

## A Supplement to Newsletter 91 Report of BSPS Conference 2006

The 2006 BSPS Conference was held at the University of Southampton, with a plenary theme of **Global migration trends**. Attendance again exceeded expectations, with over 190 people participating during the three Conference days. Many of those taking part commented

stable population many generations of constant fertility and mortality are needed. Few if any European countries have a stable population. The usefulness of the model in demonstrating the rapid ageing caused by out migration was noted. Readers may also be interested in research that Prof. Alho has participated in on Uncertain

higher rate of growth in the developing world than in the West and Europe was that these countries are using skilled labour from the developed world to fill skill gaps in areas such as engineering. He agreed that intermarriage and mixed-race children were an important topic and one that he is currently researching.

**Professor John Salt** (Migration Statistics Unit, University College London) began the third day of the conference with a very thought provoking plenary session titled '*International Migration in Interesting Times*'.

The subject of international migration, has until recently, been very much a minority field and John began by examining recent trends in international migration in Europe, and discussed some of the main implications for receiving countries. Particular attention was given to recent movements into the UK and an attempt was made to predict the likely future implications by considering what happened during the guest-worker phase during post-war Western Europe.

Globally, the number of international migrants (defined as those living outside their country of birth) has risen from 78 million in 1970 to over 191 million today. This may at first seem a large increase, yet as a proportion of the world's total population the situation is relatively stable. In 2004 the UK saw the largest ever net gain of migrants, in part due to the opening of the UK labour market in May 2004 to citizens of new EU member states.

Migration flows are complex, not least because they involve difficult definitions and concepts. John commented how this complexity is often not fully understood by officials, politicians and, in particular, the media, who have a tendency to reduce all types of inflow to 'immigration' and 'asylum-seekers'. Migration flows are also extremely varied; individuals and groups migrate for different reasons, stay for different periods of time and fulfil different roles. Simultaneously, many people return to their country of origin each year or migrate elsewhere.

Large-scale immigration often leads to implications for the provision of services su

The session started with a presentation by **Ian Timæus** (London School of Hygiene & Tropical Medicine) of his paper co-authored with Tania Boler on '*Father figures, teenage pregnancy and the educational outcomes of orphans in South Africa*'. The motivation for the paper was to add to the limited literature on how parental death affects child welfare and the effectiveness of possible strategies to mitigate impact in Africa. Using cross-sectional data to examine the impact of an AIDS death on child welfare is that it is difficult to establish causation. Are children living in poor households more likely to become orphans or are orphans more likely to be poor? This research overcomes this problem by using data on 1446 school-age children from the KwaZulu-Natal Income Dynamics Study, a panel of households in

of this, and the Hadwiger mixture model was experimented with to smooth these ASFRs.

*Albert Sabater*

There then followed a highly theoretical paper on *Family members' decisions*, presented by **Miriam Marcén** but written with colleagues from the University of Zaragoza. They used form of game theory to analyse the relationship between intergenerational transfer and public transfer, the effects of these transfers on labour decision and the consequences for intra-family allocation. It is impossible to set up a truly representative scenario for all families, but they chose a family with three generations, with two adults generations (the donor and the recipient) living apart, and a third generation being the children of the recipient. The analysis combined two approaches which to date, had been considered independently in the literature: 'inter-generational transmission' models; and 'family bargaining' models. Using a simple two-stage model they determined first the optimum level of the transfer. They considered that donors are capable of predicting others' actions and feelings, that is, empathically establish a link between the capacity to know emotionally the recipient's motives and the donor's own motives. In the second stage, the levels of provision of a household good and the effort were deduced by way of a Nash bargaining solution with the threat point being represented by the situation of divorce. After proving that individual preferences matter for intergenerational transfers, they found that private transfers will interact with public transfers in a way different from the Beckerian altruist model, and that increases in spouses' wages had greater effects on welfare in the situation of divorce than in the situation of marriage. In discussion it was suggested that rather than public transfers crowding out private transfers the relationship may be the other way round.

