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Commentary: Clarity in research frameworks for studying 'health selective migration'

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The roots of 'health selective migration' debates lie in 19th Century observations by William Farr and others. The underlying notions are: i) people's health relates to their residential locations; ii) people's attributes are used for measures about places and; iii) people move between different locations [1]. Maheswaran and colleagues [2] recently add to the evidence in a study on Sheffield, UK.

This commentary highlights aspects of research operationalisation into health selective migration using examples from Maheswaran et al. [2]. These authors point out that, whilst there are commonalities in findings, previous work has paradoxical results. Some differences will be because the inter-relationships between health, migration and area characteristics *do* vary. Some contradictory findings will be due to differences in what studies sought to determine alongside variations in geographic scale, time frame and how area characteristics are incorporated. For health selective migration research, lines of enquiry include: 'Does migration between origins and destinations affect health inequalities between areas?'; and 'Does the health of migrants differ from others?'

Determining whether migrants affect area level health ideally uses individual microdata and aggregates information into areas at two or more time points and identifies whether flows of migrants by health status between areas accounts for inequality changes. Norman and colleagues [3, 4] use this approach to track moves between differently deprived areas. This includes the 'put people back' method, i.e. what if nobody had moved? Enquiries like this tend to find that migration maintains, and may exaggerate, area health inequalities. Alternative lines of enquiry, as in Maheswaran et al. [2], focus, "on the health of migrants at the individual level and not on the effects of migration on health at the area (population) level".

Both approaches need comparison groups defined for the study purpose. This can be 'movers' compared with 'stayers' but more usefully has movers compared with different kinds of movers [5]. The Sheffield study [2] is interested in the health of movers between areas with different levels of deprivation with people classified into four (non-) moving categories. This enabled the researchers to investigate for those movers whose area circumstances improved, whether their health also improved and *vice versa*. For discussions of comparison groups see Spallek et al. [6].

Analytical frameworks with respect to time need consideration [1]. A short period (e.g. from a year before a census) may be insufficient to impact on area inequalities though health variations between movers and stayers are found. Longer time frames (e.g. 10 or 20 years) can reveal whether flows of migrants affect area differences and for individuals (in longitudinal / cohort studies) whether aspects of their lives including residential locations, inter-relate with health outcomes. The 9 years in the Sheffield cohort [2] are sufficient. A longer time will add value but risks attrition.

Time increments depends on the original data collection. Health selective migration investigated using the UK's census Longitudinal Studies (LS) have 10 year increments [3, 4]. Yearly waves of the British Household Panel Survey offer researchers freedom to define increments which suit their purpose [7, 8]. The British Birth Cohorts have uneven time increments [9]. The Sheffield work [2] uses, "the cohort start point and an end point which was either the cohort end point for patients still alive or the year of death." In general, start-end comparisons are straightforward to operate [3, 4] but multiple time points capture more life events [5, 8, 9, 10].

Associated with time is the incorporation of area characteristics; both deprivation [3, 4] and urban-rural [11]. Maheswaran et al.'s study [2] is only able to incorporate deprivation cross-sectionally (the Index of Multiple Deprivation's income domain with areas termed 'deprived' and 'affluent'). As acknowledged, a cross-sectional measure is less than ideal since areas change deprivation over time [12]. The LS work has individual attributes contemporary with local context [3, 4, 11] but decennial increments miss the intervening years. Green et al. [8] use annual house price data though this may not represent areas of social housing. Comparable deprivation measures over time [12] linked to the British Birth Cohorts can incorporate accumulations of (dis) advantage [9] while a 'life-course of place' is used in Scotland [10]. For

New Zealand, Exeter et al. [5] use quarterly increments to model deprivation trajectories for movers, churners and stayers.

This commentary has focused on operational decisions in research design although any data source will never allow complete freedom. If studying health selective migration, a start point is to clarify whether the interest is in the impact of (non-) migrants (and their health statuses) on area measures or on the impact of area characteristics on (non-) migrants (and their health statuses). The comparison groups need defining with people tracked over time and across area types. Maheswaran and colleagues are to be commended for a well defined, transparent study which yields useful findings.

References

1 Darlington-Pollock F, Norman P, Shackleton N, Exeter D. Migration, Mobility and Health. In Routledge Handbook Of Health Geography. V.A. Crooks, G. Andrews, J. Pearce (eds): Abingdon Routledge: ISBN 9781138098046 2018.

2 Maheswaran R, Strong M, Clifford P, Brewins L. Socioeconomic deprivation, mortality and health of within-city migrants: a population cohort study Journal of Epidemiology & Community Health: 2018 doi: 10.1136/jech-2017-210166.

3 Norman P, Boyle P, Rees P. Selective migration, health and deprivation: a longitudinal analysis. Social Science & Medicine 2005 60(12): 2755-2771.

4 Norman P, Boyle P. Are health inequalities between differently deprived areas evident at different ages? A longitudinal study of census records in England & Wales, 1991-2001. Health & Place 2014 26: 88-93 http://dx.doi.org/10.1016/j.healthplace.2013.12.010.

5 Exeter D, Shackleton N, Darlington-Pollock F, Norman P, Jackson R, Lee A. Using trajectory analysis to explain deprivation mobility patterns in New Zealand. 17th International Medical Geography Symposium, Angers France 2017.

6 Spallek J, Zeeb H, Razum O. What do we have to know from migrants' past exposures to understand their health status? a life course approach. Emerging Themes in Epidemiology: 2011 8:6 https://doi.org/10.1186/1742-7622-8-6

7 Green MA, Subramanian SV, Vickers D, Dorling D. Internal migration, area effects and health: Does where you move to impact upon your health? Social Science & Medicine 2015 136–137:27–34.

8 Green MA, Arcaya M, Subramanian SV. Using internal migration to estimate the causal effect of neighbourhood socioeconomic context on health: A longitudinal analysis (England, 1995-2008). Annals of the Association of American Geographers 2017 107: 1266-1278.

9 Jivraj S, Nicholas O, Murray E, Norman P. Testing for sensitive periods of neighbourhood effects on wellbeing across the life course. ONS Quality of life and personal wellbeing: https://www.ukdataservice.ac.uk/eventsdocs/qualityoflifepersonalwellbeing_27nov17 2017.

10 Pearce J, Shortt N, Rind E, Mitchell R. Life Course, Green Space and Health: Incorporating Place into Life Course Epidemiology International Journal of Environmental Research in Public Health: 2016 13(3), 331; doi:10.3390/ijerph13030331

11 Riva M, Curtis S, Norman P. Residential mobility within England and urban-rural inequalities in mortality. Social Science & Medicine 2011 doi:10.1016/j.socscimed.2011.09.030.

12 Norman P. The Changing Geography of Deprivation in Britain, 1971 to 2011 and Beyond. In: Champion T and Falkingham J (eds.) Population Change in the United Kingdom. London: Rowman & Littlefield, 2016:193-214.