

Submission to Economic and Social Research Council's Longitudinal Studies Review 2017

Recommendations

- Meta data (at various levels) for large longitudinal studies needs to be clearer about the limitations of the data, particularly in respect of: measurement error/instrument reliability, population/cohort coverage and missingness. Users should be supported to understand these issues and report them appropriately in secondary use of the data.
- The tendering process for sweeps of data collection should be reviewed and evaluated for its efficiency and effectiveness in achieving value for money and data quality.
- ESRC strategy for impact of secondary data analysis should be developed to convince researchers that there are opportunities for original work and methodology development.
- The capacity building investments of the ESRC are welcome but not yet evident in sophisticated published social science analyses: Targeted calls such as NORFACE DIAL are welcome and UK success suggests increasing and diversified capability. Capacity in using complex methods to answer pressing substantive questions requires greater commitment to substantive quality for those with strong technical skills. The ESRC should evaluate what capacity investments are achieving quality social science and whether there is a deeper conception possible of what characterises this capacity.
- Representativeness achieved by probability sampling is an effective way of producing good social coverage of a defined population. More generally, large UK social research investments should have a stronger regard for social science e.g. social dependencies.
- The proliferation of cohort studies around the world lacks a methodology to make sense of comparative analyses, which development ESRC and UK researchers should lead. Similarly more international coordination of design/measures should be developed.
- Analyses of large longitudinal studies represent a very high standard of evidence for policy and social science. Public appreciation of this value, and the UK's leading position, should be developed, and researchers encouraged to communicate the value of design.
- Our society continues to change and social science to develop - without these large investments, our societal knowledge and our disciplinary pre-eminence will decay.

Background

The Royal Statistical Society (RSS) is a membership organisation numbering more than 8,000 members, for professionals and anyone with an interest in statistics for the public good. Alongside a small central policy secretariat, the RSS is organised into sections run by members. The Social Statistics Section takes an interest in techniques of sampling, opinion polling and social measurement and statistical modelling and methodology within these areas. Therefore the section has taken an interest in the ESRC review of longitudinal studies and is representing the RSS in this submission.

The Section is run by a committee drawn from private sector, academic and government social researchers and social statisticians. This is designed to reflect the membership of the Section and so we cover a range of interest in the work of the international review group. In order to canvass views of members, we reported on the statslife website on progress and asked for feedback on the RSS interest and the proposal for a Section Meeting.

Discussing feedback from members, it was agreed that the interest of the RSS went beyond the scope of the review. Thus we plan to use more time to organise an event in October which would be complementary to the review. However, we are grateful for the opportunity to synthesise and develop views of members bearing on the review. It was a frustration about the original consultation that it solicited individual responses only, so we are grateful for the opportunity to submit this note.

The RSS has a charter to attend to the discipline of statistics i.e. methodology, the profession of statistics i.e. practice, use of statistics for public good i.e. policy and education in statistics i.e. the skills pipeline. Our interest in the ESRC review extends across all these areas and in a number of ways which the review process thus far has not covered extensively. Although the review covers a number of longitudinal studies, our responses specifically address the portfolio of birth cohorts (but most comments apply equally).

Statistical Design

The construction of large longitudinal cohorts (and panel studies) means that they are packaged into waves which follow an accountable procurement process. We have a concern that this process is not designed to lead to the best value for money or the best scientific outcome. Onerous tendering processes reduce the number of bids and it is not clear that the mode effect of different contractors on data is well understood and communicated to users. More generally the limitations of data need to be more clearly documented and communicated to users in such a way that their bearing on published analyses is effectively shown in research reports. Meta data should exist at a number of different levels and form the basis of further interaction with study teams, not the end of the matter. An example is that measurement error in all possible psychometric tests of infants is substantial and known by test developers but not explained in meta data. Furthermore, sample size is greater than available in developer test standardisation samples and therefore represents an unexploited opportunity for test validation. This sort of documentation might be developed as part of the user consultation process, taking expert advice on the production of a secondary resource, not just primary data collection choices.

Good coverage (typically framed as representativeness, but this implies we know the true population, while census practitioners refer to coverage) of a clearly defined population is a strength of the cohorts. It is impossible to estimate relations about the full extent of the distribution without data from the full distribution unless assumptions are made about the functional form

(typically linearity) - a large sample is ideal for developing this part of a model. Sampling and following up a population necessarily excludes incomers and some policy interests e.g. migrant children are excluded by design in MCS (but BCS70 has added them in where they have a valid date of birth). The question emerges of how evidence from a number of populations, how it can be synthesised and variation between them understood. It is a concern that there is no methodological agenda on this point internationally: single cohort analyses are more parochial than can now be justified scientifically. As cohorts proliferate internationally, we need to think about establishing the most salient ages to measure events, attributes and behaviours rather than consulting local preferences. International collaboration on both of these issues seems the most logical way to proceed and an area in which the ESRC and UK researchers could offer leadership.

