Health haves, health have nots, and heterogeneity in population health

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There is approximately an 18-year difference in male life expectancy between Japan (80·5 years) and Sudan (62·4 years).[1] The study by Laura Dwyer-Lindgren and colleagues[2] in this issue of *The Lancet Public Health* shows that there is also an approximately 18-year difference in male life expectancy between the census tracts with the highest and the lowest life expectancy in King County, WA, USA. There is approximately a 14-year difference in female life expectancy between the UK (83·0 years) and Senegal (68·6 years),[1] which is similar to the gap in the female life expectancy between the census tracts with the highest and lowest female life expectancy in King County.[2] These data are perhaps more remarkable since overall health in King County is among the best in the USA, ranking in the 95th percentile among county health nationwide. Although public health writing often comments on the overall poor health indicators in the USA by comparison with peer high-income countries,[3] and although recent publications have shown some of the deep health divides across counties in the USA,[4] this paper is the first to show these enormous differences by census tracts within one, overall high performing county. These data are an important reminder of the health divides within the USA and occasion a revisit of three key principles that inform population health.

First, these data highlight the health divides within one high-income country, casting a harsh light on the growing problem of health haves and health have nots in the USA. Health inequities have long characterised the US health landscape, tightly linked to both socioeconomic position and race or ethnicity. Although overall racial and ethnic health gaps are narrowing,[5] the gap between health indicators among the poorest 50% of Americans and the richest 50% is now wider than it has been in the past,[6] as it is between the richest and poorest quintiles.[7] Simply put, a substantial proportion of the US population is gradually being left behind on health achievement. Apart from the moral challenge presented by such health inequities, these health gaps have broader national implications. For example, areas in the USA where wellbeing has deteriorated during the past decades overwhelmingly voted for Donald Trump—a protest candidate—in the last US election.[8] The health implications of the actions of the Trump administration are pervasive, and, sadly, likely to further deepen these same health inequities that in part propelled his candidacy to the presidency.[9] The data from Dwyer-Lindgren and colleagues[2] are a sobering reminder that these divides are not simply North–South or East–West divides in the USA but rather stark, geographically adjacent health differences.

Second, the demonstration of intra-county health inequalities is a powerful reminder of the heterogeneity in population health, and how a study of such variability can point to the underlying causes of population health and, by extension, suggest paths to solutions. Population health science has long been concerned with aggregate health indicators. However, the study of variability can guide us to understand the factors that confer both vulnerability and resilience.[10] The demonstration of geographically proximate health variability raises several questions. What are the small-scale geographical variations in the causes of health that can explain these consequences? What are the characteristics of particular neighbourhoods that still have positive health indicators despite being marked by other vulnerabilities? Dwyer-Lindgren and colleagues take a first step in this direction, showing the pathologies that explained the observed heterogeneity. This analysis goes some way towards helping us to infer the factors that might be driving differences in, for example, ischaemic heart disease. The authors are correct in noting the behavioural factors that can contribute to these differences, and stop a step short of considering the structural conditions that in turn pattern behaviour and contribute to the observed health differences. One hopes that this work can lead to more comprehensive mapping of the geography of the foundational drivers of health, pointing to local action that can lead to improvement in the health of local populations.

Third, this work reminds us of one of the most important challenges faced by those charged with improving the health of populations: the balance we need to strike between promoting overall health and the imperative of tackling health inequity. Population health

is typically measured at a variety of administrative levels, typically in the USA at the county or the metropolitan statistical area level. It is therefore entirely rational that regional authorities aspire to measure their health successes at these levels as illustrated, for example, by the US county health rankings. Unfortunately, the easiest way to improve overall county health is through efforts that reach those who are easiest to reach, improving overall health by targeting the so-called already health haves. This approach stands to improve overall county health while widening intra-county health divides. This is a fundamental challenge in population health science[11] and requires an honest engagement with the values that ultimately determine what we choose to do and why we do it. Work that highlights the unconscionable health gaps within one of the healthiest counties in the USA should jolt us into a reckoning with the centrality of health inequalities to population health, and push us to consider the trade-offs we might have to make as we aspire to improve population health.

For more on **US county health rankings** see http://www.countyhealthrankings.org

In sum, the demonstration of substantial intra-county health variability in one of the healthiest counties in the USA is an important illustration of some core concepts in population health science. This work also pushes us to confront some of the challenges we face as we aim to improve the health of populations. One hopes that the findings of this study lead to the expansion of analytical research that provides further micro-level mapping of the foundational causes of population health, guiding efforts that can grapple with these causes with the aim of improving population health.

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