The Health of Places:
Disaggregating measures of health and defining more equal places

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Key Messages

1) How we disaggregate measures of health is important

2) There is a lot of variation in health even within quite small areas

3) To better understand inequalities we need better definitions of small areas

Background

We need to understand the complex relationship between health and other aspects of people's lives.

We tend to do this using area-level (or place-based) measures of health.

However, we need to be confident that the measures of health we are using accurately reflect the levels of health of people living within that place.

There is no real consensus as to how we show disaggregate measures of health to smaller geographies.

Main objectives

1. Systematically examine the existing literature that attributes health measures reported at an aggregate level to smaller geographical areas. Then use the most appropriate technique to attribute a range of health measures (including physical and mental) to small geographic areas;

2. Use multidisciplinary approaches to define a new small-level place-based measure of health geography, defined in terms of more equal health within these new areas;

3. Analyse the relationship between health measures and social and economic outcomes at small geographical areas, including standard definitions and our new definition.

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How we disaggregate measures of health is important

Figure 1: Self-assessed health of Lower-layer Super Output Areas in County Durham under various disaggregation methods
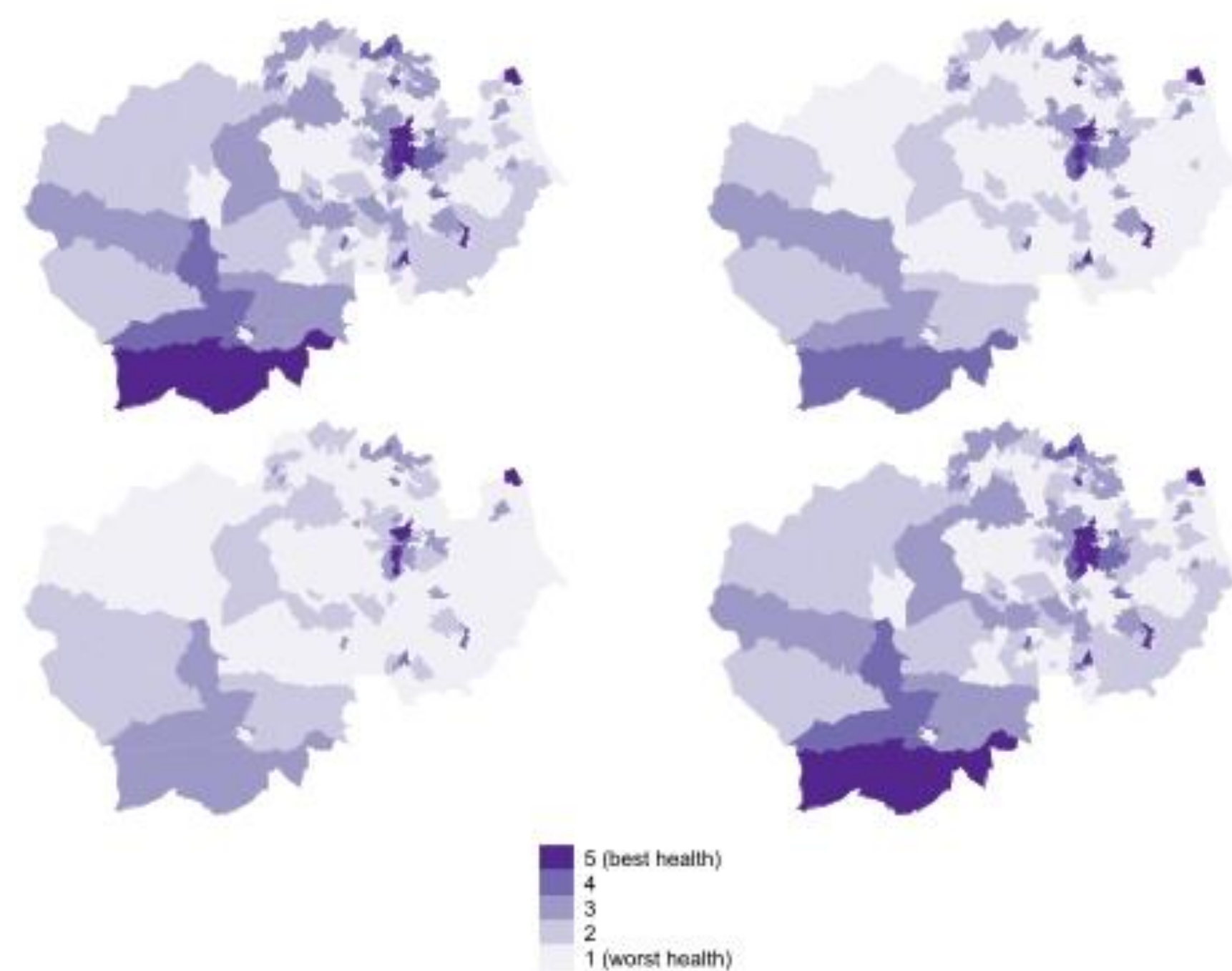

Top left panel = 'true' values obtained from Census 2021. Top right panel = when we adjust for age and gender. Bottom left panel = when we adjust for only age. Bottom right panel = when we adjust for age, gender, ethnicity, and the Index of Multiple Deprivation (IMD)

We show that it is important to control for population characteristics when we take measures of health reported at larger areas and disaggregate them to smaller areas

