

ANNUAL REPORT 2015



Australian Government
Australian Research Council

ARC CENTRE OF
EXCELLENCE IN
**POPULATION
AGEING
RESEARCH**



Introducing the Centre	1
Director's Report and Highlights	2
Chairman's Message	6
Activity Plan for 2016	7
SECTION 1: GOVERNANCE AND STRUCTURE	10
Governance	11
Structure	16
Centre Personnel	17
SECTION 2: RESEARCH AND RESEARCH TRAINING	19
Area of Focus 1: Causes and Consequences of Demographic Change	20
Area of Focus 2: Cognition and Decision Making	34
Area of Focus 3: Resources in Retirement	50
Area of Focus 4: Ageing Well and Productively	69
Area of Focus 5: Health and Aged Care	76
Area of Focus 6: Ageing in Asia and its Impact on Australia	85
Research Training and Mentoring	95
SECTION 3: EXTERNAL LINKAGES	110
Industry and Government Links	111
National and International Links	115
SECTION 4: PERFORMANCE INDICATORS AND FINANCIAL STATEMENT	123
Key Performance Indicators	124
Research Outputs	126
Media and Communications	139
End User Links	142
Centre Finance	144
Estimates of Future Expenditure	146
New Grants, Awards, Prizes and Recognition	147
CONTACT DETAILS	148



Australian Government

Department of Social Services



Australian Government

The Treasury



Department
of Industry



pwc



Stockland

medibank
For Better Health



AMP

BAIN & COMPANY



INTRODUCING THE CENTRE

ABOUT CEPAR

THE ARC CENTRE OF EXCELLENCE IN POPULATION AGEING RESEARCH (CEPAR) IS A COLLABORATION BETWEEN ACADEMIA, GOVERNMENT AND INDUSTRY.

The Centre is based at the University of New South Wales with nodes at the Australian National University and the University of Sydney. It aims to establish Australia as a world leader in the field of population ageing research through a unique combination of high level, cross-disciplinary expertise drawn from Economics, Psychology, Sociology, Epidemiology, Actuarial Science, and Demography.

CEPAR is actively engaged with a range of influential government and industry partners to cooperatively deliver outcomes to meet the challenges of population ageing. It is building a new generation of researchers to global standard with an appreciation of the multidisciplinary nature of population ageing.

VISION

Our vision is to be internationally recognised as a leading research authority on population ageing.

MISSION

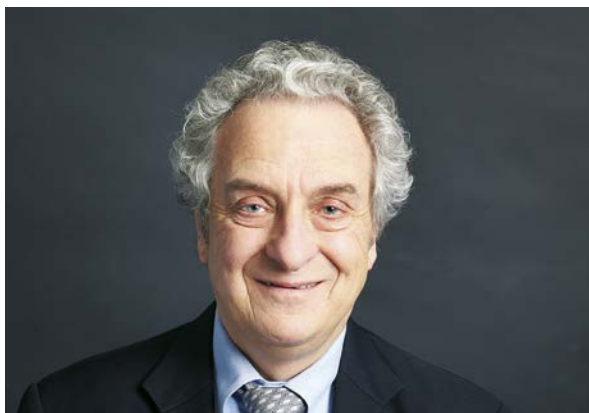
CEPAR's mission is to produce research of the highest quality to transform thinking about population ageing, inform product and service development and provision and public policy, and improve people's wellbeing throughout their lives.

OBJECTIVES

THE OBJECTIVES OF THE CENTRE ARE TO:

- Produce original research, to be published in leading international academic journals, in each of the nominated fields, integrating them to advance knowledge globally
- Establish outstanding research capability to generate the evidence base and policy analysis required to anticipate and respond constructively to the demographic transition
- Undertake evidence-based research to allow development of products and markets relevant to an ageing population
- Create new cohorts of researchers with an enriched appreciation of cross-disciplinary contributions by training PhD students and early career researchers (ECRs), thus building high quality research capacity for the generation for which population change is especially crucial
- Become a global intellectual hub for population ageing research, by combining in-house expertise with leading researchers globally in initiatives to target research issues and generate new outcome-oriented approaches to studying the population ageing process and its implications
- Engage with external stakeholders as an integral part of the Centre's research activity, to develop research goals, to share in project execution, and to translate research output into forms accessible by the professional community, both national and global.

DIRECTOR'S REPORT & HIGHLIGHTS



PROFESSOR JOHN PIGGETT

2015 saw CEPAR deepen its international reach, especially into Asia, and improve its reputation domestically as the national authority on the topics in its portfolio.

THE STRATEGIC PLAN WAS TAKEN FORWARD WITH NEWLY DEFINED AREAS OF RESEARCH FOCUS (ARFS), WHICH HAD BEEN APPROVED BY THE AUSTRALIAN RESEARCH COUNCIL (ARC) IN DECEMBER 2014.

2015 was also the year in which CEPAR applied for new funding to take its research through to 2023. CEPAR II, our in-house term for the proposed new Centre, will involve 12 Chief Investigators, five of whom are new, and an exciting new research agenda. If successful, the new centre will be unique globally in carrying forward a comprehensive multidisciplinary research agenda on population ageing into the 2020s. I give further details about this later.

THE EVOLVING RESEARCH PROGRAM

You may recall that in late 2014 CEPAR received ARC approval for the re-conceptualisation of its research program, which was designed to anticipate changes in priorities for policy and business. Over the last 12 months, evidence has begun to accumulate that this re-shaping has captured emerging concerns. For example, an important research project focused on the consequences of demographic change involves the creation of National Transfer Accounts (NTA). These are being developed as part of a multinational research effort covering some 47 countries. CEPAR has spearheaded the Australian NTA. In 2015, the Department of Social Services commissioned major extensions to the CEPAR work, reflecting their strong interest in the impacts of population ageing on policy.

Similarly, the Commonwealth Treasury has just established a new Retirement Income Policy Division, echoing CEPAR's focus on 'Resources in Retirement'.

CEPAR is also a founding member of an association which we hope will become an international association of pension researchers. The other organisations involved are the Pension Research Council, based in the Wharton School, University of Pennsylvania, and NetSPAR, in the Netherlands. The inaugural conference will be held in June in Paris, hosted by the OECD. If this is successful it will provide a conduit for pension researchers all over the world to share their work and their ideas, and will be a major step forward in retirement income research globally.

2015 also saw CI Kaarin Anstey win a \$2.5 million grant to host a research centre on cognitive health, reflecting the growing importance of cognitive ageing. This follows the earlier decision of the government to provide major funding for dementia research. In addition, she was awarded an NHMRC Principal Research Fellowship commencing in 2016 for research to reduce cognitive decline and optimise ageing well.

CEPAR's claim to impact in Asia has been steadily growing. In late 2014 the Association of Pacific Rim

Universities (APRU) approved the establishment at UNSW of a Population Ageing Research Hub. One of the Hub's first initiatives was to organise a symposium on Ageing in the Asia-Pacific which took place in September. It attracted some 80 delegates from almost 20 countries. The next annual conference is scheduled to take place in Beijing in 2016.

IN OTHER 2015 DEVELOPMENTS LINKING CEPAR TO ASIA, THE AUSTRALIA-CHINA POPULATION AGEING RESEARCH HUB (FOR WHICH CEPAR WAS SUCCESSFUL IN SECURING ALMOST \$2 MILLION IN UNSW STRATEGIC FUNDING) WAS ESTABLISHED.

I am delighted to report that CEPAR Partner Investigator Hanming Fang has been appointed as its Scientific Director. Hanming is Professor of Economics at the University of Pennsylvania and Director of the National Bureau of Economic Research's Chinese Economy Working

Group and brings very strong connections to many of China's top universities. In 2015 he made the first of three northern summer visits to CEPAR. He hosted a research workshop on the Chinese economy during his visit, and this will be repeated in 2016. Dr Katja Hanewald was also appointed as a Senior Research Fellow under the initiative; she takes up her appointment in January 2016.

Early in 2015, CEPAR joined ANU and Dhujakij Pundit University in Bangkok to organise a conference focused on labour supply, migration and population ageing. CI Peter McDonald and I both presented keynotes, along with David Card from UCLA. Selected papers from the conference were published in a special issue of the *Population Review*. Finally, three CEPAR CIs participated in the 2015 IAAG Conference in Chiang Mai, giving the Centre a strong presence at an important profile-raising event. And I presented a keynote address at the International Conference on Interdisciplinary Research on Long-term Care and Healthy Ageing at Zhejiang University in May, and have been invited to participate

in further conferences in Asia in 2016.

THE EVOLUTION OF THE RESEARCH PROGRAM HAS BEEN ACCOMPANIED BY THE DEVELOPMENT OF AN ENGAGEMENT MODEL WHICH PROMOTES RESEARCH FOCUS AND LINKAGES WITH PRESTIGIOUS GROUPS.

This involves partnering with other institutions to organise a conference or workshop on a specific topic. A program is developed to answer its core questions, resulting in research outputs being combined into a single location, to build scale and profile. One example of this is the research into economic aspects of population ageing, which is a long term project, culminating in a Handbook to be published by Elsevier. This involved a workshop in 2013 in collaboration with Harvard University. A second is the initiative on tax and pensions, an underexplored field which has now been well-covered thanks to our cooperative venture with CESifo, a leading European Economics research

institute. This volume is to be considered for publication by MIT Press in 2016, and we are hopeful of a positive outcome. Collecting research outputs in this way provides a concrete benchmark for research, rather than papers scattered through the journal literature, and may well be a way forward to make more tangible and significant the research outputs, with concomitant impact.

SHARING EARLY CAREER RESEARCHER (ECR) EXPERIENCE

An ECR retreat, which took place one weekend in August, proved to be extremely popular with our emerging researchers. Almost all our ECRs attended, along with several CIs and other senior CEPAR researchers. ECRs presented summaries of their research, and as well, we organised small multidisciplinary groups tasked with formulating a research grant application involving all their members. Kaarin Anstey presented a great talk on career development. A post-event survey indicated that more retreats of this kind would be welcomed, and we are planning a similar event in 2016.

DEVELOPMENTS IN ENGAGEMENT ACTIVITIES

The importance of population ageing was given new emphasis in Australia with the release of the Intergenerational Report (IGR) in March. Linked to this,

CEPAR ORGANISED A MAJOR ENGAGEMENT INITIATIVE, 'INTERPRETING THE IGR', IN COOPERATION WITH THE COMMONWEALTH TREASURY.

Held in Canberra in April, the event attracted more than 250 participants. It was opened by the then Treasurer, The Hon Joe Hockey MP, who focused mainly on mature labour force participation in his address. Other speakers included CEPAR CIs, senior government officials, including Treasury Secretary John Fraser, and prominent members of the business community, including Craig Dunn, ex AMP CEO and a member of the Murray Inquiry into the Australian Financial System.

A final new thrust for 2015 was moving towards state governments as potential stakeholders in CEPAR research.

Much coalface policy addressing the ageing demographic is executed at the State level. We met with senior officials of both the NSW and Queensland governments, and 2016 meetings are planned to take this further. In particular, a Roundtable involving a number of states, with Commonwealth involvement, is envisaged for later in the year. This is expected to provide important input into the development of our research initiatives over the next two years.

BIDDING FOR A NEW CENTRE

Our energies in 2015 were partly directed to constructing a manifesto for a proposed extended and expanded centre, to be funded from 2017 for a further 7 years. This was

DIRECTOR'S REPORT & HIGHLIGHTS

then incorporated into the ARC application process which began in June with a call for expressions of interest. CEPAR was shortlisted – one of 20 bids to reach this stage. Full proposals were submitted just before Christmas. We now await further adjudication processes, involving a possible interview, before final decisions are announced mid-year.

Before the EOI call, we began our preparations with a series of Leaders' Forum meetings which spanned the first half of the year. (This echoed our approach to the bid for the current centre.) Among those participating were the CEOs of AMP and Medibank, the Chairs of NAB and AustralianSuper, and the heads of several Australian government departments, including Treasury, Social Services, Health, Prime Minister and Cabinet, and Foreign Affairs and Trade. These interactions informed the development of a research program for the new proposal, and this in turn suggested the composition of the senior research team. We are delighted with the team of senior investigators we have assembled for the new bid; we believe that no multi-disciplinary group of

this calibre, with expertise in various aspects of population ageing, has ever been brought together before, anywhere in the world.

While the thrust of the research program was inspired by the Leaders' Forum meetings, the program itself was shaped by existing knowledge and available expertise. We ended up with four streams, capturing and developing the most important of these. Five of the 12 Chief Investigators are new. They bring expertise in international macroeconomics, health economics, organisational behaviour, labour market behaviour, and superannuation which will allow new frontiers to be explored and a wider range of stakeholder imperatives to be addressed. The Universities of Melbourne and Western Australia have been added to our university partners in the new bid.

We believe the increasing importance of the issue of population ageing, and CEPAR's growing reputation as a leader in the field, helped us in enlisting an impressive array of public and private sector groups as stakeholders. Several government departments, and major private sector

groups covering health, insurance, and related portfolios, have indicated their support for the Centre in the pre-Christmas proposal. We are currently negotiating with other groups as the adjudication process continues.

AWARDS AND HONOURS

Individual members of CEPAR have, of course, accumulated their share of awards, honours and achievements. In addition to Kaarin Anstey's multi-million dollar grant and fellowship, reported earlier in this message, Peter McDonald, Australia's pre-eminent demographer, has been awarded the 2015 Irene B. Taeuber Award. This biennial award is jointly sponsored by the Population Association of America and the Office of Population Research, Princeton University. It is the major honour awarded by the Population Association of America, recognising either an unusually original or important contribution to the scientific study of population or an accumulated record of exceptionally sound and innovative research. Peter McDonald is only the fourth non-American to win the award since its inception in 1977.

As well, we are delighted to report that Marc de Cure, Chair of the Advisory Board and an indefatigable supporter of CEPAR, was appointed as an Adjunct Professor in the UNSW Business School in October. Marc has had, and continues to have, a core role in CEPAR's strategic development, and especially the development of stakeholder engagement.

2016 will be another challenging year. Engagement with Asia will receive emphasis, as the China initiative ramps up. And the adjudication of the new COE round will remain a focus for some time into the year. But our administrative team, led by Anne Gordon, is first rate and we have an increasingly impressive group of researchers. I am confident our sense of shared purpose will combine with a robust strategy and efficient logistics to ensure strong progress in 2016.



John Piggott

HIGHLIGHTS

63 PROJECTS

146 JOURNAL PUBLICATIONS

INTERPRETING THE INTERGENERATIONAL REPORT
2015 PUBLIC FORUM ORGANISED BY CEPAR
ATTRACTED OVER 250 PARTICIPANTS

ASSOCIATION OF PACIFIC RIM UNIVERSITIES (APRU)
POPULATION AGEING RESEARCH HUB HOSTED BY
CEPAR OFFICIALLY LAUNCHED IN SEPTEMBER

APRU AGEING IN THE ASIA-PACIFIC RESEARCH
SYMPOSIUM SUCCESSFULLY HOSTED BY CEPAR
AND UNSW INTERNATIONAL OFFICE

CEPAR'S AUSTRALIA-CHINA POPULATION
AGEING RESEARCH HUB ESTABLISHED

23RD ANNUAL COLLOQUIUM OF SUPERANNUATION
RESEARCHERS HOSTED BY CEPAR AND UNSW
SCHOOL OF RISK AND ACTUARIAL STUDIES

THE 4TH ANU-DPU CONFERENCE WITH CEPAR: THE LABOUR
MARKET, MIGRATION AND AGEING HELD IN THAILAND

2ND CEPAR-CESIFO WORKSHOP ON PENSION TAXATION,
POPULATION AGEING, AND GLOBALISATION HELD IN MUNICH

CEPAR WORKSHOP ON THE CHINESE ECONOMY
HELD IN SYDNEY

CEPAR RETIREMENT INCOME MODELLING WORKSHOP
HELD IN SYDNEY

BID FOR ARC FUNDING FOR CEPAR II SHORTLISTED

CHIEF INVESTIGATOR KAARIN ANSTEY AWARDED
\$2.5 MILLION IN THE LATEST NHMRC FUNDING ROUND
TO HOST A NEW CENTRE OF RESEARCH EXCELLENCE
ON COGNITIVE HEALTH

CHIEF INVESTIGATOR KAARIN ANSTEY AWARDED 2016
NHMRC PRINCIPAL RESEARCH FELLOWSHIP FOR RESEARCH
TO REDUCE COGNITIVE DECLINE AND OPTIMISE WELLBEING

DEPUTY DIRECTOR PETER MCDONALD AWARDED THE
2015 IRENE B TAEUBER AWARD BY THE POPULATION
ASSOCIATION OF AMERICA AND THE OFFICE OF POPULATION
RESEARCH, PRINCETON, FOR HIS INTERNATIONAL
CONTRIBUTION TO THE STUDY OF POPULATION

CHIEF INVESTIGATOR HAL KENDIG RECOGNISED IN THE
CHAIRMAN'S AWARD FOR OUTSTANDING CONTRIBUTION
TO THE DEVELOPMENT OF GERONTOLOGY AND SERVICE
TO THE ASIA/OCEANIA REGION OF THE INTERNATIONAL
ASSOCIATION OF GERONTOLOGY AND GERIATRICS

CEPAR PARTNER INVESTIGATOR OLIVIA S. MITCHELL
NAMED AS ONE OF THE TOP TEN WOMEN IN ECONOMICS
BY THE WORLD ECONOMIC FORUM

CEPAR ADVISORY BOARD CHAIR MARC DE CURE APPOINTED
AN ADJUNCT PROFESSOR IN THE UNSW BUSINESS SCHOOL

CHAIRMAN'S MESSAGE



MARC DE CURE

The desire to have impact in alleviating economic and social dislocation caused by population ageing is the driving force behind CEPAR. This means researching population ageing issues of greatest significance and for which there is demand for and an absence of knowledge - knowledge gaps. Our strategy is designed to ensure that we understand the issues and the knowledge gaps and focus the research activities on these areas. Equally important is our focus on sharing our research and knowledge with those able to use it to develop policy, product solutions or social awareness to address the most pressing issues. We recognise that whilst high calibre research and

research outputs are extremely important, these must be combined with stakeholder engagement activities to achieve impact.

During 2015 CEPAR continued its focus on both understanding and researching knowledge gaps and knowledge dissemination. The last major review we did of our research activity was in 2014 which resulted in a refocusing of the research activities in 2014 and 2015. In addition, as part of our preparation for our bid for the continuation of CEPAR beyond the current term John Piggott, the Centre Director, and I undertook a significant engagement program with senior leaders in government, business and community groups. As John noted in his report, we met with departmental secretaries and their senior executives in a number of the significant government departments and engaged with chairs and CEOs of some of Australia's largest companies and leaders of groups such as Council on the Ageing and the Australian Human Rights Commission, to explore the critical issues and related knowledge gaps. This process not only informed our bid to the Australian Research

Council for further funding but provided a good cross check against our five year strategic plan. I would like to thank all those who assisted us in this review for their extremely valuable and considered input.

The Advisory Board continued its good work, meeting in both Sydney and Canberra with a high level of engagement and support from all members. This support was particularly important this year as we undertook a major review and funding rebid. I'd like to thank all members for their contribution and make special mention of Leesa Croke from Commonwealth Treasury who was very helpful in assisting CEPAR with its Intergenerational Report Forum in Canberra at which Treasury Secretary John Fraser and the then Treasurer the Hon Joe Hockey MP both spoke. Leesa is standing down from the Advisory Board due to a change in her role at Treasury and will be replaced on the Advisory Board by Jenny Wilkinson, who was recently appointed to head up the new Treasury Retirement Income Division. We also welcome to the board Dr David Gruen, Deputy Secretary, Economic, Department of Prime Minister

and Cabinet and Mark Cormack, Deputy Secretary, Strategic Policy and Innovation, Department of Health. David, Mark and Jenny are important and welcome new members and we look forward to them joining the Board in 2016.

The Advisory Board focus in 2016 will be on strengthening relationships and engagement mechanisms to share our knowledge with end users, including greater focus on engagement at the research stream level, on whole of government engagement, and building relationships with the new partners in our CEPAR II bid and to complement our Asia focus.

2016 brings new opportunities and challenges. Over the last couple of years, CEPAR has expanded its reach into Asia. It now hosts the Population Ageing Research Hub of the Association of Pacific Rim Universities (APRU), with university support, and also won almost \$2 million from UNSW strategic funding to establish an Australia-China Population Ageing Research Hub. These initiatives are in their early stages, but engagement will be an important part of their development and impact. Neither of these initiatives

would have been possible without strong university backing. I am delighted that CEPAR is enjoying such strong UNSW support and engagement to further its mission.

CEPAR is uniquely positioned to not only share our research but also our broader awareness gained through our global networks and to facilitate a sharing of knowledge between relevant and interested parties in government, business and the community. We welcome and encourage those interested in this major 21st century issue of demographic change and population ageing to reach out to us and engage.

A stylized, handwritten signature in dark ink, appearing to read 'M de Cure'.

Marc de Cure

ACTIVITY PLAN FOR 2016

In 2016, CEPAR will continue to harness the capabilities of its high quality and well-focused research team to consolidate its position as a leading authority in multidisciplinary population ageing research. We will focus on our priority areas of research; produce high quality research on issues that matter and disseminate output to those that can use it to drive impact; contribute to key agendas, policy initiatives, and product development; expand global collaborative networks; and build research capacity and capability to ensure CEPAR's sustainability.

ENGAGEMENT AND OUTREACH

A number of events are planned in 2016 to stimulate discussion on the issue; engage with industry, government and the global research community; and raise the profile of the Centre. These include:

- A roundtable on the development of a national longitudinal survey on the ageing demographic in February;
- The Summer Workshop on the Economics of Health and Ageing in February;
- A symposium on Age Friendly Cities at the International Federation on Ageing 13th Global Conference in Brisbane in June;
- A workshop on the Chinese Economy mid-year;
- The annual Colloquium of Superannuation Researchers in July;
- A symposium on Cognitive Health planned for late October;
- A roundtable with state government department representatives in the second half of the year;

- A workshop on the results of the analysis of the National Transfer Accounts in the second half of 2016;
- A joint policy dialogue hosted in conjunction with the Crawford School of Public Policy;
- A workshop on the International Older Workers and Caregiving Project in December;
- CEPAR's monthly seminar series; and
- Public talks featuring CEPAR personnel and distinguished visitors.

CEPAR will also work closely with our stakeholders to identify particular areas of interest in 2016 and discuss suitable modes of engagement (e.g., roundtable discussion, boardroom briefing) as well as organise the participation of CEPAR personnel in these activities.

A Research Brief on Retirement Incomes is planned for release in 2016. The brief will integrate research findings from multiple disciplines to present a synthesis of evidence pertaining to this important topic.

NATIONAL AND INTERNATIONAL NETWORKS

In the wake of the successful establishment of the Association of Pacific Rim Universities (APRU) Population Ageing Hub, CEPAR will continue to provide leadership in shaping and building this initiative and implementing the Hub's three year plan. This includes supporting the development of collaborative research projects involving Hub members and identifying effective mechanisms for engagement with government and industry.

A priority for the newly established Australia-China Population Ageing Research Hub will be the development of a formal structure for the Hub which will be oriented towards developing linkages with stakeholders in both China and Australia.

Distinguished visitors expected in 2016 include Professors Gary Hansen (UCLA), Robert Holzmann (Malaya), Carol Jagger (Newcastle-on-Tyne), Olivia S. Mitchell (Wharton), Chris Phillipson (Manchester) and Merrill Silverstein (Syracuse); and A/Professor Ross Anel (South Florida), Senior Research Fellow Eric Hernæs (Frisch Centre) and Dr Rong Peng (Guangdong).

MENTORING

The suite of mentoring programs developed by CEPAR to engage early career researchers (ECRs) and Higher Degree Research and undergraduate students will continue to be offered in 2016. Two ECR workshops, one to be held at the ANU node and the other at the UNSW node will be offered in November/December 2016; a two day career development retreat will be held for ECRs in the second half of 2016; a regular research seminar series targeted at ECRs and students will be convened; the ANU CEPAR node will host the 2016 Emerging Researchers in Ageing Conference; and summer scholarships will be offered to undergraduate students.

ACTIVITY PLAN FOR 2016

RESEARCH

Research in 2016 will be advanced on a number of topics consistent with the six key Areas of Research Focus identified in the CEPAR Strategic Plan. Specific activities include:

1 Causes and Consequences of Demographic Change

- Analyse Australian National Transfer accounts in a national and international context
- Analyse the RADAR database of aged persons in Australia, including living arrangements, labour force participation and need for care
- Estimate cohort based mortality models using multiple factor methods for financial and risk management applications
- Further develop and implement alternative demographic models of the dynamics of population age structure changes for use in a dynamic economic model for simulating economic impacts
- Implement multiple state health models with systematic longevity risk to generate future population health state and age distribution scenarios
- Further develop the research project on the interaction between taxation and pensions
- Complete research on the implications of population ageing for educational choice, endogenous technical change and international trade

2 Cognition and Decision Making

- Program and estimate a choice model that incorporates confusion (and other types of suboptimal behaviour) by some consumers. Apply to choices of insurance and investment products
- Continue to work on life-cycle models that distinguish between housing and financial assets, and examine how tax treatment of housing affects life-cycle saving behaviour
- Undertake sequence analysis of 12-year longitudinal dietary data to determine if stability and change in habitual diet impact on cognitive health
- Evaluate the impact of cognitive health in adulthood on daily activities and non-employment-based indicators of productivity
- Investigate the determinants for successful hearing aid use and associated benefits for cognitive health and general wellbeing
- Complete data collection and analyses for interventions to improve older adults' driving skills

3 Resources in Retirement

- Assess pre-retirement investment strategies taking into account housing as an illiquid asset and its consumption benefits
- Assess post-retirement investment strategies including housing, reverse mortgages and long-term care insurance in a life-cycle model that captures the unique characteristics of housing
- Continue to work on models of how retirement system rules (in the US and Australia) affect labour supply and saving over the life-cycle
- Continue to analyse the economic impacts of alternative retirement support paradigms using the CEPAR-developed Australian stochastic overlapping generations (OLG) model
- Assess policy settings for retirement incomes
- Investigate the impacts of alternative policy settings for graduated retirement sequencing
- Construct a life-cycle model of a family household, estimate its parameters using econometric methods on data drawn from the Household, Income and Labour Dynamics in Australia (HILDA) panel of households, and use it to analyse retirement decisions under alternative pension policies
- Estimate a life-cycle model of individuals using maximum likelihood and Bayesian methods and use it to address labour supply and asset accumulation over the life-cycle

4 Ageing Well and Productively

- Analyse attitudes to ageing including intergenerational relations, cohort equity, age discrimination, 'social treatment' in health care and work settings, and change over time
- Investigate the implementation of new knowledge into aged care and public health practice and policies, including the Lifestyle Functional approach to Exercise (LiFE) to reduce falls in older people; and the Integrated SOLutions for sustainable falls preVEntion (iSOLVE) project on risk of falls in primary care
- Analyse the impacts of health and health transitions on productive ageing (including workforce participation), social participation, and wellbeing
- Analyse socioeconomic determinants of health and wellbeing across the life course, including comparisons with England

5 Health and Aged Care

Use data linkage to describe health and aged care systems trajectories of older men in the Concord Health and Ageing in Men Project (CHAMP)

Analyse data to identify relationships between sociodemographic characteristics (including income, education and ethnic background) and use of health and aged care systems among CHAMP men

Continue to work on a life-cycle model that incorporates investment in both health and human capital

Continue to analyse longitudinal pathways through health service use and aged care

6 Ageing in Asia and its impact on Australia

Conduct macro- and micro-level research on ageing in Asian countries especially Indonesia

Analyse life course determinants of health, productivity and wellbeing in China

Investigate the impact of intergenerational support relationships on health and wellbeing among older Chinese

Undertake two comparative studies of ageing, health, and wellbeing: one focused on China and India and the other on the UK and Thailand

Develop a research project focused on long-term care in China

Develop research projects on ageing and health in Myanmar and Mongolia



SECTION

1

GOVERNANCE
& STRUCTURE

GOVERNANCE

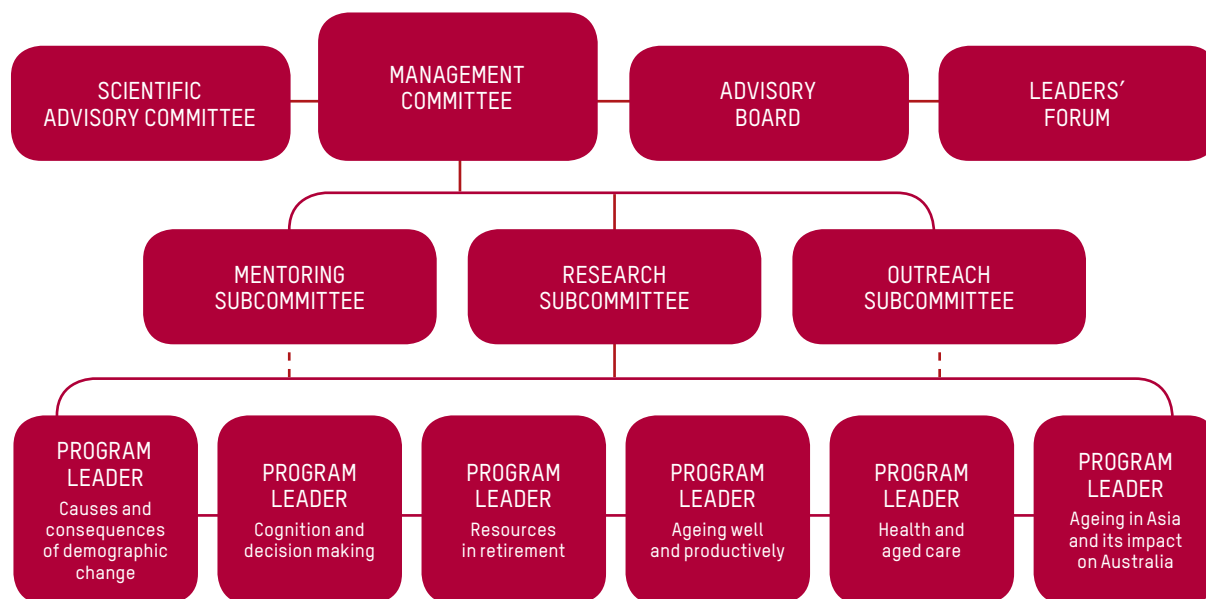
Central to CEPAR's governance are the Centre Director and the Management Committee who have overall responsibility for Centre performance and for ensuring that the Centre is conducted in accordance

with the Funding Agreement between the University of New South Wales and the Australian Research Council. Three subcommittees - focused on research management, mentoring, and outreach - support the Management Committee.

Three external committees support strategic development as well as engagement between researchers, industry and government. The Scientific Advisory Committee, Centre Advisory Board and the Leaders' Forum provide the

Management Committee with external perspectives on the formulation of research programs, their implementation, and the dissemination of research outcomes.

CEPAR ORGANISATIONAL CHART



SCIENTIFIC ADVISORY COMMITTEE

The Scientific Advisory Committee comprises a core group of international leaders in the area of population ageing, drawn from a range of fields reflecting the Centre's multidisciplinary nature.

It provides advice on the strategic direction of the Centre from a global perspective, with emphasis on research programs. Members of the Committee actively build the international profile of the Centre and identify potential international partners and linkage opportunities.

The Scientific Advisory Committee comprises:

Professor David E. Bloom,
Harvard School of Public Health

David E. Bloom is Clarence James Gamble Professor of Economics and Demography in the Department of Global Health and Population,

Harvard School of Public Health and Director of Harvard's NIA-funded Program on the Global Demography of Aging. He is also a Faculty Research Associate at the National Bureau of Economic Research, Research Fellow at IZA in Bonn, an elected Fellow of the American

Academy of Arts and Sciences, a member of the Boards of Directors of PSI and JSI, a member of the Board of Trustees of amfAR, Honorary Professor and Golden Jubilee Distinguished Visiting Professor at the University of Waikato New Zealand, and Dr V K R V Rao Chair

Professor, Institute for Social and Economic Change, Bangalore, India. In addition, Dr Bloom currently serves as Chair of the World Economic Forum's Industry Agenda Council on The Future of the Health Sector. Dr Bloom is an economist and demographer whose work focuses on health, demography, education, and labour. In recent years, he has written extensively on primary, secondary, and tertiary education in developing countries, the value of vaccination, and the links among health status, population dynamics, and economic growth. Dr Bloom has published nearly 400 articles, book chapters, and books.

Professor Gordon Clark, University of Oxford

Gordon L. Clark DSc FBA is Professor and Director of the Smith School of Enterprise and the Environment at the University of Oxford with cross-appointments in the Saïd Business School and the School of Geography and the Environment. He holds a Professorial Fellowship at St Edmund Hall, is the Sir Louis Matheson Distinguished Visiting Professor at Monash University's Faculty of

Business and Economics, and is a Visiting Professor at Stanford University's Global Projects Center. Previous academic appointments have been at Harvard's Kennedy School of Government, the University of Chicago, Carnegie Mellon's Heinz School and Monash University. His current research focuses upon investment decision making in the context of market volatility and long-term obligations. Related research concerns the design and management of investment institutions including insourcing, out-sourcing, and off-shoring, and the pricing and utilisation of financial services relevant to pension funds, endowments, and sovereign wealth funds. He is interested in the behaviour of investors as regards long-term sustainable investment which involves research on institutions' proxy-voting, strategies of corporate engagement, the sensitivity of firms to brand image and reputation, and the regulation of corporate disclosure on issues related to environmental liabilities and social responsibility.

Professor Yasuhiko Saito, Nihon University

Yasuhiko Saito is a Professor at the Advanced Research Institute for the Sciences and Humanities at Nihon University, Tokyo, Japan. His areas of specialisation are demography, ageing and health. His collaborative work extends throughout more than 20 countries. Over the past 15 years, he has conducted a six-wave national longitudinal survey on ageing and health in Japan. He also conducted a national survey on ageing and health in the Philippines and supported surveys in Singapore and India. He is currently participating in a five country comparative study of centenarians, including France, Denmark, Sweden, Switzerland, and Japan.

Professor Merrill Silverstein, Syracuse University

Merril Silverstein, PhD, is the inaugural holder of the Marjorie Cantor Chair in Aging Studies at Syracuse University with appointments in the Department of Sociology at the Maxwell School of Citizenship and Public Affairs, and in the School of Social Work. He received his doctorate in sociology from Columbia University. His research primarily focuses on ageing within the context of family life, including intergenerational relationships over the life course and international perspectives on ageing families. He has more than 150 publications on various topics in social gerontology, including the edited books *Intergenerational Relations across Time and Place*, *Handbook of Theories of Aging*, and *Kin and Cohort in an Aging Society*. He was, until 2012, Principal Investigator of the Longitudinal Study of Generations, a project that tracked multigenerational families over four decades, and has had projects in China, Sweden, the Netherlands, and Israel on topics of ageing and intergenerational relations. He is a Fellow of the

Gerontological Society of America, the Brookdale National Aging Fellowship Program, and the Fulbright International Senior Scholars Program, and between 2010 and 2014 he served as editor-in-chief of the *Journal of Gerontology: Social Sciences*.

ADVISORY BOARD

The chief role of the Advisory Board is to facilitate two-way engagement between stakeholders and researchers. Board members provide independent advice to the Management Committee with regard to strategy and external relations; facilitate the Centre's engagement with relevant stakeholders; identify new opportunities for engagement; and act as advocates and champions of CEPAR.

The Board comprises delegates of organisations providing financial support to CEPAR, along with a broader membership representing research, policy and community groups. Members are appointed by the Director in consultation with the Chair and Management Committee, for a term of three years.

Board members seek to both facilitate and enable the achievement of the Centre's mission and objectives by bringing their expertise and experience to bear. Members play an active role in strengthening links between academe, industry, government and the not-for-profit sector by participating in a range of activities which may include:

- Serving on a task force or working party to examine a specific issue
- Supporting executive development and corporate education programs
- Developing and hosting events such as symposia, fora, and conferences
- Participating in fundraising and sponsorship activities
- Mentoring staff and researchers
- Facilitating access to data, information, or people to facilitate research projects
- Facilitating the transfer of knowledge from research into practical application in business, government, or the not-for-profit sector.

In 2015, the Board met as a group on April 27 and August 7 to discuss CEPAR's research directions and opportunities for engagement. A key focus was the development of the CEPAR II research program and strategic partnerships. Retirement incomes, engagement in Asia, and the need for a longitudinal survey of older people in Australia were also discussed during the Board's meetings.

The August meeting was held in Canberra, to emphasise the importance of our links with government. This enabled Treasury and DSS representatives to participate in person.

In addition to the two formal meetings, the Director and Chair met bilaterally with individual members on a number of occasions to discuss particular issues.

LEADERS' FORUM

The Leaders' Forum provides engagement, leadership and support for CEPAR. It comprises the CEOs, Chairs, and Board members of some of Australia's largest corporations, professional and community organisations, and senior federal departmental Secretaries.

The Forum is a conduit for industry and government to help shape the research agenda on demographic change. Established in 2004 to support the Australian Institute for Population Ageing Research at UNSW, the Forum is a fluid group which provides high level strategic insight and facilitates engagement with end users. In 2015 it played a vital role in the development of the CEPAR II research program by identifying major issues and knowledge gaps.

The calibre and breadth of representation of this group is strong testimony to the significance of population ageing as an issue and to the group's recognition of the need for transformational research.

