

Research note

May 2019

Mapping indicators of population change in Scotland (2011-19)

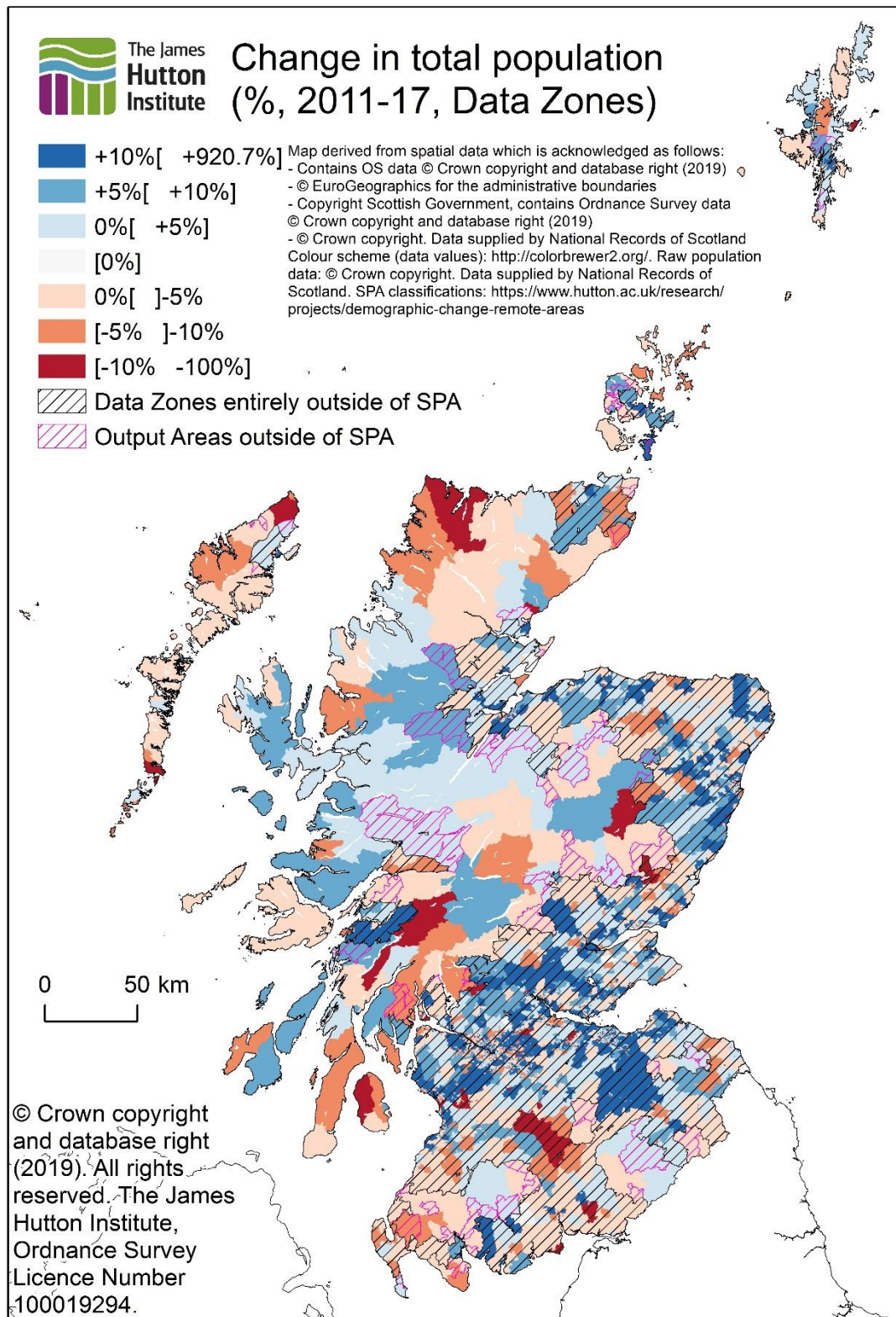


Jonathan Hopkins

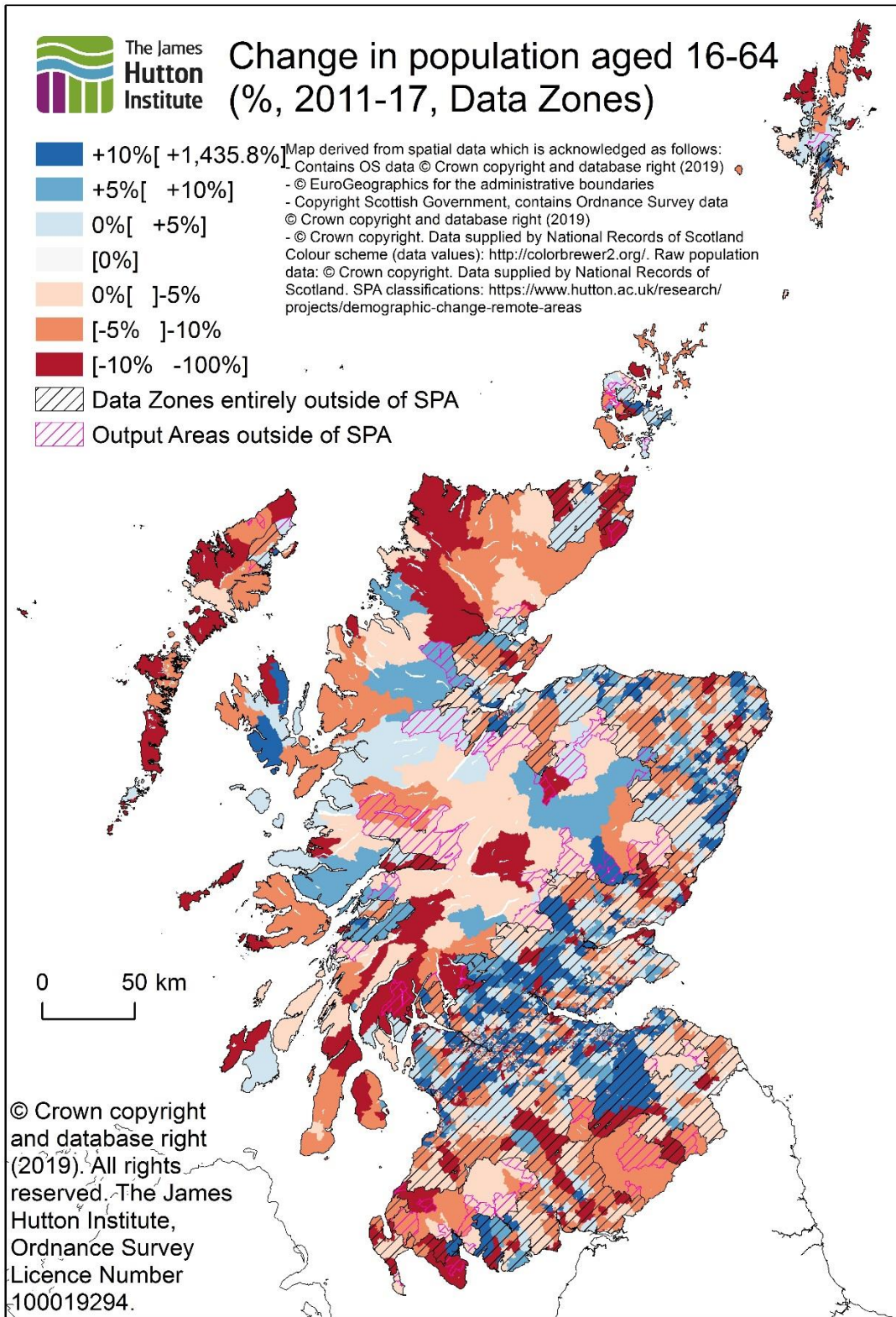
