

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 favourably on the broad spectrum of papers from academics and local and sub-national government sources. Thanks are due to the invited plenary speakers, Professors Juha Alho, Bill Clark, and John Salt, and to the organizers of the strand sessions: Baljit Bains (GLA), Paul Boyle (St. Andrews), Maria Evandrou (Southampton), Jane Falkingham (Southampton), Paula Griffiths (Loughborough), John Hollis (GLA), Laura Jones (Loughborough), Alice Reid (Cambridge), Sabu Padmadas (Southampton), Steve Smallwood (ONS), and Paul Williamson (Liverpool). Special thanks to Tony Champion (Newcastle) for running the migration sessions "on the ground".

BSPS is very grateful to the following, for their contributions to this report: Plenary sessions - Folkert Van Galen, Dick Heasman and Kanak Ghosh; Ethnic demography - Jane Falkingham, Lee Williamson, Albert Sabater, Baljit Bains; Families and households - Richard Eden and Steve Smallwood; Fertility - Paul Boyle, David Clifford and Elspeth Graham; Forecasting methods and estimation - Alan Marshall, Nissa Finney, Baljit Bains, Malcolm Brown, and Phil. Rees; GIS - Jane Falkingham; Health and mortality - Paula Griffiths, Laura Jones, Zoe Sheppard, Pieta Nasanen-Gilmore, and Chieza Zingoni; Historical demography - Stuart Basten; Local authority, census and planning - John Hollis and Roy Lewis; Migration - Guy Abel, Ludi Simpson, Phil. Rees and Stuart Burley; Posters - Laura Jones; Reproductive health - Sabu Padmadas. And apologies to anyone who was accidentally left out of this list!

Finally, BSPS is truly grateful to the Wellcome Trust and the Galton Institute, for their invaluable financial support, which covered the costs of student bursaries and plenary speakers' expenses. Thanks too to School of Social Science and the Southampton Statistical Sciences Research Institute (S3RI) at the University of Southampton, for sponsoring the reception.

Plenary Sessions

Prof Juha Alho (Dept of Statistics, University of Joensuu, Finland) began the plenary sessions of the conference with a timely presentation on the topic of '*Migration and ageing: Models and prospects*'. Thus he addressed two main topics that have dominated recent demographic debate in western societies. In a well-structured paper Prof Alho took the standard model of a stable population - in which the number of mothers in a population replicates itself with the assumption of a constant mortality pattern- and introduced the impact of migration.

This enhanced formulation of Stable Population theory made it relatively easy to study the roles of migration and fertility in population aging. He found that while migration can increase the growth rate, which tends to make the age-distribution younger; it is less effective in slowing down aging than fertility, because of its typical age pattern.

He then demonstrated the effect of migration levels on population ageing for European countries. Generally ageing populations tend to converge to the model of a stable population. The population dynamics observed in the Nordic countries served as an example.

For the UK he showed that for the long term (2004-2050) the UK growth rate without migration would be -0.8% annually. With prevailing migration levels in the model the growth rate would be -0.4%.

He pointed out that official forecasts have typically favoured migration assumptions that are closer to zero than empirical estimates. For the past decade or two, most EU countries have experienced sustained positive net-migration. Although forecasts of migration are particularly uncertain both because of problems of data quality and erratic trends, a recent summary of the evidence concludes that the probability of sustained negative net-migration is small. Therefore, it is expected that migration will slow down aging in Europe more than has been previously thought. The effect of migration can be more marked in populations where ageing is well under way due to low fertility in the previous generation and where migration now is an important component of population change (Germany, Spain, Italy). In some cases negative growth could be reversed by achievable migration levels. Considering that immigration in Western Europe shows a rising trend since 1985, this scenario is a possibility in some countries.

Juha drew the following conclusions. Population ageing and population decline need to be slowed down. Existing migration levels in Europe have a positive effect in preventing population decline and low migration countries could adjust to accept higher levels of migration. However, the ultimate outcomes for European countries are subject to changes in life expectancy, and economically and politically will depend on the qualification levels and the speed of assimilation of the migrants received. Overall this analysis suggested that in the long term that intelligent migration policy would be beneficial in Europe.

In the questions that followed the relevance of using an enhanced stable population theory was queried. Would not the use of population projections be just as good to illustrate the effect of migration? Juha felt his work was another way of illustrating the possible importance of migration. The point was also made that to arrive at a

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 Populations in Europe (UPE). Methodology and results of this work on 18 countries can be accessed at http://www.stat.fi/tup/euupe/index_en.html

The second plenary was by **Professor William (Bill) Clark** of the University of California, Los Angeles, who delivered a lively session on *Human Mobility in a Globalising World: International Flows and Local Outcomes*.

He began with a look at theories of migration old and new. The first theory was that migration is driven by economic opportunities and jobs. Later theories by Massey and others also stressed the links to families, refugees and inequality. More recently still, the influence of increasing globalisation on migration has been recognised.

Moving on to describing demographic change and population flows, Bill started with a description that he thought would be familiar to most of his audience of a world whose population is primarily from developing nations. These nations have large and still growing populations that are increasingly urban (within the last year the world became predominantly urban), youthful and unemployed. During the 20th century the world's population increased from 1.6 billion to 6.1 billion. Less well known might be the fact that the graphs of total population and total number of migrants over the twentieth century show broadly the same shape as one another. Population flows are closely linked to economic flows: another interesting set of parallel graphs being for foreign direct investment and remittances. An illustration of the importance of remittances is shown by the fact that remittances to Mexico from Mexican nationals in the USA now amount to ten per cent of the Mexican economy.

Bill next described the rise of the 'undocumented', who are estimated to be 11 million in the USA, one third of the foreign-born population. An estimate for Europe, though more uncertain, would be 8 million. By means such as the comparison of labour force surveys with employer surveys the main occupations of these workers can be identified in the sectors of restaurants, construction, cutting and sewing clothing and private households. The facts that these occupations are very low paid and that the benefits in terms of low cost commodities and services accrue mainly to the middle class, give rise to the question of whether large numbers of the undocumented are producing a 'semi-slave society'. (In this respect, Europe is less likely to be affected as it has greater employment protection.) However, it is not just an exploitative relationship as, for example, undocumented migrants in the USA still have the right to go to school.

Some interesting illustrations were used to show the way in which migration is transforming communities and the local labour market. As well as the frequently discussed cultural change and ethnic tensions that sometimes arise from migration, another often overlooked effect is the creation of jobs that did not previously exist. One example of this is the profusion of nail salons in California run by Vietnamese migrants, and in a piece of dedicated research for his presentation, the speaker had recently had his nails done! Ethnic communities also often produce a demand for distinctive services and products such as shops catering for their own tastes in food and clothing. Finally, there is no set pattern across different ethnic groupings. The vast majority of Hispanic migrants settle in California and are of Mexican origin, whereas Asian migrants are widespread over the country and are from a wide diversity of different nations.

The last section of the talk discussed the questions *Migration as crisis? Are we losing Britain/America?* The case for these propositions is set out in the US context in Brimelow's book *Alien Nation* and in the UK by Anthony Browne in his London Times article *Britain is Losing Britain*. Bill argued that the measures that would be necessary to counter immigration, as Brimelow would wish, would be vastly expensive and strongly doubts that the political will exists to implement them. For instance, they would have to include militarising the border and employing 15,000 new border patrol guards.

Bill argued that immigration flows are generated by huge inequalities that will only slow when these underlying causes are addressed. He considers the part that Western aid can play in this to be limited – its effects are marginal, there are problems with corrupt elites and, in any case, it currently amounts to only a third of total remittances. Family planning, health care and education remain fundamentally important.

In his closing remarks, Bill emphasised that immigration has very strong drivers and is therefore not going to stop. He made some suggestions that developed countries might consider: importing from low income countries; learning to manage migration; and revisiting what is a citizen. He concluded with an upbeat forecast for the long-term future: assimilation will work out and concentrations of immigrants in small parts of cities will disperse over a much wider area, as they have done throughout the long history of migration to the USA.

In response to questions, Bill agreed that there was an apparent contradiction between learning to manage immigration and redefining citizenship. He was asked whether states could control immigrant flows if they really desired. He said that it could probably be done, for instance by using a national identity card scheme, but questioned whether there was the political will given the desire for cheap labour. Another questioner pointed to the problems of migrants refusing to assimilate with the indigenous community, citing second or third generation Muslims and British emigrants to Spain. Bill agreed there were huge problems but remained optimistic. He agreed with a comment that one of the consequences of the

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 such as housing, health and education for receiving countries, and John demonstrated this clearly using housing as an example. In the early stages of immigration most migrants tend to rent accommodation, which may later lead to home ownership, but is dependent on access to routes of finance. Single labour migrants often share accommodation and in doing so price families out of the rental market. Asylum seekers are often housed through government dispersal schemes and/or reception and detention centres.

John then went on to examine the recent rise in labour immigration into the UK from the A8 countries, which has been unprecedented, has exceeded most people's expectations. However, at present, little is known about their turnover. Using data from the Work Permit System

(WP) and the Worker Registration Scheme (WRS) John demonstrated there is a marked difference in the skills profile between the non-EEA citizens and A8 citizens. Most A8 workers coming to the UK occupy lower skilled jobs whereas the majority entering through the WP system were for managerial, professional and associate professional positions.

John then sought to answer the question "what are the implications of the migration flow from A8 states?" This is proving to be a very difficult question to answer due to the lack of robust statistical data and the short period of time elapsed since May 2004. Some information may be gleaned from WRS data and other small-scale survey such as the CRONEM study carried out by the Universities of Surrey and Roehampton that interviewed 500 Polish immigrants. However, in the absence of suitable data, John suggests we turn to precedent to try to predict what may happen in the future. The guest-worker phase experience for western European countries during the mid-1950s to the mid-1970s provides one example. There appear to be a number of similarities between this and the influx of A8 citizens. Both saw large annual inflows into a labour market with hard to fill, low-paid and low-skilled, positions. Most migrants initially were young and accompanied and immigration was assumed to be temporary.

