Exploring Mortality Trends by Socio-Economic Group

The power of individual-level data

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Introduction

Introduction
What is Socio-Economic Deprivation?

Society is not equal!

Socio-economic deprivation covers things like:

- Access to healthcare
- Education
- Income
- Housing & Living Environment
- …etc

Socio-economic differentials capture differences in mortality…

…and mortality trends

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Constructing Socio-Economic Indices
SOA Socio-Economic Index (SIS)

Typically, socio-economic information is available at small census geographies:

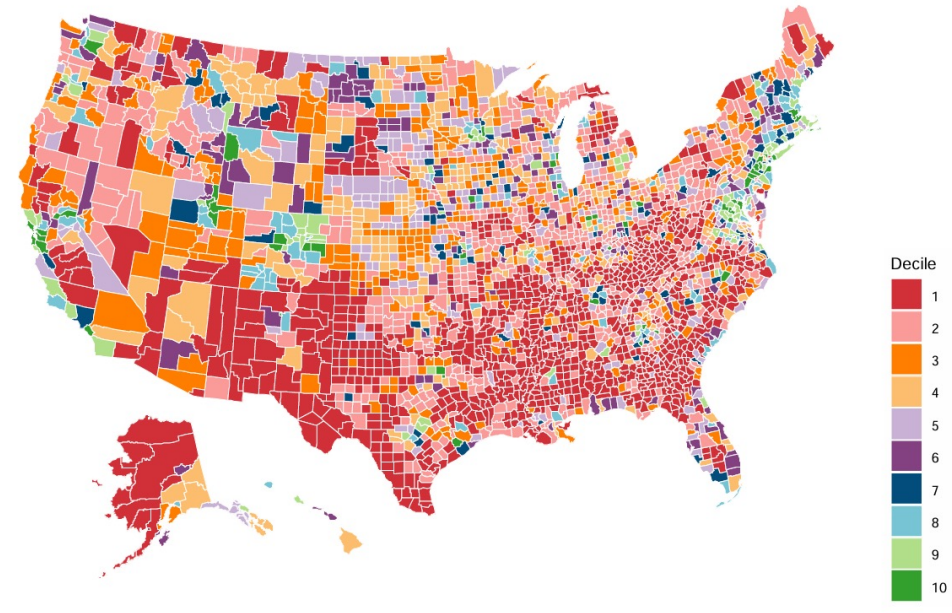
- Output Areas in the UK (~310 persons)
- Census Tracts in the US (~4,000 persons)

HOWEVER, deaths data is only available at a less granular level:

- Lower Super Output Areas (LSOAs) in the UK (~1,500 persons)
- Counties in the US (~105k persons)

Areas can be ranked from least to most deprived.

Figure 6c
COUNTIES BY SOCIOECONOMIC DECILE (WEIGHTED BY POPULATION), 2015–2019



Note: The first decile represents the 10 percent of the population in counties with the lowest SISs and the 10th decile represents the 10 percent of the population in counties with the highest SISs.

Availability of mortality data restricts the granularity of the socio-economic groupings

Source: M Barbieri. Mortality by Socioeconomic Category in the United States. Society of Actuaries

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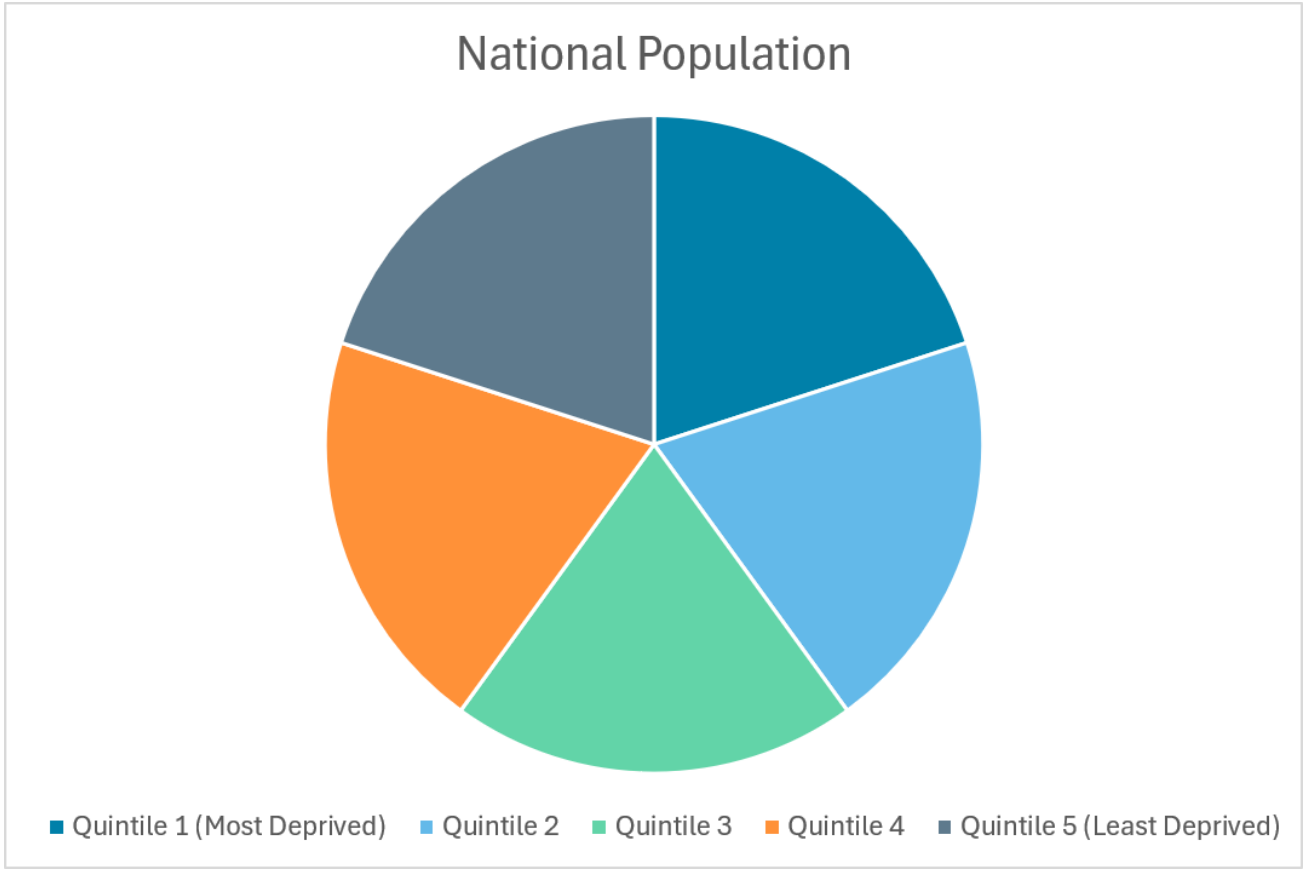
Socio-economic groups (SEG) to assess mortality trends
Typically constructed to divide population into evenly sized buckets



