	75-84 yrs	92	3.5
	85+ yrs	68	2.6
	Unknown	1	0.0
nderlying clinical conditions	Yes	612	23.5
	No	1,654	63.5
	Unknown	337	12.9
ymptomatic*	Yes	1,495	57.4
	No	703	27.0
	Unknown	405	15.6


covid-19-schools-and-childcare-facilities-mass-testing-report-week-2-20211.pdf
1 / 8
100%
1
2
3
Weekly COVID-19 Mass Testing Report for Schools and Childcare Facilities
Week 3
17th January – 23rd January 2021

Schools and Childcare Facility Weekly Testing Report

Seirbhís Sláinte Níos Fearr á Forbairt | Building a Better Health Service

1. Report Overview

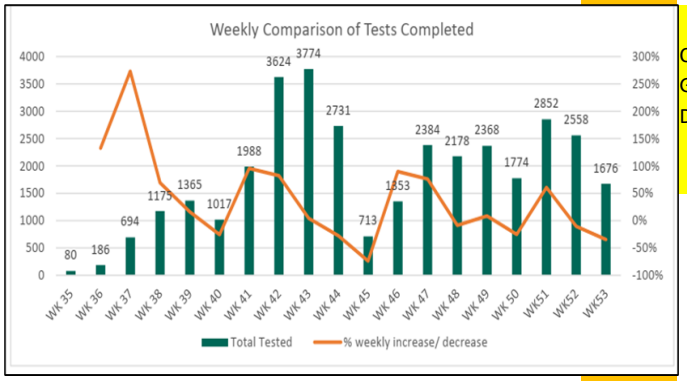
The data presented in this report are the results of the close contact testing undertaken in educational and childcare facilities following notification to Departments of Public Health of a confirmed case of Covd-19 who had attended a facility during the infectious time period.

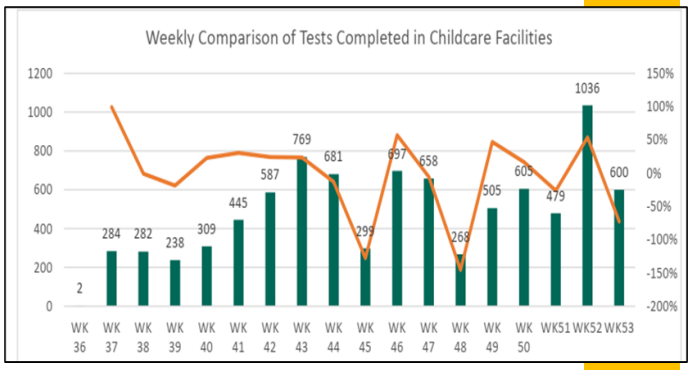
This is completely new statement
Tables which included joint cumulative totals are now removed.
These tables also included the "No. of Detected" Cases in a "Facility"
Removed in Week 3

Table 1 Summary of Schools and Childcare Facility Testing Completed to Date

Summary	Cumulative Testing YTD	Week 1 (03/01/2021 – 09/01/2021)
Number Tested	43,694	304
Number of Detected Cases	1,361	13
Detection Rate %		4.3%
Detected 0-17		6
Detected 18+	218	7
No. of Facilities Tested	1,540	43
Facilities with Detected Case	454	9

7) Difference between figures in graphs from tables and graphs presented at webinar

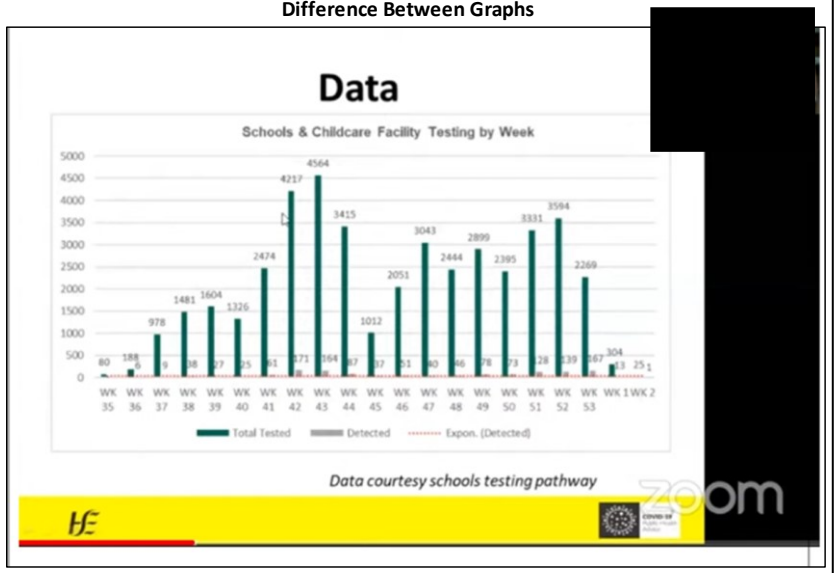




Cum. Total Report	43,428
Graphs in Reports	43234
DES Graph	43365

All different

Difference Between Graphs



Appendix 2: Data and Definitions

1) Epidemiological Weeks

2020

Year	Week	Start date	End date
2020	1	29/12/2019	04/01/2020
2020	2	05/01/2020	11/01/2020
2020	3	12/01/2020	18/01/2020
2020	4	19/01/2020	25/01/2020
2020	5	26/01/2020	01/02/2020
2020	6	02/02/2020	08/02/2020
2020	7	09/02/2020	15/02/2020
2020	8	16/02/2020	22/02/2020
2020	9	23/02/2020	29/02/2020
2020	10	01/03/2020	07/03/2020
2020	11	08/03/2020	14/03/2020
2020	12	15/03/2020	21/03/2020
2020	13	22/03/2020	28/03/2020
2020	14	29/03/2020	04/04/2020
2020	15	05/04/2020	11/04/2020
2020	16	12/04/2020	18/04/2020
2020	17	19/04/2020	25/04/2020
2020	18	26/04/2020	02/05/2020
2020	19	03/05/2020	09/05/2020
2020	20	10/05/2020	16/05/2020
2020	21	17/05/2020	23/05/2020
2020	22	24/05/2020	30/05/2020
2020	23	31/05/2020	06/06/2020
2020	24	07/06/2020	13/06/2020
2020	25	14/06/2020	20/06/2020
2020	26	21/06/2020	27/06/2020