From analysing the guest-worker migration patterns, John described four stages through which the flows developed. The first stage consisted of young single workers occupying low-skilled jobs, with more married migrants coming over in the second stage. The third stage sees an ageing effect on these migrants while many married workers send for their spouses and children. The fourth and final stage leads to the embedding and enlargement of the minority population and the establishment of a settled community. At present the A8-migrants are largely in the first stage of development. It is too early to tell if they will follow the same settlement pattern as the guest-workers but it is very likely there will be some permanent settlement of the A8 migrants.

In conclusion John strongly put forward the need for a sensible policy debate about international migration, one that takes into account the real complexities of migration flows and their implications. There is also a need to work with the media to ensure debates on the issue educate and do not sensationalise. Ultimately we need a population policy first, from which policies on migration would follow, and not vice versa.

Ethnic & Cultural Demography

Labour Markets and Education

The session on *Labour Markets & Education* under the '*Ethnic and cultural demography*' strand, organised by Baljit Bains and chaired by Jane Falkingham, was a lucky dip with three very different but individually fascinating papers.

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 in 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 South Africa surveyed in 1993, 1998 and 2004. Given the rapid increase in AIDS mortality over the period, sample size is not a problem. More than a third of children aged 7-20 are orphans; 22% have a dead father, 7% a dead mother, and 6% have lost both their parents. The death of a parent more than doubles the risk of late enrolment in school, and the poor outcomes of paternal orphans were found to persist even after controlling for the poverty and other characteristics of the household before the father's death. Daughters were found to be particularly adversely affected by the death of the father, experiencing poorer educational outcomes and higher levels of teenage pregnancy than girls with a father alive. The study also investigated the impact of cash grants and found that although they improve educational outcomes in poor households, they do not offset the specific adverse effects of orphanhood.

Ray Langsten from the American University in Cairo then presented his paper on *Measuring women's work in developing countries*, co-authored with Rania Salem from Princeton University. There are two key issues in measuring women's work - the definition of work and the measurement technique. The paper examined two alternative approaches using a sample of ever-married women drawn from the 2003 Interim Egypt DHS and re-interviewed as part of the Slow Fertility Transition (SFT) survey conducted in 2004. The fact that the same sample of women have been interviewed twice offer a unique opportunity to see how the measurement of work varies between the standard DHS question (any work in last 12 months) and the alternative SFT activities list question format (list of 16 common activities). The results demonstrated that traditional DHS approaches to measuring women's work underestimates the level of female labour force activity. In contrast the activities list approach captures a wider range of economic activities among women, allowing women to report multiple jobs held simultaneously. The paper highlights the sensitivity of women's labour force participation to the types of questions used. Ray persuasively argued that survey approaches to the measurement of women's work must be revised if women's contributions to family welfare and national accounts are to be adequately measured.

The final paper in the session was presented by **Nandini Das** of the International Institute for Population Sciences, Mumbai and examined the *impact of demographic*

pressure on the labour market in urban India. The presentation presented evidence on recent trends in the employment of informal workers in urban India using data from the Census and the Handbook of Statistics (Reserve Bank of India). Over the last decade there has been a decline in the manufacturing, energy and finance sectors, but the trade and construction sectors have experienced positive growth. This differential growth has affected the potential of the different sectors to absorb informal workers, which in turn has affected the gender balance of such workers. In 1997 for every female formal worker there were three informal workers, but there followed a drastic reduction of female involvement as informal workers in 2000-2001. For men, there were more males becoming informal workers than formal workers and in 2000-2001 there was a sudden rise in informal labour, with six informal workers to every formal one. Projections indicate that by 2009-2010 the engagement of informal workers in the manufacturing sector will fall significantly, whereas there will be an increase in their engagement in the construction and hotel sector. This has implications for policy makers and debates concerning the introduction of a national minimum wage and group insurance for informal workers.

Ethnicity – Estimates & Projections

This session opened with a paper by **Lee Williamson** of the University of Manchester entitled *Deriving age-specific fertility rates by ethnic group at the ward level for Bradford: An assessment of six promising strategies*. Lee outlined the dataset that formed the Bradford fertility data. There followed an explanation of the ragged fertility schedules occurring when rates are based on small numbers, typical when broken down by small areas and by ethnic group. To avoid problems of small numbers when calculating Age-Specific Fertility Rates (ASFRs), the basic approach was to group wards in some way. The grouping procedure included the 1991 ONS classifications of wards, commonly used deprivation indices and cluster analysis on the wards using a range of variables associated with deprivation from the 1991 Census. The ASFRs for the fertility groupings created were then smoothed using the Hadwiger function.

These rates and other rates of varying sophistication were then assessed by estimating births and comparing them against actual births with the Mean Absolute Percentage Error (MAPE) used as the measurement of error. This was both by ethnic group at ward-level and at the ward-level. The overall conclusion reached by the paper was that using more detailed information to create the ASFRs does produce more accurate birth estimates than using less detailed information, for example than using the district or national ASFRs.

In response to the question of whether there was evidence of a changed shape of the fertility schedule in any of the Bradford fertility schedules, as it was found in the London fertility schedules, it was reported that for one of the Bradford fertility groupings there was some evidence

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

Albert Sabater, also from Manchester University, presented the second paper of the session *Analysing population change of ethnic groups in England and Wales between 1991 and 2001 using a variety of small areas*. In analysing population change by ethnic group between the 1991 and 2001 Census a number of key issues are faced. These were outlined as:

- a. Changes in population definitions, particularly of students
- b. Different treatments of under-enumeration
- c. Changes to the ethnic group categories
- d. Boundary changes, particular at lower geographic levels

To tackle the first two of these problems by making use of complete population estimates derived from the latest 2001 Census results. The third problem was tackled by collapsing ethnic groups where appropriate to make the groups comparable. This was described as using 'best fit' ethnic group categories between 1991 and 2001. The final problem, boundary changes, was tackled by the use of geographic conversion table.

The base for the mid-2001 population estimate included further adjustments including the Manchester and Westminster matching studies. These adjustments were not made by ethnic group; hence to use a base for 2001 ethnicity needed to be included. Office for National Statistics (ONS) ethnic estimates assumed that people included in the adjustment had the same ethnic make-up as the wider population of the LAD. Albert instead included ethnic group assuming the same ethnic make-up as those imputed in the census. His method produced a larger estimate of people in categories other than White-British

Population projections for ethnic group for London was the title of the third session given by **Baljit Bains** from the Greater London Authority. Projections using the 2001 Census are required to update those produced from the 1991 Census that modelled up to 2026. These were produced to meet structure and service delivery requirements as well as to feed into diversity monitoring. Challenges posed by updating the projections using 2001 data include disclosure control, additional ethnic group categories in the census, and the political importance placed on the projections. In later questions, Ludi Simpson noted the importance of demographers providing expert insight into the numbers in particular when dealing with the press.

Amongst the key results projected up to 2026 were the rise in the 'Other', 'Black African' & 'Asian' ethnic groups. The proportion of London's population who were 'White' was projected to fall from 71.1% to 61.8%. The increase in immigration from the 'Accession Eight' countries (joining the EU in 2004) means that it may be appropriate to split the 'White Other' group in the future.

Baljit also highlighted the projected change in the number of Boroughs where the proportion of people in the Black & Mixed Ethnic (BME) category is greater than 50%. In 2001 two boroughs had in excess of 50%, by 2026 there were eight. Further detail on the projections of the BME included details on ageing and economic activity.

To conclude future developments were summarised including accounting for transgenerational ethnicity, projecting household ethnicity, and identifying differential mortality.

Families And Households Strand

Although there was only one session in this strand it contained four varied papers covering many different aspects of the strand topic. The session began with a paper by **Tak Wing Chan** (University of Oxford) looking at *the structure of intergenerational exchange in the UK*.

In this paper, Wing presented results from analysis of recent survey data from the British Household Panel Survey on the exchange relationship between adult children and their non-co-resident parents. He began by saying that UK community studies showed close family ties especially between mother and daughter, but there are social forces that may have weakened family ties, although more recent research suggests that there is still a high level of support and exchange. Rather than consider types of help separately Wing used latent class models, identifying three types of exchange relationship: (1) those who rarely exchange help with their parents ("low level exchangers"), (2) those who are involved in regular giving and receiving of help with their parents ("high level exchangers"), (3) those who primarily give support to their parents ("givers"). The majority (60 per cent) were low-level exchangers while high level exchangers and givers each represented about one in five of the sample. Analysis of the data confirmed some known patterns. Needs matter, those with children are more likely to be high-level exchangers. People from working class backgrounds are more likely to be givers than high or low level exchangers. Women are more likely to be high-level exchangers or givers. Some unexpected findings were that controlling for other factors, income and class has no effect and region differences largely disappear when distance is taken into account. Women are kin keepers and mothers receive more support than fathers. Siblings share out the responsibility of exchange with parents. Wing also noted that the working class received greater support that is inconsistent with strategic bequest theory. He noted however respondents that were working class lived closer to their parents.

In discussion it was noted that forms of exchange may have changed over time. People may be more self sufficient in types of traditional exchange measured here (because of wealth, new forms of technology etc), but emotional and social support may be equally or more important.

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 McConnell** and **Steve Smallwood** (Office for National Statistics) on *preparations for new estimates of lone-parents*. Hannah began by outlining the previous methodology used. This involved combining estimates from a number of sources. Since the previous estimates were made the 2001 census had become available and subsequent surveys had been rebased to new population estimates. Hannah illustrated how different sources produce different estimates and then presented a first attempt at operating the 'previous' best estimate' method on data from 1997 onwards. Estimates were made three different ways on a weighted and a sample bases (so six estimates in total) and the results combined to produce a single best estimate. Noting that these were trial estimates, Hannah pointed out that over more recent years there was some evidence of a slowing in the rising number of lone-parents. She presented some calculations that suggested that this slowing may be a combination of demographic effects. The downward pressure of later childbearing had been counterbalanced in the 1980s and 1990s by the larger cohorts at peak childbearing ages this latter demographic pressure was now tailing off and other things being equal we might actually expect lone parent numbers to have fallen slightly. Steve then continued the presentation, talking about the comparison of census and survey data. This could be used two ways – the census responses could be looked at against the survey respondents to gain an insight in to the completion

quality of the self-completion census v survey interviews. The data could also be used to look at the effect of non-response on surveys. However, there were many issues that could affect such comparisons. This work was in its early stages and first attempts to try and use such data to adjust survey estimates showed mixed results. During the discussion it was pointed out that ideally flows into and out of lone parenthood should be estimated to produce stock estimates, however finding all the data to do this was difficult.

