IDENTIFYING GEOGRAPHICALLY CLUSTERED HEALTH INEQUALITIES IN ENGLAND

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Key take home points

___ Geographic inequalities in health and socio-economic determinants across England are large and widening



___ We found four distinct clusters where those with higher wealth also had better health. Improving national health to match the most wealthy cluster would improve life expectancy by 2 years

Objectives

- Inequalities in health and their determinants are widening
- How policy should be best used to address these inequalities and whether these indicators are correlated is unclear
- We aimed to:
 - Identify and characterise geographical clusters in health and socioeconomic inequalities in England; and
 - Assess the effect of reducing geographical inequalities in health

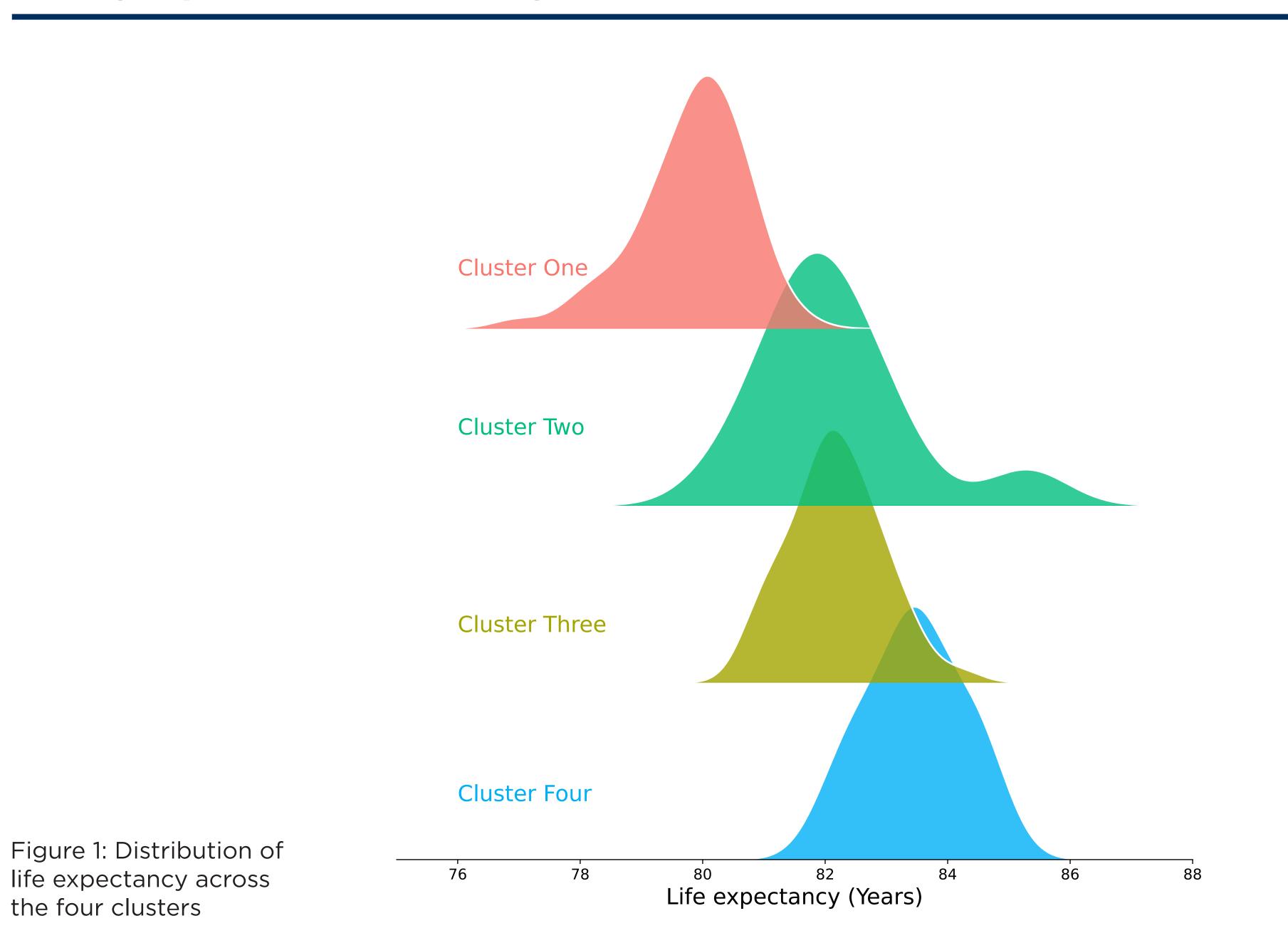
Methods

- Data on 26 health and socio-economic indicators at small area level (149 Upper Tier Local Authorities) were extracted from English administrative databases, for the latest available year in 2015-2019
- Pearson correlations between indicators at small area were analysed
- Areas with similar socio-economic profiles were grouped using hierarchical clustering, then health indicators were compared across clusters
- Effects of interventions to improve health outcomes for all clusters to match the least deprived cluster were estimated by:
 - Calculating the average health outcome for each cluster
 - Calculating the overall national average from this - Calculating the national average if all clusters matched the least deprived cluster (i.e. the national average will equal the health outcome of the least deprived cluster)
 - The difference between the two national averages is the estimated effect of improving that health outcome

What is hierarchical clustering?