Year	Week	Start date	End date
2020	27	28/06/2020	04/07/2020
2020	28	05/07/2020	11/07/2020
2020	29	12/07/2020	18/07/2020
2020	30	19/07/2020	25/07/2020
2020	31	26/07/2020	01/08/2020
2020	32	02/08/2020	08/08/2020
2020	33	09/08/2020	15/08/2020
2020	34	16/08/2020	22/08/2020
2020	35	23/08/2020	29/08/2020
2020	36	30/08/2020	05/09/2020
2020	37	06/09/2020	12/09/2020
2020	38	13/09/2020	19/09/2020
2020	39	20/09/2020	26/09/2020
2020	40	27/09/2020	03/10/2020
2020	41	04/10/2020	10/10/2020
2020	42	11/10/2020	17/10/2020
2020	43	18/10/2020	24/10/2020
2020	44	25/10/2020	31/10/2020
2020	45	01/11/2020	07/11/2020
2020	46	08/11/2020	14/11/2020
2020	47	15/11/2020	21/11/2020
2020	48	22/11/2020	28/11/2020
2020	49	29/11/2020	05/12/2020
2020	50	06/12/2020	12/12/2020
2020	51	13/12/2020	19/12/2020
2020	52	20/12/2020	26/12/2020
2020	53	27/12/2020	02/01/2021

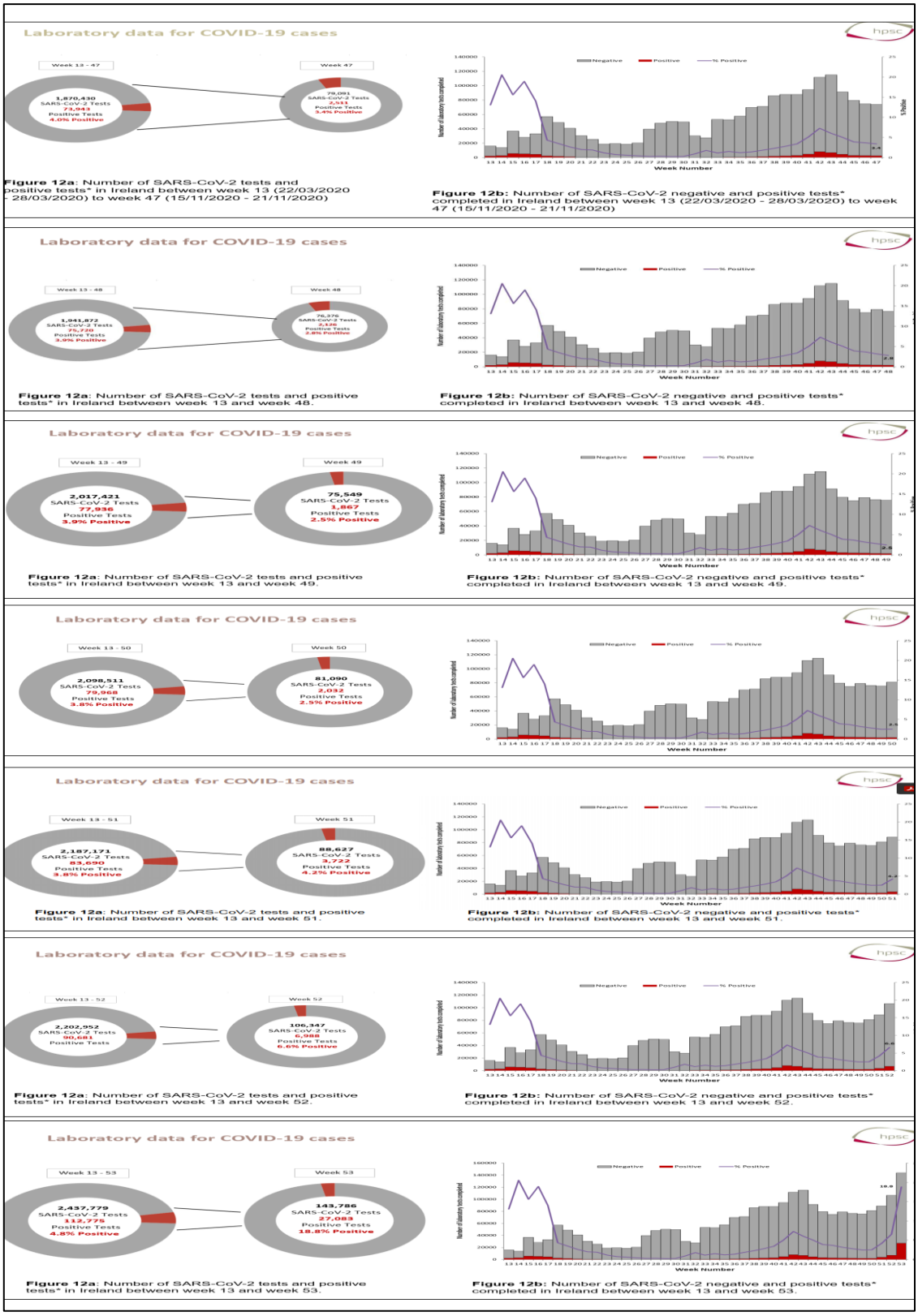
2021

Year	Week	Start date	End date
2021	1	03/01/2021	09/01/2021
2021	2	10/01/2021	16/01/2021
2021	3	17/01/2021	23/01/2021
2021	4	24/01/2021	30/01/2021
2021	5	31/01/2021	06/02/2021
2021	6	07/02/2021	13/02/2021
2021	7	14/02/2021	20/02/2021
2021	8	21/02/2021	27/02/2021
2021	9	28/02/2021	06/03/2021
2021	10	07/03/2021	13/03/2021
2021	11	14/03/2021	20/03/2021
2021	12	21/03/2021	27/03/2021
2021	13	28/03/2021	03/04/2021
2021	14	04/04/2021	10/04/2021
2021	15	11/04/2021	17/04/2021
2021	16	18/04/2021	24/04/2021
2021	17	25/04/2021	01/05/2021
2021	18	02/05/2021	08/05/2021
2021	19	09/05/2021	15/05/2021
2021	20	16/05/2021	22/05/2021
2021	21	23/05/2021	29/05/2021
2021	22	30/05/2021	05/06/2021
2021	23	06/06/2021	12/06/2021
2021	24	13/06/2021	19/06/2021
2021	25	20/06/2021	26/06/2021
2021	26	27/06/2021	03/07/2021