MARC DE CURE,
CHAIR OF THE LEADERS' FORUM

2015 ADVISORY BOARD MEMBERS

MARC DE CURE	Chair
TIM ADAIR	Director, Productive Ageing Centre, National Seniors Australia
HELEN BARTLETT	Pro Vice-Chancellor, Monash University Malaysia and Convenor, Emerging Researchers in Ageing Initiative
HAZEL BATEMAN	CEPAR Director of Research Engagement
LEESA CROKE	General Manager, Social Policy Division, The Treasury
JONATHAN DEANE	Chief Innovation Officer, AMP
ANNE GORDON	CEPAR Director of Operations
HAL KENDIG	CEPAR Director of Research Engagement
CATHERINE NANCE	Partner, PricewaterhouseCoopers
PIP O’KEEFE	Lead Economist, Human Development, Asia Pacific, The World Bank
JOHN PIGGOTT	CEPAR Director
SERENA WILSON	Deputy Secretary, Department of Social Services
IAN YATES	Chief Executive, Council on the Ageing

2015 LEADERS’ FORUM PARTICIPANTS

MARC DE CURE	Chair
MARTIN BOWLES PSM	Secretary, Department of Health
CRAIG DUNN	Board Member, Westpac
JOHN FRASER	Secretary, The Treasury
KEN HENRY AC	Chair, National Australia Bank and Executive Chair, ANU Institute of Public Policy
JOHN LAKER AO	formerly Australian Prudential Regulatory Authority
CRIAG MELLER	CEO, AMP
MICHAEL ORSZAG	Head, Global Research Services, Towers Watson
JOHN PIGGOTT	Director, CEPAR
FINN PRATT AO PSM	Secretary, Department of Social Services
HEATHER RIDOUT AO	Chair, AustralianSuper
SUSAN RYAN AO	Age and Disability Discrimination Commissioner, Australian Human Rights Commission
GEORGE SAVVIDES	CEO, Medibank Private
MICHAEL THAWLEY AO	Secretary, Department of the Prime Minister and Cabinet
PETER VARGHESE AO	Secretary, Department of Foreign Affairs and Trade



MARC DE CURE
CHAIR, ADVISORY BOARD
AND LEADERS’ FORUM

Marc de Cure has long recognised the social and economic significance of demographic change and the need to undertake and promulgate research to inform government policy, and social and commercial responses. He played a key role in the

establishment of the Leaders’ Forum in 2004 and, as its Chair, was pivotal in securing industry and government support for the Centre of Excellence bid in 2010. Marc is a non-executive company Director and business advisor and previously held senior executive roles in leading financial and professional services groups across Australia and Asia. He was AIA

Group CFO and AMP Group CFO, Executive General Manager Strategy & Development and Executive Director of its main operating subsidiaries. In professional services Marc was a senior Partner with PwC including Chairman of the Australian Financial Services practices, and more recently he was a Principal Advisor with Bain & Company. In 2015 Marc served on the Business Advisory Council and

the Executive Committee of the UNSW Business School and was appointed as an Adjunct Professor at the UNSW Business School. He holds a Bachelor of Commerce (Honours) from UNSW, a Master of Wine Quality from UWS and is a Fellow of the Institute of Chartered Accountants in Australia.

MANAGEMENT COMMITTEE

The role of the Management Committee is to oversee all operational matters, including budget management, approval of specific major programs, selection of postdoctoral fellows and postgraduate students, approval of visitors and organisation of workshops. In strategic planning, the Committee seeks high level advice from the Centre Advisory Board, Scientific Advisory Committee and Leaders' Forum.

In 2015, the Committee comprised

JOHN PIGGOTT	Centre Director (Chair)
PETER McDONALD	Deputy Director and Chief Investigator
KAARIN ANSTEY	Chief Investigator and Australian National University Node Leader
ROBERT CUMMING	Chief Investigator and University of Sydney Node Leader
ALAN WOODLAND	Chief Investigator and University of New South Wales Node Leader
ANNE GORDON	Director of Operations

In 2015, the Committee met on 10 February, 25 August and 27 October. Consultation also took place via email and teleconferencing and a number of informal meetings were held to handle research management decision making tasks.

The Management Committee is supported by three subcommittees:

RESEARCH SUBCOMMITTEE

The research subcommittee is responsible for reviewing the progress of the research programs on a regular basis, identifying opportunities for cross-program collaboration, and recommending remedial action where required. Chaired by the Centre Director, its membership comprises all the Chief Investigators and the Director of Operations.

In 2015, the subcommittee met on 14 May and 13 August.

MENTORING SUBCOMMITTEE

The Mentoring subcommittee oversees the Honours, Higher Degree Research and Early Career Researcher (ECR) programs and events, and provides advice on innovation in these arenas. It is focused on developing policies and programs to support students and ECRs affiliated with CEPAR as well as those around the country working on ageing issues.

The subcommittee is chaired by CEPAR Deputy Director, Peter McDonald, and in 2015 consisted of the Centre Director, the Director of Operations, plus Associate Investigator Kate O'Loughlin, ERA representative Matthew Carroll, Associate Investigator Loretti I. Dobrescu and PhD student Natasha Ginnivan. The subcommittee met on 15 April, 24 June and 14 October.

OUTREACH SUBCOMMITTEE

The Outreach subcommittee oversees events, the distinguished visitors program, and monitors the production of research briefs and other initiatives designed to communicate research findings to the wider community.

Three meetings, chaired by Chief Investigator Michael Sherris, were held on 18 March, 25 June and 7 October. Membership comprised the Centre Director, the Director of Operations, the two Directors of Research Engagement, CEPAR's Communications and Marketing Manager, Stakeholder Relationships Manager, plus ECR Rafal Chomik.

STRUCTURE

CEPAR is based at the University of New South Wales (UNSW) with nodes at the University of Sydney and the Australian National University (ANU). It is strongly supported by a number of key government, industry and international university partners.

NODES

The UNSW node, led by Scientia Professor Alan Woodland, is hosted by the UNSW Business School.

The ANU node consists of teams based in the Centre for Research on Ageing, Health and Wellbeing and the Crawford School of Public Policy. Professor Kaarin Anstey currently serves as ANU Node Leader.

The University of Sydney node consists of teams in the School of Public Health and the Ageing, Work and Health Research Unit. Professor Robert Cumming leads the University of Sydney node.

All eight Chief Investigators and many of the Centre’s Associate Investigators are based at one of the three nodes. Within Australia, Associate Investigators are also based at Curtin University, Deakin University,

Flinders University, Monash University, the University of Newcastle and the University of Technology, Sydney.

PROGRAMS

The research program is organised into six different, but intimately connected, areas of research focus:

Causes and Consequences of Demographic Change

Cognition and Decision Making

Resources in Retirement

Ageing Well and Productively

Health and Aged Care

Ageing in Asia and its Impact on Australia

INTERNATIONAL UNIVERSITY PARTNERS

Our partner investigators are drawn from five world-class research organisations:

The University of Manchester

The University of Newcastle, United Kingdom

The Institute for Fiscal Studies

The Wharton School

The University of Pennsylvania

Through our internationally based Associate Investigators and joint research initiatives we are connected to the following key research institutions:

CESifo

Chinese Academy of Social Sciences

Harvard University

Indian Statistical Institute

Indonesian National Population and Family Planning Board

Michigan Retirement Research Center

Network for Studies on Pensions, Aging and Retirement (NetSPAR)

Pennsylvania State University

The Ragnar Frisch Centre for Economic Research, Oslo

Research Institute for Policies on Pension and Aging (RIPPA)

St Gallen University

Southwestern University of Finance and Economics

Statistics Indonesia

Tsinghua University

United Nations Population Fund

University of Kansas

University of Malaya

University of Naples Federico II

University of Oxford

University of Parma

University of South Florida

University of Trieste

Zhejiang University

INDUSTRY AND GOVERNMENT PARTNERS

CEPAR is actively engaged with a range of influential government and industry partners to cooperatively deliver outcomes to meet the challenges and opportunities of population ageing. These include:

The Treasury

Department of Health

Department of Social Services

NSW Trade and Investment

AMP

Bain & Company

Medibank

NAB

PricewaterhouseCoopers

Stockland

CENTRE PERSONNEL

CHIEF INVESTIGATORS

Scientia Professor John Piggott (Centre Director)

School of Economics
UNSW AUSTRALIA

Professor Peter McDonald (Deputy Director)

Crawford School of Public Policy
AUSTRALIAN NATIONAL UNIVERSITY

Professor Kaarin J. Anstey

Centre for Research on Ageing,
Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Professor Robert Cumming

School of Public Health and
Centre for Education and
Research on Ageing
UNIVERSITY OF SYDNEY

Professor Michael Keane

School of Economics
UNSW AUSTRALIA, AND

Nuffield College

UNIVERSITY OF OXFORD

Professor Hal Kendig

Centre for Research on Ageing,
Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Professor Michael Sherris

School of Risk and
Actuarial Studies
UNSW AUSTRALIA

**Scientia Professor
Alan Woodland**

School of Economics
UNSW AUSTRALIA

PARTNER INVESTIGATORS

Professor Richard Disney
INSTITUTE FOR FISCAL STUDIES

Professor Hanming Fang

Department of Economics
UNIVERSITY OF PENNSYLVANIA

Professor Carol Jagger

Institute of Health and Society
UNIVERSITY OF NEWCASTLE, UK

Professor Olivia S. Mitchell

Wharton School
UNIVERSITY OF PENNSYLVANIA

Professor James Nazroo

School of Social Sciences
UNIVERSITY OF MANCHESTER

HONORARY PROFESSOR

Professor Robert Holzmann

Social Security Research Center
UNIVERSITY OF MALAYA

ASSOCIATE INVESTIGATORS¹

Dr Daniel Alai

School of Mathematics, Statistics
and Actuarial Sciences
UNIVERSITY OF KENT

Dr Ross Andel

College of Behavioural and
Community Sciences,
School of Aging Studies
UNIVERSITY OF SOUTH FLORIDA

Professor Garry Barrett

School of Economics
UNIVERSITY OF SYDNEY

Professor Helen Bartlett

Emerging Researchers in Ageing
(ERA) Initiative
MONASH UNIVERSITY

Professor Hazel Bateman

School of Risk and
Actuarial Studies
UNSW AUSTRALIA

Craig Blackburn

CHALLENGER
(From 21 March 2015)

A/Professor Heather Booth

School of Demography
AUSTRALIAN NATIONAL UNIVERSITY

Dr Joanna Brooks

Centre for Research on Ageing,
Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY
(Until 15 June 2015)

Professor Colette Browning

School of Primary Health Care
MONASH UNIVERSITY

Professor Monika Bütler

Department of Economics
UNIVERSITY OF ST GALLEN

**A/Professor Peter
Butterworth**

Centre for Research on Ageing,
Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Professor Julie Byles

Research Centre for Gender,
Health and Ageing
UNIVERSITY OF NEWCASTLE

Professor Ester Cerin

School of Exercise and Nutrition
Sciences, Faculty of Health
DEAKIN UNIVERSITY

Dr Nicolas Cherbuin

Centre for Research on Ageing,
Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Dr Dimitris Christelis

Centre for Studies in Economics
and Finance
UNIVERSITY OF NAPLES FEDERICO II

Professor Lindy Clemson

Ageing, Work and Health Research
Unit, Faculty of Health Sciences
UNIVERSITY OF SYDNEY

Dr Loretta I. Dobrescu

School of Economics
UNSW AUSTRALIA

Professor Denzil Fiebig

School of Economics
UNSW AUSTRALIA

Dr Joelle HY Fong

Faculty of Finance
SIM UNIVERSITY

Professor Bob Gregory

College of Business
and Economics
AUSTRALIAN NATIONAL UNIVERSITY

Dr Katja Hanewald

GERMAN FEDERAL MINISTRY
OF FINANCE

Senior Research Fellow

Erik Hernæs

The Ragnar Frisch Centre for
Economic Research
UNIVERSITY OF OSLO

Professor Tamara Jacka

College of Asia and the Pacific
AUSTRALIAN NATIONAL UNIVERSITY

Dr Kim Kiely

Centre for Research on Ageing,
Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Dr Cagri Kumru

Research School of Economics
AUSTRALIAN NATIONAL UNIVERSITY

Dr Vanessa Loh

School of Psychology
UNIVERSITY OF SYDNEY

A/Professor

Elisabetta Magnani

School of Economics
UNSW AUSTRALIA

Dr Simen Markussen

The Ragnar Frisch Centre for
Economic Research
UNIVERSITY OF OSLO

Dr Shiko Maruyama

UTS Business School
UNIVERSITY OF TECHNOLOGY,
SYDNEY

Dr Ramona Meyricke

SWISS RE LIFE AND HEALTH
AUSTRALIA

Professor Annamaria Olivieri

Department of Economics
UNIVERSITY OF PARMA

A/Professor Kate O'Loughlin

Ageing, Work and Health Research
Unit, Faculty of Health Sciences
UNIVERSITY OF SYDNEY

A/Professor Rachel Ong

Centre for Research in
Applied Economics
CURTIN UNIVERSITY

Professor Ermanno Pitacco

Faculty of Economics
UNIVERSITY OF TRIESTE

Professor Pradeep Ray

School of Information Systems,
Technology and Management
UNSW AUSTRALIA

Dr Renuka Sane

INDIAN STATISTICAL INSTITUTE

¹ Not all Associate Investigators were actively involved in the research program in 2015.

Dr Kerry Sargent-Cox
College of Medicine,
Biology and Environment
AUSTRALIAN NATIONAL UNIVERSITY

Professor Elizabeth Savage
Centre for the Study of Choice
UNIVERSITY OF TECHNOLOGY,
SYDNEY

Professor Martin Sliwinski
Center for Healthy Aging
PENNSYLVANIA STATE UNIVERSITY

Professor Noriyuki Takayama
Research Institute for Policies on
Pension and Ageing
HITOTSUBASHI UNIVERSITY

Dr Chung Tran
Research School of Economics
AUSTRALIAN NATIONAL UNIVERSITY

Dr Iwu Utomo
School of Demography
AUSTRALIAN NATIONAL UNIVERSITY

Professor Peter Whiteford
Crawford School of Public Policy
AUSTRALIAN NATIONAL UNIVERSITY

Mr Edward Whitehouse
PENSION ECONOMIST

Dr Tim Windsor
School of Psychology
FLINDERS UNIVERSITY

**Dr Vasoontara
Yiengprugsawan**
Centre for Research on Ageing,
Health and Wellbeing
AUSTRALIAN NATIONAL UNIVERSITY

Professor Zhongwei Zhao
School of Demography
AUSTRALIAN NATIONAL UNIVERSITY

Dr Rong Zhu
National Institute of
Labour Studies
FLINDERS UNIVERSITY

**SENIOR RESEARCH
FELLOWS**

Rafal Chomik
UNSW AUSTRALIA

Dr Fedor Iskhakov
UNSW AUSTRALIA

Dr Ralph Stevens
UNSW AUSTRALIA

Dr Chris Strickland
UNSW AUSTRALIA
(Until 23 March 2015)

RESEARCH FELLOWS

Dr Craig Blackburn
UNSW AUSTRALIA
(Until 20 March 2015)

Dr Richard Burns
AUSTRALIAN NATIONAL UNIVERSITY

Dr Elena Capatina
UNSW AUSTRALIA

Dr Yang Chang
UNSW AUSTRALIA
(Until 27 March 2015)

Dr Xiaodong Fan
UNSW AUSTRALIA

Dr Cathy Gong
AUSTRALIAN NATIONAL UNIVERSITY

Dr Jennifer Alonso Garcia
UNSW AUSTRALIA
(From 1 July 2015)

Dr Vasant Hirani
UNIVERSITY OF SYDNEY

Dr Diane Hosking
AUSTRALIAN NATIONAL UNIVERSITY

Dr Meimanat Hosseini Chavoshi
AUSTRALIAN NATIONAL UNIVERSITY

Dr George Kudrna
UNSW AUSTRALIA

Dr Xiangling Liu
UNSW AUSTRALIA

Dr Lu Bei
UNSW AUSTRALIA

Dr Adam Wenqiang Shao
UNSW AUSTRALIA

Dr Yang Shen
UNSW AUSTRALIA
(Until 14 August 2015)

Dr Andres Villegas
UNSW AUSTRALIA
(From 14 September 2015)

Dr Yan Yu
AUSTRALIAN NATIONAL UNIVERSITY

**CEPAR – DECRA
RESEARCH FELLOW**

Dr Olena Stavrunova
UNIVERSITY OF TECHNOLOGY,
SYDNEY

RESEARCH ASSISTANTS

Mahfuz Ashraf
Research Assistant
DHAKA UNIVERSITY

Lisa Cannon
Research Assistant
AUSTRALIAN NATIONAL UNIVERSITY

Emily Conway
Research Assistant
AUSTRALIAN NATIONAL UNIVERSITY

Wenzheng Jiang
Research Assistant
UNSW AUSTRALIA

Andrew Kingston
Research Assistant
UNIVERSITY OF NEWCASTLE, UK

Isabella Marker
Research Assistant
FLINDERS UNIVERSITY

Erika Martino
Research Assistant
DEAKIN UNIVERSITY

Arm Nakornthab
Research Assistant
AUSTRALIAN NATIONAL UNIVERSITY

Emily Wilford
Research Assistant
AUSTRALIAN NATIONAL
UNIVERSITY NODE

ADMINISTRATIVE STAFF

Anne Gordon
Director of Operations
UNSW AUSTRALIA NODE

Belinda Batkin
Administrative Support Officer
AUSTRALIAN NATIONAL
UNIVERSITY NODE

Amy Brushwood
Administrative Officer
UNSW AUSTRALIA NODE

Dee Bryant
Stakeholder Relationships
Manager
UNSW AUSTRALIA NODE
(From April 2015)

Elsabè Edwards
Business Manager
AUSTRALIAN NATIONAL
UNIVERSITY NODE
(Until 20 August 2015)

Marion Eluga
Executive Assistant to Professor
Kaarin J. Anstey
THE AUSTRALIAN NATIONAL
UNIVERSITY NODE

Jayne Groves
Program Administrator
UNIVERSITY OF SYDNEY NODE
(Until 12 March 2015)

Heather Kelly
Research Group Administrator
UNIVERSITY OF SYDNEY NODE

Pamela Simpkins
Senior Finance Officer
THE AUSTRALIAN NATIONAL
UNIVERSITY NODE
(From 2 November 2015)

Martina Stierner
Finance Officer
UNSW AUSTRALIA NODE

Annabella McHugh
Administrative Assistant
UNSW AUSTRALIA NODE

Grainne Murphy
Communications and
Marketing Manager
UNSW AUSTRALIA NODE

Alexi Phelps
Acting Administrative Assistant
UNSW AUSTRALIA NODE
(Until 13 March 2015)

SECTION

2

RESEARCH & RESEARCH TRAINING

CHIEF INVESTIGATOR MICHAEL KEANE WITH RESEARCH FELLOWS
ELENA CAPATINA AND FEDOR ISKHAKOV

AREA OF RESEARCH FOCUS

1

CAUSES AND CONSEQUENCES OF DEMOGRAPHIC CHANGE

Population ageing has national, regional and global economic, social and policy implications. Understanding the causes of fertility behaviour and longevity change, and improving the accuracy and texture of our projections and forecasts, is therefore critical for long-term planning and innovation by both government and business. Demographic change impacts families and individuals through changes in the economic and social environment within which they work.

These adjustments are mediated through markets, impacting wage rates, resource allocation, productivity and growth; through international and regional migration; through innovation and regulatory change in financial product markets; and through changing patterns of demand for social services and aged care, and social interactions. Government is impacted through increased expenditures required for age pensions, public health provision and the development of economic and social policy settings.

TO VIEW PUBLICATIONS
AND WORKING PAPERS RELATING
TO THIS RESEARCH VISIT CEPAR.EDU.AU

RESEARCH PROJECTS

NATIONAL TRANSFER ACCOUNTS FOR AUSTRALIA	21
STUDIES IN POPULATION DYNAMICS: FERTILITY, FAMILY AND LABOUR FORCE	22
MORTALITY TRANSITION IN AUSTRALIA	23
MORTALITY CHANGE IN THE UNITED STATES VS. AUSTRALIA, FRANCE AND JAPAN: 1950 TO 2010	24
ANALYSING THE EFFECTS OF POPULATION AGEING IN A DEMOGRAPHIC OVERLAPPING GENERATIONS MODEL	25
POPULATION AGEING, INNOVATION AND GROWTH	26
FISCAL SUSTAINABILITY AND PENSION REFORMS IN THE PRESENCE OF DEMOGRAPHIC UNCERTAINTY: THE CASE OF AUSTRALIA	27
ESTIMATION OF LIFE-CYCLE MODELS OF AUSTRALIAN HOUSEHOLDS WITH RETIREMENT POLICY	28
HOUSING IN AN AGEING SOCIETY: A SIMULATION STUDY	29
AGEING IN AUSTRALIA: CHALLENGES AND OPPORTUNITIES	30
POPULATION AGEING AND AUSTRALIA'S FUTURE	32
HANDBOOK IN THE ECONOMICS OF POPULATION AGEING	33

This area of research focus (ARF) has embraced three distinct research initiatives through 2015. The first analyses trends in demographic aggregates – fertility, mortality, and labour force. Within this pattern there is also the long- term project to build a set of national transfer accounts for Australia, an ongoing process. The second group of studies examines how, at the level of the whole economy, these major aggregates might respond to changes in policy and incentives. Central to these research projects are models which capture behavioural change and feed them back into the model outcomes. Finally, there is a group of long-term studies, only now coming to maturity, which gather research papers into a critical mass to deliver a benchmark on some specific research question.

2015 projects included:

- **DEMOGRAPHIC ANALYSIS**
This group of projects is primarily the work of the CEPAR Demography Group at ANU's Crawford School. Among the specific studies completed in 2015 are a project focused on the surprisingly high contribution of migrant workers to Australia's employment growth. This was initially presented at the ANU DPU CEPAR conference on The Labour Market, Migration and Ageing in Bangkok in March, with a revised version appearing in *Population Review* later in the year. A second study compared Australian and (non-Quebec) Canadian fertility through time. It found that while fertility rates were very similar through the 70s, since then Canadian fertility has fallen far further than Australian fertility. This finding provides the potential to analyse the causes of fertility change, since in many respects the Australian and Canadian economies are similar.
- **ECONOMIC ANALYSIS OF MATURE LABOUR FORCE**
This family of projects, led by Chief Investigator (CI) Woodland, makes use of overlapping generations (OLG) models of the Australian economy to investigate how changes in incentives and policy settings impact economic aggregates and sub-aggregates, such as labour force participation. While model development is a long process, a mature model can provide answers to a wide range of questions. For example, how do consumers respond when prices change in response to demographic transition? How fiscally sustainable is Australia's pension policy? These and other questions are addressed in a series of papers written throughout 2015. Some of the research outputs from this modelling work are also reported in ARF 4: Resources in Retirement, where we report on a series of analyses of means testing.
- **CRITICAL MASS STUDIES**
Three major research efforts are grouped here. The first comprises papers prepared for the ASSA Symposium on Population Ageing held in late 2014 and now gathered in a volume to be published in 2016 by ANU Press. These papers address various aspects of population ageing and how it might impact Australia's future. The second brings together a compendium of reviews of various aspects of ageing in Australia. And finally, a landmark Handbook in the Economics of Population Ageing is nearing completion, with contributions by a range of global experts, to crystallise the field for the first time. Manuscript delivery is scheduled for late 2016.

RESEARCHER

PETER McDONALD

External Collaborators

JAMES RICE
(ANU)

JEROMEY TEMPLE
(DEMOGRAPHIC INSIGHT P/L)

Similar to other OECD countries, the Australian population is projected to age significantly to 2050 and beyond. In this context, the role of mature age Australians as producers of goods and services and consumers of public resources in particular, has become a key issue in academic and policy discussions. Over the past 30 years, Australia's labour supply has grown considerably and its economy has been geared to rapid increases in labour supply. The key drivers of

this growth, the full entry of the baby boom generation into the labour force (today's mature age workers) and a large increase in female labour force participation rates, will lose their force as drivers of future labour supply growth. Even with very high levels of migration by historical standards, in the next 30 years, the rate of growth of the labour supply is projected to decline in Australia. This constraint comes at a time when both labour demand and the speed of population ageing is likely to increase significantly (McDonald and Temple 2013). The long-run of increases in real wages in Australia has slowed in recent years and this trend is also likely to continue in future years.

With these demographic and economic changes already upon us, an understanding of the production and consumption behaviour of all Australians, but mature age Australians in particular, is indispensable as is knowledge of the dimensions and directions of intergenerational transfers, both public and private.

The Australian National Transfer Accounts (Rice, Temple and McDonald 2014) enhance our understanding of the economic life-cycle and intergenerational transfers. The CEPAR group based at the Crawford School of Public Policy at the Australian National University produced National Transfer Accounts (NTA) for Australia for the years, 2003-04 and 2009-10, in this project in 2014.

The Australian NTA is part of the International NTA Programme that now involves 47 countries. In 2015, the Australian accounts were evaluated by the international programme and were deemed to be of excellent quality. Also in 2015, the accounts were used by the Treasury in two major Australian Government papers: the 2015 Intergenerational Report and the 2015 Tax Discussion Paper. Through a contract with the Department of Social Services, the Australian NTAs have been expanded in 2015 to include NTAs back to 1984, to provide results by single years of age for ages 80-84 years, and to overlay the income and expenditure information of the standard NTA with wealth data.

The role of mature age Australians as producers of goods and services and consumers of public resources in particular, has become a key issue in academic and policy discussions.



PROFESSOR PETER McDONALD
BCom UNSW, PhD ANU, FASSA, AM
DEPUTY DIRECTOR

Peter McDonald is Professor of Demography in the Crawford School of Public Policy at the Australian National University. He was President of the International Union for the Scientific Study of Population for the years, 2010-2013. In

2015, he received the Irene B. Taueber Award from the Population Association of America which recognises unusually original or important contribution to the scientific study of population. He is frequently consulted on the issue of population futures (causes, consequences and policies) by governments around the world, especially in Australia,

Europe and East Asia. In 2008, he was appointed as a Member of the Order of Australia.

He is an inaugural ANU Public Policy Fellow and in 2014 was a member of the Independent Review into Integrity in the Subclass 457 Programme. He has worked previously at the Australian Institute of Family Studies, the World Fertility Survey and the University of Indonesia.

RESEARCHERS

PETER McDONALD
MEIMANAT HOSSEINI-CHAVOSHI

External Collaborators

JEROMEY TEMPLE
(DEMOGRAPHIC INSIGHT P/L)
ALAIN BELANGER
(INSTITUT NATIONAL DE LA
RECHERCHE SCIENTIFIQUE)

The CEPAR group located in the Crawford School of Public Policy at ANU continually monitors demographic trends in Australia and Asia that are relevant to population ageing. A study of the very large contribution that immigration makes to employment growth in Australia and of the immigration system in Australia was published in 2015 in the journal, *Population Review*. The study examined the increase in employment in Australia

between June 2009 and June 2014. It found that employment increased by 795,000 in this period which sub-divided into 603,000 due to new immigrants, 329,000 additional people employed at ages 55 years and over, and a fall in employment of 137,000 among persons present in Australia in 2009 who were aged less than 55 years. The latter fall was mainly at young ages and was due to extension of time in education.

Also published in 2015 was a study of the evolution of population and family policy in Australia over the past 100 years. A politically important study of the trend in the fertility rate in Iran was published in 2015 in the journal, *Demographic Research*. The study shows that fertility in Iran had

levelled off in the 2000s around the replacement level, counter to government fears that fertility had fallen to a very low level. A broad overview of the demography of ageing in Asia was published in the *East Asia Forum Quarterly*.

A comparative study by McDonald and Belanger of long-term trends in fertility in Canada and Australia was near completion at the end of 2015. The study will be published in the journal, *Canadian Studies in Population*, in 2016. It shows that, up to the 1970s, fertility in Canada and Australia was very similar once the Province of Quebec was excluded from the Canadian data. However, since the 1970s, fertility in Canada has fallen much more than in Australia.

Further testing and construction of a regional database based on the 2011 Census results for Australia was undertaken in 2015. The Regional Database for Ageing Research (RADAR) is a user-friendly interactive tool to view projections and cross-sectional estimates of a wide range of demographic and economic indices relevant to population and ageing research at various levels of geography. It will assist users to understand the characteristics of their population, including future populations, and to compare areas or regions within Australia. RADAR has four modules. The Population Futures module enables users to view tables and graph projections of the underlying population at the national, state and capital

city/balance of state levels. The Labour Force, Health and Living Arrangements modules enable users to view tables and graphs of selected variables from the ABS 2011 Census of Population and Housing. RADAR will be publicly accessible online in 2016.

In addition, HILDA data is being analysed to explore transitions in labour force participation, health conditions, and living arrangements at older ages. Using the 2009 and 2012 Survey of Disability, Ageing and Carers in Australia (SDACs), disability, health condition, need for assistance, care responsibilities and care receipt among older Australians have been investigated.



DR MEIMANAT HOSSEINI-CHAVOSHI

BS (Public Health) Isfahan
University of Medical Sciences,
MA (Population Studies)
PhD (Demography) ANU
RESEARCH FELLOW

Meimanat Hosseini-Chavoshi is a CEPAR Research Fellow at the Crawford School of Public Policy at the Australian National University (ANU) mentored by Professor Peter McDonald. Prior to this, she

worked at the ANU's School of Demography (formerly the Australian Demographic and Social Research Institute) where she carried out her postdoctoral research on fertility regulation and abortion in Iran.

Before moving to Australia, she had a longstanding career with the Iran Ministry of Health and Medical Education as Head of the Population and Health Data Unit responsible

for design, implementation and data analysis of several national surveys in the areas of reproductive health, fertility, adolescence and ageing. Over the last 10 years, she has collaborated in different research projects funded by such agencies as the Wellcome Trust, WHO, UNFPA, GDN and GERPA and the Australian Research Council.

Meimanat is currently working on demographic

perspectives of ageing in Australia exploring spatial patterns of older Australians, and factors associated with their living arrangements and health conditions. Meanwhile she continues her initial research interest in fertility dynamics and population policies in Iran, and is collaborating with the Iran 2015 Demographic and Health Survey (DHS) research team.

RESEARCHER

HEATHER BOOTH

External Collaborators

LEONIE TICKLE
(MACQUARIE UNIVERSITY)

JIAYING ZHAO
(ANU)

Australian mortality has undergone radical transformation over the last hundred years. Omran's (1971) epidemiologic transition theory and its extension by Olshansky and Ault (1986) are widely used to describe mortality transformation and to situate it in a common framework comprising several specific 'ages'.

This project examines the Australian mortality experience in the light of Omran's theory. It finds that in the first decades of the twentieth century, life

expectancy in Australia was high relative to other developed countries.

This would place Australia at a more advanced stage in the transition than other countries. However, the timing of patterns of mortality by cause of death are similar to those in other developed countries, suggesting a more contemporaneous transition. The decline of mortality from infectious diseases followed international trends, but the Australian increase in deaths from circulatory diseases was more pronounced – among males in particular.

By 1950, Australia's life expectancy advantage had been lost, mostly as a result of the substantial increases in circulatory disease mortality. The subsequent

decline in circulatory disease mortality was more rapid than in most other developed countries, and life expectancy also rose rapidly.

Decompositional analysis indicates that Australia underwent the transition from Omran's Age of Receding Pandemics to the Age of Degenerative and Man-Made Diseases from around the 1920s, and that this latter Age can be said to have continued until the late 1960s. From about 1970, Australia and most other developed countries underwent further transition, as circulatory disease mortality declined and life expectancy increased, to the Age of Delayed Degenerative Diseases.

As far as cause of death is concerned, the Australian mortality transition has followed the classical or Western model of epidemiologic transition. Within this broad framework, socioeconomic and other differentials point to leaders and laggards in the Epidemiologic Transition.

Publication:

Booth, H., Tickle, L. and Zhao, Z. (forthcoming 2016). Epidemiologic Transition in Australia: The Last Hundred Years. *Canadian Studies in Population. Demographic Trends in Canada and Australia: Special Issue Devoted to Graeme Hugo*.

In the first decades of the twentieth century, life expectancy in Australia was high relative to other developed countries.



ASSOCIATE PROFESSOR HEATHER BOOTH

BSc Econ (Hons) London,
MSc Southampton, PhD London
ASSOCIATE INVESTIGATOR

Heather Booth is Associate Professor of Demography in the School of Demography at the Australian National University. She leads the Research Group on Longevity, Ageing and Mortality.

Her research in demographic modelling and forecasting focuses on methods for mortality forecasting with applications in population futures and population ageing. Additional current work addresses the causes and consequences of population ageing in the Asian region, and historic epidemiologic transition in Australia.

Heather also undertakes research on the relationship between family-based social support through social networks and the wellbeing of older Australians, and on microsimulation modelling of the disability status of the older Australian population. Heather currently supervises eight doctoral students undertaking research on ageing in Australia, Vietnam and the Philippines.

MORTALITY CHANGE IN THE UNITED STATES VS. AUSTRALIA, FRANCE AND JAPAN: 1950 TO 2010

RESEARCHERS

YAN YU
PETER MCDONALD

Mortality improves at a varying pace across populations. The slow mortality improvement of the United States relative to other industrialised countries in recent decades has attracted increasing research and policy attention. Among the four countries of Australia, France, Japan and the US, life expectancy at birth in 1950 was second highest for the US (slightly lower than Australia), and the surplus was as many as 10.1 years among females and 7.8 years among males (relative to Japan). In 2010, life expectancy was lowest for the US, and the deficit

ranged from 3.0 to 5.1 years among females and 1.7 to 3.5 years among males.

Why is the US falling behind in mortality improvement? All these four countries are among the richest in the world. The US, in particular, has the largest spending and spending per capita on health care; its health care spending share of GDP has also been the largest, increasing from 5% in 1960 to over 17% in 2009. On the other hand, the United States has a large uninsured population, as compared with universal health care coverage schemes that were begun at different times in the other three. Across the four countries, there are further similarities and differences in behaviours such as smoking, diet and

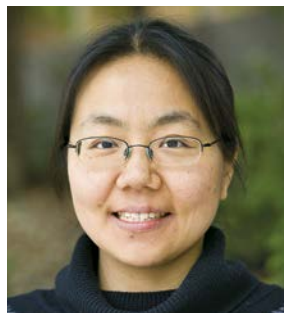
physical activities. The other countries could be following in the steps of the United States, e.g., in the reduction of health care coverage amidst budgetary difficulties, increasing fat consumption and increasing obesity. Ultimately, the combination of health systems and behaviours reflect the social conditions and cultural values of the respective countries, and may evolve over time.

Taking the US mortality disadvantage literature as the point of departure, this paper compares the US against each of the other three countries, analysing changes in female and male age-specific mortality rates in six 10-year intervals between 1950 and 2010 and identifying the cause-of-

death group that makes the largest contribution to the country differences in all-cause mortality change. In prior research, comparisons were made between the US and the averages of other industrialised countries, but averages can hide heterogeneities; analyses of individual countries differ in the range of countries, age and time intervals, or may not take a comparative perspective. The focus of this analysis is on how mortality change differs between countries, either to the US's advantage or disadvantage. On the basis of the analysis, we consider the impact of economic conditions, health behaviours, health policies and psychological wellbeing on mortality.

A presentation was made at the 2015 APRU Symposium in September and is being revised for submission. In 2015 analysis and a first draft of a paper was completed. The main findings are that the temporal and cause-of-death dimensions of the US disadvantage or advantage in mortality decline show similarities and differences across the three sets of comparisons, and there is no single story that fits all.

The slow mortality improvement of the United States relative to other industrialised countries in recent decades has attracted increasing research and policy attention.



DR YAN YU

BS Shanghai JiaoTong,
MA Sociology Columbia,
MS Statistics PhD Sociology
Wisconsin-Madison

RESEARCH FELLOW

Yan Yu is a Research Fellow at the Crawford School of Public Policy at the Australian National University. She joined CEPAR in 2011. Her doctoral

thesis brought a demographer's perspective to bear on the public health concern of obesity. She received the 2009 Dorothy S. Thomas Award from the Population Association of America for her thesis.

Her research interests include health and mortality, and the demography of ageing in both developed and

developing countries. Her current research projects include age, period and cohort patterns of body mass and mortality, and socioeconomic differences in risk behaviours.

ANALYSING THE EFFECTS OF POPULATION AGEING IN A DEMOGRAPHIC OVERLAPPING GENERATIONS MODEL

RESEARCHERS

GEORGE KUDRNA
CHUNG TRAN
ALAN WOODLAND

Australia, like most other developed countries, has an ageing population, attributed to falling mortality and fertility in the past. Projected mortality improvements in the next few decades will lead to further ageing of Australia's population, which is also expected to increase significantly in size due largely to immigration. Such fundamental demographic changes will have vast economy-wide implications and place increasing demands on government spending. Fiscal reform will inevitably form part of the overall policy response to demographic change, but formulating such policy response requires a solid understanding of the evolution of demographic structure and its interaction with economic activities.

This project develops a framework to study the effects of the dynamic evolution of the age structure and the size for the Australia economy.

More specifically, our model consists of a population model with demographic projections and an economic general equilibrium model. The population projection model is fitted with the input data on fertility, mortality and net immigration rates taken from the Productivity Commission's demographic model. The economic model is a small open-economy model with overlapping generations that embodies a rich fiscal structure with public expenditures on health care, education, aged care, family benefits and age pensions. The benchmark economy is calibrated to match key macroeconomic and fiscal aggregates in Australia.

The first paper entitled 'The Dynamic Fiscal Effects of Demographic Shift: The Case of Australia', which resulted from this project, quantifies the economic and fiscal effects of projected demographic shift and examines the sensitivity of these effects with respect to alternative assumptions for fertility, mortality and net immigration rates.

The paper was presented at several international conferences and seminars, and published in *Economic Modelling* in 2015.

The follow-up paper 'Facing Demographic Challenges: Pension Cuts or Tax Hikes' (CEPAR Working Paper 2015/10) investigates the two fiscal policy options to mitigate fiscal pressure arising from the ageing of Australia's population. Using an extended version of our economic model that disaggregates households not only by age but also by income type, the paper quantifies the macroeconomic and distributional welfare effects of (i) cuts to government spending by reducing pension benefits and (ii) increases in tax revenues through adjusting other consumption or income taxes. The results highlight the inter- and intra-generational conflicts of interest and political constraints when implementing such fiscal reforms.

In 2015, this second paper was presented at several international meetings of experts, including the 11th International WEAI Conference in New Zealand, the 2nd CEPAR/CESifo Workshop on Pension Taxation, Population Ageing and Globalisation in Munich and seminars at the University of Wuerzburg in Germany and Osaka University in Japan.

The revised paper is currently under review in *Macroeconomic Dynamics*.

A third paper entitled 'Sustainable Pensions with Means Testing' is currently under way. It studies how and to what extent the automatic stabilising device built in to a means-tested pension system can absorb the fiscal cost caused by demographic shift. Specifically, it characterises combinations of the maximum pension benefit and taper rate that maintain long run fiscal sustainability. It also analyses macroeconomic and welfare outcomes of such a sustainable means-tested pension system. The results are expected to be written up as a CEPAR working paper by mid 2016.

Projected mortality improvements in the next few decades will lead to further ageing of Australia's population, which is also expected to increase significantly in size due largely to immigration.

RESEARCHER

ALAN WOODLAND

External Collaborator

XIAO CHEN
(UNSW)

This research project is primarily concerned with the potential roles of individual ageing and population ageing in determining rates of innovation and technological progress. Since economic growth depends largely on innovation, this project will investigate various aspects of whether and how economic growth is affected by individual ageing or population ageing.

The main theme of the project is to undertake a theoretical analysis of the effect of ageing, including both individual ageing

and population ageing, upon endogenous economic growth. The primary tasks are to construct and analyse theoretical models of the impacts of ageing upon technological progress, including whether technological progress has certain bias in different research sectors, and how population ageing could affect the skill premium, in an international trade model.

