© Author 2023 • Accepted for publication 12 November 2022/First published online 08 December 2022 Online ISSN 1757-9597 • https://doi.org/10.1332/175795921X16682554193545



This article is distributed under the terms of the Creative Commons Attribution 4.0 license (http://creativecommons.org/licenses/by/4.0/) which permits adaptation, alteration, reproduction and distribution without further permission provided the

original work is attributed. The derivative works do not need to be licensed on the same terms.

JOHN BYNNER DISTINGUISHED SCHOLAR AWARD ADDRESS

Placing context in longitudinal research

2021 John Bynner Award for Distinguished Scholarship, invited lecture, SLLS conference October 2022

Heather Joshi, h.joshi@ucl.ac.uk University College London, UK

John Bynner is a leading advocate of considering context in life course research. In this paper I review some of the ways contextual information on time and place may enrich the analysis of individual histories, as well as vice versa. I take three examples from my own research: (1) a late 20th century analysis of adult health and mortality in Britain where individual and area level evidence are combined; (2) a cross-national analysis of neighbourhood and family predictors of child outcomes at age five in Britain and the US from the early 2000s; and (3) workplace as the context of segregation and the gender pay gap in Britain as it changed over several decades to 2015. The article ends with a discussion of the pros and cons of incorporating contextual evidence in longitudinal survey data sets with reference to the UK Millennium Cohort Study, which John Bynner helped to bring into existence.

Key words neighbourhood effects \bullet adult health \bullet child development \bullet gender pay gap \bullet cohort studies

Key messages

- Analysis of longitudinal data is enhanced by information on context and vice versa
- Neighbourhood effects in health and development largely reflect individual circumstances.
- Designs of British Cohort Studies illustrate the limits to building in contextual data.
- Complementary use of different surveys, cross-cohort and cross-national analysis can all aid the study of context.

To cite this article: Joshi, H. (2023) Placing context in longitudinal research, Longitudinal and Life Course Studies, 14(1): 6–21, DOI: 10.1332/175795921X16682554193545

Introduction

As John Bynner has always argued, life course research is not just about tracing individuals' histories across time. It should set these trajectories in their geographical and social context (Wadsworth and Bynner, 2011). These settings help to shape life courses. Individuals in turn may help to shape the settings, not least by moving between them. I am interested in how information on context may enhance data collected on individuals (or families) in cohort or panel studies. Context, or surroundings, could comprise: the physical, natural or built environment; 'immediate' neighbours; the safety and reputation of a locality; the school or the workplace; voluntary or cultural communities; provision of health, education and other services; the regional, national or global economy; local or national government policies, and so on.

These features apply at varying degrees of distance, and time, to individual study members. A study in Bristol, UK, found that areas subjectively identified as 'neighbourhood' varied from person to person and generally encompassed a smaller area than those designated as such in health geography (Haynes et al, 2007). In a study of spatial variation in teenage motherhood among the 1970 British Cohort, Lupton and Kneale (2012) argue that different influences – economic opportunities, values, networks, service provision – may operate at different spatial scales on early childbearing. Such multiplicity is likely to apply to other outcomes and ages. Bronfenbrenner's (1977) model of child development, for example, is of a complex and overlapping set of contextual influences. Although information technology may be eroding the importance of spatial proximity in the 21st century, the neighbourhood surrounding children, and the exposure of adolescents and adults to various environments, are still relevant.

Listing contextual factors illustrates the difference between the notions of 'space' and 'place', which is familiar in human geography. Rather like the contrast between 'sex' and 'gender', 'space' refers to a geographical location in terms of its map coordinates, physical features and climate; 'place', on the other hand, is a social construct reflecting many layers of human interactions, possibly reciprocal.

The standard way in which 'place' is spliced into large-scale surveys in the UK is by making a geocoded link to supplementary information for the address at which a study member has been enumerated. This may be an aggregated profile derived from a population census for a local statistical area, or taken from maps of environmental indicators such as green space, air pollution or rainfall, or, for example, the location of fast-food outlets. Other routes to recording context include asking the cohort informants, or their interviewers, about perceived neighbourhood quality, or exploiting Google Streetview observations (Leventhal and Brooks-Gunn, 2001; Odgers, 2012). For non-residential types of context, study members can be linked to informants from the institutions involved, such as headteachers or teachers in schools attended or managers at work, or to statistical databases on local or national economic conditions.

For some examples of use of context in analyses, I turn to the British Cohort Studies (as I was John Bynner's deputy and successor at their home, the Centre for Longitudinal Studies (CLS), 1994–2010). In 'The influence of context, timing, and duration of risk experiences for the passage from childhood to midadulthood', Ingrid Schoon, John Bynner and others (2002) compare young adults born in 1958 and

1970 in the historical context of the collapse of the youth labour market faced by the second cohort. Taylor et al (2013) focus on differences in educational regimes across Scotland, Wales, Northern Ireland and English regions in the attainment of seven-year-olds. Various pieces of research have made use of data on the social composition of primary schools (Papachristou et al, 2022a), and their policies on ability grouping of pupils (Parsons and Hallam, 2014; Campbell, 2021; Papachristou et al, 2022b). Information about the secondary school context in the cohorts born in 1958, 1970 and 1990 has been used to study single-sex schooling (Sullivan et al, 2010; 2012; Anders et al, 2018); private schooling (Sullivan et al, 2014; Henderson et al, 2020) and faith schools (McKendrick and Walker, 2020). Local employment and crime conditions played into the contrasting transitions from school by the young men and women in the Next Steps cohort (Karyda and Jenkins, 2018; Meschi et al, 2019). The hypothesis that the concentration of inhabitants of one's own ethnic minority group might be protective against disadvantage found no support for child development in the Millennium Cohort Study (MCS) or indeed for most of the US ethnic minorities examined (Zhang et al, 2017).

