

## Concurrent Session Abstracts

In alphabetical order of (first) author's name

### A

#### Factors affecting male participation in family planning and reproductive health programmes in Indonesia

*Syahmida S Arsyad, Center of Research and Development of Family Welfare and Women Empowerment, Jakarta, Indonesia  
[Session 4B]*

This paper discusses the result of the 2002-03 Indonesian Demographic and Health Survey data analysis. This analysis identified factors affecting male participation in family planning (FP) and reproductive health (RH) programmes. The sample for this analysis is the male respondents of the survey (n=7,423 married men with children). Male participation is the dependent variable, measured by nine variables related to the FP and RH programmes. Male participation is classified into two categories: high, if a respondent is involved in more than five variables, and low, if a respondent is involved in less than five variables. The independent variables are classified into three categories: socio-demographic factors (predisposing factors), enabling factors, and reinforcing factors. Bivariate and multivariate data analyses are used to identify the correlation between independent and dependent variables and highly statistically significant variables. The multivariate analysis revealed that socio-demographic factors have a significant influence on male participation in FP and RH programmes. The enabling factors which are highly statistically significant are: exposure to mass media; exposure to FP/RH service points; discussing FP/RH with friends, neighbours, or family members within the last six months; exposure to information on AIDS; exposure to information on STDs. Based on these findings, this study recommends: IEC target audience is segmented based on age, number of children, and residence (urban/rural); strengthening the role of field workers in IEC; intensifying monitoring and supervision.

### B

#### SEIFA 2006

*Joanne Baker, Australian Bureau of Statistics  
[Session 6D]*

The Socio-economic Indexes for Areas (SEIFA) are a set of four summary measures of relative socio-economic status at a small area level. They can provide a broad brush view of relative socio-economic advantage and disadvantage across areas in Australia. SEIFA 2006 was created from a wide range of variables collected in the 2006 Census of Population and Housing. The indexes are compiled at the Census Collection District (CD) level, and may be used to rank CDs according to the general socio-economic well being of people living in the area. The Australian Bureau of Statistics has produced SEIFA for each Census since 1986. For SEIFA 2006 a range of new features have been incorporated into the measures. These new features include:

- using place of usual residence rather than place of enumeration;

- the inclusion of new Census variables such as need for assistance with core activities (due to a disability or long term health condition), and type of internet connection;
- using household equivalised income; and
- revision of the Index of Economic Resources.

In this paper we consider how these major changes have affected the results for each of the four indexes. We consider the distributional structure of the indexes, including an investigation of SEIFA by Remoteness Area.

### Is Queensland Australia's growth State? Facts and fallacies

*Ross Barker, Queensland Department of Infrastructure and Planning  
[Session 5C]*

Queensland has been Australia's growth state in absolute terms and usually in percentage terms for more than a decade. Indeed Queensland has been capturing a disproportionate share of Australia's growth since the 1970s and this trend is expected to continue. But what are the facts about Queensland's growth compared with widely held perceptions. This paper will present an analysis of the components of population change in Queensland compared with Australia's other populous states of New South Wales, Victoria and Western Australia. The components of growth as well as the overall level of growth have changed dramatically over the last two decades and are set to undergo more significant change in the future. This is due to the economic drivers of growth across the nation altering and diversifying. There is no doubt, however, the resources sector will play an increasing role in the level and distribution of population growth across Australia. While much of the media attention and indeed academic research has focused on the role of interstate migration as the primary contributor to Queensland's growth, both the other two components of population change – natural increase and overseas migration – have played and will play a significant and increasing role in the State's future growth. The paper will also explore the geographical distribution of growth across the State, highlighting the dominant role of south east Queensland in the past but possibly not as important a role in the future. Finally the paper will explore future prospects based on the latest research on the drivers of population growth for the state which highlights a degree of uncertainty. Under any likely scenario however, Queensland is set to remain Australia's growth state.

### Can the Northern Territory sustain its workforce in the future?

*Tony Barnes, Corey McCann, and Francis Selzer,  
Northern Territory Treasury  
[Session 5C]*

Population plays a substantial role in influencing the medium and long-term fiscal and economic outlook for the Territory. Population projections are used in this paper to explore the likely extent of future population changes and ageing in the Territory, and the consequences of these changes for numbers of working persons in the Territory and the demand for government services and other areas of social need. As populations age, there are likely to be a variety of economic implications and fiscal pressures. These include a reduction in the rate of increase in the size of the working age population and lower average labour force

participation as the working population progressively ages. The Territory, with its unique population composition and drivers of growth, is unlikely to age in the same way as the rest of Australia and its ageing may have different consequences to those experienced in other Australian states and territories and, the analyses presented in this paper suggest these consequences may be more severe in the Territory.

### **Migrants statistics: Concepts and issues, focusing on Middle Eastern communities**

*David Bartie, Australian Bureau of Statistics  
[Session 2A]*

International migrants and their descendants have played a significant role in Australia's history and in shaping the nation we have today. In addition to numerous and varied contributions to Australian culture and society, migrants have a continuing role in population and workforce growth. In light of stabilising trends in the level of natural increase and emerging skill shortages across various sectors of the economy, the importance of this role over the forthcoming decades can only increase. Despite the ongoing interest in migrants and their descendants from research, policy and service delivery perspectives, the statistical base through which associated issues and analyses might be informed remains underdeveloped. The ABS National Migrant Statistics Unit, established in 2006 with support from the Department of Immigration and Citizenship, aims to provide statistical leadership in this field through the identification and promotion of pertinent data sources and by facilitating improved coordination amongst relevant stakeholders. My presentation will briefly introduce some of the key conceptual and definitional issues associated with this field of statistics. Focusing specifically on those of Middle Eastern origin, I will then highlight some recent trends in the distribution and characteristics of this small but important migrant community, illustrating, amongst other things, the dangers in making broad assumptions about particular migrant groups. This analysis will lead into a broader discussion about the statistical issues and challenges facing those seeking to better understand immigrant and ethnic minority communities. It will be noted that in many cases such challenges may not be easily addressed and that an enhanced focus on collaboration and innovation is likely to be the best way forward.

### **Is money the main reason mothers return to work after childbearing? A quantitative analysis of reasons by timing of return, use of leave and other factors**

*Jennifer Baxter, Australian Institute of Family Studies  
[Session 7B]*

Women's reasons for returning to work after childbearing are complex, often including a mix of financial and other reasons related to their preferences, choices and constraints. Various qualitative studies have explored this decision-making process, but the topic has less-often been explored using quantitative analyses of large samples. This paper uses a quantitative approach, considering women's reasons for returning to work, and analysing how these reasons for return to work vary with factors such as women's timing of return to work, what types of jobs they had previously worked in (or returned to) and what type of leave they used. This enables an examination of which women feel more constrained in their labour market options – returning to work sooner than preferred

– also informing why they returned to work sooner than preferred. This analysis is based on the 2005 Parental Leave in Australia Survey, a survey nested in the Wave 1.5 collection of the Longitudinal Study of Australian Children (LSAC). The study children of this cohort were aged at least 15 months at this time, at which time 56 per cent of mothers had returned to work.

**Opening new doors to overseas employment in the Central Pacific? Opportunities for I-Kiribati and Tuvaluans in New Zealand's Recognised Seasonal Employer scheme**

*Richard Bedford, University of Waikato, New Zealand;  
Charlotte Bedford and Graeme Hugo, University of Adelaide  
[Session 2A]*

There has been considerable discussion at the Pacific Forum about greater access for Pacific peoples to employment opportunities in New Zealand and Australia. One New Zealand response to this has been the development of the Recognised Seasonal Employer (RSE) scheme. In this paper we outline briefly the history of New Zealand's migration policies with reference to Kiribati and Tuvalu, and review some of the issues surrounding implementation of the Recognised Seasonal Employer scheme in this part of the Pacific. The demand for greater access by Pacific peoples to labour markets in Australia and New Zealand is likely to be an on-going one over the coming decades, and this issue will continue to be an important factor in bilateral and multilateral negotiations concerning development in the region.

**Another Kiwi exodus? A New Zealand perspective on contemporary trans-Tasman migration to and from Australia**

*Richard Bedford, University of Waikato, New Zealand; Paul Callister, Victoria University of Wellington, New Zealand; Robert Didham, Statistics New Zealand and James Newell, Monitoring and Evaluation Research Associates, Wellington, New Zealand  
[Session 2A]*

For the past few months, as New Zealand begins to gear up for the national election, there has been extensive media debate in New Zealand about international migration. In most election years since the late 1980s some dimension of international migration has featured large in the public debate. In the early months of the 2008 election year it is a rise in the numbers of New Zealanders moving to Australia that is capturing the most media attention. In this paper we examine trends in trans-Tasman migration since the last "exodus" around the time of the 1999 national elections. Age, gender, birthplace and occupational dimensions of the flows of "permanent and long-term" migrants are examined, along with some of the explanations that have been given for the increase in the flows of New Zealanders into Australia as well as back from that country to New Zealand.

### **The health, financial and relationship wellbeing of Australian couples: Does marriage matter?**

*Linda Bencic and Robyn Parker, Australian Institute of Family Studies [Session 7B]*

A large body of literature attests to a range of differences between married and unmarried couples. Collectively, the research points to married people being happier, healthier and better off financially than those not married. One conclusion drawn from this data is that marriage in and of itself confers a range of benefits on married couples that the not-married do not enjoy (Waite and Gallagher, 2000). However, there are certain flaws in the way in which much of the research is conducted, in particular the groups against which comparisons are made. Typically, married participants are compared to those who are single (never married), separated, divorced or widowed, and the findings generally support the notion that being in a couple relationship is 'better' than not being coupled. De facto (cohabiting) couples are often not included in such research as a discrete comparison group, thus not allowing for the exploration of the benefits or otherwise of different types of couple relationships. Since couples in de facto relationships vary from legally married couples in terms of their demographic profile, and from each other with respect to their commitment to their partner (Penman, 2005) treating them as a homogeneous group, or including them with married participants for the purposes of analysis, may confound the findings. As the initial step in the ongoing exploration of the relationships of the couples participating in LSAC, this paper reports on comparisons of married, de facto and single/sole parents with respect to their health, and their financial and (for coupled parents) relationship wellbeing. Aspects of these three domains will be compared for the parents of infants and the parents of kindergarten-aged children at waves one and two.

### **Do ABS interstate migration statistics accurately capture movement to and from the Northern Territory?**

*Mary Beneforti, Tony Barnes, Corey McCann and Hitesh Khanna, Northern Territory Treasury [Session 6D]*

Interstate migration is the most volatile component of the Northern Territory's population growth and inflows and outflows of population are far larger proportionally than in most other Australian jurisdictions. Measuring this growth component accurately is critical for accurate population estimates for the Territory which under-pin the distribution of GST revenues. The GST is the source of 70 per cent of the Territory's revenue. The ABS uses a model based on Medicare change of address data to measure interstate migration. However recent survey evidence suggests that a proportion of the moving population do not update their address with Medicare, and that this effect could be larger in the Northern Territory than in other jurisdictions. In addition, an analysis of Motor Vehicle Licence Transfer data suggests that ABS interstate migration flows for the Territory could be underestimated. Northern Territory Treasury is exploring whether the MVR licence transfer data could be a supplementary source of interstate migration information. This paper presents the agency's preliminary investigations into the accuracy of Territory interstate migration statistics.

### Spatial approaches to Indigenous population and demography

*Nicholas Biddle, Centre for Aboriginal Economic Policy Research, Australian National University  
[Session 2B]*

The Indigenous population of Australia has a unique distribution across the continent. In absolute terms the majority of the population live in urban cities or regional towns. However, relative to the non-Indigenous population a much higher proportion live in rural or remote areas. Traditionally, the distribution of the Indigenous population has been analysed either nationally using broad levels of geography or at a local level via specific case studies. However, with the increasing availability of large-scale geographically coded databases as well as advances in statistical techniques, there is now scope for a more explicit analysis of the spatial aspects of Indigenous population and demography. Spatial statistics is a set of techniques that take into account location and explicitly consider the relationship between neighbouring individuals or units. Spatial demography applies these techniques to demographic processes whereas spatial econometrics is more concerned with the dependent-independent variable relationship. In this paper, various techniques from these fields are applied to four aspects of Indigenous population and demography using 2001 and 2006 Census data. Firstly, I look at residential segregation of the Indigenous population. For the second topic, clusters of small areas are used to define new Indigenous communities in an urban setting. Next I analyse the spatial patterns of Indigenous socio-economic outcomes whereas the final part of the analysis applies spatial techniques to internal migration. The final section of the paper summarises the results and discusses how spatial techniques can be used to improve our understanding of where the Indigenous population live and how this affects their outcomes.

### Do food deserts exist in Brisbane? An investigative study

*Dominic Brown, Foresight Partners Pty Ltd, Queensland and University of Queensland, Graham Clarke, University of Leeds, England, Elin Charles-Edwards, University of Queensland, Diana Smith University of Leeds, England and Mike McCracken, Foresight Partners Pty Ltd, Queensland  
[Session 4C]*

The term “food desert” has been used in the Great Britain for over a decade to describe an area with relatively poor access to adequate food provision, the product of a mismatch between population and food retail distribution. Since 1997 a substantial body of literature has developed around this phenomenon in British cities. Findings have shown that food deserts exist in both affluent and low income areas. Although the former may be technically food deserts, high car ownership and high mobility rates offset much of the lack of adequate provision. The issue is of much greater concern for lower income areas which typically exhibit low levels of car ownership and mobility. In Australia, to date, there has been more limited research into the presence of food deserts. Past studies in Australia have tended to focus on spatial variations in the price of fresh fruit and vegetables rather than access to food *per se*. This study follows the methodology of previous British studies by using a spatial interaction model to undertake a city-wide approach to quantify food provision levels

and thus identify areas with poor access to food retailing. The discussion extends to include what if scenarios, to investigate the impact on “food deserts” of opening new food retailing stores. Results show that although Brisbane is well generally served by the major food retailers, the impact of opening a new store can have consequences on the existing food retail network with respect to the presence of “food deserts”.

### Impact of population ageing on the use and costs of government subsidised medicines in Australia

*Laurie Brown and Annie Abello, National Centre for Social and Economic Modelling, University of Canberra  
[Session 3B]*

In 2006-07, the Commonwealth Government spent \$5.7 billion on prescription medicines subsidised through the Pharmaceutical Benefits Scheme (PBS). The annual growth rate in government outlays on the PBS has dropped from 12.9 per cent for 1997-98 – 2002-03 to 2.6 per cent over the period 2004-05 – 2006-07. Nevertheless, considerable concern is being expressed over the likely impact that population ageing will have on government expenditure on the PBS over the next 40 years. In the second Intergenerational Report, it is stated that “spending on pharmaceutical benefits is projected to grow faster than Australian Government spending on hospitals, medical benefits and other areas” and that “government outlay on the PBS will grow from 0.7 per cent GDP in 2006-07 to 2.5 per cent GDP in 2046-47”. The impact of population ageing on future Government expenditure on the PBS is seen to be very significant and potentially unsustainable. This paper examines what PBS script use and government expenditure would look like now if Australia had the population profile anticipated by the ABS in 40 years time, all other things being equal. The microsimulation model ‘MediSim’ is used to generate PBS script numbers and costs for Australia’s population in 2007 and projected population for 2047. Over the past decade, population growth together with changes in the age structure have accounted for only about one-third of the annual growth in government outlays on the PBS. This paper explores the relative importance of population ageing compared to non-demographic factors such the emergence of new high cost drugs as the driver of possible future cost pressures.