During 2015, following the conferral of a PhD on Xiao Chen for his thesis topic, several research papers were drafted. The first models individual ageing in accordance with the psychology literature and analyses its impact on technological progress, in an international context with both technology innovation and adoption.

The second paper amends the classical overlapping-generation model with survival uncertainty and human capital investment via costly education and analyses how population ageing affects educational effort and macroeconomic performance. The third paper studies the impacts of population ageing on educational efforts, technological progress and especially skill premium in an international trade model.

During 2015, research effort was mainly devoted to further research on the third paper and further work remains to be done during 2016 to bring this paper to fruition. Once done, attention will be turned to the other papers. Accordingly, the project will continue well into 2016,

during which the research will be completed and research papers prepared for submission to academic journals for publication.

Overall, the project aims to contribute to knowledge about how population ageing affects technological innovation and, hence, how it impacts productivity, the rate of growth and economic welfare.

The main theme of the project is to undertake a theoretical analysis of the effect of ageing, including both individual ageing and population ageing, upon endogenous economic growth.



SCIENTIA PROFESSOR
ALAN WOODLAND
BA PhD UNE, FASSA, FES
CHIEF INVESTIGATOR
AND UNSW NODE LEADER

Alan Woodland is Scientia Professor of Economics in the School of Economics within the UNSW Business School.

Woodland's primary research interests and publications are in the areas of international trade theory, applied econometrics and population ageing. He has published in leading journals including *Econometrica*, *Review of Economic Studies*, *Journal of Econometrics* and *Journal of International Economics*.

He is the recipient of the Distinguished Economist Award of the Economics Society of Australia. He is an Associate Editor of the *Review of International Economics*, a past editor of the *Economic Record*, and is currently on the editorial boards of *Empirical Economics*, the *International Journal of Economic Theory* and the *Economic Record*.

Woodland has been a Reserve Bank of Australia Fellow in Economic Policy and a Senior Fulbright Fellow. He is also on the scientific boards of the European Trade Study Group (ETSG), Asia Pacific Trade Seminars (APTS), Australasian Trade Workshop (ATW) and the Dynamics, Economic Growth, and International Trade (DEGIT) Research Centre.

FISCAL SUSTAINABILITY AND PENSION REFORMS IN THE PRESENCE OF DEMOGRAPHIC UNCERTAINTY: THE CASE OF AUSTRALIA

RESEARCHERS

GEORGE KUDRNA
CHUNG TRAN
ALAN WOODLAND

Economic analyses of population ageing in Australia have so far relied on deterministic population forecasts. However, both the scale and direction of future demographic developments are highly uncertain, making the variability in fiscal and broader economic outcomes much larger than anticipated from official population forecasts. Although the official forecasts provide low and high scenarios to account for future uncertainty, the volatility in fertility, mortality and immigration rates is often much larger than suggested by this so-called scenario-based approach.

The alternative approach to forecast demographic outcomes is to apply stochastic population models. Such probabilistic models also use historical data, which serve as the basis for the future population projections. But future fertility, mortality and net immigration rates are considered as random variables that reflect the uncertainty of future population developments. The advantage of these forecasts compared to deterministic forecasts is that they provide a probability distribution of future population structures and that the uncertainty is dealt with in a coherent and interpretable manner.

This project incorporates stochastic population forecasts into the computable general

equilibrium model developed for Australia by Kudrna and Woodland (2011). The main objective of this research is to investigate the effects of uncertain demographic transitions on the government's budgetary situation, including the implications for age-related transfers to households and tax revenues from households and firms. Macroeconomic outcomes for the labour, capital and goods markets will be also reported and discussed. Another objective is to evaluate the effects of recently adopted or proposed pension reforms, including the increases in the eligibility age for the Age Pension and the preservation age for accessing superannuation.

In 2015, using the program for error propagation (PEP) developed by Alho et al. (2005), stochastic population forecasts with a probability distribution of population structures over the projection period of 2013–2100 were generated. Specifically, the PEP was fitted with the actual age structure of Australia's population in 2012 and with future fertility, mortality and immigration rates assumed in the Productivity Commission's demographic model. Their future fertility, mortality and immigration rates served as the median of the predictive distribution of these vital rates.

It is anticipated that this research project will be completed at the end of 2016, with the results written up as a CEPAR working paper and submitted for publication in a high-quality peer-reviewed journal in economics.

Both the scale and direction of future demographic developments are highly uncertain, making the variability in fiscal and broader economic outcomes much larger than anticipated from official population forecasts.



DR CHUNG TRAN

BA Hanoi National Economics University, PhD Indiana University
ASSOCIATE INVESTIGATOR

Chung Tran is a Senior Lecturer in the Research School of Economics at the Australian National University. Prior to his appointment at ANU, he worked at the University of New South Wales and Indiana University.

Chung's primary research interests lie in the areas of macroeconomics and public finance. Much of his current work explores the role of social insurance systems and macroeconomic aspects of fiscal policy. Specific research topics include: evaluating trade-offs in designing social security and health insurance systems; analysing the dynamic effects of fiscal policy;

and understanding the consequences of debt financing and fiscal austerity measures. His work appears in leading academic journals including the *European Economic Review*, the *Journal of Development Economics* and the *Journal of Economic Dynamics and Control*.

ESTIMATION OF LIFE-CYCLE MODELS OF AUSTRALIAN HOUSEHOLDS WITH RETIREMENT POLICY

28

RESEARCHERS

CHRIS STRICKLAND
ALAN WOODLAND

One of the important aspects of the study of population ageing concerns the behaviour of individuals and households over their life-cycle (life course) and how this behaviour is affected by market forces and by retirement and tax policy settings of governments. This project aims to use panel data on Australian individuals and households drawn from the Household, Income and Labour Dynamics in Australia (HILDA) Survey project to estimate structural models of life-cycle behaviour and to use the estimates to simulate the impacts of policy upon life-cycle behaviour. The expected outcome from the project is a better understanding of how individuals behave and how changes in policy arising from population ageing affect the household sector.

This project is based upon the premise that it is important to understand how taxation and retirement policy, including Age Pension and superannuation rules, affects household behaviour concerning decisions to save, work and retire using available household data. This research project does this by constructing a structural model of household behaviour over the life-cycle that is firmly based upon economic theory and is estimated using econometric techniques applied to panel data drawn from the HILDA Survey.

During 2015, work continued but at a reduced level due to the departure of one of the researchers (Strickland) from CEPAR early in the year. Nevertheless, with Strickland maintaining a consultative role, work has continued on the writing of

software programs to estimate the model via both maximum likelihood and Bayesian estimation methods. Access to the Katana multiple CPU computing facility was developed to facilitate the computationally demanding estimation methods. During 2016, we hope to reach the stage of detailed estimation of the economic model and analysis of results using the HILDA data. This task will continue into 2017.

Overall, the project aims to contribute to the structural modelling of life-cycle behaviour, to knowledge about the life-cycle decisions of Australian households, and to the evaluation of retirement and tax policy impacts arising from population ageing.

It is important to understand how taxation and retirement policy affects household behaviour concerning decisions to save, work and retire using available household data.

RESEARCHER

GEORGE KUDRNA

External Collaborator

HANS FEHR

(UNIVERSITY OF WUERZBURG)

Home ownership has important economic and social implications. It typically increases over the life-cycle, becoming a particularly important wealth component in retirement and providing an (implicit) insurance device against longevity risk. Therefore, especially ageing societies should benefit from efficient housing markets and high rates of home ownership. Quite surprisingly, despite huge tax incentives in most industrialised countries, ownership rates differ quite substantially, ranging from 44% in Germany to 70% in Australia. To what extent can these differences be explained by differences in the population structure and dynamics? How important are institutional features such as the pension system, tax incentives or the market for mortgage loans? How will population ageing affect the housing market in both countries in the future? What are the distributional

equity and efficiency consequences of various tax and pension reforms in both countries?

In order to answer these questions, this research project will construct a computable general equilibrium (CGE) life-cycle model with uninsurable labour income to account for differences in wealth accumulation and home ownership between Germany and Australia. Both models will be programmed in Fortran and will apply the same preferences and technologies. However, they will differ in their population dynamics, their fiscal systems and their housing markets.

Compared to similar previous quantitative studies on asset allocation, housing demand and home ownership, our approach offers three major innovations. First, we will not only consider the long run steady state equilibrium effects of policy changes (as per existing literature) but will also simulate the whole transition path in order to analyse intergenerational welfare changes.

Second, our approach will incorporate detailed demographic projections in both countries to study their impact on the housing market (compared to existing studies that use a stationary demographic structure). Third, we plan to quantify the aggregate efficiency effects of policy reforms by means of lump-sum compensation payments (compared to existing studies that deal only with distributional welfare consequences).

Although Australia has very high home ownership rates, Australian households have much lower financial assets and retirement incomes in comparison with German households. This research project will provide explanations for these significant differences in asset allocation and home ownership between the two countries, with a view to informing policy innovation in each country.

The two countries also differ substantially in their tax and transfer systems and we hope that our study sheds some light on the advantages and disadvantages of both systems. In addition, the comprehensive simulation model developed as part of this project can be used as the basis for future research into pension and other housing-related issues (e.g., the impact of the highly debated policy reform relating to exemptions of owner-occupied housing from the means testing of the Age Pension in Australia).

This project is expected to produce several publications in leading peer-reviewed international journals.

This research project will construct a computable general equilibrium (CGE) life-cycle model with uninsurable labour income to account for differences in wealth accumulation and home ownership between Germany and Australia.

RESEARCHERS

KATE O'LOUGHLIN
HAL KENDIG
COLETTE BROWNING

This edited book commissioned by Springer was submitted for publication in 2015. It focuses on Australian research and case studies to provide a multidisciplinary overview of the social and individual dimensions of ageing, health and wellbeing and the transitions that occur in later life. Written by Australia's leading researchers and policy analysts, the textbook-style publication provides a strong evidence base for students in health sciences and related disciplines intending to take up practitioner roles in clinical and community health settings or policymaking

roles in health and aged care services. It also informs action by service providers and policymakers, and provides an overview of Australian developments in ageing for international audiences. This book includes a foreword by the Honourable Mark Butler MP, and is expected to be available by the middle of 2016.

Nine of the key book chapters have been written by CEPAR affiliated researchers, including Chief Investigators (CIs), Associate Investigators (AIs) and a Senior Research Fellow:

INTRODUCTION: CHALLENGES AND OPPORTUNITIES

AI O'Loughlin, CI Kendig and AI Browning provide an overview of the book's constructive approach to the ageing opportunities and

challenges ahead for individuals and Australia. This chapter introduces ageing as a developmental, life span, and social process rather than a fixed chronological point/stage; with a focus on ageing in Australia within an international context.

AUSTRALIAN DEVELOPMENTS IN AGEING: ISSUES AND HISTORY

Kendig creates a 'big picture' of Australian developments in ageing over the post WWII era; including information on life span development, social change and historical legacies. This chapter highlights the interconnected dimension of ageing (which are considered separately in other chapters).

ATTITUDES TO AGEING

O'Loughlin and Kendig examine age-based attitudes and stereotypes, and available evidence on how these are manifested in the workplace, public institutions, health care system and policy discourses and strategies. Legislative and policy initiatives and older people's experiences are also drawn on.

POPULATION AGEING: A DEMOGRAPHIC PERSPECTIVE

CI McDonald considers population ageing in the context of national and global trends and the challenges and opportunities these present in Australia. A particular focus is on the spatial patterns and geographic diversity of Australia's ageing population.

HEALTH AND AGEING

AI Byles provides an overview of the health profile of older people in Australia including analysis and discussion of epidemiological evidence of changes in the pattern of health-related issues and the challenges and opportunities these present.

RETIREMENT INCOME

AI Bateman, Senior Research Fellow Chomik and Centre Director Piggott provide an overview of Australia's retirement income system – including pensions, superannuation, and taxation – and examine the available evidence on how this can provide equitable and sustainable standards of living for older people.



ASSOCIATE PROFESSOR
KATE O'LOUGHLIN
BA (Hons) Macq., PhD Syd.
ASSOCIATE INVESTIGATOR

Kate O'Loughlin is an Associate Professor in Health Sociology, and a member of the Ageing, Work and Health Research Unit in the Faculty of Health Sciences at the University of Sydney.

Her research interests and expertise are in population ageing with a particular focus on the baby boom cohort and workforce participation, and social policy relating to ageing in Australia and globally. Her current research projects investigate the interplay between paid work and unpaid care-giving and its relationships with health and wellbeing; behaviours and

exposures across the life course and their effect on health outcomes in later life; and individual and community attitudes to ageing, with a specific focus on age discrimination in the workplace. She leads the CEPAR project on Work and Care-giving, an international collaboration with scholars from Canada, the UK and New Zealand.

She has published widely in the gerontology/ageing and sociology literature and has a record of successful supervision and mentoring of higher degree students; she is primary supervisor of two CEPAR-affiliated students from the Faculty of Health Sciences.

PRIMARY HEALTH CARE AND OLDER PEOPLE

Browning and colleagues provide an overview of the health services available to and utilised by older people in hospital and community settings, and critically review the focus on primary health care initiatives in terms of access, affordability and efficacy.

CARE AND SUPPORT FOR OLDER PEOPLE

Professor Yun-Hee Jeon (University of Sydney), and Kendig consider what we mean by aged care (self-help, family, accommodation); overview the (inter-) governmental development of the policy area from 'industry' and consumer perspectives; and review recent policy reforms including

implementation and practice issues.

DIRECTION AND CHOICES FOR THE FUTURE

Kendig reviews issues of intergenerational equity, fiscal sustainability, and national productivity, as well as self-determination and wellbeing of older people. Constructive international and national approaches towards ageing and prospects for Australian leadership on ageing are also assessed.

It focuses on Australian research and case studies to provide a multidisciplinary overview of the social and individual dimensions of ageing, health and wellbeing and the transitions that occur in later life.



PROFESSOR COLETTE BROWNING

BSc (Hons) MSc Monash,
PhD La Trobe

ASSOCIATE INVESTIGATOR

Colette Browning is Director of the RDNS Research Institute, Honorary Professor at Peking University and Adjunct Professor at Monash University.

She is recognised as a national and international leader in psychology and health. Professor Browning is a Fellow of the Australian Psychological Society. Together with Hal Kendig, she co-directs the Melbourne Longitudinal Studies on Healthy Ageing program. Previously she convened the Healthy Ageing theme of

the ARC/NHMRC Research Network in Ageing Well.

Her research focuses on healthy ageing and improving quality of life for older people, chronic disease self-management and consumer involvement in health care decision making. She leads a large program of research in China on chronic illness management supported by

the China Ministry of Health.

She is the Director of Research at the Shenzhen International Institute for Primary Care Research and a member of the China Family Panel Study Advisory Committee.

RESEARCHERS

HAL KENDIG
PETER McDONALD
JOHN PIGGOTT

A conference volume based on the Academy of Social Sciences in Australia (ASSA) 2014 Annual Symposium, on population ageing, which was sponsored by CEPAR, has been in preparation throughout 2015. The event and the subsequent e-book conference publication, provided an opportunity for CEPAR to lead national thinking on the long-term challenges and opportunities of an ageing Australia.

The e-book will be published by ANU Press, with delivery scheduled for April 2016. The editors, Hal Kendig (who led the initiative), Peter McDonald and John Piggott,

are all CEPAR Chief Investigators (CIs), and all Fellows of the Academy. Following the Editors' introduction, the volume comprises four substantive sections: Perspectives on the future; Australia's population ageing in a regional and global context; Improving health and wellbeing; and Responses by government and families.

The book brings together overviews of research into population ageing in Australia, and contrasts them with global experience. It is multidisciplinary in approach – economists, demographers, sociologists and psychologists all contribute. In this sense, the book will reflect the CEPAR paradigm.

In addition to the editors, who each have separate

contributions in the volume, other CEPAR contributors include Kaarin Anstey, Tim Windsor, Richard Burns, Colette Browning, Hazel Bateman and Rachel Ong. Naohiro Ogawa, Professor of Population Economics at Nihon University, Japan, also contributed, offering a global overview of demographic change.

The contrasting international and domestic perspectives provided by McDonald, Ogawa, and Pakulski provide major lessons for the way in which population ageing is perceived in different contexts. For five countries in Asia with a combined population comprising 25% of the world, the population aged 15–24 will fall by more than 20% (in China's case, by more than 40%) between 2010 and 2050. In Australia,

by contrast, that same age-group will increase by 44%. Even though life expectancy is high and increasing in Australia, McDonald argues that this provides Australia with breathing space for sensible long-term policy solutions.

As to the solutions themselves, the book brings new perspectives to bear on the traditional issues of health, wellbeing and social inclusion; the retirement decision, pensions and superannuation, and housing, expounded by some of Australia's most prominent experts on the topic. The book will make an important contribution to the field with the potential of being frequently cited into the future, as the issue continues to grow in importance.



DR TIM WINDSOR
BA PhD UNE
ASSOCIATE INVESTIGATOR

Tim Windsor is an Associate Investigator with CEPAR and incoming Director of the Flinders Centre for Ageing Studies, located within the School of Psychology at Flinders University.

Tim's research interests are focused on psychosocial aspects of adult development and ageing, including developmental differences in emotional health and self-regulation. Recent projects undertaken while an Australian Research Council Future Fellow have been concerned with changes that take place in social networks

and social behaviour in later life, and how these changes relate to emotions, mental health, and cognition. Tim is involved in a number of collaborative studies of ageing in Australia including the Australian Longitudinal Study of Ageing (ALSA), PATH Through Life, DYNOPTA, and the Transitions in Later Life Study (TRAILLS).

He is currently developing a program of laboratory-based research concerned with processes underlying emotion regulation, and also plans to extend his research into examining the health and wellbeing of older carers.

RESEARCHERS

JOHN PIGGOTT
ALAN WOODLAND

At the initiation of CEPAR in 2011, we secured a contract to produce a *Handbook in the Economics of Population Ageing*, to be published by Elsevier. The Elsevier handbook series is the most prestigious in the Economics discipline: in the past these handbooks have helped define new fields of research. We saw this as an opportunity to help establish the Economics of Population Ageing as a field of research in its own right.

The plan was to execute the volume over the life of CEPAR, with final delivery scheduled for 2016. From a CEPAR perspective it is exciting because it is an opportunity to explore the dimensions of the field of the Economics of Population Ageing. The 2013 contributor workshop at Harvard University was a critical milestone in the development of this initiative. It provided an excellent opportunity for these internationally distinguished scholars to exchange ideas and

together arrive at an enriched understanding of what the Economics of Population Ageing might actually encompass. One outcome was that it helped crystallise our ideas about what the economic aspects of population ageing actually entailed, in a broader context than just this project.

Among the final chapters, the contribution by David Bloom and Dara Lee, on 'The Global Demography of Ageing: Fact, Explanations, Futures' provides an illuminating perspective on the field as a whole. It will serve as a unifying chapter for the volume, following an editors' introduction. It provides an overview of demographic change in the world today, including similarities and differences over time, geographical region, and stage of development. Second, it introduces attempts by economists to explain changes in behaviour, especially reproductive behaviour, that have generated these population dynamics.

They conclude that we still have much to learn about the economic drivers of fertility, arguing that although economic research in recent years has been successful in identifying causal determinants of fertility, the most rigorous research is micro-based and context-specific.

The compilation of the volume has been logistically complex. We were concerned to attract high quality authors, commensurate with the reputation of the Handbook series, and this took time. We have also established a thorough external review process. Most of the chapters have been submitted and sent out for review; some have been reviewed, and some have been revised and returned.

We are on target for delivery of a full manuscript by the end of 2016.

The Elsevier handbook series is the most prestigious in the Economics discipline: in the past these handbooks have helped define new fields of research.

AREA OF RESEARCH FOCUS

2

COGNITION AND DECISION MAKING

Individual ageing involves changes in competency that may affect relationships, communication and decision making, including the ability to drive, determine the best retirement plan or sensibly choose a health insurance policy. Population ageing has brought with it government policies designed to reduce public exposure to support for older cohorts, or the risks they face.

This inevitably means that ageing cohorts now and in the future will confront decisions that are important, and in which they or their families have little experience. Increasingly these choices will have to be made at advanced ages, when cognitive decline may impact decision making and choice. Our research combines the expertise of economists, sociologists and psychologists to investigate these issues.

TO VIEW PUBLICATIONS
AND WORKING PAPERS RELATING
TO THIS RESEARCH VISIT CEPAR.EDU.AU

RESEARCH PROJECTS

ESTIMATION OF A LIFE-CYCLE MODEL WITH HUMAN CAPITAL, LABOUR SUPPLY AND RETIREMENT	35
AN ANALYSIS OF THE AUSTRALIAN SOCIAL SECURITY SYSTEM USING A LIFE-CYCLE MODEL OF LABOUR SUPPLY WITH ASSET ACCUMULATION AND HUMAN CAPITAL	36
JOINT LABOUR SUPPLY AND RETIREMENT OF AUSTRALIAN COUPLES	37
COMPLEX FINANCIAL DECISIONS FOR RETIREMENT SAVING	38
OPTIMAL CONSUMPTION AND HOUSING EQUITY OVER A LIFE-CYCLE	40
INVESTMENT IN HEALTH OVER THE LIFE-CYCLE	41
HEALTH INSURANCE CHOICES OF SENIORS	42
ESTIMATING DISCRETE-CONTINUOUS CHOICE MODELS: THE ENDOGENOUS GRID METHOD WITH TASTE SHOCKS	43
SENSORY AGEING AND INTERACTION WITH COGNITION	44
OLDER DRIVERS, TRANSPORT AND POLICY	45
COGNITIVE TRAINING FOR EVERYDAY LIFE	46
PHYSICAL ACTIVITIES AND COGNITIVE AGEING	47
THE IMPACT OF DIETARY INTAKE ON MAINTENANCE OF COGNITIVE HEALTH	48
THE SOCIAL AND ECONOMIC IMPACT OF COGNITIVE AGEING	49

This Area of Research Focus (ARF) has come of age in 2015. Kaarin Anstey and Michael Keane, both world leaders in the field, now co-lead this body of work. Contributions in this ARF over 2015 fall into two parts. The first estimates how people might optimally choose to behave over their life course. It focuses on major life decisions – education, health investment, housing choices, pension and health insurance plans – to see how all this fits together as more and more realism is introduced into the choice process. One lesson is that in reality, people are not especially good at making major and complex life choices. The second group of studies emphasises competence and its determinants. For example, what is the impact of cognitive training, or physical activity, or diet, on cognitive competence? Competence is necessary to make good life choices, but it is certainly not enough, as analysis of complex choices shows.

Highlights include:

- **INVESTMENT IN HEALTH OVER THE LIFE-CYCLE**
A strong correlation between socioeconomic status and health status is well established, but little is known about the causal pathways underlying it – the direction of causality, and whether and to what extent some other, underlying causal factor influences both. This project focuses on individual decisions around health and human capital. Different types of health shocks are identified using the Medical Expenditure Panel Survey. The model allows the relationship between investment in human capital and health to be analysed, and also how behaviour and choices are affected when technical progress in medicine changes the treatment of a particular disease.
- **SENSORY AGEING AND INTERACTION WITH COGNITION**
This project, undertaken by Kim Kiely and Kaarin Anstey, links sensory impairment (vision and especially hearing loss) with cognition. The research shows that at age 65, both men and women could expect to live with mild hearing loss for half their remaining life. Large scale interventions could compress morbidity considerably. Yet estimates indicate that less than 10% of those with hearing impairment were referred to or underwent audiology testing. Further, those with impairment in two sensory modes (vision and hearing) face increased risk of sleep and appetite problems, depression, inhibition and agitation.
- **THE SOCIAL AND ECONOMIC IMPACT OF COGNITIVE AGEING**
This project aims to quantify the impact of age-related cognitive impairment in the community. The aim is to assess the value of research which may lead to reductions in cognitive compromise. Using data from a range of sources, through 2015 the project mainly focused on volunteering among older cohorts as a marker of productivity. Among the HILDA sample, 3.8% of older participants were cognitively impaired, and this group was much less likely to work in a voluntary capacity. The financial cost of just this component of the burden of cognitive decline runs into the hundreds of millions of dollars.

ESTIMATION OF A LIFE-CYCLE MODEL WITH HUMAN CAPITAL, LABOUR SUPPLY AND RETIREMENT

RESEARCHER

XIAODONG FAN

External Collaborators

ANANTH SESHADRI
CHRISTOPHER TABER
(BOTH WISCONSIN)

The economic and social consequences of population ageing are issues confronting most nations. As populations age, many developed and developing countries are suffering from declining labour supply as well as increasing pressure on social security and pension systems. A substantial research effort has focused on quantitatively estimating the economic consequences of an ageing population and evaluating policy response. In much of this work, the wage process is taken as given and the focus is on retirement itself. For

example, when conducting counterfactual experiments involving delaying the retirement age from age 65 to age 67, all the previous literature takes the same wage-age profile as the baseline model where the retirement age is 65 and re-estimates retirement behaviour in the new environment where the retirement age is 67. However, if one is expecting to delay retirement, she or he will certainly adjust the human capital investment decision which will affect the wage-age profile. Omitting such effect will most likely generate bias in various policy analyses.

In this paper, we develop and estimate a life-cycle model in which individuals make decisions about consumption, human capital investment, and labour

supply. Retirement arises endogenously as part of the labour supply decision. The model allows for both an endogenous wage process through human capital investment and an endogenous retirement decision. We estimate the model using Indirect Inference to match the life-cycle profiles of wages and hours from the Survey of Income and Program Participation (SIPP) data. The model replicates the main features of the data—in particular the large increase in wages and small increase in labour supply at the beginning of the life-cycle as well as the small decrease in wages but large decrease in labour supply at the end of the life-cycle. We also estimate versions of the model in which human capital is

completely exogenous and in which human capital is exogenous conditional on work (learning-by-doing). The endogenous human capital model fits the data the best; the learning-by-doing model is able to fit the overall life-cycle pattern; the exogenous model does not. We find that endogenous labour supply is essential for understanding life-cycle human capital investment and life-cycle human capital investment is essential for understanding life-cycle labour supply.

The project was completed in 2015 and a paper submitted for review by a peer-reviewed economic journal.

The model allows for both an endogenous wage process through human capital investment and an endogenous retirement decision.



DR XIAODONG FAN

BE ME Tsinghua, MS UTexas Austin,
MS PhD Wisconsin-Madison
RESEARCH FELLOW

Xiaodong Fan is a CEPAR Research Fellow located in the UNSW Business School. He joined the Centre in September 2012 after graduating with a PhD in Economics from the University of Wisconsin-Madison.

His research interests include Labour Economics, Applied Microeconomics, and Computational Economics. His current research studies the determinants of labour supply and retirement in the life-cycle context, as well as policy evaluations.

‘Working at CEPAR provides me with a great opportunity to focus on my research in the next few years, as well as opening up windows to ageing related policy analysis.’

AN ANALYSIS OF THE AUSTRALIAN SOCIAL SECURITY SYSTEM USING A LIFE-CYCLE MODEL OF LABOUR SUPPLY WITH ASSET ACCUMULATION AND HUMAN CAPITAL

36

RESEARCHERS

MICHAEL KEANE
FEDOR ISKHAKOV

In this project we develop and estimate a structural dynamic model of labour supply, consumption and savings, and human capital accumulation of Australian male workers. We investigate how inclusion of human capital in the model affects optimal behaviour under different institutional settings. Considering several decisions simultaneously allows us to draw conclusions about how different choices interconnect, in particular how investments in human capital throughout the life-cycle are affected by various aspects of the pension system and

taxation. Including both labour supply during working ages and the retirement decision (intensive and extensive margins) into the model with human capital allows us to explain the discrepancy between labour supply elasticity estimated using micro- and macro-level data.

This project also examines the long-term effects of the changes in the generosity of the social security system on labour supply over the life-cycle and the time of retirement. We quantify the differences between the effects of anticipated and unanticipated policy changes, and study how the effects of the latter vary with the age of the agent when the new policy is put into effect.

This project is in its final stage of completion. By 2015 the main structure of the model was built and an innovative solution method was implemented to cope with the high computational complexity of the model. In 2015 the project focused on the empirical analysis of the Household Income and Labour Dynamics (HILDA) Survey panel data along with the further development of the computational model to ensure a good match between the simulated data produced by the theoretical model and the observed data. It appeared that the model matches the data remarkably well in labour supply dynamics, retirement choice, hours of work, wages, and wealth accumulation and decumulation dynamics.

By the end of 2015 the formal estimation of structural parameters was nearing completion, and counterfactual simulations are being performed using the obtained estimates. Once the estimation is fully completed in the first half of 2016, a paper will be prepared for submission to one of the leading economics journals.

Considering several decisions simultaneously allows us to draw conclusions about how different choices interconnect.



PROFESSOR MICHAEL KEANE
BS MIT, MA PhD Brown, FES, FASSA
CHIEF INVESTIGATOR

Michael Keane is an Australian Laureate Fellow and Professor of Economics in the UNSW Business School. He is also a Professor of Economics at the University of Oxford.

Several independent sources have placed Michael Keane among the top 50

economists internationally in terms of citations and the impact of his work. Recently he was ranked as top economist in the 1990 PhD cohort by Research Papers in Economics (RePEc). He is considered to be a world leader in choice modelling and his expertise is sought both nationally and internationally. He has had a long association with two agencies of the US Department of Health and

Human Services as a member of the Peer Review Panel of the National Institutes of Health (NIH) in 1995-6, 1999 and 2001-5. In November 2009 he prepared a report on tax transfers and labour supply for the Australian Treasury's Commission on Australia's Future Tax System. He has been a visiting scholar at the International Monetary Fund at various times throughout his career.

He was elected to the Council of the Econometric Society in 2009 and is also a member of the American Economic Association and the American Statistical Association. He is an Associate Editor of the *Journal of Econometrics* and *Quantitative Marketing and Economics*.

JOINT LABOUR SUPPLY AND RETIREMENT OF AUSTRALIAN COUPLES

RESEARCHERS

XIAODONG FAN
ALAN WOODLAND

As the population ages across the world, many countries, Australia included, are undertaking policy reforms to increase the labour force participation of elderly individuals and to ease the financial pressures from publically provided age pensions. In Australia, over three quarters of age-eligible retirees receive the Age Pension, which is means tested via the assets and income tests. Understanding the interaction between the labour supply and retirement decisions of individuals and government policies, especially Age Pension policies, is crucial in assessing the effectiveness of these reforms.

In this project, we study the joint labour supply and retirement decisions among Australian couples. This is important for two reasons. First, the decisions by members of a household are inter-dependent. Second, the Australian Age Pension payment and the means test

depend upon marital status. To analyse these inter-dependencies, we propose a parsimonious dynamic model in which each couple decides collectively their hours worked in the labour market, while facing uncertainty in individual survival and health condition. We then propose to econometrically estimate the model using data drawn from an Australian panel data set. We carefully model relevant policies in Australia, including the income tax codes, the tax offsets (the SAPTO-Senior Australian and Pensioner Tax Offset, and the LITO-Low Income Tax Offset), and most importantly, the Age Pension and Pension Supplement.

We estimate the model using the Maximum Likelihood Estimation method. The data are drawn from the first 13 waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey data, which is a national representative sample of Australian households.

We expect to have completed the formulation and estimation of the model by mid-2016. It is then proposed to conduct various experiments to investigate the effects on Australian household behaviour concerning labour supply and retirement of a range of policy experiments. These policy experiments include further increasing the Age Pension eligibility age and changing the Age Pension benefit level, as well as varying the income and assets test policy settings. We expect to complete the project at the end of 2016 and write up the results for submission to peer-reviewed journals.

In Australia, over three quarters of age-eligible retirees receive the assets and income-tested Age Pension.

RESEARCHERS

HAZEL BATEMAN
LORETTI I. DOBRESCU
FEDOR ISKHAKOV
RALPH STEVENS
SHANG WU

External Collaborators

CHRISTINE ECKERT
(UNIVERSITY OF TECHNOLOGY,
SYDNEY)
JORDAN LOUVIERE
(UNIVERSITY OF SOUTH
AUSTRALIA)
BEN NEWELL
ANDREAS ORTMANN
(BOTH UNSW)
FEDERICA TEPPA
(DE NETHERLANDSCHE BANK
& NETSPAR)
SUSAN THORP
(UNIVERSITY OF SYDNEY)

In 2015 CEPAR researchers, in conjunction with their external collaborators, continued to investigate aspects of retirement saving choices and decisions in research funded primarily

by an ARC Discovery Grant 'The paradox of choice: unravelling complex superannuation decisions' and a new 3 year ARC Linkage Grant with partner UniSuper 'Improving flexibility, trust and communication'.

We continued to analyse data from two incentivised discrete choice experiments (DCEs) of choice of financial adviser. In Agnew, Bateman, Eckert, Iskhakov, Louviere and Thorp (2015) we explored how individuals assess the quality of financial advice they receive and how they form judgments about advisers. We show that first impressions matter: consumers more often follow advisers who dispense good advice before bad, and demonstrate how clients' opinions of adviser quality can be

manipulated over time by using an easily replicated confirmation strategy that depends on both the difficulty of the advice topics presented and the extent to which advisers 'cater' to biases of uninformed clients. Our results also reveal how clients benefit from their own past experience and how they use professional credentials to guide their choices when the quality of advice is unclear. A second working paper on the willingness to pay for the financial advice is underway and will be completed in 2016.

In related work the UniSuper Linkage Grant team (Bateman, Dobrescu, Newell, Ortmann and Thorp) designed and implemented a series of incentivised DCEs to investigate use of the

so-called product dashboard – a prescribed disclosure format for information on returns, risk and fees designed to assist retirement savers with superannuation product and investment option decisions. Preliminary analysis indicates confusion with the prescribed disclosure formats for risk and return. A working paper is underway and will be completed in early 2016.

An important financial decision for retirement savings is whether and how much to annuitise at retirement. Whereas annuities provide a stable income, they lack the liquidity required for uncertain out-of-pocket healthcare expenditure. Using both theoretical and experimental methods, we investigate whether

individuals would prefer life care annuities – that is, annuity products which provide higher income when the individual is in bad health.

In the first step Wu, Bateman and Stevens (2015) develop a theoretical life-cycle model for an individual facing uncertainty in capital market returns, health status, and out-of-pocket healthcare expenditure. The model shows that individuals prefer to purchase life care annuities over standard annuities and are willing to annuitise more of their saving when purchasing life care annuities than when purchasing standard annuities. By reducing risks related to uncertain out-of-pocket healthcare expenditure, life care annuities allow individuals to consume more



PROFESSOR HAZEL BATEMAN
BEc (Hons) Qld., PhD UNSW
ASSOCIATE INVESTIGATOR

Hazel Bateman is Head of the School of Risk and Actuarial Studies in the UNSW Business School.

She is one of Australia's leading experts in superannuation and pensions and is widely published in the area of the economics and finance of retirement incomes.

The overall themes of her research are the adequacy and security of retirement saving and retirement benefits and issues associated with the increasing risk and responsibility faced by retirement savers under defined contributions arrangements. Her work on administrative costs and charges of superannuation funds has informed global pension policy developments, including the financial product

disclosure legislation in Australia. Over the past ten years, Hazel Bateman has jointly held six ARC Discovery Grants and four ARC Linkage Grants, including an ARC Discovery Grant of \$960,000 over 2010-2014 to undertake research to better understand complex retirement and superannuation decision making.

Hazel has been a consultant on retirement income issues to a range of

Australian and international organisations including the OECD, the World Bank, the Social Insurance Administration (China) and the Korean Institute of Health and Social Affairs. She has served on the Australian Government's Superannuation Roundtable and is currently a member of the editorial board of the *Journal of Pension Economics and Finance*.

throughout their retirement and invest more of their liquid wealth in risky assets, thereby earning more equity risk premium.

In the second step we conducted a survey of 1,000 subjects close to retirement investigating whether people would prefer a higher income when in bad health than in good health and thus would prefer a life care annuity, as well as the characteristics of those individuals. The experimental survey was conducted in late 2015, and a working paper on the experimental results will be produced by mid-2016.

Finally, we continued our comparative study of the drivers of subjective life expectancy in Australia and the Netherlands (Teppa, Thorp and Bateman 2015).

Our survey was fielded to samples of around 2,000 in each of the Netherlands in late 2014 and in Australia in early 2015. Results for both countries indicate that priming people with personalised information about cohort or family longevity does not induce them to revise their subjective survival expectations. 'Live to' and 'die by' framing has a much larger effect on reported subjective expectations than personalised information about cohort or family longevity. However subjective expectations are relevant to explaining opinions on retirement policy and planning. We conclude with the observation that regulators trying to educate the public about longevity and the consequent need for

delayed retirement or pension ages need alternative strategies.

Project outputs:

- Agnew, J., Bateman, H., Eckert, C., Iskhakov, F., Louviere, J. and Thorp, S. (2015). First Impressions Matter: An Experimental Investigation of Online Financial Advice. Working Paper.
- Teppa, F., Bateman, H. and Thorp, S. (2015). Family, Friends and Framing: A Cross-Country Study of Subjective Survival Expectations. De Nederlandsche Bank Working Paper No. 491.
- Wu, S., Bateman, H. and Stevens, R. (August 2015). Optimal Portfolio Choice with Health Contingent Income Products: The Value of Life Care Annuities. World Risk and Insurance Economics Congress. Munich, Germany.

An important financial decision for retirement savings is whether and how much to annuitise at retirement. Whereas annuities provide a stable income, they lack the liquidity required for uncertain out-of-pocket healthcare expenditure.



DR. LORETTA I. DOBRESCU

BA Hons Nottingham Trent University; MSc West University of Timisoara; PhD University of Padua
ASSOCIATE INVESTIGATOR

Loretta I. Dobrescu is a Senior Lecturer in the School of Economics, UNSW Australia

Loretta is an established researcher with expertise in developing structural models

and using panel data and bounds methods to study various issues related to savings and cognition in older age. She has published significantly in top international journals of economics and mathematical modelling and is generally active in the field of microeconometrics, with particular emphasis on the Economics of Ageing and

Health Economics. Loretta was also part of the backbone team that developed the first comprehensive dataset of ageing in Europe – the Survey of Health, Ageing and Retirement in Europe.

RESEARCHERS

MICHAEL KEANE
XIANGLING LIU

For taxation and investment purposes, residential properties are classified as either owner-occupied or rental properties, with different tax regimes applying in different countries. In Australia, the family home is excluded from the income tax altogether, and is also exempt from the Age Pension assets test. Because the Australian income tax does not quarantine business losses, interest payments and other costs relating to rental property can be deducted from taxable income. Where these costs exceed rental income, the property is said to be 'negatively geared.'

The relation between these different forms of housing ownership is largely unexplored in the literature.