The third presentation was made jointly by **Hannah**

information from the BHPS to explore whether Scottish women had different fertility intentions from English women, but no evidence was found for this. Future work will consider the factors associated with delay to second and subsequent births.

**Mike Brewer** provided an interesting use of data from the UK Family Expenditure Surveys (1968-2003) to *relate fertility behaviour in successive cohorts of women to educational attainment*. Data on the age of the women and children resident in the household were used to estimate mother's age at birth and birth order and the potential error introduced by this method were discussed. The study showed that the fall in average family sizes that has occurred in the UK over the last few decades can be divided into two periods. The first (starting with women born in the 1935) involved a fall in third and subsequent births, while the second (starting with women born in the 1945) saw a postponement of childbearing and increased childlessness. Women who experience further education have very different fertility to others and are more likely to delay births and have smaller families. However, they also argue that the overall decline in average family size cannot be explained by the rising participation of women in further education.

**Roona Simpson** provided an *analysis of the 1958 and 1970 birth cohorts that aimed to explore the socio-economic characteristics of women delaying childbirth*. Grounded in a range of theories that have been suggested to explain low fertility, this study provides some useful insights into the changing fertility behaviour experienced in the UK over the last few decades. The study provided some descriptive results about the different fertility behaviour of different socio-economic groups and, unlike many other studies, also considered variations between men and women.

The final paper presented by **Paul Boyle** was based on a *survey of fertility attitudes conducted in Scotland*, on the back of the 2005 Social Attitudes Survey. This study focused on two main elements: the attitudes to fertility among Scottish women and the contextual factors that influence fertility intentions and behaviour. In particular, the study considered the influence of 'child-friendly networks' and the 'local geographical context'. The results showed that egalitarian views influenced fertility decisions, and also that there were significant differences in fertility intentions depending on whether the area in which the woman lived was described as being 'good for bringing up children'. Further research will explore whether this is a real or selection effect.

## **Fertility**

The three papers in this session ranged over a number of important issues associated with fertility trends. The first two broadened debate by introducing questions of government, religion and politics, while the final paper addressed the links between demography and human biology.

**Patrick Carroll** opened the session with a paper outlining *UK government policies in four main areas: health, taxation and social benefits, housing and housing finance, educational opportunities for women*. He argued that each of these has a negative impact on fertility levels and would have to be reconsidered in order to enable a recovery in the birth rate. His analysis proved controversial and led to a lively exchange over theS -1.1s5g and

Cohorts reaching marriageable and childbearing age in the years during and immediately succeeding the collapse of the Soviet Union showed a higher propensity to marry and give birth at an early age than those which preceded. Trends in cumulated cohort fertility also showed an increase in fertility at early ages, despite the overall decrease in fertility quantum. Period trends showed a clear decrease in median age at first birth in the first half of the 1990s – which parallels decreases in states in Eastern Europe which also experienced a particularly severe economic crisis during the period. While the economic crisis served to discourage higher-order births, the tendency for early first births may be a strategy for reducing uncertainty during a period of dramatic political and economic change.

*Arnstein Aassve* (Essex) continued the theme of *post-*

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datasets could be incorporated into the model. James's

Liveability (community safety, quality of schools, employment rates)  
Desirability (natural amenities, forests, freshwater, coastline)

Paul and his colleague created indices of each of these concepts and using regression models produced population forecasts for 2000. These outputs were evaluated these against the results of the 2000 Census.

The results were somewhat counterintuitive and unfortunately did not turn out as hypothesized. At the forecast stage the more complex the model in terms of the indices, the less well it performed against simpler models. The more naïve models were closer to the actual 2000 Census outcomes. In only one instance did the complex model outperform all others. This was where the population of the MCD (minor civil division) in Wisconsin was less than 250 people, suggesting that non-demographic variables may work better in areas of small population.

**Paul Norman** of University of Leeds (with **Ludi Simpson** and **Abdelouahid Tajar** of the University of Manchester) highlighted the difficulties encountered when *projecting emerging ethnic group populations* at a small area level, where past trend data was scarce. The area of study, Oldham and Rochdale had experience significant growth in its Asian community which was also moving out of areas of traditional settlement (inner city areas) to surrounding suburbs.

