Covid-19 Shielding Patients Dashboard
Background

Letters are being sent to groups of people considered to be at highest risk should they contract Covid-19. Individuals were identified utilising data sources held centrally at Public Health Scotland (PHS). These high level ‘shielding’ groups are:

1. solid organ transplant recipients
2. people with specific cancers
3. people with severe respiratory conditions
4. people with rare diseases
5. people on immunosuppression therapies sufficient to significantly increase risk of infection
6. people who are pregnant with significant heart disease, congenital or acquired

More details on these groups can be found https://hpspubsrepo.blob.core.windows.net/hps-website/nss/3008/documents/1_covid-19-search-criteria-highest-risk-patients.pdf.

In addition to this, Health Board clinicians and GPs have been asked to review the list of patients and identify further individuals they feel should be shielded but are not in one of the above groups.

In response to a request from a Local Authority, a dashboard and associated word document has been put together to profile the list of shielding patients for service and resource planning. As identified from the LIST covid-19 workplan, other areas had similar asks and after sharing this work with the team, this has since been developed for more areas under a ‘do it once for Scotland’ banner.

Dashboard Content

The dashboard itself is created in R, opens as an html file and is interactive.

Figure 1 – Map

The above map shows the shielding patients either by HSCP locality or intermediate zone, coloured according to a higher population rate. The user can click on an area of the map to find out further details and added interpretation can be added to the left hand side (this is similar across all the tabs). This allows users to see where the highest rate of shielding patients live according to population size and make any change in resources or services as necessary.
The above shows the overall demographics of the shielding patients (age and gender) by locality. This can be used to compare to the overall demographics of the area and compare the demographics of the shielding patients across the localities.

The area comparison tab contains a bar chart of intermediate zone rates (figure 4) ranked by rate which allows intermediate zones where rate is highest to be quickly identified and allows comparison between particular intermediate zones of interest in the area.

The funnel plot (figure 3) allows users to identify outlier intermediate zones by using both the rate of population who are shielding and population size. Outliers can be caused by a number of factors, for example, the characteristics of the population. This tab contains a pop-up box to give users more information on funnel plots and what they show.

There is a final tab named ‘tables’ which shows the raw data tables, should a user prefer to just look at the numbers.

All the above information is also in a word report, minus the interactive features, for those who prefer this format (e.g. for printing purposes).
Next Steps

These dashboards have been developed and shared with local authorities who requested these and also shared with the PHS covid-19 analytical hub. These will be revised following feedback from areas who are using these. Future developments could include: more information on the dashboard themselves e.g. deprivation; updates following the weekly updates that are sent to local authorities; including an option to remove people who have since been removed; information at higher geographies; addition of shielding group and local data mapped alongside this.

The dashboards could also be developed, with clinical input, to broaden this to a wider group of people who aren’t necessarily shielding, but could also be at increased risk if they were to contract covid-19.

Shielding Patient Map – Individual Level Data

A separate but complementary interactive map showing individual level data was also developed in R. The aim of the map was to understand the geographical locations and spatial spread of people identified in the shielding list. Additionally, it was thought that the map could be used as a tool to help the local authority in the planning and delivery of services for these vulnerable people.

Similar to the dashboard, the map opens as an html file. Data for individuals on the shielding list is embedded in this html output file. A high-level screenshot of the map (using dummy data) is provided in Figure 5.

Due to the large number of individuals, markers at this level are clustered and represented by coloured circles that detail the number of people within an area (red = high = hundreds, amber = medium = tens, green = low = single figures). Hovering over a cluster highlights the area that the number of individuals detailed in the cluster are contained within – the corners of the boundary represent individual markers and do not relate to any formal geographical boundary.

The map can be either zoomed in and out or the coloured cluster circles selected – the number of people associated with each circle cluster will aggregate or split depending on the zoom level, as seen transitioning from Figures 5 to 6. Blue marker icons are used to represent individuals on the map, located at associated postcodes (latitude/longitude coordinates). The pop-up boxes for individual markers can contain information for any variable in the dataset but were chosen as CHI and patient name for illustration (Figure 6). Patient age, address and telephone number were also added as requested by East Lothian for inclusion in their maps for local use.
Although the map was initially created for East Lothian, the R syntax was compiled to enable others to easily replicate the output for their own local authority. Initially, the output was discussed and shared with Lothian LIST colleagues and was then produced by Lothian LIST analysts for their respective local authority. This approach provided proof of concept, identifying it as a feasible ‘do it once for Scotland’ project that could be scaled up to wider LIST colleagues so that each local authority LIST representative would be able to discuss and agree production of the map with the approved shielding list contacts.

As the roll out is at an early stage it is difficult to determine how the maps will be utilised within each local authority area. Currently East Lothian are using the map information at both a strategic and operational level: to understand the geographical spread of individuals and impact on services while also requesting geographically smaller focussed maps at a community council level to plan logistical aspects of food and medicine deliveries. Information is only shared where it is necessary and appropriate, and is managed in line with agreed protocols. Other areas will feedback and update on how they’ve used these data in due course.