### Development of a dynamic microsimulation model to investigate how to best compress morbidity in older Australians and optimise ageing

*Laurie Brown, Ann Harding, Sophie Pennec, National Centre for Social and Economic Modelling, University of Canberra, Heather Booth, Australian Demographic and Social Research Institute, Australian National University and Kaarin J Anstey, Centre for Mental Health Research, Australian National University  
[Session 7A]*

This paper reports the development of a dynamic microsimulation model being developed as part of the DYNOPTA (Dynamic Analyses to Optimize Ageing) Project. The model is being constructing to establish a demographic modelling infrastructure that can be used to simulate the health and social outcomes of the baby boomer and aged cohorts and examine the impact of possible social and medical interventions to compress morbidity and optimise ageing in Australia over the next

20 years. The DYNOPTA microsimulation model is founded on a pooled dataset which combines data from nine Australian Longitudinal Studies of Ageing. The pooled dataset is being used to identify key incidence and prevalence rates, risk and protective factors for health outcomes, and disease pathways and transition rates. The modelling focuses on four conditions that contribute greatly to the burden of disease and quality of life in the aged, namely, cognitive decline and dementia, sensory impairment, impairment in mobility and mental health especially depression. The base population are those aged 45 years and over. Survey unit record data are weighted to represent the Australian 45+ population. The microsimulation modelling is theoretically underpinned by a life course approach to development and ageing, that recognises interdependencies among demographic, social, economic and health factors. The number of individuals in various states of disability and the length of time spent in these states prior to death will be modelled over the next 20 years, and associated costs estimated. A key function of the DYNOPTA microsimulation model is to run scenarios that model the impact of intervention programs designed to change risk factors and compare health and economic outcomes with the base-case model. Once built, the model will provide a new and innovative means of directly informing health and social policy.

### **Baby boomers: Exploring the past to discover their future**

*Jennifer Buckley, University of Adelaide*  
[Session 1C]

Current debates on baby boomers focus largely on the challenges posed by population ageing and the wave effects created by the baby boomer cohort (born 1946-1965). Less visible are debates about the diverse needs of individuals within this cohort or of how social change will create quite different needs and expectations from those of previous generations. This presentation will provide a theoretical perspective on some of the key changes to social structure that have occurred over the last fifty years and will use Australian Bureau of Statistics (ABS) data to analyse the extent to which this perspective is supported by changes in the demographic characteristics of earlier and later born cohorts. A comparison will be made between the earlier born cohort (1927-1936) aged 45-54 at the 1981 ABS census and the later born cohort (1952-1961) aged 45-54 at the 2006 census. The purpose of comparing each of these cohorts at the mid-life stage is to highlight changes to the context in which baby boomers will age. Differences in the demographic characteristics will be contextualised both historically and within current frameworks for ageing and the implications of these differences for the future ageing of the baby boomer cohort will be considered.

## **C**

### **Infant and child deaths among slum-dwellers in urban Bangladesh**

*Bruce Caldwell, National Centre for Epidemiology and Population Health, Australian National University*  
[Session 8A]

Infant and child mortality rates have declined dramatically in recent years in Bangladesh. This reflects the successes of efforts to reduce the impact of infectious disease through childhood immunisation and

simple treatments such as oral rehydration therapies. There is evidence that this decline has slowed down in the very recent past as the major potential reductions in infectious disease have been achieved. A major issue here is the increasing dominance of neonatal mortality in total Under 5 mortality. While this reflects successes in reducing post-neonatal and child mortality it also reflects inadequate maternal and child health services, and particularly very limited use of birthing services. Although the proportion of births attended by trained health providers has increased it remains (at around 10 per cent of all births) one of the worlds' lowest. Surprisingly neonatal mortality, and Under 5 mortality as a whole, is only slightly lower in urban areas than in rural areas despite a much greater presence of health facilities. This reflects poor access to health services especially among the urban poor and limited use of birthing services. Concern that the health of the urban population, especially the urban poor, has been neglected has led to new attempts to provide urban primary health programs equivalent to those that have been perceived to have been successful in rural areas. This paper examines U5mortality among an urban population of Dhaka and the factors influencing it. The most surprising finding is the rapid pace of decline in Under 5 mortality and especially in neonatal mortality. The paper examines to what extent this can be attributed to the new programs. The paper analyses quantitative data from surveys undertaken in 2000 and 2005 and qualitative data from follow-up surveys undertaken in 2000 and 2006. In addition supplementary data from the Bangladesh Demographic and Health Survey of 2004 are used to provide national comparisons.

### How can demographers inform water and catchment planning?

*Leonardo Carroll, Australian National University  
[Session 4C]*

Water management is a major research and policy issue in Australia, and an area in which demographers can make significant contributions. This paper will describe some ways in which demographic and population data, particularly from the Australian Bureau of Statistics, can support and inform Australian water planning and management. The paper will begin by describing key recent reforms to Australian water policy. In the last decade, Commonwealth and State/Territory Governments have adopted a National Water Initiative, a National Plan for Water Security, and enacted water planning legislation such as the *Water Management Act 2000* (NSW) and *Water Act 2000* (Qld). A proliferation of Commonwealth, State/Territory and regional authorities have also been established. To varying degrees, these institutions and frameworks refer to demographic and population issues. Population change is significant in the context of new, large scale water accounting processes under the National Water Initiative, as well as regional water plans and allocations. The paper will describe ways in which data from the Australian Bureau of Statistics can inform water planners and managers. Some small-area data (for example, Basic Community Profile data at the Collection District level) can be readily concorded to geographic areas relevant to water planning and management (for example, water management areas, catchments, and natural resource management boundaries). In other cases, more detailed data manipulation is required. Useful data can be extracted from, among other sources, the Water Accounts and small-area agricultural data. Findings of interest will be highlighted. The paper will also identify other

sources of demographic and population data for water and catchment planners, both existing and planned. These include State and Territory regulatory bodies and new initiatives such as the Australian Water Resources Information System (AWRIS).

### **Surviving the Territory: Group differences in migration intentions among non-Indigenous residents of the Northern Territory**

*Dean Carson, Charles Darwin University  
[Session 4A]*

This paper examines some results from the 2006 Northern Territory mobility survey administered to nearly 1500 non-Indigenous residents. The survey focused on motivations for coming to, and leaving the Territory, and satisfaction with quality of life indicators. This paper identifies groups of respondents based on age, sex and household structure, along with respondents planning short and long stays in the Northern Territory. Differences in motivations and quality of life satisfaction between these groups are used to attempt to explain different patterns in intended migration. Chi-square tests and logistic regression are used to model group differences. The research argues that formulating a policy aimed at increasing the non-Indigenous population of the Northern Territory is likely to be a complex undertaking, as factors which motivate in-migration are very similar to those which motivate out-migration. The significance of economic, family/social, and environmental factors changes depending on the resident's length of stay and lifecycle stage, as well as the degree to which the decision to move is controlled by external factors. As a result, some of the motivations and satisfactions associated with decisions to stay might be considered counter-intuitive. The paper concludes that the Northern Territory's population, like that of many remote and small jurisdictions, is inherently unstable in terms of mobility, and that there may be more value in trying to predict migration patterns than in trying to reduce population turnover per se.

### **The 'problem' of urban drift and temporary mobility in the Northern Territory: what it says about the need for an Indigenous demography research agenda**

*Dean Carson and Gary Robinson, Charles Darwin University  
[Session 2D]*

This paper looks at a range of views about the increasing urbanisation of (particularly young male) Aboriginal people in the Northern Territory. It raises questions about what motivates rural-to-urban migration among this group, and what the policy responses might be. In attempting to define the scope of rural-to-urban migration, the research reveals weaknesses in available data sources and gaps in the literature on Indigenous demography. Patterns of urbanisation are known to influence fertility and mortality as well as mobility, but the various strands of research have not been well linked in Indigenous demography. Furthermore, few demographic studies have considered Aboriginal populations based on language or cultural affinity and have instead observed Aboriginal people as an homogenous population within administrative boundaries. There is an opportunity to frame an Indigenous demography research agenda in the Northern Territory which addresses issues of data and scope. Our investigation of 'urban drift' is among the first attempts to do so.

### **Mister-ing out: The invisibility of men in explaining Australia's low fertility**

*Amina Casey, University of Tasmania  
[Session 6B]*

Australia's fertility levels are overwhelmingly classified as 'low', and in response, a pro-natal policy intervention, the 'baby bonus', has been implemented in the hope of increasing them. While the causes of Australia's fertility decline are numerous and multifaceted, currently theories that have their foundation in the low fertility of Europe are used to understand and respond to Australia's situation. However, these theories, which typically adopt a female-centred perspective in explaining declining fertility, are particularly limited in understanding Australia's fertility trends, as they ignore an entire half of the jigsaw – men. Despite international evidence that men's preferences have been found to be just as influential as women's in decision making about childbearing, minimal research exists in Australia that delves into men's attitudes towards partnering and becoming fathers. This paper argues that in order to develop a comprehensive understanding of fertility decline in Australia, this missing piece of the puzzle must be addressed. The paper offers interim findings on just one small piece of the puzzle: fertility by both partner's qualifications, and concludes with a proposal to expand these findings for a doctoral project.

### **Model estimates of small area temporary populations in Australia: Some results**

*Elin Charles-Edwards and Martin Bell, University of Queensland  
[Session 7A]*

The estimation of service populations, incorporating both the temporary and resident populations of small areas, has been a persistent problem in applied demography. A major obstacle to the development of these estimates is the variation in intensity and duration of temporary mobility across space and time. This makes it a difficult and expensive demographic component to measure directly. At the same time, past attempts to estimate temporary (non-resident) populations using symptomatic data (e.g. electricity usage) have met with only limited success. Given that almost one million Australians were temporarily away from home on the night of the 2006 Census, the continued omission of temporary residents from official population estimates is problematic. This paper sets forth an alternative approach to estimating non-resident populations based on simulation modelling. Prior research has demonstrated that temporary populations reflect the interaction of several variables including intensity, seasonality, duration and composition. We outline a model that couples duration with seasonality and implement this through a Monte Carlo simulation to estimate the temporary populations of selected Australian Tourism Regions. The model is calibrated and tested using data from the National Visitor Survey.

### Estimation of past census undercounts for the Indigenous population in the Northern Territory

*Ramakrishna Chondur, Sabine Pircher and Yuejen Zhao, Department of Health and Community Services, Northern Territory [Session 1A]*

*Introduction:* The results of the Australian Bureau of Statistics (ABS) 2006 Census post-enumeration survey (PES) indicated that there may have been an underestimation of the Northern Territory (NT) Indigenous population prior to 2006. The aim of this project was to estimate the Indigenous population for the years 1991 to 2005, based on the 2006 Census estimates and other ABS published information, and to assess the extent of Indigenous population undercounts from previous censuses. *Methods:* The project assumed that the 2006 Indigenous population and undercount estimates were correct and that net interstate migration for Indigenous people residing in the NT was zero. The Indigenous population estimates were then backcasted by adding the components of natural change (deaths, excluding those who were born after 30 June of the Census year and died before 31 July of the next Census year) to the 2006 Indigenous population estimates. The backcast estimates were then compared with ABS published estimated resident population figures for the NT, by five-year age groups and sex. *Results:* The preliminary results of this project substantiated the PES results, indicating that historically there has been a significant underestimation of the NT Indigenous population prior to 2006. For 2001, the ABS underestimation for the NT Indigenous population was 6 per cent. *Conclusions:* Historically there has been a substantial underestimation of the NT Indigenous population. A correction is needed to NT vital statistics, including birth rate and life expectancy, as well as population projections.

### Estimating the number of Aboriginal and Torres Strait Islander Australians: The methods, challenges and data limitations

*Patrick Corr, Australian Bureau of Statistics [Session 1A]*

In 2007, the Australian Bureau of Statistics released the results of the 2006 Census of Population and Housing. For the first time the ABS also included remote areas of Australia and discrete Indigenous communities in the scope of the Census Post Enumeration Survey used to assess the accuracy of the Census count. Results from these two statistical collections are combined with additional information to compile experimental estimates and projections of the Aboriginal and Torres Strait Islander Australians for various areas of Australia. Preliminary estimates of the Indigenous and non-Indigenous population of each State and Territory as at 30 June 2006 were released by the ABS in September 2007. This paper will provide an overview of the methods, challenges and data quality limitations involved in compiling the preliminary estimates of Australia's Indigenous and non-Indigenous peoples for 30 June 2006. The paper will also briefly outline plans for preparation of final estimates for 30 June 2006 and compiling a set of population projections based on these statistics.

### Short-term immigration to Australia: A preliminary investigation

*Melissa Cotterill and Patrick Corr, Australian Bureau of Statistics  
[Session 2D]*

There is growing interest in the contribution short-term immigrants make to foreign economies and societies. The United Nations defines a short-term migrant to be a traveller who moves to a country, other than that of their usual residence, for a duration of more than three but less than twelve months for reasons such as education and employment. Short-term immigrants are becoming more frequent owing to greater opportunities for international migration. In June 2007, the Australian Bureau of Statistics (ABS) introduced an improved method of estimating net overseas migration (NOM). Due to this change and the development and design of a new processing system the ABS can now compile de-identified complete movement histories for each traveller entering or leaving Australia, storing these histories in a synthetic longitudinal database of migrant characteristics. These characteristics are obtained from data collected from traveller completed incoming and outgoing passenger cards and associated visa information. Previously information on short-term international travel movements could be compiled from the ABS overseas arrivals and departures collection which is based on a travellers intended duration of stay in Australia. The difference between a travellers intended duration of stay (as stated on their passenger card) and their actual duration of stay is substantial. With the development of the improved NOM system the ABS is now able to compile data on travellers' subsequent travel behaviour and derive statistics based on their actual duration of stay. This preliminary investigation will be able to more accurately examine the characteristics of short-term immigrants based on their actual duration of stay in Australia. These characteristics could include age, sex, visa class, reason for journey, country of birth, country of origin, country of citizenship, state of stay, and exact duration of stay. Examining the data on these actual short-term immigrants should provide insight into the behaviours and characteristics of future waves of short-term immigrants into Australia. This in turn may well help future research and develop better policies affecting Australian immigration.

### Changing fertility patterns at Statistical Local Area level: An analysis of 1996 and 2006 Australian population census data

*James E Coughlan, James Cook University  
[Session 1B]*

The broadly pro-natalist policies of the previous Howard Coalition Government contributed to a small increase in the Total Fertility Rate of Australia over the past decade. A question of interest to some demographers may be which socio-demographic groups experienced fertility increases over the past decade and why? This paper, however, is more interested in the impact of macro economic and socio-demographic factors issues on fertility change in Australia between 1996 and 2006. Thus this paper provides an examination of fertility change based on national Statistical Local Area (SLA) level data from the 1996 and 2006 Australian Censuses of Population and Housing. Rather than focus our analysis on merely individual characteristics - such as educational attainment, religion, existing fertility, ethnicity, family/household income and labour force participation - the paper takes into consideration a

number of general basic socio-demographic and economic factors at the SLA level in an attempt to provide an initial discussion of factors contributing to the observed changes in fertility since 1996. In addition, as there has been some recent concern over the issue of teenage mothers, the paper also analyses the basic socio-demographic and economic factors at the SLA level with respect to teenage fertility, in an attempt to determine which of these factors may impact upon teenage motherhood.

**The changing spatial distribution and concentration of Australia's Chinese communities: Transformations over the past twenty years – An analysis of 1986 – 2006 Australian population census data**

*James E Coughlan, James Cook University  
[Session 8B]*

The immigrant ethnic Chinese communities in Australia have settled in Australia from a diversity of countries, predominantly in the Asia-Pacific region, with the main source countries being Hong Kong, Malaysia, the People's Republic of China, Singapore, Taiwan and Viet Nam. In addition to the immigrant populations, there is also an expanding second and later generations of Chinese-Australians. This paper details how the spatial distribution and concentration of the Chinese communities in Australia have changed over the two past decades, through an examination of national Statistical Local Area (SLA) level data from the 1986, 1996, 2001 and 2006 Australian Censuses of Population and Housing. Rather than focus our analysis on merely country of birth data, and here the issue would be which countries to include in our analysis, the present study analyses the data of individuals (i) born in the largest source country of Chinese immigrants, the People's Republic of China, (ii) of Chinese ancestry, and (iii) who spoke a Chinese language at home, specifically those who speak Cantonese, Mandarin and Other Chinese languages. A number of basic demographic and economic factors at the SLA level are considered in an attempt to provide an initial discussion of factors contributing to the observed changes in Chinese-Australian distributions and concentrations since 1986. As expected, from field observations and the diversity of the countries of origin of Chinese-Australians, the paper reveals that the three census variables reveal a contrasting picture of the spatial distribution and concentration of the Chinese-Australian communities. The data also indicate that there are few areas of 'high' Chinese spatial concentration, and that overall there is an increasing dispersion of Chinese-Australians into the broader Australian community.