Clearly there are many examples that can be drawn from experiences in countries other than the UK but here I offer more detailed examples of incorporating context from various stages of my own research. I focus on the following three topics:

- 1. neighbourhood effects in adult health and mortality;
- 2. neighbourhood effects in early child development;
- 3. workplace effects on the gender pay gap.

Neighbourhood 'effects' have raised controversial policy issues. Research on neighbourhoods fuels a debate (Dorling et al, 2001; van Ham et al, 2012) between those convinced that 'place' has its own influence and the view that spatial differences 'merely' or mainly reflect population sorting. The former perspective on spatial differences supports the case for Area Based Initiatives (ABIs) to combat social disadvantage, targeting areas of multiple deprivation. The latter suggests that such initiatives risk being ineffective and inequitable, with people moving in and out of target areas, and interventions failing to reach deprived individuals who are not concentrated in such areas. Both recognise 'place' as a set of social relations within and beyond the purely spatial boundaries that might be drawn on a map.

It has been contended that longitudinal data have a greater potential to resolve questions of causality than cross-sections of individuals, observed at one snapshot in their habitat (van Ham et al, 2013; Jivraj et al, 2019). The objective here is not to go into the policy implications (much as this would have been encouraged by John Bynner), but to illustrate how longitudinal surveys of persons may incorporate aspects of contexts. I conclude with a discussion of how this is implemented in the design and development of the British Cohort Studies.

Example 1: neighbourhood effects in adult health and mortality

My first example is based on work in the 1990s before I became much involved with the birth cohort studies. It used the Office for National Statistics (ONS) Longitudinal Study (LS), which links census to vital events. The paper, published with Andy Sloggett in the *British Medical Journal* in 1994, is the one for which I

have received my highest number of citations. It has probably also met with the least credence. We used the LS to match mortality at ages 16–70 between 1981 and 1989 to an index of deprivation (in ten categories) based on four census indicators of the local social profile for the English electoral ward of residence in 1981. Although wards are small geographical areas, averaging a population around 5,000, they vary in size, are not necessarily socially homogeneous and are far from a perfect proxy for the elusive 'neighbourhood'. Their boundaries, redrawn from time to time, are often not well recognised by most inhabitants. Nevertheless, there was higher mortality in the more deprived wards. We also took the four indicators – unemployment, no car access, not owning the home, and semi– or unskilled occupation, as predictors of mortality at an individual level. This completely accounted for the association of mortality with area deprivation for men, and for women living in the more deprived wards.

Apart from the arguably contextual phenomenon of the broad North–South regional divide, the result suggested that 'where you live' makes little difference to 'when you die', over and above 'who you are'. We concluded, to a chorus of scepticism, that social inequality in male mortality was more due to personal circumstances than to some additional feature of community disadvantage. This flew in the face of believers in 'neighbourhood effects' and the associated case for area-based policies.

Another contribution to the policy debate was our estimation that 45% of the individuals with at least one of the personal deprivation characteristics were in the 20% most deprived wards. In other words, thus defined, 55% of the 'deprived' people resided outside the potential target areas. This implied that while area targeting (ABIs) could be an effective way of reaching concentrations of deprivation, such an approach should be complemented by measures that reached the more dispersed deprived (Holtermann, 1978).

A suggestion was the effects of 'place' might not have been best captured as a fixed effect of a ward deprivation score. Allowance should be made for area idiosyncrasies (random effects) which might be picked up in multilevel models. These (then) new methods for handling hierarchical data in social statistics became available for use with the linked census data, as the ONS computing environment developed. In a follow-up project, colleagues and I investigated models of long-standing illness (Wiggins et al, 1998; 2002). Area effects were indeed detected, in both males and females, but such estimates were modest.

Using the Health and Lifestyle Survey (HALS) that was fielded in 1984–85, our team constructed a bespoke index of contextual change – deindustrialisation, or loss of employment in heavy industry – between the censuses of 1981 and 1991 (Mitchell et al, 2000). This was assessed for electoral wards (postcode zones in Scotland), 396 of which were sampled in the survey, averaging 23 interviews per zone. Our hypothesis was that this particular aspect of local geography (deindustrialisation) could be expected to generate health variation through inducing the out–migration of healthier people and to lowering the morale and services available to those who stayed. HALS provided evidence, not collected in the census, of subjective perceptions of trust in, and solidarity with, the 'community'. Although the geographical area people had in mind in answering these questions may not have referred to the same space as covered by electoral boundaries, and which might vary from person to person, the responses showed an independent influence of feeling part of the community on self-assessed health over and above those of objective

area indicators. The conclusion of this study was that, carefully measured, area, attitudes and individual factors all played a role in explaining spatial variations in adult health. This elaborated, without contradicting, the findings we obtained from the census evidence.