The final paper was by **Julian Buxton** (with **Lynda Clarke** both of London School of Hygiene & Tropical Medicine) on *Cohabitation: Changes over the 1990s and longitudinal evidence on transitions in status*'. The work had been carried out for the Law Commission that has published a consultation paper on financial remedies for cohabitants on relationship breakdown and death. (Details of the project are available at <http://www.lawcom.gov.uk/192.htm>). The paper used the ONS Longitudinal Study (ONS LS) to examine the circumstances of cohabitants and transition in relationships. Findings included that cohabiting couples were younger on average than married couples but that the population of cohabiting couples was older in 2001 than in 1991. The analysis confirmed previous studies that show members of cohabiting couples with children are more likely to become lone parents than married couples. Cohabiting couples were also found to be more likely to be working.

Fertility Sessions

The fertility strand at the Annual meeting comprised three sessions. The first session focused on fertility in the UK, with two papers on Scotland, while the second was a more general session and the third included papers on international fertility.

Fertility in the UK

The overlap between the papers in this session was good. Two were based on work funded by the ESRC / Scottish Executive Scottish Demography Programme and two were from the ESRC Understanding Population Trends and Processes (UPTAP) Programme.

Elspeth Graham and **Paul Boyle** began by speaking about the *consistently lower fertility in Scotland compared to England*, over the last couple of decades. To date, little is known about why fertility is lower (the demographic processes that account for it), or about the factors that might explain why fertility is lower. The study used retrospective birth history data from the British Household Panel Study (BHPS) to show that delaying the start of a family does not appear to explain this difference, as Scottish women appear to start their families at a younger age than English women. In fact, Scottish women are significantly more likely to delay their second and subsequent births, even controlling for other factors such as religion, ethnicity and parental background. In addition, this study used cross-sectional

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 the acceptability or otherwise of amending policies that had been designed to protect the rights of women and to help the less well off in society. Objections were also raised to social engineering as an approach to reversing fertility decline.

Eric Kaufmann continued the political theme by examining the thesis that *the world's population will become increasingly religious and politically conservative in the twenty-first century*. He presented a range of analysis using European data to generate some speculative projections, arguing that religious-secular fertility differences remain marked in Europe. His contention that we will see a reversal of the growing secularisation of the last decades raised a number of interesting questions about the intergenerational transmission of religious and political attitudes, and of fertility behaviour. Although the jury is still out on the de-secularisation thesis, the paper served to remind population researchers of the impact of wider social trends on fertility.

In the final paper of the session, **Elspeth Graham** shifted the geographical focus to South-east Asia. She examined the trend in *sex ratios at birth in Singapore* over the last forty years in order to investigate whether or not this wealthy Asian country experienced a growing female demographic deficit as fertility declined. She argued that the available evidence does not support the intensification of male bias over the period but that the case of Singapore raises important questions about how demographers interpret sex ratios at birth. Discussion centred on the possible biological causes of sex ratio imbalances and the difficulties of inferring deliberate discrimination against daughters from the demographic record.

International Fertility

This stimulating session provided diversity, in the analysis of both high and low fertility settings. It also provided interesting parallels, particularly between the first two papers and their focus on the peculiarity of trends in first births during post-socialist economic crises.

The first paper, by **David Clifford** (Southampton), examined *fertility change in Uzbekistan*, one of the former Soviet republics in Central Asia. It highlighted the lack of research on fertility change in Central Asia and the consequent need to draw on examples from Central and Eastern Europe as background for the study of post-socialist fertility change. Birth history data from the Uzbekistan Health Examination Survey, 2002, were used to reconstruct the pattern of fertility change in the years leading up to and following independence in 1991.

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-socialist fertility change in an interesting analysis of Albanian trends*. Total fertility in Albania fell from 3.0 in 1990 to 2.2 in 2003 but, as with Central Asia, little is known about the nature of the fertility transition during the 1990s. Here, data from the Albanian Living Standard Measurement Survey, 2002, were analysed using non-parametric Kaplan Meier estimation and semi-parametric Cox regression. Declines in fertility have been driven specifically by a decline in higher-order births. Interestingly, period effects show that the likelihood of first birth was higher during the period from 1990 to 1999. One possible explanation for the latter result is the increase of unemployment among women – which might have had a positive impact on entering parenthood. More generally, the analysis points towards the persistence of ‘traditionalism’ for the onset of family formation, and the influence of ‘modernity’ and economic constraints on the number of children, especially for third births and higher parities.

Moving from a context of relatively high fertility in Europe, to one of lowest-low fertility, **Francesca Fiori** (Rome, ‘La Sapienza’) contributed to the literature on fertility in Italy. The study focused on the *transition from first to second birth* – the event that has a particularly crucial impact on lowest-low fertility – and the hypothesised importance of the extent of support for mothers. The aim was to understand how formal and informal support in childcare in the three years following the birth of the first child may influence second birth-risks, controlling for the socio-economic and demographic characteristics of mothers. Data from the National Institute of Statistics (ISTAT) Survey of Births, 2002, formed the basis of the analysis. Interestingly, expected fertility increases with the father’s involvement in childbearing and child-rearing (presence at delivery, uptake of parental leave, help with childcare) but other aspects of gender relations are not important (for example, father’s help in domestic tasks). The support of institutions does not significantly influence the probability of transition from the first to the second child.

Forecasting Methods and Estimation

Estimation of Demographic Rates

Bernhard Babel (University of Cologne) described *forecasting German mortality via panel data procedures*. This work was motivated by the significant rise in life expectancy at birth between 1900 and 2000 for both men and women. Bernhard and colleagues Eckart Bomsdorf and Rafael Schmidt aimed to critique the much-used Lee-Carter model of mortality (*Journal of the American Statistical Association* 87, 1992) by building on the model of Bomsdorf and Trimborn (1992). They aimed to extend the deterministic log linear model in a stochastic context and did this using panel data. In particular, two effects were distinguished: a common time effect over all ages; and an age-specific effect. Autoregressive process was used to model these effects and plausible confidence intervals were obtained. In conclusion Bernhard highlighted that the model is easy to fit, yields interpretable parameters and allows for a simple analysis of the forecast error and is therefore recommended for forecasting mortality rates.

Several questions followed the paper. Bernhard was asked why there were such differences between the cohort and period approach. He explained that inaccuracies resulted from projecting cohort analysis so far in the future but that such time scales were demanded by life insurance companies and it was therefore necessary to devise forecasting methods. Bernhard agreed that his model had a tendency to over-forecast. In response to a question he also clarified that it was not possible to model subgroups of the population because such data is not available for one-year age groups in Germany. Bernhard’s paper will soon be published in the *Journal of Population Economics*, or copies can be obtained from his website or by e-mailing him directly (babel@wiso.uni-koeln.de).

James Raymer (University of Southampton) presented work that he has undertaken with Andrei Rogers (University of Colorado) on *using age and spatial flow structures in the indirect estimation of migration streams*. James used a log-linear multiplicative component model to interrogate the effects of migrant origin, migrant destination and the interaction between migrant origin and destination. The model was illustrated using interdivisional migration in the US between 1995 and 2000 for which historical time series data on age and spatial structures was available. This showed the model’s capabilities to estimate the proportions of migrations between places and the degree to which migration was more or less than expected. Where direct data is not available indirect estimation can be done using auxiliary data such as place of birth and residence by age. James concluded that age and spatial regularities of migration can be used for estimation; and that the model presented provides a powerful framework for analysing and estimating migration directly and indirectly. In response to questions James clarified that as the census and health register in the UK have the same age profile, both

datasets could be incorporated into the model. James's paper is available at: www.colorado.edu/ibs/pubs/pop/pop2006-0002.pdf.

Laura Staetsky (University of Southampton) presented material from her PhD on *patterns of sex differentials in mortality in the Jewish population of Israel*. Her work was initiated by observations that there was a widening of sex differentials for mortality in developed countries between 1950 and 2000 but not in Israel. Rather, Israeli Jews behaved much more like developing countries with low sex differentials. Laura's main sources of data are the Israeli Central Bureau of statistics and the Human Mortality Database. She presented three methods of quantifying sex differentials that all illustrated the unusual experience of Israeli Jews in comparison to populations of other nations. First, sex differentials by country can be listed at different time points. Second, ratios of male-female mortality rates can be calculated. Third, mortality of males and females by age can be ranked for each country. Laura suggested that possible explanations for Israel's low sex differentials could be the migration history of the Israeli population and the culture of the Jewish diaspora. Laura hopes to extend the work by examining data on causes of death, by comparing the Jewish diaspora with Israeli Jews and by modelling the sex differentials.

Laura was asked whether data were available to compare Israeli born with non-Israeli born. She responded that this was possible but that few Israeli born have to date died. However, analyses reveal that the differentials for Israeli born are slightly higher than for foreign-born. It was suggested that this could be explained by healthy people having migrated to Israel but Laura said that this was not the case. Rather, whole communities from Eastern Europe migrated and there was no real selection by health.

Household Projections and Planning

There were four papers in the Household Projections and Planning session, two explored household projections at a national level in England and Scotland and two focused on projections at a regional level in Hampshire and Miami Dade County. The comparison of techniques and findings from each of the talks gave a varied and interesting session.

