Public Health Scotland

COVID-19 Shielding Programme (Scotland) rapid evaluation

Data report: COVID-19 test and mortality data

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Introduction

About this report

This report is part of a series of three reports, published in January 2021, relating to the Public Health Scotland evaluation of the Scottish Government shielding programme. This data report presents detailed routine data relating to the Scottish Government shielding programme. The other two reports in the series are the full evaluation report and the summary evaluation report. More detail about the Scottish Government shielding programme and the Public Health Scotland evaluation can be found in the full evaluation report.

The data presented in this data report cover four areas:

- the clinical and socio-demographic profile of the shielding group
- COVID-19 testing in the shielding group
- COVID-19 deaths in the shielding group
- COVID-19 death-to-case rates in the shielding group.

Throughout this report, COVID-19 deaths refer to deaths with COVID-19 as cause or contributory condition on the death certificate.

COVID-19 death-to-case rates are the number of COVID-19 deaths in a certain time period, divided by the number of confirmed COVID-19 cases in this same time period. COVID-19 death-to-case rates give an indication of how likely individuals are to die, if they contract COVID-19.

Limitations

Collating and analysing the data for this data report was done as part of a **rapid** evaluation, against the complex backdrop of the COVID-19 pandemic. There are a number of important limitations:

- All data in the full evaluation report and in this data report present the result of descriptive analysis only. Public Health Scotland[1] led a case-control study which explored the risk of severe COVID-19 illness among shielding people, using robust statistical methods. The results of this study have not yet been published.
- The shielding evaluation covers the period between March and August 2020, but datasets in this data report refer to different time periods. The evaluation supported programme delivery in real time. Data analyses were undertaken at different points in time, in response to specific data requests and based on the most up-to-date information available at the time of the request.
- Similarly, the way in which data linkage was undertaken was informed by the needs of programme delivery, especially in the early stages of the programme. The needs of the evaluation were a secondary consideration in some instances. The resulting linked datasets therefore have limitations from an evaluation perspective.

Data sources used

For the purpose of this analysis the following data sources have been used and linked together at the level of the individual:

- Shielding list – this includes all individuals in Scotland with a condition that is considered to put them at high risk of severe illness from COVID-19.
- Rapid and Preliminary Inpatient Datamart (RAPID) – a record is generated for each admission to hospital, including if a patient is transferred to a different hospital as part of the same continuous inpatient stay. All records are subject to change until a patient is fully discharged, therefore all analysis conducted using RAPID data should be treated as an estimate, and subject to change.
- Electronic Communication of Surveillance in Scotland (ECOSS) – this database holds all positive microbiology laboratory specimen results and a subset of antimicrobial susceptibility/resistance data in Scotland. For the purpose of this analysis, a subset of the dataset was used which includes the first COVID-19

positive test result for a patient, or the first negative if the patient has not had a positive result. This means the patient may have had previous negative tests before the positive test date identified in the dataset – or they may have had subsequent positive or negative tests after the initial test.

- Care Home Flag – care home residents have been identified using a community health index (CHI) linkage institution code flag, which is updated monthly, and is reliant on GPs providing information on patients residing in residential and care homes.
- National Records of Scotland Deaths – death registrations in Scotland.

All data linkage and use followed Public Health Scotland Information Governance procedures, in line with General Data Protection Regulation.

Profile of the shielding group

Unless stated otherwise, all data in this section represent the situation on 31 August 2020, the formal endpoint of the shielding evaluation. Data by clinical shielding category are only available for the seven original clinical shielding categories. The same individual can be counted in more than one clinical shielding category. Detail about the different shielding categories can be found in the full evaluation report. Unless otherwise stated, all Scotland-wide data in this section, and in this report, are based on mid-2019 population estimates for Scotland.[2]

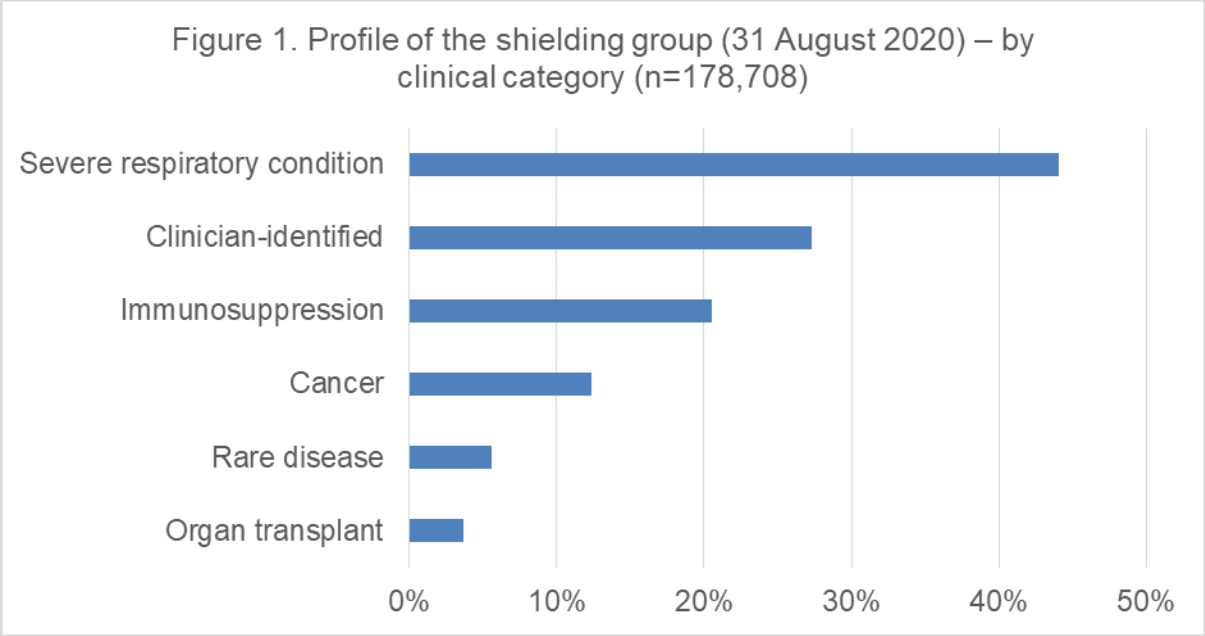
Number of shielding people

About 3% of the Scottish population were advised to follow shielding guidance. The number of people in the shielding group gradually increased over time, reaching 170,911 on 4 May 2020 and 181,225 on 6 July 2020. Afterwards, the number of shielding people started to decrease. By 31 August 2020, the number of shielding people had dropped to 178,708. People were added to and removed from the shielding list over the duration of the shielding programme. People were added as the identification process was refined or as a result of new diagnoses. People were removed if their risk was revised or if they had died.