Illustrative example

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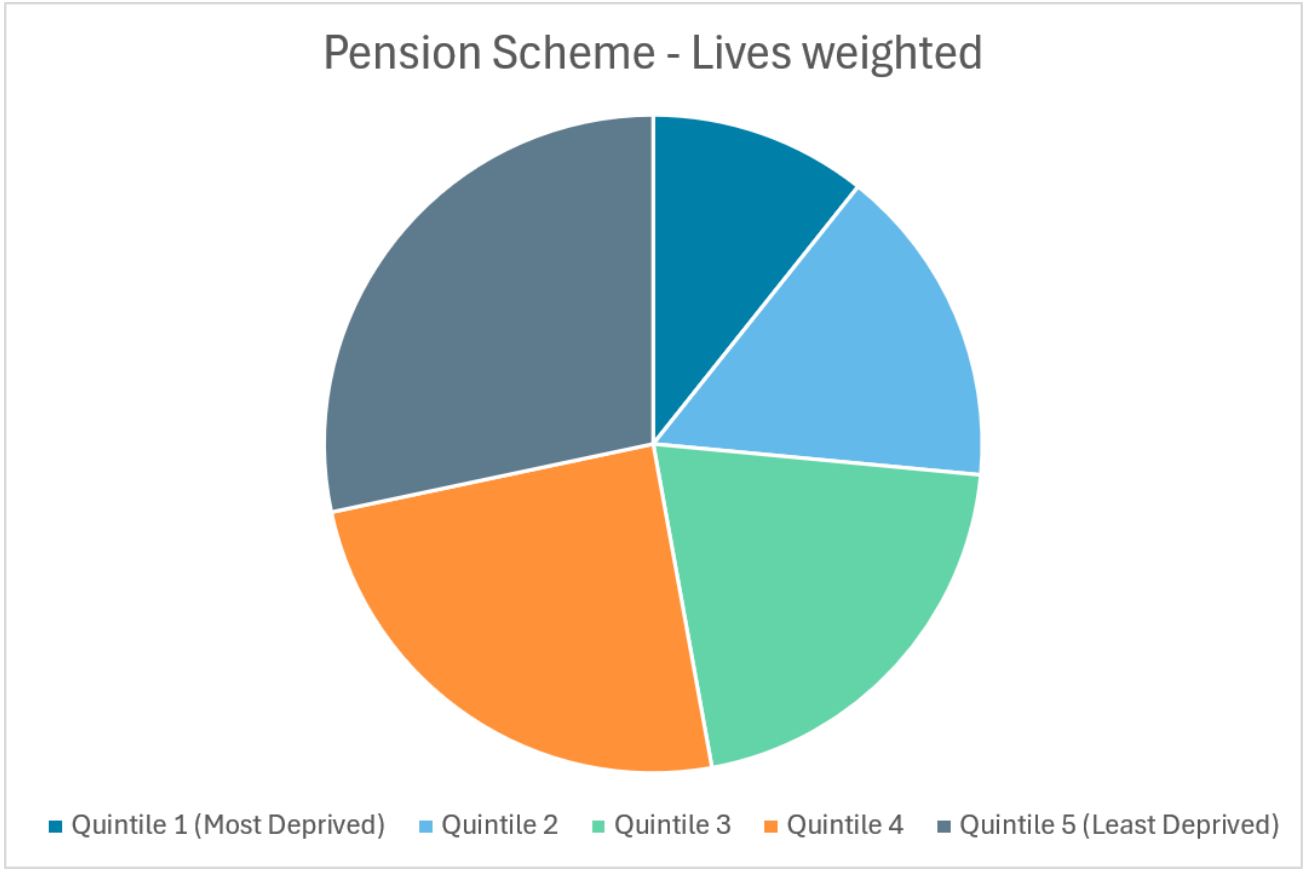
Pension schemes don’t look like national population
Typical distribution weighted towards higher SEG



Illustrative example

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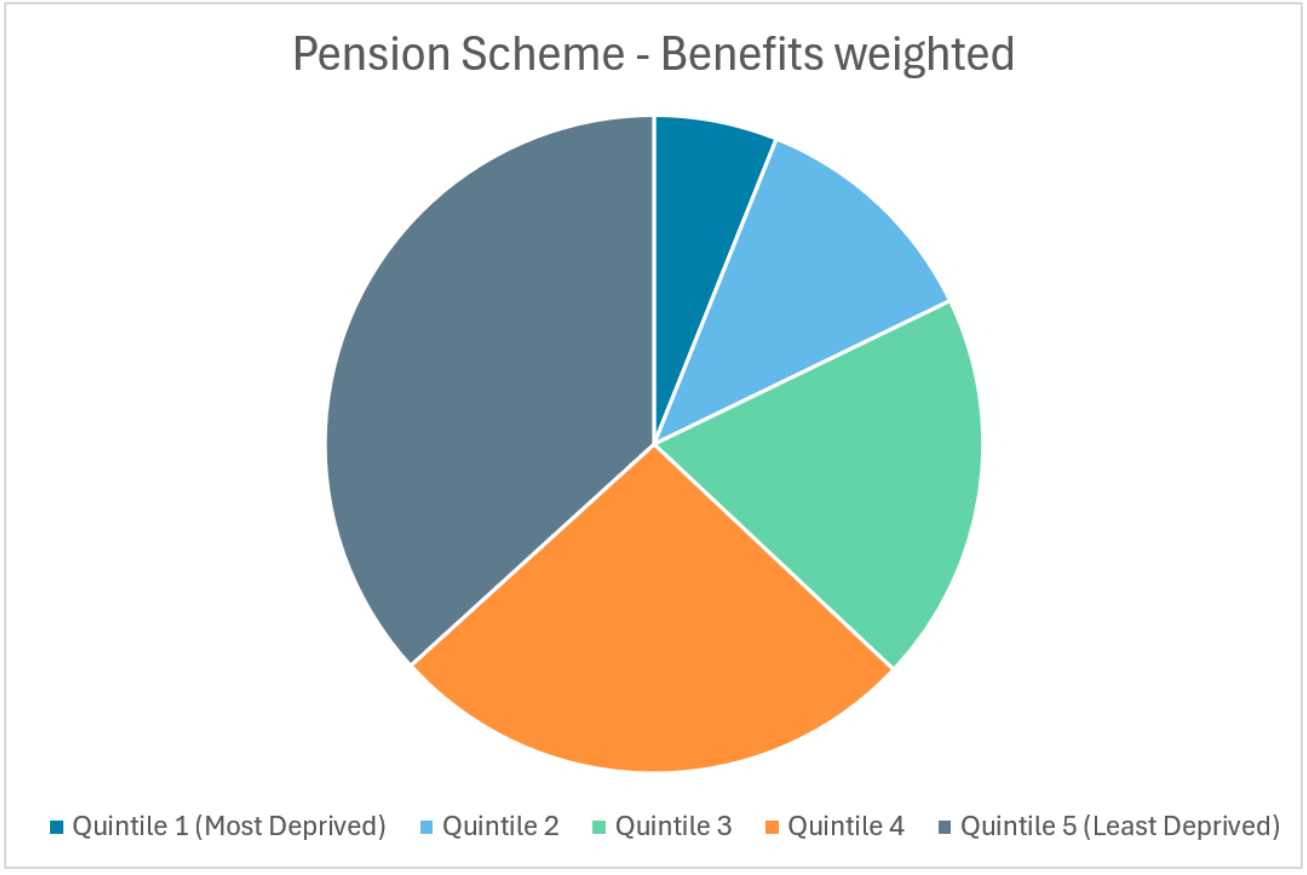
Pension schemes don’t look like national population
Higher SEG have higher wealth