Secondary Utilisation

Use of large longitudinal data sets has been the subject of targeted calls supported by the ESRC through the SDAI and NORFACE DIAL, both having a particular requirement for impact. To a degree, we have a concern that the focus on 'impact' of secondary data use excludes some of the scientific value and development of methodology. There is a challenge in engaging with impact partners where the outcome of an analysis is not known to the point that it is not part of the policy agenda and therefore has no established interested party. There is a subsidiary issue that impact partners can have low expectations of the complexity of analysis, as well as limited capacity to engage with complex analysis, all of which can reduce ambition of methodology used for secondary analysis. The opportunities presented by the NCRM are important, to a degree we have a concern that funding processes exclude social statisticians, or conflate them with quantitative social scientists - the feed through of methodological work into new social science methods.

The ESRC has rightly targeted funds to build capacity in the use of large social data and recognised the skills need as existing at several stages of the skills pipeline. The RSS would like to see the utility of large-scale longitudinal social data exploited in analyses of both substantive and technical sophistication appropriate to the issues being investigated. It is not uncommon to see cross-sectional analysis, and latest end point regression analyses, pace epidemiology, are also common but utilisation of the longitudinal social structure is not. Our journal series A (statistics in society) receives submissions where substantive social science is of a quality which matches the statistical standard much more rarely than we would hope. We also observe technical shortcomings in material published elsewhere which suggest peer review processes taking statistical validity of analysis for granted. Overall there seems to be a gap between technical capacities and substantive understanding, and little realisation on either side that this is a problem - substantial end to end secondary analysis exemplars are lacking.

There is a need to close the capability gap without simply establishing epistemic concentrations in successful clusters - abstraction by quantification has a disciplinary character but longitudinal social data has diverse research potential. We were pleased to see in the recent NORFACE call

that success did not simply reflect the 'usual suspects' but would like to see evaluation of the extent to which existing initiatives are closing this gap between pockets of substantive and technical excellence. More widely we would encourage the ESRC to evaluate the success of capacity building activities in this area, and to further develop its conception of how the desired capacity is characterised. We are concerned by the degree to which statisticians have been excluded from ESRC strategy and review processes, given the value they add to methods used, as well as development of capability future practitioners - a partnership would be more beneficial.

Future Longitudinal Investment Value

Critical public understanding of statistics and a public culture of statistical literacy are important to the RSS and we believe a critical attitude to social science evidence needs to be fostered. Evidence from the longitudinal studies is of a very high scientific standard and there is a need to develop the public appreciation. The analyses of these studies and the knowledge emerging are not well understood or discriminated in public discourse. RCTs have achieved recognition in certain circles but are not realistic solutions to research design of the kind large longitudinal studies are best at. The recent book by Helen Pearson is important although its scope was limited to certain birth cohort studies and to a degree gives more a descriptive impression of this research. We need to communicate about methodology and how the design of large longitudinal studies means appropriate analyses give us a very strong understanding of social processes. This does not just mean the sample size but how the design of the data allowed us to reach a particular conclusion, and the inclusion of statistical adjustments to allow for limitations. The correlations found in analyses of these studies are not of the same inferential character allowed by randomisation but their robustness in identifying social regularities needs to be promoted.

The portfolio of large longitudinal studies in the UK makes for a unique resource which allows us to describe our changing society in complex terms which we should not shy away from. The social coverage, family data and longitudinal nature mean that we can conduct analyses not otherwise possible. Administrative data linkage can enhance longitudinal studies, reduce respondent burden and costs; it also verifies cohort data, allowing cross validation and study of biases - it represents evolutionary not replacement potential. Future studies can develop by building on past experience and reviews of this kind and the knowledge from international collaborations. Current analyses need to be encouraged to make use of the particular value of these studies, to some degree being more ambitious. Psychometric tests and behaviours in a family linked longitudinal frame of population coverage are not available reliably in other sources. The complexity and novelty of these data are underutilised and we hope funding calls will continue to raise the bar but more communication of the potential of the resource for more complex questions with policymakers and interested parties would be beneficial.

The value of large longitudinal studies is not doubted, and this is evidenced by the investments now of many other countries within Europe and beyond. These offer resources which UK

researchers can access, although the UK leads the way in the openness of its data licensing. However, government policy evaluation in the UK requires data from the UK and a gap in large cohort investments leaves a problem, as it did in the 1980s. Grand concepts like life chances are inaccessible without large, longitudinal studies collecting social data with good population coverage. While taking part in international collaborations like that spearheaded by the OECD is worthwhile, as are Young Lives and EPPE/EPPSE, these projects are different to an academic-led cohort. Furthermore the need for health understanding from early in life means different data will be appropriate to consider, but also that the nature of healthy development and lives would be considered rather than a focus on disease which is an inefficient use of a representative sample. Conversely, studies which have a health focus need sufficient social science conceptualisation in order to access concepts of ageing well. The RSS would like to see the ESRC strategy for longitudinal studies driven at all stages by advancing the science.

Submitted by RSS Policy and Research Manager, 25 July 2017