Clinical profile

Shielding categories

More than four in ten (44%) people on the shielding list had a severe respiratory condition. More than a quarter (27%), in the ‘other’ category, had been identified by their clinician as likely to benefit from shielding. One in five (21%) were included because of immunosuppression therapy. Just more than one in ten (12%) were advised to shield because of cancer. Smaller groups of people were shielding because of a rare disease (6%) or organ transplant (4%). The smallest group consisted of pregnant women with severe heart disease (see Figure 1).



Source: Public Health Scotland (Shielding list).

The composition of the shielding group by clinical category remained stable over time. The only exception was people in the 'other' category who had been identified by their clinician as likely to benefit from shielding. This group increased by 30% from 37,394 individuals on 4 May 2020 to 48,772 individuals on 31 August 2020.

Comorbidities

Scotland-wide comorbidity data were not available to the evaluation. An analysis by the University of Aberdeen[3] provides insight in the pre-pandemic comorbidity profile of the shielding group in the NHS Grampian area. More than a third of shielding individuals (37%) had two or more comorbidities. Chronic respiratory disease was the most common comorbidity (57%). More than a third (38%) of shielding individuals had mental health conditions. One in five (21%) had hypertension, 16% had kidney disease and 13% had diabetes.

Socio-demographic profile

Gender

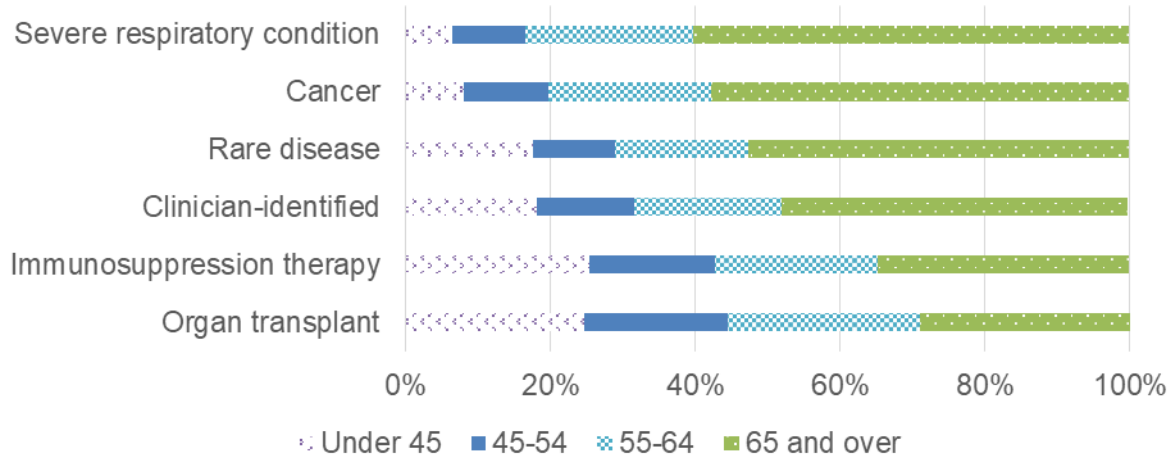
Just over half (55%) of shielding individuals were female – 45% were male. Across the Scottish population as a whole, 51% of people are female – 49% are male.

Age

Around half (52%) of shielding individuals were aged 65 or older – only 14% were under 45. Across the Scottish population as a whole, only one in five (19%) people are aged 65 and older – more than half (53%) are under 45.

Individuals who were shielding because of a severe respiratory condition or cancer were more likely to be older (see Figure 2): 60% (severe respiratory condition) and 58% (cancer) of people in these groups were aged 65 or older. Individuals who were shielding because of immunosuppression therapy (35% are aged 65 or older) or an organ transplant (29%) had a younger age profile. Even in these clinical groups, the percentage of people aged 65 or older remained higher than in the Scottish population as a whole (19%).

Figure 2. Age profile of the shielding group (31 August 2020) – by clinical category



Source: Public Health Scotland (Shielding list).