Illustrative example

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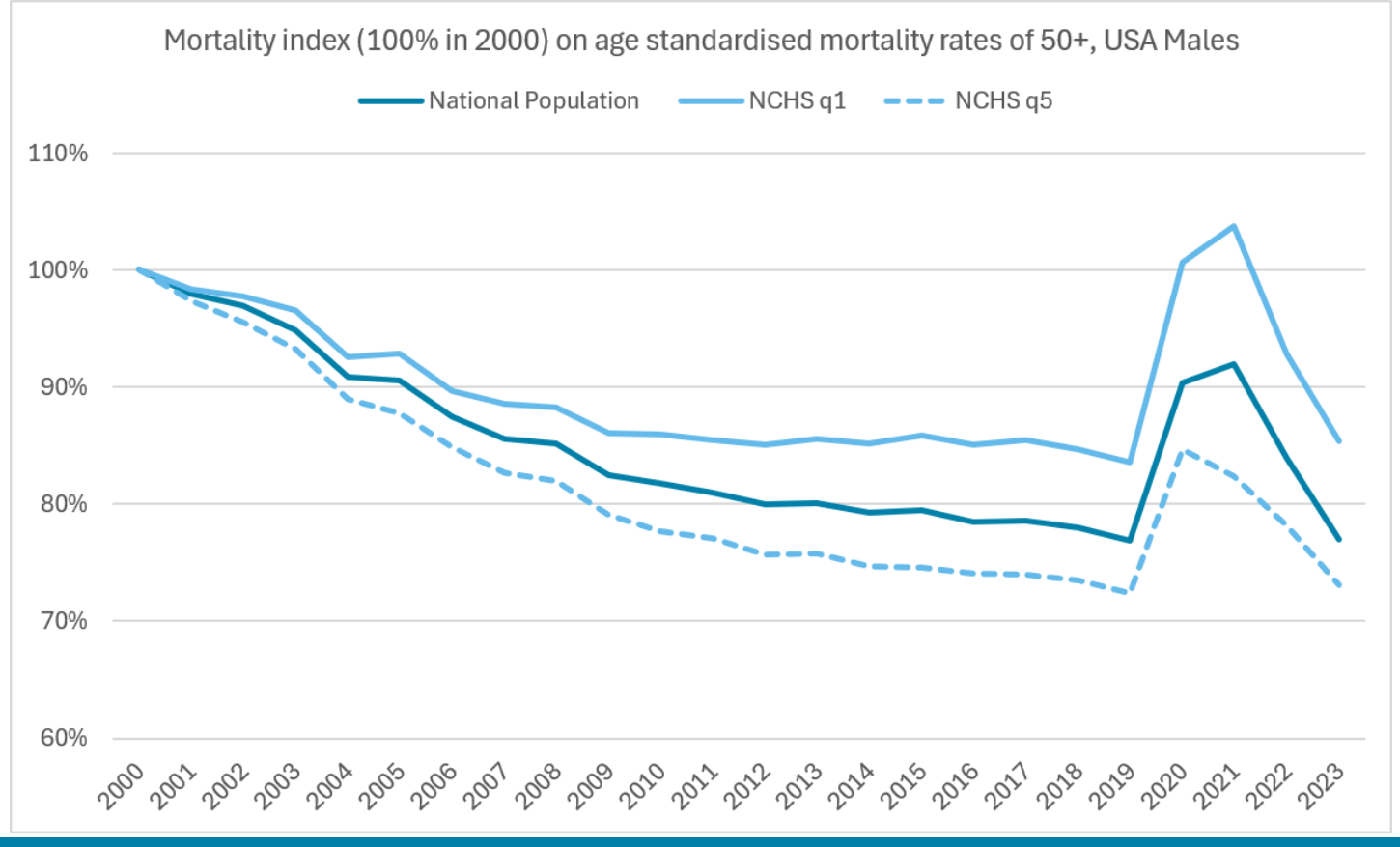
How do mortality trends behave between socio-economic groups?
SOA county quintiles



Improvement difference of 0.3% p.a. between quintile 5 and national population over 2000-2019

Source: SOA 2026 Mortality Trends Explorer

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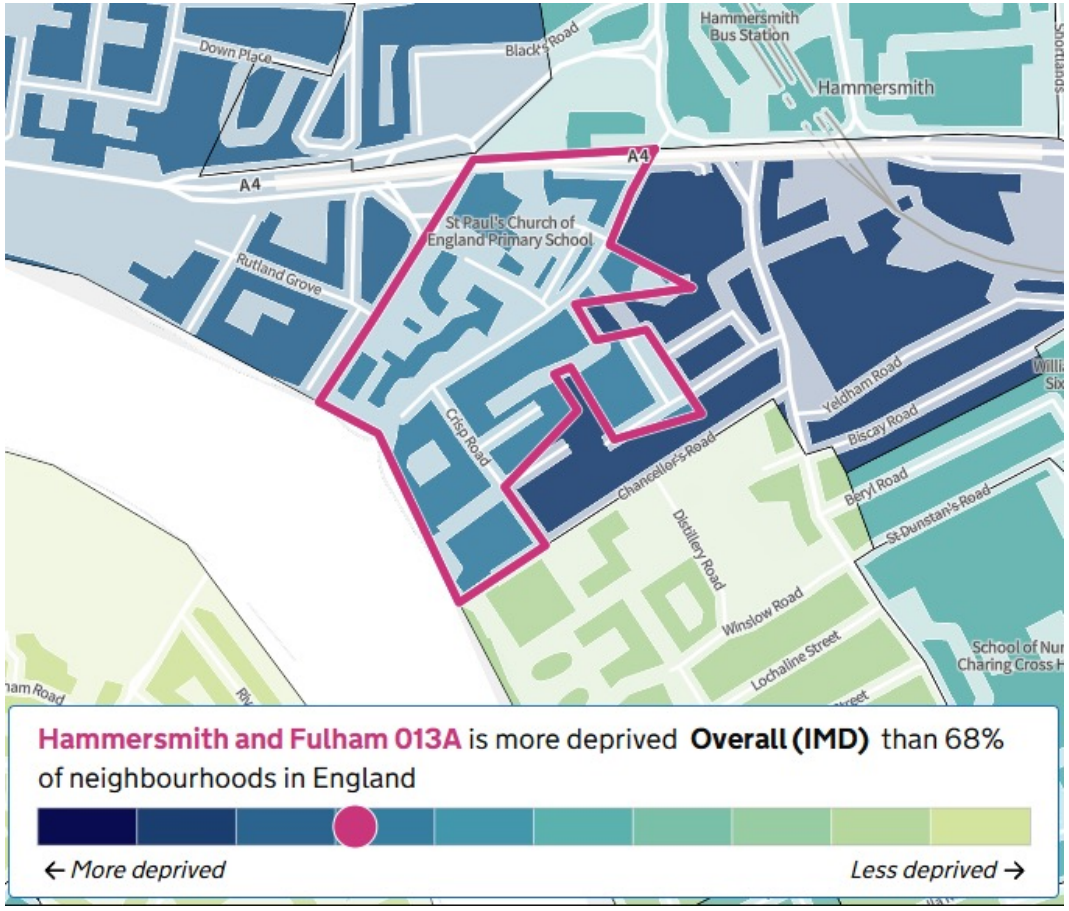
What do Socio-economic groups tell us about the area?
An example of IMD quintile 2