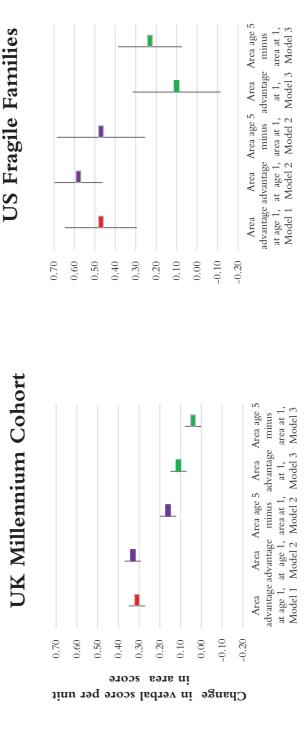
Example 2: neighbourhood patterns in early child development, US and UK

Does where young children live make a difference to their development in early childhood? A project started in 2013, with Mary Clare Lennon (CUNY), compared two cohorts born around the millennium – one in the UK and the other in the US (Buttaro et al, 2021; Gambaro et al, 2022). In this project we looked at outcomes in children of residential mobility, neighbourhood prosperity and family circumstances. The American data came from the Fragile Families and Child Wellbeing Study (FFSCW) which followed children born 1998–2000 in 20 big cities. The British data were taken from the MCS of a sample of children born across all parts of the UK. Both studies oversampled disadvantaged families, and our analyses reweighted the data to reflect the profile of the big-city population nationally. To make the two studies more directly comparable, we selected only MCS children born in hospitals in big cities. It is worth noting, however, that our conclusions for the UK as a whole are similar when other urban and rural contexts are additionally included (Gambaro et al, 2017).

We constructed an area profile score, largely from the census, for the average level of social advantages enjoyed by the inhabitants of small areas (Buttaro and Gambaro, 2018). The small areas available to be linked to the survey respondents were, for the UK, the lower super output area (LSOA) in England and Wales with its average population size around 1,500 (smaller and larger units in Scotland and Northern Ireland) and for the US, the census tract, somewhat bigger and more variable in size with an average population around 4,000. The score for a given area did not change between our two dates, four years apart, but we did allow for families changing area score if they moved – as did 40% of British and 63% of the US children between ages one and five years. We looked at three outcomes of the children at age five: a verbal score, and externalising and internalising problems expressed as country-specific percentiles (Buttaro et al, 2021). Results are illustrated in Figure 1 for verbal scores. The other outcomes showed similar though less well determined patterns.

In each country a basic model, controlling only for the child's sex and exact age, showed better scores in the more advantaged areas and poorer scores in the less advantaged ones, particularly in the US, based upon just the area score at age one. Figure 1 provides (in red) a baseline estimate, Model 1, of verbal scores. In the MCS sample a 1 percentile increase in area advantage at age one is associated with 0.31 of a percentile increase in the verbal score. In FFSCW in the US, the gain in verbal score is 0.47. Our second model (purple) introduces the change in area score by age five as another regressor, which is zero for those who did not move. We also included an indicator of whether the family moved during this time (estimates not shown as generally insignificant). A comparison of the second estimate (Model 2) in Figure 1 with that for Model 1 indicates that those who had not moved showed a stronger association with the area indicator than the raw association in Model 1. For those who

Figure 1: Estimates for effect of area advantage score at age one and change in it to age five (for movers) on verbal percentile at age five



Note: Model 1 controls also only for age and sex of child. Model 2 includes change in area score to age five. Model 3 controls also for family circumstances at age one. Area advantage and verbal score measured in percentiles. Source: Buttaro et al (2021).

had moved, the area-related element of verbal score is given by the estimate for area at age one plus that attaching to the change in score, that is, the combination of the two estimates shown in purple. Movers had enhanced verbal scores over and above that predicted by their age one address if they went to a better area, but show a lower outcome if they went to an area with a lower score. The association with the age five area is particularly strong in the US sample where the majority of families moved.

What happens to the spatial pattern of disadvantage when we account for the disadvantages at the individual level? Once individual family circumstances at baseline were included (estimates in green), the pair of associations with area advantage were attenuated. Though one of the two estimates becomes insignificant in each country, the association with area was not entirely accounted for. We also took account of changes in family circumstances, such as partnership and employment, which were associated with moving, but their inclusion added little explanatory power.

Among the 'individual'/family characteristics absorbing much of the spatial variation in child outcomes were unemployment, race/ethic group, income and housing tenure, which are unequally spatially distributed in both countries. Racial minorities and private rental, particularly clustered, were especially prevalent in the US cities. Other family factors like single motherhood and maternal ill-health, while important predictors of some of the outcomes, were less spatially concentrated. Notably, internalising and externalising behaviour problems were consistently related to mother's ill health in both samples.