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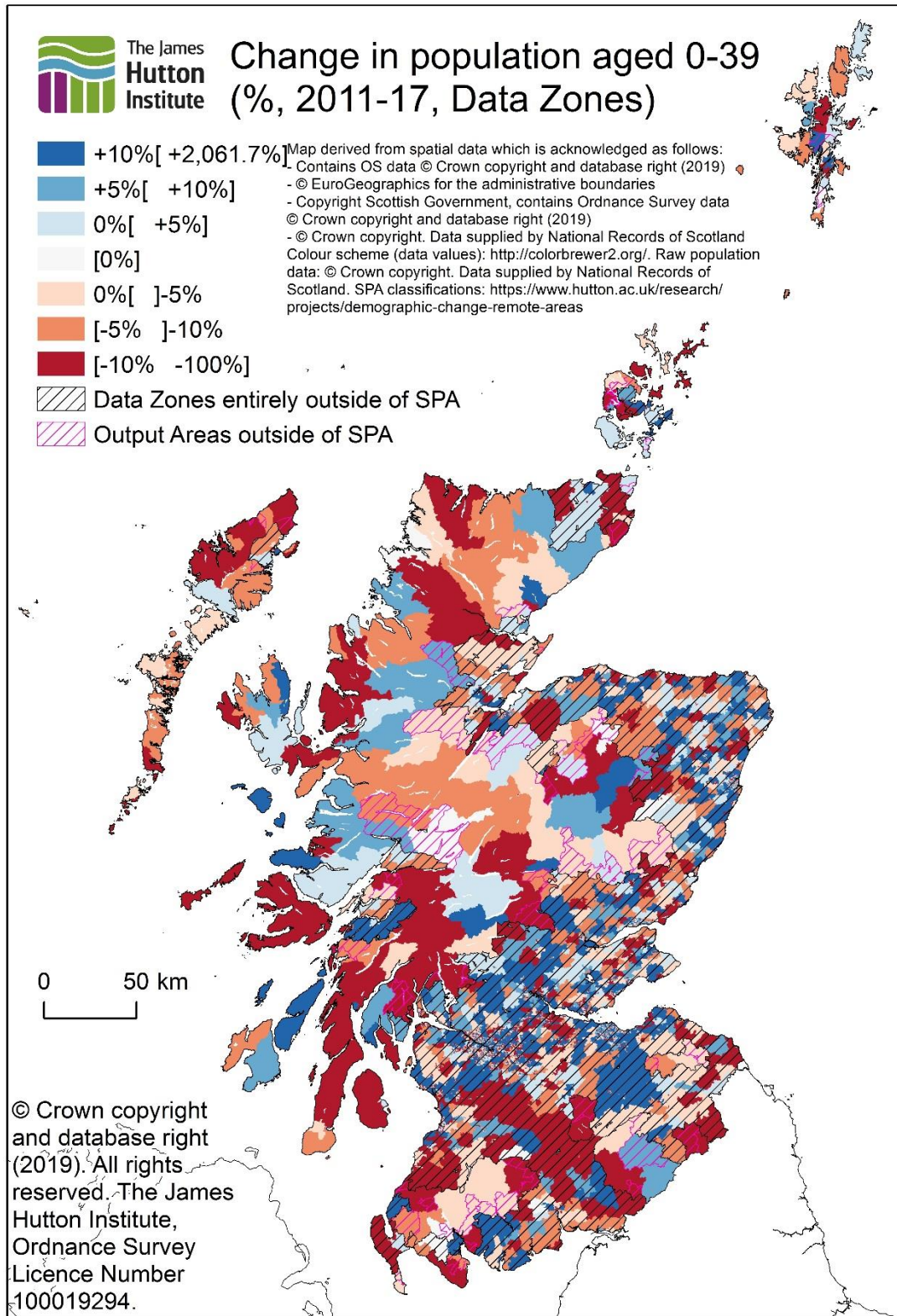
Map 1