Dave King from Anglia University discussed the latest *DCLG household projections for England*. The projections predict an increase of 5.1 million households and a decrease of the average household size from 2.3 to 2.1 between 2003 and 2026. Dave identified growth and aging of the adult population as key exogenous factors driving the projected household growth and the increase in levels of one-person household as a key endogenous component. The numbers of one-person households and average household size predicted in 2026 have been attained in Sweden and are comparable with Germany supporting the plausibility of the projections.

Esther Roughsedge described the *household projections produced biennially in Scotland by GROS*. The methodology used to produce the household forecasts involves projections of household headship rates for seven household types and the GRO-s population projections (minus the communal establishment population). As in England, the Scottish household projections predict growth in the number of households. Increases in the levels of one-person households due to changing lifestyle choices and the aging population were identified as key factors associated with the projected increase. GRO-S is currently considering several potential methodological improvements, one of which is the incorporation survey data to supplement infrequent census data.

Oliver Kerr from Miami Dade County in Greater Miami talked about his experiences over the last thirty years producing *household and population projections*. Miami Dade County is a rapidly growing metropolitan area with a population of about 2.4 million people. Oliver explained that his work involved producing Countywide long range projections and projections for 32 statistical areas within the County using current and historic data combined with an estimate of the future population capacity of each area. Oliver stressed the importance of in-migration, from the Caribbean islands, notably Cuba, and from Latin America, in terms of its effect on population change in Miami Dade.

The final speaker, **Robin Edwards**, spoke about the *Small Area Forecasting model developed by Hampshire County Council*. The model is dwelling led and is used to produce short term projections by single year of age and gender and dwelling stock for 5400 output areas in the county of Hampshire and unitary authorities of Portsmouth and Southampton. The model is linked to the County Council's Land Availability Monitoring System to produce forecasts of population change resulting from new developments; the effects of natural change and migration are also taken into account.

In conclusion, the session revealed the importance of projections of households for planners. As noted by Dave King, the number of households is an important proxy for environmental concerns. The need to examine in detail the factors driving projected changes in households was identified as critical in order to understand the causes and implications of household change.

Small Area Population Estimation

Paul Voss's presentation of University of Wisconsin (with Guangqing Chi) challenged current demographic forecasting techniques that relied particularly on traditional demographic inputs, and proposed a different approach through '*updated engineering and non-demographic fuel additives*'. These non-demographic predictors of population change included the nature of the land in terms of:

Accessibility (transport infrastructure)
Developability (capacity to which the land can be developed for human occupation)

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 set known as Super Older Person's Database.

The results showed small discrepancies between the SAPE data and the administrative data sources. No systematic errors seemed present. Most discrepancies were in known or expected problem areas such as areas
Of rapidly changing (growth or decline) populations.
With high numbers of independent school pupils
With high student residents
With nursing homes and hospitals.
However there were some unexplained discrepancies.

Simon Brown of Hampshire County Council presented their work to derive *population estimates for census output areas* as a base for a forecasting model. The Output Area data needed treatment to deal with disclosure control, to change the 0s and 3s in the data and randomly replacing them with 1s and 2s and some 0s and 3s.

Hampshire has a sizeable military armed forces population, which needed to be handled separately as did its student population. Both have unique migration propensities compared with the general population and in both cases the size and age structure remain roughly constant.

Once robust estimates had been produced these formed the basis of projections at census output area level. The forecasting model resulted in output up to 2012 and incorporated expected gains in the dwelling stocks, natural change as well as migration. Excel and the use of VB (Visual Basic) allowed the models to be run relatively quickly and with ease.

Results are available on the following website:
<http://www3.hants.gov.uk/environment-statistics/population.htm>

Uncertainty

Stanley Smith, *University of Florida*, presented the first paper on *Prediction intervals for county population forecasts*. A large series of experimental forecasts of county populations in the state of Wisconsin were constructed covering the 20th century from 1920 to 2000. Errors were computed by comparing forecasts with the census populations. The findings, based on the Mean Absolute Percentage Error (MAPE) were that errors increase fairly linearly with the forecast horizon, that errors were fairly uniform, decade by decade, that the sign of errors (indicating over or under prediction) jumped around erratically and that the coefficient of variation declined as the century progressed. Errors were not influenced by county population size though the rate of growth did have some effect. Past forecast errors can predict the size of future errors. Simple models did just as well as complex models based on a variety of factors

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 the cohort-component method*. This paper empirically examined a system proposed by Swanson et al. for placing a formal measure of uncertainty around population projections made using the cohort-component method. The measure is in the form of a Mean Square Error Confidence Interval, which takes into account bias and random error. The bias portion is developed using Demographic Analysis estimates of net undercount error for age-race-sex groups over two successive census counts. The random error portion is developed using variation in mortality. Together, these two sources of error can be extended to cover the uncertainty in estimates and short-term forecasts generated by the cohort-component method, given certain restrictions regarding strategic assumptions. The confidence intervals are intended to provide a set of boundaries for both the total population and age-race-sex groups once a given set of strategic assumptions is established regarding secular trends in the components of population change. The system was illustrated with a set of intervals around age and sex groups projected for a small area, Nye County, Nevada.

Richard Belding, Aberdeenshire Council presented the third paper of the session on the topic of *Comparing and evaluating historic projections and forecasts of population*. The context of the review was the projections of the population of Aberdeen City and Aberdeenshire over the past decade. Careful comparisons of successive forecasts by local teams and the General Register Office Scotland were presented in a series of informative graphs. The local projections were informed by knowledge of the local economy and its influence on migration flows into and out of the region and within it. GROS projections were mainly trend based. The conclusion was that it was important to link projections to trends in employment and local housing plans. The past was not necessarily a guide to the future.

GIS and Its Uses and 'Abuses' Within Demography

This strand, chaired by Paula Griffiths and organised by Jane Falkingham brought together an interesting set of papers that used GIS in one form or another to explore the interaction between demographic processes and location.

Two of the papers, from different parts of the globe provided an interesting insight into the potential of GIS for improved planning of school provision. First, Dr **Mohammad Amirul Islam** (University of Southampton), in a paper jointly authored by Mohammad Zahirul Islam (Institute of Regional Science/Planning, Karlsruhe University), showed how *census data combined with*

administrative and survey data could be used to inform the location of new primary schools in the Savar Upazilla area, a sub-district of Dhaka district in Bangladesh. First existing provision was mapped, showing supply. Then the number of children of primary school age was projected up to 2015 using exponential model of population projection to show demand. The spatial mismatch between supply and demand was then highlighted. The local government has clear guidelines for the construction of new schools, including the availability of alternatives within a certain distance and the number of children per school. By using GIS, and following these guidelines, the results of the study suggested the location of new schools, taking into account existing roads and other topographical information such as rivers and areas at risk of flooding. The research also highlighted areas where there was oversupply and potential for either amalgamation of schools or closure. Currently there is no systematic planning of school provision within Bangladesh. This research clearly demonstrated how school provision could be rationalised, making more efficient use of scarce resources. This is especially important in a developing country context and GIS offers the potential to help countries achieve the education related MDGs.

Turning to an area closer to home **Wendy Pontin**, from Norfolk County Council, then discussed the *potential of using GIS to improve the method of school pupil forecasting* within the Norfolk Education Authority. Wendy presented the results of a pilot exercise that has been undertaken to test a new improved model that forecasts the number of 0-19 year olds both on individual school rolls and on a resident school catchment basis for each year group of a 6 year forecast period. The School catchment forecasts take into account the predicted new house build whilst School rolls forecasts attempt to incorporate predicted patterns of parental preference, using September 2006 patterns as a guide, and school capacity. For schools that are oversubscribed, pupils are redistributed to neighbouring schools. The model has been developed as a set of interactive EXCEL spreadsheets that are relatively easy to use. Initial results highlight the fundamental importance of the accuracy of the base data. The model requires individual pupil records with valid postcodes as well as FHSA patient register data aggregated to unit level postcode level to provide information on 0-4 year olds. This means that those administering this data need to be aware of the need for accuracy and full coverage. Wendy also warned other LA demographers interested in developing their own model that GIS is resource hungry, people in terms of computing capacity and people and there is a need to manage expectations. However the pilot exercise found that the model forecasts for the first year were within 1%. Thus for the first time, it appears there is the potential for producing consistent forecasts of both resident and school rolls that are fit for purpose – an exciting development.

Staying with the theme of education, **Angela Baschieri** and **Jane Falkingham** (University of Southampton) then presented a paper examining *the role of family, community and state in determining school enrolment in*

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 surprisingly, School enrolment was found to vary according to the availability of secondary school within the community and community perceptions of the quality of schooling offered. Interestingly, however, enrolment also varied significantly according to the percentage of land with a slope below 5 degrees, a proxy for the availability of arable land. Tajikistan is a mountainous country dominated by the Trans-Alay Range in the north and the Pamirs in the southeast, and with arable land constituting just 6% of the overall land mass. The main cash crop is cotton and the paper provides clear evidence that school enrolments are lower in cotton growing areas, a finding that has significance in a country where cotton plays an important part in local politics.

Finally, **Fiifi Amoako Johnson** (also University of Southampton) presented the initial findings on a joint project with Craig Hutton and Zoë Matthews that aims to provide small area estimates of *poverty and vulnerability to climate change in the Brahmaputra River Basin of Assam in India, Tibet in China and Bhutan*. The IPCC (1998) projections show that climate change induced effects such as floods and droughts will impact greatly on the socio-economic wellbeing of individuals, households and communities. These changes are anticipated to impact on livelihoods, settlements, health, demographics and the environment including energy and water sources, sanitation, industry and infrastructure. The effects are hypothesized to vary greatly and felt more among poor and vulnerable communities due to limited resources and infrastructure. The Brahmaputra River Basin is one area where climate change induced effects are imminent. Adaptation strategies necessary to counter climate change induced effects are well documented in the literature. However, statistics to evaluate and monitor the vulnerability and adaptive capacity of at risk populations is almost non-existent particularly in developing countries. The study aims to combine survey, census information and administrative data to derive local level estimates of a range of socio-economic indicators. These will then be used to evaluate and monitor the vulnerability and adaptive capacity of at risk populations in the Brahmaputra River Basin. At present there are no findings and Dr Johnson's presentation was devoted to discussing the range of potential indicators. A useful discussion ensued, highlighting the importance of

developing indicators in a range of dimensions as well as the need for a composite indicator of vulnerability. We look forward to hearing about the results at a next year's BSPS.