Year	Week	Start date	End date
2021	27	04/07/2021	10/07/2021
2021	28	11/07/2021	17/07/2021
2021	29	18/07/2021	24/07/2021
2021	30	25/07/2021	31/07/2021
2021	31	01/08/2021	07/08/2021
2021	32	08/08/2021	14/08/2021
2021	33	15/08/2021	21/08/2021
2021	34	22/08/2021	28/08/2021
2021	35	29/08/2021	04/09/2021
2021	36	05/09/2021	11/09/2021
2021	37	12/09/2021	18/09/2021
2021	38	19/09/2021	25/09/2021
2021	39	26/09/2021	02/10/2021
2021	40	03/10/2021	09/10/2021
2021	41	10/10/2021	16/10/2021
2021	42	17/10/2021	23/10/2021
2021	43	24/10/2021	30/10/2021
2021	44	31/10/2021	06/11/2021
2021	45	07/11/2021	13/11/2021
2021	46	14/11/2021	20/11/2021
2021	47	21/11/2021	27/11/2021
2021	48	28/11/2021	04/12/2021
2021	49	05/12/2021	11/12/2021
2021	50	12/12/2021	18/12/2021
2021	51	19/12/2021	25/12/2021
2021	52	26/12/2021	01/01/2022

Figure 21: HPSC COVID-19 Weekly Report Week 53

2) Positivity Rates: HPSC Weekly Reports



3) HPSC Mass Testing School and Childcare Facilities Report - Week 53

Table 7 Breakdown of confirmed COVID-19 cases by age group up to WK 53:

Week of Notification	Age Groups			Totals		
	0-4 years	5-12 years	13-18 years	0-18 years	% of 0-4 population	% of 5-18 Population
Week 53	392	689	931	2,012	0.1%	0.2%
Week 10-53	2,787	5,244	6,288	14,319	0.8%	1.3%
Week 35-53	2,516	4,847	5,780	13,143	0.8%	1.2%

* **Note**: % of population was calculated using CSO 2016 '*Census of Population – profile 3 An Age Profile of Ireland*'.

4) Definition of Safeguard

safe·guard
/ˈsāfˌgärd/

noun

1. a measure taken to protect someone or something or to prevent something undesirable:
"there were multiple safeguards to prevent the accidental release of a virus"

verb

1. protect from harm or damage with an appropriate measure:
"low interest rates are offering the opportunity to safeguard their financial futures"

Powered by Oxford Dictionaries

5) HSE Website: Cases less common in children

Protecting your child from COVID-19

Stay at home – Ireland is at level 5.
Read about the current government restrictions on gov.ie

COVID-19 (coronavirus) can affect children as well as adults.

But cases of COVID-19 are much less common in children. Children generally get a milder infection than adults. They often have no symptoms.

Children do not spread the virus more than adults and are rarely the cause of the virus spreading in households.

Read about what to do if your child has symptoms of COVID-19

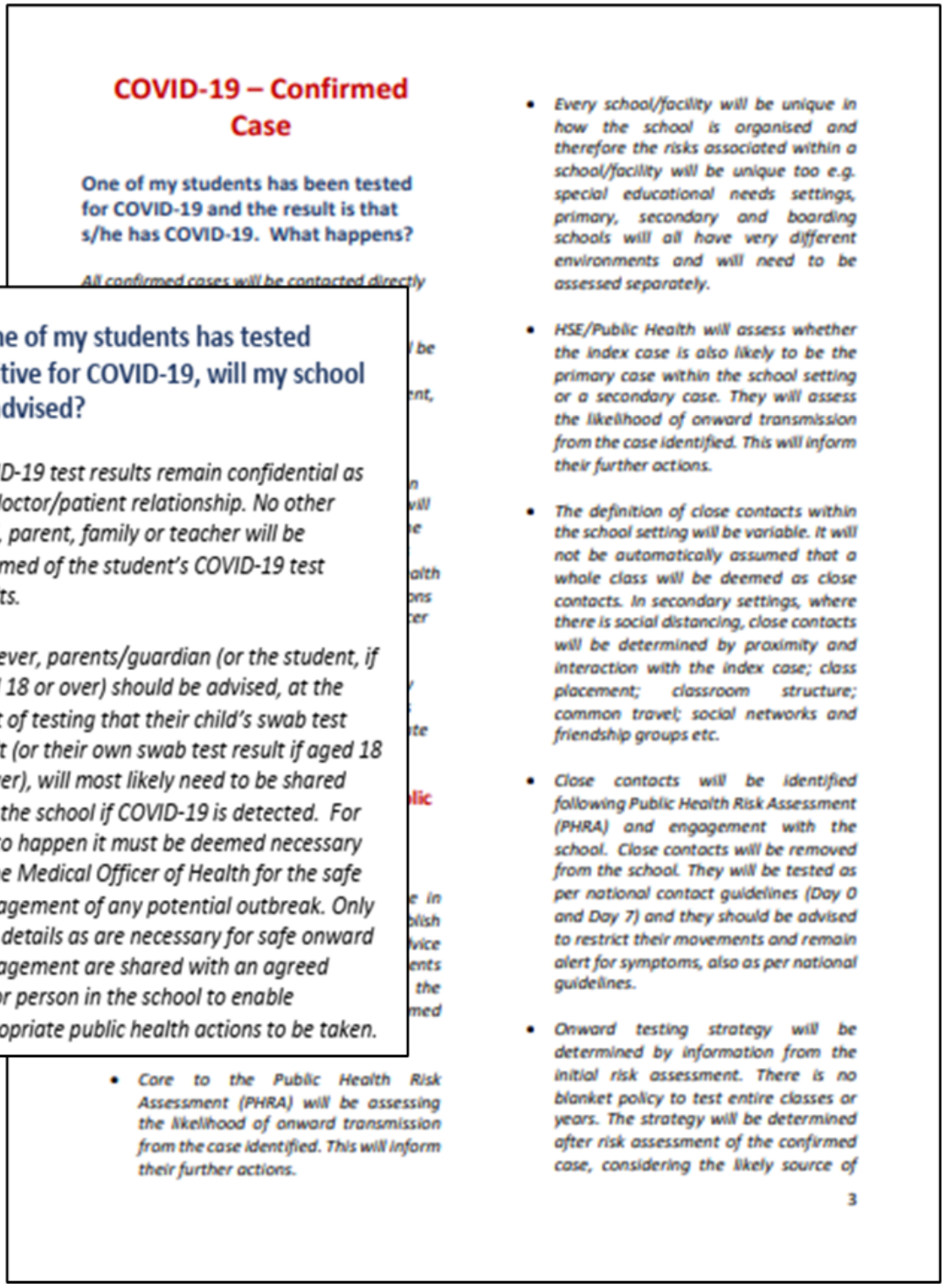
Join the Fight Against Coronavirus.
Download the CovidTracker app

6) ECDC Key Messages [December 2020]