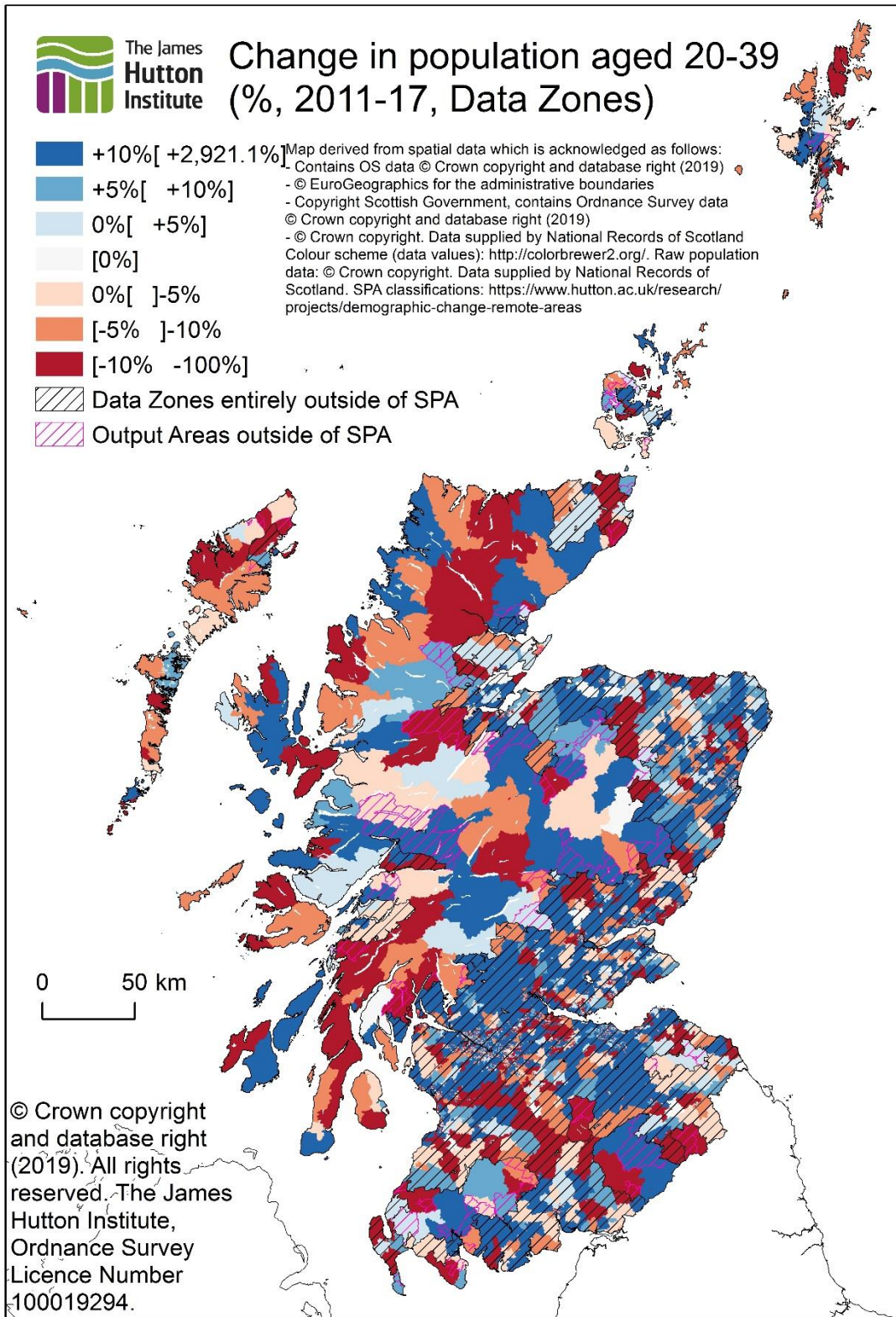
Map 2

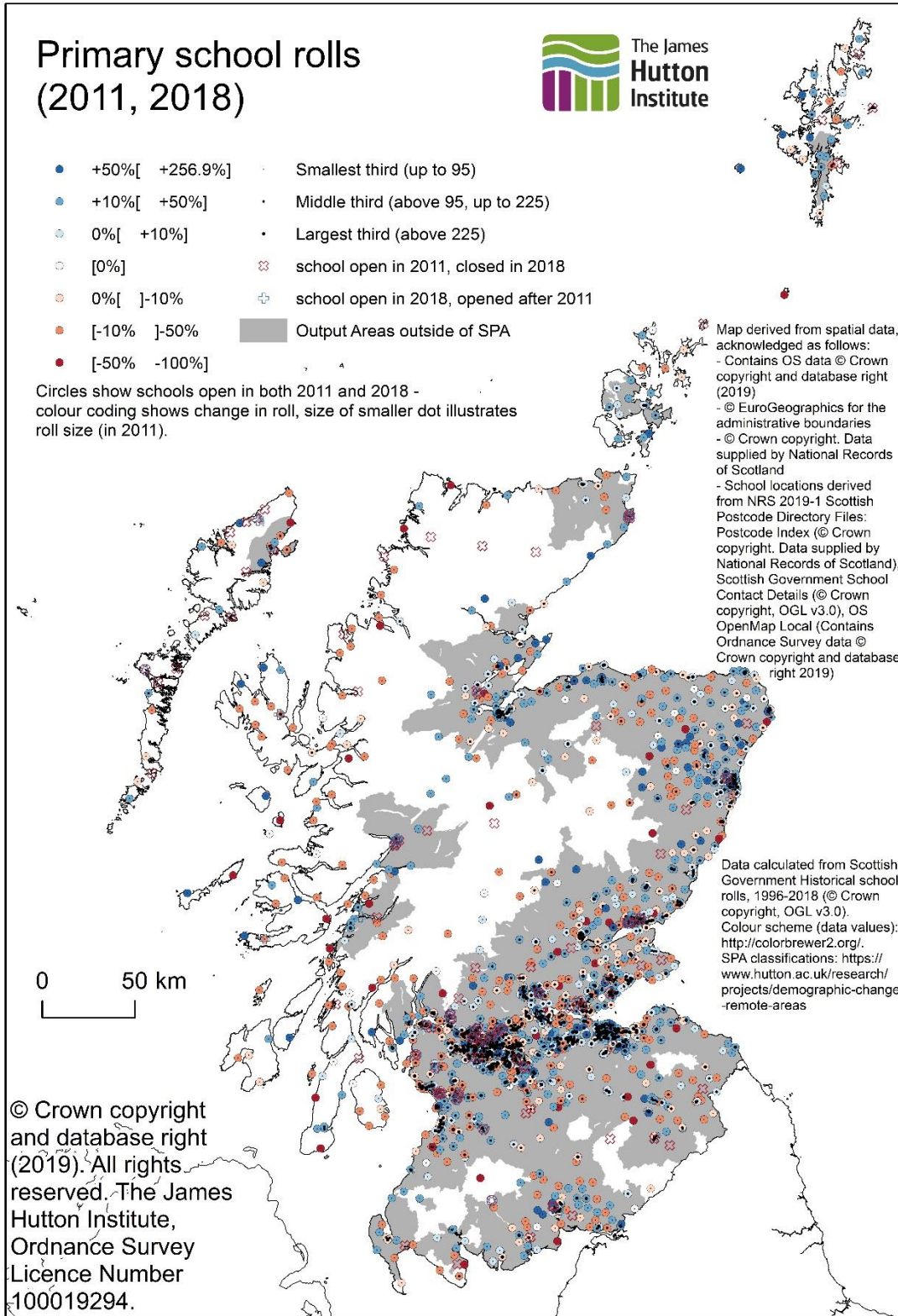


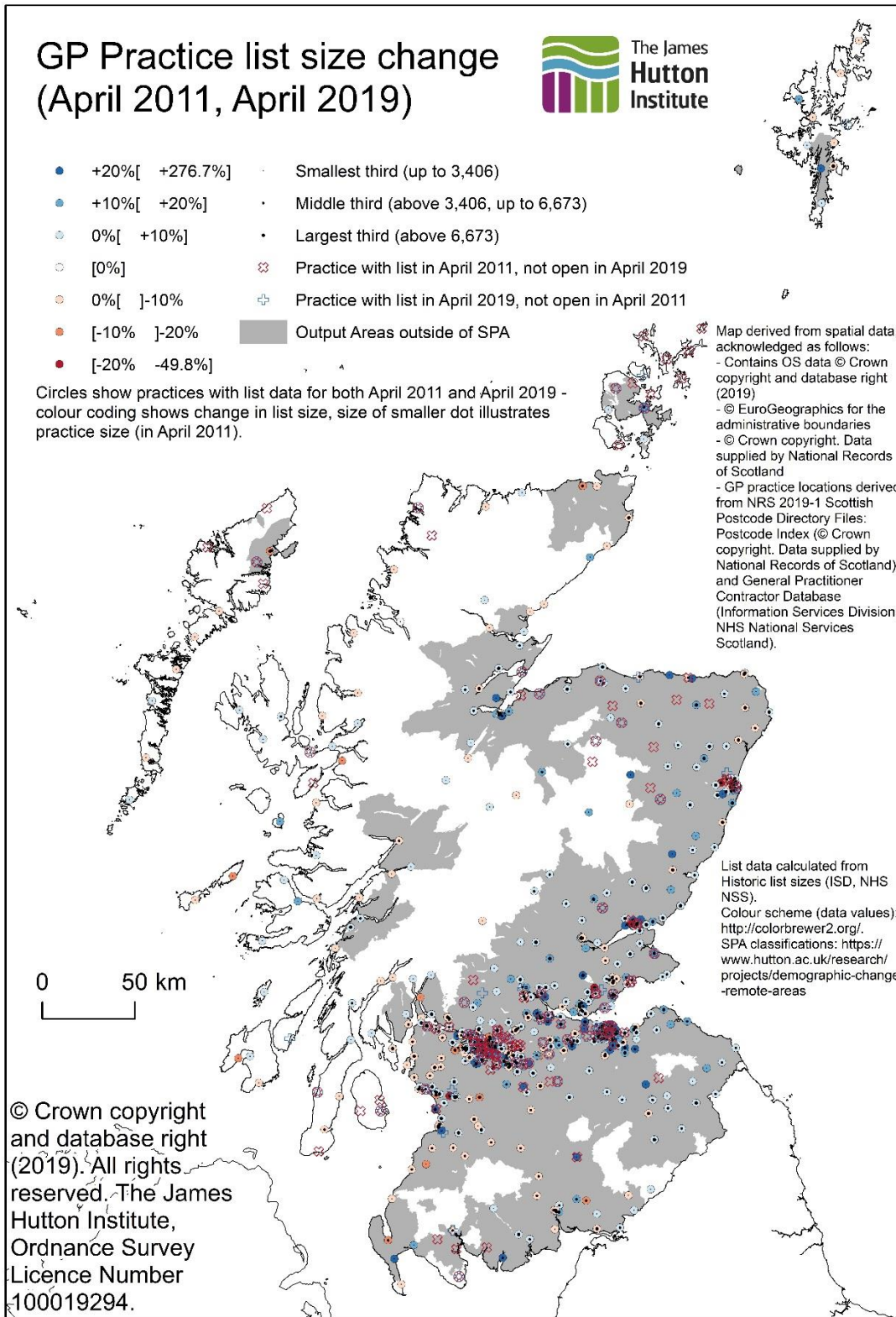
Map 3



Map 4







Summary of data sources and analysis

Population change in small areas, as shown in Maps 1-4, was calculated using the Population Estimates (Current Geographic Boundaries) published by National Records of Scotland¹.

The analysis of changes in school rolls (Map 5) used the school contact details published by the Scottish Government², which provides information on the schools open in each year, their address and other information. The postcodes in these addresses were matched to spatial data (grid references) using information in the most recent postcode index, supplied with the Scottish Postcode Directory (source: National Records of Scotland)³, which contains information on active and deleted postcodes. Postcodes which were active/valid when the school details were acquired were identified and were used for the match: in a minority of cases, postcodes were matched using the most recent postcode record or manually⁴. Historical school rolls were sourced from additional records published by the Scottish Government⁵, open schools in three years (2011, 2015, 2018) were flagged based on a school code column and the school contact details, and non-primary and Independent schools were