Health and Mortality

European Health Differentials

The first paper in this session '*First generation British Indo-Asian men: Cardiovascular disease mortality in relation to childhood and adulthood socio-economic markers*' was presented by **T. Tillin** from Imperial College, University of London. Tillin highlighted that people of Indo-Asian origin are at increased risk of cardiovascular disease (CVD). To try and understand why this group has higher CVD mortality rates in the UK Tillin studied the effects of childhood and adulthood socio-economic position (SEP) and time since migration on mortality rates. This was studied using 1400 first generation men aged 40-69 years. Measurements included fasting bloods, glucose tolerance testing, blood pressure, ECG and self completed questionnaires. The results showed that those with more years of education had reduced risk whilst men whose fathers had manual occupations had greater risks of CVD mortality. Tillin concluded that both childhood and adulthood SEP have strong cumulative and interactive effects on risk of CVD. A question was raised as to whether it was genetic factors that were more important in comparison to SEP and Tillin's response was that many factors (including genetic) were at play and SEP could not explain all the variation.

The next paper '*From torture to torment: Unwilling migrants and the cost of mental health care*' was by **Sallyann Goodall** a clinical psychologist based in East London. She gave an ethnographic report of 3 case studies of Ugandan migrants who were seeking asylum. This study follows from the controversy that the Home Office allows "too many people to stay here" and that there are "too many people for current health and social service budgets". This report emphasised that most of these migrants are not assessed for their mental health needs on arrival yet they usually have a history of abuse. On arrival they go through several frustrations as their asylum applications are rejected. These asylum seekers are not allowed to work and this was a major factor affecting their mental health. This results in them seeing psychologists when their mental health has deteriorated and therefore requiring more hours of care, medication and monitoring for suicidal thoughts. This increases the costs of looking after the migrants. Sallyann concludes that the state increases the cost then blames the migrants but if they had been assessed on arrival healthcare costs potentially would have been cheaper.

The final paper in this session '*Socioeconomic inequalities and demographic differentials in mental and physical health of the Greek elderly population*' by **Georgia Verropoulou** and **Cleon Tsimbos** from the University of Piraeus, Greece was presented by Georgia.

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 Europe), which is a longitudinal, multidisciplinary study. Mental health (depression) was assessed using a 12-item questionnaire (EURO-D- Scale). Risk factors for poor mental health were age (75+ years), sex (female), past depression, living alone and poor physical health whilst education was protective. The risk factors for poor physical health were sex (female); age, low income, being unemployed, and increased weight whilst living with children and education were protective. An interesting discussion followed and one point that was raised was that the sample did not include those elderly people in institutional care, which could result in bias in the conclusion as the sample in this study was shown to be relatively healthy. Georgia acknowledged that this could be true but a small proportion of the elderly in Greece are in institutions as most are cared for by the family. Another member of the audience also pointed out that Greeks are known for their longer life expectancies in comparison to other populations and this could explain why this elderly sample was a healthy group.

Regional & Community Health Session

Chiedza Zingoni (Loughborough University) presented a paper entitled “*Urban South African adolescents are consuming ‘western’ diets*”. Chiedza spoke about the nutrition transition currently occurring within South Africa. A quantitative food frequency questionnaire was administered to a total of 154 South African adolescents, who are part of the Birth to Twenty (Bt20) cohort study. The results showed that the total energy intake was consistent with that seen in ‘western or transitioned’ diets and that this generation of adolescents have a similar level of dietary risk of non-communicable diseases as their peers in more socio-economically developed countries.

Andy Cullis (Institute of Education, University of London) investigated whether *neighbourhood socio-economic characteristics were associated with the well being of young children* residing within that area. Data from the Millennium Cohort Study (MCS) were utilised and the analysis focused on children aged three years, by examining the compositional and contextual effects of their area of residence on their cognitive development.

In the third paper of this session, **Zoë Sheppard** (Loughborough University) presented a paper on “*Understanding dimensions of community socio-economic status in urban Johannesburg and Soweto: what can community members tell us?*”. This paper identified the need to better understand the role of community as well as household SES on adolescent health outcomes. Using participants and their caregivers from the Bt20 study and key informants from the Johannesburg/Soweto area numerous focus groups and in-depth interviews were conducted. These focus groups established lay knowledge and perceptions about the importance of community and school SES. The results suggest that both social support and economic factors are

equally important in understanding the role of community SES and have been used to inform the development of a quantitative questionnaire which is currently being piloted in the field.

The final presentation of the session was given by **Chen Ji**, for a paper by Kandala Bakwin (University of Warwick). The research entitled “*Mapping children’s health inequalities in Nigeria: contextual influence of child’s place of residence*” utilised data from two Nigerian Demographic and Health surveys in order to map the state-level variation of diarrhoea, fever and cough prevalence in young Nigerian children. This type of spatial analysis and geo-additive modelling allows the identification of socio-economic and spatial effects on determining prevalence of cough, fever and diarrhoea. Distinct spatial patterns between the East and the West of Nigeria with regards to the prevalence of cough, fever and diarrhoea were found, with the East showing a higher prevalence of all three morbidities.

Health Session

The first presentation was given by **Giju George** from De Montfort University, on ‘*Attitudes to life style risk factors of coronary heart disease among the various South Asian groups and sub-groups*’. The presenter began by discussing that South Asians were at a significantly higher risk of coronary heart disease. He then described the qualitative methodology taking a grounded theory approach. Ten focus groups were conducted with men aged 35-65 years in Leeds, Leicester and East Ham using snowball recruitment from voluntary organisations, places of worship, meetings and fairs. The discussions addressed why people develop heart disease as well as the role of smoking, diet, stress, alcohol, General Practitioners, role models and racism. Quotes from the focus groups were presented and the presenter concluded by raising some challenges encountered in undertaking this type of research such as the need to develop a rapport with multiple sub communities within the South Asian population studied.

Lidia Panico from University College London presented the second paper entitled ‘*Ethnic variation on the impact of family living arrangements on child health: findings from the Millennium Cohort Study*’. The presenter began by outlining the rationale for the study, that is, that unmarried parenthood had increased over time and that living arrangements were linked to child development and emotional outcomes and that there were ethnic variations in living arrangements and child health. The first sweep of the Millennium Cohort Study was used to address whether family living arrangements affected child health, whether this varied by ethnicity, and what were the pathways between family living arrangements and health, and whether these vary by ethnicity. Birth weight was lowest for children of lone parents and highest for children of married parents and there were different patterns of birth weight by ethnic group but this was only significant for Black Caribbeans and Whites. Socio-economic factors explained some of the pathways.

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 focused on the findings from her utilisation based survey on 6 childhood illnesses. She described the first and second main course of action by Black caregivers of children under 6 years of age who had diarrhoea, cough, fever, constipation, ibala (locally defined illness) and cried a lot. Home treatments were a popular first choice for diarrhoea, vomiting, fever, constipation and crying whereas over the counter medicines were popular for coughs, fever and teething. However, the type of treatment varied by socio-economic status (SES) and there was widespread use of enemas and medicines that were not always used as intended.

Paula Griffiths of Loughborough University was the final presenter in the session. She presented a paper entitled '*The importance of considering puberty when investigating the association between socio-economic status and BMI in a cohort of 9/10 year old children in urban South African children*'. The presenter discussed the limitations of previous studies investigating the association between SES and body composition in that they either did not measure the stage of pubertal development or used a single measure. The Birth to Twenty data were outlined as well as the methods of analysis, being a staged linear regression of BMI controlling for measures of SES, Tanner pubertal ratings and confounding factors. Only 9/10 year SES measures were associated with measures of pubertal status (breast/genitalia not pubic hair) but there was no evidence in this sample that birth SES was associated with puberty.

Child Health Session

The first paper in this session was presented by **Pieta Näsänen-Gilmore** from Loughborough University. The paper investigated the *impact of household fuel pollution on the health status of young children in Bangladesh*. The paper looked at indoor air pollution from wood, charcoal, dung, and crop residue fuels that are often exacerbated by poor stove designs in cramped living conditions. The presentation showed an aggregate correlation between pneumonia deaths globally and use of biomass fuels. In Bangladesh where the study was based acute respiratory infections contribute to 20% of all infant mortality. The study included 625 households in 5 wards, of which 98.1% were using biomass fuels. The study found that households on average exceeded the WHO recommendations at cooking and non-cooking times for pollution and that the most polluting fuels were used in the poorest households. Respiratory infections were found to be prevalent across all of the different fuels used in the study households. Women were observed to spend between 4-7 hours cooking per day. The study's findings will be used to inform educational/ behavioural interventions to make better designed stoves more locally available and marketable at low cost.

Laura Jones from Loughborough University presented a paper investigating *socio-economic determinants of pubertal development in an urban South African cohort*. The importance of timing of pubertal development was emphasised because of its links with earlier initiation of sexual activity, obesity, and non-communicable diseases. The study participants had provided Tanner ratings from 9-13 years annually to assess pubertal development. The study had investigated associations between SES measures taken at birth and the timing of initiation of puberty. The study found little association between the early life SES environment and age at initiation of puberty in boys or girls.

The third paper was presented by **Sarah Hall** from the University of Southampton. This paper used *data from the Bangladesh Demographic and Health Surveys to examine factors associated with neonatal mortality*. 4 million children die in the neonatal period globally on an annual basis. Although Bangladesh has experienced a halving of neonatal deaths in the last 20 years, it still experiences high rates of neonatal mortality relative to its GDP. The findings of the study revealed women who had received 4 or more antenatal visits had 50% less neonatal mortality when compared to those with zero visits. Those who had received the recommended dose of tetanus toxoid immunisation also experienced half the rate of neonatal mortality compared to those who had not received the recommended dose. Although those with an institutional delivery had increased risk of neonatal mortality, this is likely because high-risk pregnancies are transferred to such facilities either late in pregnancy or during labour. When women who had appropriate antenatal care in pregnancy plus an institutional delivery are compared to those who did not receive appropriate antenatal care but gave birth in an institution, those who didn't receive antenatal care have a marked increase in neonatal mortality.