Feasibility work was carried out to assess at what geographical level combined with the aggregation levels of ethnic group categories and an assessment of the level of data detail would yield robust and useful forecasts. By looking at the range of options, the team were able to produce outcomes based on 8 models and assess these.

Using age specific demographic rates over crude rates resulted in similar forecast outcomes for the White groups than it did for other ethnic groups. In the Pakistani groups, the application of district rates masked local trends however using ward demographic rates compounded the volatile nature of the population change. Excluding the use of population constraints resulted in much higher growth rates.

Ethnic group ward projections were deemed too volatile unless the population was large as in the case of the White group. Using age specific demographic rates was preferential to more general crude rates. However using district level rates tended to mask local features.

**Harvey Snowling** of the General Registrar Office of Scotland presented the *small area estimation process in Scotland* and how the results compared with administrative data sources. Adopting the existing method used to produce mid-year population estimates, small area estimates were produced for 'datazones' for the years 2001 to 2004.

SAPE for all data zones were assessed against existing alternative data sources. Comparisons were made for children aged 5-14 using Child Benefit data, School's Census data and estimates of pupils in Independent schools. Adults over 65 were compared with a DWP data

thought to influence growth. The paper demonstrated that we have still a long way to go before we have robust small population projection methods.

*David Swanson* of the University of Mississippi presented the second paper of the session on *towards measuring uncertainty in population data generated by*

*Tajikistan.* The paper examined the factors associated with school role amongst children aged 7-17 in Tajikistan. In particular the paper examined the hypothesis that after controlling for household characteristics enrolment rates, particularly amongst older children, will be lower in areas where the opportunity cost of education is higher, for example where there are more opportunities for cash labour or where travel costs are high. In order to investigate this, data is needed on both the child's individual and household characteristic but also on the characteristics of where they live. Thus the research combined household and community data from the 2003 Tajikistan Living Standards Measurement Survey with aggregated data from the 2000 Census as well as spatial data from remote sensing on land use. This is the first time that Tajik data from different sources has been linked using GIS. Not

She explored factors affecting mental and physical health of the elderly population using data from the SHARE project (Survey of Health, Ageing and Retirement in

The third presenter was *Natalie Spark Du Preez* from Loughborough University, presenting a paper entitled '*Health seeking behaviour for 10 childhood illnesses in urban South Africa*'. Although the research involved both quantitative and qualitative methods, the presenter

deficiencies in the treatment of many of the children in the study regardless of their sex.

### **Health Methodology and Mortality Session**

The first paper entitled; *Dying Alone: The distribution of Section 46 funerals in England* was presented by **Johan Mohan**, University of Southampton. The presentation revealed that section 46 funerals (where a body with no relatives present is found) that are reported by Local Authorities are three times as common as suicides and often linked with extreme weather conditions such as a heat-wave (Klinenberg's work in Chicago in 2002). Data from 213 Local Authorities (LA) on the age, year and the gender of the section 46 funerals was presented. The work aimed to study trends of an increase in the section 46 funerals. 43% of all section 46b funerals occur among victims over 75 years of age. Mean age of death was identified as 67 years for men and 76 for women with a sex ratio of 2.55 male to female deaths. The age-specific skew of Section 46 funerals could be an indication of material deprivation, as it cannot be explained by socio-economic status or geography. Approximately only 1% of deaths within local authorities are claimed as Section 46 funerals. Prevalence of section 46 funerals within LA is highly skewed with a small number of LAs experiencing a high number of Section 46 funerals. Regression analysis was used to study the association between the social fragmentation index and death rates. Currently Section 46 funerals account for 3600 deaths per annum. This work will aim to estimate the future annual rates for section 46 funerals and to explore the impact of socio-economic status, migrations and isolation on the

abortion, and medical abortion is rarely available, despite its high demands. Services which are mostly available in urban areas, only 1-3 days a week due to a lack of trained nurses, and they often charge a high fee. Same day services were not provided and procedures were often unsafe and carried out in inappropriate spaces. Counselling was not provided and registration breached confidentiality. Women lacked knowledge of their legal rights regarding abortion as well as decision-making powers. Abortion is still considered as sinful and illegal abortion is still often used. Currently the government is making more effort to train doctors in abortion techniques and to provide more services through governmental and non-governmental institutions. Regional training centres have been set up to increase awareness and media, radio and poster displays are used to spread messages of safe abortion. The conclusion suggested that good progress has been made in Nepal to increase the awareness of safe abortion in the communities, although there are still gaps in practice. It is also necessary to increase family planning education and availability to avoid promoting abortion as a form of contraception.