removed (the latter due to missing data). The location information for open primary schools in three years were then added to the historical rolls, using the school code to match records. Finally, three sets of records were identified and exported:

- Schools which were open in both 2011 and 2018. These are shown on the map as circles, shaded based on change in roll from 2011 to 2018. The size of a dot in the centre of the circle is proportional to the 2011 roll.
- Schools which were open in 2011, but were closed in 2018.
- Schools which were not open in 2011, but which were open in 2018.

The map shows location data from 2018, with the exception of schools in the second category described above, where the 2011 grid references were used.

¹ Population Estimates (Current Geographic Boundaries), National Records of Scotland. Downloaded from statistics.gov.scot. © Crown copyright. Data supplied by National Records of Scotland.

² School Contact Details, Scottish Government. © Crown copyright. Contains public sector information licensed under the Open Government Licence v3.0

³ 2019-1 Scottish Postcode Directory Files: Postcode Index, National Records of Scotland. Contains NRS data © Crown copyright and database right 2019

⁴ In one case this match used Ordnance Survey OpenMap Local data (Contains Ordnance Survey data © Crown copyright and database right 2019) and a school location sourced from Google Maps.

⁵ Historical school rolls, 1996-2018, Scottish Government. © Crown copyright. Contains public sector information licensed under the Open Government Licence v3.0

The map of GP practice populations (or list sizes) (Map 6) was created using contact details for practices from April 2011⁶ and April 2019⁷, historic list sizes⁸ for the appropriate months were matched to these using a practice code, and spatial data was sourced from the Postcode Index cited above. Again, valid postcodes for the months noted above were identified and used for the link of location data; for a small number of cases the most recent postcode record was used for this match, instead. Three subsets of records were exported, representing practices with list data for both April 2011 and April 2019 (for which change in the list size is mapped) and also practices open (with data) in only one of these months.

All maps show the location of the Sparsely Populated Area (SPA) within Scotland: this area was defined using Census Output Areas and covers a region of rural areas and small towns from which less than 10,000 people are accessible within 30 minutes' travel. The data sources and methods used to define this, and create Output Area and Data Zone-based lookup tables, are described in two reports⁹.