**The changing spatial distribution and concentration of Australia's Vietnamese communities: Transformations over the past twenty years – An analysis of 1986 – 2006 Australian population census data**

*James E Coughlan, James Cook University  
[Session 8B]*

In Australia during the late 1980s and 1990s, there was some academic and public debate concerning the formation of Vietnamese 'ethnic enclaves' and 'ghettos' in some Australian cities. Most of this debate was based on a somewhat contested analysis of country of birth data from various Australian censuses. This paper details how the spatial distribution and concentration of the Vietnamese communities in Australia have changed over the two past decades, through an examination of

national Statistical Local Area (SLA) level data from the 1986, 1996, 2001 and 2006 Australian Censuses of Population and Housing. Rather than focus our analysis on merely country of birth data, as has generally been the practice in previous studies, the present study analyses the data of individuals (i) born in Viet Nam, (ii) of Vietnamese ancestry, and (iii) who spoke the Vietnamese language at home. A number of basic demographic and economic factors at the SLA level are considered in an attempt to provide an initial discussion of factors contributing to the observed changes in Vietnamese-Australian distributions and concentrations since 1986. As expected, from field observations, the paper reveals that the three census variables reveal a contrasting picture of the spatial distribution and concentration of the Vietnamese-Australian communities. The data also indicate that although a few areas of 'high' Vietnamese spatial concentration have persisted into 2006, overall there is an increasing dispersion of Vietnamese-Australians into the broader Australian community.

### Staying or leaving? Residential mobility choices of older people in the Northern Territory

*Elizabeth Creed, Charles Darwin University  
[Session 4A]*

The Northern Territory Mobility Project covers a suite of research projects designed to address the causes and consequences of population turnover in the Northern Territory. Using qualitative data from this research, this paper draws on in-depth interviews conducted with twenty-one current and ex-Territory residents in the over 50 age cohorts. Residential mobility often occurs in response to life course transitions and those common to older cohorts which may influence mobility decisions include reassessing participation in the labour force, preparing for retirement, caring responsibilities for elderly parents and/or grandchildren, losing a partner, declining physical capability and the personal dilemma of generativity versus stagnation. By examining the interplay between life course transitions and the Territory-specific environments in which they occur, the influence these circumstances exert on mobility choices and intentions will be highlighted. Many Territory residents in the over 50 age cohorts came to the Northern Territory as young adults to take up employment opportunities and have 'moored' themselves to the Territory. Others in the over 50 age cohorts who first came to the Territory at older ages may have had more specific time-frames and different employment-related motivations for moving to the Territory but their familial roots and filial obligations continue to be located elsewhere in Australia. While situated in the literature on the mobility of older people, this paper argues that life course transitions are useful to identify some of the influences on older people's mobility decisions. However, the context in which these decisions occur, namely the geographically and socially unique environments of the Northern Territory, must also be considered in understanding retention and loss of the Territory's older people. As the Territory's residents age, will the reasons that brought them to the Territory be strong enough to encourage them to stay?

## D

### The employment and retirement transitions of New Zealanders in their '60s: Evidence from the Linked Employer-Employee Database

*Sylvia Dixon and Dean Hyslop, Department of Labour and Statistics, New Zealand*

*[Session 5D]*

This paper examines the employment patterns and transitions of New Zealanders who were aged in their 60s between 1999 and 2007. It uses data from LEED, a national longitudinal administrative database that covers all New Zealanders in employment. The paper explores the changes that occur in cross-sectional and longitudinal employment patterns when workers are in their 60s. It also looks at some aspects of transitions to retirement, such as whether final exits from employment tend to be sudden transitions or phased over a number of years, and the extent to which retirements are bunched at 65 years, the standard age of eligibility for NZ Superannuation.<sup>1</sup> We find a moderately high level of job mobility among employees in this age group. Phased transitions from employment to retirement appear to be far more common than abrupt movements from full-time work to inactivity. Final exits from employment are spread over a wide range of ages before and after 65 years. The paper discusses the interpretation and possible implications of these findings, and other patterns that are identified in the analysis.

(1) NZ Superannuation is the most important source of retirement income for the majority of New Zealanders.

## F

### Melanesia as the new "labour reserve" for Australia and New Zealand

*Wardlow Friesen, University of Auckland, New Zealand*

*[Session 1D]*

Both Australia's Pacific Region contract labour scheme and New Zealand's Recognised Seasonal Employer (RSE) scheme have identified Melanesia as a significant source of short-term, seasonal, contract labour. These schemes are targeted at filling labour shortages for seasonal workers, especially in the agricultural/horticultural sector, but might be considered as prototypes for other contract labour schemes. This paper first reviews the demographic factors which have resulted in a 'labour surplus' in the countries of Melanesia. Although fertility rates have started to trend downwards, high fertility levels over several decades have left a legacy of a youth boom in which there are many more potential entrants into the wage labour force than there are jobs. In Australia and New Zealand, skilled and professional labour requirements have been supplemented by selective immigration policies for permanent residents, while shortages have developed for unskilled and seasonal work not served by these policies. It is this gap which the new policies attempt to fill. After considering the current characteristics and future potential for these short-term labour movements, the paper goes on to consider longer-term demographic, social, economic and political implications of these movements in the region for both source and destination countries.

## G

### The mobility of nurses and midwives in the Northern Territory

*Stephen Garnett, Kristal Coe and Helen Walsh,  
Charles Darwin University  
[Session 1D]*

The mobility of nurses and midwives in the Northern Territory was investigated with a view to managing the issue. Internal government documents and ABS data were interrogated to quantify trends in turnover over the last 20 years. In addition a thousand nurses responded to a survey discussing their motivations for coming to the Northern Territory, staying and leaving. Principal component analysis was undertaken to identify the main drivers of activity and these were then compared with length of stay and a range of demographic variables. These results were then compared with those from other professional groups in the Northern Territory who have been studied using similar methods.

### Employment of overseas-qualified nurses and midwives in the Northern Territory of Australia

*Kate Golebiowska, Charles Darwin University  
[Session 1D]*

High annual turnover of nurses and midwives employed in the Northern Territory provided a trigger to study the mobility of these Australian-qualified and overseas-qualified health professionals. This presentation sums up the results of the study that concentrated on the overseas-qualified group. Their visa conditions, typically imposing temporary fixed-term employment and residency may help to stabilise the workforce and service delivery. Their motivations to move to, remain in, and leave the Northern Territory are presented. Their employment experience as international migrants and their professional contribution are also discussed. This study suggests solutions to enhancing retention of overseas-qualified professionals and accelerating the achievement of the required professional standards.

### Using split-population models to examine the probability and timing of parity progression

*Edith Gray, Ann Evans, Rebecca Kippen, Australian Demographic and Social Research Institute, Australian National University and Jon Anderson, University of Minnesota, USA  
[Session 6B]*

Survival models are widely used in demography to analyse the timing of events such as death or leaving school. Standard survival analysis assumes the event in question is universal, that it will eventually be experienced by everyone. This is clearly not the case for events such as marriage or childbirth, which creates a problem when analysis of the speed of progressing to an event is required for those who progress, separate from the proportion who never experience the event, since standard survival analysis conflates the two. This problem can be overcome by applying a 'split population' or 'cure' survival time model which partitions the proportion of those who do not eventually experience the event from the speed of progression for those who do. This paper demonstrates the use of split-population models in examining variables affecting the

propensity and timing of additional births using a sample of women from the 2001 Household, Income and Labour Dynamics in Australia (HILDA) Survey (N=4,611). Comparing three birth cohorts we model the propensity and time to have another child given sex composition of existing children, number of siblings and age at first birth. The study finds evidence of a preference for a mixed-sex composition, and an increased propensity for women with two boys to try for a third child. Women in later cohorts tend to have more children if they themselves come from larger families. Age at first birth is strongly associated with the propensity to have another child and with the speed of progression.

### **Equally valued but not substitutable: Sons and daughters in contemporary Australia**

*Edith Gray, Ann Evans, Rebecca Kippen and Claire Barbato,  
Australian Demographic and Social Research Institute, Australian  
National University  
[Session 1B]*

This paper examines how gender of existing children influences the fertility decisions of parents of two children. Fertility decisions are sequential and the persuasive factors are different at successive parities. One of the identifiable reasons for having a third child is a preference for a mixed-sex composition, particularly in countries with low-fertility regimes. Pollard and Morgan (2002) have argued that greater gender equality has led to a recent attenuation of the mixed-sex preference which indicates a 'basic equivalence' or 'full substitutability' of sons and daughters. This research is based on 40 in-depth interviews with Australian parents of two children to understand their reasons for having a third child or not. Gender does emerge as a persuasive reason for having a third child but it is laden with caveats. Gender is also presented as a reason not to have any more children ('I don't know how I would manage a girl now'). It is also clear that sons and daughters are considered by parents to be of equal value but not substitutable. Differences between girls and boys are readily apparent to parents. They are encountered in daily interactions with their own (and other) children. The differences are also reinforced through persistent cultural expectations of gendered behaviour, which parents in this study indicate are more proscriptive for boys. Gender is central to how parents experience their children. A mixed-sex composition remains a compelling reason to have a third child because of the perceived differences between girls and boys and the 'variety' or 'balance' that can ensue. This paper contributes to the literature on fertility decision-making by untangling some of the complexities of gender within families. We also argue that while sons and daughters are of equal value to parents, the differences between boys and girls means they are not directly substitutable.

### **Abra-cadastre: Now you see them – now you don't!**

*Dennis Griffith, Department of Planning and Infrastructure,  
Northern Territory  
[Session 3C]*

The paper describes how some of the existing statistical classifications and definitions used by the Australian Bureau of Statistics (ABS) hide or minimise the extent of disadvantage experienced in remote and sparsely populated areas of Australia. The ASGC Remoteness Classification, SEIFA Indices and definition of Unemployed persons are

key examples. It is argued that these classifications and definition need to be reviewed as soon as practicable to correct these problems as they cause the disadvantages of remote and Indigenous populations to be significantly understated when allocating Education and Health funding by the Commonwealth, State and Territory Governments. The problems with the classifications have several causes, some of which are due to deliberate policy decisions whilst others are caused by insufficient census information being available to ABS for some remote areas. Ways to improve census collections in remote areas are discussed. This paper also describes the steps that were taken to address the latter problem in the Northern Territory through a five stage project undertaken, in consultation and collaboration with ABS, starting in 2003. The first stage was the development and endorsement by Government of uniform spatially referenced statistical geography throughout the Northern Territory. The second stage was the alignment of that statistical geography with the ABS' Australian Standard Geographical Classification (ASGC). The third stage was the redesign of NT Mesh Blocks in to improve future statistical collections and analysis. The fourth stage was the development of social and economic indicators to populate the statistical geography and facilitate the development of small area statistical profiles. The fifth and final stage is the implementation of rural and remote addressing to facilitate the collection and analysis of detailed spatially referenced data. At the completion of the project much more accurate and meaningful data will be available for to government and researchers for evidenced based policy making and statistical analysis across the Northern Territory.

### Could Australia profit from China's demographic dividends?

*Fei Guo, Macquarie University*  
*[Session 6A]*

China is currently experiencing the stage of demographic transition in which the age structures of its population as well as the labour force are at the "optimum" stage – with smaller proportion of young population and still a much smaller proportion in the elderly age groups, which are mainly resulted from rapid and sustained fertility decline in the past three decades. The overall dependency ratio in China has been considerably lower than that in most industrialised countries, including Australia. In 2007, the overall dependency ratio in China was only 38.9 dependent persons per 100 labour force participation age persons, compared with 49.3 in Australia in the same year. More specifically, the young and aged dependency ratios were 27.8 and 11.1 respectively in China while 29.9 and 19.4 respectively in Australia in 2006 (Population Reference Bureau, 2007). It has been argued by a number of scholars that China's recent rapid economic growth was contributed partially by its advantageous population age structure, which is described as the first "demographic dividend" that the country has been profiting in recent years (Wang and Mason, 2007; Mason and Lee, 2006; Pool, 2004; Wang and Yao, 2003). Following the sustained low fertility in the past and future decades, China's population will soon experience rapid ageing process, which will be at a pace that no other developed or developing nations have ever experienced. Limited available studies suggest that China's policy-makers have started to become aware that they need to respond to the demographic changes effectively and implement elderly support policies that could facilitate accumulating assets and capital,

which in turn could potentially yield the “second demographic dividend” (NDRC, 2007; Mason and Lee, 2006; Wang and Mason, 2005; Golley and Tyers, 2006). Australia has been taking in migrants, especially in the category of skilled migrants, from China in recent decades. The number of Chinese migrants (permanent settlers and long-term arrivals) to Australia has been increasing, with slight fluctuations in some years. Among all Chinese migrants, the majority came in the category of skilled migrants. In the recent decade, an increasing number of Chinese students came to Australia to study in various levels of Australian educational institutions, mostly in higher educational institutions. Some students have later on opted to stay on in Australia as permanent settlers and some have chosen to return to China. Australia has profited twice in this process, lucrative revenue from exporting education and at the same time producing and importing skilled workers for domestic labour market. It is argued that the increasing number of Chinese students studying overseas, including Australia, was a direct result of its recent rapid economic growth that is partially contributed by its “first demographic dividend” resulted from advantageous age structure. Parallel to China’s rapid economic growth is the formation of the middle and upper middle classes who are still in prime age of labour force participation and are able to accumulate wealth in a very short period of time. Chinese students currently studying in Australian educational institutions are the offspring of these middle and upper middle class in China. Their parents’ income and wealth are the main sources to pay for their study overseas, including Australia. This is also a reflection of the pattern of China’s intergenerational wealth transfer in the “first demographic dividend” period identified by Wang and Mason (2005), in which the resources are mainly reallocated from working generations to children. It has also been argued that, like other East Asian populations, China could experience the “second demographic dividend” in the next number of decades, depending on the implementation of effective state policies and mechanisms. The second demographic dividend is generated in the process of anticipating forthcoming ageing through deepening capital by increasing savings rates and accumulating physical wealth and investment. Studies about the second demographic dividend in the East Asian region, including China, suggested that in this process more resources will be reallocated from working population to elderly rather than young dependents (Wang and Mason 2005; Mason and Lee, 2006). Could Australia benefit China’s second demographic dividend in the same way it benefits China’s first demographic dividend? This paper attempts to offer some preliminary thoughts on the impacts of China’s potential second demographic dividend on the intergenerational wealth transfer and subsequently on the changing patterns of Chinese students overseas, including Australia. It will also attempt to examine the changing age structure, especially changing dependency ratios, on China’s domestic labour market, and subsequently on the export of skilled labour to other countries, including Australia. It is hoped that some forward-looking policy implications could be generated and Australia’s limited “demographic window of opportunity” in other populations could be identified.