Key messages

- There is a general consensus that the decision to close schools to control the COVID-19 pandemic should be used as a last resort. The negative physical, mental health and educational impact of proactive school closures on children, as well as the economic impact on society more broadly, would likely outweigh the benefits.
- In surveillance data, among childhood COVID-19 cases, children between 1-18 years of age have lower rates of hospitalisation, severe hospitalisation and death than do all other age groups.
- Children of all ages are susceptible to and can transmit SARS-CoV-2. Younger children appear to be less susceptible to infection, and when infected, less often lead to onward transmission than older children and adults.
- This report does not consider the epidemiology of COVID-19 in relation to new variants of SARS-CoV-2, for which robust evidence on the potential impact in school settings is not yet available, such as one recently observed in the United Kingdom.
- School closures can contribute to a reduction in SARS-CoV-2 transmission, but by themselves are insufficient to prevent community transmission of COVID-19 in the absence of other non-pharmaceutical interventions (NPIs) such as restrictions on mass gathering.
- The return to school of children around mid-August 2020 coincided with a general relaxation of other NPI measures in many countries and does not appear to have been a driving force in the upsurge in cases observed in many EU Member States from October 2020. Trends in case notification rates observed since August 2020 for children aged 16-18 years most closely resemble those of adults aged 19-39 years.
- Transmission of SARS-CoV-2 can occur within school settings and clusters have been reported in preschools, primary and secondary schools. Incidence of COVID-19 in school settings appear to be impacted by levels of community transmission. Where epidemiological investigation has occurred, transmission in schools has accounted for a minority of all COVID-19 cases in each country.
- Educational staff and adults within the school setting are generally not seen to be at a higher risk of infection than other occupations, although educational roles that put one in contact with older children and/or many adults may be associated with a higher risk.
- Non-pharmaceutical interventions in school settings in the form of physical distancing that prevent crowding as well as hygiene and safety measures are essential to preventing transmission. Measures must be adapted to the setting and age group and consider the need to prevent transmission as well as to provide children with an optimal learning and social environment.

7) Teachers Union of Ireland: Suspected or Confirmed Case of COVID-19 in Schools



COVID-19 – Confirmed Case

One of my students has been tested for COVID-19 and the result is that s/he has COVID-19. What happens?

All confirmed cases will be contacted directly

If one of my students has tested positive for COVID-19, will my school be advised?

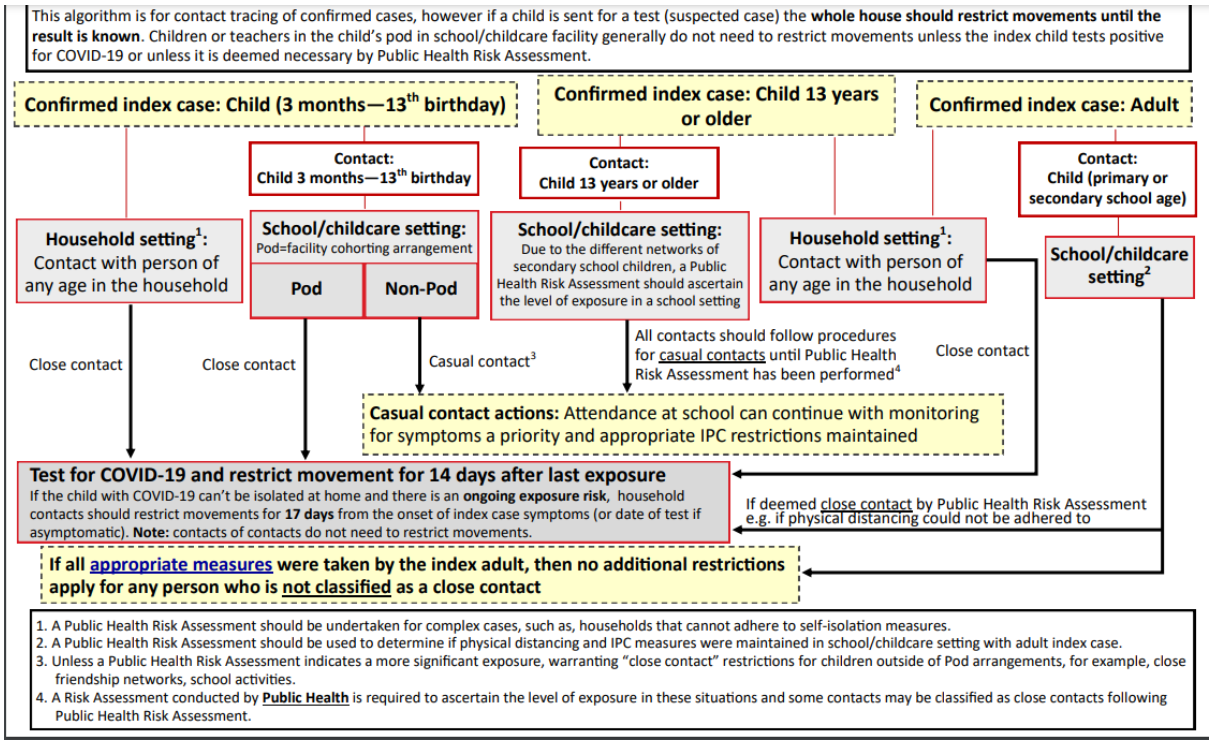
COVID-19 test results remain confidential as per doctor/patient relationship. No other child, parent, family or teacher will be informed of the student's COVID-19 test results.

However, parents/guardian (or the student, if aged 18 or over) should be advised, at the point of testing that their child's swab test result (or their own swab test result if aged 18 or over), will most likely need to be shared with the school if COVID-19 is detected. For this to happen it must be deemed necessary by the Medical Officer of Health for the safe management of any potential outbreak. Only such details as are necessary for safe onward management are shared with an agreed senior person in the school to enable appropriate public health actions to be taken.