Guidance on interpretation

The maps show estimated population change, or (in the case of GP practices and primary schools) proxies for population change. In addition to overall population change (Map 1), change in the size of key population groups: the 'working age' population (Map 2), children and young adults (Map 3), and young adults (Map 4) are shown. Projections suggest that the SPA population will fall by more than a quarter from 2011 to 2046, and the working age population will decline by a third over the same period¹⁰, these trends are driven by limited numbers of children and younger people, and therefore these are key population cohorts to understand. In addition,

⁶ GPs contracted to work in Scottish General Practices contact details; as at 01 April 2011, General Practitioner Contractor Database, Information Services Division, NHS National Services Scotland

⁷ GPs in Practices Details - as at 01/04/2019, General Practitioner Contractor Database, Information Services Division, NHS National Services Scotland

⁸ Historic list sizes, Information Services Division of NHS National Services Scotland

⁹ Copus, A. and Hopkins, J. (2017) Outline Conceptual Framework and Definition of the Scottish Sparsely Populated Area (SPA). Available at

https://www.hutton.ac.uk/sites/default/files/files/RD%203_4_1%20Working%20Paper%201%2001_1%20161117.pdf. Hopkins, J. and Copus, A. (2018) A Demographic Profile of the Scottish Sparsely Populated Area (SPA) 1991-2037. Available at

https://www.hutton.ac.uk/sites/default/files/files/RD%203_4_1%20Working%20Paper%202%2001_2ii%20270218%20-%20published.pdf.

¹⁰ Copus, A. and Hopkins, J. (2018) Demographic change in the Sparsely Populated Areas of Scotland (1991-2046). Available at <https://www.hutton.ac.uk/sites/default/files/files/research/srp2016-21/RD3.4.1%20Note%20WP1-3%20web%20-%20published.pdf>

research¹¹ by Community Development Lens (CoDeL) in Uist suggests a trend of younger people and young families moving to the region.

The small area map of total population change from 2011 to 2017 emphasises the fact that population trends in the SPA have not been stable or uniform across the region: although past research has measured an overall population decline, there is evidence that some parts of the SPA (shaded in blue) have seen a recent increase in population. It should be noted that on 'static' maps such as these, Data Zones in rural areas with a low population density have a larger area and appear more prominent, and may cover multiple islands. For instance, the Data Zone containing the Small Isles (which saw a population increase of over 5%) covers these islands and part of the mainland (near Ardnamurchan). Another Data Zone with an increase of more than 5% covers Jura, Scarba and Colonsay.

The maps of population sub-groups show more mixed patterns: broadly, the picture in island areas for changes in the populations aged 16-64 and 0-39 appears more negative than for total population, but some locations have seen growth. The population trend for young adults (age 20-39) appears to be much more positive, although this is a relatively small subset of the population.

The mapping of changes in school rolls and GP practice lists (Maps 5 and 6) shows these changes at point locations – although these services are not provided everywhere, they provide finer detail and can be compared with the trends in population change described above. It should be noted that the very high density of these facilities in larger cities means that patterns in these areas are obscured. Locations where new facilities have opened since 2011 (marked by a blue cross), and where existing facilities have seen growth in rolls/lists (shown by blue circles) are likely to be experiencing population growth; however, locations where services have closed (red crosses) or where primary schools and GP practices have seen a reduction in pupils or patient numbers (orange/red circles) may have had a loss of population. Changes in rolls or lists at single schools or GP practices should be compared with other nearby trends. For example, GP practices have opened on Rousay (north of Orkney), Arran and near to Stornoway: however, other practices in these locations have closed since 2011, implying broader population loss (and potentially centralisation of services).

¹¹ CoDeL (2018) The Young Uibhisteach. Available at <http://codel.scot/wp-content/uploads/2018/10/The-Young-Uibhisteach--CoDeL-Final-Report-Sept-18.pdf>.

Acknowledgements

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Any views expressed are those of the author and are not necessarily those of the Scottish Government, RESAS or SEFARI. Any errors in data analysis or interpretation are those of the author.

The data analysis and mapping was carried out using appropriate software¹².

¹² R Core Team (2018) R: A language and environment for statistical computing. R Foundation for Statistical Computing. Vienna, Austria. <https://www.R-project.org/>; Esri (2017) ArcGIS Desktop 10.5.1. Esri, Redlands.