

Modelling Mortality Inequalities

The Index of Scottish Life Expectancy: THISLE

The Longevity Index for England: LIFE

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Outline

- Motivation and relevance to a meeting on compensation
- Inequalities in life expectancies

Who am I \Rightarrow Disclaimers

- I am not an expert in compensation claims
- This brief introduction is about how **data science and machine learning** methods have been used to assess mortality inequalities

traditional statistics \leftrightarrow data science \leftrightarrow machine learning \leftrightarrow AI

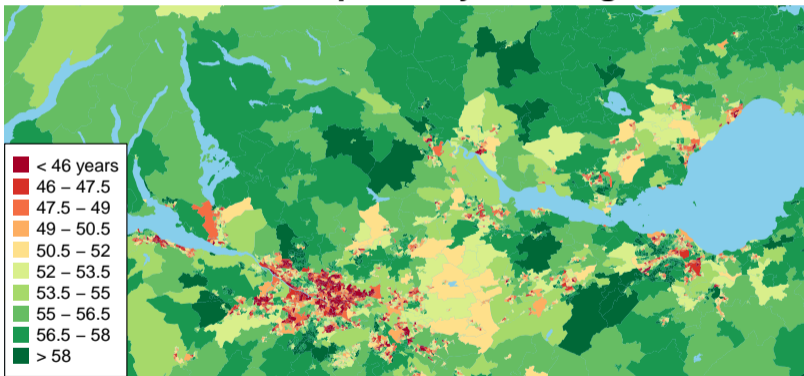
- AI has not been used! (But could be)
Why not (me)? Explainability of results.
- It is for others to judge the relevance of how to use information about mortality inequalities in the general population when assessing compensation claims from a legal and a moral perspective.

Motivation and Relevance

- Mortality heterogeneity: mortality varies between subgroups. Main reason: prevalence of causal risk factors varies between groups (e.g. smoking)
- Aim: to develop an index of mortality by neighbourhood and corresponding life expectancies by neighbourhood.
- Relevance: adds information to a compensation-related event

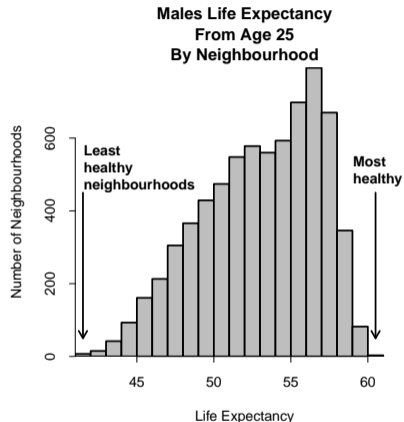
Inequalities in Life Expectancy: Central Scotland

The Index of Scottish Life Expectancy Males Life Expectancy From Age 25



$LE = 46$ to $LE = 58 \Rightarrow +26\%$

Inequalities in Life Expectancy: ~ 7000 neighbourhoods



Partial Life Expectancy → relevant for personal injury claims

Partial Life Expectancies (PLE): Comments

- Various assumptions underpin PLE calculations that need to be understood
- Variants: PLE; Healthy Life Expectancy (HLE); Worklife Expectancy (WLE)
- **Neighbourhood PLE** measures the neighbourhood average and depends on: average unemployment, education, marital status, ...

Individual PLE depends on: smoker status, diet, exercise, conscientiousness, access to healthcare, ...