Was the association of adverse outcomes with disadvantaged areas explained by the poorer circumstance of individuals? As with adult long-term illness, in Example 1, the answer is 'largely but not entirely'. Family hardship, albeit concentrated in poor places, emerges as the main predictor of poor child development. This was also the conclusion of a number of other geographically informed analyses of the early years of the Millennium Cohort, many of which were led by Eirini Flouri (see references in Buttaro et al, 2021).

We also pointed to a higher-level ecology in this study: the international comparison of welfare states and changes in this context over time. Of the two 'liberal welfare states', the UK was a more friendly environment in the early 2000s. It offered more public expenditure, facilities to combine employment with parenthood, and subsidies for day care and early education than did the US (Waldfogel, 2010). Both countries had programmes aimed at the poorest children in the poorest communities. Sure Start was one of a set of measures brought in by the 1997 Labour government which complemented the universal health service in Britain, and what were then its more stable housing provisions. Owner occupation was still within reach for many young families in the UK, and there was a sizeable social housing sector catering to those on low incomes. The US cohort was more reliant on precarious housing (rental or sharing). The contrast in policy environments is consistent with a greater concentration of disadvantage in US cities. The historical context of both surveys pre-dated the 2008 recession and there have been substantial changes since then. Housing markets in both countries have increased precarity. In the UK, there has been a large increase in private renting among families with young children who had traditionally been able to embark on home ownership (Lupton, 2016). The outcomes we observed in the US context may thus have become more relevant to the UK. This example therefore shows how international comparisons can provide a route for the study of contextual effects in longitudinal research.

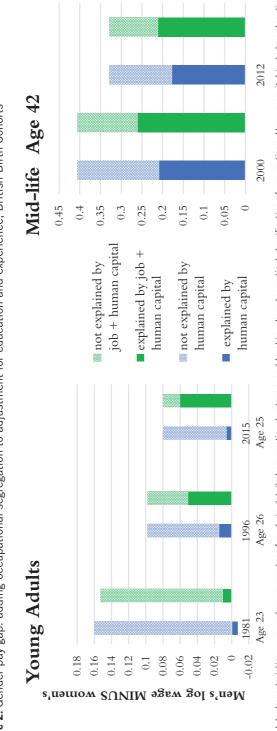
Example 3: segregation at work

The workplace context plays an important role in individuals' pay and rewards. The last example comes from ongoing work on the gender pay gap in the UK cohort studies, on which I am working with a team led by Alex Bryson. The difference between men's and women's pay can, to some extent, be accounted for by differences in personal characteristics ('human capital') as well as characteristics of the job. The former are skills, experience and qualifications, often better measured in longitudinal rather than cross-sectional sources. Job characteristics include occupation, hours worked and type of contract. The workplace context is partly captured by industrial sector and firm or workplace size, frequently available in social surveys. Most of this information can be collected from either the employee or the employer, with perhaps varying reliability. The sex segregation of a workplace, or of the occupation in the broader labour market, is particularly effective at differentiating pay between and within groups of workers. It is a feature of the context rather than an individual's characteristics.

The concentration of workers into gender-typical lines of work is associated with lower rates of pay per hour for people doing typically 'women's jobs' and there are several reasons women in typically women's jobs get paid less per hour than men with similar human capital (Cortes and Pan, 2017). It may reflect the legacy of wagesetting institutions traditionally dealing with men and women separately. It may be that women prefer some features of the jobs where they are concentrated and are willing to accept lower pay accordingly. Alternatively, there may be discriminatory practices restricting access to more male-dominated jobs, pushing down wages in more feminised jobs (the queuing theory), or just a perception that stereotypically feminine work is worth less than that of men. Levanon et al (2009) found more evidence for the devaluation of women's work than for the queuing hypothesis, in the longitudinal data they constructed on US occupations between 1950 and 2000. Our current work on the gender wage gap in the British Cohort Studies takes various points over three decades from 1981, when its historical trend was downwards. As shown in Figure 2, the gap falls at a given age, that is, across cohorts, but it also rises over time across ages within a given cohort. Our analysis (of data files prepared for Foliano et al, forthcoming and Wilkinson et al, forthcoming) finds evidence that over and above differences in human capital, the context of occupational segregation helps to account for women's pay penalty, though by no means completely. The explained elements (solid parts of the bars in Figure 2) do not seem to be consistently accounting for the inter-cohort trend. In the hatched sections of those bars, the unexplained female pay penalty, though it does decline across cohorts, persists within as well as between occupations.

We can look into the relationship between segregation and pay more closely using another data set: the linked employer-employee records from the Workplace Employment Relations Survey. Theodoropoulos et al (2022) have shown the presence of female managers reduces, if not eliminates, the pay penalty to females in feminised workplaces. This is particularly true where the female managers have a direct role in setting payments. This finding supports the idea that there is discrimination in other workplaces, that is, those with only male managers. Female managers tend to be more prevalent in firms with a predominantly female workforce. This interesting information about the workplace context is not usually available in multipurpose

Figure 2: Gender pay gap: adding occupational segregation to adjustment for education and experience, British Birth Cohorts



Note: Job characteristics measured as: percentage female in detailed occupational category and level in a broader vertical classification of occupations. Human capital includes education and work experience.