Source: https://deprivation.communities.gov.uk/maps

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An example of IMD quintile 2
The issue with grouped data!

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The Power of Individual Data

Zooming in on Education

Education is one aspect of many socio-economic indices

Source: English indices of deprivation 2025: statistical release - GOV.UK

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Can we do better than county level data?

Education data available at individual level in the US

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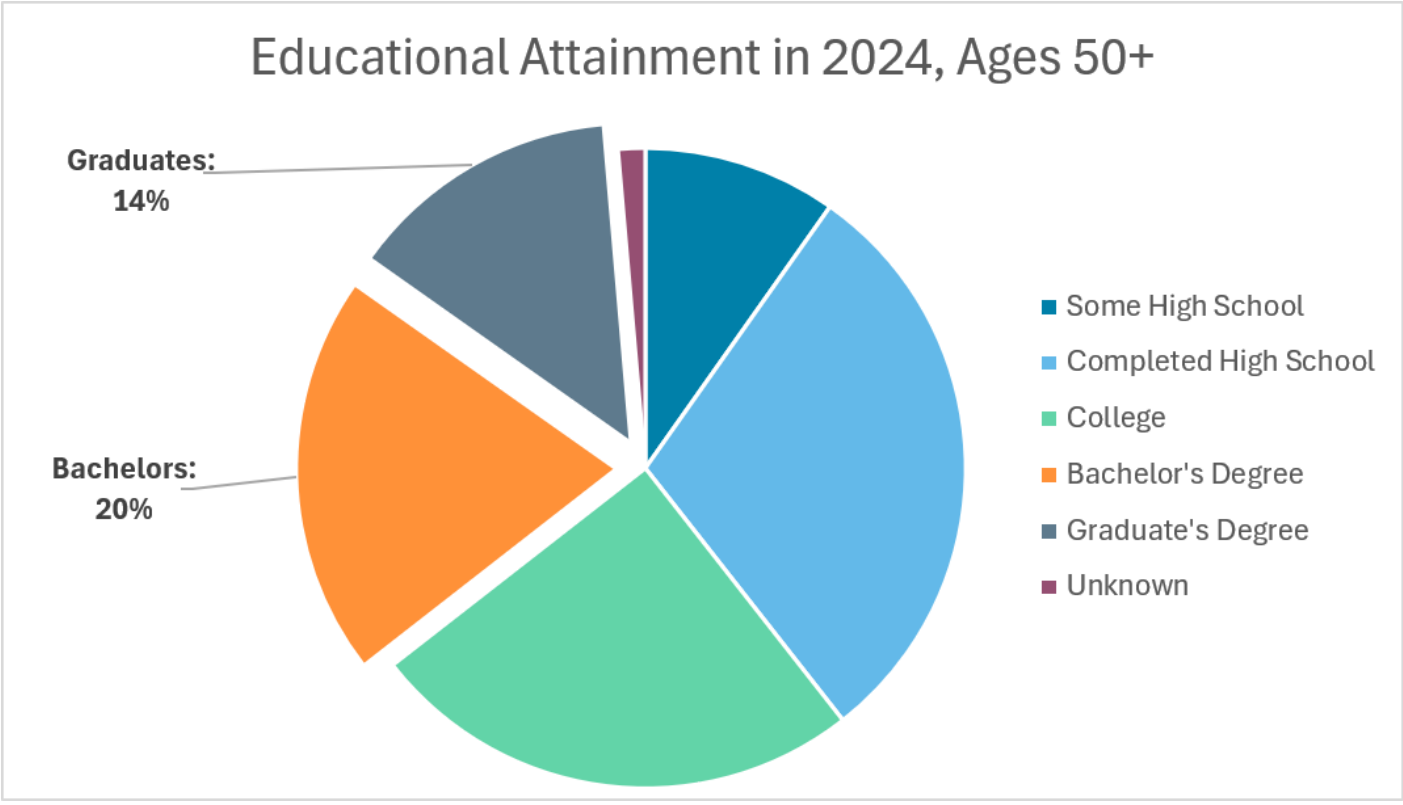
Education groupings
How does the national population split out?



A third of the US population aged 50+ are university educated.