- *Core to the Public Health Risk Assessment (PHRA) will be assessing the likelihood of onward transmission from the case identified. This will inform their further actions.*
- *Every school/facility will be unique in how the school is organised and therefore the risks associated within a school/facility will be unique too e.g. special educational needs settings, primary, secondary and boarding schools will all have very different environments and will need to be assessed separately.*
- *HSE/Public Health will assess whether the index case is also likely to be the primary case within the school setting or a secondary case. They will assess the likelihood of onward transmission from the case identified. This will inform their further actions.*
- *The definition of close contacts within the school setting will be variable. It will not be automatically assumed that a whole class will be deemed as close contacts. In secondary settings, where there is social distancing, close contacts will be determined by proximity and interaction with the index case; class placement; classroom structure; common travel; social networks and friendship groups etc.*
- *Close contacts will be identified following Public Health Risk Assessment (PHRA) and engagement with the school. Close contacts will be removed from the school. They will be tested as per national contact guidelines (Day 0 and Day 7) and they should be advised to restrict their movements and remain alert for symptoms, also as per national guidelines.*
- *Onward testing strategy will be determined by information from the initial risk assessment. There is no blanket policy to test entire classes or years. The strategy will be determined after risk assessment of the confirmed case, considering the likely source of*

3

8) COVID-19 Management of contacts* of cases in the school setting



9) Covid-Hub HPSC Data- Cases (Weekly)

Weekly Cases Week 10-53

WK. NO	Row Labels	Sum of 0-4	Sum of 5-14	Sum of 15-24	Sum of 25-34	Sum of 35-44	Sum of 45-54	Sum of 55-64	Sum of 65+	Sum of UNKNOWN	TOTALS
Week 10	01/03/2020 - 07/03/2020	0	0	0	0	0	0	0	0	0	0
Week 11	08/03/2020 - 14/03/2020	0	0	0	0	0	0	0	0	0	0
Week 12	15/03/2020 - 21/03/2020	5	16	69	166	165	158	117	139	1	836
Week 13	22/03/2020 - 28/03/2020	10	13	102	282	302	309	243	372	6	1639
Week 14	29/03/2020 - 04/04/2020	9	7	116	372	435	440	337	718	7	2441
Week 15	05/04/2020 - 11/04/2020	24	31	311	827	855	905	714	894	7	4568
Week 16	12/04/2020 - 18/04/2020	36	94	402	910	987	1131	773	1365	3	5701
Week 17	19/04/2020 - 25/04/2020	13	29	236	512	541	583	382	1613	1	3910
Week 18	26/04/2020 - 02/05/2020	12	33	224	394	382	392	250	657	-2	2342
Week 19	03/05/2020 - 09/05/2020	12	35	144	282	297	230	171	283	3	1457
Week 20	10/05/2020 - 16/05/2020	11	12	117	298	253	191	116	146	-2	1142
Week 21	17/05/2020 - 23/05/2020	14	22	76	95	118	79	55	97	1	557
Week 22	24/05/2020 - 30/05/2020	8	18	33	59	64	70	46	96	-2	392
Week 23	31/05/2020 - 06/06/2020	8	11	29	25	35	42	25	37	1	213
Week 24	07/06/2020 - 13/06/2020	5	2	14	19	18	19	7	22	-1	105
Week 25	14/06/2020 - 20/06/2020	3	3	10	13	17	11	7	13	-1	76
Week 26	21/06/2020 - 27/06/2020	1	1	8	14	11	7	6	11	0	59
Week 27	28/06/2020 - 04/07/2020	4	3	11	23	13	16	8	10	1	89
Week 28	05/07/2020 - 11/07/2020	4	6	38	25	19	3	4	2	-1	100
Week 29	12/07/2020 - 18/07/2020	4	1	20	37	18	19	12	23	-1	133
Week 30	19/07/2020 - 25/07/2020	5	5	16	32	23	21	9	10	0	121
Week 31	26/07/2020 - 01/08/2020	18	26	53	70	45	40	12	17	0	281
Week 32	02/08/2020 - 08/08/2020	21	27	80	157	113	86	43	22	0	549
Week 33	09/08/2020 - 15/08/2020	18	47	122	107	88	80	43	41	0	546
Week 34	16/08/2020 - 22/08/2020	26	57	165	159	116	92	65	31	1	712
Week 35	23/08/2020 - 29/08/2020	22	63	195	153	126	111	60	58	1	789
Week 36	30/08/2020 - 05/09/2020	35	78	201	172	142	113	76	96	1	914
Week 37	06/09/2020 - 12/09/2020	60	132	254	255	203	158	124	126	0	1312
Week 38	13/09/2020 - 19/09/2020	68	161	458	305	285	285	191	196	0	1949
Week 39	20/09/2020 - 26/09/2020	44	164	525	396	287	264	182	190	2	2054
Week 40	27/09/2020 - 03/10/2020	83	184	760	550	472	424	321	252	-2	3044
Week 41	04/10/2020 - 10/10/2020	121	308	1241	771	601	591	438	419	5	4495
Week 42	11/10/2020 - 17/10/2020	220	592	2050	1271	1041	960	727	577	-2	7436
Week 43	18/10/2020 - 24/10/2020	294	719	1706	1052	965	953	786	692	2	7169
Week 44	25/10/2020 - 31/10/2020	209	564	991	697	689	704	493	517	1	4865
Week 45	01/11/2020 - 07/11/2020	149	345	551	590	540	484	308	424	2	3393
Week 46	08/11/2020 - 14/11/2020	97	260	453	395	379	358	231	338	0	2511
Week 47	15/11/2020 - 21/11/2020	116	283	528	399	407	349	205	270	1	2558
Week 48	22/11/2020 - 28/11/2020	76	208	337	258	280	246	150	224	1	1780
Week 49	29/11/2020 - 05/12/2020	94	254	302	321	298	270	175	280	-6	1988
Week 50	06/12/2020 - 12/12/2020	80	245	294	333	313	305	188	201	0	1959
Week 51	13/12/2020 - 19/12/2020	118	351	540	577	565	469	383	351	1	3355
Week 52	20/12/2020 - 26/12/2020	238	517	1251	1253	1043	912	718	656	1	6589
Week 53	27/12/2020 - 02/01/2021	392	885	3409	3157	2363	2233	1799	1518	2	15758
	Grand Total	2787	6812	18442	17783	15914	15113	11000	14004	32	101887

10) Covid-Hub HPSC Data- Hospitalisations (Weekly)