While little guidance is provided on the issue, the decisions are crucial to the wealth accumulation of households for which investment in housing constitutes a major component. The research is particularly timely with the net income effect induced by the tax advantage of the rental property currently under the spotlight in Australia, especially in terms of its possible contribution to the housing market boom.

This project studies household housing choice transitions by age and net wealth by developing a discrete life-cycle model of household consumption

and portfolio choice in relation to the purchase of owner-occupied and rental properties. It assumes a household with a stochastic income and a risk-free financial asset purchases a family home for the consumption services it provides and a rental property for investment. The value of each property is defined by the number of bedrooms from 0 to 8. The real rate of return on housing follows a stochastic process. The constraints are: the household faces substantial housing equity risk, collateral requirements and liquidation cost in their investment.

In 2015 data was collected and formulas for house price dynamics by number of bedrooms were elementarily estimated. Procedures for

estimating household income by age and education were developed and calibrated with results from the literature. Additionally, a framework for simulating housing choices over a lifetime was implemented and elementary results were obtained.

In 2016, these simulations will be refined, with improved parameterisation, and the life-cycle model estimated.

This project studies household housing choice transitions by age and net wealth by developing a discrete life-cycle model of household consumption and portfolio choice in relation to the purchase of owner-occupied and rental properties.



DR XIANGLING LIU

BE MS China University of Mining & Technology, PhD UNSW
RESEARCH FELLOW

Xiangling Liu is a CEPAR Research Fellow located in the UNSW Business School. She joined the Centre in October 2015 after

graduating with a PhD in Economics from the University of New South Wales.

Her research interests include real estate economics and finance, applied econometrics, and household debt and finance.

'Working at CEPAR is a great opportunity for me to focus on my research, which shall

also provide me with the best opportunity for developing my academic career.'

RESEARCHERS

MICHAEL KEANE
SHIKO MARUYAMA
ELENA CAPATINA

The project studies the relationship between socioeconomic status (SES) and health focusing on individuals' decisions to invest in health and human capital over the life-cycle. While many previous papers have established a strong correlation between socioeconomic variables and health, little is understood about the causal pathways behind it. The challenge lies in the ability to empirically identify the effect of SES on health, the effect of health on SES and the effect of common factors systematically correlated with both SES and health. Due to the present limited understanding of the

SES-health relationship, most existing life-cycle models make drastic simplification assumptions, for example assuming that health evolves exogenously over the life-cycle and modelling human capital accumulation independent of health. However, given the rising health care costs and ageing populations in most countries, it is becoming increasingly important to develop the tools needed for the design of effective policy aimed at improving health outcomes. Therefore, we aim to fill this gap in the literature by building and estimating a model of health formation over the life-cycle in the spirit of Grossman (1972), emphasising the role of decisions regarding investment in health and human capital. It is important to consider these

decisions jointly since a large literature suggests that human capital (and the income that it generates) affects health, and vice-versa. The magnitudes of these effects are very controversial and one of the aims of our project is to develop new methods to estimate these effects.

We build a life-cycle model with endogenous labour supply and investment in health capital. Individuals accumulate human capital (experience) while working, and can invest in health capital through effort such as seeing a doctor regularly and exercise. The incentives to invest in health and human capital are analysed in relationship to one another. A key feature of the paper is to model a realistic health process over the life-cycle using data from

the Medical Expenditure Panel Survey. In particular, we use data on respondents' detailed medical conditions to distinguish between different types of health shocks with different causes and effects: shocks that affect the ability to work and those that do not, shocks that affect future health and those that are transitory, and shocks that are predictable in the sense that they are correlated with previous health and health behaviour and those that are unpredictable. In addition, this paper is the first to study the medical expenditure shocks associated with detailed medical conditions. This modelling and estimation are important since they enable us to accurately capture how people form expectations regarding the

evolution of health and the degree of health risk they face throughout their lives in order to estimate how health impacts individuals' economic decisions such as the allocation of resources between consumption, leisure, work and health investment. We also emphasise that health impacts human capital accumulation over the life-cycle through its effect on labour supply decisions.

In 2016, a working paper, which has been presented at international conferences, will be further developed before submission to a peer-reviewed journal in economics.



DR SHIKO MARUYAMA

BA MA Keio University,
PhD Northwestern University
ASSOCIATE INVESTIGATOR

Shiko Maruyama is a Senior Lecturer at the University of Technology, Sydney (UTS) Business School. Prior to his appointment at UTS, he was a CEPAR Research Fellow located at the UNSW node.

His research interests include empirical applied microeconomics and a wide range of health economics topics, such as health insurance, informal care, elderly care, long-term BMI trends, and the effect of birth outcomes.

Previously he has held Visiting Scholar positions at the Department of Economics at Queen's University,

the Department of Management and Strategy at the Kellogg School of Management and the Institute of Economic Research at Hitotsubashi University.

RESEARCHERS

MICHAEL KEANE
OLENA STAVRUNOVA

This project studies selection and moral hazard in the US Medigap health insurance market (a supplementary private health insurance for seniors in the US). We develop an econometric model of insurance demand and health care expenditure, where adverse selection is measured by sensitivity of the demand for Medigap insurance to health care expenditure risk, while the moral hazard is measured by the difference in health care expenditure between individuals with and without Medigap who have the same expenditure risk.

In 2015 the revised research paper derived from this project has been accepted

for publication in the *Journal of Econometrics*.

We find evidence of advantageous selection in the Medigap market. Conditional on characteristics that insurance companies can legally use for pricing, healthier individuals are more likely to buy Medigap. This contradicts the prediction of classic models of adverse selection with a single dimension of private information (i.e., a person's unobserved risk type). However, when we condition on additional types of private information that cannot be used in pricing (cognitive ability, risk attitudes, financial planning horizon, longevity expectations, education, race and marital status) we do find adverse selection on health status.

Among the factors that affect demand for Medigap, cognitive ability is one of the most important ones. In the most recent revision of the paper we added an extensive discussion of the policy implications of this finding. If relatively healthy senior citizens with high cognitive functioning are more likely to buy Medigap than less healthy seniors (for whom the value of supplemental insurance is greater), it strongly suggests that information problems exist in the market.

Indeed, there is a large body of work showing that many senior citizens have a poor understanding of Medicare and Medigap insurance. Publications that explain Medicare and Medigap rules are readily available, but many studies find seniors have difficulty

understanding these materials. Thus, it seems likely that many seniors – particularly those with cognitive limitations – may have great difficulty making choices in this area. As a result, informational interventions aimed at helping senior citizens to make better insurance choices may be called for.

Our results also imply that the moral hazard effect is substantial: Medigap increases health care spending by 24% on average, and the increase is much greater for people in better health. As a result of the moral hazard, a policy of expanding Medigap coverage to all senior citizens would increase per capita health care expenditure by about \$740.

Among the factors that affect demand for Medigap, cognitive ability is one of the most important ones. In the most recent revision of the paper we added an extensive discussion of the policy implications of this finding.



DR OLENA STAVRUNOVA
PhD Iowa
RESEARCH FELLOW

Olena Stavrunova is a Senior Lecturer in the Economics Discipline Group at the University of Technology, Sydney and a CEPAR Research Fellow.

Olena joined UTS in July 2007 after completing her PhD in Economics at the University of Iowa. Her research interests include Applied Econometrics, Bayesian Econometrics, Health Economics and Labour Economics.

She has published in international and Australian journals on a variety of topics

in applied econometrics and health economics, including econometric modelling of health care expenditures and hospital waiting times; the impact of hospital waiting times on patient utilisation of health care services; and econometric modelling of the demand for private health insurance in Australia.

ESTIMATING DISCRETE-CONTINUOUS CHOICE MODELS: THE ENDOGENOUS GRID METHOD WITH TASTE SHOCKS

RESEARCHER

FEDOR ISKHA KOV

External Collaborators

JOHN RUST

(GEORGETOWN UNIVERSITY)

BERTEL SCHJERNING

THOMAS JØRGENSEN

(BOTH UNIVERSITY OF COPENHAGEN)

This project develops a new method for solving and estimating computationally demanding life-cycle models involving simultaneous discrete and continuous choices. The new method both widens the range of possibilities to build a more realistic model of human behaviour, and overcomes the mathematical complications inherent to the non-convex problems such as those combining discrete and continuous choice.

The method we develop is based on the DC-EGM algorithm that generalises the endogenous grid point method (EGM) by allowing for discrete choices. The method of endogenous grid points is an innovative approach which allows us to model consumption/savings or other continuous choice at very low computational cost. However, DC-EGM generalisation is needed to study retirement choice that is intrinsically discrete.

This project started out in 2012 as a direct extension of the method of endogenous grid points to solve the models with discrete and continuous choice. In the first two years the development of all aspects of the retirement model with consumption/savings choices and the corresponding solution method was undertaken.

This work revealed several surprising theoretical properties of the model which were never explained in the literature. The method performed exceptionally well in most applications but there were more complex models of interest in which the method failed to perform consistently.

In 2014 a more systematic assessment of the performance of the endogenous grid point method for discrete-continuous choice was undertaken. From using the method in several other research projects at CEPAR and elsewhere, it became clear that the overall complexity of the deterministic solution of such models is unpractical for empirical applications.

However, inclusion of the extreme value distributed shocks associated with every discrete choice in the model, significantly reduced the complexity of the solution while also enhancing the empirical applicability of the method. At the end of 2014, the project was nearing completion with all the major results obtained, and most of the writing also finalised.

In 2015 an academic paper presenting the DC-EGM method itself and the results of Monte-Carlo tests of its performance was submitted to a top-tier peer-reviewed international economic journal. The results were also presented at various meetings including the World Congress of the Econometric Society in Montreal in August.

The method of endogenous grid points is an innovative approach which allows us to model consumption/savings or other continuous choice at very low computational cost.



DR FEDOR ISKHA KOV

BMath CandSc
St Petersburg
State University,
MSc PhD University of Oslo
SENIOR RESEARCH FELLOW

Fedor Iskhakov is a Senior Research Fellow at CEPAR located in the UNSW Business School. Previously he was a research fellow at the Centre for the Study of Choice, University of Technology,

Sydney (2010-2012); lecturer in the Graduate School of Management at St Petersburg University (2009-2010); and a Visiting Research Scholar at the University of Maryland (in 2006 and 2010) and the University of Oxford (in 2012 and 2013). Between 2002 and 2011 he had an association with the Ragnar Frisch Centre for Economic Research at the University of Oslo where he has held the positions of

Research Fellow and Postdoctoral Research Fellow.

His doctoral thesis, 'A dynamic structural analysis of health and retirement,' was awarded His Majesty the King of Norway's gold medal, for the best research in social sciences among young researchers in Norway in 2008.

His research interests lie in the area of structural microeconometrics, and more specifically in dynamic

modelling of individual choice. 'Working at CEPAR gives me a unique chance to participate in research projects of the highest theoretical and methodological quality which have substantial relevance for economic policy in Australia and the world.'

RESEARCHERS

KIM KIELY
KAARIN J. ANSTEY

This program of research investigates the social and health implications of age-related sensory impairment. Vision and hearing loss can have debilitating impacts on an individual's professional and personal life, especially for those who have enjoyed good sensory functioning earlier in life. Despite high prevalence of hearing loss and vision loss, decline in sensory acuity is poorly recognised and 'invisible', exerting subtle effects that accumulate over time if not detected and treated early. For example, communication and mobility difficulties arising from sensory loss can give rise to loss of independence, social

withdrawal, poorer mental health, and reduced quality of life. Importantly, as both hearing and vision loss predict cognitive decline and dementia incidence, their comorbidity may not simply be a coincidental result of general ageing processes but could reflect a causal connection via an underlying biological etiology or social pathway.

Our research has shown that sensory loss disproportionately affects older adults, and is a leading contributor to non-fatal disease burden for older Australians. Major outcomes for the project to date include the estimation of sensory-impaired life expectancies published in *Journals of Gerontology: Medical Sciences*. Our analyses demonstrate that older adults live for

extended periods with hearing loss and/or vision loss and that this can lead to a range of adverse outcomes. Notably, at age 65 both men and women could expect to live (on average) with mild hearing loss for at least half of their remaining years of life. This indicates that interventions targeting sensory impairment have good potential to compress morbidity. We have also investigated the links between sensory loss and neuropsychiatric symptoms of dementia, finding that those with dual sensory loss are at increased risk of sleep disturbances, appetite problems, depression, irritability, disinhibition, and agitation. Despite these impacts and advances in hearing aid technology, it is clear from our ongoing research that there is a large

unmet need for interventions targeting hearing impairment.

Preliminary analysis of hearing data from the PATH Through Life study linked to Medicare Benefits Schedule (MBS) records indicates that less than 10% of study participants with hearing impairment were referred or underwent diagnostic audiology assessment. Diagnostic assessments were linked to late life transitions and were less likely to be used by adults as they became older, left the workforce, or received an Age Pension. There were also gender differences in access to services as women with hearing problems were more likely to undergo diagnostic audiology assessments than men with hearing problems.

Our research has shown that sensory loss disproportionately affects older adults, and is a leading contributor to non-fatal disease burden for older Australians.



DR KIM KIELY
BLib (Hons) USyd, PhD ANU
ASSOCIATE INVESTIGATOR

Kim Kiely is a Postdoctoral Research Fellow within the Centre for Research on Ageing, Health and Wellbeing (CRAHW) at the Australian National University. He currently holds an NHMRC Early Career Fellowship entitled 'Estimating and

Alleviating the Impacts of Age-Related Sensory Decline' and in 2015 was awarded the RM Gibson Award from the Australian Association of Gerontology.

Kim has a background in psychology and epidemiology, and his research is orientated by a contextualised perspective to human development across the life course. His core research interests encompass aspects

of healthy and productive ageing, focusing on the social, functional and cognitive impacts of sensory loss in late life.

Current work includes the estimation of sensory impairment and cognitive impairment free life expectancies, analyses of the determinants and outcomes of successful sensory aid use, and identifying mechanisms underlying sensory-related

cognitive decline. Kim also maintains a strong interest in psychiatric epidemiology through his involvement in a research program investigating the mental health of welfare recipients. This stream of research examines mental health inequalities among Age Pension recipients and considers the implications of reforms to the pension system.

RESEARCHERS

KARRIN J. ANSTEY
KIM KIELY

External Collaborator

RANMALEE ERAMUDUGOLLA
(ANU)

There is currently a lack of descriptive population-based information on older drivers and their expectations about future driving. This information is important for policymakers and planners. We aimed to describe the health, lifestyle, economic, social and cognitive characteristics of drivers compared to non-drivers in an ageing Australian cohort that is representative of the population. We also aimed to find out how long older Australians expect to keep driving, and what factors are associated with driving expectations. The sample was drawn from the PATH Through Life project Waves 3 (n = 1970) and 4. PATH is a population based sample, originally drawn from the electoral roll. At Wave 3, 93% of the remaining participants in the older cohort were current drivers (mean age

70 years). Drivers were more likely to be employed than non-drivers, had fewer medical conditions, better self-rated health, and self-rated vision, better cognitive function and reported fewer difficulties with Instrumental Activities of Daily Living. They reported larger social networks but did not report any differences in rates of volunteering or caring for grandchildren. In terms of distance driving, 41% reported driving 50-150km per week, 20% reported driving 151-200km per week, 19% reported driving >200km per week and 20% reported driving < 50km per week. Sixty percent of participants reported driving 5 or more days per week whereas only 5 % reported driving 1 day or less per week. The average driving expectancy was 12 years, however, there was a wide range in expectancies. Only a small number of participants (3.7%) ceased driving over the 4 years of follow-up. Drivers had an average of about 50 years of driving experience.

Overall this descriptive work demonstrates how driving is integral to the daily lives of older Australians with older adults driving most days. Unfortunately, adults who have poor health and fewer financial resources are less likely to drive. Our study was not designed to evaluate causal relationships. However we observed lower social engagement among non-drivers. Non-driving may be a form of social disadvantage among older Australians. The policy implications of this relate to urban design, the provision of community transport and services. Age-friendly societies must enable older adults to participate regardless of driving status.

In other related research we examined whether visual acuity was associated with unsafe driving among older adults. As in previous studies, we did not find that visual acuity using a simple eye chart, was predictive of unsafe driving. This

information as well as our wider expertise were drawn on to provide policy advice in 2015 to the ACT Government with respect to proposed changes to older driver licensing laws. This project is linked to the Social and Economic Impacts of Cognitive Ageing (SEICA) project (see page 49). That project examines how cognitive impairment influences social engagement and activities of daily living, with driving being one of those.

This project is expected to yield publications, conference presentations and contribute to further policy advice related to older drivers. The population level data will be useful for urban planning and health professionals as it will provide estimates for the numbers of drivers who will become at risk due to incident dementia and eye disease.

Driving is integral to the daily lives of older Australians with older adults driving most days. Unfortunately, adults who have poor health and fewer financial resources are less likely to drive.

RESEARCHER

KAARIN J. ANSTEY

External Collaborator

RANMALEE ERAMUDUGOLLA
(ANU)

Playing computerised 'brain training' games in order to improve one's cognitive skills has become extremely popular with all age groups. These games are heavily marketed to older consumers along with claims about their ability to reduce the risk of developing dementia. However, reviews of research on the efficacy of computerised cognitive training have found no consistent evidence that such training programs improve functioning on everyday activities or indeed prevent cognitive decline.

Speed of Processing Training is a type of cognitive training task that has been extensively researched and is associated with an important complex everyday activity – driving a motor vehicle. Performance on tasks measuring Speed of Processing, such as the Useful Field of View (UFOV) test can predict driving ability and crash rates in older adults. Furthermore, repeated training on the Speed of Processing task results in improvements on other tasks measuring attention, speed and multi-tasking. What is not yet clear, is whether the effects of Speed of Processing training improves other cognitive, sensory and motor functions related to driving, and ultimately whether it leads to

measurable improvements in driving safety and/or crash rates.

Kaarin Anstey and her research team are conducting a study on the effect of a five week program of online Speed of Processing training on older adults' performance on driving-related tests. These tests include hand and foot reaction times, hazard perception, visual attention, postural balance, and motion perception. To date, approximately 30 participants aged 65 and above have enrolled in the program. All participants receive a baseline assessment of their performance on the driving-related tests. Then, half the sample receive an online subscription to the Speed

of Processing training game, to be done at home for about 2 hours per week over a period of 5 weeks. At the end of the period, all participants are once again assessed on the driving-related tests. Preliminary data suggest that, compared to the control group who received no training, the home based online training program can lead to improvements on the UFOV test. If these gains also translate to the other driving-related tests, this would provide strong motivation for future work on the effect of training on on-road driving skills. Such an evidence-based and accessible tool for maintaining a complex daily function would enhance mobility, productivity, and wellbeing in older adults.

Performance on tasks measuring Speed of Processing, such as the Useful Field of View (UFOV) test can predict driving ability and crash rates in older adults.



PROFESSOR KAARIN J. ANSTEY
BA (Hons) Syd., PhD Qld., FASSA
CHIEF INVESTIGATOR AND
ANU NODE LEADER

Kaarin J. Anstey is Director of the Centre for Research on Ageing, Health and Wellbeing and Director of the Dementia Collaborative Research Centre - Early Diagnosis and Prevention, both of which

are based at the Australian National University. She is also an NHMRC Senior Research Fellow and an ANU Public Policy Fellow.

Her substantive research interests include cognitive ageing, depression, and wellbeing. Kaarin has worked extensively with longitudinal studies and leads the PATH Through Life study.

She is interested in the social impact of late-life cognitive impairment with increasing longevity. Kaarin is also working on interventions to reduce the risk of cognitive decline and dementia and to promote healthy ageing. Kaarin has developed a model of driving safety and conducts research to improve older driver safety.

RESEARCHER

KAARIN J. ANSTEY

External Collaborator

AMBER WATTS
(UNIVERSITY OF KANSAS)

Our previous CEPAR work examined physical activity and cognitive function in a population based study that included three age-cohorts ranging from 20-70 years. We found that higher levels of physical activity are associated with higher levels of cognitive performance among adults in young, middle and late adulthood. If we had only looked at older adults, we may have assumed that the higher levels of cognitive function in older adults were a phenomenon restricted to ageing. But the fact we saw the pattern at all ages suggests that this is an enduring life course effect and that the benefits of physical activity occur throughout adulthood.

It is possible that lifestyles are established early in life according to childhood cognitive abilities or education which is related to cognitive ability.

Alternatively, physical activity is associated with reduced inflammation, lower blood pressure, better glycemic control, and lower body weight and all these factors have been linked to cognitive ageing. Hence physical activity may impact on cognitive function through multiple direct and indirect pathways over the adult life course.

Surprisingly, our multilevel within-person analyses did not find that physical activity protected older adults from cognitive decline but that those who exercised performed better on cognitive tests. Note that in this study we did not examine the effect of physical activity on the development of cognitive impairment, Alzheimer's

disease or dementia. In a review of literature on the primary prevention of dementia, we identified physical activity as the factor with the most consistent evidence in support of its protective effect. In terms of ageing well, physical activity appears to be the single most effective intervention as it addressed multiple risk factors for chronic disease as well as the processes that accelerate ageing.

In 2015, with our CEPAR visitor Assistant Professor Amber Watts from the University of Kansas, we have begun investigating more complex associations between physical activity and cognition in an attempt to understand the putative mechanisms for the strong association between physical activity and cognition. This work in progress is examining how physical activity interacts with a key genetic risk factor

for cognitive ageing, namely the polymorphism of the Brain Derived Neurotrophic Factor (BDNF) gene called BDNF*MET. Analyses are ongoing and are investigating whether participants with the risk allele show less cognitive benefit from physical activity and whether this is gender specific. A manuscript and conference presentation are planned outputs for this work in 2016.

Surprisingly, our multilevel within-person analyses did not find that physical activity protected older adults from cognitive decline but that those who exercised performed better on cognitive tests.

RESEARCHERS

KAARIN J. ANSTEY
KIMBERLY ASHBY-MITCHELL
DIANE HOSKING

The relationship between diet and cognitive health during ageing is controversial. Animal studies provide clear evidence for the physiological mechanisms whereby dietary factors impact on brain structure and functioning across the lifespan. In humans, however, testing these theoretical relations is not straightforward. Although a number of studies have found that healthful diets such as the Mediterranean Diet may be protective, findings from one population do not necessarily generalise to others. Diet is a complex exposure. Individuals' diets

are defined by country and culture specific practices and dietary intake is unlikely to remain stable over long periods of time.

This project investigated relations between diet and cognitive health in an Australian context using 12-year longitudinal data from the Australia Diabetes, Obesity and Lifestyle Study. A complex pattern of associations was evident between cognitive functioning at wave 3 and dietary patterns estimated at each of the three time points. There were no consistent associations across time-points between any one dietary pattern and cognitive outcomes, however, protective effects were found for a dietary pattern defined by vegetable and plant-based food item consumption compared to

the negative impact of a 'Western' dietary pattern defined by processed foods. These findings were published in 2015 in the journal *Nutrients*. An important contribution of the paper was to demonstrate the impact of the method chosen to summarise dietary intake prior to analyses.

Given the current research focus on the Mediterranean diet and cognitive health, associations were investigated between a Mediterranean diet score calculated from Australian food frequency data in AUSDIAB and participants' cognitive status. Greater adherence to the Mediterranean Diet was not predictive of cognitive outcomes among older adults, however, some individual constituents

of the Mediterranean Diet had a significant effect.

One of the features of the AUSDIAB study is the collection of dietary data at each of the three study time points. This enables the investigation of dietary stability and dietary change over 12 years. In future work we plan to categorise and describe the most common sequences of dietary intake during this period across the course of the study and relate them to outcomes relevant to cognitive health. This 'within-person' approach to dietary intake over time will increase understanding of the relations between long-term diet and health or cognitive outcomes.

The aforementioned findings were presented by Kimberly Ashby-Mitchell as an oral

presentation at the International Association of Gerontology and Geriatrics Congress (Thailand, October 2015). They also contributed to a poster presentation at the National Health and Medical Research Council Symposium (Sydney, October 2015) and informed a published Deeble Institute Policy Brief. The Brief focused on why increasing burden of cognitive impairment is relevant to policymakers and provided them with some actions to consider regarding the role of diet and physical activity in dementia prevention.



DR DIANE HOSKING
BA ANU, BHthSc (Hons) PhD Adel.
RESEARCH FELLOW

Diane Hosking joined the CEPAR node at the Australian National University in March 2014 as a Research Fellow at the Centre for Research on Ageing, Health and Wellbeing (CRAHW). Diane moved to ANU immediately after completing

her PhD in Psychology at the University of Adelaide and CSIRO Animal, Food and Health Sciences.

Diane's research focuses broadly on cognitive health and cognitive ageing. Her PhD research investigated the impact of dietary intake across the lifetime upon older age cognition and cognitive change. Diane's current research interests include

identifying the role of dietary stability and transition on older-age physical and cognitive health, and examining the economic and social impacts of the subtle cognitive deficits that frequently accompany ageing.

RESEARCHERS

KAARIN J. ANSTEY
DIANE HOSKING

The societal cost of age-related cognitive impairment has focused to date upon estimating the direct and indirect costs of dementia care. There is limited knowledge, however, of the social and economic impact of non-clinically defined age-related cognitive impairment. Our project aims to quantify the impact of age-related cognitive impairment in the community to inform cost-efficacy evaluations of research and action to maintain older age cognitive functioning.

During 2015, we used data from the HILDA survey and from the PATH Through Life study to quantify specific economic and social outcomes of low cognitive functioning. In HILDA we examined the associations between cognitive impairment in those 60 years + and reported hours in a typical week spent volunteering or doing charity work. As older adults transition from full-time work into retirement or semi-retirement they have

time potentially to undertake volunteer activities, thereby contributing to the 'non-monetary' economy. We found that 3.8% of older participants in HILDA were cognitively impaired, and that this group was significantly less likely to volunteer than their non-impaired counterparts. Those who did volunteer did so on average 1 hour, 9 minutes less per week. Using the replacement cost approach to value volunteering time, this represents more than \$300 million associated with cognitive impairment in the Australian population. These findings were presented in the CEPAR seminar series at ANU and as a poster at the Ageing in the Asia-Pacific Research Symposium co-hosted by CEPAR at the University of New South Wales. Our revised manuscript is currently under review for the journal *Gerontology*.

In 2016 we plan to extend our investigation of volunteering as a marker of productivity.

We will examine the relations between differing longitudinal sequences of work and volunteering activity and their relations with cognitive health. We also have the opportunity to investigate the social and emotional drivers of volunteering in older age, which will increase knowledge of the mechanisms that underpin associations between volunteering and cognitive health.

An alternate approach to measuring cognitive impairment with tests of cognitive functioning is to use informant reporting of cognitive decline over time. In order to evaluate the social impact of cognitive impairment we used data from waves 3 and 4 of the PATH study. In wave 4, informant data were available for 1,392 participants aged 72-78.

We investigated the relationships between informants' perceptions of participants' functional change in learning, problem-solving and memory, and the 4-year change in participants' self-reported physical, mental, and social, engagement. Informant-reported cognitive decline was associated with unfavourable shifts in factors relevant to preserving cognitive health including depressive status, physical activity, mental engagement, and capacity for mobility (driving). We have submitted these findings as an abstract to the international conference 'Cognitive Ageing' to be held in April 2016 in Atlanta.

Our project aims to quantify the impact of age-related cognitive impairment in the community to inform cost-efficacy evaluations of research and action to maintain older age cognitive functioning.

AREA OF RESEARCH FOCUS

3

RESOURCES IN RETIREMENT

Governments around the world have been reforming policies (and often breaking public pension promises) to find ways to reduce the fiscal impact of the ageing baby boomer cohorts. Australia is unusual in having promised relatively little in public pensions, buttressing retirement incomes through mandated superannuation.

This policy regime provides a valuable test-bed for research into non-government approaches to retirement provision. Research in this area of focus takes private provision as a point of departure, and examines risk pooling, spreading and sharing mechanisms, public-private coordination, and the impacts of incentives, defaults, and compulsion on behaviour with respect to retirement choices. The analysis is designed to discover what innovations, by government and business, might improve outcomes.

TO VIEW PUBLICATIONS
AND WORKING PAPERS RELATING
TO THIS RESEARCH VISIT CEPAR.EDU.AU

RESEARCH PROJECTS

OPTIMAL INDIVIDUAL PRE AND POST RETIREMENT DECISION MAKING UNDER SYSTEMATIC LONGEVITY RISK	51
A VALUE BASED LONGEVITY INDEX WITH APPLICATIONS TO LONGEVITY RISK MANAGEMENT	52
VALUE HEDGING OF ANNUITIES WITH AN UNCERTAIN MARKET PRICE OF LONGEVITY RISK	53
RISK MANAGEMENT AND PAYOUT DESIGN OF REVERSE MORTGAGES AND HOME EQUITY RELEASE PRODUCTS ALLOWING FOR IDIOSYNCRATIC HOUSE PRICE RISK	54
MODELS FOR DEPENDENCE IN MORTALITY WITH FINANCIAL APPLICATIONS	55
ESTIMATION AND APPLICATION OF AFFINE CONTINUOUS TIME MULTI-COHORT MORTALITY MODELS	56
PRE RETIREMENT INVESTMENT STRATEGIES – TARGET ANNUITISATION FUNDS	57
GUARANTEED BENEFITS IN VARIABLE ANNUITIES	58
MANAGING RETIREMENT RISKS WITH REVERSE MORTGAGE LOANS AND LONG-TERM CARE INSURANCE	59
MODELLING LONG-TERM CARE INCORPORATING SYSTEMATIC UNCERTAINTIES IN HEALTH TRANSITION RATES	60
PRODUCT PRICING AND SOLVENCY CAPITAL REQUIREMENTS FOR LONG-TERM CARE INSURANCE	61
MULTISTATE ACTUARIAL MODELS OF FUNCTIONAL DISABILITY	62
POST-RETIREMENT INCOME: FINANCIAL AND ACTUARIAL ISSUES	63
PENSION REFORM AND LABOUR SUPPLY – FLEXIBILITY VS PRESCRIPTION	64
PENSION TAXATION, POPULATION AGEING, AND GLOBALISATION	66
MEANS TESTING PUBLIC PENSIONS	68

AREA OF RESEARCH FOCUS 3 RESOURCES IN RETIREMENT

Research activity through 2015 in this Area of Research Focus falls into three broad categories. The first focuses on risk management in retirement. Reverse mortgages, long-term care (aged care), and the implications of distinguishing between idiosyncratic and systematic risk, all under-researched topics, receive attention. The second focus is on actuarial estimates of mortality and morbidity projection. And finally, various aspects of policy are dealt with in depth – especially means testing and the interaction between taxation and pensions.

- **RISK MANAGEMENT IN RETIREMENT**
One of the most puzzling issues in the economics of ageing and retirement is why people will not insure against the risk of outliving the resources at their disposal, or purchase reverse mortgages or long-term care insurance. Governments do provide some longevity insurance, through the Age Pension or Social Security, but voluntary insurance does not appeal to consumers. This research initiative provides cutting-edge analysis of financial and insurance markets and products to try to establish an evidence base allowing the development of more affordable and appealing products. Led by CI Michael Sherris, a global leader in actuarial aspects of longevity insurance, projects and papers continue to appear which work away at this issue.

For example, the question of how systematic longevity risk can be hedged in an annuity product is dealt with in one of several projects contributing to our knowledge on this larger problem.

- **ACTUARIAL PROJECTIONS OF LONGEVITY AND MORBIDITY**
Demographers and epidemiologists are not alone in trying to get a handle on trends in longevity and morbidity. Actuaries work on this issue as well, relying on detailed analysis of past experience to predict the future. For example, in a series of papers Sherris and his colleagues have tried to take specific characteristics of different pools of survival data (national, pension funds etc) to estimate survival distributions taking account of the specific characteristics of different pools – for instance, data truncation in pension funds.
- **POLICY ANALYSIS**
Two major research initiatives which have reached maturity through 2015 focus on means testing, and the taxation of pensions. The first of these was the topic of a research project funded by the Michigan Retirement Research Centre for the US Social Security Administration. These papers have appeared, either in published form or as CEPAR Working Papers, and will contribute to the CEPAR Retirement Incomes Research Briefs currently under construction. The second thrust is broader, encompassing not just means testing but the broader interaction of pensions and taxation. This is a surprisingly neglected topic, and conference-linked projects through 2015 have tried to address it comprehensively for the first time, from a global perspective. Chapters of a volume are now being written, with publication scheduled for late 2016.

OPTIMAL INDIVIDUAL PRE AND POST RETIREMENT DECISION MAKING UNDER SYSTEMATIC LONGEVITY RISK

RESEARCHERS

YANG SHEN
MICHAEL SHERRIS

This research project aims to provide a rigorous theoretical analysis of the optimal investment, consumption, insurance and retirement choice problem of an individual investor, whose mortality evolves in a stochastic manner over time. Most prior analysis assumes mortality rates are known and deterministic and address only idiosyncratic longevity risk. The aim is to provide analytical and numerical solutions to the problem in both a continuous-time setting and a multi-period discrete-time setting with a focus on the impact of systematic improvements.

The project has considered the lifetime asset allocation problem with both idiosyncratic and systematic longevity risks, in which the stochastic mortality model is given by a general diffusion process. Allowance is made for a wage earner to invest in a zero-coupon bond, a stock and a longevity bond, consume part of his wealth and purchase life insurance or an annuity so as to maximise the expected utility from consumption, terminal wealth and bequest. The problem is solved via the dynamic programming principle and the Hamilton-Jacobi-Bellman equation.

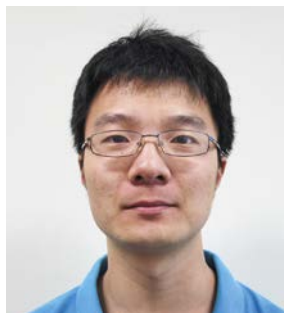
New insights are gained from general solutions and special solutions derived for

the general diffusion mortality model and the square-root mortality model, respectively. To illustrate the results, numerical examples based on special solutions are provided. It is shown that idiosyncratic mortality risk has significant impacts on the wage earner's investment, consumption, life insurance purchase and bequest decisions regardless of the length of the decision-making horizon, while systematic mortality risk has significant impacts on the wage earner's investment in the zero-coupon bond and the longevity bond. Since systematic mortality risk is assumed hedged by trading the longevity bond, its impacts on consumption, purchase of life insurance and bequest are not

significant, especially when the decision-making horizon is short. This highlights the importance of new financial instruments that allow individuals to hedge systematic longevity risk.

Results are reported in Shen, Y. and Sherris, M. (2015). Lifetime Asset Allocation with Idiosyncratic and Systematic Mortality Risks, which is under revision for submission.

Most prior analysis assumes mortality rates are known and deterministic and address only idiosyncratic longevity risk.



DR YANG SHEN

BEC East China Normal University,
MSc PKU, PhD Macq.
RESEARCH FELLOW

Yang Shen was a CEPAR Research Fellow located in the UNSW Business School. He joined the Centre in September 2013 after submitting his PhD thesis at Macquarie University, working at CEPAR

until August 2015. He left CEPAR to take up an Assistant Professorship in the Department of Mathematics and Statistics at York University in Canada.

His research interests include Actuarial Science, Financial Mathematics, and Stochastic Control. He has published research articles in journals including *Automatica*, the *European Journal of*

Operational Research, *Insurance: Mathematics and Economics*, the *Journal of Futures Markets*, *Nonlinear Analysis: Theory, Methods & Applications*, and the *Scandinavian Actuarial Journal*.

A VALUE BASED LONGEVITY INDEX WITH APPLICATIONS TO LONGEVITY RISK MANAGEMENT

52

RESEARCHERS

MICHAEL SHERRIS
YANG CHANG

Longevity risk is a risk that has the potential to be transferred to financial market participants rather than being held on the balance sheets of reinsurers, insurers and pension funds. Financial markets contracts are based on indices so that an index that captures the risks involved is required. Current indices for longevity take the form of projected survival probabilities or numbers of survivors in a cohort. Because of the typical maturity of coupon and annuity bonds in financial markets, indices that reflect the longer term nature of longevity risk should be considered.

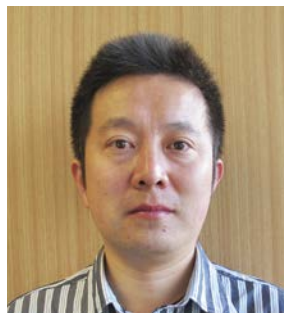
This project proposes an alternative cohort-based value index for insurers and pension funds to manage longevity risk. This index is an expected present value of a longevity linked cash flow valued using a specified cohort mortality model and a commonly used interest rate model. Since interest rate and longevity risk are inherent with any longevity linked obligation and interest rate risk can be effectively hedged, this index will provide a better measure of the longevity risk than current indices.

Current mortality models are largely age-period based, so we develop a cohort based stochastic mortality model with age-dependent model parameters that provides realistic cohort correlation structures as an underlying

basis for the value index. We show how the model improves fitting performance compared to other cohort models, particularly for very old ages, and has a familiar model formulation for financial market participants. We also demonstrate the hedge effectiveness of the index.

Results are provided in the CEPAR Working Paper 2015/05: Chang, Y. and Sherris, M., A Value-Based Cohort Index for Longevity Risk Management.

We show how the model improves fitting performance compared to other cohort models, particularly for very old ages, and has a familiar model formulation for financial market participants.



DR YANG CHANG
BSc (Hons) PhD UTS
RESEARCH FELLOW

Yang Chang joined the UNSW CEPAR node in February 2014 as a Research Fellow and left in March 2015 to take up a position as a Senior Quantitative Analyst in Enterprise Risk Analytics at Westpac. He completed his

PhD in Quantitative Finance at UTS in March 2014.

Yang's PhD thesis focused on the anomalies in the fixed income and foreign exchange market after the Global Financial Crisis and proposed a consistent approach to modelling such anomalies. His research interests include financial modelling and risk management of longevity risk.

RESEARCHER RALPH STEVENS

This project aims to provide insights into the effectiveness of hedging of systematic longevity risk using capital market solutions. Lately there is an increased interest in hedging systematic longevity risk through medium term (five to ten year) future contracts. The aim of such a contract is to hedge the variations in value of the liabilities at some day in the future. However, a risk that is not included in current evaluations is the uncertainty in the risk premium for systematic longevity risk, e.g., the price of renewing a contract to hedge systematic longevity risk at maturity.

This presents a substantial rollover risk in these contracts.

In 2015 as part of the project the mathematical solutions of the Bayesian updating of the market price and mortality dynamics were derived. We allow for dependency between the market price dynamics and the evolution of the mortality dynamics. This dependency might be due to an increase in demand for hedging products if mortality decreases more than expected as annuity providers become more aware of the risks or due to reduced supply as it might increase the ambiguity related to the evolution in the mortality dynamics. Moreover, we allow for differences in the already-held beliefs about mortality and market price

dynamics, as typically there is more information on the former than the latter.