## Historical Demography

This year's historical demography strand at the Conference saw seven papers, which, although primarily concentrating on England and Scotland, were incredibly varied and offered much food for thought for international scholars. In particular, the papers represented a move away from the simple calculation of rates and statistics toward a deeper understanding of the dynamics of past populations and, in particular, how they can be analysed.

*Eilidh Garrett's* paper, for example, explored the *potentials of longitudinal analysis* by linking the Scottish civil registers to the five censuses covering the period. By combining these data, it is possible to compare fertility behaviour and patterns of migration between communities, utilising both cross-sectional census data and longitudinal family register-based data.

*Alice Reid's* paper, likewise, forced us all to look more closely at that most thorny of issues – *age reporting*. By using the Scottish data obtained through the Cambridge Group project on 19<sup>th</sup> Century Scottish communities, it was possible to demonstrate how families reported ages to the census-takers, and the relationship that bore to data found in the civil registers. Again, by looking more deeply into the mechanics of registration and how families *engaged* with registration, our understanding of the demographic data that we have inherited is greatly enriched.

*Jim Oeppen's* paper, *Long-run improvement in life expectancy since 1840: Separating quantity and efficiency in age-specific mortality change*, looked at what might be described as the 'international frontier for life expectancy' with striking results. The case of Japan's post-war success in increasing life expectancy was

particularly interesting. In attempting to understand the dynamics behind these changes in life expectancy, Jim suggested the importance of considering not only age-specific mortality, but also the rates of *efficiency* – in short, whether improvements in **mortality occur in age-groups that really matter**.

*Mark Merry* and *Philip Baker's* paper, *Families and households in seventeenth century London: a social snapshot*, used the taxation material of the 1690s – especially the Marriage Duty Act of 1695 – to uncover aspects of the social and demographic make-up of two very different parts of London. Clearly the richer Cheapside parishes returned quite different results to the poor St Botolph's Aldgate. Again, using carefully constructed datasets, Merry and Baker were able to shed further light upon the massive social, economic and cultural changes that impacted on the demographic regime of London at the end of the seventeenth century.

*Gill Newton's* description of the *demographic regime present in the suburban London parishes of St James and St John Clerkenwell* in the early modern period again questioned the ability to which we are able to draw firm conclusions from the data which we have inherited – particularly in relation to infant mortality. However, as the second paper emanating from the Cambridge-London *People in Place Project*, Gill's paper, in tandem with Mark and Philip's, demonstrated the extent to which it is possible to reconstruct parts of the demographic characteristics of everyday life in this most important of early modern cities.

My paper, frankly, was a little odd. In *Death and Burial in Newcastle & Gateshead, 1750-1850*, I attempted to understand how parents and relatives of the deceased felt at the death of their loved ones and how they might have expressed it. Using Friendly Society data, rhetoric regarding cemetery reform and Monumental Inscriptions. I found there to be a striking paradox between investment in both funerals and gravestones by a wide range of society juxtaposed to a shocking neglect of cemetery facilities.

Finally, *Death on a strange isle: the mortality of the stone workers of Purbeck in the nineteenth century*, presented by *Andy Hinde* in collaboration with *Michael Edgar*, used a fairly unique Dorset community to gauge occupational-specific mortality. As stone workers were carefully selected from within local families, this represented an ideal 'closed-community' with which to compare to broader data returns. Unsurprisingly, perhaps, the stone workers returned heavier mortality levels than the rest of the population of Purbeck. However, further analysis suggested that the excess mortality was primarily consigned to boys aged less than five years, diminishing the effects of adult male mortality. It was further suggested that, owing to the extremely closed nature of the community, genetic factors may have been at play.