cohort surveys. The best data obtainable from the latter are likely to be informants' reports on their type of work which are converted into occupation codes. From these codes the likelihood of sharing a workplace with workers of the same sex can be inferred, but such data are at several removes from what might be collected in a bespoke survey of individuals' employment contexts. There are limits to what can be deduced about workplace segregation from occupation codes. If the degree of segregation varies by age of worker, for instance, an imported segregation score may not be appropriate – unless segregation cells are constructed by age, and even then not every workplace in a given occupation necessarily has the same proportion of female workers. Occupational codes (like geographical boundaries) change regularly as the occupational coding scheme attempts to keep pace with change in the nature of work. For all its limitations, occupational data will doubtless continue to be collected and coded for its interest to social medicine and social stratification, but it would not be reasonable to expect longitudinal surveys of individuals to reveal all relevant particulars of all the workplaces they pass through. The lesson here is that workplace and longitudinal surveys can complement each other.

Context in the British Cohort Studies

How is context built, or not, into the design of the British Cohort Studies? The first three national cohorts, of 1946, 1958 and 1970 included all births that occurred in a given week, nationwide. This means that they were never geographically clustered, and that their members went on to be widely distributed across schools and workplaces.

By the 21st century there was interest in creating and analysing hierarchical data structures which would be explicitly designed to pick up contextual effects, both measured and unmeasured. The Longitudinal Study of Young People in England, which is now being followed up as Next Steps, filled the gap between the 1970 and Millennium cohorts. Its members, though born in 1989–90, were recruited from schools at age 14 rather than at birth. This created a sample with built-in school context.

The MCS, implemented in 2000-01, followed a tight geographically clustered design that seemed to invite analyses allowing for variations at a geographical as well as the individual level. It was based, like Example 1, on the geography of electoral wards, variably averaging a population of 5,000. Rather than one week's births, it took 100% of a whole year's births, not nationwide but in a sample of wards. Some 398 wards were selected, in a stratified sample, over-representing disadvantaged and ethnic minority populations. In each ward 20 to 200 children were recruited (Plewis, 2007). Although it was necessary to allow for the clustered design in estimating statistical significance, there has been little substantive use made of the sampling units to structure secondary analysis, which might have taken the electoral ward as the setting for the neighbourhood context. Two thirds of the families on low incomes (bottom quintile at the first survey) were in the oversampled strata but one third lived elsewhere, making targeting only partially successful (Sullivan et al., 2020: Table A4). As hinted earlier, the original wards were not always socially meaningful. The 1998/99 ward boundaries were replaced in 2001 for statistical purposes by small area statistics in a geographical hierarchy of census 'output areas'. These were designed to reduce variation in size and as far as possible to reflect social homogeneity. In England and Wales, the average population of the smallest unit, the output area, was around 300, that of the LSOA was 1,500; and of the medium super output area

(MSOA), 7,500. Official statistics about local conditions began to be assembled on the LSOA geography using information largely from the 2001 census, in the form of a sophisticated Index of Multiple Deprivation (IMD). It varied in detail across the four UK nations and was periodically updated with new evidence.

Researchers interested in local conditions usually measured them by grouped scores of the IMD at the LSOA level. MCS also attempted to collect data on subjective perception of neighbourhood quality (including safety for children) and social networks. The reports on neighbourhood were generally congruent with the ranking on 'objective' geocoded scores (Gambaro et al, 2016; 2017; Peregrino et al, 2018), but it would not have been possible for interviews with isolated individuals to collect much material on the presence and quality of social networks, particularly at different geographical scales, in a quantitatively comparable way across the country. Such a topic might be better pursued in local studies with qualitative methods, for example the study of the Berkeley cohort in California (Settersten et al, 2021) or of four urban neighbourhoods in Britain (Power et al, 2011).

It might have been possible to infer something about variations in local social cohesion as an unexplained residual indicating flourishing or failure in the original wards but for two serious drawbacks. One was that the location of the sampled wards had to be kept confidential to protect the anonymity promised to informants. Once a ward's identity was known, it followed that any family living there with a child born between the eligible dates would be identifiable – or at least could be presumed to have been invited to join the cohort. This would have limited any assembling of external information about the place, such as good or bad news in the media about the local or adjacent area.

The other problem with exploiting the original design was that families dispersed from the addresses at which they had been originally recruited. Rapidly, through attrition and mobility, the sample size in many wards dropped below the 15–30 cases recommended by Duncan and Raudenbush (1999) for a multilevel design. Of those families in the first survey whose whereabouts were known at the age seven survey, 48% had moved more than 2 km from the address at their first interview – and were therefore unlikely to be in the same neighbourhood, however defined. By age 14, 59% of the families still in contact had moved at least 2 km (Sullivan et al, 2020: Table A6). The cohort were thus moving between an increasing number of small areas with a diminishing number of cases in any one place, and even fewer in any one preschool or primary school. By secondary school they were, basically not clustered, in contrast to Next Steps.

The particular clustering scheme for MCS recruitment was not ideal from the viewpoint of fieldwork management as there were generally too few cases in a ward per month to make up a full interviewer load. As clustering by ward did not provide good evidence for neighbourhood effects, our recommendation for the design of a cohort study in the 2020s was for geographically larger clusters. For information about the environment, it should also be possible to make use of advances in geocoded supplementary data that could be linked to survey families' locations whether or not they had moved (Sullivan et al, 2020).