The benefit of having these mathematical solutions is that it prevents the need for nested simulations, which are too time consuming to apply. Since we have the Bayesian updating solutions of the problem we are not required to re-estimate the parameters in each simulation path at the time of renewal of the contract. The results indicate that the rollover risk substantially reduces the hedge effectiveness of value hedging. Therefore, in risk management decisions annuity providers should include the rollover risk as part of the risks when evaluating whether to transfer their systematic longevity risk to third parties or not.

The results indicate that the rollover risk substantially reduces the hedge effectiveness of value hedging.



DR RALPH STEVENS
BSc MSc MPhil PhD
Tilburg University
SENIOR RESEARCH FELLOW

Ralph Stevens joined the UNSW CEPAR node in July 2012 as a Senior Research Fellow. Previously he held the position of Lecturer in the School of Risk and Actuarial Studies at the University of New South Wales.

He holds a PhD degree from CentER, Tilburg University, where his research was focused on the Network for Studies on Pensions, Aging and Retirement (NetSPAR) theme: Living Longer in Good Health. He is also a NetSPAR Fellow.

His current research focuses on the effects of systematic longevity risk on annuities. This includes managing and measuring

systematic longevity risk in a portfolio of life insurance and pension products and calculating the capital reserves for systematic longevity risk. He is also interested in retirement choices.

This incorporates optimal decision making in life-cycle models as well as describing, understanding and improving choices related to the individual retirement decision.

RISK MANAGEMENT AND PAYOUT DESIGN OF REVERSE MORTGAGES AND HOME EQUITY RELEASE PRODUCTS ALLOWING FOR IDIOSYNCRATIC HOUSE PRICE RISK

54

RESEARCHERS

KATJA HANEWALD
MICHAEL SHERRIS
ADAM WENQIANG SHAO

External Collaborator

DANIEL CHO
(SWISS RE)

Home equity is a significant component of individual wealth of Australians as they reach retirement. Recently there has been increased attention given to the possibility of using home equity to finance health and other costs in retirement. Reverse mortgages provide an alternative source of funding for retirement income and health care costs. The two main risks that reverse mortgage providers face are house price risk and longevity risk.

These projects analyse various aspects of reverse mortgages including the risk and profitability of reverse mortgages from the lender's perspective for both lump-sum and income stream payments and an analysis of the combined impact of house price risk and longevity risk on the pricing and risks of reverse mortgage loans in a stochastic multi-period model.

In the first project, in order to model the risks involved, a multi-period cash flow model is developed and calibrated. Reverse mortgage cash flows and loan balances are modelled in the multi-period stochastic framework that allows for house price risk, interest rate risk and risk of delayed loan termination.

A Vector Auto-regressive (VAR) model is used to simulate economic scenarios and to derive stochastic discount factors for pricing the no negative equity guarantee embedded in reverse mortgage contracts. In the second project, models incorporating a new hybrid hedonic-repeat-sales pricing model for houses allowing for individual characteristics, as well as a stochastic mortality model for mortality improvements along the cohort direction (the Wills-Sherris model) are used.

In the first project the results show how lump-sum reverse mortgages have potentially higher expected returns and require less risk-based capital than income stream reverse mortgages, which is a

factor that may explain why this product design dominates in many markets. The loan-to-value ratio, the borrower's age, mortality improvements and the lender's financing structure are shown to be important drivers of the profitability and riskiness of reverse mortgages, but changes in these parameters do not change the main conclusions.

In the second project we show that pricing based on an aggregate house price index does not accurately assess the risks underwritten by reverse mortgage lenders, and that failing to take into account cohort trends in mortality improvements substantially underestimates the longevity risk involved in reverse mortgage loans.

Papers based on the research have been published in leading international journals:

Cho, D., Hanewald, K. and Sherris, M. (2015). Risk Analysis for Reverse Mortgages with Different Payout Designs, *Asia Pacific Journal of Risk and Insurance*. Vol 9, 1, 77-105.

Shao, A.W., Hanewald, K. and Sherris, M. (2015). Reverse Mortgage Pricing and Risk Analysis Allowing for Idiosyncratic House Price Risk and Longevity Risk, *Insurance: Mathematics and Economics*, Volume 63, July, 76-90.



DR KATJA HANEWALD
MSc Econ PhD Humboldt-Universität zu Berlin
ASSOCIATE INVESTIGATOR

Katja Hanewald was a Senior Research Associate in the Australian Institute for Population Ageing Research at the UNSW Business School from January 2011 until 1 July 2013 when she returned to Berlin to work as an Executive

Officer in the German Federal Ministry of Finance. In January 2016 she returned to CEPAR as a Senior Research Fellow with CEPAR's Australia-China Population Ageing Research Hub.

Her research interests include optimal risk management decisions of households and firms facing longevity risk and financial risk; pricing and risk management of equity release

products; and solvency capital requirements for banks, insurers and pension funds.

'I am always interested in a number of research topics beyond the projects I am currently working on. CEPAR provides the perfect setting for me to develop my projects and deepen my interest in other economic, demographic and actuarial areas.'

RESEARCHERS

DANIEL H. ALAI
MICHAEL SHERRIS

External Collaborator

ZINOVYI LANDSMAN
(HAIFA)

Standard approaches to modelling survival use a range of survival distributions. Estimating these distributions has some challenging aspects when used to model survival of human populations. These include the censoring and truncation of survival data. In insurance and pension funds the full lifetime of the individuals in the pool have usually not been observed. It's also important to recognise that mortality improvement has meant that pools of lives have common factors that impact the survival probabilities.

Pools can be interpreted in different ways, from nation-wide cohorts to employer-based pension annuity portfolios. In practice, data will come from a range of sources and allowing for different pools in the estimation is important. This project considers modelling of survival (lifetime) distributions and has incorporated dependence in a pool of lives via a common stochastic component. The common stochastic component is representative of systematic longevity risk, not accounted for in standard life tables and actuarial models used for annuity pricing and reserving.

Research issues have included the estimation of these distributions allowing for censoring and truncation as well as the heavy tail nature of survival distributions.

Research outputs from the project include:

- Working paper: Alai, D., Landsman, Z., and Sherris, M. (2015). Modelling Lifetime Dependence for Older Ages Using A Multivariate Pareto Distribution.
- Alai, D., Landsman, Z., and Sherris, M. (2015). A Multivariate Tweedie Lifetime Model: Censoring and Truncation. *Insurance: Mathematics and Economics* 63: 203-213.

- Alai, D., Landsman, Z., and Sherris, M. (2015). Multivariate Tweedie Lifetimes: the Impact of Dependence, which has been accepted to appear in the *Scandinavian Actuarial Journal*.
- Research was presented at a number of international conferences including the International AFIR Colloquium, Sydney, August, 2015.

It's also important to recognise that mortality improvement has meant that pools of lives have common factors that impact the survival probabilities.



DR DANIEL H. ALAI

BMath Waterloo, PhD ETH Zurich
ASSOCIATE INVESTIGATOR

Daniel Alai is a Lecturer in the Centre for Actuarial Science, Risk and Investment at the University of Kent.

Prior to his appointment at Kent in early 2014, Daniel was a Senior Research Associate in the Australian Institute for

Population Ageing Research at the UNSW Business School.

Daniel joined UNSW in June 2010 following his graduation from the Department of Mathematics at ETH Zurich. He has also worked for insurance companies such as Sun Life (Waterloo) and Manulife (Waterloo), as well as for consulting companies KPMG (Toronto) and Tillinghast-Towers Perrin (New York City).

He has expertise in actuarial risk management and loss modelling, development and assessment of models for longevity risk and application to product developments, risk management and regulatory requirements.

ESTIMATION AND APPLICATION OF AFFINE CONTINUOUS TIME MULTI-COHORT MORTALITY MODELS

56

RESEARCHERS

MICHAEL SHERRIS
YAJING XU

External Collaborator

JONATHAN ZIVEYI
(UNSW)

Models for mortality with financial applications are important for the pricing and risk management of all forms of longevity products. These models need to be cohort based and capture the dependence between cohorts. An important approach to this modelling is based on the continuous time models using affine dynamics developed from the interest rate risk and term structure literature.

This project aims to develop and calibrate continuous time mortality multi-cohort models in an affine

framework. Previous models have either been single cohort models or have implied very high correlations across cohorts. Estimation of these models is also a challenge and ensuring consistent models with stability in estimation is as important.

In our approach, the mortality intensity is modelled with age-period common factors that affect all the cohorts as well as cohort specific factors that only affect specific cohorts, so that the correlations among cohorts are not perfect. The multi-cohort model is estimated using Danish male mortality data since there is a long history of mortality data for many cohorts. The model assumes two common factors for the age-period mortality which

are fitted using a Kalman Filter algorithm. The cohort specific factors are estimated by minimising the residual calibration error.

The model is assessed based on the out-of-sample forecast performance of mortality survival curves and compared with the RH model (age-period-cohort model developed by Renshaw and Haberman (2006)) and the CBD model (age-period model developed by Cairns et al. (2006)) based on the actual mortality data. The results show that the proposed model effectively incorporates improvement trends for cohort survival curves based on the Danish data and performs better than the alternative models assessed.

The project results have been reported in the CEPAR Working Paper 2015/13: Xu, Y., M. Sherris and J. Ziveyi, The Application of Affine Processes in Multi-Cohort Mortality Model and have been presented at a number of international conferences including the International Insurance: Mathematics and Economics Conference in Liverpool, England, 2015 and the International AFIR Colloquium, in Sydney, August, 2015.

The results show that the proposed model effectively incorporates improvement trends for cohort survival curves based on the Danish data and performs better than the alternative models assessed.



PROFESSOR MICHAEL SHERRIS
BA Macq., MBA Syd., FIA, FIAA, FSA
CHIEF INVESTIGATOR

Michael Sherris is Professor of Actuarial Studies in the UNSW Business School. His research sits at the intersection of actuarial science and financial economics, and has attracted a number of international and Australian awards. He has published in

leading international risk and actuarial studies journals, including *Journal of Risk and Insurance*, *Insurance: Mathematics and Economics*, *Journal of Economic Dynamics and Control* and *Geneva Papers on Risk and Insurance*. He is on the editorial board of the *Annals of Actuarial Science* and served on the editorial board of the *North American Actuarial Journal*. Prior to becoming an academic he

worked in the banking and finance industry for a number of major banks and a life insurance company. He has been an active member of the Australian actuarial profession having served on the Council of the Institute of Actuaries of Australia. He was President (2008-2009) of the Asia Pacific Risk and Insurance Association and a Board and Executive Member of the Enterprise

Risk Management Institute International. He was named Australian Actuary of the Year 2007 in recognition of his contributions to actuarial research and education both internationally and within Australia.

RESEARCHERS

MICHAEL SHERRIS
MENGYI XU
ADAM WENQIANG SHAO

There has been an increased focus on investment strategies during the accumulation phase that target post retirement income rather than maximising wealth at retirement. These strategies include a range of retirement date targets and include life-cycle investment strategies that vary the proportion allocated to equities based on age and wealth.

Another approach is to consider a target based on the value of retirement income at retirement age allowing for inflation and longevity. This project

develops and assesses target annuitisation investment strategies that aim to provide minimum values based on an inflation and longevity linked income stream for a range of specified retirement ages. The minimum reflects a basic level of retirement income, leaving room for higher outcomes if market returns are favourable. This is a form of portfolio insurance strategy that aims to protect a minimum level of income on retirement.

The project has developed longevity income indices for Australia, Japan, the UK and the US to quantify the volatility and trends in the index. These indices quantify how much an individual would require to provide one dollar per

annum in real terms over their lifetime. Longevity protection is based on the assumption that an individual self-insures this risk using official life table data. Indices similar to this have been developed in the BlackRock CoRI Retirement Indexes which are based on annuity values with full insurance of longevity risk.

The project considers both option-based portfolio insurance (OBPI) and constant-proportion portfolio insurance (CPPI) using the annuity based retirement index as a minimum guarantee target. We simulate returns on equity and bonds based on realistic parameters. The results show that these minimum target annuitisation strategies on average require increasing

equity proportions over time but with a high degree of variability. Option-based strategies incur a cost through the implied guarantee premium but meet the retirement income target with more certainty. CPPI strategies have increased equity exposures for higher strategy multiples and for higher equity market outcomes. They perform better in exceeding the retirement income target for higher equity returns than OBPI strategies. The CPPI strategies do not perform as effectively in higher volatility equity markets with increased chances of falling short of the target annuitisation values.

Results in 2015 have been reported in the draft working paper: Xu, M., Sherris, M. and Shao, A. W. (2015), Portfolio Insurance Strategies for Target Annuitization Funds (in progress) and have been presented at the International Insurance: Mathematics and Economics Conference in Liverpool, England, 2015 and the International AFIR Colloquium, in Sydney, August, 2015.



DR ADAM WENQIANG SHAO
BEC BISU, MEd CUFE,
PhD UNSW, ASA
RESEARCH FELLOW

Adam Shao is a Research Fellow at the UNSW CEPAR node. He holds a PhD from the School of Risk and Actuarial Studies, UNSW. He qualified as an Associate of the Society of Actuaries in December 2015.

Adam's research interests include health dynamics, longevity risk, pricing and risk analysis of retirement products (e.g., annuity, reverse mortgage, and long-term care insurance), solvency capital requirements, and house price modelling. Adam's research plan is to look at retirement product designs from both supply and demand

sides. More recently, Adam has been working on two projects: (1) systematic uncertainties of multiple-state health transitions; and (2) retirees' optimal portfolio choice when they have access to reverse mortgage and long-term care insurance.

RESEARCHERS

MICHAEL SHERRIS
YANG SHEN

External Collaborator

JONATHAN ZIVEYI
(UNSW)

Variable annuities are products that have been offered in many countries to allow individuals to participate in investment markets and to also have guarantees that limit downside risk and provide lifetime income payments. They involve charges for these guarantees and require investment strategies that hedge the risks. Quantifying the costs and risks of these products is a challenge in ensuring viable markets for these products from both an insurer and a policyholder perspective. Since these products can be surrendered with early termination charges, the issue of how to determine the impact of these charges has attracted research attention.

This project considers the pricing of guaranteed minimum maturity benefits embedded in variable annuity contracts in the case where the guarantees can be surrendered at any time prior to maturity. Surrender charges are imposed as a way of discouraging early termination of variable annuity contracts. We formulate the valuation framework as an American put option pricing problem and derive the corresponding pricing partial differential equation by using hedging arguments and Ito's Lemma.

Given the underlying stochastic evolution of the fund, we also present the associated transition density partial differential equation whose solution is well known in the literature. An explicit integral expression for the pricing partial differential equation is then presented with the aid of Duhamel's principle.

We outline the algorithm for implementing the integral expressions for the price, the corresponding early exercise boundary and the delta of the surrender option. Numerical results are derived and analysed for the sensitivity of the prices, early exercise boundaries and deltas to changes in the underlying variables. An analysis of the fair insurance fees is also presented.

The results are reported in a draft working paper: Shen, Y., Sherris, M., and Ziveyi, J. (2015). Valuation of Guaranteed Minimum Maturity Benefits in Variable Annuities with Surrender Options (in progress) and have been presented at the International AFIR Colloquium, in Sydney, August, 2015.

Since these products can be surrendered with early termination charges, the issue of how to determine the impact of these charges has attracted research attention.

MANAGING RETIREMENT RISKS WITH REVERSE MORTGAGE LOANS AND LONG-TERM CARE INSURANCE

RESEARCHERS

MICHAEL SHERRIS
ADAM WENQIANG SHAO

External Collaborator

HUA CHEN
(TEMPLE UNIVERSITY)

Increasing emphasis has been placed on understanding the role of housing in financing long-term care (LTC) needs in Australia and other countries. LTC insurance is also a product that is available in some countries such as France and the United States but not in Australia. Since there is a high proportion of home ownership in Australia and a house can be seen as a form of self-insurance against LTC costs, the question arises as to what the demand would be for products that can potentially cover LTC costs such as LTC insurance and reverse mortgages on a retiree's house.

To address this question, this project considers a retiree's optimal portfolio choice with respect to consumption, reverse mortgage loans, and private LTC insurance.

We use a discrete time life-cycle model that takes into account mortality risk, health shocks and house price risk. The aim is to consider how individuals can use reverse mortgage loans and private LTC insurance to better manage retirement risks. In particular, we aim to quantify the extent to which the demand for private LTC care insurance is reduced by home equity, which provides a form of self-insurance.

These interacting effects between reverse mortgage and private LTC insurance are important and need to be better understood. To do this we consider welfare gains from different products. We quantify the welfare gain of 65-year-old females if they have access to a reverse mortgage only and the welfare gain when private LTC insurance is also included. We show that LTC insurance has limited additional benefits when

an individual can access the equity in their home if they are a home owner. An important methodological contribution is to the literature in the implementation of the optimal decision making framework.

Results have been written up in the draft working paper: Shao, A.W., Chen, H., and Sherris, M. (2015). Managing Retirement Risks with Reverse Mortgage Loans and Long-Term Care Insurance (in progress) and were presented at the Eleventh International Longevity Risk and Capital Markets Solutions Conference in Lyon, France, September 2015.

The question arises as to what the demand would be for products that can potentially cover long-term care costs such as long-term care insurance and reverse mortgages on a retiree's house.

MODELLING LONG-TERM CARE INCORPORATING SYSTEMATIC UNCERTAINTIES IN HEALTH TRANSITION RATES

RESEARCHERS

MICHAEL SHERRIS
TIFFANY ZIXI LI
ADAM WENQIANG SHAO

Current modelling of health transitions for actuarial assessment of long-term care (LTC) insurance do not incorporate the impact of systematic improvement in mortality. LTC costs are impacted by the age at which an individual becomes functionally disabled and the amount of time spent in need of LTC. With systematic mortality improvement the time of disablement may be deferred to older ages and the time spent disabled and in need of LTC becomes more uncertain.

This project develops a model that incorporates systematic uncertainties in the transition rates among health states. The approach is to incorporate a multi-state latent factor intensity to model the transition rates between states including recovery rates. Parameter estimation uses Monte Carlo maximum likelihood. An approximating state space model is used in the estimation of the unobserved systematic factor, referred to as 'frailty'.

Future health states are simulated using the model to generate uncertain future times spent in differing health states including in LTC states.

The project uses the US Health and Retirement Study (HRS) data from 1998 to 2012 to assess the model and its implications. The estimation shows significant reductions in transition rates from healthy to disabled and from healthy to deceased during this period. In other words, systematic improvement has reduced rates of disability and mortality rates of healthy individuals, as would be expected. Recovery rates from disabled states are found to have a high level of sensitivity to 'frailty'.

Results for a range of ages covering 50, 55, 60, 65, 70, and 75 are presented along with the 'frailty' effects for the respective expected survival probabilities and time spent in each health state. Expected future lifetime increases, even after considering systematic

uncertainties, as does future healthy life expectancy. The results show that the increase in disability prevalence at older ages is mainly due to the delay of incidence of disability. Future lifetime in disability now has uncertainty in the model and the ratio of healthy life expectancy to total life expectancy indicates neither morbidity compression nor expansion in the US population aged more than 50 during the study period.

Results are being written up in a draft working paper: Li, Z., Sherris, M. and Shao, A.W. (2015). Modelling LTC Incorporating Systematic Uncertainties in Health Transition Rates (in progress) and were presented at the Australasian Actuarial Education and Research Symposium, Gold Coast, December, 2015.

The results show that the increase in disability prevalence at older ages is mainly due to the delay of incidence of disability.

PRODUCT PRICING AND SOLVENCY CAPITAL REQUIREMENTS FOR LONG-TERM CARE INSURANCE

RESEARCHERS

ADAM WENQIANG SHAO
MICHAEL SHERRIS
JOELLE HY FONG

This project presents a comprehensive assessment of premiums, reserves and solvency capital requirements (SCRs) for long-term care (LTC) insurance policies using Activities of Daily Living and US data. We compare stand-alone policies, whole life insurance policies with LTC benefit riders (LTC insurance combined with whole life insurance), life care annuities (LTC insurance combined with annuities) and shared LTC insurance in terms of net premium cost and SCRs.

Net premiums and best-estimate reserves for base LTC insurance policies are determined using Thiele's differential equation. Product features such as the elimination period and the maximum benefit period are compared using a simulation-based model.

We show how a maximum benefit period can reduce costs and risks for LTC insurance products. SCRs for longevity risk and disability risk are based on the Solvency II standard formula. We quantify the extent to which whole life insurance policies with LTC benefit riders and life care

annuities provide lower SCRs than stand-alone LTC insurance policies.

Results appear in the publication: Shao, A.W., Sherris, M. and Fong, J.H. (2015). Product Pricing and Solvency Capital Requirements for Long-Term Care Insurance, *Scandinavian Actuarial Journal*, (Accepted on 14 Sep 2015), DOI: 1080/03461238.2015.1095793.

We show how a maximum benefit period can reduce costs and risks for LTC insurance products.



DR JOELLE HY FONG

PhD Wharton School, University of Pennsylvania
ASSOCIATE INVESTIGATOR

Joelle Fong is a Senior Lecturer at SIM University in Singapore.

Prior to her appointment at SIM University in February 2014 she was a CEPAR

Research Fellow based at the UNSW node. She joined CEPAR in August 2011 after graduating with a PhD in Insurance and Risk Management from the Wharton School at the University of Pennsylvania. She holds masters degrees from Wharton and Singapore Management University (SMU), and is currently an affiliate

researcher with SMU's Sim Kee Boon Institute for Financial Economics. Before commencing her PhD, she also held several positions in the Singaporean Civil Service.

Joelle's research interests include the economics of pensions and retirement; private and public insurance; annuities; and risk

management of morbidity and longevity. Her research has been published in the *Journal of Risk and Insurance* and the *Journal of Pension Economics and Finance*.

MULTISTATE ACTUARIAL MODELS OF FUNCTIONAL DISABILITY

RESEARCHERS

MICHAEL SHERRIS
ADAM WENQIANG SHAO
JOELLE HY FONG

Modelling transition rates between health states is fundamental to the assessment of costs and risks of products for long-term care (LTC) insurance. LTC costs are expected to significantly increase over the coming decades as the baby boom generation nears retirement. Recent policy discussions in the United States have focused on expanding the private LTC insurance market so as to alleviate some of the pressure on public programs. An important and fundamental input to the pricing of LTC insurance products is a set of age- and sex-specific functional status transition rates that can flexibly take into account alternative benefit trigger specifications.

This project estimates a multistate model for LTC insurance applications based on US Health and Retirement Survey (HRS) data. The project finds significant differences in disability rate patterns and levels between our set of estimates and those separately estimated using an earlier approach developed by the Society of Actuaries.

We apply generalised linear models to evaluate disability transitions for individuals in old age based on a large sample of US elderly. Our results suggest that the elderly face a 10% chance of becoming LTC disabled only at ages past 90, rather than in their 80s.

Furthermore, age patterns of recovery are found to differ significantly between the sexes. We also show that these estimates of transition probability are sensitive to the definition of 'LTC disability,' which has implications for the design of benefit triggers for private and public LTC insurance programs.

Results appear in the publication: Fong, J. HY., Shao, A.W. and Sherris, M. (2015). Multi-State Actuarial Models of Functional Disability, *North American Actuarial Journal*, Volume 19, Issue 1, 19:1, 41-59.

An important and fundamental input to the pricing of LTC insurance products is a set of age- and sex-specific functional status transition rates that can flexibly take into account alternative benefit trigger specifications.

RESEARCHERS

ERMANNO PITACCO
ANNAMARIA OLIVIERI
MICHAEL SHERRIS

This project aims to produce a book focusing on financial and actuarial issues in post-retirement incomes including modelling longevity and health, demand and supply issues including drawdown strategies and products such as annuities, long-term care (LTC) annuities and variable annuities. Post retirement income has become the focus of current research as well as the wealth management industry. Increasingly products are being developed to manage post retirement risks with a focus on longevity, disability and health. Governments are

increasingly expecting individuals to provide for their own retirement income and LTC needs with the public pension and health support provided as a safety net.

Topics covered will include longevity and disability trends, basic models of mortality and heterogeneity, post-retirement income institutions, markets, and products, and a framework for individual financing decisions. It will provide details of various forms of annuity and pensions including LTC annuities and variable annuities. It will analyse life-cycle models and decisions around annuitisation of retirement wealth. The book is based on existing institutional and regulatory structures and

requirements and incorporates current research perspectives.

Although research based, the aim is to also be a teaching resource and assumes knowledge of undergraduate financial and actuarial mathematics, probability theory, and economics. The project has been scoped and developed over the last few years. Authors for different chapters are now being approached. The aim is to develop draft chapters in 2016 and to complete a full draft by the end of 2016.

Post retirement income has become the focus of current research as well as the wealth management industry. Increasingly products are being developed to manage post retirement risks with a focus on longevity, disability and health.



PROFESSOR ANNAMARIA OLIVIERI

Degree in Business Economics, University of Parma, Degree in Actuarial Science and Statistics, University of Florence, PhD, University of Brescia

ASSOCIATE INVESTIGATOR

Annamaria Olivieri is Professor of Mathematical Methods for Economics, Actuarial Science and Finance in the Department of Economics

at the University of Parma.

Her areas of research include life and health insurance modelling and risk management. She is an actuary and full member of the *Istituto Italiano degli Attuari* (Italy) and Associate Editor of the *European Actuarial Journal*. In 2011 she was awarded the Bob Altling von Geusau Memorial Prize, together with Ermanno

Pitacco, for the best paper published in the *ASTIN Bulletin* on an AFIR related topic. She has presented in continuous professional development courses and masters programmes (in Italy and abroad) for both actuaries and non-actuaries, in the field of actuarial mathematics and risk management techniques. She is an author and co-author of many research

articles and the recent textbooks, *Introduction to Insurance Mathematics: Technical and Financial Features of Risk Transfers, 2nd edition* (2015) with Ermanno Pitacco, and *Modelling Longevity Dynamics for Pensions and Annuity Business* (2009) with Pitacco, Denuit and Haberman.

RESEARCHERS

ERIK HERNÆS
SIMEN MARKUSSEN
JOHN PIGGOTT

External Collaborator

KNUT RØED
(FRISCH CENTRE)

This project constitutes a major piece of work focused on how mature workers respond to incentives to continue with their labour force attachment as they enter the retirement window. Evidence is generally hard to come by: the heterogeneity of older employee cohorts, and the multiple reasons for retirement (health, family circumstance, etc) make it difficult to isolate the impacts of policy change in this space.

This project studies in detail the comprehensive 2011 Norwegian pension reform, using longitudinal administrative data, to examine the labour supply responses to alternative reform paths. The reform unified the pension access age of private sector workers, (who had hitherto had different access ages depending on their employer), and eliminated the earnings tests which had been in place until the reform. By examining these different groups before and after the reform, we are able to infer the labour supply responses of these different groups as they react to a range of changes in policy structure.

Overall the reforms present a highly unusual and surprisingly complete quasi-natural experimental set-up for our investigations.

The core issue of the paper was whether workers in the retirement window, when appropriately informed, would respond to incentives to continue working, or whether the blunt instrument of increasing the access age was necessary to persuade employees to work longer. Many countries have adopted the latter strategy, which does work, but at considerable social cost, mainly related to the heterogeneity of the cohorts under examination.

It is not optimal for everyone to work longer. So the issue is very important for policy formulation in developed countries around the world, including Australia.

An initial paper was submitted for publication late in 2014. It reported findings for the retired cohort only. They showed that the flexibility approach has the potential for raising labour supply considerably. The response for a revision, received in May, was accompanied by extensive editorial and referee reports, and much of the last eight months has been devoted to an extensive reworking of the project. The re-written paper has now been resubmitted to the *Journal of Public Economics*.



SCIENTIA PROFESSOR
JOHN PIGGOTT

BA Syd., MSc PhD Lond., FASSA
CENTRE DIRECTOR

John Piggott is Professor of Economics and ARC Australian Professorial Fellow in the UNSW Business School.

He has a long standing interest in retirement and pension economics and finance, and in public finance.

His publications include more than 100 journal articles and chapters in books, which have appeared in the leading international academic journals as well as in highly cited conference volumes. In addition, he has co-authored two books, both published by Cambridge University Press.

His national policy experience includes membership of both the Henry Tax Review Panel (2008-2009)

and the Australian Ministerial Superannuation Advisory Committee (2007-2011).

Internationally, he worked with the Japanese government for nearly a decade from 1999 on pension and population ageing issues. In 2004, he was tasked with evaluating World Bank assistance on pension reform in the Asian region for the Bank's Operations Evaluation Department. In 2007 he was

appointed Visiting Professor, Zhejiang University, China, and from 2008-2010 was Visiting Scholar with the Department of Insurance and Risk Management, Wharton School of Business, University of Pennsylvania.

John serves as book review editor of the *Journal of Pension Economics and Finance* and is an Associate Editor of the new Elsevier journal, *The Journal of the Economics of Ageing*.

Work over the last eight months included, among other things, the incorporation of a second cohort for analysis, and a clear theoretical specification of the model. As well, the econometric analysis was improved, and the exposition of this complex reform improved through diagrams.

Our basic message, however, remains much the same, although it is now more empirically convincing, clearer, and more tightly argued. We find an elasticity of labour supply of about 0.25, mainly at the extensive margin – that is, most of this increase in supply is through people extending their working life. This magnitude of response solves the fiscal

issue as well as the labour supply issue. That is, a response of this magnitude means that income tax collections more than make up for the increase in social security outlays associated with earnings test elimination.

The core issue of the paper was whether workers in the retirement window, when appropriately informed, would respond to incentives to continue working, or whether the blunt instrument of increasing the access age was necessary to persuade employees to work longer.



SIMEN MARKUSSEN
BEc MEc PhD Oslo
ASSOCIATE INVESTIGATOR

Simen Markussen is a Senior Research Fellow at the Ragnar Frisch Centre for Economic Research in Oslo, Norway.

Since completion of his PhD in Economics in 2010 he has published several research papers in the leading journals within labour and health economics. He conducts empirical research aimed at identifying causal effects of various labour market policies or events.

He participates in the public debate around labour, health and education in Norway, holding numerous talks with relevant organisations and governmental agencies as well as filling a periodic column in *Dagens Næringsliv*, a major Norwegian newspaper, every sixth week.

RESEARCHERS

HAZEL BATEMAN
 RAFAL CHOMIK
 ROBERT HOLZMANN
 GEORGE KUDRNA
 JOHN PIGGOTT
 ALAN WOODLAND

The demographic transition being experienced around the world is generating a policy appetite for pension reforms. While there is now a substantial analytical and policy literature on pension policy, the taxation of pensions has received relatively little attention. Increasingly, however, pension taxation is coming under the spotlight, either directly, as tax preferences for pension saving and pension pay-outs are weakened, or indirectly, through reducing pensions by means tests or cuts to

pension entitlements. The need for systematic analysis is becoming critical.

This project, overseen by Robert Holzmann and John Piggott, has been designed to provide a landmark set of papers which provide new theoretical contributions, empirical evidence, and policy analysis and experience, into a volume which will be a benchmark for future research in this field. It was given critical mass through two linked conferences, the first held at CEPAR UNSW in November 2014, and the second at CESifo, Munich, in September 2015. The papers presented there, and others commissioned through the conference organisation and execution process, will be gathered in a volume to be considered by MIT Press.

The process of editing the volume is underway, and it is anticipated that this will be completed in 2016.

Pension taxation must be seen in the context of broader taxation structures. Too often pension taxes have been analysed in isolation from the other tax and transfer instruments prevailing in an economy. A more comprehensive approach brings into play the rationale for alternative policy designs, and their economic impacts. In turn, these broad structures have differential effects, depending on the inter-jurisdictional mobility of capital and labour.

The volume will have four substantive sections. The first will begin with an extended editors' Introduction.

We have been fortunate to secure commitment from both leading theorists and policy analysts to write substantial chapters for the first section, even though these were not presented at the conferences. Pierre Pestieau and Helmuth Cremer will co-author a 'theoretical foundations' paper – long overdue, and Luca Micheletto and Spencer Bastani will contribute a chapter on optimal age-dependent taxation – which is essentially what the special tax treatment of pensions amounts to. As well, Caba Feher, of the IMF, and Alain Joustien (Liege) will provide a policy and issues overview.

With the scene set, the second section moves to country specific issues and research questions. These papers illustrate the wide range of issues being confronted across national jurisdictions, all bound together by the fiscal and equity implications of population ageing. Countries covered include the UK and Australia, Portugal, the USA, and Switzerland.

Part Three focuses on large scale modelling exercises designed to assess the quantitative impact of policy structures and reforms. Again, in most cases these papers have been completed. An important final section explores the much understudied area of cross border taxation and pension portability.



DR GEORGE KUDRNA

MA Econ TUL Czech Republic,
 PhD Econ Syd.
 RESEARCH FELLOW

George Kudrna is a CEPAR Research Fellow, located in the UNSW Business School. He joined the Centre in July 2011 after working as a Postdoctoral Fellow for the UNSW School of Economics.

He completed his undergraduate studies in economics and insurance management in the Czech Republic, and received a PhD in Economics from the University of Sydney in 2009.

His research interests include pension economics, economic modelling, computational economics and population ageing. He has written articles published in

the *Journal of Macroeconomics* and the *Economic Record*.

George is currently involved in research projects on taxation of private pensions, means testing of public pensions, and economic implications of population ageing and pension reforms in Australia.

'Since joining CEPAR I have benefited tremendously from

the comments and suggestions of Chief Investigators and exchange of ideas with other research fellows at the Centre. Participation at CEPAR conferences and workshops involving policymakers and industry professionals has broadened my understanding of the issues related to population ageing.'

Among papers authored by CEPAR affiliates are chapters on Tax Expenditures in the Australian context (Chomik and Piggott), a chapter on the history of pension tax policy in Australia by Al Bateman, and a chapter on quantitative analysis of Australian pension reform by Kudrna and Woodland.

The Kudrna-Woodland piece builds on their well-developed overlapping-generations (OLG) model focused on retirement policy in Australia. Private pensions in OECD countries receive concessional tax treatments, aiming to increase self-funding in retirement and household savings. The existing tax treatment applied to Australia's superannuation (Australia's term for private pensions) is atypical, featuring a flat tax rate on contributions and fund income, with benefits being generally tax free.

This paper provides a quantitative analysis of hypothetical replacements of existing tax arrangements applied to superannuation with traditional tax expenditure EET and TEE regimes. Simulation results show that the examined progressive tax reforms to superannuation have positive implications for vertical equity, as indicated by larger relative welfare gains and income improvements experienced by lower income households. We also find positive long run effects of the reforms on domestic assets as well as reduced pension expenditures.

The tax expenditures chapter tackles comprehensively the interpretation of these calculations as they pertain to pensions. Some countries (for example, France) exclude pension taxation treatment from tax expenditures altogether.

In other countries, the estimates have currency within tax law, but appear to have little influence in the policy debate. In the Australian context, tax expenditure estimates have considerable influence in the reform debate, informing policy perceptions, partly because pension taxation is less settled in this jurisdiction. This chapter points to the shortcomings and interpretative difficulties of published tax expenditure estimates, and provides a range of estimates under alternative assumptions and frameworks.

The Bateman chapter describes Australia's very unusual approach to pension taxation. It surveys the evolution of Australia's approach to the taxation of

pensions over the past 30 years and critically assesses the current arrangements and possible reforms, with a view to providing lessons for countries contemplating a similar approach.

Most of these papers were presented at at least one of the two dedicated CEPAR CESifo conferences.

While there is now a substantial analytical and policy literature on pension policy, the taxation of pensions has received relatively little attention.

RESEARCHERS

ALAN WOODLAND
JOHN PIGGOTT
RAFAL CHOMIK
GEORGE KUDRNA
CAGRI KUMRU

This project, led by Alan Woodland and John Piggott, commenced in 2014 and relates to enhancing our understanding of means testing retirement income schemes through cross-country policy analysis, a clear exposition of the practical aspects of means testing, and state-of-the-art macroeconomic modelling of different arrangements. Building on these, the work attempts to test the application of insights from Australia's experience of means testing to other countries, particularly the United States.

Throughout 2015 the project benefited from funding from the US Social Security Administration (SSA) through the Michigan Retirement Research Center (MRRC). The MRRC is housed at the University of Michigan and funded by the US SSA.

Australia is unusual in its retirement income policy structures and much can be learnt from its current means-testing and mandatory-saving

framework, especially in an era where the IMF, the OECD, and others have advocated means testing as a way to address both fiscal stress and inequity issues while encouraging private pension provision. In fact, Australia's means-tested Age Pension is one of the largest means-tested programs in the OECD yet one of the cheapest pension schemes. It's a policy area in which Australia can contribute to debates in many countries.

The debate is topical in the US and several commentators and analysts have proposed ways of explicitly introducing means testing to Social Security. The SSA itself has analysed how imposing an income-tested reduction in benefits of between zero and 50% for people with incomes between about 120% and 240% of average earnings would affect costs.

Yet when compared against the parameters of the Australian pension means test, such a reform appears very conservative. Crucially, there is also uncertainty about the macroeconomic impacts of imposing new means tests in a country like the US or varying the design in Australia's existing regime.

The means test may create disincentives to work and save for those wishing to target a certain benefit level, but such distortions must be compared to disincentives from much larger earnings related pensions with associated payroll taxes or social insurance premiums.

The models developed as part of this project can consider such interactions and generate estimates of labour supply and saving decisions, the timing of the retirement decision, and overall efficiency and distributional impacts of alternative policy scenarios.

The project has generated a number of insights highlighted in research papers by Kudrna (CEPAR Working Paper 2015/9); Dabbs and Kumru (CEPAR Working Paper 2015/24); Kumru, Piggott and Thanopoulos (CEPAR Working Paper 2015/32), and summarised in an overview paper by Chomik et al. (CEPAR Working Paper 2015/35). These answer pertinent questions using Australian and US model parameters, which include: the extent to which having any mandatory pension scheme at all is economically efficient (depends on how much benefit we gain from the

pension acting as insurance for otherwise uninsurable risks such as longevity); whether means-tested pensions are more economically efficient than universal or earnings-related pensions (in general, means-tested pensions fare better because they tend to be cheaper and reduce work disincentives for prime-age workers); whether it is efficient to increase the means-test taper (higher tapers are favoured, but conclusions can be sensitive to model and methodology); and whether labour earnings should be excluded from the means test (yes, but the aggregate benefits are relatively small).

The insights were also tested in scenarios where individuals have 'non-standard preferences', i.e. where they find it difficult to commit to saving. Kumru, Piggott and Thanopoulos (2015) find that where self-control problems exist, means testing still appears to be more advantageous than providing universal pensions. Higher tapers are also favoured, even more so than in a model where people have standard preferences.