Some small areas have very unequal health within them

Figure 2: The average self-assessed health of Output Areas in County Durham
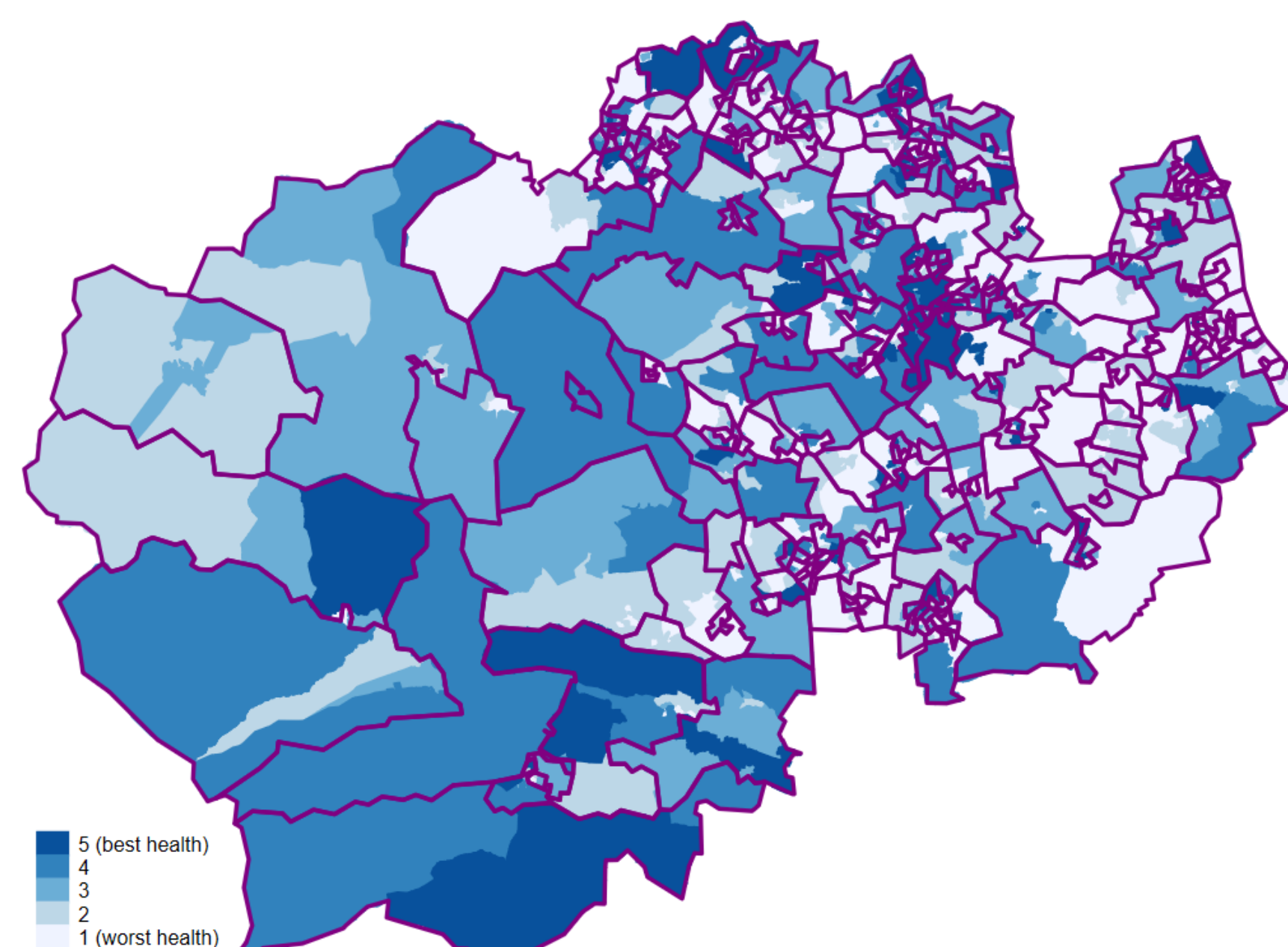
Some LSOAs contain OAs where the self-assessed health is amongst the worst in the country as well as some OAs where the health is amongst the best in the country.

We developed an algorithm to help us combine OAs together in a different way such that neighbouring OAs were joined together to minimise the variation in health within the newly constructed areas (of similar size to a LSOA).

Note: *Data on self-assessed health taken from the 2011 Census*

We can create small areas with more equal health within them

Table 1: Comparing variation within areas of existing geographies and our prosed new geographies

	Current LSOAs	New areas
Number (N)	34,753	31,324
Number of OAs in LSOA/new area	5.21 [Range: 2 to 13]	5.24 [Range: 4 to 7]
Population size	1,614 [Range: 983 to 8,300]	1,791 [Range: 1,224 to 9,36
Average 'health' of an area	80.7% [Range: 48.0 to 97.0]	80.6% [Range: 48.2 to 97.1
Within area standard deviation	5.15 [Range: 0.21 to 28.21]	3.17 [Range: 0.16 to 16.4

Our Newly defined areas outperform existing LSOAs in minimising the variation of self-assessed health (Table 1). This is important if we want to use area-based measures of health. This will not eradicate, but will help reduce the risk of ecological fallacy.

What we are doing now

We are replicating our analyses using the most up-to-date data from Census 2021

We are also considering other measures of health, such as disease prevalence and mortality, as well as measures of health care utilisation

We are working with some Combined Authorities and ICSs so understand the implications of our proposed new areas

Implications

We have shown that **it is important to correctly disaggregate measures of health** to smaller geographical areas.

Further, we have shown that **health can vary substantially within small areas** and so to get better information on population health we need to consider more **homogenous areas** with respect to health.

This should allow us to better understand **health inequalities**