Weekly Hospitalisations Week 10-53

WK.NO	Row Labels	Sum of 0-4	Sum of 5-14	Sum of 15-24	Sum of 25-34	Sum of 35-44	Sum of 45-54	Sum of 55-64	Sum of 65+	Sum of Unknown	TOTALS
Week 10	01/03/2020 - 07/03/2020									0	0
Week 11	08/03/2020 - 14/03/2020										0
Week 12	15/03/2020 - 21/03/2020	2	2	14	31	26	42	37	85	0	239
Week 13	22/03/2020 - 28/03/2020	1	1	7	26	35	65	64	205	2	406
Week 14	29/03/2020 - 04/04/2020	0	4	14	36	50	81	90	345	0	620
Week 15	05/04/2020 - 11/04/2020	8	-2	9	32	39	84	96	318	0	584
Week 16	12/04/2020 - 18/04/2020	2	2	6	18	38	50	62	245	0	423
Week 17	19/04/2020 - 25/04/2020	1	1	4	17	38	30	47	214	0	352
Week 18	26/04/2020 - 02/05/2020	4	4	4	16	10	31	27	120	0	216
Week 19	03/05/2020 - 09/05/2020	0	5	7	2	3	22	13	106	0	158
Week 20	10/05/2020 - 16/05/2020	1	0	5	9	8	16	21	69	0	129
Week 21	17/05/2020 - 23/05/2020	0	0	1	6	2	9	20	59	1	98
Week 22	24/05/2020 - 30/05/2020	0	0	1	5	5	12	4	34	0	61
Week 23	31/05/2020 - 06/06/2020	1	1	0	-1	4	2	10	19	0	36
Week 24	07/06/2020 - 13/06/2020	0	-1	-3	3	3	0	0	-45	-1	-44
Week 25	14/06/2020 - 20/06/2020	1	-1	1	-3	3	0	-2	7	0	6
Week 26	21/06/2020 - 27/06/2020	0	0	-1	-1	1	0	3	7	0	9
Week 27	28/06/2020 - 04/07/2020	1	1	3	1	2	3	0	5	0	16
Week 28	05/07/2020 - 11/07/2020	1	0	2	0	6	0	3	9	0	21
Week 29	12/07/2020 - 18/07/2020	0	0	2	1	1	2	2	6	-1	13
Week 30	19/07/2020 - 25/07/2020	0	1	0	0	0	0	1	1	0	3
Week 31	26/07/2020 - 01/08/2020	0	0	3	2	1	4	1	2	0	13
Week 32	02/08/2020 - 08/08/2020	1	0	-2	0	0	-1	1	6	0	5
Week 33	09/08/2020 - 15/08/2020	0	0	4	3	2	2	3	9	0	23
Week 34	16/08/2020 - 22/08/2020	0	0	0	4	2	2	0	3	0	11
Week 35	23/08/2020 - 29/08/2020	2	1	0	1	1	0	2	-5	0	2
Week 36	30/08/2020 - 05/09/2020	0	1	2	1	-2	3	0	22	0	27
Week 37	06/09/2020 - 12/09/2020	3	-1	2	3	0	6	5	12	0	30
Week 38	13/09/2020 - 19/09/2020	2	0	4	0	4	9	8	40	0	67
Week 39	20/09/2020 - 26/09/2020	-2	1	3	5	8	8	18	18	0	59
Week 40	27/09/2020 - 03/10/2020	5	7	11	13	10	10	12	27	0	95
Week 41	04/10/2020 - 10/10/2020	5	5	4	7	8	11	21	82	1	144
Week 42	11/10/2020 - 17/10/2020	2	1	13	18	16	18	27	80	0	175
Week 43	18/10/2020 - 24/10/2020	2	4	4	9	13	27	35	119	0	213
Week 44	25/10/2020 - 31/10/2020	2	5	8	12	16	22	29	107	0	201
Week 45	01/11/2020 - 07/11/2020	3	4	11	18	22	30	29	136	0	253
Week 46	08/11/2020 - 14/11/2020	4	3	8	7	17	21	18	129	0	207
Week 47	15/11/2020 - 21/11/2020	3	1	12	10	11	19	23	103	0	182
Week 48	22/11/2020 - 28/11/2020	2	0	7	10	14	19	18	89	0	159
Week 49	29/11/2020 - 05/12/2020	1	1	1	12	5	9	15	76	0	120
Week 50	06/12/2020 - 12/12/2020	1	1	8	10	2	9	14	58	0	103
Week 51	13/12/2020 - 19/12/2020	-1	4	9	7	16	22	26	87	10	180
Week 52	20/12/2020 - 26/12/2020	1	4	26	19	25	28	39	126	-10	258
Week 53	27/12/2020 - 02/01/2021	3	5	27	44	29	48	37	164	0	357
	Grand Total	62	65	241	413	494	775	879	3299	2	6230

11) Outbreaks and Clusters Reports – Week 53

Table 6: Number of COVID-19 workplace outbreaks notified from 02/08/2020 to midnight on 02/01/2021 and laboratory confirmed cases‡ linked to workplace outbreaks.

Workplace outbreaks	Number of outbreaks notified					Laboratory confirmed cases‡ linked to outbreaks (week 32-53)				
	Week 53	Week 53 outbreaks: Range in no. of cases#	Week 32-53	Number open	Open outbreaks: Range in no. of cases#	Cases notified in week 53	Total cases	Total hospitalised cases	Total ICU cases	Total number of deaths*
Meat/poultry Production and Processing	0	n/a	35	6	3-72	7	636	9	**<5**	<5
Other food/beverage Production and Processing	0	n/a	21	4	0-37	<5	182	**<5**	**<5**	<5
Construction industry**	0	n/a	51	8	0-11	<5	186	**<5**	**<5**	<5
Commercial	6	0-7	82	18	0-10	<5	358	**<5**	**<5**	<5
Manufacturing	1	1	31	11	0-14	<5	154	5	<5	<5
Office-based	0	n/a	41	4	0-22	<5	133	**<5**	<5	<5
Defence/Justice/Emergency services	2	0-2	19	6	0-6	<5	71	**<5**	<5	<5
Other Workplace^	2	0-6	24	6	2-6	5	69	<5	<5	<5
Total	**11**	**0-7**	**304**	**63**	**0-72**	**15**	**1789**	**27**	**<5**	**<5**

**Cases linked to some construction site outbreaks may reside in Northern Ireland and consequently will be notified in that jurisdiction. These cases will not be included in the case numbers for Ireland. ^"Other workplace" includes businesses that do not fit in the above workplace categories. #n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6) ‡Case numbers fewer than 5 are not presented here

[2] Workplace outbreaks exclude the following workplaces: hospitals, residential facilities, hotels, public houses, retail outlets, and other settings (outbreaks in GP practices and outbreaks associated with home carers). These are reported under those headings.