## H

### Assessing the accuracy of Australia's regional population estimates

*Andrew Howe, Australian Bureau of Statistics  
[Session 3D]*

Australia's official series of regional (below-state) population estimates are produced annually by the Australian Bureau of Statistics (ABS). Data from the 2001 Census was used to produce these estimates for 2001. These were then used as a base to calculate 'preliminary' regional population estimates for 2002 to 2006, by applying estimation techniques using a range of data sources, and various validation processes. Following the release of 2006 Census data, population estimates for 2006 were recalculated. These are referred to as 'rebased' 2006 estimates. The differences between the preliminary and rebased 2006 estimates are, essentially, a measure of the accuracy of Australia's preliminary population estimates. This paper investigates these differences, providing an insight into the quality of Australia's regional population estimates. An assessment of these differences for different types of regions, as provided in this paper, may provide users with an idea of how accurate or otherwise ABS population estimates are for these types of regions in the future. The paper assesses the accuracy of these estimates over the past two decades, and notes an overall improvement in the quality of the estimates in 2006, especially at the Local Government Area and Part of State levels. The presence, however, of several poorly-estimated areas in 2006 reveals that there are still many challenges when preparing Australia's regional population estimates, including the absence of relevant population indicator data for some regions.

### International migration in Malaysia: Issues, problems and prospects

*Graeme Hugo and Balambigai Balakrishnan, University of Adelaide  
[Session 2A]*

In Southeast Asia interest in international migration is at an unprecedented level for a number of reasons including rapid increases in international mobility in the region, the new international discourse on migration as a positive factor in economic development and the perceived relationship between international migration and terrorism. However, migration policy in the region remains underdeveloped and evidence-based policy making is the exception rather than the rule. Despite the evidence that international migration is a long-term structural feature of economies in the region some countries with significant labour shortages continue to seek to prevent it altogether or regard it as a short term and temporary contingency. Malaysia is an important case in point. It has both significant immigration and emigration, as is true of all Southeast Asian nations, but it is an emphatically net immigration country. Yet from time to time it has adopted strong anti-migration policies. The present paper analyses recent changes in the scale and composition of international migration to Malaysia using data from an array of different sources. It is shown that international migration has increased in recent years despite government efforts to reduce it. Moreover immigration has become more complex and it is argued that international migration has increasingly become an integral structural element of the Malaysian economy and cannot be

seen as a temporary contingency. The paper next examines the drivers of contemporary migration in Malaysia with particular attention being given to increasing labour shortages in specific sectors of the economy, especially in low skill, low status and low pay jobs. These deficits are being caused not only by demographic and economic factors as is predicted in orthodox international migration theory. Theoretical migration to Malaysia is being strongly influenced by a number of other considerations. In particular three elements are especially important. The first is the emergence of a vibrant migration industry in the region which not only facilitates but causes migration. This structural, institutional element is neglected but it injects an element of permanency into migration to Malaysia. Secondly social networks linking migrants in Malaysia with friends and relatives in their home country are proliferating. This is providing more and more potential migrants in countries like Indonesia and Bangladesh with social capital in Malaysia which can anchor their migration. Thirdly the process of labour market segmentation is resulting in some sectors of the economy being dominated by, and reliant upon, migrant labour. All of these drivers seem unlikely to diminish in their effects over the next decade or so and the outlook is one of more immigration. Turning to policy it is shown that policies regarding immigration in Malaysia have conformed to an Asian model of migration which does not recognise the fundamental and growing importance of migration to national economies. As a result migration policy in Asia is often characterised by:

- Unrealistic policies and programs to replace migrant workers with local workers.
- Overly restrictive entry policies which encourage the proliferation of underground migration and marginalise migrant workers.
- Restriction of the rights of international labour migrants.

There are signs that Malaysia is moving out of their paradigm and it is argued in the paper that this needs to be encouraged. As in other countries in the region there is an urgent need to move away from a policing paradigm in international migration policy to one of migration management. Development of a well managed mix of legal immigration channels which are consistent with Malaysia's needs is an important national priority.

### Statistical challenges in the Asia Pacific region

*Terence H Hull, Australian Demographic and Social Research Institute, Australian National University  
[Session 3D]*

While a small population and a large continent in the context of the Asia Pacific Region, Australia has the potential to contribute disproportionately to the improvement of statistical systems among the neighbours. The ABS, with funding from AusAID has a very strong track record for assisting countries in the design and implementation of censuses and surveys. The University of Queensland is active in a number of programs designed to improve the quality and coverage of vital registration. Yet the achievements to date are dwarfed by some of the challenges confronting most countries, including poverty, political decentralization, over dependence on foreign donors, anxieties about national security, and legacies, or maintenance of authoritarian systems of governance. Using experiences of Indonesia, China, Papua New Guinea and Australia, this

paper argues that countries should look to regional collaboration as a means of facing these challenges efficiently and effectively.

### **The other APA: The formation of the Asian Population Association in 2008**

*Terence H Hull, Australian Demographic and Social Research Institute, Australian National University  
[Session 5D]*

Following a long gestation, in late 2007 a small group of Asian demographers met in Tehran at the Establishment Committee for a regional membership association of population specialists. Led by Professor Jalal Abbasi Shavazi, the group laid the groundwork for the establishment of what they agreed should be the Asian Population Association. This presentation will review the constitution, structure and purposes of the new APA and relate some of the reasoning behind the groups formation, including the hope that a group of dedicated professionals might help the countries of the region to improve the quality and quantity of population data, and contribute critical comment to the process of population policy making. Members of the Australian Association with interests in Asia will be encouraged to join the Other APA. Undoubtedly there will be some discussion of acronyms.

## **J**

### **Educational disparities and the importance of age structure: Indigenous and non-Indigenous Australians**

*Natalie Jackson, University of Tasmania  
[Session 6A]*

Australia's Aboriginal population has a markedly younger age structure than its non-Aboriginal counterpart. As a result, any declines in gaps between the two populations on important social indicators – such as educational attainment and labour force status – may be more apparent than real; a reflection of the differing age structures, rather than relative improvement. This paper illustrates the argument for educational attainment, across the period 1981-2006. It shows first that the crude gap between the two populations in fact increased across the period – after first declining between 1981 and 1991, and that it did so for both pre-tertiary (Year 12) attendance, and post-school qualifications. Using a classic standardisation technique it then illustrates how the differences in age structure conceal what would otherwise be greater gaps. The findings make it imperative that differences in age structure be explicitly acknowledged and built into all policy interventions, and that any such interventions be carefully monitored for their potential to negatively discriminate on the basis of age structure.

### How will changing disease patterns affect the future burden of disability at older ages?

*Carol Jagger, Ruth Matthews and MRC CFAS, University of Leicester, United Kingdom*

*[Session 7A]*

Major causes of disability in later life are known to be the consequences of both acute and chronic diseases such as stroke, coronary heart disease (CHD), arthritis, and dementia. Projections of the numbers of disabled older people and their need for long-term care have rarely taken into account the considerable temporal changes in these diseases that have occurred and will occur in the future due to higher levels of obesity and inactivity. As part of a wider project modelling ageing populations to 2030 (MAP2030) we are developing a simulation model to estimate future numbers of older people with disability and years lived with disability over the next 20 years under a number of disease scenarios. Data from the MRC Cognitive Function and Ageing Study, a nationally representative sample of people aged 65 years and over was used to estimate transition rates to disability and death conditional on a range of diseases and conditions present at baseline. These transition rates were used with the 1992 England and Wales population to simulate the new numbers with and without disability to 2026. A series of scenarios for trends in incidence, risk factors and treatment for stroke, coronary heart disease (CHD), arthritis, and dementia were devised from systematic reviews and these were applied to the simulation model. More general scenarios of improved and poorer population health were also applied. We will present comparisons of the size of the disabled older population under the different health scenarios compared to ageing of the population alone. Outputs from the simulation model include disability-free life expectancy (DFLE) which alongside life expectancy provides opportunities to assess how large interventions need to be to produce compressions of disability.

### Fertility among Mongolian herders: Levels and trends 1996-2005

*Lesley Johnston, Selena Matthews and Meghan Wagler, Simon Fraser University, Canada*

*[Session 8C]*

Following the collapse of the Soviet state in 1990, Mongolia underwent an economic and political transition. Over the next 17 years, the national total fertility rate in the country continued to decline. As the pastoral population continues to cope with the aftermath of the transition, experience increased labour needs, and the loss of government sponsored services available to rural inhabitants, fertility rates in this population could again rise. The objectives of this paper are to contribute to the literature by determining the most up-to-date total fertility rate (TFR) and trends of Mongolia's rural population; comment on the social, political, cultural and economic factors responsible for the trends observed; and hypothesize about future fertility trends in this population. We reviewed published and grey literature reporting Mongolia's fertility levels over the past half century in order to observe recent trends in TFR. We determined TFR for rural Mongolia for 1996-2005 using data from a household survey (n= 1898) and applying the Own Child Method (OCM). Our findings show that TFR in rural Mongolia has increased between 2003 and 2005. In light of the fact that our calculations produced very similar results to those determined

for rural Mongolia by the Mongolian Reproductive Health Survey for 1996-2003, it is highly plausible that our 2004-2005 TFR figures are accurate estimates. Our results support the United Nations high variant projection for Mongolia, which predicts an increase in TFR in the near future. Since the political and economic transition of 1990, Mongolia has observed a rapid decrease in the quality of these social services. It is therefore likely that a continued deterioration would result in an increased fertility rate in affected areas.

### **Indigenous fertility in the Northern Territory: Intergenerational change**

*Kim Johnstone, Australian Demographic and Social Research Institute, Australian National University  
[Session 5A]*

This paper presents early results from PhD research investigating intergenerational change in Indigenous fertility in the Northern Territory. It highlights spatial differences in fertility between urban and rural populations as a key explanatory variable – despite the fact that fertility levels are extremely high in remote Indigenous communities, aggregate data for the Territory as a whole reveal steady fertility decline. Making use of a 20-year time series of fertility data by Indigenous status held by the NT Department of Health and Community Services the paper explores intergenerational trends in fertility and establishes a framework for analysis that aims to prioritise the voices of Indigenous women and men.

## **K**

### **I am not moving. Why not? An analysis based on the Survey of Dynamics and Motivation for Migration in New Zealand**

*Mansoor Khawaja, Statistics New Zealand  
[Session 3A]*

This paper is based on information drawn from a nationwide Survey of Dynamics and Motivation for Migration undertaken in New Zealand, as a supplement to the Household Labour Force Survey (HLFS) for the March quarter 2007. The HLFS samples around 15 000 private households, or around 30 000 individuals, on a statistically representative basis, and its target response rate is 90 per cent. The main aim of the migration survey was to investigate reasons (social, economic, environmental or other) why people move from one area to another area or stay where they live. While demographic studies have traditionally focussed on migrants, partly because of their impact on the size and structure of an area's population, this survey categorised the respondents into three specific groups, viz. those who migrated in the last two years, those who are planning to move, and those who choose to stay where they live ('non-movers' or 'stayers'). This last group (the focus of this study) is usually the largest in population size (over 70 per cent of our survey respondents were in this category) and is vital to an area's future planning considerations. The survey results provided insight into different demographic profiles of the three groups. Compared with movers, the 'stayers' are older, are more likely to be married, are less likely to have had a change in living arrangements, are more likely to include people who are not employed and not seeking work (eg retired people) and have lower average income level. Non-movers

cited environmental factors as the most common set of reasons for their decision, and these included availability/proximity of services, suitability of area, and current life style or quality of life. Important among social reasons were a desire or need to live closer to their family, and closeness to work place.

### Social and community participation of immigrants in Australia

*Siew-Ean Khoo and Jeromey Temple, Australian Demographic and Social Research Institute, Australian National University  
[Session 8B]*

Immigrants' participation in social and community groups and activities has the potential to contribute to developing friendships and a shared sense of community between migrants and local residents, thereby contributing to their social integration and social cohesion in multicultural societies. This paper uses data from the 2006 Australian General Social Survey to examine the involvement of immigrants in social activities in the community and compare their social and community participation with that of native-born Australians. This is the first survey to collect nationally representative data on immigrants' social and community involvement, as well as information about their migration visa category, duration of residence and other background characteristics, allowing for analysis of their social and community participation by these characteristics. Information was collected on several measures of social and community participation, including attendance at community events, active involvement in various types of social and community groups and organizations, and engagement in a variety of civic activities. Multivariate logistic regression is used to examine migrant characteristics that are associated with the different types of social and community participation and in comparison with native-born Australians. The implications of the findings in relation to the social integration of migrants in Australian society are discussed.

## L

### Age and SEIFA 2006

*Russell Lim, Australian Bureau of Statistics  
[Session 6D]*

The Socio-economic Indexes for Areas (SEIFA) are a set of four indexes designed to compare and rank small areas in terms of socio-economic advantage and disadvantage. In this presentation we discuss how the SEIFA 2006 ranking of a small area is related to the age of the area's residents. The relationships between SEIFA and age are not simple, nor consistent across the four indexes. Although the age effects vary amongst the four indexes, there are some common patterns. The purpose of this presentation is to explore relationships between SEIFA and age structures of regions. We discuss the effects of age on some of the indicators used to create SEIFA. We examine the benefits and drawbacks of age-standardising the SEIFA variables. We also consider the difficulties of defining and measuring a concept of socio-economic disadvantage that is applicable across all age groups. SEIFA is a general measure of socio-economic advantage and disadvantage that can be applied in many types of analysis. We provide an example of analysis, in which it is useful to look at areas' age structures in combination with SEIFA.

### Combining work and family responsibilities: Analysis of the experiences of Australian parents in paid work between 2000-2005

*Ibolya Losoncz, Australian Government Department of Families, Housing, Community Services and Indigenous Affairs  
[Session 7B]*

Australian parents in paid work often try to reconcile two equally important aspirations: participation in the labour market, and commitment to caring for their family and children. For some parents, combining work and family responsibilities means the management of a variety of intersecting tensions rather than a comfortable state of equilibrium. However, successful reconciliation of these goals benefits not only the parents involved, it also promotes other societal goals, such as increased employment participation, family stability and income security, facilitation of gender equity and child development, and alleviation of child poverty. In the Household, Income and Labour Dynamics in Australia (HILDA) survey parents in paid work are asked to indicate on a 7-point rating scale how strongly they agree with a list of 13 statements on combining work and family responsibilities. Research to date have either looked at selected items from the list, or grouped items under the three themes of impact on self, work, and family. However, the simultaneous demands and rewards of work and family life on working parents is inherently a subjective experience. Accordingly, this research will use cluster analysis to identify major homogenous groups with a distinctive profile of their experience. The second part of the paper will identify the characteristics and circumstances that best describe and discriminate between each group. Finally, the paper will investigate the extent to which the formation of these major homogenous groups remained the same between 2000 and 2005, and the extent to which individuals move between these groups in their life course.

## M

### The hidden demography of colonialism: Aboriginal Australians and Poor Whites compared: Victoria, 1850-1985

*Janet McCalman, University of Melbourne and Len Smith, Australian Demographic and Social Research Institute, Australian National University  
[Session 1A]*

This paper will present the results of the first two longitudinal historical cradle-to-grave datasets constructed in Australia: the Aboriginal population of the state of Victoria, reconstituted backwards using genealogical research and vital registrations, 1835-1930; and an impoverished European population born at the Melbourne Lying-In Hospital, 1857-1900 and traced until 1985. Both populations were highly stressed, resulting in exceptionally high infant mortality and early adult mortality. The Aboriginal population suffered the additional burdens of racism and social exclusion, even though after the passage of the 1886 'Half-Castes Act', the majority of Aboriginal Victorians were legally 'white'. The contrasting fates of poor whites and 'unofficial blacks' during the health transition powerfully demonstrate the health burdens of inequality and discrimination.

## Leading causes of mortality and morbidity for Australian children

*Malcolm Macdonald, Australian Institute of Health and Welfare  
[Session 4D]*

This presentation will explore the leading causes and trends of mortality, morbidity and overall burden of disease and injury among Australian children aged 1-14 years. It is well known that disparities in mortality and morbidity exist among sub-populations of Australian children and where possible, the leading causes will be examined by Indigenous status, socioeconomic status and region (urban/rural/remote). For the past two decades, major health gains for children have been achieved through the halving of the child mortality rate, however, injuries, which are largely preventable, remain the leading cause of death among children. Other leading causes such as cancers and conditions of the nervous system will also be discussed, in order to provide a comprehensive picture of the causes of death among children. Despite the major declines in mortality, chronic disease and the long term effects of serious injury continue to pose a threat to the future health and wellbeing of Australian children. The leading causes of hospitalisation for children, including respiratory conditions and injuries, will be discussed, with particular attention to chronic conditions such as asthma and diabetes. It is also important to look at the causes of burden of disease and injury among children. Burden of disease and injury methods combine information on both premature death and ill-health, and highlights conditions that may not be captured by mortality and hospitalisation statistics, for example, mental health conditions among children.