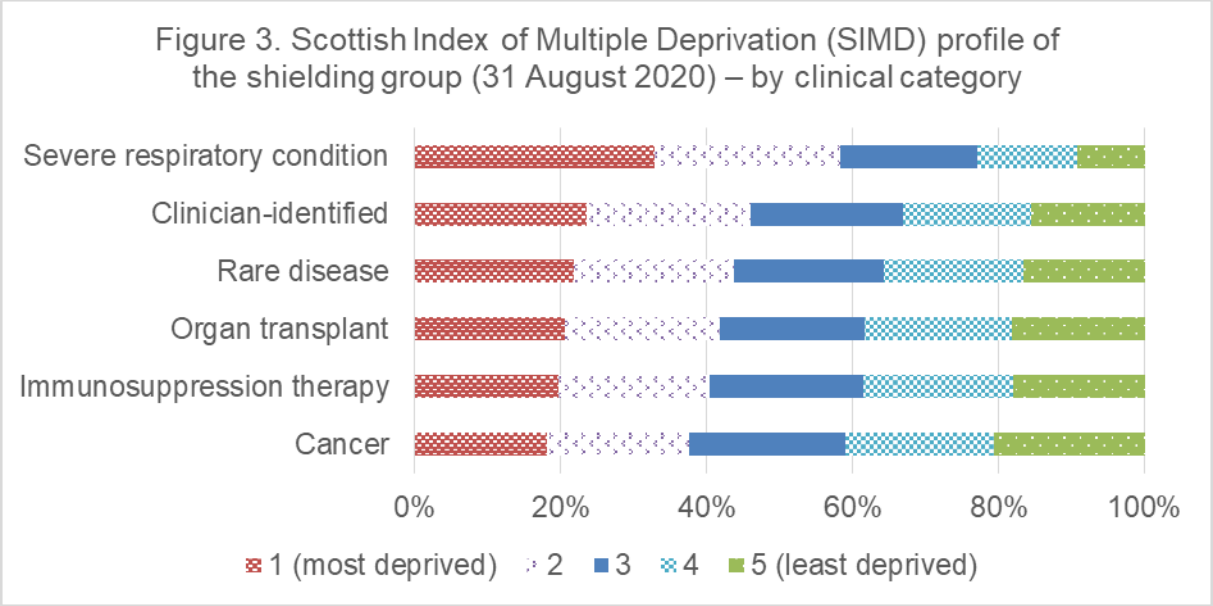
The shielding list included more than 2,000 children under 16 and almost 4,000 people aged 16–24. This means that only 3% of shielding individuals were younger than 25. More than a quarter (27%) of the Scottish population as a whole is younger than 25.

The age profile of the shielding group remained stable over time. The only exception is children under 16: the number of children decreased from 3,721 children on 4 May 2020 to 2,106 children on 31 August 2020. Over the summer of 2020, local health boards re-assessed which children still needed to be on the shielding list – in light of emerging evidence of COVID-19 vulnerability in children.

Deprivation

A quarter (26%) of shielding people lived in the 20% most-deprived areas of Scotland – 14% lived in the 20% least deprived areas. Across the Scottish population as a whole, (by definition) 20% of people live in the 20% most-deprived areas. This is broadly consistent with findings in the Scottish Burden of Disease Study Deprivation Report: the disease burden in the most-deprived areas in Scotland is more than double the burden found in the least-deprived areas (14.1% compared to 6.7%).[4]

The difference in deprivation profile between the shielding group and the population at large was most pronounced among those with a severe respiratory condition (see Figure 3): a third (33%) of people with a severe respiratory condition lived in the 20% most-deprived areas.



Source: Public Health Scotland (Shielding list).

Rural / urban classification

Almost three quarters (70%) of people on the shielding list lived in urban areas. This is similar to the percentage of the Scottish population as a whole who live in urban areas (71%). Shielding individuals were, however, less likely to live in small towns than the Scottish population as a whole (12% compared to 20%) and more likely to live in rural areas (18% compared to 9%).

Care home residents

Just over 2,000 shielding individuals (2,136 or 1.1% of all shielding individuals) were care home residents. More than half (51%) of shielding care home residents were shielding because of a severe respiratory condition. The care home resident data presents the situation on 5 June 2020. Care home residents were identified using a CHI linkage institution code flag, which is updated monthly, and is reliant on GPs providing information on patients residing in residential and care homes.

Across the Scottish population as a whole, there were 35,989 care home residents in Scotland in 2017 (0.7% of the Scottish population).[5]

Other socio-demographic characteristics

It is not possible to provide a breakdown of the shielding group by ethnicity or disability.

COVID-19 testing

Positive COVID-19 tests provide an indication of the level of COVID-19 infections in a population. COVID-19 case rates, the number of positive COVID-19 tests per 100,000 people, take into account the size of different populations and facilitate comparison. However, caution is required when interpreting positive tests and case rates:

- The testing regime needs to be considered: other things being equal, testing more allows for more cases to be picked up. Test rates, the number of COVID-19 tests per 100 people, are therefore presented alongside case rates in Tables 1 to 3 in this section.
- A higher case rate in the shielding group than in the population at large does **not** suggest that shielding was ineffective. Shielding could only influence some aspects of exposure to the virus. This is discussed in more detail in the full evaluation report.

Confirmed COVID-19 cases

A total of 1,839 people on the shielding list (1% of the shielding group) were diagnosed with COVID-19 in the period until 31 August 2020. This includes all people in the shielding group who had a positive COVID-19 test, a hospital discharge diagnosis of COVID-19, or COVID-19 mentioned on their death certificate.