Table 5: Number of COVID-19 outbreaks in settings involving vulnerable populations, including the Roma community, Irish Traveller community, outbreaks in Direct Provision Centres, facilities for the homeless/those with addiction issues and prisons notified from week 32 (week commencing 02/08/2020) to midnight on 02/01/2021 and laboratory confirmed cases‡ linked to these outbreaks. *Data source: CIDR*

Vulnerable populations	Number of outbreaks notified					Laboratory confirmed cases‡ linked to outbreaks (week 32-53)				
	Week 53	Week 53 outbreaks: Range in no. of cases#	Week 32-53	Number open	Open outbreaks: Range in no. of cases#	Cases notified in week 53	Total cases	Total hospitalised cases	Total ICU cases	Total number of deaths*
Roma community	0	n/a	9	7	3-74	0	149	9	<5	<5
Irish Travellers	1	n/a	80	45	0-66	0	1193	53	<5	<5
Direct provision centres	1	9	21	7	2-29	0	158	<5	<5	<5
Homeless^	0	n/a	7	1	2	0	15	<5	<5	<5
People with addictions	0	n/a	2	0	n/a	0	33	<5	<5	<5
Prisons	0	n/a	3	1	9	0	33	<5	<5	<5
Total	**2**	**0-9**	**122**	**61**	**0-74**	**0**	**1581**	**69**	**8**	**<5**

^ Homeless facilities include some facilities that provide long term supported accommodation. Also includes staff of homeless facilities.
#n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6)
‡Case numbers fewer than 5 are not presented here

Table 4: Number of COVID-19 outbreaks and cases‡ in residential institutions in Ireland, from 02/08/2020 to midnight on 02/01/2021. *Data source: CIDR*

Outbreak location	Number of outbreaks notified					Laboratory confirmed cases‡ linked to outbreaks (week 32-53)				
	Week 53	Week 53 outbreaks: Range in no. of cases#	Week 32-53	Number open	Open outbreaks: Range in no. of cases#	Cases notified in week 53	Total cases	Total hospitalised cases	Total ICU cases	Total number of deaths
Centre for disabilities	3	0-2	62	12	0-11	<5	304	11	<5	<5
Children's / TUSLA residential centre	3	0-2	11	4	0-2	<5	25	<5	<5	<5
Mental health facility	0	n/a	10	1	n/a	<5	77	<5	<5	<5
Other	0	n/a	9	4	0-12	<5	33	<5	<5	<5
Not Specified	1	n/a	5	1	n/a	<5	16	<5	<5	<5
Total	**7**	**0-2**	**97**	**22**	**0-12**	**<5**	**455**	**21**	**<5**	**<5**

#n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6)
‡Case numbers fewer than 5 are not presented here

Table 7: Number of COVID-19 outbreaks associated with school children (+/- staff), universities/colleges/third level students and childcare facilities notified to midnight on 02/01/2021 and laboratory confirmed cases‡ linked to these outbreaks.

Outbreak location	Number of outbreaks notified					Laboratory confirmed cases‡ linked to outbreaks (week 32-53)				
	Week 53	Week 53 outbreaks: Range in no. of cases#	Week 32-53	Number open	Open outbreaks: Range in no. of cases#	Cases notified in week 53	Total cases	Total hospitalised cases	Total ICU cases***	Total number of deaths
School*	11	0-5	295	109	0-48	15	1234	8	<5	0
University/college/third level students**	0	n/a	90	33	2-190	<5	1006	12	<5	0
Childcare facility	5	0-6	107	30	0-22	<5	529	<5	<5	0
Total	**16**	**0-6**	**492**	**172**	**0-190**	**19**	**2769**	**23**	**<5**	**0**

*These outbreaks are outbreaks associated with school children +/or school staff. Transmission of COVID-19 within the school has not necessarily been established in these outbreaks
**These outbreaks also include outbreaks among third level students that may have occurred in other locations, such as private houses or social gatherings, and may not be directly linked to a University/college location
#n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6)
‡Case numbers fewer than 5 are not presented here

Table 3: Number of COVID-19 outbreaks and cases‡ in acute hospital settings in Ireland, from 02/08/2020 to midnight on 02/01/2021. *Data source: CIDR*

Outbreak location: Acute Hospitals	Number of outbreaks notified					Laboratory confirmed cases linked to outbreaks (week 32-53)			
	Week 53	Week 53 outbreaks: Range in no. of cases#	Week 32-53	Number open	Open outbreaks: Range in no. of cases#	Cases notified in week 53	Total cases	Total ICU cases	Total number of deaths
	23	0-18	141	76	0-138	101	1717	35	135

Table 2: Number of COVID-19 outbreaks and cases‡ in nursing homes and community hospital/long-stay units in Ireland, from 02/08/2020 to midnight on 02/01/2021. *Data source: CIDR*

Outbreak location	Number of outbreaks notified					Laboratory confirmed cases‡ linked to outbreaks (week 32-53)				
	Week 53	Week 53 outbreaks: Range in no. of cases#	Week 32-53	Number open	Open outbreaks: Range in no. of cases#	Cases notified in week 53	Total cases	Total hospitalised cases	Total ICU cases	Total number of deaths
Nursing home	22	0-26	135	64	0-82	65	2126	116	<5	160
Community Hospital/Long-stay unit	1	6	10	7	1-54	<5	97	<5	<5	<5
Total	**23**	**0-26**	**145**	**71**	**0-82**	**69**	**2223**	**119**	<5	**163**

‡Case numbers fewer than 5 are not presented here

12) References to Week Numbers and Date

Week Numbers and Dates	Reference
Week 10: 1st March 2020 to 7th March 2020	Pandemic Began in Ireland (1st Epidemiology Week)
Week 11: 8th March 2020 – 14th March 2020	Schools Officially Closed due to Pandemic
Week 13 - 27: 27th March 2020 to 28th June 2020	1st Official Lockdown
Week 27: 28th June 2020 – 4th July 2020	Childcare Facilities Reopened
Week 32: 2nd August 2020 – 8th August 2020	Beginning of 2nd Wave
Week 28 – 34: 5th July 2020 – 22nd August 2020	1st Lockdown Restrictions Lifted/Before Schools Reopened
Week 11 - 34: 8th March 2020- 22nd August 2020	Time Period when Schools were Closed
Week 35: 23rd August 2020 – 29th August 2020	Schools Officially Reopened
Week 43: 18th October 2020 – 24th October 2020	2nd Official Lockdown
Week 44: 25th October 2020 – 31st October 2020	Pre-planned Midterm Break in Schools
Week 47: 15th November – 21st November 2020	HPSC School Report Published
Week 48: 22nd November – 28th November 2020	Beginning of 3rd Wave
Week 49: 29th November 2020 – 5th December 2020	2nd Lockdown Restrictions Lifted
Week 52: 20th December 2020 – 26th December 2020	Preplanned Christmas School Holidays
Week 52: 20th December 2020 – 26th December 2020	3rd Lockdown (24th December 2020)
Week 53: 27th December 2020 – 2nd January 2021	Last epidemiology week of 2020

Week References and Dates 1

Appendix 3: HPSC Reports- Clauses

1) HPSC Outbreaks/Clusters in Ireland Weekly Report Clauses

Total Number of COVID-19 outbreaks notified since week 10	11,539
Number of COVID-19 outbreaks notified from week 48:	2,503
Number of COVID-19 outbreaks notified since week 48: OPEN	2,306
Number of COVID-19 outbreaks notified since week 48: CLOSED	197
Number of COVID-19 outbreaks notified in week 3 2021	268

Waves (weeks)	Dates
Wave 1 (weeks 10-31)	01/03/2020 – 01/08/2020
Wave 2 (week 32-47)	02/08/2020 – 21/11/2020
Wave 3 (week 48 onwards)	22/11/2020 onwards

HPSC Outbreaks & Clusters Disclaimer 2

Due to the recent surge in case numbers, there is a delay in linking of cases to outbreaks on the national surveillance system (CIDR). Therefore, the number of linked cases to outbreaks in this report is likely to be an underestimate.