## The projection of births: A new approach

*Peter McDonald and Rebecca Kippen, Australian Demographic and Social Research Institute, Australian National University  
[Session 6B]*

McDonald and Kippen (2007) have argued that trends in fertility are best measured using a three-way classification of the characteristics of mothers. The characteristics are age, parity and interval since last birth. Conventionally, only age is used as a controlling characteristic. They have proposed a new aggregate measure of fertility, the intrinsic total fertility rate that controls simultaneously for the three mentioned characteristics. They have argued that this new measure provides a more accurate picture of both the trend and the level of fertility in any society. In simple terms, a woman's age is not a very strong predictor of whether she will give birth or not in the coming year. Parity and, for parities greater than zero, the interval since the last birth are much more powerful predictors. Accordingly, there is a logic that births should be projected using all three characteristics. This is not simply because fertility rates by age, parity and interval since last birth are more reliable than rates by age alone but also because the existing structure of the population by age, parity and interval since the last birth has an important bearing upon how many births occur in the next year. We propose and implement for Australia a new method for projecting births based on this logic. The method estimates completed parity distributions for single-year birth cohorts and then converts these back to period rates of birth from which the annual number of births is estimated.

### Indigenous early childhood education in remote settings: Mobile preschools in the Northern Territory

*Nick McTurk, Menzies School of Health Research and Charles Darwin University  
[Session 2B]*

Widespread evidence demonstrates the strong cross-cultural correlation between education and health and the inter-generational effects of low levels of literacy on health outcomes. Early childhood is a critical period for cognitive development and accordingly, access to effective support can overcome many of the risk factors faced early in life, setting a future pattern of good health and longevity. Currently, Australia's Indigenous population are characterised by insufficient access to early childhood education, leading to low levels of success at school. Intensification of interventions early in the life course are required to break the cycle of extremely high burdens of morbidity and low levels of life expectancy that are passed from generation to generation within this population. But what form should this intervention take? How can such an intervention be delivered in a socio-culturally appropriate way? How can physical and logistical barriers be surmounted to ensure that transient Indigenous populations are given regular access to such a service? The Commonwealth and Northern Territory Governments have pledged their support to supplying pre-school education to every child and mobile preschools are the favoured option for Indigenous children in remote areas of the Northern Territory. This presentation shall outline the results of a literature review of interventions on Australian Indigenous school readiness. This will be followed by an appraisal of a new research project, which is designed to assess the effectiveness of mobile preschools in improving school readiness for Indigenous children in the Northern Territory of Australia.

### Infant and child mortality in Orissa, India: Patterns and policy responses

*Nick McTurk, Menzies School of Health Research and Charles Darwin University  
[Session 8A]*

India has approximately 16 per cent of the global population, but this country contributes over 20 per cent of all global deaths during infancy. Girls are at higher risk than boys, but patterns of mortality are highly uneven. This paper shall provide an overview of the spatial distribution of gender specific infant and child mortality rates in India using 2001 census data. It will assess the causes of death in the state of Orissa, where mortality burdens are higher than elsewhere in India and illustrate how and why some of Orissa's social groups have higher risks than others. It will illustrate that patterns of gender specific mortality are influenced by the links between culture and physical geography. It will demonstrate that patterns of social and infrastructural development and access to health services are important drivers of the socio-spatial variation in Orissa's child mortality burden.

### Licit and illicit drugs in Australia

*Paul Meyer, Australian Institute of Health and Welfare  
[Session 3B]*

The use of drugs, both licit (mainly alcohol and tobacco) and illicit, is a recognised risk to health. The National Drug Strategy 2004–2009 has been developed to reduce the harmful effects of drugs (including alcohol and tobacco) in the Australian population. The current Strategy and its forerunners auspice a large body of work including a national drug strategy household survey series which commenced in 1985. It is conducted every 3 years to monitor drug-related attitudes, awareness, opinions and behaviours in the population aged 12 years and above. This survey has become one of the major sources of information used to inform the development and refinement of Australian drug policy and to advise international agencies on the use of licit and illicit drugs in Australia. The most recent drug survey was conducted in 2007. A stratified random sample of 23,356 participants across all Australian states and territories was surveyed by drop-and-collect and computer-assisted telephone interviews. Respondents were asked about their smoking status, alcohol consumption patterns, and illicit drug use (including marijuana, heroin, cocaine, ecstasy and amphetamines). The results of the 2007 survey will be reported in this presentation, including trends over time and differentials between population groups.

### Where have all the children gone? Trends in childlessness among professional women in Australia

*Riyana Miranti, Mandy Yap\*, Robert Tanton and Justine McNamara,  
National Centre for Social and Economic Modelling, University  
of Canberra  
[Session 1B]*

\*now at Centre for Aboriginal Economic Policy Research, Australian National University

Research shows that fertility rates for women with higher education are lower than for less well educated women. There is also evidence that professional women may have more difficulty combining work and family responsibilities which then may result in lower fertility rates among these women. The latest Census 2006 shows that Australia's total fertility rate (TFR) is 1.85 which is below the replacement rate. The data also shows that the proportion of Australia's workforce which is female rose from 43 per cent in 1996 to 46 per cent in 2006, while women's labour force participation rate also increased. Women have increasingly wanted to complete their education and to get return from their investment in education by working. The aim of this project is to examine one specific aspect of fertility only which is childlessness by using three different Censuses 1986, 1996 and 2006, particularly by focusing on trends in childlessness among women in elite professional groups. Three issues will be investigated. First, the paper analyses the differences in childlessness between women in the specific degrees (such as law and medicine) and other degrees, and whether the gap is narrowing or widening over time. Second, it also analyses the differences in childlessness between women in elite occupations (such as doctors, dentists, and lawyers) other professional women narrowing or widening over time, and similarly whether the gap is widening or narrowing over time. Third, the paper will analyse whether patterns of childlessness among professional women

in Australia's largest cities are representative of those for the whole of Australia, or do professional women in these cities experience different rates of childlessness to their counterparts living elsewhere.

### **(Im)mobility: Further thoughts on the nodal network model for regional population structures in north east Arnhem Land**

*Frances Morphy, Centre for Aboriginal Economic Policy Research, Australian National University  
[Session 2B]*

The structure and dynamics of remote Aboriginal regional populations are under-researched. Memmott et al. (2004: 1) remark that 'whereas larger scales of mobility are analysable ... using the statistical methodologies of demographers and using the gross census units of Statistical Divisions and ATSI regions, there is a need to develop a greater understanding of smaller-scale regional characteristics.' One could add that much of the smaller scale research that *has* taken place has focused on the phenomenon of intra-regional mobility. This paper will elaborate the idea of the nodal network (Morphy 2007) as a model for understanding the structure and dynamics of the Yolngu population of Arnhem Land, focusing on the nature of the nodes that anchor networks of people in time and space. It develops the idea of the 'nodal individual' who can be shown to be very immobile in terms of place of residence over the long term. It will be argued that it is only possible to account for the 'nodality' of such individuals and the characteristics of the networks that they structure in terms of contemporary local systems of clanship and kinship, and the relationship between clans and their estates. It will be suggested that the nodal network model is more generally applicable to Aboriginal populations, and that such systems display a remarkable resilience and adaptability in the face of the rapid and disruptive social change occasioned by colonisation and its aftermath. The paper ends by exploring some of the reasons why this might be so.

### **Age patterns and model schedules of Australian internal migration 1976-2006**

*Salut Muhidin and Martin Bell, University of Queensland  
[Session 3D]*

Numerous studies have observed that age is consistently and systematically linked with migration behavior across time and space. These regularities have been captured by model migration schedules (Rogers & Castro 1981), which consist of mathematical functions representing the pre, post and labor force curves. Despite their widespread recognition, there have been no systematic attempts to apply model schedules to Australian internal migration data. This paper aims to address that deficiency by deriving migration schedules for the age profiles of Australian internal migration and examines the extent to which they have changed over time. Using data from the Australian Internal Migration (AIM) database, the paper develops migration schedules for the intercensal periods between 1976-1981 and 2001-2006. Results reveal the consistency and evolution in the age profile of internal migration over time, with applications for use in sub-national population projections.

### An assessment of population and civil registrations in Indonesia: Evidence from the 2005 SUPAS data

*Salut Muhidin, University of Queensland and Dani Ismail, Indonesian Central Bureau of Statistics (BPS), Jakarta, Indonesia*  
[Session 3D]

Registration and certification of demographic events (i.e. birth, death, and migration) are regarded as one fundamental instrument to evidence-based population policy, monitoring and evaluation. Ideally, the system serves dual principles: first as legal requirements to establish civil status and protect individual right; and second, as a source of data for informing policy and planning. In Indonesia, the population registration has actually been implemented since independence in 1945. The government of Indonesia has supported the system by regulation of its management and implementation. The Articles of the 2002 Child Protection Law, for example, call for free and compulsory birth registration. Recently, the Law No. 23/2006 on Civil Administration has been endorsed. According to this new Law, vital statistics will be provided through civil registration conducted from village level up to provincial level and national level. Yet, the implementation of this system is not sufficiently prioritized by the government or by society at large. As a result, the registration system has not been established properly to provide reliable vital statistics. Despite the need for these data, few studies of the Indonesian vital registration system have been carried out. In addition, little is known of the empirical basis for current population registration in Indonesia. The present study therefore is designed to fill this gap by assessing the current development of Indonesian population registration from the 2005 intercensal population survey (SUPAS). This is the first time questions related to population registration have been asked in the national survey. The 2005 SUPAS collected information on the registration of demographic events, including: family registration card (*Kartu Keluarga/KK*), population identity card (*Kartu Tanda Penduduk/KTP*), birth report and certificate, death report and certificate, and residence move (in/out) report and certificate. Results show that application of the registration system in Indonesia varies based on place of residence (i.e. urban/rural and regions) as well as the social and economic characteristics of the population.

## N

### Gender and ethnic dimensions of changes in the leading causes of death in Malaysia, 1990-2002

*Shyamala Nagaraj, Tey Nai Peng, University of Malaya, Malaysia, Balambigai Balakrishnan University of Adelaide and Ng Chiu Wan University of Malaya, Malaysia*  
[Session 8A]

Malaysia has one of the lowest crude death rates in the world at below 5 per thousand population. However, standardization against other less youthful populations (like the US and Japan) suggests that the age specific death rates are still higher than those of the developed countries. Improvements in mortality have not been uniform across age, ethnicity and sex. Recent research shows that females have seen much greater declines than males, and the Chinese community has seen greater declines than the Indian or Malay communities. Age-gender-ethnic differentials are sharp. For example, Malay males aged 20-29 and Indian

males aged 15-34 registered an increase in the death rate between 1970 and 2000. This paper seeks to shed light on the male-female differentials in mortality by focusing on the causes of death. Socioeconomic development and improvement in the health services have brought about dramatic changes in the causes of deaths. Degenerative diseases and other factors associated with life style have taken over from communicable diseases as the main causes of deaths. By considering the changes in the leading causes of death across age groups, gender and ethnicity, the paper hopes to identify the causes of death that lead to lower male life expectancy as well as to the differentials among ethnic groups. The changes in the causes of death will be analyzed within the context of social changes and advances in medical technology and improvement in health services in the country.

### **Dementia free life expectancy in Australia: A population level estimate for 2004-06**

*Binod Nepal, Laurie Brown and Geetha Ranmuthugala, National Centre for Social and Economic Modelling, University of Canberra [Session 3B]*

With the rapid population ageing, dementia has become an import population health concern in Australia. It is estimated that more than 200 000 Australian are currently living with dementia. This paper estimates life expectancy with and without dementia among Australian males and females at later life. The analysis was performed by applying the life table technique that integrates mortality and morbidity statistics to derive a single population health indicator. Observed prevalence rates were used to calculate life expectancy with dementia. We estimated that at 65 years of age, males are expected to live additional 18.3 years; six per cent of these additional years would be lived with dementia. Females survived to the same age are expected to live another 21.5 years, nine per cent of which would be spent with dementia. At 85 years of age, males live further 5.9 years, with one-sixth of this life lived in a demented state. Females reaching this age would live additional 7.1 years; one-fourth of this remaining lifetime would be spent in a demented state. The portion of demented life out of total remaining life increases with age at the rate of about 20-30 per cent every five years beyond the age of 65. The rise in life expectancy is associated with increased duration of life lived with dementia. As females live longer than males, they experience a greater impact of dementia.

### **Estimating lifetime socio-economic disadvantage in the Australian Indigenous population and returns to education**

*Binod Nepal, Laurie Brown and Mandy Yap\*, National Centre for Social and Economic Modelling, University of Canberra [Session 5A]*

\*now at Centre for Aboriginal Economic Policy Research, Australian National University

Aboriginal and Torres Strait Islanders are perhaps the most disadvantaged group in Australian society. The extent of disadvantage experienced by the Indigenous population is reflected in the statistics on a wide range of social and economic indicators, particularly the 17 years gap in life expectancy and low employment and income. The importance of this issue cannot be understated, with overcoming Indigenous disadvantage now placed firmly at the centre of the Federal Government's reform agenda.

This paper reports on the development of a demographic-economic model that was applied to estimate the effect of improved educational outcomes on lifetime economic outcomes among Indigenous Australians. The modelling approach incorporated a series of econometric equations that estimated the relationship between key strategic change indicators and used them to estimate lifetime economic outcomes using a life table model. The life table analysis provided estimates of changes in life expectancy, years in education and employment, and lifetime earnings. This paper presents the results from a module that estimated gaps in the educational and economic outcomes of Indigenous Australians compared to the non-Indigenous population, and examined likely returns to education if parity in year 12 (or equivalent) completion rates could be achieved. We estimated that lifetime labour incomes for Indigenous males and females were about half to three-fourth lower than that for non-Indigenous males and females. If the same proportion of Indigenous as non-Indigenous populations were to have completed Year 12 or equivalent post-school qualifications, their lifetime labour income would increase by about 30 to 40 per cent, even if the employment pattern remain the same. The main constraint in this modelling was the lack of quality input data owing to none or small sample sizes of Indigenous populations in national surveys. Yet this research contributes to the evidence base gathered to support future decision making around strategies that aim to improve the long term outcomes for Indigenous Australians.

### **The gender transition in tertiary education in New Zealand and Australia**

*James Newell, Monitoring and Evaluation Research Associates, Wellington, New Zealand and Paul Callister, Victoria University of Wellington, New Zealand*  
[Session 3C]

Degree level educational attainment trends for New Zealand and Australia by age are compared and cohort intercensal educational transitions estimated. The 1981 to 2006 period saw a rapid shift from a male to female led pattern of growth in tertiary educational attainment. Educational capital gains by females outpaced those by males. By the end of the 1990's the pattern had switched to female youth cohorts increasingly leading males in tertiary educational attainment. Degree or higher completions by females aged 20 to 24 years exceeded those of males by 45 per cent over the 1996 to 2001 period in New Zealand and a similar story can be inferred for Australia. In New Zealand, this gender educational transition occurred earlier for Maori residents than for those of European ethnic origin. This move towards greater emphasis on professional qualifications by women is likely to be associated with changing patterns of labour market participation and reproduction strategies by age. It raises the questions, why are young males not emulating the gains made in female educational capital accumulation, what will be the likely long term consequences and should we be concerned?