Positive COVID-19 tests

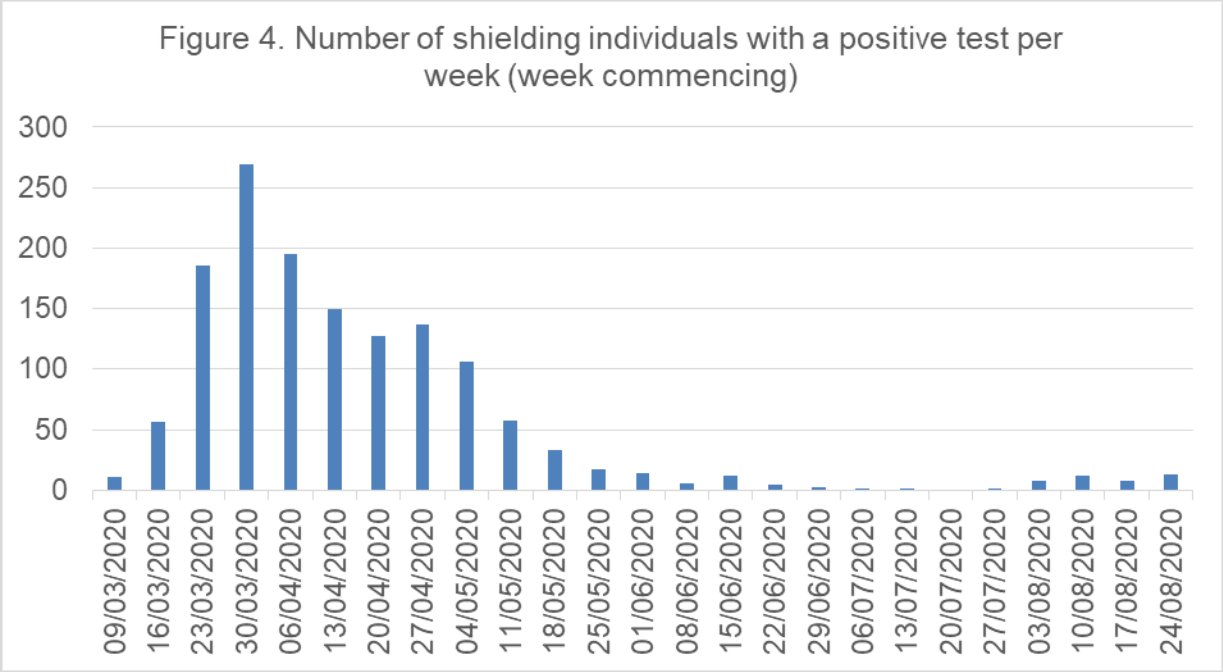
In the dataset used in the remainder of this section, positive test data for the shielding group are reported by the date of the **most recent** positive test for each individual. This means that shielding individuals who had a positive test in the period until 31 August 2020 but had another positive test after this period (for example on 15 September 2020), are **not** included.

A total of 1,440 shielding people had a positive test in the period until 31 August 2020. Among the population at large, a total of 20,478 people had a positive test in the period

until 31 August 2020.[6] This corresponds to case rates of 733 COVID-19 cases per 100,000 shielding people[a] and 375 COVID-19 cases per 100,000 individuals in the population at large.

Positive COVID-19 tests over time

Positive tests in the shielding group peaked in the week commencing 30 March 2020 when 269 individuals recorded a positive test (see Figure 4).



Source: Public Health Scotland (Shielding list) and ECOSS.

Positive COVID-19 tests subgroup analysis

Subgroup analysis by age covers the period until 30 September 2020. Subgroup analysis by level of deprivation and by clinical shielding category covers the period until

a Based on a total number of 196,464 in the shielding group. This is the number of people on the shielding list as of 31 August 2020 (178,708) plus the number of shielding individuals who had been identified as having died as of 31 August 2020 and were thus no longer included on the list (6,550), as well as those individuals removed from the list for other reasons (11,206).

27 September 2020 (i.e. until the week commencing 21 September 2020). Positive test data are again reported by the date of the **most recent** positive test for each shielding individual. Shielding individuals who had a positive test in the period between March and September 2020 but had another positive test after this period (for example on 15 October 2020) are **not** included.

Positive COVID-19 tests – by age

Case rates per 100,000 tended to increase with age, but there was no consistent trend (see Table 1).

Table 1. COVID-19 test data shielding group (1 March to 30 September 2020) – by age

	Number per age group[b]	Tested (at least once)	Test rate	Tested positive	Case rate per 100,000 in age group
<45	28,453	6,938	24%	152	534
45-54	24,136	5,108	21%	143	592
55-64	42,315	8,471	20%	297	702
65-69	24,068	4,527	19%	134	557
70-79	48,953	11,431	23%	461	942
80+	28,570	8,358	29%	463	1,621
Total	196,495	44,833	23%	1,650	840

Source: Public Health Scotland (Shielding list) and ECOSS.

Positive COVID-19 tests – by level of deprivation

Case rates per 100,000 tended to be higher in more deprived areas but there was no consistent trend (see Table 2).

b The number per age group is the number of individuals in each age group on the shielding list as of 28 September 2020, plus the number of individuals in that same age group who had been identified as having died as of 28 September 2020 (and were thus no longer included on the shielding list), as well as those individuals removed from the list for other reasons.

Table 2. COVID-19 test data shielding group (1 March to 27 September 2020) – by level of deprivation (1 = most deprived, 5 = least deprived)

	Number per deprivation quintile[c]	Tested (at least once)	Test rate	Tested positive	Case rate per 100,000 in this group
1	50,040	11,838	24%	474	947
2	44,461	10,131	23%	367	825
3	39,311	8,535	22%	293	745
4	34,135	7,336	21%	280	820
5	28,483	6,188	22%	191	671
Total	196,430[d]	44,028	22%	1,605	817

Source: Public Health Scotland (Shielding list) and ECOSS.

Positive COVID-19 tests – by clinical shielding category

Case rates per 100,000 were highest among those who were shielding because of a rare disease (1,217) or organ transplant (983) (see Table 3).

c Based on the number of individuals on the shielding list in each deprivation quintile as of 28 September 2020, plus the number of individuals in that same quintile who had been identified as having died as of 28 September 2020 (and were thus no longer included on the shielding list), as well as those individuals removed from the list for other reasons.

d The total number of shielding individuals in Table 2 (196,430) is slightly lower than the total number of shielding individuals in Table 1 (196,495) because of a difference in the number of individuals of unknown age and the number of individuals of unknown level of deprivation.

Table 3. COVID-19 test data shielding group (1 March to 27 September 2020) – by clinical shielding category

	Number per shielding category[e]	Tested (at least once)	Test rate	Tested positive	Case rate per 100,000 in category
Severe respiratory condition	83,320	17,501	21%	687	825
Clinician-identified	52,754	12,901	24%	497	942
Immunosuppression therapy	40,613	7,085	17%	272	670
Cancer	28,396	9,488	33%	247	870
Rare disease	11,172	2,801	25%	136	1,217
Organ transplant	7,017	1,510	20%	69	983

Source: Public Health Scotland (Shielding list) and ECOSS.

e Based on the number of individuals on the shielding list in each clinical category as of 28 September 2020, plus the number of individuals in each category who had been identified as having died as of 28 September 2020 (and were thus no longer included on the list), as well as those individuals removed from the list for other reasons.