## Local Authority, Census and Planning

This stream was split amongst four topics: the 2001 Census, ONS Population Estimates, Estimates and projections, and the 2011 Census.

### 2001 Census

*Eileen Howes* (Greater London Authority) discussed *changes in tenure patterns by ethnic group* in London boroughs between 1991 and 2001. Eileen noted the extent of the increase in private renting across London and showed differences between the ethnic groups overall and also within a single group but across particular boroughs. Eileen then discussed changes in

The most recent IMPS work is the Interdepartmental Task Force on international migration statistics, established in May this year and due to report to the national statistician in October with suggestions for high level activity in improving the information flow on migrants before they migrate,

provided by each source for each client group. The presentation then looked at ongoing work to improve the quality and utility of information used for strategic planning, by synthesising these two sources.

**Roy Lewis** of Essex County Council then discussed *demographic issues arising from the need to ensure that infrastructure provision matched local population growth*. Recent changes to the Development Planning system are intended to produce a more integrated spatial planning framework. The frameworks will link plans more directly to delivery through active involvement of both planners and infrastructure providers within a long-term financial investment plan. A key issue was use of demographic data to support funding bids because locally produced policy based forecasts lead to adjustment of nationally produced trend-based projections. Roy illustrated the issue through comparison of policy-based forecasts derived from the Draft East of England Plan with 2003-based ONS population projections. There were four key dimensions to compare and contrast between the forecasts and the projections – demographic detail, geography, time horizons and trajectories. Whilst there were differences of scale there were many similarities of pattern, which could be explained by key differences in approach. Roy concluded by stating that demographic inputs to projects needed to be clear on the drivers of population change, supported by robust and consistent data, better understand user needs, and be aligned to financial cycles. Such an approach would reduce uncertainties of demographic data and help ensure timely and adequate provision of infrastructure.

**John Hollis** of the Greater London Authority looked at recent *ONS mid-year population estimates for London and the London boroughs*. There is a need for robust estimates as the starting point for projections for the *Review of the London Plan*. Since 2001 several boroughs had complained vigorously to ONS about the veracity of the estimates. This presentation looked at three ways of

to protect the confidentiality of individuals and households in published census data. Caroline described research into some methods designed to protect against disclosure that might arise when geographies are published that overlap and can be differenced to produce slivers. These slivers or small areas usually contain small numbers of people, particularly so in rural areas, which increases the occurrence of unique records. Unique records exist when an individual or household is the only one in an area with a particular combination of characteristics. Disclosure control is applied to the data to minimise the probability of identification of these unique records. Caroline described some new ideas for geographical perturbation of household records for disclosure control, with examples using a synthetic census dataset. Random record swapping was carried out on the 2001 UK Census and is used as a benchmark for assessing the new methods. Results of two new swapping approaches were shown; firstly perturbation of households irrespective of geographical boundaries and secondly a spatially sensitive approach, perturbing households according to local population density.

The aim is to create uncertainty in the data, measured by the conditional probability that a published value of one in a small area is actually the true record, while at the same time trying to preserve the statistical properties of the data.

**Natalie Shlomo**, also of the University of Southampton and ONS, completed the session with a review of *statistical disclosure control methods for census frequency tables*. Natalie provided a review of statistical disclosure control (SDC) methods for standard tabular outputs containing whole population counts from a Census (either enumerated or based on a register). SDC methods implemented at Statistical Agencies for protecting Census tables include both pre-tabular and post-tabular methods or combinations of both. Pre-tabular methods are implemented on the microdata prior to the tabulation of the tables and typically include forms of record swapping between a pair of households matching on some control variables. This method has been used for protecting Census tables at the United States Bureau of the Census and the Office for National Statistics (ONS) in the United Kingdom. Record swapping can be generalized into a pre-tabular method called PRAM (the Post-Randomization Method). This method adds “noise” to categorical variables by changing values of categories for a small number of records according to a prescribed probability matrix and a stochastic process based on the outcome of a random multinomial draw. Post-tabular methods are implemented on the entries of the tables after they are computed and typically take the form of random rounding, either on the small cells of the tables or on all entries of the tables. Small cell adjustments (rounding) have been carried out on the Census tables at the Australian Bureau of Statistics (ABS) and the UK ONS, and full random rounding has been carried out at Statistics Canada and Statistics New Zealand. A fully controlled rounding option which uses linear programming techniques to round entries up or down and in addition ensures that all rounded entries add