Source: ASEC data, US Census

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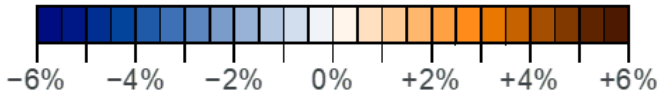
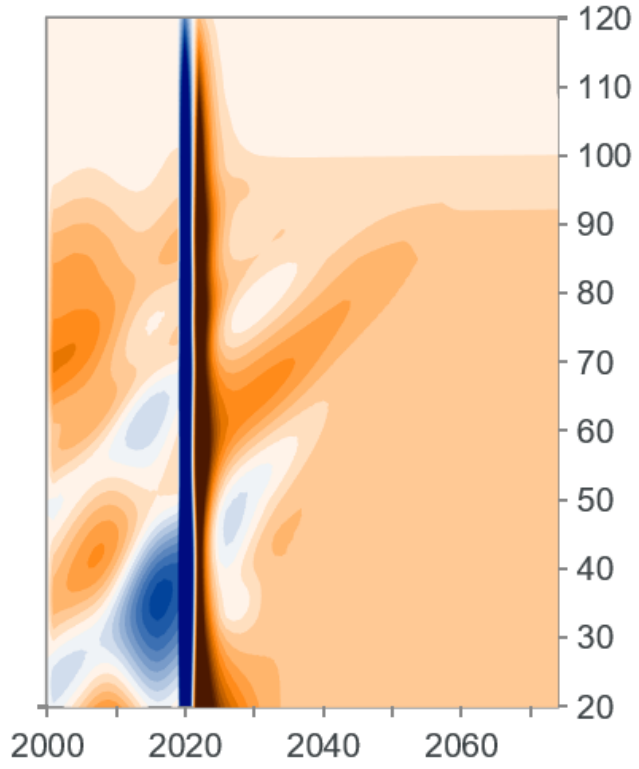
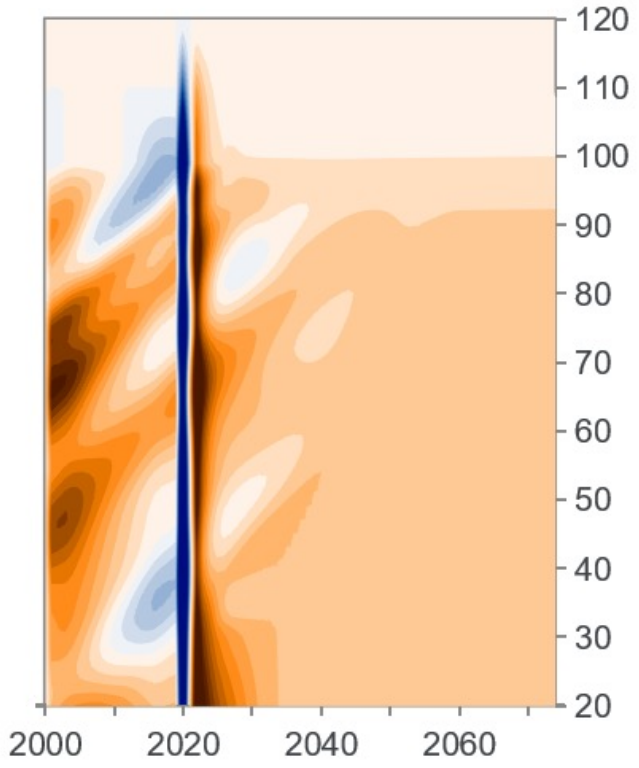
Projecting forward…
How do improvements compare?



National Population



Bachelors & Graduates



Two different populations

Source: SCOR calibration of CMI model to US data, custom overlay

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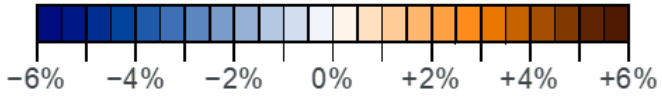
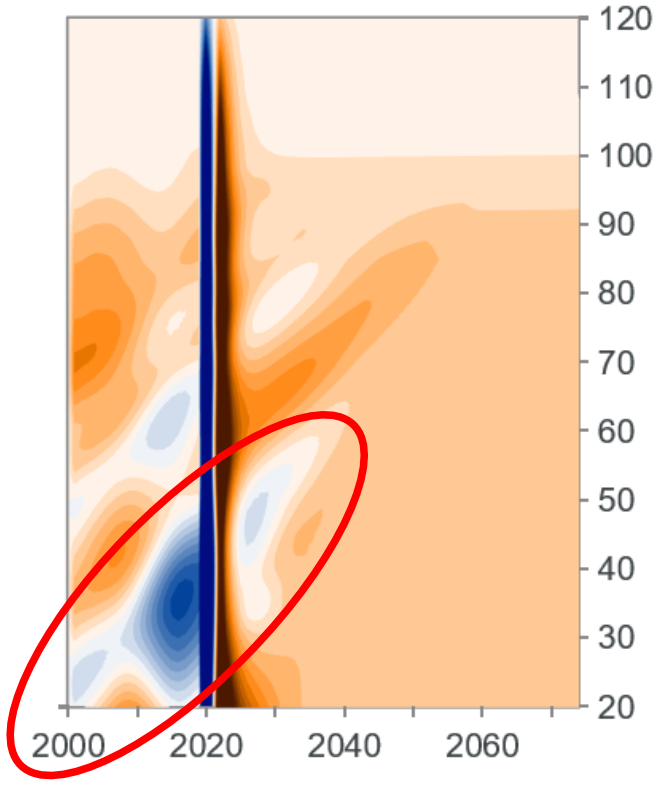
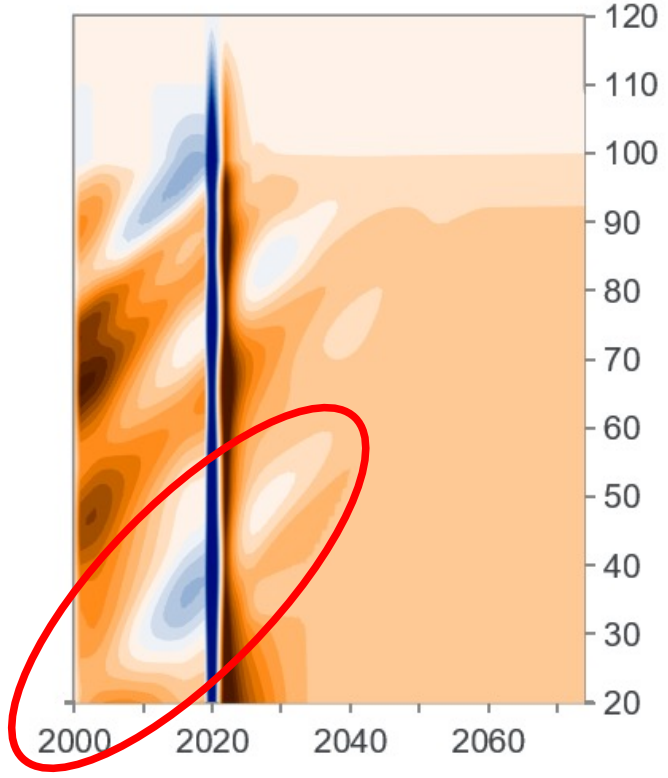
Projecting forward…
Opioid epidemic