The research suggests that Australian policymakers should consider reforms that make the Age Pension taper

more aggressive (recent reforms do accentuate the effect of the asset taper). For example, Kudrna finds that strengthening the Age Pension income test in Australia from 50% to 100% could reduce pension outlays by 17%, allowing for lower income tax rates to maintain a balanced government budget. The reform would also have positive effects on per capita labour supply, domestic assets and average welfare in the long run.

For US policymakers interested in exploring greater targeting of Social Security but concerned with adverse incentives, the findings should be particularly encouraging. Even if policymakers were choosing to keep total spending constant, Dabbs and Kumru find that choosing a US-style earnings related scheme is economically inferior to an Australian-style means-tested one.

The project's success is visible not only in several ground-breaking papers, but is also reflected in CEPAR researchers being invited to participate in the MRRC's annual workshop which provided an opportunity to network and share ideas with other researchers as well as with the SSA.

AREA OF RESEARCH FOCUS

4

AGEING WELL AND PRODUCTIVELY

A whole of life approach to ageing naturally suggests that healthier lifestyles will lead to more productive ageing, whether in the formal labour market or in the family context. The core research question here is how public education and policy initiatives can encourage behavioural change to support ageing well and productively.

Research examines ways in which health and psycho-social factors influence productive contributions as well as independence, wellbeing, and use of health and community services. It focuses especially on those aspects of decision making and life choices that are important for a longer and more productive life, an important issue in the context of demographic change because as baby boomers age, the potential productivity of this cohort will depend on how well they age.

TO VIEW PUBLICATIONS
AND WORKING PAPERS RELATING
TO THIS RESEARCH VISIT CEPAR.EDU.AU

RESEARCH PROJECTS

SOCIOECONOMIC DETERMINANTS OF HEALTH AND WELLBEING ACROSS THE LIFE COURSE	70
PRODUCTIVE AGEING	71
LIFESTYLE INFLUENCES ON HEALTHY AGEING AND CHRONIC DISEASE	72
ATTITUDES, AGEING AND INTERGENERATIONAL RELATIONS	74
ACTIVITY SPACES AND ENGAGEMENT IN PHYSICAL ACTIVITY IN MID-AGED AND OLDER AUSTRALIAN ADULTS	75

That people are living longer is well known; less well known is the fact that over the last 30 years, much of that improvement in life expectancy has been driven by reductions in mortality at mature ages. Maintaining productivity and wellbeing into later ages therefore becomes critical, as does the determination of what has led to this improvement at the sub-aggregate level. Projects in this area of research examine lifestyle, social attitudes, physical activity, and other aspects of the human condition to determine their influence on healthy and productive ageing.

Some research projects documented under this Area of Research Focus examine both the social and health contexts within which older people currently live: chronic disease for example. Others take a much longer perspective, using life history, socioeconomic status, and other data to draw inferences about the relationship between early trauma, lifestyle and health at later ages. Among notable advances in 2015 are projects focused on:

- **HEALTH AND WELLBEING ACROSS THE LIFE COURSE**
A large team of researchers, led by Chief Investigator Hal Kendig and Partner Investigator James Nazroo, is analysing the life course determinants of later life experience of health and wellbeing. Partner status, parental influences on mental health, workforce participation, and voluntary and involuntary job exits, all form part of this matrix. Further, different cohorts will experience different predominant influences. New survey data incorporating life history narratives enormously increases the richness of this work. Results point to where intervention policy may be most effective, and also help to explain why different cohorts exhibit such varying expectations and attitudes. Related research documents trends in productive ageing, both within and outside the paid labour force.
- **CHANGING SOCIETAL ATTITUDES TO AGEING**
In 2015 this project used 2009-10 Australian survey data to analyse attitudes towards intergenerational equity and welfare policies after the onset of the GFC. A second round of the survey which began in 2015 will continue into 2016. It will allow assessment of the evolution of attitudes since the first survey. The second survey focuses particularly on older people's experiences and perceptions of ageist treatment.

RESEARCHERS

HAL KENDIG
JULIE BYLES
JAMES NAZROO
KATE O'LOUGHLIN
VANESSA LOH
CATHY GONG
RICHARD BURNS
TAZEEN MAJEED

External Collaborators

BRAM VANHOUTTE
CHRIS PHILLIPSON
(BOTH MANCHESTER)

This project examines how the life experiences of the baby boom cohort (born 1946-1950) influence health, productivity, wellbeing, pension and service use at ages 60 to 64 years. In 2015 the research team from the Australian National, Newcastle, Sydney, and Manchester universities analysed the Australian Life History and Health (LHH) findings in comparison to

the English Longitudinal Survey on Ageing (ELSA). This work was facilitated by a CEPAR ECR Travel Grant for Vanhoutte from Manchester to visit Sydney and ANU from December 2014 to February 2015. In December 2015, Dr Wahrendorf from Dusseldorf University visited ANU and Newcastle to commence comparative analyses with Australia, England, and Germany.

A special issue on 'Social Inequalities over the Life Course: Comparative Perspectives', edited by Kendig and Nazroo, was published online with the *Journal of Population Ageing*, including seven articles that examine the influence of different societal and policy developments over the post war period. An article on a gendered approach to

workforce participation patterns, led by Majeed, was published in the *Journal of Vocational Behaviour*, and related papers are under review. A paper led by Vanhoutte is under review investigating the influence of migration from England to Australia on health and wellbeing in later life.

Gong and Kendig presented in an invited symposium on age friendly cities convened by Professor Phillipson for the European Regional meeting of the International Association of Gerontology and Geriatrics (IAGG) in Dublin. In 2016 a chapter will be presented in an international book on age friendly communities as well as a paper to the International Federation on Ageing in Brisbane.

Research is also forthcoming in the ASSA/ CEPAR book *Population Ageing and Australia's Future* (edited by Kendig, Piggott and McDonald) to be published by ANU Press (see page 32); chapters addressing socio-economic determinants include 'Ageing and Social Change' by Gong and Kendig. Socioeconomic dimensions of ageing are also examined by a number of CEPAR collaborators in the book *Ageing in Australia: Challenges and Opportunities* edited by O'Loughlin, Kendig and Browning, in press (see page 30).

Additional socioeconomic influences are examined in articles published by Deborah Black and CEPAR colleagues on 'housing', another led by Kendig and

Loh on 'pathways to wellbeing in later life', and one on 'partner status' led by Byles; an article under review led by Burns examines parental influences on mental health in later life; and a working paper in progress led by Gong on how voluntary and involuntary job exits at mature ages impact health and wellbeing.

This project examines how the life experiences of the baby boom cohort (born 1946-1950) influence health, productivity, wellbeing, pension and service use at ages 60 to 64 years.



PROFESSOR JAMES NAZROO
BSc MB BS Lond., PhD UC Lond.
PARTNER INVESTIGATOR

James Nazroo is Professor of Sociology at the University of Manchester, UK. He also serves as co-Director of the Manchester Institute for Collaborative Research on Ageing and Director of the Centre on Dynamics of

Ethnicity. His research focuses on issues of inequality, social justice and underlying processes of stratification, particularly in relation to ageing and ethnicity. He works on the social determinants of health and wellbeing in later life, social inequalities over the life course, and longitudinal surveys of health and retirement.

He is the lead investigator for the five year interdisciplinary research programme 'Frailty, Resilience and Inequalities in Later Life (fRiLL)' (2011-2016); a Chief Investigator on the ongoing 'English Longitudinal Study of Ageing' (ELSA); and a Partner Investigator on the ARC Discovery grant 'Socioeconomic determinants and health inequalities over

the life course' being conducted in collaboration with CEPAR colleagues Kendig, Loh, Gong, Byles and O'Loughlin.

RESEARCHERS

HAL KENDIG
CATHY GONG
KATE O'LOUGHLIN
VANESSA LOH

In Australia, there has been increasing policy attention on maintaining productivity by enabling and supporting Australians to continue participation in productive activities as they age. Countering the negative view of ageing as a process of declining health, the productive ageing approach recognises that older individuals can and often do continue making valuable social and economic contributions by engaging in a range of productive activities. Productive activities may be paid or unpaid, and include volunteering, care-giving,

and other informal help to others such as childcare and housework.

This project draws primarily from the Australian longitudinal data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey from 2001 to 2012. The aim of this research is to investigate the extent of engagement in productive activities (including paid and unpaid work, volunteering, care-giving, childcare, and housework) and the determinants and consequences of engagement in productive activities for more recent cohorts of ageing individuals in Australia.

In 2015, Gong examined trends in healthy life expectancies in Australia

and the impacts of long-term health conditions on capacities for paid work. The study reports that older men and women are generally living longer but are also having more years with long-term health conditions; and women (but not men) in their 50s and 60s are having fewer years free of long-term health conditions. The capacity of people to work to age 67 or 70, as expected by the Government, will be influenced by workplaces that promote ageing workers' health and facilitate their continued work through job flexibility, job sharing and job rearrangement. In the analysis of the 2015 Intergenerational Report, Woods and Kendig (2015) underscore the potential for working longer as a strategy

for improving the incomes of older people as well as addressing fiscal shortfalls and labour force shortages.

Gong has further papers under preparation on social determinants of voluntary and involuntary job exits at mature ages. In 2016 she is planning further research on work-life balance in later life, perceived and observed age discrimination, and transitions of health and their impacts on both paid and unpaid productivities.

The capacity of people to work to age 67 or 70, as expected by the Government, will be influenced by workplaces that promote ageing workers' health and facilitate their continued work through job flexibility, job sharing and job rearrangement.



DR VANESSA LOH
BLibStudies (Int) (Hons), PhD Syd.
ASSOCIATE INVESTIGATOR

Vanessa Loh was a CEPAR Research Fellow in the Ageing, Work and Health Research Unit, Faculty of Health Sciences at the University of Sydney until July 2014, before accepting a position as a Postdoctoral Research Fellow in the School of Psychology at the

University of Sydney.

Her research interests include the psychosocial, individual and environmental predictors and determinants of healthy and productive ageing, work and retirement, and older adults' continuing contributions via paid work and other productive activities.

'My work as a CEPAR Research Fellow between 2012 and 2014 enabled me to broaden and extend my

research interests from individual and organisational factors in work and retirement to broader issues in population ageing research and healthy and productive ageing. Working with CEPAR has provided me with unique opportunities to meet and collaborate with both CEPAR-affiliated and other researchers from a range of disciplines with similar research interests. For example, my six-week study

visit to work with Partner Investigator Professor James Nazroo and his colleagues at the University of Manchester, provided me with a fantastic opportunity to establish lasting collaborative ties, and to develop my research and knowledge of quantitative methods used in sociological research by consulting directly with leading international experts in the field.'

RESEARCHERS

COLETTE BROWNING
HAL KENDIG
RICHARD BURNS
LINDY CLEMSON
KATE O'LOUGHLIN
JULIE BYLES
VANESSA LOH

External Collaborators

LYNETTE MACKENZIE
(UNIVERSITY OF SYDNEY)
JO ENTICOTT
SHANE THOMAS
(BOTH MONASH UNIVERSITY)

This project is based primarily on the Melbourne Longitudinal Studies on Healthy Ageing program (MELSHA), led by Associate Investigator (AI) Browning and Chief Investigator (CI) Kendig, with CEPAR support for the most recent rounds of data collection and support for Research Fellow Burns in data analysis and publications.

Burns, with Browning and Kendig, has led a number of publications on psychosocial aspects of wellbeing based on the 16 years of MELSHA data. Their article in *International Psychogeriatrics* reported that the main impact of widowhood transitions for both men and women was a decline of positive wellbeing which is associated with general unhappiness or malaise that is not reflected in depressive states. Another article now under review found that as people reach advanced later life they are more likely to not be 'living well' – that is, independently with good self-rated health and quality of life – and that this ageing well measure was more powerful than chronic disease in predicting mortality.

In a paper with CIs Anstey and Kendig now under review, Burns found that healthy ageing among very old people aged 85+ years can be experienced quite differently than among relatively younger groups in later life. These very old survivors were found to be mostly quite healthy. Further, it was clear that it was not functioning or health that predicted early mortality for this cohort, rather it was mental health conditions (depression and dementia).

In a collaborative paper with CI Kendig and AIs Byles and Loh, Burns also analysed data from the Australian Life Histories Survey to examine the impact of early parental influences on mental health outcomes over adulthood. In a presentation to the Society for Mental Health Research

(and in a paper now under review), Burns reported that poor parental quality and in particular over-protective mothers, were associated with self-reported histories of depression or anxiety diagnosis though late middle age. An invited address by Kendig to the Australian Institute of Family Studies drew on these findings to underscore the importance of emotional health in childhood on adult mental health outcomes.

AI Browning and colleagues Enticott, Thomas and CI Kendig examined trajectories of ageing well among older Australians over a 16-year period using MELSHA data. Trajectory modelling mapped different ageing trajectories, and was used to identify individuals who were 'ageing well'. Improvability from ageing poorly to ageing well

was incorporated as an important construct in the study design. This issue is often ignored in current studies but is important in identifying changeable factors that could benefit many to age well. Three distinct trajectories were identified: ageing well in all waves, ageing well then deteriorating, and not ageing well in any wave. The individual characteristics and gender differences that predicted and influenced the different ageing trajectories are highlighted in the paper, which is under review.

AI Browning and Thomas also contributed to a special issue of the journal, *Frontiers in Public Health*, on Evidenced Programming for Older Adults. Their paper compared chronic illness management programs and



DR RICHARD BURNS

BMus ANU, BA CSU, PGDE UC,
MSc Manchester, PhD USQ
RESEARCH FELLOW

Richard Burns joined the ANU CEPAR node in January 2013 as a Research Fellow at the Centre for Research on Ageing, Health and Wellbeing (CRAHW). Previously, Richard was a Research Fellow on a

Capacity Building Grant and a joint NHMRC/ARC funded project, the DYNOPTA project, which were based at CRAHW.

Richard's research focuses on wellbeing and mental health and has encompassed varied contexts including educational, organisational and epidemiological. More recently, Richard has been examining longitudinal changes in dimensions of

wellbeing and mental health across adulthood and more specifically in the years leading to death. Current work is focusing on describing 1) changes in wellbeing and cognitive function in late life, 2) the psycho-socio-demographic factors that drive flourishing and positive mental health across the lifespan, and 3) the impact of job strain and workplace

climate on employee health and wellbeing, and as barriers to workforce participation in later life.

policies for older adults in Australia and the UK noting the importance of training health professionals in behaviour change methods to support older people to engage in healthy behaviours and lifestyles.

Findings from the healthy ageing research are being disseminated to broader public audiences and in public policy. The forthcoming ASSA/CEPAR book *Population Ageing and Australia's Future* (see page 32) has a chapter on wellbeing and its improvement as a national goal (Burns and Browning); and another chapter examining social influences on ageing well and strategies to achieve it in health and care policies (Kendig and Browning).

This research also supports ageing in place by promoting positive health trajectories. It recognises the importance of physical and meaningful activity, coping skills, self-management and social connectedness for at-risk older people to maintain participation and safety. Examples include: a paper led by AI Clemson with Browning, Kendig and Mackenzie on predictors of injurious falls and fear of falling in the *Journal of Aging and Health*; a project titled 'Potential benefits of assistive technology to care providers and recipients', which draws on the collaborative work of AIs Clemson and O'Loughlin and the findings of a UK project (Yeandle et al) to examine the use of telehealth/telecare to support

effective networks of care; and a paper led by Kendig and Research Fellow Gong on ageing in place in Australia: longitudinal predictors and policy influences (in progress).

Further studies on the implementation and sustainability of new knowledge into aged care and public health practice and policies, include LiFE (the Lifestyle Functional approach to Exercise) to reduce falls in older people; and the iSOLVE project (Integrated SOLutions for sustainable falls preVENTion) which aims to establish integrated processes and pathways in assessing and responding to risk of falls in primary care.

... as people reach advanced later life they are more likely to not be 'living well' – that is, independently with good self-rated health and quality of life – and this ageing well measure is more powerful than chronic disease in predicting mortality.



PROFESSOR LINDY CLEMSON

Dip (OT) NSW College of Occupational Therapy,
B App Sc (OT) WAIT, MAppSc (OT)
PhD Syd.

ASSOCIATE INVESTIGATOR

Lindy Clemson is a Professor in Ageing and Occupational Therapy. She is the Joint Head of the Ageing, Work & Health Research Unit at the University of Sydney and an

NHMRC Career Development Research Fellow.

Lindy has more than 100 peer-reviewed publications, with over half on falls prevention, and has produced several practical manuals providing frameworks for practice. She developed the first assessment procedure for identifying fall hazards in the home. This Westmead Home Safety assessment, currently considered a gold

standard, is used by numerous universities and clinical settings nationally and internationally.

Lindy served on the Board of Directors of the Independent Living Centre for ten years up to 2008, has served on the NSW Policy Development Working Party (Falls) and as a NHMRC Grant Review Panel member in 2005 and 2007. She currently serves on the executive of the

Australian and New Zealand Falls Prevention Society and as an invited member of the World Federation of Occupational Therapists International Advisory Group on Accessibility and Participation. She is on the editorial board of the *Journal of Aging and Health* and the *Australian Occupational Therapy Journal*.

RESEARCHERS

HAL KENDIG
KATE O'LOUGHLIN
MERRIL SILVERSTEIN

External Collaborator
RAFAT HUSSAIN (ANU)

The rights and self-respect of older people depend largely on their 'social treatment' in everyday life, but there is growing evidence that they face negative attitudes and discrimination that limit their contributions and wellbeing. Negative views on ageing are increasing along with rising public concerns about the costs. The Age Discrimination Act (2004) addresses these problems but there is limited evidence to date on its effectiveness or about the knowledge required to guide effective action against age

discrimination and promote positive attitudes towards ageing.

This project aims to determine changing societal attitudes towards older workers, recent retirees, and those in advanced old age concerning intergenerational justice and related social issues and policies.

In 2015, preparation of publications continued including a chapter on 'Attitudes to Ageing' (O'Loughlin and Kendig) for the book *Ageing in Australia: Challenges and Opportunities* (see page 30). Further analyses of the 2009-2010 Attitudes to Ageing in Australia (AAA) baseline survey were conducted with CEPAR support, as a component

of the national Australian Survey of Social Attitudes (AuSSA). A comprehensive report on the methodology and findings was completed on Australian attitudes towards intergenerational equity and welfare policies at this time after the onset of the GFC (see: Kendig, O'Loughlin, Hussain, Heese and Cannon, CEPAR Working Paper 2015/33). Among other findings, the report found that only a quarter of people in 2010 thought that there was 'very strong/strong' conflict between older and younger people, with more than half stating that the degree of conflict was 'not very strong'.

The research team also designed a second round of the AAA survey that is being conducted in 2015-16. The two waves of the AAA survey

will be compared to investigate how attitudes to ageing may have evolved along with the socioeconomic and political change including developments between the 2010 and 2015 Intergenerational Reports. The focus for the survey continues to be on the attitudes of different age and socioeconomic groups, possible social and economic influences on them, and how they relate to political and social views relevant to older people. The 2015-16 AAA survey also queries in greater depth ageing people's experiences and perceptions of ageist treatment as well as younger people's experiences and perceptions that may give rise to them.

This project aims to determine changing societal attitudes towards older workers, recent retirees, and those in advanced old age concerning intergenerational justice and related social issues and policies.



PROFESSOR HAL KENDIG
AB UC Davis, MPI PhD USC, FASSA
CHIEF INVESTIGATOR

Hal Kendig is a sociologist and gerontologist. He is Professor of Ageing and Public Policy at the Australian National University in the Centre for Research on Ageing, Health, and Wellbeing. He previously served at the University of Sydney as Head of the Ageing,

Health and Work Research Unit and as National Convenor of the ARC/NHMRC Research Network in Ageing Well.

He leads the CEPAR Ageing Well, Ageing Productively Area of Research Focus, including collaborative projects on social inequalities over the life course, Australian Attitudes to Ageing, and other research on aged care and men's health. In 2015 he served as lead editor of the

CEPAR-supported book *Population Ageing and Australia's Future* (ANU Press, forthcoming – see page 32). From 2016 to 2018 he will lead a collaborative ARC Discovery grant on ageing well in China. He is active in a number of policy advisory responsibilities.

He is a Fellow of the Academy of Social Sciences in Australia serving on the Policy and Advocacy Committee,

a Fellow of the Gerontological Society of America, Distinguished Fellow of the Australian Association of Gerontology, and a founding Board member of the Global Social Initiative on Ageing. He serves on the editorial boards of *Ageing and Society*, the *Australasian Journal on Ageing*, the *Journal of Population Ageing* and the *Journal of Gerontology: Social Sciences*.

ACTIVITY SPACES AND ENGAGEMENT IN PHYSICAL ACTIVITY IN MID-AGED AND OLDER AUSTRALIAN ADULTS

RESEARCHER

ESTER CERIN

Urban environment characteristics can impact on successful and productive ageing by facilitating or hindering an active lifestyle across mid-to-late adulthood. Yet, how urban community design shapes the physical activity of this segment of the population is unclear. Global Positioning System (GPS) data (providing information on indoor/outdoor locations participants visited over seven days and travel routes and modes) were collected in 2011/2012 from 238 randomly selected mid-aged and older adults residing in NSW, QLD and SA and participating in the AusDiab3 study. Participants also

wore monitors capturing their physical activity and sedentary behaviours. This study aims to examine associations of characteristics of the neighbourhood environment and areas surrounding other frequently visited destinations (e.g., workplace) with physical activity and sedentary time in order to identify optimal mixes of destinations and environmental characteristics that are predictive of an active lifestyle within an Australian urban context.

Although GPS monitors can provide a large amount of objective data on locations where physical activity and sedentary behaviours occur, GPS data processing is laborious and technically challenging. The first part

of our project focussed on solving GPS data processing problems and transforming GPS data into information that can be used for the determination of environment-activity associations. The aim was to create GPS files with relevant information that could be imported into the Personal Activity Location Measurement System (PALMS), an encrypted web application that simultaneously processes, cleans and filters time-stamped physical activity monitor and GPS data and detects visited locations and trips. GPS data collected in the AusDiab3 study were particularly problematic because two different brands/models of GPS monitor were used (GlobalSat DG-100

and BTT08). These two types of GPS monitors provided data differing in content and format that were not compatible with PALMS. We have, thus, developed a procedure for the conversion of raw data from the two types of GPS monitors into 'csv' files that could be imported into PALMS. All GPS data have been now standardised, cleaned and mapped, requiring over 300 hours of intense processing. For each of the 238 participants, locations visited across the seven day period of monitoring are now being coded into location types (e.g., outdoors vs indoors; parks; recreational spaces; commercial locations; residential address). This information will allow an examination of the participants' activity

levels and sedentary behaviours across different types of locations. Using extant Geographic Information Systems (GIS) data, we will also be able to establish the extent to which the environmental characteristics of one's residential and workplace 'neighbourhoods' are associated with visitation and time spent in recreational locations, and with the likelihood and time spent on active versus motorised transport.



PROFESSOR ESTER CERIN
BSc(Hons) Rijeka, MSc UQ,
PhD NYU(UK)
ASSOCIATE INVESTIGATOR

Ester Cerin was a Professor of Physical Activity and Health at Deakin University before taking up the position of Professor of Physical Activity and Health at the Institute for Health and Ageing at the

Australian Catholic University in January 2016. She currently holds an Australian Research Council Future Fellowship in Urban Design and Active Ageing.

Her research interests focus on environmental and psychosocial determinants of lifestyle behaviours (physical activity and diet) and health across the lifespan. She is a member of the Executive

Committees, the chief analyst and one of the main investigators of two multi-country studies on environmental correlates of physical activity and obesity in adults and adolescents (IPEN Adult and Adolescent studies) funded by the National Institutes of Health (USA). She is a Chief Investigator on an NHMRC Centre of Research Excellence

in Cognitive Health. She leads the Institute's research program on the neighbourhood built environment, physical activity and cognitive health. She is a Deputy Editor-in-Chief of the *International Journal of Behavioral Nutrition and Physical Activity*.

AREA OF RESEARCH FOCUS

5

HEALTH AND AGED CARE

An ageing demographic will have dramatic implications for health and aged care budgets, and new strategies for delivering service while containing cost are urgently needed. Among older cohorts, health and aged care fit together. When prolonged hospitalisation is required (the most expensive type of health care delivery), this often leads to long-term residential care.

In many countries aged care is largely publicly funded or subsidised. While in Australia the cost is not currently large, it is projected to increase rapidly as baby boomers age. Patterns of use, changes in health status, new financing mechanisms, and delivery innovations, all fall within this Area of Research Focus.

TO VIEW PUBLICATIONS
AND WORKING PAPERS RELATING
TO THIS RESEARCH VISIT CEPAR.EDU.AU

RESEARCH PROJECTS

WORK AND CARE	77
INVESTIGATING PATHWAYS OF HEALTH AND COMMUNITY CARE SERVICE USE	78
DETERMINANTS OF HEALTH SERVICE USE	80
THE CONCORD HEALTH AND AGEING IN MEN PROJECT	81
LONG-TERM CARE INSURANCE: A SENSITIVITY ANALYSIS	82
LONG-TERM CARE INSURANCE REFORM	83
TABLET BASED WELLBEING CHECK SYSTEM FOR THE ELDERLY LIVING INDEPENDENTLY	84

2015 research projects, under this heading, fall into three groups. First, several research projects seek to understand individual behaviour responding to health and aged care needs and policies: patterns of health care use, the work-care trade-off, and the use of new tablet based support systems. Second, several projects focus on long-term care, a market which is non-existent or struggles to survive in almost every country in the world. Finally, a group of research projects examines a range of conditions associated with frailty in older men – studies based on data drawn from the Concord Health and Ageing in Men Project (CHAMP).

Among highlights in each group are:

- **INDIVIDUAL BEHAVIOUR**
Health service use was tracked using large surveys linked to administrative data sets. Chronic disease was found to be increasing, with both population age and increased obesity as correlates. Since many chronic diseases are potentially avoidable through lifestyle changes and screening, increased focus on prevention was seen as a policy option. As well, comorbidities increase health service use, suggesting more integrated health service delivery could improve efficiency.
- **LONG-TERM (AGED) CARE**
Two projects focus on long-term care (LTC), approaching the issue from opposite standpoints. From the insurer's perspective, analysis of what would make an LTC product viable is undertaken. This is important because the market is more or less untested, and past experience is not available on which to assess risk and derive pricing. An important finding here is that products which combine LTC coverage with other benefits are far less risky than 'stand-alone' LTC products. The second project tries to explain individual saving behaviour for LTC, given different kinds of policies towards LTC insurance – for example, the expansion of the US Medicaid system.
- **FRAILITY AND AGEING IN MEN**
Among these projects is included an analysis of the results of sarcopenia of different levels of severity on activities of daily living, over a period of several years. Higher institutionalisation, mortality and disability all followed from sarcopenia of all levels of severity. Sarcopenia can be affected by lifestyle, and especially resistance exercise, suggesting that, again, prevention strategies may yield substantial social benefits.

RESEARCHERS

KATE O'LOUGHLIN
VANESSA LOH
HAL KENDIG

The Older Workers and Caregiving Project is part of an initiative of the Global Social Initiative on Ageing (GSIA), a core activity of the International Association of Gerontology and Geriatrics (IAGG), and has two key objectives: 1) to build international comparative knowledge on older workers and care-giving to inform global initiatives in socioeconomic policies; and 2) to establish an international collaborative network to work towards sustainability in policy-relevant population ageing research. The project examines the nexus between paid work and care-giving within the context of population ageing and the impact on individuals, families and the broader economy with a particular focus on the gendered nature of care-giving. The specific aims are to determine how individual circumstances and social and economic policy impact on productivity (labour force participation, care-giving activities), health and wellbeing, and to consider how and

why governments may need to look at new ways of organising/supporting care work (paid and unpaid).

From 2012-2015 funding from CEPAR and the Worldwide Universities Network (WUN) members (Alberta, Leeds, Sydney) supported the collaboration. A proposal to the WUN Research Development Fund in 2015 was successful (£15,000) and provides funding for 2016-2017. The application, Sustainable Care: Connecting People and Systems, led by Prof Sue Yeandle (now at Sheffield University) maintains the existing collaboration (Alberta, Sydney) and extends it to include Auckland and Zhejiang as WUN member universities. The WUN members (Sheffield, Alberta, Sydney, Auckland, Zhejiang) and CEPAR (Sydney/ANU nodes) provided additional funding totalling £21,000.

OUTCOMES 2015:

- 1 IAGG 8th European Regional Congress, Dublin, Ireland, April 22-26, 2015:
 - GSIA Master Class for Early Career Social Science Scholars on Population Ageing and Work-Care Challenges in a Global Context,

Convenor Yeandle; presenters/facilitators O'Loughlin (Sydney), and Fast (Alberta). CEPAR-affiliated PhD students, Johanne Brady and Natasha Ginnivan, were supported to attend.

- IAGG-CSO Invited Symposium paper: 'International networking and collaboration on work and care: insights from three continents' (Fast, Yeandle, O'Loughlin)
- 2 6th International Carers Conference, Gothenburg, Sweden, 3-6 September 2015. O'Loughlin participated in a themed seminar on 'Combining work and care: contributing to business, economic and social sustainability?'
 - 3 Special Issue, *Journal of Cross-cultural Gerontology* (publication March 2016): Older Workers and Caregiving in a Global Context (Eds O'Loughlin & Phillips). Papers on work and care-giving from researchers in Australia, Canada, UK, NZ, China, Singapore, Sub-Saharan Africa.

- 4 Journal articles submitted/in progress: Reflections on Australian and New Zealand policy initiatives in the interface between work and care (O'Loughlin, Alpass, Keeling & Kendig, submitted to *Vulnerable Groups and Inclusion*); The interrelations between caregiving, paid work, and health status for Australia's baby boomers (O'Loughlin, Loh, & Kendig, Special Issue, *Journal of Cross-cultural Gerontology*, March 2016); Employment and Health Consequences of Care-Giving for Older Workers in Four Liberal Democracies (O'Loughlin, Loh, Yeandle, Fast, Keeling).

PLANNED ACTIVITIES 2016:

The 2016-2017 WUN-funded collaboration will allow team members to prepare, develop and participate in webinars and three international workshops (Zhejiang, April 2016; Sheffield, July 2016; and Sydney, December 2016) to extend and strengthen the international research collaboration by focusing on:

- 1 Scholarly collaboration on the international input required for a major research proposal to the

UK Economic and Social Research Council Research Centres Competition 2016;

- 2 Group work on four co-authored comparative papers in peer-reviewed academic journals (each co-authored by two or more team members);
- 3 Collaboration and outreach to successfully establish the new *International Journal of Care & Caring* (launching 2017, Policy Press, STC).

The CEPAR Sydney node will host the third international workshop in December 2016.

Abstracts have been accepted for two conference papers for presentation at the ISA Forum of Sociology in Vienna, 10-14 July 2016: 1) Older Workers and Care-giving in a Global Context: A Theoretical Analysis of Pressures towards Convergence and Differentiation (O'Loughlin, Yeandle, Fast, Phillips); and 2) Older Workers and Caregiving in a Global Context: Methodological Challenges and Opportunities in Comparative Analyses (Fast, O'Loughlin, Phillips).

RESEARCHERS

JULIE BYLES
HAL KENDIG
CATHY GONG

External Collaborators

CATHERINE CHOJENTA
XENIA DOLJA GORE
MELISSA HARRIS
(ALL UNIVERSITY
OF NEWCASTLE)

This project assesses patterns of health care use by specific sub groups of older people including: men and women aged 85 years and older, those who have experienced stroke, and health care use in the two years prior to death.

Several analyses have been conducted using survey information collected via the Australian Longitudinal Study on Women's Health and the 45 and Up Study linked to administrative

datasets such as the NSW Admitted Patient Data Collection (APDC) and the Medicare Benefits Scheme (MBS).

Key findings to date:

- Most women will have one or more admissions after the age of 70, with 80% having at least one admission to hospital in the ten years between 2001 and 2010, and less than 4% of women dying before any hospital admission.
- A small proportion of acute hospitalisation for older women are classified as 'unnecessary' by virtue of being for rehabilitation or convalescence on ICD-10-AM chapter Z.
- Among the cohort of women, 37% had one or more stays classified as rehabilitation or convalescence between 2011 and 2013. The average length of stay for these admissions was 17.3 days, compared to 4.5 days for all other reasons for admission. Women who had 'unnecessary' hospital admission were more likely to live in a regional or remote area and had worse physical health.
- More than half of the admissions were related to cardiovascular disease, especially atrial fibrillation.
- Risk of hospital admission is also driven by need factors such as respiratory conditions, and strongly related to potentially avoidable chronic conditions.

Risk of admission is also related to more than two medications, poor physical functioning, more than four GP visits per year, and by enabling factors including private health insurance and living in an inner regional area.

- Among women who survive to 84-89 years, almost 25% were classified as 'low users' and had very low probability of hospital admission over the years 2001 to 2010. 38% of women had moderate use, having around a two in ten predicted probability of being in hospital in each year. 21% had a trend of increasing use as they aged with their probability of admission increasing from less than one in ten to more

than two in five by the time they were aged 84-89 years. Around 17% of women had relatively high probability of admission in all years, with a greater than one in two predicted probability of admission in 2010. The most common reasons for admission were for cardiovascular disease. Rehabilitation accounted for over 7% of admissions. Women with high hospital use also had more than twice the total number of bed days, and were more likely to be living outside a major urban area, widowed, have arthritis and heart disease, stroke or chronic obstructive pulmonary disease, had worse physical and mental health, and were more



PROFESSOR JULIE BYLES
B Med PhD Newcastle
ASSOCIATE INVESTIGATOR

Professor Julie Byles is Director of the Research Centre for Gender, Health and Ageing – a Priority Research Centre at the University of Newcastle that includes the World Health Organization

Collaborating Centre for International Longitudinal Studies on Gender, Ageing and Health. She is also Head of the International Longevity Centre – Australia, and a director of the Australian Longitudinal Study on Women's Health.

As a clinical epidemiologist, Professor Byles' interests are in risk determination, health assessment, other health

care evaluation, and measurement of health outcomes. As a Gerontologist and Fellow of the Australian Association of Gerontology, Professor Byles' research interests in ageing include the role of health services, preventive activities, and treatments in maintaining quality of life for older people, and in determining physical,

psychological and social factors associated with optimal physical and mental health of men and women as they age.

likely to die in the following two years. Increased hospital use was associated with falls. Those with low hospital use were less likely to have hypertension.

- Among the population of men and women aged 85 years and over who died,
 - i A large proportion were still living on their own in the last year of life (76%)
 - ii Men were most likely to be admitted to hospital in their last year of life for organ failure.
 - iii Men were more likely to have a longer length of stay in hospital in their last year of life compared to women (median: 23 days compared to 20 days)
- Among women who died, 85% had at least one hospital admission in the last year of life and 8% had their first admission during this time. 30% of deaths were due to cancer, 22% to organ failure, 13% to dementia/Alzheimer's, 7.0% to diabetes, 4% to influenza/pneumonia, 24% to other causes such as AMI, stroke,

other chronic heart and cerebral disease, and intracranial haemorrhage.

- Women who died of cancer had the highest median number of bed days (23 days), followed by diabetes (16), organ failure (16), influenza/pneumonia (13), 'other' (11 days) and dementia/Alzheimer's (10 days).
- Women who died of diabetes were most likely to be admitted with an acute maximum length of stay (≤ 5.8 days).
- Women who died of dementia were most likely to be admitted for a medium maximum length of stay (> 5.8 ≤ 11.9 days).
- Women who died of cancer and organ failure were more likely to be admitted for a long maximum length of stay (> 11.9 days), consistent with palliative care.
- The greatest proportion of admissions classified as being for rehabilitation were for women who died of influenza/pneumonia, organ failure, and 'other' causes.

KEY CHALLENGES AND POLICY OPTIONS

Prevention

- Health service use is driven by potentially avoidable chronic disease and risk factors, particularly obesity and smoking.
- The prevalence of chronic disease is increasing, along with population ageing and increasing rates of obesity.

Integrated management of chronic disease

- Older people have multiple morbidities, which increase health care use.
- The same women tend to use high numbers of MBS services, many medications, and have high use of hospital services. Integration of care is essential for efficient and effective care of these people.

Rehabilitation and palliative care

- Many older women will have hospital admissions for rehabilitation, or for palliative length of stay, particularly in the last year of life. Alternative settings for care may

provide better outcomes in terms of quality of life and more appropriate use of acute services.

Project outputs:

Harris, M.L., Dolja-Gore, X., Kendig, H. and Byles, J.E. (2016). First Incident Hospitalisation for Australian Women aged 70 and Beyond: a 10 Year Examination using Competing Risks. *Archives of Gerontology and Geriatrics*. 64:29-37.

An additional three journal papers are currently under review and another paper is in preparation. Findings were also presented at the IAGG-Asia/Oceania 2015 Congress in Chiang Mai.

RESEARCHERS

HAL KENDIG
COLETTE BROWNING
CATHY GONG

External Collaborators

YUN-HEE JEON
(UNIVERSITY OF SYDNEY)
STEPHEN DUCKETT
(GRATTAN INSTITUTE)

This project was completed in 2015 as research findings are in press, while ongoing research has been incorporated into programs on Ageing in Asia. Chapters on primary health services (Browning and colleagues), hospital services (Duckett), support and care in the community (Jeon and Kendig), and issues and principles in accessing and funding services (Kendig) are forthcoming in the 'Ageing in Australia: Challenges and Opportunities' book

(O'Loughlin et al., in press, see page 30). A chapter on international trends in aged care (Fine and Kendig) is forthcoming in Held, R. and Armstrong, J. (Eds) *Social Role Valorisation and Ageing Services*, Valor Institute: Plantagenet, CA.

Contributions to aged care policy and dissemination continued with presentations by Gong to the ACT aged care data linkages workshop in September, convened by the ACT Australian Association of Gerontology. Kendig led an invited symposium on 'Empowering Older People: Evidence and Action' for the IAGG Asia/Oceania Regional Conference in Chiang Mai, Thailand. The symposium included an invited presentation by CEPAR Associate Investigator

Byles on 'Health as a Resource for Active Ageing' and a presentation by Kendig and Gong on 'Australian Innovations in Empowering Older People'. Kendig also contributed to the invited national workshop by the Department of Social Services (DSS) 'Long term policy planning: Co-design workshop' and gave a presentation to the Aged Care and Community Services (ACSA) Board on 'Understanding the Potential Implications of CDC'.

Kendig led an invited symposium on 'Empowering Older People: Evidence and Action' for the IAGG Asia/Oceania Regional Conference in Chiang Mai, Thailand.