Incorporating contextual and environmental information into longitudinal studies of individuals has its pluses and minuses. On the one hand it enriches the evidence even where it does not add to statistical explanation. On the other hand it has several costs. There are few well-validated instruments for quality of context, and

space on questionnaires is limited. These constrain possibilites for data enhancement and data linkage (CLS, 2022). It may seem that augmenting data sets with external data has a low cost compared to sending out interviewers and imposing on the informants' time. But there are other risks. Cohort members may not give their consent to linkage, and data holders may limit the information they release. They may not necessarily hold complete, accurate or up-to-date information. They may not have the resources or motivation to ensure its quality, supply it or monitor its use. A study has to guard against disclosing cohort members' identity whether the linkage is to geocodes or administrative records, and also to protect the identity of institutions such as schools. Provisions for onward linkage to other users or sharing derived variables among users may not be straightforward. While linked data are increasing in scope, their analysis is increasingly confined to safe settings. These additional data sources add to researchers' evidence, but they can also add to their frustrations, as well as to the workload of data managers, data suppliers and data distributors.

Conclusion

Cohort studies and other longitudinal data sets have been used to contribute to the debate on place versus persons, context versus composition. Although a clear causal interpretation remains elusive, the results reviewed here about neighbourhoods do not provide evidence that effects of 'place' are overwhelming, or that area-based initiatives on their own would be a sensible strategy to redress social disadvantage. The adverse circumstances of disadvantaged areas do indeed reflect the disadvantaged circumstances of their inhabitants. Being confined to a deprived community is one aspect of personal disadvantage.

There are limits to what can be detected in a nationally uniform statistical index, like the IMD, and there may be other aspects of the ecology affecting well-being or disadvantage. For some such aspects there are statistical geocoded databases that can also be linked to surveys and so on, but it may be beyond a national sample survey to record the many layers of physical infrastructure, social networks and migration flows that might be more apparent in a locally based cohort

The neighbourhood is by no means the only sort of 'place' to consider. I have given one example of workplace segregation, and alluded to a number of other ventures into non-residential contexts that have enriched the scientific and policy applications of the British Cohort Studies

The recent round of follow-up surveys of the British cohorts during the COVID-19 pandemic will continue to provide evidence on the context of a major historical event. Going forward, I recommend that more consideration should be given to building contextual variables into national data sets. I have also argued that there is scope for complementary reference to local and workplace studies, and for cross-cohort and cross-national comparisons, to enhance the contextual perspective in longitudinal and life course studies.

Funding

The research in Example 1 was supported by the ESRC grant no. R000232797 (Health Inequalities Among Women and Their Families). Example 2 is taken from a project funded through the NICHD grant 1R15HD065653-01 and the

ESRC-ES/K000438/1 (Home Moves in the Early Years). Example 3 is supported by ESRC grant ES/S012583/1 (Gender Wage Gap). The Centre for Longitudinal Studies has been funded by numerous grants, mainly from the ESRC. HJ's current participation in the Centre is funded by ESRC grant ES/V016814/1 (Early Life Cohort Feasibility Study).

Acknowledgements

My thanks to the Society for Longitudinal and Life Course Studies for the opportunity to give this lecture; to John Bynner, for his guidance of my career and leadership of the cohort studies; to all the co-authors whose work I have cited; to the funders of our work and to all cohort members for their cooperation.

Conflict of interest

The author declares that there is no conflict of interest.

References

- Anders, J., Henderson, M., Moulton, V. and Sullivan, A. (2018) The role of schools in explaining individuals' subject choices at age 14, *Oxford Review of Education*, 44(1): 75–93. doi: 10.1080/03054985.2018.1409973
- Bronfenbrenner, U. (1977) Toward an experimental ecology of human development, *American Psychologist*, 32(7): 513–31. doi: 10.1037/0003-066X.32.7.513
- Buttaro, A. Jr and Gambaro, L. (2018) *The Index of Local Area Relative Disadvantage: A Cross-Country Comparison*, Working Paper 2018/3, London: Centre for Longitudinal Studies, Institute of Education, UCL.
- Buttaro, A., Gambaro, L., Joshi, H. and Lennon, M.C. (2021) Neighborhood and child development at age five: a UK–US comparison, *International Journal of Environmental Research in Public Health*, 18(19): art 10435, doi: 10.3390/ijerph181910435.
- Campbell, T. (2021) In-class 'ability'-grouping, teacher judgements and children's mathematics self-concept: evidence from primary-aged girls and boys in the UK Millennium Cohort Study, Cambridge Journal of Education, 51(5):563–87. doi:10.1080/0305764X.2021.1877619
- CLS (Centre for Longitudinal Studies) (2022) *Data Access Framework*, London: Centre for Longitudinal Studies, Institute of Education, UCL, https://cls.ucl.ac.uk/wp-content/uploads/2017/02/CLS_Data_Access_Framework.pdf.
- Cortes, P. and Pan, J. (2017) Occupation and gender, in S.L. Averett, L.M. Argys and S.D. Hoffman (eds) *Oxford Handbook of Women and the Economy*, New York: Oxford University Press, pp 425–52.
- Dorling, D., Smith, G., Noble, M., Wright, G., Burrows, R., Bradshaw, J., Joshi, H., Pattie, C., Mitchell, R., Green, A.E. et al. (2001) How much does place matter?, *Environment and Planning A: Economy and Space*, 33(8):1335–69. doi:10.1068/a34104
- Duncan, G.J. and Raudenbush, S.W. (1999) Assessing the effects of context in studies of children and youth development, *Educational Psychologist*, 34(1): 29–41. doi: 10.1207/s15326985ep3401_3
- Foliano, F., Bryson, A., Joshi, H., Wielgoszewska, B. and Wilkinson, D. (Forthcoming) Gender Wage Gaps Among Young Adults: A Comparison Across British Cohorts, Working Paper, London: UCL.
- Gambaro, L., Buttaro, A., Joshi, H. and Lennon, M.C. (2022) Does residential mobility affect cognitive development at age five? A comparative study of children born in US and UK cities, *Developmental Psychology*, 58(4):700–13. doi:10.1037/dev0001288