- Hierarchical clustering is an algorithm that groups similar variables into clusters
- Where the variables (in this case wealth variables) within each cluster should be broadly similar and the variables between each cluster should be broadly different
- The hierarchical algorithm first groups the variables that are most similar (i.e. closest to one another) and then the next variables closest and so on until a set number of clusters is found

Geographical clustering of wealth variables



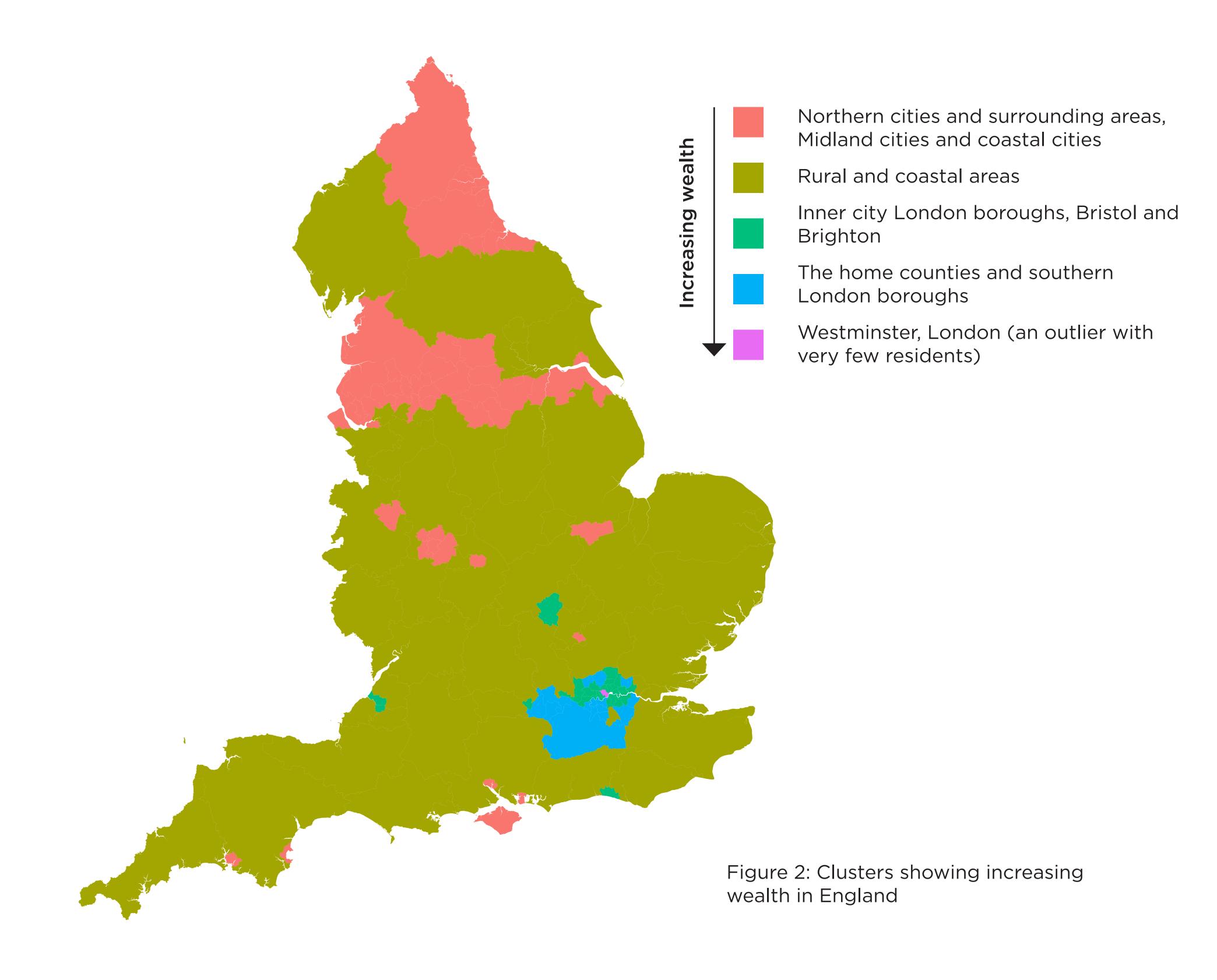
Results



- Behavioural risk factors (such as smoking, obesity and alcohol consumption) correlated with life expectancy, healthy life expectancy and socio-economic indicators
- Four key geographic clusters of similar socio-economic profiles were identified (from most deprived to least deprived):
- Northern cities and surrounding areas, Midland cities and coastal cities
- Rural areas
- Inner-city London boroughs, Bristol and Brighton
- Home counties and outer London boroughs
- Westminster was also determined as a cluster, this is an outlier due to the small number of residents and as such is not included within additional calculations
- The most deprived clusters displayed multi-dimensional health disadvantages
- Their residents had the lowest life expectancy and highest levels of depression, disability and child obesity
- We found that improving health to match the least deprived cluster (home counties) could potentially improve health outcomes:
- Life expectancy/health life expectancy could potentially improve by **2.0/3.3 years**
- Depression prevalence could potentially reduce by 3% from 11%
- Childhood obesity prevalence could potentially decrease by 3% from 35%

The most deprived clusters displayed multi-dimensional health disadvantages

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Conclusions

- There are large inequalities in health outcomes across the country, with a 8 year gap in life expectancy between the most and least deprived areas and a 16 year gap in health life expectancy
- These health outcomes correlate and cluster with both income and wealth indicators
- Granular estimates of variation in geographical patterns of inequalities and unmet need could inform more effective precision public health approaches.



Scan this QR code for an interactive visualization of the analysis



