Call for Proposals and Terms of Reference

UNFPA/IUSSP project on demographic estimation from limited and defective data

BACKGROUND

In the past twenty five years, enormous strides have been made in improving the quantity and quality of demographic data collected in developing countries. The spread of Demographic and Health Surveys (DHSs) across the developing world has allowed fresh insights into trends and trajectories of both fertility and child mortality. Demographic Surveillance Sites, localised longitudinal projects, have allowed demographers and other quantitative social scientists to begin the process of untangling causality across a wide range of demographic and socio-economic outcomes. The analysed results from these data sources have been used to inform policy and to direct interventions that have made a significant difference to the lives and well-being of people in developing countries.

With these advances, the centrality of national censuses to developmental and planning agendas is increasingly being ignored or forgotten. Not only can censuses provide demographic estimates that usually cannot be derived from other sources (small area estimates and estimates of relatively rare events such as adult mortality and migration, for example), but also the census is of fundamental importance in establishing the sampling frames for other inquiries, such as the Demographic and Health Surveys.

The process of attempting to enumerate simultaneously all people living in a defined area makes the entire census process (from planning and logistics, through to enumeration, data processing and analysis) extremely complex and expensive. Material errors like differential under-enumeration are common features of most censuses and, if the data collected are to be used to maximum effect for planning and development, they must be subjected to rigorous assessment and analysis.

A changing set of global priorities in the realm of population studies in the late 1980s saw a significant intellectual shift in the weight afforded to reproductive health relative to demography. This shift, most clearly articulated at the 1994 Cairo Conference on Population and Development, has directed the focus away from the training of demographers in working with,

assessing, and analysing census and survey data. With fewer sources of funding for this kind of training, many institutions in both the developed and developing worlds cut back on - or in several cases, entirely stopped - teaching and developing expertise in the estimation of demographic parameters from limited and defective data. Few demographers graduating in the last 15 years have been trained, or developed extensive skills, in this aspect of demography; the majority of skilled practitioners in this area have already retired or are nearing retirement.

Concurrently, and for reasons similar to those outlined above, the major works that have been used to guide demographic analysis of deficient and defective data have not been updated for many years and do not cover recent advances in demographic estimation. Changing demographic conditions across the developing world (notably the departure of demographic dynamics from conditions of stability) mean that many of the methods that still form part of the canon of indirect techniques of demographic estimation may no longer be robust or capable of producing reliable results.

These two factors have led to increasing concern that there is insufficient expertise to assess and analyse the census data that will be collected in the future, including the upcoming 2010 census round. Funded by the United Nations Population Fund (UNFPA), and run under the auspices of the International Union for the Scientific Study of Population (IUSSP), this project aims to arrest the erosion of knowledge in this branch of demography and to document, in a practical and useful way, the current state-of-the-art of techniques of demographic estimation.

SCOPE OF PROJECT

The project is to develop a suite of resources that sets out and explains the wide variety of methods available to estimate demographic parameters from census and survey data suitable for use both by the staff of national statistical offices and by professional demographers across the globe. The resources should be sufficiently simple to allow national statistical office staff (who may not be trained demographers) to make informed choices between methods of demographic estimation and to guide them through the implementation and operationalisation of the chosen methods, while simultaneously offering much greater detail for the benefit of professional demographers. This more sophisticated exposition should set out not only the mechanics of the methods, but also detail the underlying mathematics, assumptions and internal logic. It is very important that the material provided should also reflect in detail on the situations where particular approaches are either strongly indicated or contra-indicated; on the assumptions that

must hold for the methods to produce robust results; and the implications of any violations of those assumptions. The likely impact of the HIV/AIDS epidemic on the methods should also be given careful consideration.

The material should be disseminated in a way that allows for the greatest possible interactions between demographers and practitioners, and for the material produced to be made widely available. To this end, the following deliverables are anticipated as part of this project:

a) A web-based version of the suite of resources. As suggested above, this would have to be ordered hierarchically, presenting the basic material first and followed by the more detailed exposition of each method in turn. A multi-layered design, easily implemented using web technologies, is almost certainly called for. In addition, the creation of an online forum or wiki-type arrangement is encouraged.

   The successful application will be expected to maintain and update the web-based component for two years from the date of contract.

b) A hard-coded version on CD of the same material outlined above to allow demographers and other users in bandwidth-constrained environments to make use of the material by means of CD-Rom rather than the web.

c) A limited number (c. 200) of paper copies of the core material for distribution.

The material, which is expected to be approximately 250 print-equivalent pages long, must be developed in English. Where possible, however, the resources should be designed with translation into other languages in mind.