up to the rounded totals may be a viable solution in the future but at the moment is not able to cope with the size, scope and magnitude of Census tabular outputs. Other post-tabular methods include cell suppression or some form of random perturbation on the internal cells of the Census tables. Few evaluation studies have been carried out on the impact of SDC methods on disclosure risk and the resulting utility and quality of Census tables. The approach for assessing SDC methods is based on a disclosure risk-data utility framework and the need to find the balance between managing disclosure risk while maximizing the amount of information that can be released to users and ensuring high quality outputs. To carry out this analysis, quantitative measures of disclosure risk and data utility are defined which then determine optimal SDC methods and their parameters. Natalie presented the analysis on common methods for SDC on Census tables, and in addition examined utility measures, which assess not only distortions to distributions but also the impact on statistical inference, community, genetic factors may have been at play.

## Migration Strand

This strand featured 14 papers in its four sessions. The strand organiser was Paul Williamson, with Tony Champion stepping in as deputy at the conference itself. .

The first session comprised three papers focusing on international migration. **Julie Jefferies** and **Emma Wright** (*Office of National Statistics*) described the work being carried out by the ONS in *estimating short-term migration flows in and out of the UK*. The rising importance of short term migrants and temporary workers in recent years has highlighted issues in defining and capturing migrants in the process to measuring such

presentation, showed how contrasting are the views of migration. His suggestions on improved intelligence included the adoption of the type of Landing Card system used already by the USA and Australia for all flows including those with the European Economic Area.

The second session in the migration strand focused on Latin American migration. *Consuelo Martín Fernández*

registers (disaggregated by age and sex) year by year with Census information for 2000-01, which provided additional classifiers of migration. He compared two indirect estimation techniques: Iterative Proportional Fitting (IPF) and the Expectation Maximisation (EM) algorithms, used to calculate migration counts by origin and destination of Local Authority Districts grouped according to the ONS classification. Both sets of estimates were shown to be equivalent. The methods would enable researchers to fill gaps in the time series of patient registration migration. These are published for origins by age and sex, destinations by age and sex, and origins by destinations for all ages and sex. The method adjusts the full migration matrix available from the 2001 Census to the year-by-year

qualitative and quantitative methods in her poster “*Saving for later life – pensioners of the future*”. **Melanie Abas** (King’s College London) and colleagues presented “*Depression, disability and socio-economic position among older adults ‘left behind’ by out migration: a multilevel study in Kanchanaburi province, Thailand*” which concluded that families are adapting to urbanisation, with at least one family member remaining to care for elderly family members. However, they also identified that further research is required to fully understand the impact of out migration on the psychological and physical health of those that are ‘left behind’. **Zoë Sheppard** (Loughborough University) et al presented results of a qualitative study that highlighted

to promote programme strategies to identify the situation of married and cohabiting populations in relation to their sexual and reproductive health needs.

The second paper was presented by *Monica Magadi* from CRSP, Loughborough University on '**The link between HIV/AIDS and recent fertility patterns in Kenya**'. The paper, co-authored with Alfred Agwanda, addressed the pathways, mechanisms and determinants (individual and contextual level) through which HIV/AIDS may influence fertility. The analysis based on the 2003 Kenyan DHS data showed that HIV/AIDS infected women were more likely to have had not given a birth in the observation period, which may have been operated through the sexual exposure factors vis-à-vis increasing ages at first sex and marriage. The interactive roles of proximate determinants, along with increasing infant and child mortality, were also highlighted in explaining the recent stall in fertility reduction in the country.

The third paper was presented by *Claire Bailey* from the University of Southampton on the '*Fear of side effects as a barrier to modern contraceptive use among Ghanaian*