COVID-19 deaths

The number of COVID-19 deaths and COVID-19 death rates per 100,000 people provides an indication of the severity of the COVID-19 pandemic in a population. However, caution is again required when interpreting COVID-19 death data:

- COVID-19 death data combine information about two aspects of the COVID-19 pandemic: the number of infections in a population and the likelihood of death **in case of infection**. A higher number of COVID-19 deaths in a population can indicate more infections **or** a higher vulnerability to death in case of infection **or** both.
- A higher COVID-19 death rate in the shielding group than in the population at large does **not** suggest that shielding was ineffective. A higher COVID-19 death rate in the shielding group could reflect the higher vulnerability to death, in the shielding group, in case of infection. This is discussed in more detail in the full evaluation report.
- Crude COVID-19 death rates, the number of COVID-19 deaths per 100,000 people, do not take into account the age profile of a population.

Throughout this section and this report, COVID-19 deaths refer to deaths with COVID-19 as cause or contributory condition on the death certificate. Unless otherwise stated, all Scotland-wide data in this section and in this report are based on National Records of Scotland COVID-19 death data.[7] Scotland-wide deaths are recorded by date of registration. In Scotland deaths must be registered within eight days although in practice, the average time between death and registration is around three days. Shielding group deaths are presented by date of death.

Pages 14–16 and 26–28 in the full evaluation report discuss how the routine COVID-19 death data presented below can inform answers to key evaluation questions.

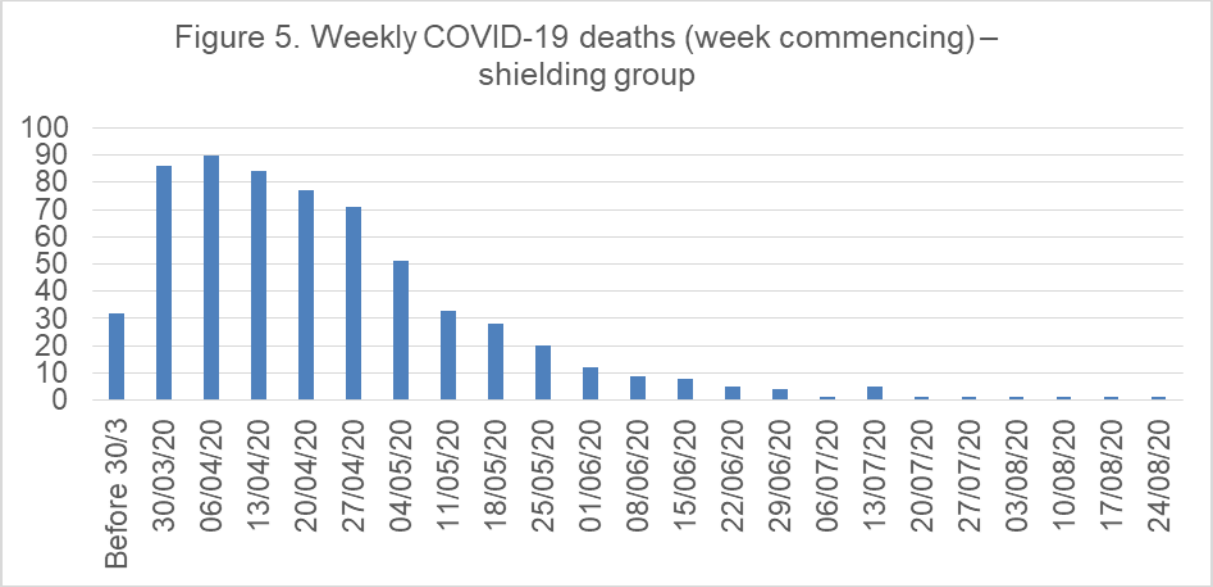
Total number of COVID-19 deaths

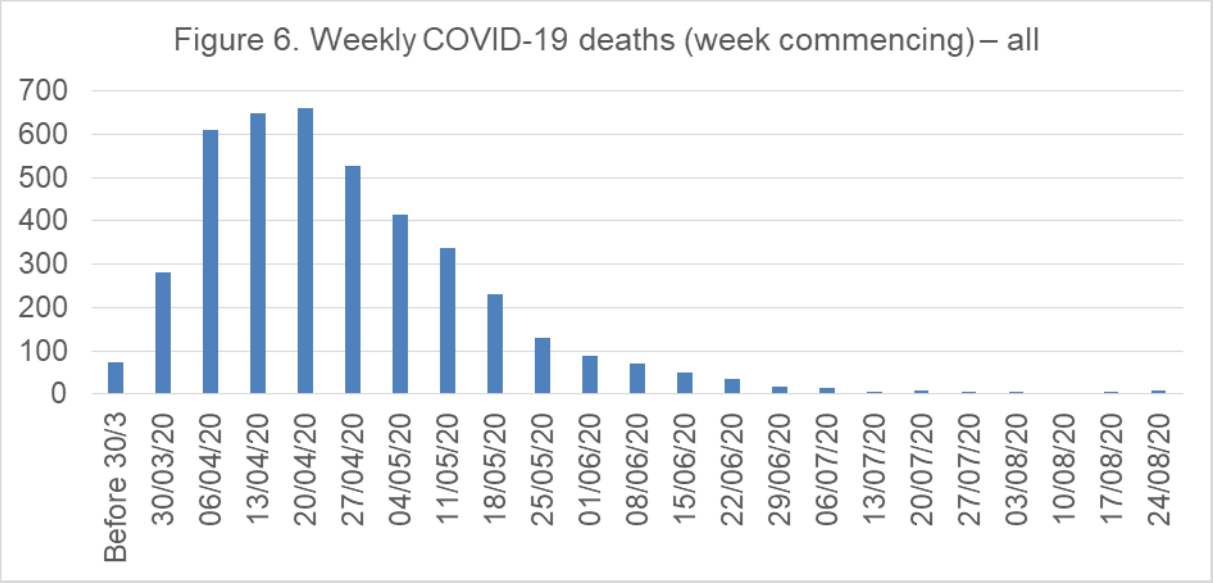
In the period until 31 August 2020, there were 622 COVID-19 deaths in the shielding group. Across the Scottish population at large, 4,230 COVID-19 deaths were registered over this same period. This means that 15% of all COVID-19 deaths in Scotland occurred in the shielding group. These figures correspond with crude COVID-19 death rates of 336 per 100,000 in the shielding group[f] and 77 per 100,000 in the population at large. Crude death rates do not take into account differences in age profile.