MINIMUM CONTENT

The suite of resources must cover, at least, the following aspects of demographic estimation:

1) Assessment of data quality and descriptive statistics

- *Assessment of the essential demographic variables collected in censuses and surveys*
- *Metrics of age and sex structure*
- *Internal consistency of demographic parameters*
- *Editing and imputation rules and procedures; implications for demographic estimation*

2) Measurement of demographic parameters

a) Fertility

- *Direct measurement of fertility from census data (based on last birth and births in the last year)*
- *Direct measurement of fertility using exposed-to-risk approaches (e.g. for DHS data)*
- *Indirect measurement of fertility (Brass P/F; Relational Gompertz models; Own-children techniques)*

- *Two-census approaches*

b) Child mortality

- *Direct measurement of child mortality from censuses (based on last birth and births in the last year data)*
- *Direct measurement of child mortality using exposed-to-risk approaches (e.g. for DHS data)*
- *Indirect measurement of child mortality (Brass CS:CEB; Brass-Blacker; Other techniques)*
- *Adjustment techniques applied to estimates of child mortality to take the impact of HIV/AIDS into account*

c) Adult mortality

- *Direct measurement of adult mortality from censuses (based on reported deaths in the household)*
- *Indirect measurement of adult mortality – orphanhood approaches*
- *Indirect measurement of adult mortality – siblinghood approaches*
- *Indirect measurement of adult mortality – Generalised Growth Balance methods*
- *Indirect measurement of adult mortality – Synthetic Extinct Generation methods*
- *Preparation and derivation of life tables from collected data*

d) Maternal mortality

- *Approaches to measuring maternal mortality, including sisterhood methods*

e) Migration

- *Balancing equation (residual) methods*
- *Direct estimation based on place of last residence; time of last move data*
- *Approaches to estimating migration developed by Hill; Raymer and Rogers; and others*

3) Use of model life tables for demographic estimation

- *Families of model life tables / life tables available for use*
- *Problems, issues and recommendations regarding the use of model life tables*

While the focus of the material should be on using and working with census data, the material should also cover estimation methods from other data sources (e.g. the birth history data collected in Demographic and Health surveys; and data from vital registration systems).

Further, the resources must be designed primarily as practical tools – and appropriate worked examples must be provided, possibly in downloadable spreadsheet format. It is to be hoped that data from many different regions of the world be used in the examples.

The scope of work has been left intentionally wide. Many of the canonical methods written up in the UN's Manual X, for example, were devised for use in situations where computing facilities were limited or non-existent. With the ubiquity of desktop computing, these constraints are

exceedingly rare and – if possible – the material should seek to revise existing approaches and methods in an attempt to achieve greater transparency and accuracy through greater computational sophistication.

Space also exists within the scope of the project for the inclusion of material in other areas deemed relevant or important, according to the specific interests and expertise of the members of the team. An example of this might be to extend the project to incorporate new metrics that use census and survey data to measure progress towards meeting the Millennium Development Goals. If the successful team's application also contains an intention to consider aspects of demographic estimation for small areas, further consultation and negotiation with UNFPA will be required to ensure that the work undertaken does not overlap with current UNFPA projects.

Proposals should clearly indicate any extension beyond the minimum scope set out above.

ELIGIBILITY AND SELECTION CRITERIA

Individuals, groups of individuals (not necessarily from the same institution), institutions, or consortia of institutions are welcome to apply. The successful application will be determined by the IUSSP who will charge suitably qualified people to evaluate the proposals and to make recommendations to the IUSSP and UNFPA.
While cost is clearly an important determinant in the application process, demonstrated expertise together with a track record of publication in the area covered by this project will be a more significant determining factor in the IUSSP's recommendation. Further, as the resources will most probably be used most often in the developing world, weight will be placed on the regional composition of teams, and regional expertise of the bidding team.

COPYRIGHT AND OWNERSHIP

Copyright of the material disseminated will rest with the IUSSP under a Creative Commons Attribution-Non-Commercial-Share Alike 3.0 France Licence[1].

TIME LINES

The project should be completed substantially (i.e. capable of being distributed and disseminated as per the original application) within 12 months of the signing of the contract and will be

[1] http://creativecommons.org/licenses/by-nc-sa/2.0/fr/ and http://creativecommons.org/licenses/by-nc-sa/2.0/fr/legalcode

subjected to IUSSP-appointed peer review. A final update must be available within 24 months of signing the contract.

BUDGET

The overall budget for the particular project has not been set, but the scale of the project is such that the IUSSP anticipates proposals with a total cost in the region of between USD150 000 and USD250 000. More expensive proposals are unlikely to receive funding.

PROPOSAL REQUIREMENTS

Individuals or parties wishing to be submit a proposal should prepare a proposal not more than ten pages long, setting out

- names, affiliations and expertise of all individuals who will be involved;
- a detailed inventory of intended deliverables, enumerating the demographic methods that will be covered by the material;
- proposed formats for the deliverables, as well as an updating and dissemination strategy covering the duration of the project;
- time frames and way points;
- budgets (broken down into at least the following headings: staffing costs; equipment costs; administrative costs and overheads; subsistence and travel).

The successful proposal will be ratified by means of a binding agreement between the successful team and the IUSSP.

Completed applications should be sent to the Executive Director of the IUSSP, Dr Mary-Ellen Zuppan (zuppan@iussp.org), by 24 November 2009. The successful team will be selected and notified by 31 January 2010.