The COVID-19 outbreak definition is available in appendix 2 of this report and on the HPSC website at: https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/casedefinitions/covid-19outbreakcasedefinitionforireland/

Please note COVID-19 outbreaks and cases are continuously validated/updated on Ireland's national Computerised Infectious Disease Reporting System (CIDR).

HPSC Outbreaks & Clusters Disclaimer 1

*All COVID-19 cases that died and were linked to outbreaks in these settings have been laboratory confirmed. No deaths in probable/possible cases linked to outbreaks in these settings have been notified.
**Cases linked to some construction site outbreaks may reside in Northern Ireland and consequently will be notified in that jurisdiction. These cases will not be included in the case numbers for Ireland.
^"Other workplace" includes businesses that do not fit in the above workplace categories.
#n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6) ‡Case numbers fewer than 5 are not presented here.
***Contains data from weeks in 2020 (48-53) and 2021 (weeks 1-3)

[2] Workplace outbreaks exclude the following workplaces: hospitals, residential facilities, hotels, public houses, retail outlets, and other settings (outbreaks in GP practices and outbreaks associated with home carers). These are reported under those headings.

Note: Data are provisional

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HPSC Outbreaks & Clusters Disclaimer 3

#n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6)
‡Case numbers fewer than 5 are not presented here
*Contains data from weeks in 2020 (48-53) and 2021 (weeks 1-3)

[1] This section focusses on the following residential settings: Centres for disabilities, Children's/TUSLA residential centres and mental health facilities. Homeless services, addiction services, direct provision centres and prisons are reported in the Focus on Vulnerable Populations section.

HPSC Outbreaks & Clusters Disclaimer 4

^ Homeless facilities include some facilities that provide long term supported accommodation. Also includes staff of homeless facilities.
#n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6)
‡Case numbers fewer than 5 are not presented here
**Contains data from weeks in 2020 (48-53) and 2021 (weeks 1-3)

Note: Data are provisional
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HPSC Outbreaks & Clusters Disclaimer 5

*These outbreaks are outbreaks associated with school children +/or school staff. Transmission of COVID-19 within the school has not necessarily been established in these outbreaks
**These outbreaks also include outbreaks among third level students that may have occurred in other locations, such as private houses or social gatherings, and may not be directly linked to a University/college location
***Case admitted to ICU is an adult.
#n/a is used where there were no outbreaks in a category or where there are no confirmed cases currently linked to any outbreak in that category (see technical note 6)
‡Case numbers fewer than 5 are not presented here
##Contains data from weeks in 2020 (48-53) and 2021 (weeks 1-3)

HPSC Outbreaks & Clusters Disclaimer 6

*Public Health link cases to outbreaks and report these to HPSC. This process is taking longer with the recent surge in case numbers. Public Health are prioritising reporting of outbreaks in key settings e.g. RCFs, hospitals. Therefore, the number of private house outbreaks is underestimated.

HPSC Outbreaks & Clusters Disclaimer 7

Note: Family outbreaks reported in July 2020 were composed largely of late notified outbreaks from the period March to May 2020.

HPSC Outbreaks & Clusters Disclaimer 8

*It is common practice not to close private house outbreaks on CIDR due to the large volume of these types of outbreaks on CIDR
**These outbreaks are outbreaks associated with school children +/or school staff. Transmission of COVID-19 within the school has not necessarily been established in these outbreaks.
***These outbreaks are associated with a university/college location and do not include outbreaks among third level students that occurred at other locations

HPSC Outbreaks & Clusters Disclaimer 9

‡Case numbers fewer than 5 are not presented here.
*Contains data from weeks in 2020 (48-53) and 2021 (weeks 1-3)

HPSC Outbreaks & Clusters Disclaimer 10

*These outbreaks are outbreaks associated with school children +/or school staff. Transmission of COVID-19 within the school has not necessarily been established in these outbreaks.
**These outbreaks are associated with a university/college location and do not include outbreaks among third level students that occurred at other locations.
***Contains outbreaks for weeks in 2020 (48-53) and 2021 (weeks 1-3)

Note: Data are provisional

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Appendix 2
Technical Notes

1. Data are based on statutory notifications and were extracted from the National Computerised Infectious Disease Reporting (CIDR) system. Data are provisional and subject to ongoing review, validation and update. As a result, figures in this report may differ from previously published figures.

2. For surveillance purposes, the following COVID-19 outbreak definition is used for notifying COVID-19 outbreaks/clusters:
   Confirmed*
   - **There is a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic.**
     OR
   - **There is a cluster/outbreak, with two or more cases of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition), and at least one person is a confirmed case of COVID-19.**

   * From September 21st 2020, suspected COVID outbreaks should be reported with the disease category 'Acute Respiratory Infection (ARI)'. If one or more cases linked to the outbreak are subsequently confirmed as COVID-19, the ARI outbreak should be reclassified to being a COVID-19 outbreak. Outbreaks of suspected COVID-19 which were notified before September 21st 2020, and met the previous COVID-19 outbreak definition should remain as COVID-19 outbreaks on CIDR.
   The COVID-19 case definition is detailed on the Health Protection Surveillance Centre (HPSC) website: https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/casedefinitions/

3. This report includes confirmed and suspected COVID-19 outbreaks.

4. An "Open" or "Closed" outbreak is defined as an outbreak where the outbreak status is "Open" or "Closed" on CIDR. In order to declare an outbreak "Closed" the outbreak location should not have experienced any new cases of infection which meet the case definition for a period of 28 days (two incubation periods).

5. Outbreak type (family/general) indicates whether an outbreak is confined to a family (family outbreak) or affects members of more than one household (general outbreak).

6. The "range in number of cases" presented in Tables 2 to 7 is based on laboratory confirmed cases linked to an outbreak in CIDR. The priority is to notify outbreaks to CIDR in a timely fashion and, while every effort is made to link cases to outbreaks as quickly as possible, there can sometimes be a delay in linking cases to the outbreak. Ranges in number of cases that include "0" include outbreaks that currently have no linked cases. Data in CIDR are continuously reviewed and updated and this includes the identification and linking of outbreak-associated cases.

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