National Population



Bachelors & Graduates



Much smaller impact

Source: SCOR calibration of CMI model to US data, custom overlay

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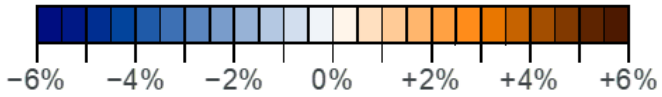
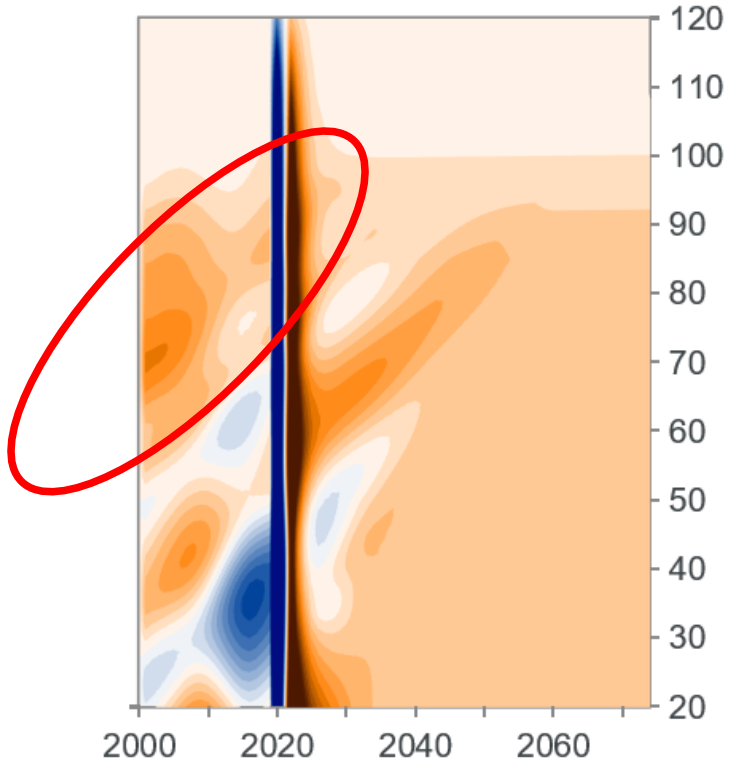
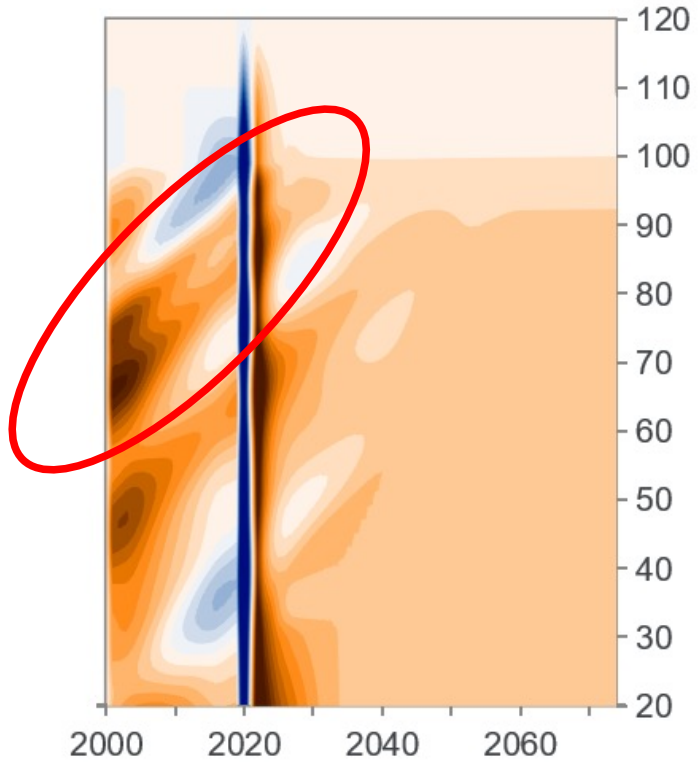
Projecting forward…
Golden cohort



National Population



Bachelors & Graduates



Stronger cohort effect

Source: SCOR calibration of CMI model to US data, custom overlay

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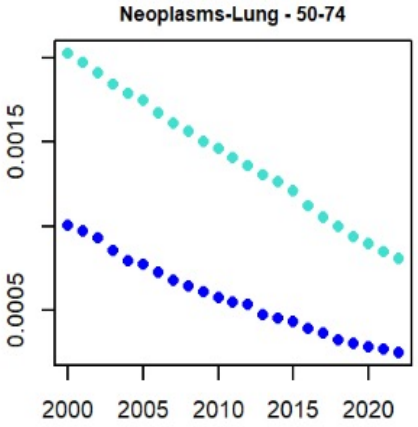
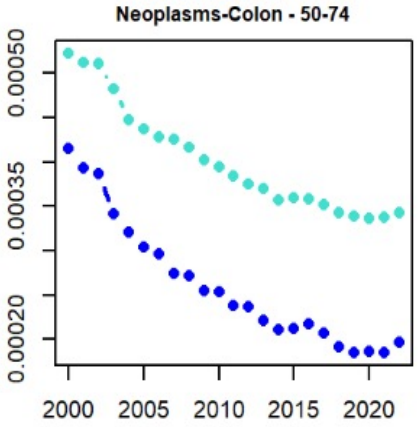
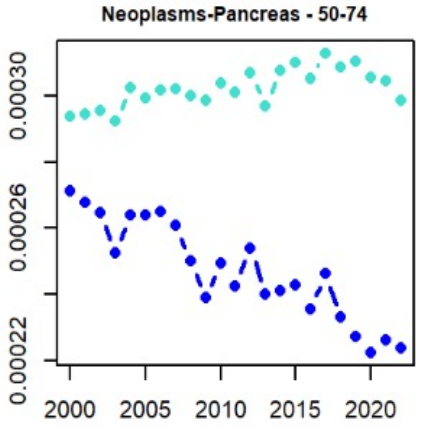
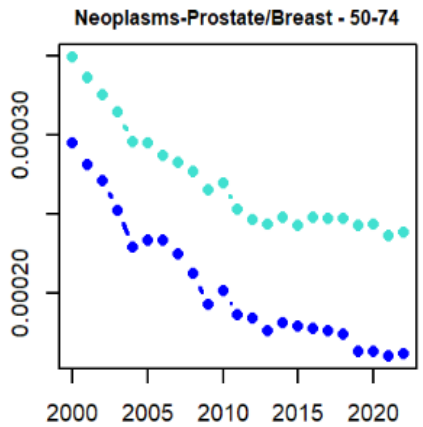
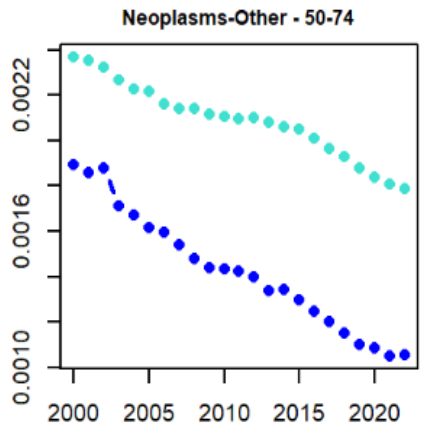
Digging deeper: Cancer trends
Deaths **by cause** is available











- Cancer improvement faster for Bachelors & Graduates for all causes except lung cancer
- Smoking trends suggest B+G has plateaued.