COVID-19 deaths over time

The majority of COVID-19 deaths in the shielding group occurred in April 2020 with a peak in the week commencing 6 April 2020. Across the Scottish population at large, COVID-19 deaths peaked two weeks later, in the week commencing 20 April 2020. Weekly COVID-19 deaths drop more slowly in the shielding group than in the population at large (see Figures 5–6).

f Based on a total number of 185,258 in the shielding group. This is the number of people on the shielding list as of 31 August 2020 (178,708) plus the number of shielding individuals who had been identified as having died as of 31 August 2020 and were thus no longer included on the list (6,550). These death rates refer to the full period between 1 March and 30 August 2020 – as opposed to presenting monthly or annual rates.



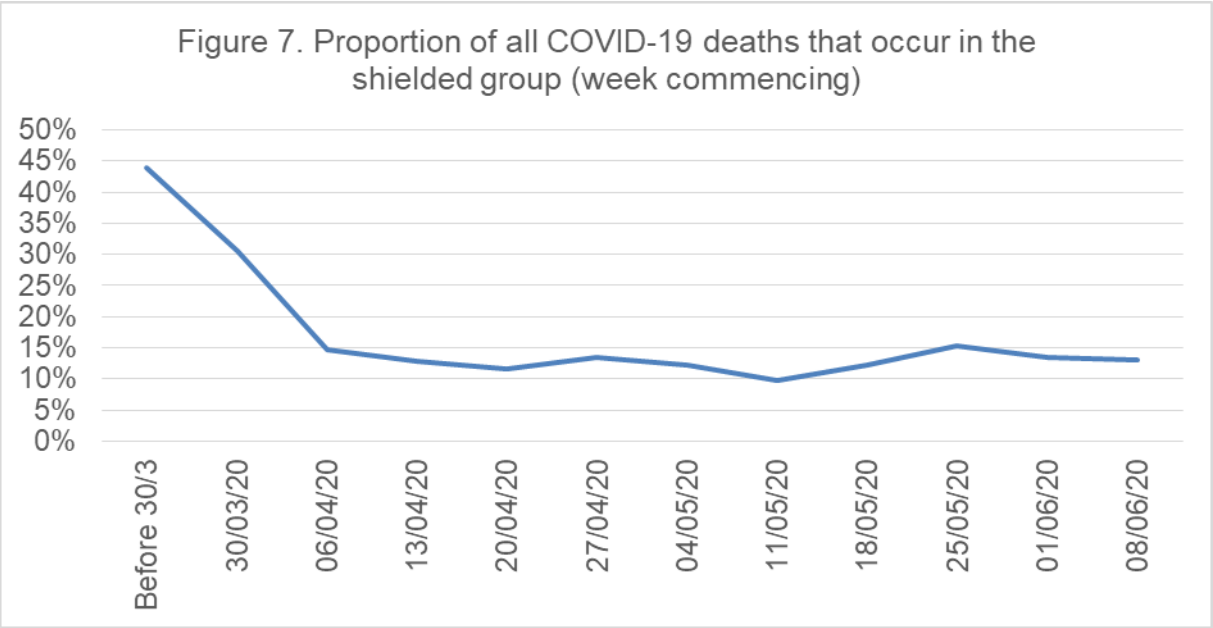


Source: Public Health Scotland (Shielding list) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

During the early weeks of the pandemic, one in three of all COVID-19 deaths occurred in the shielding group. From early April 2020 onwards until early June 2020,[g] the

g Total weekly COVID-19 deaths across the population at large drop below 50 at that point.

proportion of all COVID-19 deaths that occurred in the shielding group dropped to 10–15% (see Figure 7).



Source: Public Health Scotland (Shielding list) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

Age-standardised COVID-19 death rates

The age-standardised COVID-19 death rate for the period between March and September 2020 is 244 per 100,000 individuals in the shielding group and 140 per 100,000 in the population at large. The method used by National Records of Scotland to calculate age-standardised death rates for the population at large was used to calculate age-standardised death rates for the shielding group.

COVID-19 deaths subgroup analysis

Subgroup analysis by age covers the period until 30 September 2020. Subgroup analysis by clinical shielding category covers the period until 27 September 2020 (i.e. until the week commencing 21 September 2020).

COVID-19 deaths – by age

The vast majority (91%) of all COVID-19 deaths in Scotland between March and September 2020 occurred in the 65+ age group (see Table 4). COVID-19 deaths in the shielding group were also concentrated in the older age groups – but the concentration was not as pronounced. A total of 44% of COVID-19 deaths in the shielding group occurred in the over 80s age group, compared to 63% for the population overall. In the younger age groups, COVID-19 death rates were markedly higher in the shielding group. This difference gradually reduces in the older age groups until, in the over 90s age group, the COVID-19 death rate in the shielding group becomes lower than in the population at large. The method used by National Records of Scotland to calculate death rates by age group for the population at large was used to calculate death rates by age group for the shielding group.