The final paper in this session was presented by **Ray Langsten** from the American University in Cairo. This paper investigated *physician treatment of male and female children*. The paper was motivated by the relatively higher mortality of girls experienced in Egypt despite their biological propensity for lower rates of mortality in early life compared to boys. Prior to the study parental reports of physician care practices had suggested that physicians potentially provide higher quality care to male over female children. This study used direct observations of government physicians and assessed the child's diagnosis and prescribed treatment. Physicians were found to not provide adequate assessments for two thirds of both male and female children. They diagnosed over 85% of serious childhood illnesses. This was equally observed for males and females. A half of the sample was given antibiotics for ARI inappropriately, although there were not significant differences between males and females. Approximately one third of children were inappropriately not given ORS. The study concludes that while sex differences in care practices were not observed, there were clear

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 prevalence of these funerals. Terms such as living alone, loneliness and isolation require a further clarification in relation to section 46 funerals. It was commented that the work could benefit from the use of coroner's reports on the cause of death.

The second presentation in this session was entitled; *Misinterpretations of health inequalities in the UK* and was presented by **J. Scanlan** who is a law attorney from Washington. This work looked at racial, socio-economic and regional differences in health outcomes across the world over the past 30 years. A point was made that health inequalities research fails to recognise the health inequality outcomes and their prevalence. Research often aims to highlight decline in health inequality. This work questioned whether it is possible to measure health disparities accurately. Odds ratios do not provide a correct measure of health outcomes in advantageous or disadvantageous groups. Current research implies there are no appropriate tools to measure the changes in health inequalities over time as well as the direction of change. Morbidity measures are easier to handle and the odds ratios are more suitable for dealing with morbidity than health inequalities. Ameliorative interventions have sometimes been shown to exacerbate inequalities because of a decline in prevalence of the overall outcome, making

relative differences greater. The question remains as to "what is a large difference".

The third presentation was entitled; *The effect of birth-weight on mortality in the 1st year of life: Can we improve the estimates in developing countries* and was presented by **Amos Channon** from the University of Southampton. This study looked at techniques to measure infant mortality in countries that lack good health standards and where demographic health surveys (DHS) often lack data on infant birth-weight. Research often uses cases with incomplete data to overcome this problem. But this practice may introduce a bias in the analysis as the complete cases may represent a population subset (wealthier, healthier, higher SES). The DHS data from Kazakhstan (2.9%), Malawi (55.9%), and Cambodia (84.1%) with percentages of missing birth-weights were analysed for the relationship between birth-weight and child mortality (neonatal and infant). Comparison was made between the analysis using complete cases only and the analysis of all data generated using the following methods: 1) Use of a proxy variable to replace the missing birth-weight (e.g. mother's perception of infant size) 2) Inverse probability weight (predicts the missing birth-weights using the available birth-weight of children of similar sizes). 3) Multilevel multiple imputation method (generates data based on existing birth-weights). Multilevel logistic regression on neonatal data indicates children with measured birth-weights were different from others (home birth, rural, low education families, a higher death rate). In Kazakhstan 21.5% of neonatal deaths occur among children classified as very small at birth. However the assumption that children with lighter birth weight have a higher risk of mortality does not take into account regional/geographical differences of accessing medical services. In Malawi the use of mother's perception as a proxy for size indicates very large children (together with very small children) have a higher risk of death. The trends are similar with different proportions in Cambodia. **Conclusions:** Mother's perception as a criterion for birth-weight classification does not work very well. Model findings across the three different methods did not agree and there was some discussion as to what was the most appropriate method to use given the study's findings

National abortion guidelines in Nepal. Barriers to accessing safe abortion in Nepal was presented by **Mahesh Puri**. Centre for Research on Environment Health and Population Activities (CREHPA), Kathmandu, Nepal. Abortion was legalised in Nepal in 2002. This paper aimed to test whether abortion and appropriate support follow the World Health Organisation's 2003 Safe abortion guidelines where abortion should be safe and carried out by qualified nurses, using suitable equipment, up to 12 weeks of pregnancy. Abortion law in Nepal in 2002 stated that abortion should be available to all without discrimination at listed health centres with trained staff to carry out the procedure. However, there is a lack of knowledge of availability of abortion by women in communities. Health services generally provide only one option for

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 19th 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 levels of owner occupation and showed that the traditional patterns of change (ie families moving out of renting in Inner London for areas of cheaper housing to buy) are still apparent amongst the different ethnic groups and gave examples of how this process was continuing.

Jo Wathan (University of Manchester) then spoke about the progress being made with the *2001 Census Samples of Anonymised Records* with particular emphasis on the potential of these datasets. Jo described the full range of anonymised microdata that is now available from the UK 2001 Censuses. The family of datasets includes:

- The Licensed Individual SAR: a 2% sample of individuals; available under a standard end user license
- The Special License Household SAR: a 1% sample of households in England and Wales only; available under a special license
- The Small Area Microdata file: a 5% sample of individuals, with less detailed individual information but with local authority geography; available under a standard end user license
- The Controlled Access Microdata: more detailed versions of the 2% individual and 1% household files available for use only within an ONS safe setting.

The Microdata enable users to undertake more flexible analyses than is possible using census tables and users may explore individual and household characteristics, produce models, undertake data manipulation and to define their own tables using samples from the Census output database. Jo discussed how confidentiality has been achieved by limiting the detail of key variables in the end-user license data files, and by providing more detailed data under more stringent licenses or within safe settings. These data now provide a range of data options, including many variables that were previously unavailable such as local authority and religion. Jo showed how users could access the data and gave examples of the potential that exists for demographic and other social research, including use by local authority researchers.

Malcolm Brown (Cornwall County Council) discussed *Cornish ethnicity data* from the 2001 Census. Although any response 'Cornish' to the ethnicity question had to be a 'write-in' about 34,000 people in Cornwall and 3,500 people in the rest of the UK wrote on their census forms that they considered their ethnic group to be Cornish. This represented nearly 7% of the population of Cornwall. This response followed local publicity before the Census but does not seem to have been co-ordinated tightly. Malcolm considered that the numbers themselves cannot be taken as an accurate count of the number of 'Cornish' people in Cornwall. However, the County Council has used the information via commissioned tables to test whether there were any significant differences in characteristics between the Cornish and non-Cornish populations. While there are differences most can be associated with the older age-structure of those who presented themselves as 'Cornish'. Planning for the 2011 Census is now well advanced and Cornish ethnicity is under consideration. A strong case for Cornish being a tick box option in 2011 is being made. Malcolm also mentioned the options for Cornish language to be an optional entry should a question on language get onto the final census form, however he admitted that Cornish is basically a dead language.

The final contribution to the session was by **Knud Moller** (City of Stoke on Trent) who discussed *issues relating to the study of migration based on the 2001 Census*. He set out his own experience of using migration and travel-to-work data for Stoke on Trent. Knud discussed the terminology used in relation to the data – pointing out discrepancies between different tables – as well as the advantages and disadvantages of the available statistics. He pointed out that the Census notes did not inform that in creating new geographies certain migration data are not to be treated as additive. He was concerned with the concepts of what the data are measuring, what they meant to measure and whether they are fit for purpose. Knud concluded that for the study of migration the Census has the main shortcoming of being just a snapshot at one particular point in time.

ONS Population Estimates

The entire session was devoted to four presentations from ONS that were related to the IMPS (Improving Migration and Population Statistics) Project.

Roma Chappell started the session with a *progress report on all aspects of IMPS*. International migration is the focus of later presentations. Improvements to internal (UK) migration data were on a slower track than other parts of the work, but there was work on looking at benefits data (children and retired) the National Pupil Database and student information. Of particular concern was the use of NHS walk-in centres and hence the failure of, mainly, young adult males, to re-register after a move. The four LA Case Studies will complete later in 2006 and ONS hope to be able to generalize from the findings to similar areas. Have all areas got similar sources as then study authorities?

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, as they arrive in the UK and after they have arrived in the UK.

Giles Horsfield then spoke on a key theme of IMPS, *improving the distribution of international in-migrants to the UK at country and Government Office Region levels*. Giles described the International Passenger Survey, the main source of data used in ONS estimates of total international migration, with particular emphasis on the in-migrants' intended areas of residence in the UK upon entry. Many in-migrants, in fact, settle in different areas of the UK, either directly, or by moving on quickly from their initial destination. For example, the 2001 Census shows a different distribution of international immigrants to the regional distribution of the IPS. Giles presented the initial results of research into improving the distribution of IPS immigrants using data derived from the Labour Force Survey (LFS) to distribute IPS in-migrants at UK country and GOR level. He described the method developed to produce geographic distributions in this way and showed some early results. International flows based on IPS intentions have been strongly focussed to London (37%) but the LFS implies that this should only be about 31% with significant uplifts in the flows to the East Midlands and Eastern regions.

Jonathan Smith's presentation picked up from the regional redistribution of international immigrants to look at ways of *distributing the flows at local authority district level*. These estimates at local authority district level are required by single year of age and sex for use in both the mid-year population estimates and sub-national population projections. Jonathan cover three aspects of the methods:

1. The sub-regional geography on which International Passenger Survey data should be used.
2. Smoothing methods for producing stable sub-regional estimates
3. Age distributions applied to local authority district totals

At present the IPS data is distributed to a geography, the family health service authorities (FHSAs), that is no longer used by the NHS. Within each FHSA the totals are distributed by reference to the 2001 Census. A key problem is hotspot city centre destinations. The Census shows that destinations are more widely spread. Jonathan looked at the potential solutions in regions outside London, where the new geography will broaden out to encompass local authorities in the same region within the hinterland of the hotspot districts. Using this revised geography the regional IPS/LFS totals would be distributed to grouped LAs using the original IPS data and then further distributed to individual LAs using the 2001 Census. London, however, creates a more complex problem that had not yet been cracked. The geography of

hotspots in London is more complex, but hope lays in the more robust local LFS migration data for the capital.