### The impact of changing internal migration patterns on birth rates in New South Wales regions

*Shane Nugent, NSW Department of Planning  
[Session 6C]*

Studies of regional population growth generally focus on migration as the main cause of differences in growth rates. In addition to its impact on total numbers, migration also results in changes in the age structure of regions. Recent data has shown very large shifts in crude birth rates between regions in New South Wales, with significant impacts on population growth in the regions. This paper explores the cause of these shifts by examining fertility rates, age structure and age-sex differences in migration between regions. The paper discusses the implications of these trends for future age structure and population growth or decline in New South Wales regions.

## P

### A socio-demographic profile of return migrants in Australia

*Angélique Parr, University of Queensland  
[Session 3A]*

It has been repeatedly shown that return migrants are a distinct group among an already selective population of internal migrants, particularly in terms of age (Bell and Hugo, 2000; Newbold and Bell, 2001). While the age profile of return migration in Australia concurs with North American work that returns are most prevalent among young adults, a notable difference is an increase in returns at older ages. A number of studies have found other socio-demographic variables that are common among return migrants (Da Vanzo 1983; Grant and Vanderkamp 1986; Morrison and Da Vanzo 1986; Rosenbaum 1993). However the results of this work are often contradictory or inconclusive, so there is still no definitive set of characteristics to encapsulate return movers (Rogers and Belanger 1990). Further, most of this work is based on lifetime measures of return, with only a superficial analysis of migrant characteristics employing fixed-interval measures (Newbold and Bell 2001). The potential to explore the character of return migrants in the Australian context is provided by the one per cent Household Sample File from the Census of Population and Housing. Using the sample from the 2001 Census, a series of binomial logistic regression models are developed to identify the characteristics that most significantly differentiate return migrants from other migrants as well as non-migrant populations.

### Estimating and projecting NSW fertility

*Angélique Parr, NSW Department of Planning; Alison Culpin, NSW Department of Education and Training and Tom Wilson NSW Department of Planning*  
*[Session 8C]*

Considerable demographic research underpins the component assumptions used to derive population projections for New South Wales. The focus of this paper is one component – fertility. New South Wales demographers have traditionally used births data from the vital registrations collated by the Australian Bureau of Statistics to develop fertility assumptions as for population projection models. As with childbearing in Australia as a whole, fertility rates in New South Wales are currently at historic lows and there is considerable debate about their future direction (Jain and McDonald, 1997; Kippen 2004; McDonald 2005; McDonald and Kippen 1998). Part of this debate has been to question the coverage of the registration data used to analyse fertility patterns and trends. This has compelled the NSW Department of Planning to look for other sources of information about childbearing patterns of New South Wales in order to either support or refute the research that has already been undertaken. An additional source of information about childbearing is the New South Wales Midwives Data Collection (MDC). Administered by the NSW Department of Health, this population-based surveillance system that covers all births that occur at home, in public or private hospitals in the state (NSW Health 2007). This paper explores similarities and differences in fertility rates that are derived using both data sources. Two sets of fertility assumptions are developed and an assessment is made of their impact on the resulting projected numbers of births and overall population projections.

### Feelgood factors and fertility

*Nick Parr, Macquarie University*  
*[Session 1B]*

The literature on the relationship between satisfaction with life (“happiness”) and fertility has tended to attribute any relationship to the effects of fertility on life satisfaction: the possibility that higher levels of life satisfaction may predate and, indeed, may affect fertility has tended to be overlooked. This paper examines whether men and women who express higher levels of satisfaction with life are subsequently more likely to have higher levels of fertility. The data are from 3951 males and 4342 females aged 15–49 when interviewed in 2005 for Wave 5 of the Household Income and Labour Dynamics in Australia (HILDA) survey, a large, nationwide, longitudinal survey of the Household population of Australia. The results show that both for males and for females there is a strong positive relationship between satisfaction with life measured roughly two years earlier and current fertility. The low fertility of men and women who stated an overall satisfaction with life below the mid-point of the scale given is particularly striking. The effects of satisfaction with life remain significant after controlling for a range of possible confounding factors. The implications of these findings are discussed.

### Modelling demographics within the new APPSIM Australian dynamic microsimulation model

*Sophie Pennec, Institut National d'Études Démographiques, France, and National Centre for Social and Economic Modelling, University of Canberra; Bruce Bacon, National Centre for Social and Economic Modelling, University of Canberra and APPSIM Team*  
[Session 2C]

As in most developed countries, Australia is facing an ageing of its population. This ageing is placing pressures on the economy, particularly with the imminent retirement of the baby boomer cohort. This pressure will come from the change in the structure of the population, with more people of retirement age, relative to people of active age. This will result in greater demand for health services and social care support, as these people reach the high disability older age range requiring more care support. Developing the capacity to examine the distributional effects of both demographic changes and policy changes is the goal of the new Australian dynamic microsimulation model (APPSIM). The presentation will deal with the main features of this new model, with strong emphasis on the core demographic modules. It will examine current fertility, mortality, migration, family formation and dissolution patterns in Australia, and will describe some of the proposed innovative features of the new model (potentially including a linked macrosimulation model that will be used to align key demographic and other processes to external benchmark data).

### Migration experiences into a Vientiane capital neighborhood. The case of Phonpapaonthong, Sisattanak District, capital of Lao PDR

*Kabmanivanh Phouxay, Umea University, Sweden, and National University of Laos*  
[Session 4A]

The paper analyses *migration experiences* of women migrant workers who have come to work in garment factories in Vientiane Capital. The paper concentrates on *decision making processes* to migrate; *the living condition in original areas*, and the subsequent change in migrants' individual lives as well as their family *livelihoods* over the course of their migration. In addition, the paper also sheds light on the *impact of migration* on surrounding communities and the larger socio-cultural environment of Vientiane Capital City. Over recent years, Vientiane Capital has witnessed significant inflow of migrants from the provinces. Migrants have come to the city for several purposes such as education, employment as well as a general strategy to improve living conditions. Sisattanak is a centre of industrial, commercial and educational activities and has experienced the highest in-migration rate in Vientiane Capital City. For this reason, the research was conducted in Sisattanak. The paper draws on empirical findings collected through household survey, semi-structure interviews with key informants, and in-depth interviews and focus group discussions with women migrant workers at the garment factories in the village in May 2005. The research found that household economic conditions, poor infrastructure and unemployment in the original areas attributed strongly to migrants decision to move. Employment opportunities, education condition, good accessibilities and facilities are motivations for migrants to move to Vientiane Capital City. The research found that most migrants are satisfied with their living and working condition in the city, especially

the young women workers. Overall, the findings show that migrants' livelihoods have changed dramatically over the course of their migration project. Furthermore, migration is found to have both positive and negative impacts on the individual, the family and the larger socioeconomic and cultural surroundings of communities in Capital of Lao PDR.

### Age-structural transitions in the neo-Europes: Whose model will they follow?

*Ian Pool, University of Waikato, New Zealand  
[Session, 6A]*

Age-structural transitions (ASTs), and especially their last phase of ageing, are driven by different trends representing different dimensions of ASTs: a generic **phasic** change from a “youthful” to an “old” structure; **cohort flows** coming from momentum, and which may well be disordered; **numerical** (growth in numbers at, say, 65+ years) as against **structural** (growth in the % at, say, 65+ years) **ageing**. The mix of these has as much – perhaps more – demographic impact on policy as do the effects of each dimension. The mixes thus have very significant policy implications. In separate papers, which provide a building platform for the present paper, I signaled the importance of these different dimensions for policy, notably in limiting the achievement of demographic dividends, and on the Millennium Development Goals. Above all, trends in one dimension may cut across the trends in another. For example, ageing policy tends strongly to focus on structural ageing, yet pays little attention to numerical ageing, despite earlier seminal work, particularly by Don Rowland. This paper analyses the mix of **numerical** and **structural ageing** seen historically in the Western Developed Countries (WDCS: North Western Europe, Mediterranean, Japan and the neo-Europes – Australia, Canada, New Zealand, United States). It shows marked regional differences within the WDCs, with the neo-Europes one distinct cluster with common attributes, inferring a scenario for the neo-Europes that is very sobering for policy makers addressing issues of ageing. United Nations projection series will be looked at to analyse on-going effects.

### “It’s all just anecdotal”: Can qualitative population research inform Indigenous public policy?

*Sarah Prout, Centre for Aboriginal Economic Policy Research,  
Australian National University  
[Session 2B]*

Indigenous mobility practices are complex and dynamic demographic processes that are generally ignored or poorly understood within public policy frameworks. Often, fragmented and pejorative conceptualisations of Indigenous mobility are the product of what Taylor (2006, p. 23) has termed an ‘information vacuum’: a lack of knowledge and understanding of the characteristics and drivers of Indigenous spatiality. This information vacuum not only perpetuates marginalising interpretations of Indigenous spatial practices, it also militates against the development of effective and appropriate models for targeting and delivering basic services – such as health, housing, and education – to Indigenous populations. The Indigenous mobility ‘information vacuum’ is the result of both a lack of focussed, participatory, and rigorous related research, and an uncomfortable relationship between research and policy in this field of enquiry. This paper examines several issues at the policy-research nexus

that are not easily resolved. These include methodological approach, data sources, scale of analysis, and issues of power and representation. The analysis also critically evaluates the tendency of bureaucrats to absorb only quantitative research that produces “hard” demographic data. It argues that in relation to Indigenous spatiality, such data have a number of significant limitations which are often overlooked in the perpetual quest to target resources and justify budgets. Drawing on several relevant qualitative case-studies of Indigenous spatiality, the paper explores the potential of interview and observational data to augment statistical analyses, and enhance policy development processes concerning Indigenous population dynamics.

## Q

### Parental cohabitation and children’s well-being

*Lixia Qu and Ruth Weston, Australian Institute of Family Studies  
[Session 7B]*

Two of the most significant changes in Australian family life over the last few decades are the increasing proportion of couples who are living together without having married (here called “cohabitation”) and the increasing proportion of children born to parents who are not married to each other. Most of the babies are born to cohabiting couples. However, little attention has been given to the implications of such circumstances for children’s lives. It is not clear whether children born to cohabiting parents are worse off than those who were born to married parents. This paper uses data from *Growing Up in Australia: the Longitudinal Study of Australian Children (LSAC)* to compare the developmental progress (physical, social and emotional, and learning) of three groups of children – children living with both their biological parents who are cohabiting, children living with both their biological parents who are married to each other, and children living in sole-mother families. Multivariate analysis is applied to the data in order to assess the extent to which any differences in the developmental progress of these children can be explained by other characteristics of the children, parental socio-demographic characteristics, parental psychological well-being, quality of parental relationship, and parenting practices.

## R

### Mobile populations and their impacts: The Victorian research

*Jeremy Reynolds and Fiona McKenzie, Department of Planning and Community Development, Victoria  
[Session 2D]*

Evidence-based planning and place-based management approaches are both gaining credibility and becoming instilled in Victorian government processes. Consequently there is increasing demand across State and local government for high quality spatial analysis and population projections based on a rigorous analysis of regional and local trends. While many improvements in the quality of products and services have been made, public servants, consultants and people working for the community sector are delving deeper into the world of demographic analysis and are becoming more aware of data quality issues and gaps in urban and regional analysis. One such gap is the dearth of research on

mobile or service populations. Populations are clearly not geographically static, although much analysis treats them as such. The population of any area varies over the day, the week and the year. Infrastructure and services planning should take account of such changes. Place of employment data from the census has long been used in urban planning as a complement to residential population data but in most cases there is no data about weekly or seasonal fluctuations of populations. There is an increasing body of research on second homes which can throw some light on seasonal populations, but little of this research has been undertaken in Australia. In Victoria, several types of mobile populations have been identified: working populations, seasonal and itinerant workers, roaming skilled workers, construction crews, weekend populations, holidaymakers, daytrippers, festival and event attendees and school camps. In each case, some of their characteristics and impacts have been identified. Out of this, two studies have been undertaken by the Department of Sustainability and Environment<sup>1</sup> and further ones are planned. The first study was of non-resident ratepayers in the Shire of Mansfield, a rural shire located three hours north east of Melbourne. Half the ratepayers give their main residential address as outside the Shire. So many live in Melbourne that the Shire now holds an annual ratepayers' meeting at Nunawading in the heart of Melbourne's eastern suburbs. In 2007 the Department and the Shire combined to do a survey of non-resident ratepayers to gain information about their property and its use, their involvement in the local community, their use of local services and their expectations of the future. A second survey in 2007 focussed on two coastal communities which have traditionally been popular with holidaymakers and daytrippers. They have growing permanent populations and are becoming more popular for commuting and daytripping, owing to more flexible working arrangements and to their better accessibility to large urban populations. This survey estimated fluctuations of populations and assessed population impacts on infrastructure, services and the environment through interviews with service providers. Other research work is now planned on mobile populations in order to provide a better evidence base for a range of planning purposes.

- (1) Since the time of these surveys, the planning function of the Victorian Government has moved to a newly formed Department of Planning and Community Development.

### **The urbanisation of Victoria: Trends, prospects and implications**

*Jeremy Reynolds and John O'Leary, Department of Planning and Community Development, Victoria  
[Session 5C]*

Like other States, Victoria's population over the last 150 years has become increasingly concentrated into its capital city and other main regional centres. Following a period of counter-urbanisation in the 1970s and 1980s, urbanisation has, since 1990, strengthened. Structural economic and social change and changes in the components of demographic change have led to an unprecedented amount of growth occurring in Melbourne. Given recent changes in the labour market and overseas migration, Melbourne now faces major planning, infrastructure and service delivery challenges. Ongoing labour shortages are likely to lead to sustained higher levels of overseas migration. A quarter of overseas migrants coming to Australia settle in Melbourne. Melbourne's metropolitan planning strategy, Melbourne 2030, is a sustainability plan

to manage the growth 620 000 households, the increase projected to occur between 2000 and 2030. It now looks as though that level of growth will be achieved 6-8 years earlier than previously thought. In regional Victoria, there are other challenges: servicing an ageing population; skills shortages in an increasing range of occupations; rural population loss and increasingly mobile populations. Owing to the continued loss of rural youth and age specific migration and in-migration of families and retirees, regional Victoria's population is older than Melbourne's, with the oldest populations being found in dry land farming areas in the western third of Victoria. Such areas have experienced long term population decline, with out-migration of youth, declining fertility rates and increasing numbers of deaths as the population ages. Skills shortages in a range of occupations are becoming more prevalent. Education planning has to address issues associated with declining school roles. Health and emergency services planning face issues associated with an ageing workforce as baby boomers reach retirement. Meanwhile the large regional centres and their immediate hinterlands are growing strongly: Geelong, Ballarat and Bendigo accounted for almost half of regional Victoria's growth between 2001 and 2006. With improved road and rail links they are being drawn into a 'Greater Melbourne' which is rapidly growing out towards them.

### Improving population health indicators to monitor our ageing populations

*Jean-Marie Robine, French National Institute of Health and Medical Research, France, Carol Jagger, University of Leicester, United Kingdom and the EHLEIS team*  
[Session 1C]

The question of whether increased life expectancy is accompanied by more or fewer years in good health has been well rehearsed but not equivocally answered. The joint analysis of health and life expectancies adds a quality dimension to the quantity of life lived by the populations, important for our ageing populations, and can provide evidence of inequalities and highlight potential targets for public health strategies both nationally and cross-nationally. However, though many countries worldwide produce these population health indicators, there is a lack of harmonisation in the underlying morbidity measures and in the calculation methods. The European Union has begun to standardise measures and calculations of Healthy Life Years (HLY), a disability-free life expectancy which is proposed as the first EU Structural Indicator on health. Based on a global activity limitation question from the EU Statistics on Income and Living Conditions survey, HLY is now comparable for the 27 Member States (MS). These results show that life expectancy at age 65 varies by 8 years in Europe from 12.5 years for men in Latvia to 21.5 years for women in France. The proportion of life expectancy free of activity limitation (corresponding to the HLY) varies by MS from 19 per cent to 81 per cent. Even ignoring potential outliers there still appears to be considerable cross-national variation.