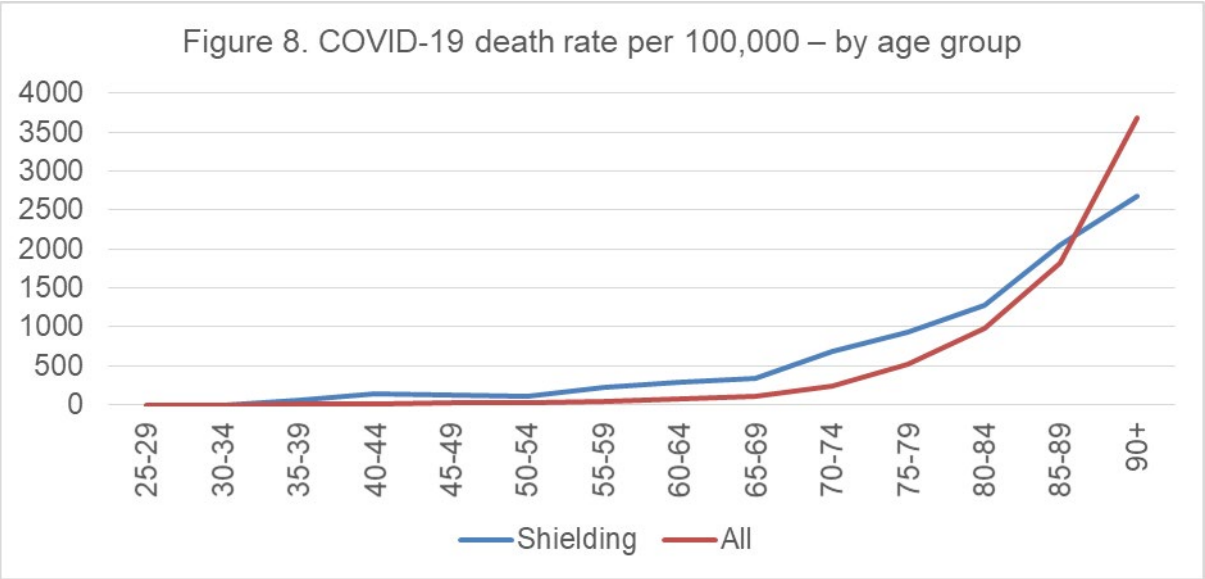
Table 4. COVID-19 deaths by age – shielding group and population at large (1 March to 30 September 2020)

	Number of COVID-19 deaths – shielding	Number of COVID-19 deaths – all	Proportion of shielding COVID-19 deaths	Proportion of all COVID-19 deaths	COVID-19 death rate per 100,000 – shielding	COVID-19 death rate per 100,000 – all
25-29	0	1	0%	0%	0	1
30-34	0	2	0%	0%	0	1
35-39	2	8	0%	0%	63	4
40-44	5	17	1%	0%	137	9
45-49	7	41	1%	1%	133	20
50-54	9	61	1%	1%	110	27
55-59	25	105	4%	2%	232	45
60-64	38	147	6%	3%	294	71
65-69	47	203	7%	5%	346	115
70-74	106	406	17%	9%	690	244
75-79	116	607	18%	14%	935	522
80-84	120	826	19%	19%	1,277	981
85-89	102	905	16%	21%	2,055	1,824
90+	57	945	9%	22%	2,671	3,677
Total[h]	634	4,274	100%	100%	/	/

Source: Public Health Scotland (Shielding list) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

h The total number of COVID-19 deaths here is slightly higher than the 631 (shielding) and 4,265 (population at large) figures mentioned above. The earlier figures presented weekly data until and including the week commencing 21 September 2020 and excluded COVID-19 deaths on 28–30 September 2020.

The number of COVID-19 deaths per 100,000 increased with age in the shielding group, but the increase was less steep than in the population at large (see Figure 8).



Source: Public Health Scotland (Shielding list) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

COVID-19 deaths – by clinical shielding category

The highest number of COVID-19 deaths in the period until 27 September 2020 occurred among people who were shielding because of a severe respiratory condition (341 deaths), followed by deaths in the 'other', clinician-identified group (125 deaths) and among people who were shielding because of cancer (110 deaths) (see Table 5). Crude death rates do not take into account differences in age profile across the shielding categories. The three conditions with the highest COVID-19 death rates have the highest proportion of over 65s.

Table 5. COVID-19 deaths in the shielding group – by clinical shielding category (1 March to 27 September 2020)

	Number of COVID-19 deaths	Crude COVID-19 death rate per 100,000[i]
Severe respiratory condition	341	419
Clinician-identified	125	249
Cancer	110	451
Immunosuppression therapy	87	232
Rare disease	74	701
Organ transplant	19	284

Source: Public Health Scotland (Shielding list) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

COVID-19 deaths – care home residency

Between March and early November 2020, 22% of COVID-19 deaths in the shielding group happened among individuals who were care home residents (see Table 6). Among the population at large, 43% of COVID-19 deaths (2,101 deaths) occurred in care homes and had been recorded by 9 November 2020.

Data on COVID-19 deaths by residency in care homes are not available separately for the period under consideration in this evaluation (March until August 2020). Note the difference in definition: for the shielding group, the data refer to individuals who were

i Based on the number of shielding individuals in each clinical category as of 28 September 2020 plus the number of individuals in each clinical category who had died as of 28 September 2020 (and were thus no longer included on the list): 81,316 in the respiratory group; 50,156 in the clinician-identified group; 37,513 in the immunosuppression group; 24,370 in the cancer group; 10,558 in the rare diseases group and 6,697 in the organ transplant group. The death rates refer to the full period between 1 March and 27 September 2020 – as opposed to presenting monthly or annual rates.

care home residents. For the population at large, the data refer to individuals who died in a care home.