- Gambaro, L., Joshi, H. and Lupton, R. (2017) Moving to a better place? Residential mobility among families with young children in the Millennium Cohort Study, *Population, Space and Place*, 23(4): art e2072, doi: 10.1002/psp.2072.
- Gambaro, L., Joshi, H., Lupton, R., Fenton, A. and Lennon, M.C. (2016) Developing better measures of neighbourhood characteristics and change for use in studies of residential mobility: a case study of Britain in the early 2000s, *Applied Spatial Analysis and Policy*, 9(4): 569–90. doi: 10.1007/s12061-015-9164-0
- Haynes, R., Daras, K., Reading, R. and Jones, A. (2007) Modifiable neighbourhood units, zone design and residents' perceptions, *Health & Place*, 13(4): 812–25.
- Henderson, M., Anders, J., Green, F. and Henseke, G. (2020) Private schooling, subject choice, upper secondary attainment and progression to university, *Oxford Review of Education*, 46(3): 295–312. doi: 10.1080/03054985.2019.1669551
- Holtermann, S. (1978) The welfare economics of priority area policies, *Journal of Social Policy*, 7(1): 23–40. doi: 10.1017/S0047279400007297
- Jivraj, S., Murray, E.T., Norman, P. and Nicholas, O. (2019) The impact of life course exposures to neighbourhood deprivation on health and Well-being: a review of the long-term neighbourhood effects literature, *European Journal of Public Health*, 30(5): 922–8. doi: 10.1093/eurpub/ckz153
- Karyda, M. and Jenkins, A. (2018) Disadvantaged neighbourhoods and young people not in education, employment or training at the ages of 18 to 19 in England, *Journal of Education and Work*, 31(3): 307–19.
- Levanon, A., England, P. and Allison, P. (2009) Occupational feminization and pay: assessing causal dynamics using 1950–2000 U.S. Census data, *Social Forces*, 88(2): 865–91. doi: 10.1353/sof.0.0264
- Leventhal, T. and Brooks-Gunn, J. (2001) Changing neighborhoods and child Wellbeing: understanding how children may be affected in the coming century, *Advances in Life Course Research*, 6: 263–301. doi: 10.1016/S1040-2608(01)80013-7
- Lupton, R. (2016) Housing policies and their relationship to residential moves for families with young children, *Longitudinal and Life Course Studies*, 7(3): 288–301. doi: 10.14301/llcs.v7i3.377
- Lupton, R. and Kneale, D. (2012) Theorising and measuring place in neighbourhood effects research: the example of teenage parenthood in England, in M. van Ham, D. Manley, N. Bailey, L. Simpson and D. Maclennan (eds) *Neighbourhood Effects Research: New Perspectives*, Dordrecht: Springer, pp 121–45.
- McKendrick, A. and Walker, A. (2020) The Role of Faith and Faith Schooling in Educational, Economic, and Faith Outcomes, IZA Discussion Paper 13192, Bonn: IZA.
- Meschi, E., Swaffield, J. and Vignoles, A. (2019) The role of local labour market conditions and youth attainment on post-compulsory schooling decisions, *International Journal of Manpower*, 40(8): 1482–509. doi: 10.1108/IJM-11-2017-0303
- Mitchell, R., Gleave, S., Bartley, M., Wiggins, R.D. and Joshi, H. (2000) Do attitude and area influence health? A multilevel approach to health inequalities, *Health & Place*, 6(2): 67–79. doi: 1016/s1353-8292(00)00004-6
- Odgers, C., Caspi, A., Bates, C.J., Sampson, R.J. and Moffit, T.E. (2012) Systematic social observation of children's neighborhoods using Google StreetView: a reliable and cost-effective method, *Journal of Child Psychology and Psychiatry*, 53(10): 1009–17. doi: 10.1111/j.1469-7610.2012.02565.x