DR CATHY GONG
PhD Econ ANU
RESEARCH FELLOW

Cathy Gong is a CEPAR Research Fellow located in the Centre for Research on Ageing, Health and Wellbeing at the Australia National University. She joined CEPAR in August 2013. Prior to this she worked as a Research Fellow with the National Centre for

Social and Economic Modelling (INATSEM) at the University of Canberra; as an Assistant Director with the Child Care Data and Modelling Team at the Department of Education; and as a Statistician/Senior Statistician with the Urban Household Survey Division of the National Bureau of Statistics of China.

Her research interests include life course impacts on

late life health and wellbeing, intergenerational support relationships, health services use, international comparisons of ageing in Asia, social determinants of healthy and productive ageing, age friendly communities, inequality and mobility in health, employment and economic wellbeing, as well as labour market and retirement choices in late life. She has

published in a range of journals as well as in two books. Her skills and experience in cross-sectional and longitudinal data analysis, indexation, microsimulation and other economic and statistical techniques enable her to contribute widely to multidisciplinary research on ageing and health.

RESEARCHERS

VASANT HIRANI
ROBERT CUMMING

External Collaborators

VASI NAGANATHAN
FIONA BLYTH
DAVID HANDELSMAN
DAVID LE COUTEUR
LOUISE WAITE
MARKUS SEIBEL
PATRICK KELLY
(ALL UNIVERSITY OF SYDNEY)

This research programme includes studies of ageing and health outcomes among older men participating in the Concord Health and Ageing in Men Project (CHAMP).

The aim of the first study was to examine associations between cross-sectional and longitudinal associations at five year follow-up between anaemia and frailty in older Australian

men aged ≥ 70 years, living in the community participating in CHAMP. The study showed that anaemia precedes frailty in men who were non-frail at baseline. Low haemoglobin levels among patients may alert clinicians to the increased risk of frailty. The results of the study were written up in a paper, titled 'Cross-sectional and longitudinal associations between anaemia and frailty in older Australian men: The Concord Health and Ageing in Men Project', published in the *Journal of the American Medical Directors Association* 2015;16 (7):614-20.

The aim of the second study was to examine the associations between serum 25-hydroxyvitamin D (25D) and 1,25-dihydroxyvitamin (1,25D) with anaemia in

community-living men aged ≥ 70 years participating in CHAMP. The findings showed that serum 1,25D but not 25D concentrations are independently associated with haemoglobin levels in older men in both cross-sectional and longitudinal analyses at five year follow-up. This raises the question whether vitamin D metabolites may influence anaemia states, mediated through different biological pathways, or represent a time-dependent biomarker of chronic ill-health. This study, 'Cross-sectional and longitudinal associations between the active vitamin D metabolite (1,25 dihydroxyvitamin D) and haemoglobin levels in older Australian men: the Concord Health and Ageing in Men Project', has been published in *Age (Dordr)* 2015;37(1):9749.

The aim of the third study was to explore the longitudinal relationships between severity of sarcopenia and incident activities of daily living (ADL) disability, institutionalisation, and all-cause mortality among community-dwelling older men participating in CHAMP. Dual-energy x-ray absorptiometry measures were used to assess sarcopenia in terms of low appendicular lean mass (ALM), using the Foundation for the National Institutes of Health (FNIH) criteria. To differentiate between severity of sarcopenia we used low ALM alone (sarcopenia I), low ALM with weakness (sarcopenia II), and sarcopenia with weakness and poor gait speed (sarcopenia III).

Cox proportional hazard models and logistic regression models were used to assess the risk of mortality and institutionalisation, and incidence of ADL disability. The results showed that sarcopenia I, II, and III were associated with increased risk of incident disability (at five year follow-up), institutionalisation, and mortality (follow-up: median 7 years). This study, 'Sarcopenia is Associated with Incident Disability, Institutionalisation, and Mortality in Community-Dwelling Older Men: The Concord Health and Ageing in Men Project' has been published in the *Journal of the American Medical Directors Association* 2015; 16 (7):607-13.



DR VASANT HIRANI

BSc Leeds, MSc London School of Hygiene and Tropical Medicine, Diploma in Dietetics London Metropolitan University, PhD University College London
RESEARCH FELLOW

Vasant Hirani is a CEPAR Research Fellow at the University of Sydney working at the Centre for Education and Research on Ageing. Her research interests have

focused on vitamin D epidemiology and the impact of vitamin D status on healthy ageing. Other research interests are in the field of population health and nutrition, including obesity, chronic disease, anthropometry such as demi-span, and mental health.

She is a lead author for papers published in a range of international peer-reviewed

journals. Vasant's research program initially started with investigating the impact of vitamin D status on ageing of older men participating in the Concord Health and Ageing in Men Project (CHAMP). She has subsequently worked on a range of longitudinal research projects to investigate health and longevity in older community-dwelling men in Australia. This includes: examining a range of socio

demographic, economic and lifestyle factors and subjective and objective measures of health as predictors of mortality; investigating the impact of anaemia on frailty; associations between anaemia and vitamin D status; and associations between anaemia and physical function.

RESEARCHER

ERMANNO PITACCO

Long-term care insurance (LTCI) covers are relatively new products, in the framework of health insurance. It follows that specific biometric data are scanty. Pricing and reserving problems then arise because of difficulties in the choice of appropriate technical bases. Different benefit structures imply different degrees of sensitivity with respect to changes in biometric assumptions, and then different levels of the 'uncertainty risk', that is, the risk arising from the choice of technical bases. Hence, an accurate sensitivity analysis can help in designing LTCI products with the aim of mitigating the impact of the uncertainty risk, and,

in particular, in comparing stand-alone products to combined products, i.e. packages including LTCI benefits and other lifetime-related benefits.

A sensitivity analysis has been performed in order to assess the change in expected present values of benefits when changing: (1) the assumptions about senescent disability, in terms of probability of entering the LTC state(s); and (2) the age-pattern of mortality of people in LTC state(s). It uses the biometric assumptions proposed by Rickayzen and Walsh (2002) and Rickayzen (2007). Both the LTC stand-alone cover and LTC combined products have been addressed, and the advantages provided by packaging LTC benefits together with lifetime-

related benefits (i.e. conventional life annuities and death benefits) have been analysed.

Numerical results show, in particular, that the LTC stand-alone cover is much riskier than all the LTC combined products that were considered. As a consequence, the LTC stand-alone cover is a highly 'absorbing' product as regards capital requirements for solvency purposes.

Numerical results show, in particular, that the LTC stand-alone cover is much riskier than all the LTC combined products that were considered.



PROFESSOR ERMANNO PITACCO
ASSOCIATE INVESTIGATOR

Ermanno Pitacco is Professor of Actuarial Mathematics at the University of Trieste, and Academic Director of the Master in Insurance and Risk Management at the MIB School of Trieste. His current research interests lie in the area of life and health

insurance mathematics and techniques, focussing in particular on longevity risk and life insurance portfolio valuations and solvency assessment. He is an author and co-author of textbooks and papers in the actuarial field. He has published in leading international risk and actuarial studies journals, including *Insurance: Mathematics and Economics*,

the *ASTIN Bulletin* and the *Journal of Pension Economics and Finance*. He was awarded the 1996 INA Prize for Actuarial Mathematics, from the *Accademia Nazionale dei Lincei*, and the 2011 Bob Alting von Geusau Memorial Prize, together with Annamaria Olivieri.

Ermanno is editor of the *European Actuarial Academy* series (Springer), co-editor of

the *European Actuarial Journal* and Associate Editor of a number of international journals.

Professor Pitacco visited CEPAR in August 2015 where he worked with Michael Sherris and his team as well as attended the AFIR-ASTIN Colloquium where he was a member of the Scientific Committee.

RESEARCHER

ELENA CAPATINA

External Collaborators

GARY HANSEN
(UNIVERSITY OF CALIFORNIA,
LOS ANGELES)

MINCHUNG HSU
(NATIONAL GRADUATE
INSTITUTE FOR POLICY
STUDIES)

Rapid population ageing poses significant challenges in terms of long-term care (LTC) provision and financing. In countries that lack a universal public LTC insurance system, out-of-pocket LTC costs are high and persistent, and represent a large source of individual financial risk. Social insurance systems face rising challenges to cope with the increasing number of individuals who cannot afford to pay for their LTC needs in old age, mainly

due to the shifting demographics. Therefore, a major endeavour in the current LTC literature is to better understand individuals' saving decisions in relation to LTC needs, and determine how these decisions are affected by the insurance environment.

This project will advance the current literature by focusing on two important but relatively understudied aspects: family dynamics and how individuals value LTC consumption when LTC needs arise. First, the absence/presence of a spouse matters greatly for saving behaviour for several reasons: healthy spouses can provide care at home when LTC needs arise lowering the cost of care; unhealthy spouses with LTC needs could deplete joint assets leaving the other

spouse financially unprepared for his/her future needs; and the death of a spouse can be a major shock to financial planning.

Second, Ameriks et al. (2015) show that savings behaviour is strongly influenced by people's preferences over LTC expenditures and that there is a high marginal utility from expenditures in the LTC state.² We recognise that there is a wide range of quality types of LTC and that the presence of a healthy spouse may also affect the quality of LTC received. Therefore, we model an LTC-state, family-type dependent utility function and allow for endogenous LTC expenditures. By incorporating these important features, our project will deliver an improved framework in

which policy reform can be analysed.

We build a rich general equilibrium framework that accounts for the features listed above and for population ageing. The model is calibrated to the United States using data from the Health and Retirement Study. We use the calibrated model to quantify the impacts of LTC policy reforms such as the expansion of the Medicaid LTC insurance program and the provision of a universal public system that pays for a minimum level of LTC costs.

We anticipate having a completed paper by the end of 2016 to be submitted to a first tier peer-reviewed Economics journal. The paper will be presented at several international workshops and conferences in 2016.

A major endeavour in the current LTC literature is to better understand individuals' saving decisions in relation to LTC needs, and determine how these decisions are affected by the insurance environment.

² Ameriks, J., Briggs, J.S., Caplin, A., Shapiro, M.D., Tonetti, C., 2015. Long-Term Care Utility and Late in Life Saving. Working Paper 20973. National Bureau of Economic Research.



DR ELENA CAPATINA

BA Econ. UBC, MA PhD Toronto
RESEARCH FELLOW

Elena Capatina is a CEPAR Research Fellow located in the UNSW Business School. She joined the Centre in July 2011 after graduating with a PhD from the University of Toronto. Her research interests include

Macroeconomics, Health and Labour Economics.

Her articles have been published in the *Journal of Monetary Economics* and *Labour Economics*.

'Since my arrival at CEPAR, I have been continuing my research on health risk in the context of life-cycle models of labour supply and saving. CEPAR has been an ideal environment to conduct

research in this area. As an Early Career Researcher, I have greatly benefitted from the support and mentorship of senior leaders at CEPAR, especially Michael Keane. CEPAR has also provided great support for building my research networks through organised workshops and conferences and its visitors program. One of the great benefits of working here is

making my research known and developing more collaborations with others in my field. In addition, the multidisciplinary aspect of CEPAR has enriched my experience as I have gained an understanding of the importance of my research in a larger scheme.'

TABLET BASED WELLBEING CHECK SYSTEM FOR THE ELDERLY LIVING INDEPENDENTLY

RESEARCHERS

PRADEEP RAY
MAHFUZ ASHRAF

External Collaborators

KOEL GHORAI
TEUKU GUEMPANA
FATEMA KHATUN
(ALL UNSW)

DON KERR
JACQUELINE BLAKE
(BOTH UNIVERSITY OF THE
SUNSHINE COAST)

KASTURI BAKSHI
SOUBIR PAL
(BOTH KINSPARC-KALYANI,
INDIA)

To maintain their independent lifestyles, many frail elderly people prefer to live alone at home rather than in nursing homes. However, family members often worry about their elderly relatives' wellbeing and feel insecure leaving them unsupervised

at home. In Australia, 50% of people over 61 experience loneliness and almost 30% are chronically lonely. Loneliness is associated with higher stress ratings, increased risk of cardiac deaths, depression, reduced movement, psychiatric disorders such as schizophrenia, and increased general medical expenses with lonely people reporting worse health than those who are not lonely. In 2013 a tablet based system was developed (funded by the Smart Services CRC) to support the wellbeing of older people living alone through communication with family members living far away (e.g. in a different country). In 2014, a preliminary trial of the tablet-based Wellbeing Check system was carried

out in seven homes through a NSW based aged care provider, Julie Warner Community Care (JWCC).

The prototype was modified based on the above trial results and during 2015 the system was trialled in 30 homes on the Sunshine Coast (through the University of the Sunshine Coast) and 20 elderly homes in Kalyani, India (through an NGO called KINSPARC). Older people need to be persuaded to overcome a lack of familiarity with new technologies, and local support is important in encouraging participation. Hence the trial also involved an innovative aged care service delivery model called 'Silvercare' where a retired person (less than 65 years of age) supports about ten elderly (over 65 years) in

close geographical proximity for the deployment and support of the system.

Results so far show high numbers of people intend to keep using these applications beyond the trials, especially for communication with younger members of their families. In-depth interviews are being carried out with some of the respondents, while the data from 50 homes (Sunshine Coast and Kalyani, India) are being analysed. These should result in two publications; one of a system development methodology on eHealth for the elderly and the other on the trial evaluation results.

In the meantime Pradeep Ray's team has been successful with the following related publications:

- 1 V. Kapadia, A. Ariani, J. Li and P. Ray. (2015). Emerging ICT Implementation Issues in Aged Care, *International Journal of Medical Informatics*, 84(11):892-900.
- 2 A. Akteruzzaman Bhuiyan, P. Narsimhan and P. Ray, Prevention and management of chronic conditions, accepted (2015) as a chapter in the book *Ambient Assisted Living: Technologies and Applications* (eds Francisco Flórez-Revuelta and Alexandros Andre Chaaraoui).



PROFESSOR PRADEEP RAY

BTech BHU-IT India, MTech IIT, Kanpur India, PhD UTS
ASSOCIATE INVESTIGATOR

Pradeep Ray is a Professor of Information Systems at the UNSW Business School and the Director of the Asia Pacific ubiquitous Healthcare Research Centre (APuHC) at UNSW Australia.
He leads a number of

collaborative research projects on eHealth (healthcare using information and communication technologies) involving global organisations (e.g., WHO, ITU and IEEE), industry and academia in Australia, Europe, North America and Asia. His work on the WHO project (involving four countries in the Asia-Pacific) on the assessment of eHealth for Health Care Delivery (eHCD) led

to the designation of APuHC as a WHO Collaborating Centre on eHealth in 2013 with a focus on mHealth (healthcare using mobile phones) for Aged Care.

Pradeep has been the Chair of the eHealth Committee of the Institute of Electrical and Electronic Engineers (IEEE) Communication Society and the IEEE global spokesman on telemedicine. He has been appointed as a Distinguished

Lecturer of eHealth at IEEE for 2014-2015. Under his leadership, APuHC was invited in 2010 by the Aged Care Industry IT Council (ACIITC) to develop a long-term strategic IT plan for the aged care sector in Australia. This led to the ongoing \$1 million collaborative initiative on IT in aged care involving academic and industry organisations in Australia, Europe, Asia and USA.

AREA OF RESEARCH FOCUS

6

AGEING IN ASIA AND ITS IMPACT ON AUSTRALIA

Asia is the world's most rapidly ageing region, with a range of demographic stages represented. The Asian region is also home to more than 40% of the world's population, living in countries with dramatically different per capita incomes and rates of economic growth. Research focuses on these population dynamics and their interactions, including the determination of evolving demographics in some of the region's largest countries.

It examines differences between and within national populations, their health status, and their life expectancy, and studies policy reform and its implications both for the countries involved and for Australia.

TO VIEW PUBLICATIONS
AND WORKING PAPERS RELATING
TO THIS RESEARCH VISIT CEPAR.EDU.AU

RESEARCH PROJECTS

AGE PATTERNS AND SEX DIFFERENTIALS OF MORTALITY IN ASIA SINCE 1950	86
CHANGES IN AGE PATTERNS OF MORTALITY BY MAJOR CAUSES OF DEATH IN RECENT EPIDEMIOLOGIC TRANSITION AND POPULATION AGEING IN TAIWAN AND HONG KONG	87
POPULATION AGEING AND SOCIAL SECURITY POLICY IN ASIA	88
COMPARATIVE AGEING IN ASIA	89
THE DEMOGRAPHY OF INDONESIA	90
MEETING THE NEEDS OF OLDER PERSONS IN RURAL INDONESIA: SITUATIONAL ANALYSIS AND POLICY APPROACHES	91
AGEING AND WELLBEING IN VIETNAM: AN IN-DEPTH STUDY OF CHANGING INTERGENERATIONAL SUPPORT STRATEGIES	92
UNDERSTANDING THE CAUSES AND CONSEQUENCES OF POPULATION AGEING IN ASIA	93
LONG-TERM CARE IN CHINA	94

Asia continues to be a focus for CEPAR researchers. It is the fastest ageing region in the world, but with an enormous variation in demographic stage, from Japan, the world's oldest economy, to China, still young, but projected to be older than Australia by 2050.

Projects in this Area of Research Focus include several country-specific studies (Indonesia, China, Vietnam), and studies which compare developments across the region. Some focus on the demographic events themselves, offering careful analyses of epidemiological transitions, while others focus on support mechanisms. Among the major contributions are projects which focus on:

- AGE PATTERNS AND SEX DIFFERENTIATION IN MORTALITY IN ASIA**
This long term project, led by AI Zhongwei Zhao, aims to systematically examine mortality change for all 50 Asian countries and territories over the past 60 years. Their analysis provides many fascinating findings. For example, while the overall pattern of mortality change points to a largely complete epidemiological transition, specific regions have not caught up. Geographical clustering of slow improvement generally is associated with environmental and systematic socioeconomic factors that hinder improvement. The laggards have been jurisdictions prone to social unrest and military conflict, again linked to poor public health programs.
- MAPPING INDONESIA'S DEMOGRAPHY**
A country-specific project which has changed perceptions of the demographic profile of Indonesia has been led by CI Peter McDonald. Until this study, no consensus had emerged as to Indonesia's demography – records were scant, and census data, while collected, had never been systematically analysed. This ongoing research reached a milestone in 2015 with a completed study of internal migration between provinces in Indonesia. It also focused on fertility and mortality trends in Indonesian provinces, and documented more detailed socioeconomic data for Jakarta.
- LONG-TERM CARE IN CHINA**
Long-term care (LTC) is in its infancy in China. CEPAR is undertaking a series of projects to inform policy development and business investment in this vital area. A recent linkage grant has assured this topic will be investigated for several years into the future. There is, thus far, no well formulated national policy on LTC. Rather, the government is assessing a number of pilot projects, typically funded by subnational jurisdictions. Assessing future trends in LTC demand is difficult because of changing cultural mores. One analysis undertaken suggests that fertility (that is, having children available to care for you as a frail elder) is less important in determining demand for LTC than education level and income.

RESEARCHERS

YAN YU
ZHONGWEI ZHAO

Life expectancy at birth (e0) increased from 42 years in 1950 to 70 years in 2010 in Asia. This dramatic mortality improvement reflects the socioeconomic development, improvement in standards of living, and advancement in medical technology and health care that have been achieved by many countries in Asia. Some countries, on the other hand, have been subject to past or ongoing military conflicts and societal dysfunctions. This project aims to systematically examine mortality change for all 50 Asian countries and territories over the past 60 years, using the life tables published by the World Population Prospects (WPP) 2012 Revision in five-year time intervals between 1950-1955 and 2010-2015. Specifically, we ask how female and male mortality changes vary across age groups and whether, in the Asian context, the sex-specific age variations change across key dimensions of interest such as mortality level, historical time and populations.

We found that over the 60-year period between 1950-1955 and 2010-2015, the Asian population as a whole has largely completed the classic epidemiologic transition and experienced rapid mortality decline, representing an important chapter in its history. During this transition, the pace of the mortality decline is closely related to the initial mortality level. Before e0 reaching approximately 70 years, there is a negative and almost linear relationship between initial e0 and the gain in e0, and for the majority of the populations, the longevity gain is dominated by contributions ascribable to mortality reductions under age 15. At lower mortality levels, however, mortality decline in the older ages accelerates, and plays an increasingly important role in the e0 gain. The gains in longevity and shifts in the age patterns of mortality change have taken place in both sexes, but mortality improvement is generally smaller for males than females, and the sex gap in longevity widens at lower mortality levels.

Besides the overall trend, we detected clusters of Asian populations where mortality improvement is faster or smaller than as expected from initial mortality level. A dozen countries and territories in East, Southeast and West Asia have achieved very low mortality levels even by world standard, whereas two regional clusters lag behind in mortality improvement: one in Central Asia and the Caucasus and the other in South and Southeast Asia. With some exceptions, countries that are slow (or fast) in controlling infectious diseases and improving mortality among children and young adults in the earlier years tend to be slow (or fast) in fighting man-made and degenerative diseases and improving adult and old-age mortality in the later years.

The persistence over time and geo-cultural clustering of disadvantages point to environmental and systemic socioeconomic factors that hinder mortality improvement.

While the sustained success in the vanguard group is obviously attributable to their remarkable socioeconomic development, high standards of living, advanced medical technology and services, and effective health care and disease prevention, most of the laggards, in the last 60 years, have been subject to social unrest and military conflicts that are intertwined with poor, or lack of, socioeconomic development and public health programs.

The work is intended as a chapter for the *Routledge Handbook of Asian Demography*. We have completed the chapter, and made two presentations related to the Handbook at the 3rd Asian Population Association Conference in Kuala Lumpur in July.

CHANGES IN AGE PATTERNS OF MORTALITY BY MAJOR CAUSES OF DEATH IN RECENT EPIDEMIOLOGIC TRANSITION AND POPULATION AGEING IN TAIWAN AND HONG KONG

RESEARCHERS

ZHONGWEI ZHAO
YAN YU

This research project began in July 2015 and was partly supported by CEPAR under the Associate Investigator's funding scheme.

As a part of a large study, this project intends to examine changes in age patterns of mortality in the process of epidemiological transition in order to provide further insights about mortality decline, especially its decline at old ages. This research project will analyse data collected from Hong Kong and Taiwan and examine long-term mortality decline and changes in major causes of death. The study will help to improve our knowledge about the late stage of epidemiologic

transition and shed light on changes in healthy life expectancy in the process of population ageing.

Yan Yu joined the research team in late 2015. Since July, we have conducted a literature review, collected the required data, conducted preliminary data analysis, and tested some theoretical hypotheses. We have already had some interesting results and research findings.

On the basis of our preliminary analysis, we have extended the study to more populations and widened the research. We have examined mortality changes in Hong Kong and Taiwan in the context of epidemiologic and mortality transition in Asia. We have also systematically compared changes in age

patterns and sex differentials of mortality by major causes of death between Hong Kong, Taiwan and some developed countries in the world.

In the next few months, intensive data analysis will be conducted and completed. We are planning to report the findings in two research papers, which will be submitted to major academic publishers or international journals. The project is expected to be completed by mid-2016.

This project intends to examine changes in age patterns of mortality in the process of epidemiological transition in order to provide further insights about mortality decline.



PROFESSOR ZHONGWEI ZHAO
BA PKU, MA Exeter, PhD Camb.
ASSOCIATE INVESTIGATOR

Zhongwei Zhao is a Professor in the School of Demography at the Australian National University. He is also a member of the Board of Trustees of the International Centre for Diarrhoeal Disease Research, Bangladesh.

Prior to taking up his present appointment, he was a senior fellow at the Demography Program in the Research School of Social Sciences at the Australian National University; a senior research associate at the Cambridge Group for the History of Population and Social Structure; and a Bye Fellow at Pembroke College, University of Cambridge.

Zhongwei has published many papers in world leading demographic journals. Research interests include: the environmental impacts on population health and mortality; mortality and fertility transition in Asia, especially East Asia; computer microsimulation in demographic research; historical demography; changes in families, households and kinship

networks; demographic estimation and mortality models; and demographic impacts of famines.

RESEARCHERS

JOHN PIGGOTT
RAFAL CHOMIK
PETER McDONALD

Asia continues to be a focus for CEPAR researchers. It is the fastest ageing region in the world. This is particularly the case among Australia's closest trading partners in East and Southeast Asia. Japan, for example, has reached the future first, with the oldest population in the world. By 2050, China, Thailand, Vietnam and Indonesia are expected to have a population age structure that is older than Australia or the US today.

This project has built on previous years' research relating to the region, including a comprehensive overview of the structures of health and retirement income policies in Asia, written by Chomik and Piggott and published in a special issue of the *Asian Economic Policy Review* in July 2015. This year, Chomik, Piggott and McDonald took a step back to consider the various ways that ageing is measured and how different metrics of ageing can be of use in different policy areas.

While standard approaches to quantifying ageing are based on mechanical calculations of age dependency, they don't necessarily capture what it means to be 'dependent'.

Changing patterns of human capital accumulation and labour productivity, labour force participation and work intensity by age and sex, health status and disability, public spending by age, among other socioeconomic shifts, alter the actual levels of dependency across generations, and the implied social, economic, and fiscal stress.

Systematically taking more real-world factors into account, by augmenting demographic projections with health, economic status, and public spending data, can furnish policymakers and households with a better understanding of how demographic change affects the economy and transfer

systems, allowing for improved policy and economic decisions. These can then have a specific application (e.g., measuring dependency related to health, long-term care, or fiscal policy).

The project made extensive use of the National Transfer Accounts (see page 21), including for the first time comparing Australian NTAs to other countries in Asia. Outputs included a paper that is expected to be published in a special issue of the *Journal of the Economics of Ageing*. The work was also presented at a conference at the University of Hawaii, hosted by the Korea Statistics and the East West Centre.

... taking more
real-world factors
into account...
can furnish
policymakers
and households
with a better
understanding of
how demographic
change affects
the economy.



RAFAL CHOMIK
BEcFin UWA, MEd
London Metropolitan
SENIOR RESEARCH FELLOW

Rafal Chomik is a Senior Research Fellow at CEPAR, located in the UNSW Business School. He joined CEPAR in April 2012.

Rafal has worked in public administration and policy

analysis for over a decade, initially as a project manager in economic regeneration and subsequently as an economist focusing on social policy.

He has experience in economic and business consulting in the private sector, working as an economic advisor for the British Government and as a pensions economist at the

Organisation for Economic Cooperation and Development in Paris. He specialises in social policy design, public and private pension analysis, static microsimulation modelling of the tax-benefit system, and poverty and income measurement.

His current work at CEPAR is centred on producing policy related briefing papers, summarising existing CEPAR

and external research and assisting the secretariat in producing technical content for conferences and the media.

RESEARCHERS

CATHY GONG
COLETTE BROWNING
HAL KENDIG
VASOONTARA
YIENGPRUGSAWAN
JAMES NAZROO
JULIE BYLES

External Collaborators

SHANE THOMAS
(MONASH UNIVERSITY)
CATE D'ESTE
(ANU)

Populations are ageing rapidly in both developed and developing countries, raising increasing concerns for workforce supply, fiscal sustainability, retirement incomes and quality of life for older people. The impact of and response to the unprecedented challenges of rapid population ageing in countries at different levels of development will create new opportunities for a range of contributions to the international comparative literature on ageing within different cultural and social economic environments.

A three-year ARC Discovery project 'Ageing in China and Australia: Promoting health, productivity and wellbeing' was developed by and subsequently funded to a team of Chief Investigators and Partner Investigators including CEPAR affiliates

Kendig, Browning, Byles, Nazroo, Yiengprugsawan, and Gong as well as D'Este (ANU), and Thomas (Monash). CEPAR Scientific Advisory Committee member, Professor Silverstein, is also a collaborator.

CEPAR Associate Investigator (AI) Browning with her colleagues Thomas, Chapman, Yang, Zhang and Liu completed an 18 month cluster randomised controlled trial on diabetes self-management in older people in Beijing, China (The Happy Life Club™). The implementation of the pilot program was reported in a special issue of the journal *Frontiers in Public Health*, on evidenced programming for older adults. A systematic review of psychological interventions to manage type 2 diabetes in China was conducted by Browning and her colleagues Chapman, Liu, Merkouris, Enticott, Yang and Thomas. They found that Cognitive Behaviour Therapy, Motivational Interviewing and Client Centred Therapy were effective in improving type 2 diabetes outcomes. With her colleagues Shariff and Yasin, Browning also published a study on increasing physical activity in older Malays with diabetes.

Personalised feedback combined with peer support increased physical activity levels and cardiorespiratory fitness in older Malays living with diabetes.

A comparative study of healthy life expectancy (HLE) has yielded an article on HLE in China, led by Dr Hao Luo (Tsinghua) for the *Journal of Health and Ageing* (in press), and another on HLE in Australia led by CEPAR Research Fellow Gong is in progress. The China HLE article concluded that a substantial proportion of ageing people's remaining life years were spent in states of perceived 'not good health' while remaining largely independent in basic self-care and without severe impairments.

Gong with CEPAR Chief Investigator Kendig and Silverstein organised a symposium for the Asia section of the Gerontology Society of America (GSA) Annual Scientific Meeting on intergenerational helping relationships and care support in China and Japan, as well as older US immigrants from Korea and India. They also presented a GSA paper 'Life course impact on life satisfaction among older Chinese'. Gong delivered an invited paper on healthcare utilisation among

older Chinese at a GSA sponsored US-Shanghai conference and a co-authored paper is now under review.

In 2016 Gong will continue collaborative research on Asia along with her other responsibilities as a CEPAR Research Fellow. Presentations mentioned above will be further developed into journal articles.

AI Yiengprugsawan is leading a regional study on health system responses to population ageing and non-communicable diseases in Asia. This research is supported by a Fellowship under the Asia Pacific Observatory on Health Systems and Policies, the World Health Organisation Western Pacific Regional Office (2014-2016) and a Study Advisory Committee including Kendig and AI Byles. She also contributes to the Thai cohort study including research on health behaviours and mortality, and a longitudinal study of caregiving, work, and mental health with a paper on preliminary findings currently in review. She led a symposium on the APO regional study at the IAGG regional meeting in Chiang Mai and presented a related

paper to the CEPAR APRU Symposium in Sydney.

In 2016, Yiengprugsawan will continue her APO Fellowship and then take up an Endeavour Research Fellowship with Professor Andrew Steptoe at University College London conducting an English-Thai comparative study of ageing, health, and wellbeing. With support from CEPAR, she will commence a comparative study on caregiving, health, and wellbeing in China and India.

The impact of and response to the unprecedented challenges of rapid population ageing in countries at different levels of development will create new opportunities for a range of contributions to the international comparative literature on ageing within different cultural and social economic environments.

RESEARCHERS

PETER MCDONALD
IWU UTOMO

External Collaborators

TERENCE HULL
KHOO SIEW-EAN
(BOTH ANU)

A large three-year Linkage Project led by Peter McDonald and conducted in cooperation with AusAID, UNFPA, Statistics Indonesia, and the Indonesian National Population and Family Planning Board, focuses on population and development in Indonesia.

Social and economic planning in Indonesia today is problematic because of a lack of consensus regarding the current and likely future demography of this, the world's fourth most populous nation.

This project involves analyses of the unit record data from the censuses of Indonesia from 1971 to 2010. The project brings together technical demographic expertise in Australia and Indonesia to develop reliable population estimates and to inform evidence-based policymaking including policies related to the ageing of the population of Indonesia.

In 2015, studies were completed on internal migration between provinces in Indonesia; the determinants and migration outcomes for people moving from the province of Central Java; the accuracy of age and sex

distributions for Indonesia and its provinces at the censuses; fertility and mortality levels and trends in Indonesia and its provinces; patterns of ethnic intermarriage; and migration, ethnicity and education in the Jakarta Metropolitan Region.

Social and economic planning in Indonesia today is problematic because of a lack of consensus regarding the current and likely future demography.



DR IWU DWISETYANI UTOMO

BA Psych University of Indonesia, MSc Demography Florida State University, PhD ANU
ASSOCIATE INVESTIGATOR

Iwu Utomo is a fellow at the School of Demography at the Australian National University (ANU). She joined CEPAR in September 2014.

She graduated from the ANU School of Demography in 1998

and returned to the School as a Postdoctoral Fellow in 2000 under a Merdeka Fellowship Award from the Australian Government. Her first appointment at ANU was with the National Centre for Epidemiology and Population Health (2002-2008) where she worked on issues relating to Gender, Sexuality and Health in Indonesia, Thailand, Mozambique and South Africa. Iwu has been successful in

gaining ARC funding for Harmful Sexual Practices in Southeast Asia (2005-2008); Indonesian Young Adults Transition into Adulthood (2008-2015); and Meeting the Needs of Older People in Indonesian villages (with Peter McDonald and Robert Sparrow, 2016-2019). She is also involved in The Transition to Adulthood Longitudinal Survey which has received funding from WHO (2008-

2011); the Ford Foundation (2008-2020); and the National University of Singapore (2010). In 2008, Iwu received an AusAID Australian Development Research Award for a project on Integrating Gender and Reproductive Health Issues in the Indonesian National Curriculum. This study also received additional funding from the Ford Foundation.

MEETING THE NEEDS OF OLDER PERSONS IN RURAL INDONESIA: SITUATIONAL ANALYSIS AND POLICY APPROACHES

RESEARCHERS

IWU UTOMO
PETER MCDONALD

The project aims to identify the needs of older people in rural Indonesia for income, housing, health, daily care and social interaction and the extent to which their needs are met. It also considers the efficacy of existing policy programs and how these might be improved. There are presently 22 million Indonesians aged 60 years and over and this number is projected to rise to 48 million by 2035. A high proportion of these older persons (57%) live in rural areas, commonly being areas from which younger people have moved to the rapidly growing cities and towns. This situation presents challenges for the traditional family-based aged care system in rural Indonesia. While this issue has been considered in some depth in countries such as China and Thailand, field research on the situation of older people in rural Indonesia has been limited. This project sets out to address this information gap.

Funding provided by CEPAR to Dr Iwu Utomo as an Associate Investigator enabled the conduct of preliminary field work in Indonesia in September–October 2015. Subsequently, Utomo and McDonald in collaboration with Dr Robert Sparrow (Wageningen University, The Netherlands) were awarded an Australian Research Council Discovery grant that will enable expansion of the study.

There are decades of experience in the study of the needs of older people in developed countries including the US Health and Retirement Survey, the English Longitudinal Survey of Ageing (ELSA), and the Survey of Health, Ageing and Retirement (SHARE) conducted in a large number of European countries. Indeed, such studies have been conducted in almost every developed country with the notable exception of Australia. For the Indonesian study, the CEPAR researchers adapted the questionnaires used in the surveys in developed countries so that they were suitable for use in the Indonesian context but covered similar issues.

As the emphasis in the Indonesian study is upon older people who live in villages where a high proportion of the younger generation (their adult children) have left the village, rather than conducting a national or regional representative sample, it was preferable to take an ecological approach and select a range of villages for the study. For this initial study, two villages in the south of Java were chosen: Giriasih, a poor village in an infertile, upland limestone area and Winong, a better-off village on a flat, fertile, wet-rice plain. The villages were carefully chosen using tabulations from the full-count of the 2010 Indonesian Census, on-line information about the villages themselves and aerial views from Google Earth. The fieldwork in these villages was conducted in cooperation with Muhammad Absor and a team from the National Islamic University in Yogyakarta. Subsequently, the Rector of Andalas University in West Sumatra, Professor Werry Taifur, offered to provide funding support for the conduct of the survey in a village in West Sumatra. The village of Salo, a better-off village

on a fertile upland plain, was chosen using the same techniques that had been applied to select the other two villages. Fieldwork in Salo was conducted in cooperation with Defriman Djafri of Andalas University.

In the three selected villages, 100 per cent of persons aged 60 years and over were targeted for interview. Where the older person was not able to respond to some or all of the questions, support was obtained from the principal carer of the older person. Household economic information was obtained from the head of the household – usually the older persons themselves. Interviews were also conducted with the older person's adult children living in the same household and with adult children living in Jakarta. Interviews were face-to-face except for the Jakarta interviews which were conducted by telephone. A total of around 1,000 interviews were completed. Utomo and McDonald were present during the fieldwork in all three villages observing the situation of the village and conducting in-depth interviews with village officials, service providers and some older people

themselves. In-depth interviews were also conducted with the staff of public health clinics for each area (located outside the village) and with officials at the district, province and national levels. In all, about 40 in-depth interviews were completed.

The data will be available for analysis at the end of January 2016. Other Indonesian universities have expressed interest in funding additional villages in their regions. Fieldwork in these villages and in the villages supported by the ARC grant will commence in the second half of 2016. At that time, the researchers have the intention of making a documentary film on the situation of older Indonesians. Interest in the study approach has been expressed by researchers from two other countries, Vietnam and Iran. The Vietnam study involving CEPAR Associate Investigator, Dr Heather Booth, has also been supported with seed funding from CEPAR (see page 92).

RESEARCHERS

HEATHER BOOTH
CUC HOANG

Rapid population ageing is emerging as an important issue in developing countries such as Vietnam, and will gain momentum in the coming decades. Two important social security challenges arise: financial security and the provision of personal care in old age. In Vietnam, the family is legally responsible for the wellbeing of the older generation.

Meeting the responsibility for the wellbeing of elderly Vietnamese parents in the context of rapid socioeconomic change, a shift in the social welfare state and the pressures of the modern economy, has led to the ongoing evolution of non-traditional support strategies, including diverse living arrangements, intergenerational transfers, and changing interpretations of filial piety and the roles of daughters and daughters-in-law.

This project focuses on these changing interpretations in examining how the challenges of financial security and personal care are being met. A particular focus is the distribution of support among family members and how family decisions are made about the provision of elder support when traditional strategies are no longer employed.

Detailed fieldwork in a village in North Vietnam will examine how and how well the needs of the Vietnamese elderly are being met by family support strategies, focussing on who provides support, types of support, how family decisions about support are made, and how support is perceived by both receiver and giver. The study, which includes quantitative and qualitative approaches, is designed as a pilot for further research on ageing in Vietnam. The findings of the study are expected to inform policy to the benefit of both the older and working generations.

This project will also serve to test the suitability of a questionnaire developed for similar research in Indonesia (see page 91) and will provide comparable data with cross-cultural comparisons to be undertaken.

Rapid population ageing is emerging as an important issue in developing countries such as Vietnam, and will gain momentum in the coming decades.

UNDERSTANDING THE CAUSES AND CONSEQUENCES OF POPULATION AGEING IN ASIA

RESEARCHERS

HEATHER BOOTH
XIAO GUANG JIA

Most Asian populations are undergoing population ageing, but the degree of ageing varies considerably. This project examines the patterns of population ageing in the countries of Asia since 1950. It finds six geographically-defined groups, within which ageing patterns are relatively homogeneous. The underlying causes of population ageing are demographic transition, involving the decline of both fertility and mortality, and international out-migration. Rapid economic development and demographic transition are associated with advanced ageing. In contrast, warfare and significant unrest, and low levels of development are associated with delayed demographic transition and reverse ageing.