Table 6. COVID-19 deaths and non-COVID-19 deaths among care home residents from 1 March 2020 – shielding group and population at large (deaths as recorded by 9 November 2020)

	COVID-19 deaths	Non-COVID-19 deaths	All deaths
Shielding – care home residents	158	590	748
Shielding – not care home residents	569	8,055	8,624
Shielding – all	727	8,645	9,372

Source: Public Health Scotland (Shielding list), Care Home Flag, National Records of Scotland (Deaths involving Coronavirus in Scotland)[7] and NHS National Services Scotland (Care Home Census).[5]

COVID-19 and other deaths

In the period until (and including) the week commencing 24 August 2020, there were 6,315 non-COVID-19 deaths in the shielding group. Overall, 9% (622 deaths) of all deaths in the shielding group were COVID-19 deaths. Across the population at large, 13% of all deaths in the period between the week commencing 2 March 2020 and the week commencing 24 August 2020 were COVID-19 deaths.

COVID-19 and other deaths subgroup analysis

In the period until 27 September 2020, there were 7,350 non-COVID-19 deaths in the shielding group. The proportion of shielding deaths that were COVID-19 deaths varies between the shielding categories (see Table 7).

Table 7. COVID-19 deaths and non-COVID-19 deaths in the shielding group – by clinical shielding condition (1 March to 27 September 2020)

	Number of COVID-19 deaths	Number of other deaths	COVID-19 deaths as % of all deaths
Severe respiratory condition	341	2,765	11%
Clinician-identified	125	1,590	7%
Cancer	110	2,467	4%
Immunosuppression therapy	87	870	9%
Rare disease	74	527	12%
Organ transplant	19	145	12%
Total	631	7,350	8%

Source: Public Health Scotland (Shielding list) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

COVID-19 death-to-case rates

COVID-19 death-to-case rates are the number of COVID-19 deaths in a certain time period, divided by the number of confirmed COVID-19 cases in this same time period. COVID-19 death-to-case rates give an indication of how likely individuals are to die, if they contract COVID-19.

The evaluation had access to detailed COVID-19 test data, which allowed for subgroup-level comparison between the shielding group and the population at large, for individuals who were admitted to hospital, for any reason, between 1 March and 31 July 2020. COVID-19 death-to-case rates have only been calculated for this subgroup.

There are advantages to looking at this (hospital) subset of the COVID-19 test data: early on in the pandemic, testing was largely hospital-based. It is important to acknowledge the limitations of this dataset. The data include all hospital admissions, related to COVID-19 or otherwise. The data include all positive tests, irrespective of whether testing was performed during the hospital admission or not. The data do not consider the date of testing and the possibility of hospital-onset infection.

Hospital admissions in the shielding group

One in six individuals in the shielding group (29,851) had at least one hospital admission between March and July 2020 (see Table 8). A total of 22,694 of those were tested for COVID-19 and 1,175 tested positive at least once.

Table 8. COVID-19 test and death data – individuals with at least one hospital admission in the shielding group and in the population at large (March to July 2020)

	Admitted (at least once)	Tested (at least once)	Tested positive (at least once)	COVID-19 deaths	Death-to-case rate
Shielding	29,851	22,694	1,175	423	36%
All	187,200	108,968	6,865	1,995	29%

Source: Public Health Scotland (Shielding list), ECOSS, Rapid and Preliminary Inpatient Datamart (RAPID) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

Among those with at least one hospital admission (for any reason) between March and July 2020, COVID-19 death-to-case rates stood at 36% for the shielding group and 29% for the population at large.

COVID-19 death-to-case rate – by age

Among those with at least one hospital admission for any reason between March and July 2020, the COVID-19 death-to-case rate was higher in the shielding group than in the population at large across the different age groups (see Table 9). The difference was more pronounced in the younger age groups.

Table 9. COVID-19 death-to-case rates by age – individuals with at least one hospital admission in the shielding group and in the population at large (March to July 2020)

	COVID-19 death-to-case rate – shielding	COVID-19 death-to-case rate – all
< 55	10%	5%
55-64	22%	16%
65-69	34%	28%
70-79	44%	39%
80+	52%	47%

Source: Public Health Scotland (Shielding list), ECOSS, Rapid and Preliminary Inpatient Datamart (RAPID) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

COVID-19 death-to-case rate – by level of deprivation

Among those with at least one hospital admission for any reason between March and July 2020, COVID-19 death-to-case rates were higher in the shielding group than in the population at large across the different levels of deprivation (see Table 10).

Table 10. COVID-19 death-to-case rates by level of deprivation (1 = most deprived, 5 = least deprived) – individuals with at least one hospital admission in the shielding group and in the population at large (March to July 2020)

	COVID-19 death-to-case rate – shielding	COVID-19 death-to-case rate – all
1	33%	29%
2	37%	29%
3	39%	33%
4	37%	29%
5	35%	26%

Source: Public Health Scotland (Shielding list), ECOSS, Rapid and Preliminary Inpatient Datamart (RAPID) and National Records of Scotland (Deaths involving Coronavirus in Scotland).[7]

References

1 McKeigue P et al. Risk of COVID-19 in clinically extremely vulnerable individuals advised to shield during the epidemic in Scotland – cohort and case-control study [to be published].

2 National Records of Scotland. Mid-2019 Population Estimates Scotland (accessed 18 January 2021).

3 Butler J et al. Understanding healthcare needs of patients shielding during COVID19: a data linkage study of pre-COVID-19 healthcare utilisation [unpublished].

4 Scottish Public Health Observatory. The Scottish Burden of Disease Study, 2016 Deprivation report. The burden of disease is measured in Disability-Adjusted Life Years (DALY). Edinburgh: ScotPHO; 2018.

5 NHS National Services Scotland. Care Home Census for Adults in Scotland Figures for 2007-2017 (as at 31 March).

6 Scottish Government. Trends in daily COVID-19 data (accessed 18 January 2021).

7 National Records of Scotland. Deaths involving coronavirus (COVID-19) in Scotland (accessed 18 January 2021).

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