### Is the compression of morbidity a universal phenomenon?

*Jean-Marie Robine, French National Institute of Health and Medical Research, France and the M-project group*  
[Session 1C]

Recent reviews of national health trends show conflicting results. It is clear today that the various health dimensions follow different trends over time. For instance an expansion of morbidity may accompany a compression of disability. What do we measure when we observe a decline in disability? Is the elderly population healthier or are individuals more independent and less helped by children, using more technical devices in a more favorable environment? The recent OECD study, reviewing trends in ADL disability at age 65 and over in 12 OECD countries during the 1990s, demonstrates that there is clear evidence of a decline in disability among elderly people in only five of the twelve countries studied: Denmark, Finland, Italy, the Netherlands, and the United States. Three countries (Belgium, Japan and Sweden) report an increasing rate and two countries (Australia, Canada) a stable rate. In France and the United Kingdom, different surveys show different trends in ADL disability (OECD, 2007). These results suggest that a decline in ADL disability may be less universal than expected. More importantly, the OECD study shows that ADL disability at age 65 and over ranges from a low of 12 per cent in Finland (Health Survey) to a high of 30 per cent in the United States (Medicare Current Beneficiary Survey). This paper reviews the available evidences about the compression of morbidity and the disability decline and discusses the context in which they occur: initial level of disability, initial value of life expectancy and trend in life expectancy.

## S

### How useful are demographic surveys in explaining the determinants of early marriage of girls in Terai of Nepal?

*Nepali Sah, Australian Demographic and Social Research Institute, Australian National University*  
[Session 4B]

This paper aims to analyse the importance of demographic and socio-economic factors on age at marriage of girls in Terai<sup>1</sup> of Nepal. Despite some change towards rising age at marriage of girls in the recent decades, many of the girls are married off at early age particularly in Terai region of Nepal. The factors behind this practice are culture, tradition and religion influenced by dowry. In this paper, I explore several demographic datasets (NFHS<sup>2</sup> 1996, DHS<sup>3</sup> 2001 and 2006), NAYA<sup>4</sup> 1999 and Census<sup>5</sup> 2001) with a view to assessing the utility for understanding the determinants of early marriage of girls in Terai of Nepal. The demographic surveys carried out in Nepal so far have been able to demonstrate the changes in increasing age at marriage over time. The differentials and determinants such as sex, religion, education, geographic region, place of residence (rural/urban), economic status of the household and women, and occupation have been included. However, factors such as age at menarche of girls, dowry and cost of marriage, and cross-border marriage migration which seem to impact on prevalence of lower age at marriage of girls in Terai region of Nepal have not been considered in the demographic surveys. Literature clearly demonstrates that age at menarche of girls, dowry and marriage cost, and cross-border marriage migration are playing

important role in determining the age at marriage of girls. Thus, findings suggest that demographic surveys in future need to consider these factors. Studies on dowry and marriage cost could also be collaborated with national research institution such as Central Bureau of Statistics in their Living Standard and Household Economic Survey. This would not only be fundamental for understanding the marriage but also be instrumental in understanding economic phenomena of the family and the society and formulating strategies for poverty alleviation.

- (1) Plain area in the southern part of Nepal adjoining to northern Indian States.
- (2) Nepal Family and Health Survey.
- (3) Demographic and Health Survey.
- (4) Nepal Adolescents and Young Adults.
- (5) Census of Nepal.

### **Does non-utilization of ANC create complications while delivery among women in slums in greater Mumbai?**

*V. M. Sarode Mulund, College of Commerce, Mumbai, India  
[Session 5B]*

This study uses primary data, collected using cluster sampling of sample size of 346 reproductive women who have given at least one live birth prior to survey on antenatal care indicators, antenatal check-ups, and reproductive health problems during the pregnancy and the complications while delivering a child from Ramabai Nagar slum. This paper examines utilization of health services available to these women in slums in Mumbai and also checks whether non utilization of ANC and having reproductive health problems during pregnancy creates complications during child delivery on the basis of standard of living index constructed from household amenities, housing quality and sources of drinking water, electricity and toilet facilities. The findings using logistic regression reveals unimaginable low level of utilization of health services for illiterate women in the study area. Besides to these there is evidence that those respondents did not go for ANC and had reproductive health problems during the pregnancy creates problems during child delivery, particularly to illiterate mothers. This paper suggests that awareness is required at every stages of ANC particular to illiterate women with low SLI category women in a slum.

### **The double whammy: Ageing patients and an ageing health workforce**

*Janet Sceats and Shefali Pawar, Pinnacle Group Ltd., Hamilton, New Zealand  
[Session 2C]*

There is increasing concern, both in Australasia and internationally, about the sustainability of the health workforce in the face of demographic change. Much of the emphasis has been upon the ability of the hospital sector to attract and retain high quality, highly skilled medical and nursing staff. Primary care, particularly general practice, is, however, the part of the health care system with which most people interact. Failure to address the needs of this sector will undermine any attempts to address shortfalls in the more expensive and specialized secondary and tertiary sectors. This paper is a case-study based on the upper-central part of New Zealand's North Island. It looks at the impact of demographic change

on the workload of general practitioners and practice nurses over the next 20 years, relating these trends to the demography of that workforce. Estimates of the likely number of health professionals who will need to be recruited to maintain existing service levels are made. The data come from the first New Zealand study of its kind using sub-national age and ethnicity-specific consultation data from a Primary Health Organisation, which serves 1/10 of the population of New Zealand. It includes a significant Maori population with poorer health status, Maori and Pakeha living in isolated rural areas with dispersed settlement, plus retirement zones with heavy concentrations of older Pakeha. The region is also heavily dependent on overseas trained medical practitioners. Comparisons with workforce analyses based on national-level data show that such national-level analyses may underestimate the true level of need among sub-populations who are already disadvantaged because of their location and /or demographic characteristics.

### The village midwife program and infant mortality in Indonesia

*Ranjan Shrestha, University of Montana, USA*  
[Session 5B]

Indonesia introduced over 50 000 midwives in villages across the country in the 1990s to provide primary care to women without easy access to health facilities. Using the Indonesian Family Life Survey (IFLS), this paper describes the trends in the use of birth services and facilities in Indonesia and estimates the impact of the village midwife program on infant mortality. Since women choose the type of assistance during delivery and where they give birth, regressing mortality outcomes against the choice of services will lead to biased estimates due to the correlation between the choice of services and unobserved characteristics of the women. Furthermore, the village midwife program targeted villages lacking health facilities and such non-random placement of the program can bias the estimates of its impact on infant mortality. In order to overcome the problem of endogeneity associated with selective placement of midwives, mortality outcomes and program prevalence are aggregated at the district level and the program effect is estimated taking district fixed effects. The results suggest that the program is associated with a reduction in neonatal mortality, but not with post-neonatal mortality. However, the inclusion of time-specific effects into the analysis removes the effect of the program on neonatal mortality.

### Catholic schools at a crossroads: The significance of demographics in Catholic schools

*Crichton Smith, Catholic Education Commission, NSW*  
[Session 3C]

In July 2007, the Catholic Bishops of NSW and ACT released a pastoral letter on Catholic schools which recognized that “changes in enrolment patterns and in our educational and cultural context have radically affected the composition and roles of the Catholic school in recent years”. The significance of this Pastoral Letter for the future culture of Catholic education in NSW – and other states and territories – cannot be understated, as this is the first Pastoral Letter on Catholic education in NSW since 1879. Demographic analysis has played a critical role in the development of Catholic Schools at a Crossroads. The understanding of the changing composition of NSW schools developed through detailed

analysis of longitudinal ABS Census and Catholic school enrolment data was critical to the awareness of the changing composition of Catholic and non-Catholic enrolments in Catholic schools, and the “decline in representation in our schools of students from both poorer and wealthier families”. This paper outlines the detailed demographic analysis and policy process preceding the release of the Pastoral Letter by the Bishops, and examines the policy and cultural challenges, and the critical indicators of progress which the Bishops of NSW and ACT have raised for the leaders in Catholic schools and Catholic educational administration. The paper also highlights how the demographic issues in ‘Crossroads’ have become issues of national significance in Australian Catholic education. In summary, this paper provides one example of the increasingly significant role that rigorous demographic analysis plays in policy formation and policy responses to demographic change – a key theme of the APA 2008 Conference.

### The sectoral trends of Australian schooling

*Crichton Smith, Catholic Education Commission, NSW  
[Session 3C]*

This paper reports on the development of a series of research reports from the National Catholic Education Commission which explore aspects of the three sectors of Australian schooling. Drawing from a number of sources, including ABS census and historical data, MCEETYA data, and an annual census of Catholic schools, the analysis of this data is starting to providing a comprehensive demographic picture of the changing dynamics of Australian schooling. This paper summarises the first report on sectoral trends: *Schools – A National Perspective*, which examined aspects of the changing number of schools in the three sectors over the past 44 years, and reports on some of the similarities and differences between the three school sectors in Australia. The data in this first report draws primarily from an unbroken annual time-series of ABS schools publications, commencing with the ABS *Social Statistics* publication in 1962, and the paper will outline some of the questions and policy implications arising from reporting of the data. The paper also outlines the intended future research reports, as well as discussing how this project has been significant in opening new avenues of understanding and policy development. This paper also highlights how the analysis of reporting of historical trends has led to further demographic research as a tool for significant policy development. In summary, this paper illustrates the relevance of historical demographics in understanding, contextualizing and even identifying contemporary demographic and policy issues.

### Whatever happened to the children?

*Crichton Smith, Catholic Education Commission, NSW  
[Session 6D]*

The ABS recorded that there were almost 3 million students at the 2006 Census of Population and Housing, while the ABS Schools, Australia 2006 publication reported that there were almost 3.4 million students, a difference of 420 000 students in Australian schools. Given that the 2006 ABS Census and the 2006 Schools Census collected by the Commonwealth Department of Education, Employment and Workplace Relations (DEEWR) (formerly DEST) were conducted in the same week in August 2006, a discrepancy of 14 per cent between the two censuses

appears somewhat significant. This paper examines this discrepancy including an exploration of potential regional and sectoral variations; and considers possible reasons for the difference between the two collections, including students likely to be under-enumerated and the possibility of a definitional ambiguity relating to 'preschool' in the ABS Census question. In conclusion, the paper examines the relevance of the ABS Census for authorities involved in educational administration, policy and planning.

### Closing the gap? Trends in Indigenous Australians' life expectancy

*Len Smith, Australian Demographic and Social Research Institute, Australian National University, Tony Barnes, Charles Darwin University, Ching Choi, Unaffiliated and Peter McInnes, OATSIH, Australian Government Department of Health and Ageing  
[Session 1A]*

The Prime Minister's recent commitment to narrow the 17-year gap between the life expectancy of Indigenous Australians and that of other Australians echoes similar promises made over the last 30 or more years. We review trends in estimated Indigenous life expectancy over that period, the underlying age and cause distributions, and the methodologies used, in order to establish the validity of the estimates, the likelihood of reduction given past trends, and the components which will need to be addressed if the gap is to be narrowed or eliminated.

### Historical demography and the new prosopography

*Len Smith, Australian Demographic and Social Research Institute, Australian National University, James Bradley, Janet McCalman and Sandra Silcot, University of Melbourne  
[Session 5D]*

Prosopography ('portraying an absent or imagined person') has its origins in classical studies, in which information about a historical figure from all available sources is collected together to form a synthetic biography. The new prosopography is a branch of informatics, in which information about individuals is extracted from large historical databases and aggregated so as to provide information about social groups. Like classical prosopography, the new prosopography initially focused on the history of elites, simply because the data was more readily available. However there is an accelerating trend to the study of 'ordinary' people, which has been made possible by the construction of large databases covering whole populations, such as the historical censuses and civil registrations. We report on the progress of three such Australian studies: children born in the Melbourne Lying-in Hospital from 1857 to 1900 and their descendants; the Victorian Koori population from 1870 to the present; and convicts transported to Tasmania and their descendants from 1803 to the present. These studies present a number of challenges not encountered in traditional historical demography research based on local registers. A central problem is the identification of unique individuals across different sources.

### Country Matters: Social Atlas of Rural and Regional Australia. Information to support decisions affecting rural people and communities

*Patrick Stakelum, Australian Government Department of Agriculture,  
Fisheries and Forestry*  
[Session 6C]

Understanding people and communities is fundamental to the design and delivery of appropriate policies and well targeted programmes. However, there is limited socio-demographic and socio-economic information readily available to support policy development for people and communities in rural and regional Australia. The Bureau of Rural Sciences (BRS) is addressing this gap through the publication of *Country Matters – Social Atlas of Rural and Regional Australia*. The atlas provides policy and decision makers, researchers and the public with the information and tools to support decisions affecting rural people and communities. BRS has produced this updated edition of the Social Atlas based on Australian Bureau of Statistics (ABS) 2006 population and Housing Census data. The Social Atlas explains trends and makes comparisons between the demographic and economic make up of rural, regional and metropolitan Australia. It describes the economic and social life of over 7.5 million people living in over 800 non-metropolitan city regions across Australia. The Social Atlas highlights many interesting facts on the demographics and lifestyle of people living outside major urban centres. These include information about the demography, labour market, industry, family structure, households, income levels, access to internet, and volunteering. There are significant challenges confronting people who live in regional and rural Australia, but there are also many opportunities. Through publications such as the *Country Matters – Social Atlas of Rural and Regional Australia*, social science is contributing to a comprehensive understanding of the nature of these challenges and providing insights into future directions.

### Strategic directions in local demography statistics

*Paul Sullivan, Patrick Corr and Peter Harper, Australian Bureau of  
Statistics*  
[Session 6C]

Demographic statistics are core outputs of any National Statistical Organisation. They include the size, distribution, composition, structure and rate and components of change over time of a nation's population. In Australia, selected state and territory level demographic statistics are required to be produced to meet legislated decision making such as the distribution of GST revenue to the states and territories and apportioning seats to each state and territory in the House of Representatives. With increased focus on advocating evidence-based and informed decision making, there is ongoing demand for high quality and timely demographic statistics at the local level. These are required for the formulation, planning and monitoring performance of programs and service delivery targets. The strategic priority for improved and expanded demographic statistics at the local level has been identified as part of the State statistical priority setting process between the Australian Bureau of Statistics and State/Territory Government representatives. This paper outlines a draft strategic statement on demographic statistics at the local level. It

lists several key result areas and objectives so as to guide what future actions can be undertaken not only by the Australian Bureau of Statistics but also State and Territory Governments and their agencies so as to meet the articulated need for improved and expanded demographic statistics at the local level. The ABS invites comments on the draft paper, its relevance and options for future actions so as to refine a paper for further consideration and decision between the ABS and State/Territory Government representatives.

## T

### Projecting remote populations: Policy issues and lessons from Australia's Northern Territory

*Andrew Taylor, Charles Darwin University  
[Session 2C]*

Population forecasting literature documents the inverse relationship between forecast errors and jump-off population size. Despite this, governments of relatively small jurisdictions do require evidence-based information on which to formulate and review population-related policies. The Northern Territory of Australia is one such jurisdiction. Here the Government has sponsored the development a hierarchical multistate cohort-component model (NTPOP) disaggregated by sex, Indigenous status and age. The Northern Territory's population is small with around 60 per cent residing in the two major centres of Darwin and Alice Springs, considered remote by some indexes of service delivery, and the remainder in even more remote and isolated areas. These characteristics of smallness and remoteness have impacted on the availability and accuracy of component data inputs to date. Previous forecasts undertaken by the Australian Bureau of Statistics have consistently produced high errors within 5 years from jump-off and medium series percentage errors exceeding 60 per cent have been recorded at 30 years. Despite the likelihood of the NTPOP producing similarly high errors, its development has provided a range of tangible benefits in the context of strategic thinking around long-term population issues. In discussing the likely accuracy of NTPOP results, this paper contends that the primary benefit of the model are situational learning and inter-organisational knowledge generation. Insights from this review may assist small and remote jurisdictions to envision a productive engagement process around population forecasting where the production of forecast numbers, and there accuracy, is secondary to more strategic outcomes.