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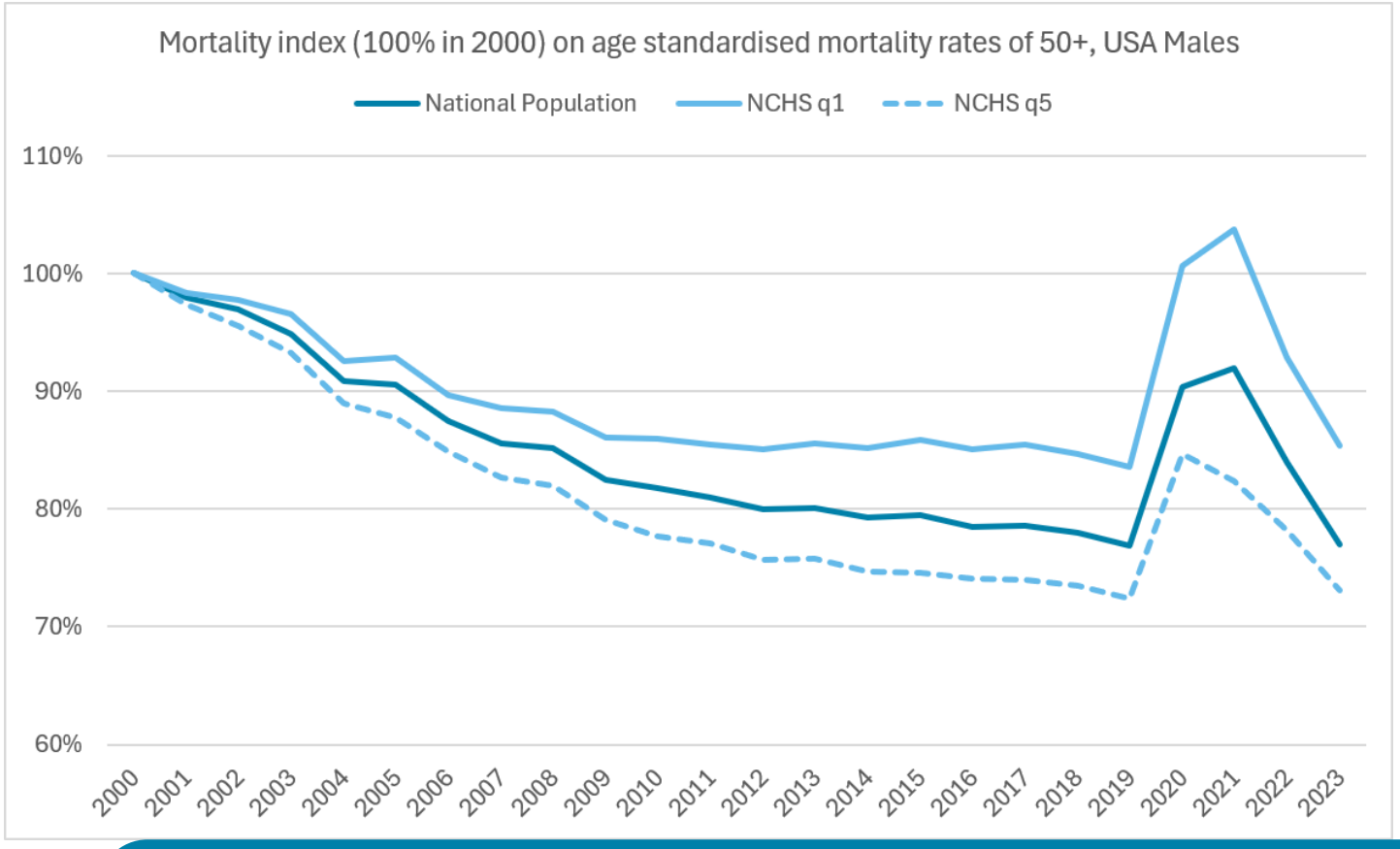
Reminder of mortality index by national population and quintiles



Improvement difference of **0.3% p.a.** between national population and quintile5 over 2000-2019

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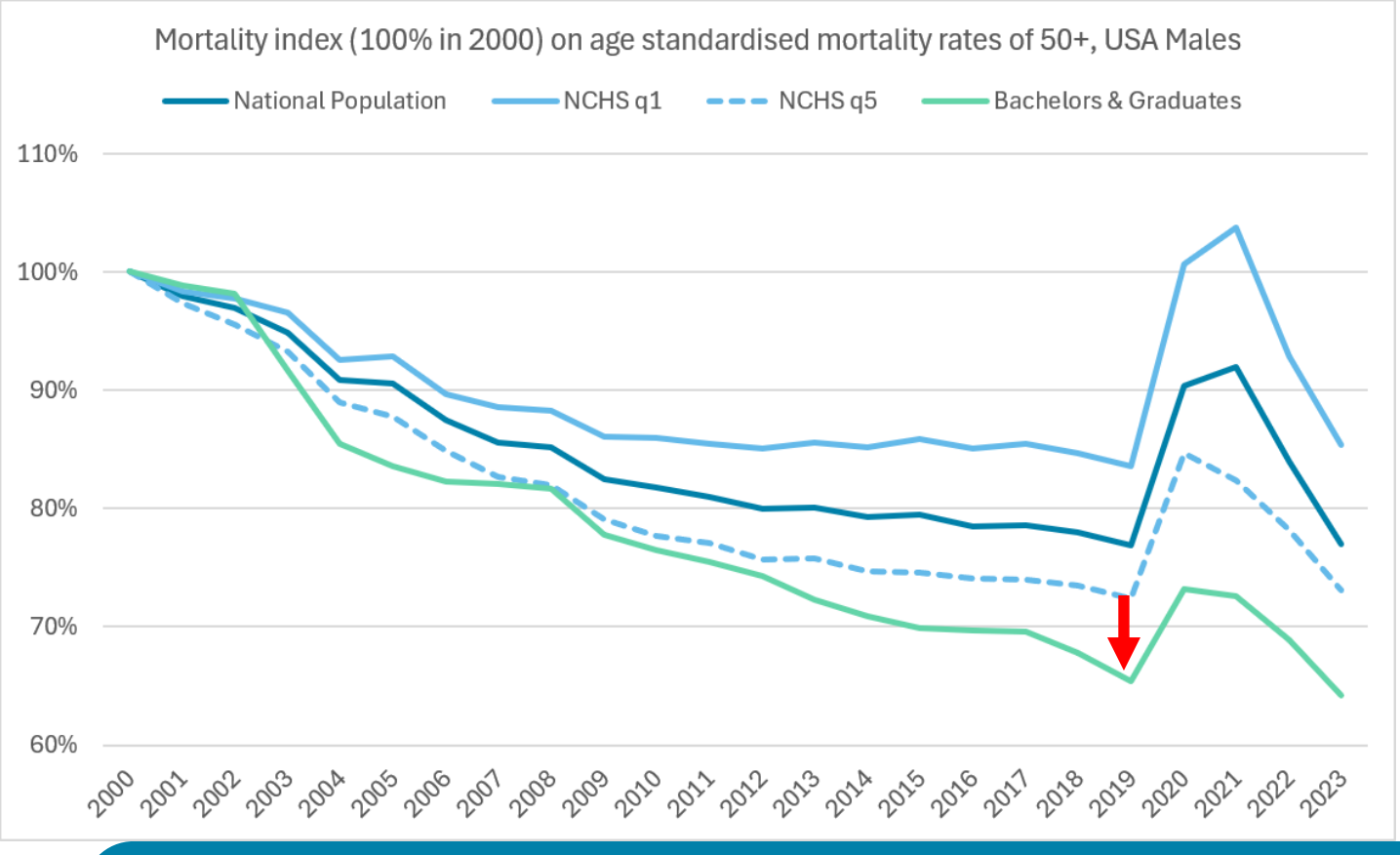
The Power of Individual Data!