Briony Eckstein and **Folkert van Galen** presented their work looking at *alternative sources to improve the estimation of population and migration statistics*. Changes in society, such as increased population mobility, lower fertility and mortality rates, more complex living arrangements and shifting societal norms in the areas of partnership and family formation, all add to the problems of producing accurate population estimates on a usual residence basis. Many of the statistics produced by the ONS are calculated through the use of administrative data sources. For example, the mid-year estimates (MYEs) are calculated using such data sources as birth and death registrations from the Registrar General's Office, GP patient register and National Health Service Central Register data and the International Passenger Survey. The presentation considered whether the inclusion of additional administrative data sources (the allocation of National Insurance numbers to migrant workers, the transfer of state pensions overseas and the Worker's Registration Scheme) might help to improve the quality of migration and population statistics. A significant problem relates to the accepted definition of usual residence and therefore any new data sources must be consider in relation to whether they assisted the present definition or pointed to additional population definitions, such as short-term migrants, persons with homes both in the UK and overseas, second homes, etc.

Estimates and Projections

The session started with **Stuart Booker** of Fife Council speaking – almost totally without visual aids due to equipment hiccough - on *utilising population projections for local authority strategic planning*. The General Register Office for Scotland (GROS) publishes population projections for Scottish local authorities. These are a potential source of information for local authority strategic planning. In addition, each local authority holds administrative data on the current client group for key services. However, the quantity and quality of this information varies according to the service in question. Both sources of information on the local population have strengths and weaknesses. The GROS population projections are particularly sensitive to the migration and fertility assumptions made, but provide comprehensive information on the future population at a local authority level. Variant assumptions can be made, reflecting the assumptions applied to variant national projections. These reveal a high degree of uncertainty over the school age and younger working age population, but much greater certainty over the future numbers of older people. By contrast, the local authority's own administrative data can provide current information at a more localised geographical level. It can also provide a near-comprehensive profile of the current school age population. However it provides only partial information for most other client groups. Stuart reviewed the strengths and weaknesses of GROS sub-national projections and administrative data and summarised recent attempts to quantify the quality of information

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 improving post-2001 estimates. The first method exhumed the notion of ‘unattributable population change’ and linked amendments between 1991 and 2000 to the volume of international migration to London. The method was then extended from 2001 to 2005. The second method linked the distribution of international migrations amongst the regions according to the Labour Force Survey, rather than the International Passenger Survey, much as outlined earlier by Giles Horsfield, and then distributed migration to London amongst the boroughs according to NHS Flag 4 registrations, ie first registrants from overseas. The third method was based on known development of new homes in each borough since 2001, with population growth determined by linking population projections and the relationships between population and households as developed in the DCLG 2003-based household projections. The results were compared and comments made on strengths and weaknesses of each method.

2011 Census

Neil Storer of Camden Council spoke on preparations being made by Camden Council for *the 2007 Census Test*. Camden is one of five local authorities to be selected to take part in the 2007 Census test and is the only LA in London taking part. ONS is using the Test to evaluate several different aspects of its enumeration procedures, but a crucial role is to assess the value of close liaison with local authorities in maximising enumeration in the census. Neil discussed why Camden had been chosen. In the 2001 Census Camden fared badly, with 75% of Output Areas (OAs) in category 4 (over 20% under enumerated) and 24% in category 3 (10-20% under enumerated). Of 733 OAs, just 3 were category 2 (5-10% under enumerated) and only 1 in category 1. Camden is high on the latest ONS index of hard to count areas: it is home to both established and recent migrant communities; a high proportion of students in both halls of residence and in private households; a high proportion of accommodation in public and private estate blocks with gated/secure access; houses in multiple occupation and addresses with unmeasured living spaces; a highly mobile population and one with a younger demographic which tends to defy ‘normal’ working/waking hours. At the same time, Camden had expressed a desire to help improve the Census and, with the emphasis on post-out questionnaires and the need to better understand local address geographies, Camden is also recognised as having a well established and good quality local land and property gazetteer (LLPG).

Local authority liaison could well prove be a key part of improving enumeration performance in the next Census. Camden will be liaising with ONS to give a better understanding of local communities and geography, better prepare census staff and residents for the arrival of the census and building the importance of the Census into the psyche of the borough. Lessons learned will set Camden in good stead for ‘real thing’ in 2011 and the knowledge gained should benefit all London boroughs in the run up to the 2011 Census. The modest input of resources into liaising with ONS now could be nothing in comparison with the potential costs associated with a poor enumeration.

Peter Stokes of the Office for National Statistics spoke on *developing a questionnaire for the 2011 Census*. The next Census will collect a range of information about every resident of the UK, and the Office for National Statistics has a significant programme of work underway to determine what this will include. Peter reviewed progress so far, which includes analysis of the 2001 Census, consultation with users and stakeholders and the development of questions for the 2007 Census Test. The process and timetable for continuing question development was discussed and ONS’ current judgement on the likely content of the 2011 Census was outlined.

Caroline Young of the University of Southampton presented on *methods of geographical perturbation for disclosure control*. Disclosure Control methods are used

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 flows. They discussed the feasibility of alternative data sources to attain estimates of this difficult-to-capture population. The International Passenger Survey was identified as a possible candidate, although problems such as switchers, definitions, timing and seasonality were outlined.

The second paper was given by **Arnstein Aassve** (*University of Essex*) on the work conducted by **Letizia Mencarini** and **Ettore Recchi** (*University of Florence*) into the *geographic and work mobility of European citizens in the European Union Member States*. Logistic regression modelling was used to examine the statistical relationship between the two forms of mobility. Using the European Community Household Panel dataset, it was shown that more flexible labour markets are related to higher rates of spatial movements of the workforce both within and between European nations.

The final talk of this first session was given by **Philip Rees** (*University of Leeds*) looking into the extensive topic of *globalisation, population mobility and the impact of migration on population*. The first half of his talk focused on the role that the UK plays in the global mobility system. He then looked at recent press coverage of migration and, in an absorbing multimedia

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** (*Cuban Centre for International Migration Studies, CEMI*) spoke of *Cuban emigration as a family solution* to the economic crisis after 1989 and the fall of socialist countries in Eastern Europe and the tight economic blockade by the US and other countries since then. Cuba has been a source country for migrants for many decades before the Cuban Revolution and is not unusual among Latin American and Caribbean countries. But the specifics of emigration in each period can be understood within its specific cultural, economic and political context. Dr Martín described a variety of statistical, interview and document analysis methods used in her studies, and two methods devised for use with family members. In one the interviewee fills in qualities on a diploma that they would award to 'the best émigré' and another to 'the worst émigré'. In the other, the interviewee is asked to put the qualities associated with a good life and a poor life on the top and bottom steps of a drawn staircase, and then to indicate where they themselves are at the moment, and where they think they will be in five years time. The multi-method observations were used to demonstrate a clear change in official-social and family attitudes toward emigration after 1989 towards acceptability. The quality of 'the best émigré' has also changed during recent years, to one that is not politically motivated against the Cuban Revolution but which is concerned to achieve their own and their family's well being.

Adriana Carolina Silva (*Nueva Granada University, Colombia*) distinguished *forced displacement from economic migration within Colombia*, using the Continuous Household Survey. Forced displacement resulting from military conflicts within Colombia involves whole families, while economic migration is mostly of single migrants, but both add to the labour force in urban centres. The analysis, using Heckman selection logistic regression models, showed negative selection for the forced migrants relative to labour migrants, in that their success in getting work in the cities was significantly lower. Voluntary migrants were also more likely to earn higher wages than forced migrants. A time series showed that more recent migrants to the cities were mostly economic and had higher insertion in the labour market.

Angélica Reyna Bernal (*Autonomous University of Hidalgo*) spoke of *new attraction regions in Mexico* through an analysis of data from the period 1970-2000. The traditional internal movement from rural areas to the largest cities (Mexico, Guadalajara, Monterrey and Puebla) contributed to a marked concentration of population in the central region of the suggested a change in this pattern, with the growth of small and medium cities. Through detailed GIS-based analysis of migration

data from the national censuses of 1970 to 2000, Angélica examined the migratory flows of two contrasting regions that act as an alternative to the great metropolis. First, the coastal regions that form the most peripheral parts of Mexico, with 114 medium and small cities now representing one third of the National Urban System. The acceleration of coastal urbanization is very recent and is directly caused by labour immigration associated with the petroleum, tourist, fishery and harbour industries related to the opening of international global commerce. Second, the Hidalgo-Tlaxcala-Puebla region, close to Mexico City and Puebla receives part of the outmigration from Mexico City and has a strong commuting links with it.

Stuart Burley (*University of Plymouth & Cornwall County Council*) kicked off the third session of the migration strand with a paper on *in-migration to Cornwall*. The conundrum that he had investigated was that the population of the poorest county in England was growing strongly through in-migration. The Longitudinal Study of England and Wales was used to confirm that this process had been happening in the last intercensal decade (1991-2001). Migrants to Cornwall experienced a decrease in economic activity on migration there, although their part-time economic activity remained high. The in-migrants tended to move down the occupational hierarchy. Reporting on a survey of reasons for migration to Cornwall, Stuart confirmed that moving to improve incomes was not an important motivation. Life style reasons were dominant. However, migrants did improve their housing market position. These findings were consistent with migration to Cornwall being part of downshifting, possibly pre-retirement and including a group of benefit claimants seeking a cheaper place to reside.