- Papachristou, E., Flouri, E. and Joshi, H. (2022a) The role of primary school composition in affective decision-making: a prospective cohort study, *British Journal of Educational Psychology*, 57(8): 1685–96.
- Papachristou, E., Flouri, E., Joshi, H., Midouhas, E. and Lewis, G. (2022b) Ability-grouping and problem behavior trajectories in childhood and adolescence: results from a U.K. population-based sample, *Child Development*, 93(2): 341–58. doi: 10.1111/cdev.13674
- Parsons, S. and Hallam, S. (2014) The impact of streaming on attainment at age seven: evidence from the Millennium Cohort Study, *Oxford Review of Education*, 40(5): 567–89. doi: 10.1080/03054985.2014.959911
- Peregrino, A.B., Watt, R.G., Heilman, A. and Jivraj, S. (2018) Breastfeeding practices in the United Kingdom: is the neighbourhood context important?, *Maternal and Child Nutrition*, 14(4): art e12626, doi: 10.1111/mcn.12626.
- Plewis, I. (ed) (2007) *The Millennium Cohort Study: Technical Report on Sampling*, 4th edn, London: Centre for Longitudinal Studies, Institute of Education, UCL.
- Power, A., Wilmot, H. and Davidson, R. (2011) Family Futures: Childhood and Poverty in Urban Neighbourhoods, Bristol: Policy Press.
- Schoon, I., Bynner, J., Joshi, H., Parsons, S., Wiggins, R.D. and Sacker, A. (2002) The influence of context, timing, and duration of risk experiences for the passage from childhood to midadulthood, *Child Development*, 73(5): 1486–504. doi: 10.1111/1467-8624.00485
- Settersten, R.A. Jr, Elder, G.H. Jr and Pearce, L.D. (2021) Living on the Edge: An American Generation's Journey Through the Twentieth Century, Chicago: University of Chicago Press.
- Sloggett, A. and Joshi, H. (1994) Higher mortality in deprived areas: community or personal disadvantage?, *British Medical Journal*, 309(6967): 1470–4. doi: 10.1136/bmj.309.6967.1470
- Sullivan, A., Joshi, H. and Leonard, D. (2010) Single-sex schooling and academic attainment at school and through the lifecourse, *American Educational Research Journal*, 47(1): 6–36. doi: 10.3102/0002831209350106
- Sullivan, A., Joshi, H. and Williams, J. (2020) New Birth Cohort Study: Theoretical Sampling Design Options, CLS Working Paper 2020/4, London: Centre for Longitudinal Studies, Institute of Education, UCL.
- Sullivan, A., Leonard, D. and Joshi, H. (2012) Single-sex and Co-educational schooling: what are the social and family outcomes, in the short and longer term?, *Longitudinal and Life Course Studies*, 3(1): 137–57.
- Sullivan, A., Parsons, S., Wiggins, R.D., Heath, A. and Green, F. (2014) Social origins, school type and higher education destinations, *Oxford Review of Education*, 40(6): 739–63. doi: 10.1080/03054985.2014.979015
- Taylor, C., Rees, G. and Davies, R. (2013) Devolution and geographies of education: the use of the millennium cohort study for 'home international' comparisons across the UK, *Comparative Education*, 49(3):290–316. doi: 10.1080/03050068.2013.802927
- Theodoropoulos, N., Forth, J. and Bryson, A. (2022) Are women doing it for themselves? Female managers and the gender wage gap, Oxford Bulletin of Economics and Statistics, 84(6): 1329–55. doi: 10.1111/obes.12509
- van Ham, M., Manley, D., Bailey, N., Simpson, L. and Maclennan, D. (eds) (2012) Neighbourhood Effects Research: New Perspectives, Dordrecht: Springer.

- van Ham, M., Manley, D., Bailey, N., Simpson, L. and Maclennan, D. (eds) (2013) Understanding Neighbourhood Dynamics: New Insights for Neighbourhood Effects Research, Dordrecht: Springer.
- Wadsworth, M. and Bynner, J. (eds) (2011) A Companion to Life Course Studies: The Social and Historical Context of the British Birth Cohort Studies, Abingdon: Routledge. Waldfogel, J. (2010) Britain's War on Poverty, New York: Russell Sage Foundation.
- Wiggins, R.D., Bartley, M., Gleave, S., Joshi, H. and Lynch, K. (1998) Limiting long-term illness: a question of where you live or who you are? A multilevel analysis of the 1971–1991 ONS longitudinal study, *Risk Decision and Policy*, 3(3): 181–98. doi: 10.1080/135753098348149
- Wiggins, R.D., Joshi, H., Bartley, M., Gleave, S., Lynch, K. and Cullis, A. (2002) Place and personal circumstances in a multilevel account of women's long-term illness, *Social Science and Medicine*, 54(5): 827–38. doi: 10.1016/S0277-9536(01)00112-5
- Wilkinson, D., Bryson, A., Joshi, H., Foliano, F. and Wielgoszewska, B. (Forthcoming) The Gender Wage Gap at 42: Evidence from Two Cohort Studies, Working Paper, London: UCL.
- Zhang, N., Beauregard, J., Kramer, M.R. and Bécares, L. (2017) Neighbourhood ethnic density effects on behavioural and cognitive problems among young racial/ethnic minority children in the US and England: a cross-national comparison, *Population Research Policy Review*, 36(5): 761–804. doi: 10.1007/s11113-017-9445-1