USING CENSUS MICRODATA TO EXPLORE ETHNIC INEQUALITIES IN HEALTH

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OVERVIEW

- Research context → what is selective sorting?
- Why Census Microdata?
  - Checking relationships
  - Comparing gradients
  - Transitions at the extreme
  - The forgotten middle?
- What Now?
  - Towards causal relationships
  - Trajectory analysis
  - New Ideas!
Methods

- (indirectly) Standardised Illness Ratios
- Rate ratios / Extremal quotients
- Gini coefficient / Lorenz curve
- Slope Index of Inequality / Relative Index of Inequality
- Binary Logistic Regression (outcome as health or migration)

Objectives

- Examine the nature of the relationship between health and migration by ethnic group.
- Explore the nature of ethnic inequality in England’s society.
- Analyse trends and patterns in population health by ethnic group in recent decades.
- Analyse whether change in area type and social class is associated with changing health gradients for different ethnic groups.

Data

SELECTIVE SORTING AND HEALTH

- Population **selectively sorted** into different life circumstances through migration, residential mobility and social mobility.

- **Selective** as opportunities for migration or social mobility vary by socioeconomic status, area, ethnicity and **health**.

- Movement of **differently healthy** groups between area types or social classes may influence health profile of **different area types** or social classes.

- **Selective sorting** may therefore contribute to **changing health gradients**: Widening? Maintaining? Or constraining?
WHY CENSUS MICRODATA?

Cross-Sectional Samples of Anonymised Records
- Large sample sizes
- Full coverage of census variables:
  - Migrants identified by one-year migration variable

ONS Longitudinal Study
- 1% sample ~ 500k at each census (cross-sectional) & ~ 350k across the censuses (longitudinal)
- Full coverage of census variables
- Plus... events data: births; immigration; deaths; emigration
- Migrants identified by 10-year migration variable
ANALYTICAL APPROACH

**Compare gradients**

(Indirectly) Standardised Illness Ratios

SIRs calculated based on health at end of study period by destination deprivation quintile and origin deprivation quintile

Calculate Q5:Q1 ratio with movement, and without

**Transitions at the extreme**

(Indirectly) Standardised Illness Ratios

SIRs for deprivation transitions for

a) movers (migrants) and stayers (area type change);

b) movers and stayers combined: overall influence of selective sorting?

**The forgotten middle?**

Slope / Relative Indices of Inequality (SII/RII)

SIRs calculated based on health at end of study period by destination deprivation quintile and origin deprivation quintile

Calculate SII / RII with movement, and without
Comparing Gradients

2001 SIRs by deprivation quintile at 2001 and 1991

- **Movement**: 1.81
- **No Movement**: 1.70

2011 SIRs by deprivation quintile at 2011 and 2001

- **Movement**: 1.79
- **No Movement**: 1.75

Source: ONS Longitudinal Study
Health gradients by deprivation are steeper when groups move within and between deprivation quintiles than occur when population ‘put back’ into their origin quintile: movement appears to exaggerate health gradients…

How?
TRANSITIONS AT THE EXTREMES

Source: ONS Longitudinal Study
TRANSITIONS AT THE EXTREMES

Source: ONS Longitudinal Study
TRANSITIONS AT THE EXTREMES

Source: ONS Longitudinal Study
CONCLUSION B

Transitions into and out of Q1 and Q5 by *movers* contributes to widening health gradients between 1991-2001 and 2001-2011

Movers churning within Q1 in *better* health than stayers who remain in Q1; movers churning within Q5 have *poorer* health than stayers who remain in Q5
THE FORGOTTEN MIDDLE?

\[ y = 72.76x + 66.23 \]
\[ R^2 = 0.96 \]

\[ y = 78.36x + 63.80 \]
\[ R^2 = 0.96 \]

| No movement | SII (absolute differences) | 72.76 | RII (relative differences) | 2.10 |
| Movement    | 78.36                      | 2.23  |

Source: ONS Longitudinal Study
CONCLUSION C

Steepening slope attributable to worsening health for all deprivation quintiles apart from those in Q1 who see marginal improvements

Relative differences in health also increase when movement occurs (compared to putting population back into origin)
WHAT NEXT?

Cardiovascular Disease – Residential Mobility – Deprivation

**ASSOCIATIONS**
- Binary logistic regression—total population & stratified by ethnic group
- Compare risk of CVD for moves with that for stayers
- Ethnic differences?
- Differences by nature of the move?

**EFFECTS**
- Cox proportional regression (survival analysis)—total population & stratified by ethnic group
- Compare risk of CVD for movers who move before first CVD event with stayers
- Ethnic differences?
- Differences by nature of the move?

**TRAJECTORIES**
- Trajectory analysis
- Compare CVD risk for movers according to their deprivation trajectory
- Only movers who move before first CVD event
- Ethnic differences?
13 distinct deprivation groups:

- 7 trajectories for the movers-
  - E.g. persistent low/high deprivation, move into low / high etc...

- 5 deprivation quintiles for the "stayers" and those with fewer than 10 observations across 34 quarters (not enough information)

- Association with risk of CVD: movers across the spectrum had lower risk of CVD than immobile counterparts...
CONCLUDING REMARKS

- Value of longitudinal data, and breadth of detail in cross-sectional data
- Illustrative of important patterns warranting further research
- Developing research methods: trajectories and sequence analysis; survival analysis; matching methods
- Applied in different contexts: New Zealand... or even Scotland and Northern Ireland?
KEY REFERENCES


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