Background:
Health inequalities in the UK and other advanced economies are receiving renewed attention by the public and governments in light of the Covid-19 pandemic. Current data on mortality and longevity in England lack precision either in space or in time. We estimated trends from 2002 to 2019 in life expectancy for all 6,791 English Middle-layer Super Output Areas (MSOAs, median population 7,985 in 2019).

Methods:
We used data for all deaths in England from 2002 to 2019 with information on age, sex and MSOA of residence and data on population by age, sex and MSOA. We used a Bayesian hierarchical model to obtain stable estimates of age-specific death rates by sharing information across age groups, MSOAs and years. We used life-table methods to calculate life expectancy at birth by sex and MSOA.

Results:
In 2002-2006 and 2006-2010, the vast majority of MSOAs experienced a life expectancy increase for both sexes. In 2010-2014, female life expectancy decreased in 322 (5%) of MSOAs for women. By 2014-2019, the number of MSOAs with declining life expectancy was 1,178 (17%) for women and 635 (9%) for men. The life expectancy increase from 2002 to 2019 was smaller where life expectancy had been lower in 2002, mostly northern urban MSOAs, and larger where life expectancy had been higher in 2002, mostly MSOAs in and around London. As a result of these trends, the gap between the lowest and highest MSOA life expectancy increased from 2002 to 2019, to reach 20.6 (95% credible interval 17.3-24.4) years for women and 27.2 (23.4-31.7) years for men.

Conclusions:
This study highlights not only rising inequality, but also declining life expectancy in a large proportion of English communities. The post-Covid rebuild policies in England must include pro-equity economic and educational policies, and expansion of public health and healthcare.

Key messages:
- Between 2014 and 2019, 17% and 9% of communities in England underwent a decrease in life expectancy for women and men respectively, highlighting the immediate need for equity-focused policies.
- For women, 2% of small areas in England have experienced a long-term decline in life expectancy between 2002 and 2019.

High-resolution spatiotemporal analysis in 6,791
English areas reveals declines in life expectancy
Theo Rashid

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