Bachelor and Graduates population has a higher improvement rate



B&G improvements are 0.5% p.a. faster than quintile 5

This equates to **2.5% increase** to PV claims!

Improvement difference of **0.8% p.a.** between national population and B&G over 2000-2019

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Conclusions

Conclusions
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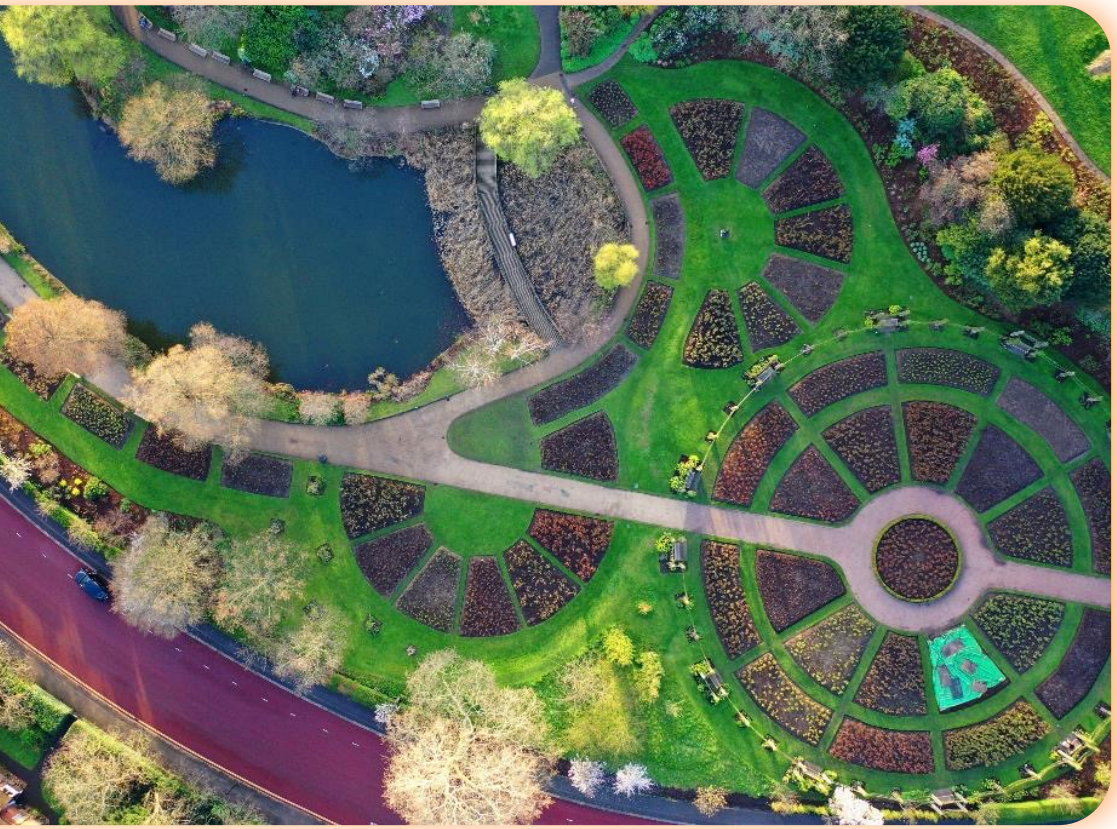

1. Relying on county alone could cost you!
2. Underlying drivers of mortality differ by socio-economic group
3. Consider whether your pension scheme members are different to their neighbours

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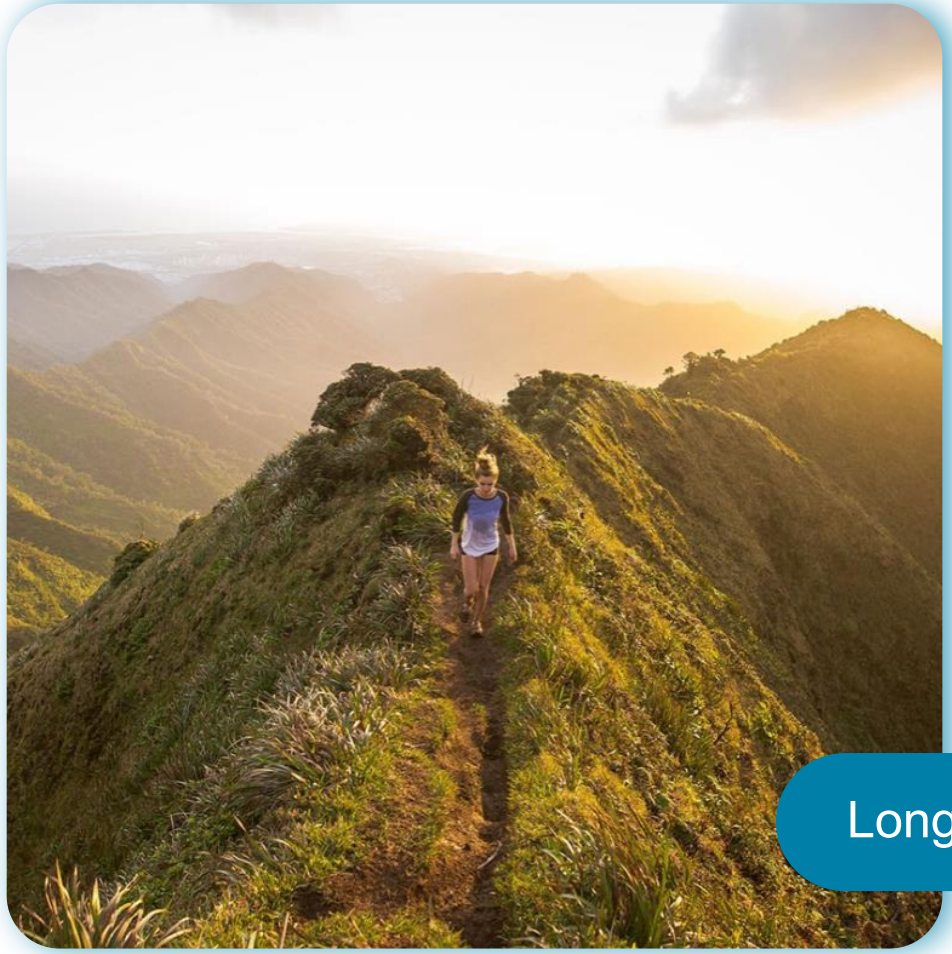

Thank You

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