Cecilia Macintyre (*GRO-Scotland*) assessed the *methods used in Scotland to monitor migration through use of Health Registers*. The traditional method involved counting patient re-registrations across Health Board Areas, counts that were affected when patient records were transferred. Information on migration at Council Area level is provided by comparing two extracts from a patient management system called the Community Health Index. There was a need to develop robust measures based on the CHI comparisons: the CHI postcode detail meant that summaries could be provided for a number of different geographies, moving away from reliance on NHS geography. However, some serious discrepancies have come to light between the England-Scotland flows recorded in the NHSCR at Southport and measures of the same flows generated from the CHI. The former estimated the Scotland to England flow as 42.4 thousand whereas the latter estimated the flow as 26.0 thousand. The two time series moved in parallel but the source of the discrepancy had not yet been traced.

Guy Abel (*University of Southampton*) described his research into *the indirect estimation of elderly migrant flows in England and Wales*. The aim was to develop a method of enhancing the content of migration time series by combining migration information from the NHS

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 marginals of the patient re-registration data. It can also be used to add further attributes, such as long-term limiting illness, to the time series of migration data.

Jamie Goodwin-White (University of Southampton) described how she used the Public Use Microdata Sets from the US Census to compare the *labour market achievements of the immigrant generation*, the 1.5 generation (children of foreign born immigrants themselves foreign born but migrating to the US as children) and the second generation (the native born children of foreign born). The research showed that the 1.5 generation fared better than their parents and the second generation. Recent Mexican immigrants did face wage penalties compared with native-born whites of equivalent backgrounds, but these penalties were lower than previously reported. These relationships, however, varied significantly between large metropolitan labour markets.

The final migration session consisted of presentations on internal migration in China, Italy, Sweden and the Netherlands. **Penny Kane** (University of Melbourne) looked at *the experiences of Chinese women* who are increasingly moving to the cities in search of new and better-paid employment. The majority of these women are aged 20-40, are poorly educated and work in factories or within the service industries. Despite the authorities' refusal to provide work permits or accommodation, there are strong incentives in the form of both higher incomes and improved status and appreciation from family members still residing in the country. Given the official disapproval of migrant women, employers rarely provide health care insurance and, coupled with the difficulty in providing pre-natal supervision to a highly mobile population, this may explain why the rate of stillbirths to migrant women was twice that to local women. This provided a very interesting insight into a country where the pace of change is so great that studies on the effects of migration may be out-dated as soon as they are completed.

Stefania Rimoldi and **Laura Terzera** (Università degli Studi di Milano) presented information on the *settling behaviour of legal and illegal foreigners in Italy*. The first part of the analysis examined the centrifugal concentration of foreign population settlements. Bangladeshis were shown to have the most concentrated

settlement patterns, Ukrainian settlements were less concentrated and Albanians were the most likely immigrants to be dispersed throughout Italy. It was suggested that the differences in settlement patterns may be partly explained by the size of each immigrant population and the time of arrival into Italy, with the more polarised ethnic settlement patterns possibly representing an earlier stage of immigration. Cluster analysis was also used to examine the characteristics of each ethnic group and showed there to be more variation than that identified in the centrifugal analysis.

Stamatis Kalogirou, taking time out from his military service in Greece, described the extension of his previous work on *modelling internal migration for England & Wales and Japan to analysing the determinants of out-migration in Sweden*. Looking first at temporal trends in migration to and from the capital city Stockholm, it was shown that high in-migration and low out-migration tended to be in line with periods of strong economic growth. Using Geographically Weighted Regression (GWR) to model out-migration at local authority level, it was shown that the most statistically significant determinant was divorce. This was a novel finding for Sweden and was not identified within the previous analyses of the other countries.

The role that divorce plays in the decision to migrate was also examined by **Peteke Feijten** and **Maarten van Hamm** (University of St Andrews). They had used longitudinal data sets from the SSCW survey (1993) and the Netherlands Family Survey (1993 & 2003) to plug the knowledge gap in *how separation affects the spatial aspects of housing careers*. The analysis was threefold looking at the frequency, distance and direction of moves associated with relationship separation. The findings showed that, although separated people move far more frequently, they actually move shorter distances than single people or those in first relationships, this being largely attributable to separated men with children. Finally, although most separated people tend to remain living in the same type of residential environment, for those that do move the city was the most common destination choice.

Poster Strand

The research-diverse poster strand proved to be great success at this year's conference. A total of six posters were presented. **Stuart Booker** (Fife Council) presented "*Measuring population similarities: an area deprivation example*" which outlined how rankings can be used to compare the social and economic characteristics of populations living in different geographical areas. **Dylan Kneale** (Institute of Education, University of London) presented a topical poster on "*Early motherhood and neighbourhood characteristics*" which illustrated how neighbourhood may influence child bearing decisions, and introduced the preliminary conceptual framework of this work in relation to a wider research project. **Karen Baker** (University of Southampton) investigated whether more young people can save for their future using

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 the importance of understanding community level socio-economic status (SES) and showed how this work has informed the development of a quantitative tool to assess community SES within urban Johannesburg/Soweto in their poster “*Understanding dimensions of community socio-economic status in urban Johannesburg & Soweto: what can community members tell us?*”. **Paul Norman** (University of Leeds) and colleagues in their poster “*Improving access to vital statistics*” reflected that computerised birth and death statistics are not being utilised. Through their work with the Economic and Social Data Service (ESDS) they hope to enable widespread use of these vital statistic data and improve usability and consistency.

Thanks must go to Professor **Bill Clark** (University of California) and **Consuelo Martin Fernandez** (University of Havana) who had the unenviable task of judging the poster competition this year. The postgraduate prize went to **Dylan Kneale** (Institute of Education, University of London) for his poster on “*Early motherhood and neighbourhood characteristics*”. The remaining prize went to **Melanie Abas** (King’s College London) and colleagues for their poster on “*Depression, disability and socio-economic position among older adults ‘left behind’ by out migration: a multilevel study in Kanchanaburi province, Thailand*”.

Reproductive Health Sessions

The reproductive health session this year was well received and the hall was well-packed. There were two sessions on reproductive health; the first session addressed reproductive health issues related to pregnancy losses and the second session focused on contraceptive use and risky sexual behaviour. John Cleland chaired the first session and the second session was chaired by Sabu Padmadas. The sessions were lively throughout with good time for discussion.

The first paper in the strand was entitled ‘Economic strategies and the risk of early pregnancy loss in a rural Bolivian population’, presented by **Virginia J. Vitzthum** from the Indian University and Institute for Primary Health & Preventive Care at Binghampton. The paper was co-authored by Hilde Spielvogel and Jonathan Thornburg. Based on a detailed qualitative research, this paper discussed the *effects of different economic*

strategies and empowerment of women engaged in agricultural activities on their reproductive functioning. The main outcome measures were early pregnancy loss and sustained conceptions. The study pointed out that food shortage and high labour demands during planting and harvesting seasons were associated with women’s early pregnancy loss experiences. While the study merits the richness of detailed qualitative and biomarker data, the findings presented were refuted by small number of observations that made the statistical analysis less convincing. The discussion touched upon issues related to seasonal ‘male’ migration and the measurement of lifestyle indicators in explaining pregnancy losses among study population.

The second paper was presented by **Steve Clements** on ‘*Exploring the circumstances surrounding later abortions*’. This work was carried out jointly with Roger Ingham, Ellie Lee and Nicole Stone – all except Ellie is based in the Centre for Sexual Health Research at the University of Southampton and Ellie is based in SSPSSR at the University of Kent. The study aimed to explore the historical patterns and sub-national variations in later abortions using secondary analysis of survey data collected from GPs and hospital consultants and also from a national questionnaire survey of women attending for later abortions. The study concluded that late awareness of pregnancy is the major factor explaining abortions in England and Wales. The purposive selection of the study population and the possible bias that could influence the factors associated with later abortions were discussed.

The third paper was presented by **Govinda P. Dahal** on ‘*Fertility limiting behaviour and contraceptive choice among men in Nepal*’, co-authored with Andrew Hinde, both from the University of Southampton. Using the 2001 Demographic and Health Survey data from Nepal, the authors investigated the factors determining contraceptive use among men who reported their intention to limit fertility. The study concluded that presence of sons in the family had a positive effect on men reporting contraceptive use and intention to limit family size. Also, men who have at least two boys were likely to choose male sterilisation than other methods, when compared to their counterparts. The discussion focused on the important policy implications of the study suggesting measures to increase male involvement in reproductive health in the country.

The first paper in the second session was presented by **John Cleland** from CPS, LSHTM, co-authored with Mohammed Ali from the WHO. Analysing DHS data from 18 sub-Saharan African countries, John presented their work on the ‘*Trends in protective behaviour among single vs. married young women in sub-Saharan Africa*. The paper pointed out little improvement in condom use among married and cohabiting populations who were as vulnerable as young unmarried to HIV infections. The study concluded that condom use in the sub-Saharan African context is regarded as a method primarily to tackle unwanted pregnancy than preventing sexually transmitted diseases. The discussion stressed on the need

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 women*'. The paper investigated the association between exposure to family planning information and respondent's reports on fear of side effects as an explanation for not intending to use a method in the future. The analysis was based on the DHS data from Ghana, a sub-sample of the population, who reported not using any contraceptive methods at the time of survey and those who stated that they do not intend to use any method in the future. The main point raised in the discussion was on the lack of exposure to contraceptive information along with the exchange of rumours and misinformation through social networks as possible factors explaining the barriers to contraceptive use.

The last paper in the session was presented by **Mohammad Amirul Islam** on '*Male method choice in Bangladesh: Does it matter who makes the decision?*', co-authored with Sabu Padmadas and Peter WF Smith from the University of Southampton. This paper explored the couple dataset from the 2001 Bangladesh DHS to investigate the influence of couple decision-making on the choice and use of male methods. The study pointed out that the sex of the spouse who takes the decision to use a method is associated with the type of method use among couples. The strategies to include men in family planning decision processes with an aim to promoting more male-based methods were discussed. The programme implications of a female oriented family planning programme in Bangladesh, in the context of potential increases in sexually transmitted diseases and HIV, were also highlighted.