### Projecting the prevalence and costs of type 2 diabetes with an ageing population

*Linc Thurecht, Laurie Brown and Mandy Yap\*, National Centre for Social and Economic Modelling, University of Canberra  
[Session 7A]*

\*now at Centre for Aboriginal Economic Policy Research, Australian National University

Type 2 diabetes is a common, chronic and costly health condition that imposes a significant burden on affected individuals and costs on the health system. Within Australia it is estimated that more than one million people aged 25 years and over have the disease. It has also been estimated that in 2000-01 1.7 per cent of recurrent health expenditure was spent on diabetes. Yet despite the significant burden and cost associated

with the disease, type 2 diabetes largely occurs as a result of modifiable lifestyle factors. We present a population-based model that projects the changing age structure and risk-profile of the Australian population over a forty-five year period. We then determine the expected number of diabetics and calculate the cost to the health system. The model can then be used to assess the expected impact of prevention and intervention programs designed to change the prevalence of the risk factors associated with the type 2 diabetes within the Australian population. The model thus provides policy developers with the capacity to evaluate the potential impact that a hypothesised prevention or intervention program might achieve, including the relative cost-benefits of alternative strategies. As a case study, we provide a base case projection of the expected number of diabetics over the next forty-five years which is then decomposed between that which is associated with the ageing population and that which is associated with the increased prevalence of modifiable risk factors.

### Why are there so many short jobs in New Zealand? An analysis of job tenure using Linked Employer-Employee Data (LEED)

*Jason Timmins, Department of Labour, New Zealand  
[Session 1D]*

Linked Employer-Employee Data (LEED) is the main source of information in New Zealand for measuring job tenure and turnover. LEED-based measures of job tenure, produced by Statistics New Zealand, suggest that nearly half of all jobs in New Zealand have been going for 12 months or less. When compared with labour force surveys in Australia and the US New Zealand appears to have twice as many short jobs that finish within a year. The main objective of this paper is to investigate the use of earnings spells in LEED as a measure of job tenure.

The paper explores the extent to which employment relationships in LEED contain multiple job (earnings) spells and the impact on the tenure distribution if individual job spells, between an employer and employee, are joined together. The study found that one in five jobs (21.1 per cent) in LEED, as at March 2006, were repeat spells with the same employer and nearly half (44.4 per cent) of repeat-job spells started following a single month of non-employment. A distinctive pattern among repeat-job spells was for an earnings spell to end in December and for a new spell to begin in February. Around a quarter of all repeat spells start in February following a one month break from their employer, in particular, 63.1 per cent of job spells in the education industry fall into this category.

Imputing all non-employment periods as employment had a measurable, but not a particularly dramatic effect on the job tenure distribution. For example, the share of job spells with elapsed tenure of 12 months or less falls by only 10 percentage points from 48.1 per cent to 38.0 per cent, a decline of around 20 per cent. It is likely that LEED-based measures of job tenure that define job spells as a contiguous set of months with non-zero earnings will bias downwards mean job tenure and raise the share of jobs that have only been going for a few months. There is some evidence that many repeat job spells are in fact continuing relationships between an employer and employee and not the beginning of a new job.

### Complications during pregnancy, delivery and post delivery: A study of Uttar Pradesh based on RCH-DLHS-2, 2002-2004

*Divya Tiwari, Jawaharlal Nehru University, New Delhi, India  
[Session 5B]*

A key Millennium Development Goal is reduction of maternal mortality levels, India accounts for about one-quarter of maternal deaths worldwide with the highest maternal mortality ratio in the most populous (186.7 million) state of Uttar Pradesh. The objectives of the study are to examine the prevalence of pregnancy, delivery, post delivery and maternal complications in Uttar Pradesh and to examine the factors which influence various complications. Factors taken in the present paper are demographic (age, age at marriage and CEB), socio-economic (religion, caste, place of residence, women's and husband's year of schooling and standard of living), health status (pregnancy wastage) and health seeking behaviour (composite index for ANC, place of delivery and conduct of delivery). The Reproductive and Child Health Survey Round II, 2002-04 has been used. The study mainly uses univariate analysis, bivariate analysis (cross tabulation, Chi-square test and correlation) and multivariate logistic regression analysis. Women suffering from any complication during maternal period amount to 54.2 per cent in U.P. There is a significant association between most of the background characteristics and pregnancy, delivery, post-delivery and maternal complications. Health status and health seeking behaviour indicators have stronger association with complications than demographic and socio-economic indicators. The correlations among the independent variables are not high implying that no serious multi-collinearity exists among the explanatory variables. Multivariate logistic regression reveals that the relationship between age, CEB, religion, caste, place of residence, women's and husband's year of schooling, standard of living, pregnancy wastage, composite index for ANC, place of delivery and conduct of delivery and various complications are significant. Health status and health seeking behaviour indicators have stronger relationship with complications than demographic and socio-economic indicators. At the end limitations of the study and data and suggestions based on the findings will be discussed.

### Two-home family situations of children and adults: Observation and consequences for describing family patterns in France and in Australia

*Laurent Toulemon, Institut National d'Études Démographiques, France and Sophie Pennec Institut National d'Études Démographiques, France; Australian Demographic and Social Research Institute, Australian National University and National Centre for Social and Economic Modelling, University of Canberra  
[Session 2D]*

With the increasing diversity of family situations, many people – children as well as adults – can live in more than one dwelling. The aim of this paper is, first, to estimate the proportion of people living in two or more households, and second, to describe the consequences of these two-home situations on basic estimates of family situations based on “routine” surveys or censuses. Results are presented for France and Australia. In France, between 4 and 6 per cent of adults and some 3.5 per cent of children aged under 18 live in two or more dwellings, 2.2 per cent share their time between both parents' homes, and

1.3 per cent live partly with their parents and partly away from home or at boarding school. When these situations are taken into account, the proportion of children not living with both parents falls from a biased estimate of 22.3 per cent to 18.9 per cent. In Australia, the same picture can be drawn but at a much lower level than in France. Multi-residence is linked to specific family situations. Some of these situations are temporary or ambiguous situations: young adults who already left the nest but are still in the parental home, couples with a partner partly living elsewhere, retired persons moving from one place to the next. Others are clear, such as children of separated parents sharing their time between both parents' homes, but may be subject to omissions, as some respondents may be reluctant to refer to a former partner. The successive waves of panel data such as SILC for France and HILDA for Australia allow a better description of the dynamics of these situations. Identifying situations of multi-residence is crucial to accurately describe family situations of adults and children.

## V

### Why do people move? An overview and some key results from New Zealand's Dynamics and Motivations for Migration survey

*Sarah Voon, Statistics New Zealand  
[Session 3A]*

A new survey entitled the Dynamics and Motivations for Migration was conducted as a supplement to the New Zealand Household Labour Force Survey in the March quarter 2007. This survey investigates the reasons for internal migration and provides insights into demographic characteristics of people who have moved or not moved, as well as satisfaction ratings for living conditions. This presentation will provide an overview of the survey including some key results.

## W

### The disappearance of the bronzed Aussies and other healthy Australians?

*Helen Ware, University of New England and David Lucas Australian National University  
[Session 3B]*

Once national icons, today images of bronzed Aussie life savers are as likely to raise thoughts of skin cancer as of robust good health. We are told that one in two Australians will develop skin cancer – at some time during their lives. Reading the constant claims of the ills which one in four, five or six Australians are said to suffer, the average newspaper reader can well be forgiven for performing some basic arithmetic and then questioning whether there are any healthy Australians left. This paper interrogates the arithmetic and finds that, even after allowing for some with multiple burdens and excluding claims which relate to the prevalence of risk factors such as sun exposure, alcohol consumption or smoking rather than to actual diseases, there is still remarkably little if any room left for simple good health. One issue is whether a disability necessarily renders the possessor unhealthy. Another issue, given that the great majority of us eventually die of disease rather than trauma, is the difference between prevalence in the population at a given point of time and life time risk.

Whilst it is understandable that lobby groups and medical specialists will continue to emphasize the prevalence of 'their' disease, we argue that there is a need for more consideration of just who the healthy are. We present a model for discussion.

### Application of life tables for selected causes of death in New South Wales, Australia

*Daminda P Weerasinghe, Macquarie University  
[Session 4D]*

Cause specific life table models are analysed using abridged, multiple decrement and cause elimination life tables with the mortality data for New South Wales (NSW) in 2000-02. Statistics relating to the following broader disease groups are examined: infectious and parasitic diseases; malignant neoplasms; mental disorders; diabetes mellitus; diseases of the cardiovascular system; diseases of the respiratory system; diseases of the digestive system; and accidents, injury and poisoning. Multiple decrement tables are generated by country of birth and by the disease groups listed above. The data are analysed in detail for the following sub-diseases of the cardiovascular system: rheumatic fever and rheumatic heart disease; ischaemic heart disease (IHD); cerebrovascular diseases; and aortic aneurism. The partial elimination of IHD is also studied. It is shown that Pacific born men and women who reach their 30th birthday and eventually die from IHD are expected to live on average about 10.8 and 5.8 years respectively less than average men and women in NSW. If IHD is eliminated as a cause of death, 7.5 years for males and 6.7 years for females would be added to life expectancy at birth.

### Modified parameterised model migration schedules for state and regional population projections

*Tom Wilson, NSW Department of Planning  
[Session 2C]*

Parameterised model migration age schedules have proved highly effective in the preparation of population projections. They permit a migration age profile to be represented by a limited number of parameters rather than a large number of age-specific rates, and at the same time graduate the jagged pattern formed by raw migration rates. However, the standard model age schedules as developed by Rogers and Castro and others do not fit some Australian migration age profiles particularly well, notably regional internal migration age profiles with sudden spikes in migration rates at ages 17 and 18. This paper proposes modifications to the standard model age schedules, and illustrates them with examples from New South Wales and the ACT. The paper also describes how to fit the modified model schedules in an Excel spreadsheet using a combination of an approximate linear fitting method developed by Rogers et al. followed by minor manual adjustments.

## Y

### **Indigenous demography: A gender and spatial dimension**

*Mandy Yap, Centre for Aboriginal Economic Policy and Development,  
Australian National University  
[Session 5A]*

In many developing countries, gender disparity in the achievement of education and employment outcomes tend to hinder economic growth and improvements in socioeconomic outcomes of the population. Women and girls are often disadvantaged in these countries, thereby limiting their capacity to participate in education and employment. The persistence of lower earnings and fewer representations in managerial positions for women generally in Australia is well-documented but research into gender disparities in socioeconomic outcomes for Indigenous males and females is still grossly lacking. Australia's Gender-related Development Index (GDI) is ranked third across 177 countries, suggesting that at the national level, women are achieving similar outcomes to men in the four components – life expectancy, adult literacy, school enrolments and income earnings. However, this does not necessarily hold true for all regions or for all population sub-groups. There has been extensive research into the gap between Indigenous and non-Indigenous outcomes but very little of this has adopted a gender perspective. Using 2006 Census data, this paper explores the development of, a similar gender related index, as a tool to enable a relative ranking of the performance of Indigenous males and females and non-Indigenous males and females at the regional level. The index will provide some insights into whether the national picture is representative of the Indigenous population and whether there are spatial variations at the Indigenous region level.

### **Any causal relationship between parental income support receipt and child mortality? An analysis of a cohort of Australian children with the Second Transgenerational Data Set**

*Peng Yu, Australian Government Department of Families, Housing,  
Community Services and Indigenous Affairs  
[Session 4D]*

Previous research by Yu (2008) finds an association between family and child characteristics (low family income, socio-economical disadvantage, teenage motherhood, large family size and children living with non biological parents) and increased risk of child mortality. Long-term income support receipt (IS), as an indicator of economic disadvantage, was also found to be associated with increased child mortality, however it is not clear whether this association is through a third factor (e.g., income support receipt serves as a marker for economic disadvantage), or whether it is IS receipt *per se* which contributes to child mortality. The purpose of the paper is to undertake a more detailed analysis of the relationship between IS incidence and child mortality by examining the direction of association between these two factors. It is hypothesised that child mortality may affect parental IS incidence in the short run by loss of eligibility or changes in behaviour following the death of a child; or in the long run by increasing parental IS incidence through affecting, for instance, parental health and relationship stability. Conversely, parental IS receipt may decrease the risk of child mortality by allowing parents more time to care, or increase child mortality as a measure of some aspect of

parental disadvantage. This research aims to improve our understanding of this relationship using a unique administrative dataset, the Second Transgenerational Data Set of FaHCSIA, containing nearly a whole birth cohort of Australian children. Duration models with time varying variables are applied for the analysis. No evidence is found that parental IS receipt is a significant risk factor for child mortality. However, child mortality is associated with lower incidence of parental IS receipt immediately the death of a child and with higher incidence of parental IS in the long run. The results provide weak evidence of overall negative impacts of child mortality on family financial situation.

### Demographics and consumption patterns in urban China

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[Session 4C]*

The main objective of this paper is to study the consumption pattern of households in urban China and three of its most important regions, which include the cities of Shanghai, Beijing and Tianjin. Another objective of this paper is to consider the importance of geographic region as a basis for differentiating urban Chinese consumers through an examination of data from these three cities. The study is based on the data collected in the Urban Household Income and Expenditure Survey conducted in 2005 by the State Statistical Bureau of China among a sample of 54 496 households. Differences were found in terms of the age distribution, education level, household composition, birth and death rates, income, expenditure patterns and consumer durable ownership rates in the three cities. Beijing and Shanghai, the two most affluent cities in China, exhibited the highest consumer durable ownership rates and the highest cost of living. Another interesting finding was the high savings rate – urban Chinese households saved about a quarter of their disposable income. While previous research has frequently segmented China in terms of a rural *versus* urban dichotomy or by geographic region, this study suggests that the urban Chinese do not constitute a homogeneous market. Further, it is suggested that both geographic region and income, which varies between rural and urban settings, are sound bases for segmenting this important market.

## Z

*A comparative study of daily mortality variations and their link with changes in weather conditions and air quality*

*Zhongwei Zhao and Shanghai mortality project research team  
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[Session 8A]*

Since 2004, a number of inter-related mortality studies have been undertaken by researchers from the Australian National University, University of Cambridge, Fudan University, Shanghai Municipal Centre for Disease Control and Prevention and Hong Kong University of Science and Technology. Up to present, the studies have already collected a large amount of detailed mortality data. This study, on the basis of our preliminary analysis of detailed data on mortality, weather conditions and air quality, will examine the seasonal and daily mortality changes and

their relationship with changes in weather conditions and air quality such as air temperature and level of air pollution. It provides further insights into mortality patterns, and their variations in the studied populations. The study, through linking mortality changes and these environmental variables, also has considerable implications in the study of the health consequences of climatic and environmental changes.

**Transitions experienced in the first five years: How children born between 2001-2006 compare with earlier Australian cohorts**

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Australian Government Department of Families, Housing, Community  
Services and Indigenous Affairs  
[Session 8C]*

In recent decades, children have been experiencing an increasing number of changes in family forms caused by resident parents commencing or ending marriages and de facto relationships. However, despite the vigorous debate arising from the impact of multiple family transitions on child outcomes, very little data has been presented on the frequency of these transitions for Australian children. One notable exception has been de Vaus and Gray (2004). The study by de Vaus and Gray uses 2001 Household, Income and Labour Dynamics in Australia (HILDA) survey data to estimate family transitions over the first fifteen years of life experienced by children born since 1946. We add to the evidence base established by de Vaus and Gray by analysing the experiences of a more recent cohort of children using the latest release of HILDA survey data. The majority of social surveys only record marriage or relationship status at a point in time with no additional records on relationship history. The HILDA survey provides an important exception as it asks respondents for their marital history and, to a limited extent, their de facto relationship history. We are able to explore the most recent trends by constraining analysis to within the first five years of childhood. We also compare the family transitions experienced by children born in the most recent cohort against the transitions encountered by earlier cohorts, and examine changes in the types of family forms into which children are born.