The consequences of population ageing can be formulated as two main social security challenges: income support in retirement and the provision of personal care. Traditionally, old-age support is institutionalised in the intergenerational contract, whereby successive generations provide material and personal care for their elders, and operationalised through the multi-generation household. The viability of this support is brought into question in the context of increased longevity, small family size, changed gender relations, the out-migration of children for employment and the demands of the modern economy. In fact, the intergenerational contract is being upheld through a series of adaptations including diversified living arrangements, monetary transfers and gifts, attitudinal change, revised expectations and a relaxation of customary roles. These adaptations often do not adversely affect the wellbeing of elders.

The establishment of formal old-age social security systems in Asia has been slow relative to other countries at similar levels of development, due in part to strong norms of filial piety. System designs vary as a result of history and philosophy, while system reform is meeting the challenges of fiscal sustainability posed by ongoing population ageing. Inadequate coverage and inequity are also being addressed. Social pensions (safety nets) are more commonplace; though their value remains low, social pensions are instrumental in reducing poverty and increasing wellbeing in old age.

Population ageing and old-age security are integral to wider social development. In rapidly changing economies in particular, elder wellbeing depends on the ability of the working generation to successfully negotiate change.

The increasing status of women plays a key role: first in reducing fertility – and producing population ageing – and second in weakening normative roles of daughter-in-law as domestic worker and informal carer. Policies that support adaptation through state social security systems and other enabling measures will enhance the wellbeing of the older and working generations alike.

The consequences of population ageing can be formulated as two main social security challenges: income support in retirement and the provision of personal care.

RESEARCHERS

BEI LU
JOHN PIGGOTT
MICHAEL SHERRIS
ADAM WENQIANG SHAO

Long-Term Care (LTC) has become an imperative challenge in China. CEPAR has begun a project covering various aspects of LTC: informal care status, health trends, current and future LTC demand, and LTC usage in pilot projects.

Policy designs, which take account of and encourage informal care provision, will be critical to the fiscally sustainable delivery of LTC. Lu, Liu and Piggott (2015) explore current informal care status using the China Health and Retirement Longitudinal Study (CHARLS) dataset. We find that fertility change is not the main driver for reducing informal care.

Education levels, living standards, urbanisation and co-residency are much more important. This suggests that current policy, which targets those with one child families, may be misguided, and also that mechanical extrapolations of future demand for care may be misleading.

A second paper (Lu et al, 2016) explores the dynamic changes of elders' health and disability prevalence from 2000-2010. Using the Aged Population in Urban/Rural China (SSAPUR) data, the paper reports a decline in the Activities of Daily Living (ADLs) prevalence in general from 8.92% to 8.13% over the ten year period. Statistical models drawing on panel data are used to predict the impact factors of disability of elders. These are combined with adjusted

population mortality tables and projections to generate Disability Free Life Expectancy (DFLE) and Life Expectancy (LE) at old ages. We find a high 'compression of morbidity' stage from 2000 to 2006, which then reverses from 2006-2010. Demographic features and living behaviours (including drinking and smoking) are discussed. Future trends are also estimated using the income and education effect from the model results. It is anticipated that by 2050, about 44 million people over the age of 60 (or 27 million over 80) will need LTC services.

Finally, ARC Grant project No LP150100347 is working with data from a pilot program at Qingdao City in Shandong province. Qingdao City initiated a policy to integrate LTC cost into the

current Basic and Employee Medical Insurance Policy. By the end of 2015, more than 40,000 individual data observations were collected and cleaning is underway. This research will lead to an actual medical cost analysis to the most severely disabled recipients, allowing sustainability to be assessed.

Outputs:

Lu, B., Liu, X.T., Mi, H. and Yang M.X. (2016). A Trend Analysis of Chinese Elders' Disability and Disability Free Life Expectancy from 2000-2010, Working Paper.

Lu, B., Liu, X.T. and Piggott, J. (2015). Informal Long-term Care in China and Population Ageing: Evidence and Policy Implications, *Population Review*, Vol. 54, No. 2, pp 28-41.

We find that fertility change is not the main driver for reducing informal care. Education levels, living standards, urbanisation and co-residency are much more important.



DR BEI LU

BA Tsinghua, MBA S. Aust., PhD UNSW

RESEARCH FELLOW

Bei Lu is a CEPAR Research Fellow located at the UNSW Business School and a Research Fellow with Tsinghua University and Zhejiang University, China.

After graduating from Tsinghua University in Beijing, Bei worked as an international

trader for 12 years. She returned to academia in 2002 to undertake a PhD in Economics at UNSW. Her thesis and subsequent research focuses on pensions and related social welfare and economic issues.

Bei has been very successful in developing international linkages over the past ten years. In 2003, she initiated a research project with the provincial

government of Zhejiang province, China, which examined the impacts of various pension reform proposals in that province, and this has formed the basis of an ongoing engagement with pension economists and policymakers in China. In 2004, she assisted the World Bank's Operations Evaluation Department in evaluating the Bank's support of pension reform in the Asian region. She

has spearheaded a number of research projects with Chinese academic institutions which have formed the basis of successful Linkage Grant applications in 2010, 2013 and 2015. She has presented her research at a number of international conferences and has published in the *International Social Security Review*, the *Journal of the Economics of Aging*, *Population Review*, and *CESifo Economic Studies*.

RESEARCH TRAINING & MENTORING

A TWO DAY RETREAT FOR EARLY CAREER RESEARCHERS, A NATIONAL CONFERENCE FOR PHD STUDENTS FOCUSED ON AGEING RESEARCH, AND A LONGITUDINAL DATA ANALYSIS WORKSHOP, WERE SOME OF THE HIGHLIGHTS OF CEPAR'S 2015 RESEARCH TRAINING AND MENTORING PROGRAM.

CEPAR's Early Career Researchers (ECRs) gathered in Bowral in August to participate in a program designed to enhance multidisciplinary collaboration across the Centre, as well as explore mechanisms for engaging with end users and increasing the impact of their research. Valuable research training for both ECRs and PhD students was also provided through the 2015 Workshop on Longitudinal Data Analysis and Results Interpretation, convened by CEPAR Associate Investigator (AI), Ross Andel.

Australian PhD students in ageing also came together in December 2015 for the 14th National Emerging Researchers in Ageing (ERA) Conference. Sponsored by CEPAR and hosted by the National Ageing Research Institute in Melbourne, the conference featured presentations from over 40 students. Potential honours students were offered a taste of research through the inaugural CEPAR Summer Scholarship program, a new initiative designed to encourage second and third year undergraduates to consider a research career by offering them an opportunity to work on a three month project at CEPAR.

The Centre also played host to a number of students and ECRs keen to connect with CEPAR researchers and take advantage of the dynamic research environment CEPAR offers. Some of these visited for extended periods of time, others visited briefly as part of the Association of Pacific Rim Universities (APRU) Ageing in the Asia-Pacific Research Symposium. We hope that each of these young researchers returned to their home institution with an enriched appreciation of the benefits of a multidisciplinary approach

to population ageing.

In 2016, we look forward to implementing new initiatives which will provide further training opportunities for our young researchers, enhance their appreciation of the importance of collaboration with industry and government, and strengthen their networks.

Peter McDonald
Deputy Director and
Chair, Mentoring Committee

EARLY CAREER RESEARCHER MENTORING AND TRAINING

ECRs are mentored by CEPAR senior researchers and have opportunities to interact with experts within the three collaborating universities, as well as international leaders in the field who visit the Centre during the year.



A range of events held throughout 2015 also provided frequent occasions to engage with our industry and government partners. Our ECRs participate in Centre activities such as workshops and seminars, contribute to the Centre's working paper series and have opportunities to develop a range of skills.

In 2015, 22 research fellows were funded directly by the Centre and, additionally, seven of our CEPAR AIs were ECRs.

EARLY CAREER RESEARCHER RETREAT
Putting together an outline for a Linkage Grant proposal in the course of a morning is a formidable task, but this was the challenge posed to three teams of young researchers at a research

retreat exclusively for CEPAR's ECRs in August. Multidisciplinary teams were given just two hours to put together a proposal for a project that combined their collective expertise to address an issue of importance to industry or government. Chief and Partner Investigators were on hand to provide encouragement and guidance and then joined the audience as the three groups presented the project. Most agreed this was the highlight of a two day program which also featured a session on career development, opportunities to present research, and time to network in an informal setting.

EARLY CAREER RESEARCHER WORKSHOP
An advanced training workshop titled 'Longitudinal Data Analysis and Results Interpretation' was hosted by the CEPAR ANU node in September 2015. Convened by CEPAR Associate Investigator Ross Andel, the workshop attracted ECRs and PhD students from around the nation. The workshop was offered free of charge to

CEPAR RESEARCHERS WORKING TOGETHER AT CEPAR'S FIRST ECR RETREAT

RESEARCH TRAINING & MENTORING

96

both CEPAR and non-CEPAR affiliates and CEPAR travel bursaries were available to assist with costs incurred by interstate participants. As well as providing an opportunity for participants to advance their skills, it also offered a forum to network with other emerging researchers working in the field.

The interactive five day workshop was designed to improve the ability of participants to conduct analysis of longitudinal data, as well as to interpret results while following general strategies for successful publication in scientific journals. The hands-on workshop encouraged participants to bring their own data and research questions.

In a follow-up survey of participants, many

praised the practical nature of the workshop. For example, one respondent said, 'The presenter offered a practical perspective, looking at different techniques for solving a problem, rather than the more traditional university lecture on the deep mathematics behind a given technique, and the problems that it might solve. One approach is problem centred, the other is technique centred. Both are needed but only the second is traditionally offered. Ross operates in the real world where one has to find the best technique for addressing a given problem.'



ECR WORKSHOP PARTICIPANTS WITH PRESENTER ROSS ANEL

NATIONAL AND INTERNATIONAL NETWORKING OPPORTUNITIES

Creating opportunities for young researchers to develop their international networks and communicate the results of their research to international peers continued to be an area

the Centre invested significant resources.

In 2015 the CEPAR ECR Travel Grant Scheme provided the opportunity for international collaboration and connection for two early career researchers.

CEPAR Partner Investigator

Professor James Nazroo's colleague, Dr Bram Vanhoutte was one such recipient of the CEPAR ECR Travel Grant. He spent six weeks investigating the impact of the life course on later life with specific attention to the role of generational opportunity



ASSOCIATE PROFESSOR ROSS ANEL

BA Vanguard University of Southern California,
PhD University of Southern California
ASSOCIATE INVESTIGATOR

Ross Anel is an Associate Professor in the School of Aging Studies at the University of Southern Florida (USF). His primary research interest is the investigation of

modifiable risk factors for cognitive impairment including Alzheimer's disease and other types of dementia. He is particularly interested in the role of occupational environment in cognitive change and cognitive impairment, but he also studies other factors in this context including leisure activities, education, personality, dietary factors, and blood profile.

More recently, he has been involved in the search for clinical tools capable of identifying early signs of cognitive impairment. This includes collaboration with colleagues from the Czech Brain Ageing Study where they target spatial navigation memory as a potential indicator of cognitive status, and with the USF Health Byrd Alzheimer's Institute, on the use of a web-based

memory monitoring system for older adults.

Finally, he works with colleagues from the Cognitive Aging and Neurophysiology of Aging Labs at USF where they conduct research aimed at helping older adults maintain their cognitive abilities, particularly those abilities that tend to decline with age such as memory and speed of information processing.

structure and gender, using both Australian and ELSA data (see page 70 for more details). His visit helped to strengthen the existing links between CEPAR and the Manchester Institute for Collaborative Research on Ageing (MICRA) at the University of Manchester, UK.

Amber Watts from the University of Kansas, accessed the program to visit and collaborate with CEPAR Chief Investigator Kaarin Anstey. Focussing on longitudinal analysis of existing data on health, behaviour and cognitive functions in older adults (see page 47 for further details), Amber's visit established sustainable links between ANU's Centre for Research on Ageing, Health and Wellbeing and the University of Kansas.



DR BRAM VANHOUTTE

Research Associate,
The University of Manchester
ECR TRAVEL GRANT RECIPIENT

'The CEPAR ECR travel scheme enabled me to accomplish a lot during my short Australian research visit. As well as closely collaborating with Professors Hal Kendig, Kate O' Loughlin and Julie Byles, and Dr Vanessa Loh on a research paper comparing later life health and wellbeing of English migrants to Australia, I also networked with a number of CEPAR Chief and Associate Investigators, exchanging ideas for further collaboration as well as presenting my own research findings. I am extremely grateful for CEPAR's support, without which this would not have been possible.'

Our visitors program also provided our students and ECRs with an opportunity

to expand their international networks. This included international experts who were distinguished speakers at 2015 CEPAR or CEPAR-sponsored events such as the APRU Symposium and Retirement Incomes workshop. Many of our visitors spent extended periods of time at the Centre meeting with CEPAR personnel to discuss CEPAR research and the development of joint projects. For our junior researchers, this provided an excellent opportunity to exchange ideas and perspectives with a range of multidisciplinary experts in an informal setting.

Hosting visiting PhD students from institutions with which we are building a collaborative research program, also expanded the networks of our young researchers and fostered the development of collaborative research relationships. CEPAR students were also encouraged to present their research at international conferences. To enable this, CEPAR provided funding to 7 PhD students in 2015 to assist with travel expenses.



GU TIANAN

PhD student, Renmin
University of China
CEPAR VISITOR,
17-28 AUGUST, 2015

'CEPAR facilitates a global vision and provides great opportunities for researchers and practitioners in the world to exchange knowledge and ideas on reducing the growing pressure created by population ageing. My visit to CEPAR was fruitful and interesting and I wish to visit CEPAR again in the future.'

HIGHER DEGREE RESEARCH TRAINING

44 HDR students are currently enrolled under the supervision of CEPAR Investigators and working on topics aligned with the Centre's research agenda. Details of their research theses are provided on pages 99 – 109. These students have the opportunity to participate in a range of Centre activities, including conferences and workshops and meetings with international visitors.

We contribute to the development of national research capacity more generally through our support for Emerging Researchers in Ageing (ERA), an initiative which aims to bring together students interested in ageing research and provide them with opportunities to form networks and undertake collaborative endeavours. In 2015 ERA membership continued to grow, with over 700 registered members, primarily doctoral students drawn from a wide range of disciplines but also key professionals, industry stakeholders and representatives from peak bodies in the ageing field keen to play a role in

RESEARCH TRAINING & MENTORING

supporting early career researchers.

ERA members have the opportunity to participate in the annual conference, virtual seminar series, as well as take advantage of other opportunities, for example, the ERA travel exchange scheme.

CEPAR'S funding support allows the ERA administrative team to coordinate educational and mentoring activities for research students in the ageing field. The key annual ERA activity is the ERA National Conference. The theme of the 14th National ERA conference was Bringing Research to Life, hosted by the National Ageing Research Institute (NARI) in Melbourne. The attendees reported a high degree of satisfaction with the conference, especially with the quality of the content. The conference entailed

43 oral presentations, 5 posters, and 6 full papers and covered a wide range of issues from a number of disciplinary perspectives including: residential aged care cultural diversity, pharmacology, cognitive health and dementia, work and social participation, housing and care in the community and healthy ageing and physical functioning.

ERA ran a joint workshop with the Australian Association of Gerontology (AAG) in addition to the conference. Focused on translating research into policy and practice, it attracted 25 participants who provided very positive feedback.

Three post-conference workshops were well attended by ERA participants:

- Action research workshop (presented by Betty Haralambous and Paulene Mackell from NARI);
- Funding your research: Applying for grants (presented by Professor Colleen Doyle from NARI); and
- Research funding and Early Career Fellowships (presented by Tessa Jones, Research Development Officer at Monash University).

Jeofrey Abalos, a PhD student at the Australian National University, was one of two CEPAR researchers to present. He was awarded a 2015 ERA Travel Bursary to attend the conference and present his paper *Availability of Support and Provision of Care among Older Persons in the Philippines*.

Speaking about the experience, Jeofrey said 'The 2015 ERA Conference was a great learning experience for me. Not only was I able to present my research to fellow Early Career Researchers working in the field, but I was also exposed to a wide diversity of methodological approaches in studying the ageing phenomenon. I also learned how to improve my presentation skills by observing great presenters during the different sessions that I attended and through the rapid fire presentation. The post-

conference workshop on grant writing was also very informative. It equipped me with the necessary skills and provided me with the appropriate information to improve my chances of getting a research grant. With all these wonderful experiences I look forward to attending the 2016 ERA Conference in Canberra!'

EMERGING RESEARCHERS IN AGEING VIRTUAL SEMINAR SERIES

The ERA Virtual Seminar series continues to provide a regular opportunity for ERA members from across Australia and internationally

to come together virtually to hear from leading researchers and stakeholders in the field of ageing and engage in extended discussion. Participation in the series has included up to 74 participants per virtual seminar. Three virtual seminars took place in 2015: a session on building research industry linkages in May; on legal and medical issues associated with death in August; and on program evaluation in October. In addition, ERA collaborated with the AAG to run a joint webinar on professional networking in July.

UNDERGRADUATE STUDENT ENGAGEMENT

SUMMER SCHOLARSHIP PROGRAM

In 2015 CEPAR offered a Summer Scholarship Program at the UNSW node for the first time. Successful applicants were given the opportunity to work under the supervision of CEPAR Research Fellows for a 12 week period over the summer break. The program generated a great deal of interest from undergraduate students in Economics and Actuarial Studies who competed for four awards.



JEOFREY ABALOS AND NATASHA GINNIVAN AT THE 14TH NATIONAL ERA CONFERENCE

The successful students and their research projects were:

Hendson Koh
Measuring House Price Growth and the Impact of Property Characteristics

Ivan Lai
Drawdown Structures in Australia and the Netherlands

James Ma
The Impact of Risk Preferences on Medical Expenditures

Todd Stenner
Pension Indexation and Inequality

The program is designed to provide students with a taste of working in a research centre and to inspire them to pursue research studies.



JAMES MA
Bachelor of Actuarial Studies/
Bachelor of Economics

‘This project has enhanced my knowledge of the retirement industry and, with a keen interest in pursuing an honours year, has allowed me to develop the necessary research skills to successfully complete future research.’

– James Ma

STUDENT THESES

CEPAR affiliated students work under the supervision of CEPAR Investigators on topics aligned with the Centre’s research agenda.

In 2015 a total of 44 HDR students and 1 honours student were affiliated with the Centre. This year six HDR CEPAR affiliates submitted their theses for examination and/or graduated:

- Caroline Broderick (PhD submitted)
- Natalia Garabato (PhD submitted)
- Cuc Thu Hoang (PhD submitted)
- Andrew Kingston (PhD submitted)
- Maria Pilar Rioseco Lopez (PhD submitted)
- Tazeen Majeed (PhD awarded)

PHD STUDENTS AT THE UNSW BUSINESS SCHOOL

NATALIA ARANCO
MEC Universidad de Montevideo

SUPERVISORS:
Professor John Piggott
and Dr Shiko Maruyama

Assessing the impact of fertility differentials in the accumulation of human capital

The aim of this thesis is to provide new evidence on how the relationship between fertility and intergenerational accumulation of human capital, which we call fertility-education differentials (FD), varies across countries and over time, and explore the mechanism behind the determination of FD. We propose a novel measure of FD, which is based on the

realisation that if low educated women have more children than their higher educated counterparts then on average, given a certain cohort of babies, the education level of their mothers is expected to be lower than the education level of all women (of reproductive age) in the country. Data are drawn from the Demographic and Health Surveys, and the final database comprises 192 surveys from 63 countries across 30 years. In addition, to enhance our understanding we have recently included some developed countries for comparison.

BIANCA BONOLLO
*BSc Econ University of Padua,
MSc Econ Ca’ Foscari University of Venice*

SUPERVISOR:
Dr Lorettil Dobrescu
CO-SUPERVISOR:
Professor John Piggott

Social networks and formal care usage

This research aims to provide a deeper understanding of the role of social networks in determining the amount of formal care demanded by the elderly. There are two main channels through which social networks could impact health care. First, social ties could provide informal care (as a substitute for formal services). Second, they could also provide better information about available formal care, and help access



PHD STUDENT ROSILENE WAERN, FAR LEFT, RECEIVING THE YOUNG INVESTIGATOR AWARD (POSTER) AT THE 9TH ASIA PACIFIC CONFERENCE ON CLINICAL NUTRITION

RESEARCH TRAINING & MENTORING

it. This study exploits the new modules of the fourth wave of the Survey of Health, Ageing and Retirement in Europe, which collects specific information about the social networks of the elderly in several European countries. A first draft of the project has now been finalised.

NATALIA GARABATO

BA Econ (Hons) University of the Republic, Montevideo

SUPERVISORS:

Professor John Piggott and Professor Denzil Fiebig

What motivates people to save for retirement? The role of personality & impatience

This thesis investigates the determinants of retirement income and savings focusing on the role of impatience and how it affects people's disposition to save for retirement. Literature suggests that impatience and present bias are plausible explanations for suboptimal financial decisions as evidence shows that individuals do not allocate resources intertemporally in ways that are likely to be welfare improving. Using a one off experiment included in the Social Protection Survey in Chile to measure people's impatience, we analyse the determinants of the subjective discount rate,

its relation to retirement income (actual or projected) and how/whether individuals respond to incentives to delay gratification. The findings show that impatience is negatively correlated with actual retirement income (for retirees) and expected pension income for non-retirees, which confirms a link between impatience and the ability to save for retirement. Moreover, the findings suggest people can be significantly affected by financial incentives to delay consumption. The findings have important implications for the design of incentives to save in retirement products. Natalia submitted her thesis in May 2015.

SHANG WU

B Bus (Hons) UTS, MAcc Syd., BAppFin/BActStud Macq.

SUPERVISORS:

Professor Hazel Bateman and Dr Ralph Stevens

CO-SUPERVISOR:

Professor Susan Thorp

Demand side issues for a long-term care (LTC) annuity market

This project aims to provide both theoretical justification and empirical evidence for the hybrid product LTC annuity which combines a life annuity and LTC insurance. The empirical study will use data from

a large experimental survey conducted online to examine the demand for LTC annuities and the interaction between retirement income and LTC insurance. The theoretical study will calibrate a life-cycle model to explore the influence of having access to a LTC annuity market on optimal decisions in retirement in terms of annuitisation, consumption and investment. The survey has been conducted online in 2015 and data is being analysed. For the theoretical study, the first draft of the working paper has been completed and results have been presented at leading international conferences. The project is expected to be completed in 2016.

MENGYI XU

BCom (Hons), UNSW Australia

SUPERVISOR:

Professor Michael Sherris

CO-SUPERVISOR:

Dr Adam Wenqiang Shao

Housing and retirement savings

The research aims to integrate pre-retirement investment strategies and post-retirement income solutions in the presence of housing. These two phases are linked through a target income stream. The accumulation phase focuses on achieving the target from both a pension

fund manager and an individual's perspective. From a fund manager's perspective, portfolio insurance strategies are used to achieve a target annuitisation level for fund members. From an individual's perspective, he/she takes into account the housing asset, which is typically the most important asset in household portfolios. By comparison, the decumulation phase focuses on optimally drawing down the accumulated wealth, taking into account both health and home ownership status. The progress made in 2015 includes a detailed investigation of the portfolio insurance strategies and some preliminary analysis of consumption and asset allocation decisions in the presence of housing using Australian data.

YAJING XU

BActSc MAActSc Central University of Finance and Economics, China

SUPERVISORS:

Professor Michael Sherris and Dr Jonathan Ziveyi

CO-SUPERVISOR:

Professor John Piggott

Cohort models of mortality and the design of derivative contracts for longevity risk management

Longevity risk has increasingly become a major challenge for insurance

companies and pension funds around the world, which deserves deep and detailed consideration. The ineffectiveness of existing hedge instruments encourages the development of longevity-linked securities and derivatives. The financial market is believed to have the required capacity and experience in managing longevity risk. The primary focus of this study is to provide new insights into establishing a tradable longevity market by calibrating market price of longevity risk and constructing longevity indices. Better forecasts of cohort survival curves provide a basis for accurate pricing and hedging of mortality-linked products issued by insurance companies and annuity providers. In this regard, this research proposes and assesses a multi-cohort affine mortality model, which can deliver tractable representations of cohort survival curves. Based on this model, this research investigates how to derive market risk premium of longevity risk using tradable retirement indices. This research also develops value-based longevity indices for cohorts in different countries, which

are believed to be handy for quantifying changes in the costs and risks of longevity at the same time.

XIAOYUN ZHANG
BMgt Zhejiang University, China

SUPERVISOR:
Professor John Piggott

CO-SUPERVISOR:
A/Professor Elisabetta Magnani

Female labour participation and parental care in China: Analysing the effect of the New Cooperative Medical Scheme (NCMS)

The thesis studies the recently implemented policy of the New Cooperative Medical Scheme (NCMS) in rural China, and evaluates the impact of the NCMS policy on the informal care provided by females, and their labour force participation. We find that the household enrolment rate is around 90% after 2006 in counties where the NCMS is offered. Households are less likely to enrol in the NCMS program when the household heads have above high school education, are migrant workers and the households have members with other types of health insurance. Previous research suggests that NCMS policy increases the health utilisation and improves the health status among the elder enrollees.

The thesis hypothesises that female children's informal care will be decreased due to the increase of the parents' health status in NCMS enrolment households, and that this may have an impact on labour force participation. Preliminary results, however, suggest that the NCMS policy has decreased the female's informal care in NCMS enrolled households, but has no significant impact on female labour force participation.

HONOURS STUDENT LOCATED AT THE UNSW BUSINESS SCHOOL

ZIXI (TIFFANY) LI
BCom/BEcon UNSW

SUPERVISORS:
Professor Michael Sherris
and Dr Adam Wenqiang Shao

Modelling long-term care incorporating systematic uncertainties in health transition rates

The effect of systematic mortality uncertainties on long-term care (LTC) is not well studied in the existing literature. The aim of this study is to incorporate systematic uncertainties in formulating the transition rates among health states based on panel data at the individual level, which has not been done previously.

A multi-state latent factor intensity model is used to model the transition rates and the parameter estimation is based on Monte Carlo maximum likelihood. An approximating state space model is then constructed to track the unobserved systematic factor, referred to as the 'frailty'. The proposed model is then applied to the US Health and Retirement Study (HRS) data between 1998 and 2012. The results have important implications for future LTC cost projections and LTC insurance pricing and risk analysis.

PHD STUDENTS LOCATED AT THE CENTRE FOR RESEARCH ON AGEING, HEALTH AND WELLBEING, ANU

RICHARD ARTHUR
*BSc Computer Science UNSW,
BSc Psych (Hons) ANU*

SUPERVISOR:
Professor Kaarin J. Anstey

ADVISORS:
Dr Moyra Mortby, Dr Richard Burns
and A/Professor Richard O'Kearney

Is anxiety a risk factor for cognitive ageing?

Little research exists on the relationship between anxiety and cognitive ageing. Some research has suggested anxiety predicts cognitive decline (CD) in older adults. Such an association may be important because of the

implications for treatment of anxiety, and potential slowing of cognitive ageing for some individuals. Using 12 years of data from the Personality and Total Health (PATH) Through Life project (among other resources), this study aims to investigate epidemiologically whether, and under what conditions, anxiety is associated with CD in older adults; to delineate possible neuropsychological mechanisms; and to describe possible clinical implications.

KIMBERLY ASHBY-MITCHELL
*BSc Human Ecology – Nutrition
and Dietetics MSc Nutrition
University of the West Indies*

SUPERVISOR:
Professor Kaarin J. Anstey

ADVISORS:
Professor Carol Jagger
and A/Professor Anna Peeters

The relationship of diet and physical activity behaviours to cognitive impairment in older adults

It is well documented that our populations (both in developed and developing countries) are ageing and that lifestyle factors may hold the key to preserving mental and functional status. This thesis adopts a cross-national approach between Australia and seven Latin American and Caribbean countries and

focuses on two modifiable lifestyle factors – diet and physical activity. In November, Kimberly gave her final oral PhD presentation.

CAROLINE BRODERICK
BSc Psych (Hons) ANU
SUPERVISOR:
Professor Kaarin J. Anstey

Depressive symptoms and progression to cognitive disorder: The PATH Through Life Project

Cognitive disorders are increasingly diagnosed within Australia, with significant financial costs associated with rehabilitation. This increase highlights the necessity to identify predictors of cognitive disorders, to potentially prevent or delay the onset of these disorders. Past research shows that depression is a predictor for the onset of cognitive disorders, for example, dementia and pre-clinical dementia syndromes including Mild Cognitive Impairment (MCI). However, there is a limited amount of longitudinal research investigating specific depressive symptoms as predictors of progression to cognitive disorders which are pre-clinical to dementia. Further research outlines specific depressive symptoms are associated

with cognitive impairment/ cognitive performance and therefore may have implications for investigating progression to cognitive disorders.

This study investigated whether specific depressive symptoms predicted progression to MCI and Any-Mild Cognitive Disorder. This study utilised 3 waves of data from the PATH Through Life Study while adjusting for demographic, health and lifestyle factors and medication. Results indicated depressive symptoms of difficulties concentrating and loss of confidence were stronger predictors of progression to cognitive disorders and remained significant when adjusting for all demographic, health and lifestyle factors and medication. The findings suggest specific depressive symptoms may be more predictive of cognitive disorders. Early screening and monitoring of the specific depressive symptoms may prevent or delay progression to cognitive disorders with appropriate intervention. This thesis was submitted in 2015.

NATASHA GINNIVAN

*BSc Psych UNSW,
PGDip Psych Macq.*

SUPERVISOR:
Professor Kaarin J. Anstey

ADVISORS:
Dr Kerry Sargent-Cox
and A/Professor Kate O'Loughlin

Self-perceptions of ageing from a cross-cultural perspective: The differential impact of socio-cultural practices on identity and age-stereotypes

Due to differing social practices around elder respect in more collectivist cultures such as China, Japan and the Philippines, it is hypothesised in some research that older people in these cultures are less prone to the internalisation of negative age stereotypes. Preliminary results from focus group data in both Australia and the Philippines show that older people in collectivist cultures rely on a more cohesive frame of reference for the social role of an older person than older people in Australia. Different groups of seniors (Australians N = 66 aged 60-75 and Filipinos N= 15 aged 55 - 79) were randomly assigned to either one of two experimental conditions where there was a positive prime or a negative prime, or the control condition where there was no prime. The aim was to see if the subtle

prime commenting about age in either a positive or negative way on memory ability would have an effect on performance. Participants then took part in a survey on cultural attitudes and attitudes towards ageing. Preliminary findings show no significant differences in performances between experimental conditions, nor cultural differences in memory ability. Results from the survey so far showed that there were significant differences between cultural attitudes towards ageing; namely elder respect was held to be of importance to the senior Filipinos in comparison with the Australians. Further more in-depth statistical analysis has revealed from the survey that one's cultural orientation predicts attitudes towards the physical aspects of ageing. This supports previous research by Becca Levy (2005, 2009) which shows that adults with more positive self-perceptions of ageing enjoy significantly better functional health compared with those who hold less positive attitudes towards ageing. Overall, older Filipinos from this study showed significantly more positive attitudes towards the physical

aspects of ageing than the Australians, and our statistical model showed that this was accounted for by one's cultural orientation: collectivist versus individualist.

PUSHPANI HERATH

*MBBS University of
Sri Jayawardenepura,
MSc UTexas, Arlington*

SUPERVISOR:
Professor Kaarin J. Anstey

ADVISOR:
Dr Nicolas Cherbuin

Understanding the relationship between treatment of common chronic diseases and cognitive function

Dementia and cognitive impairment are becoming two of the most important neurological disorders among the elderly. The proposed study was designed to examine the impact of long-term medical treatments for chronic diseases such as diabetes, hypertension, hypercholesterolemia, and depression on cognitive function and structural brain changes. This study is using data from the PATH Through Life Project. Three studies, 'Exploring the link between type 2 diabetes and diabetes medication with cognitive function'; 'The effect of statins on cognition, mild cognitive impairment and

structural brain changes: evidence from the PATH Through Life Study'; and 'Effects of use of NSAIDs on cognitive function and structural brain changes' have been completed and the results are being written up for publication.

LARA MORRIS

BSc Psych (Hons), MCLinPsych

SUPERVISOR:
Professor Kaarin J. Anstey

ADVISORS:
Dr Kim Kiely and
Dr Kerry Sargent-Cox

Adverse childhood experiences and lifestyle risk factors for chronic disease over the life course

This year the clustering of lifestyle risk factors (smoking, harmful alcohol use and physical inactivity) and the psycho-social determinants of multiple unhealthy behaviours have been examined. The project also explores whether the experience of childhood adversities increases the number of lifestyle risk factors for chronic disease in adulthood and if so, whether this is independent of later life socioeconomic, behavioural and psychosocial factors. Future plans are to extend this work to examine the effect of childhood adversity on cognition over the life course.

LILY O'DONOUGHUE-JENKINS*BA BSc Psych (Hons) ANU***SUPERVISOR:**

Professor Kaarin J. Anstey

Cognitive impairment and service use: Translating research for policy

In 2014 the topic of this thesis changed slightly. The main focus of this thesis is still how individuals with cognitive impairment use health services but it also looks at the concept of knowledge translation. For the past eight months Lily has been on secondment to ACT Health, where she has been working on several papers. The first analyses the relationship between cognitive impairment, depression and primary care. The second analyses hospital admission and cognitive impairment and the final paper focuses on knowledge translation and research within the ACT Government.

QUANG TRINH*BA Sociology Vietnam National University, MSocSc Sociology National University of Singapore***SUPERVISOR:**

Professor Hal Kendig

CO-SUPERVISORS:

Professor Peter McDonald and A/Professor Minh Huu Nguyen

Ageing and intergenerational relationships in Vietnam

This thesis looks at population ageing in Vietnam in association with the socioeconomic context. It examines many aspects of the Vietnamese elderly's intergenerational relationships including living arrangements, intergenerational support exchange, and their knowledge of older people's rights. The Vietnamese elderly's life satisfaction and quality of life will also be analysed in comparison with other Asian countries using WHO SAGE-INDEPTH data. The study this year resulted in a poster presentation at the Ageing in the Asia-Pacific Research Symposium at UNSW in September 2015 and an oral presentation at the 10th Asia/Oceania Congress of Gerontology and Geriatrics (IAGG 2015), held in Chiang Mai, Thailand in October 2015. Both the poster presentation and the oral presentation focused on the Vietnamese elderly's life satisfaction and their living arrangements respectively. An abstract on intergenerational support exchange is under preparation for GSA's conference next year in the US.

PHD STUDENTS LOCATED AT THE SCHOOL OF DEMOGRAPHY, ANU**JEOFREY B. ABALOS***BS Commerce University of Luzon, Master in Population Studies University of the Philippines Population Institute***SUPERVISOR:**

A/Professor Heather Booth

CO-SUPERVISOR:

Professor Zhongwei Zhao

Changing health status and health expectancy among older persons in the Philippines

The thesis aims to understand how different factors influence the compression of morbidity among older persons in the Philippines. While there have been earlier studies on the changing health status of older Filipinos, these mostly focused on the socioeconomic factors and did not take into account other important factors such as changing lifestyle, family support and health care utilisation. This thesis aims to address this gap by examining a broad array of factors that could influence the changing health status of older persons in the Philippines. Although all potential factors that could influence the health status of older Filipinos will be examined in this study, the main focus

will be on the role of health care utilisation and family support. To provide a better context for the study of health status among older Filipinos, this thesis will also analyse changes in mortality patterns among older persons and how it relates to their health. Data will be drawn from two national surveys on older persons in the Philippines and the 2010 Census of Population and Housing.

BRIDGET BROWNE*BEd Macq., FIAA, FIA***SUPERVISOR:**

A/Professor Heather Booth

CO-SUPERVISORS:

Professor Michael Sherris, Dr Tim Higgins and Dr Anna Howe

Aged care in Australia: What place for long-term care insurance?

This research examines why there is no private, voluntary long-term care insurance product in Australia to support the costs of aged care. It also examines the variability in individual financial exposure to aged care costs and considers potential insurance product designs.

Following initial analysis of the Australian Institute of Health and Welfare's Pathways in Aged Care linkage dataset of 2003-04 (PiAC 03-04), a more

complete dataset has been obtained, the extended PiAC database (PiAC 02-11). Analysis of this dataset is underway to establish transition rates between care statuses and state-dependent life expectancies by age and sex. These results will be used to develop an underlying biometric basis for a long-term care insurance product in further work, and have much wider application to our understanding of outcomes for aged care recipients and should be of value to policymakers and practitioners in the aged care domain.

ALICE FALKINER*BA (Hons) MSocRes ANU***SUPERVISOR:**

Professor Peter McDonald

CO-SUPERVISOR:

Dr Anne Evans

Dual caring in Australia: An examination of the experiences of people with multiple caring responsibilities

Informal care provided by family members is the most common form of care for people with disabilities, long-term health problems and the frail aged in Australia. Although there is a range of research focusing on the experiences of informal carers in

RESEARCH TRAINING & MENTORING

Australia, there are some key areas that have been neglected. One such area is the study of informal carers who balance informal care with other child care responsibilities. This thesis bridges the gap in knowledge about dual caring in Australia. In 2015 this project completed analysis identifying the predictors and impacts of dual caring. This was achieved primarily through event history analysis and multilevel modelling of longitudinal data from the Household, Income and Labour Dynamics in Australia (HILDA) survey. This thesis is expected to be submitted in 2016.

CUC THU HOANG

BA Sociology VNU, MA Population Studies ANU

SUPERVISOR:

A/Professor Heather Booth

CO-SUPERVISORS:

Dr Iwu Utomo and Dr Philip Taylor

Modes of aged care in Vietnam: Adaptation to change

This thesis is a study of intergenerational care and support for the elderly in Vietnam in the context of rapid demographic, social, and economic changes. The market economy has brought new demographic, cultural and socioeconomic dynamics that challenge the traditional aged care system

for elderly Vietnamese. Most elders no longer live in traditional living arrangements which has a negative impact on their wellbeing. The negative effects of 'couple' and skipped-generation living arrangements disappear when intergenerational transfers and support are taken into account. The study has shown that the combined effect of living arrangements and intergenerational transfers and support are largely positive, indicating successful adaptation to the changing conditions. Furthermore, living in an institution while continuing to receive familial support has become an option for some of the elderly population. The care responsibilities for Vietnamese elders are not only for the son, daughter, and daughter-in-law but also for the state and private sectors. This thesis was submitted in November 2015.

NERIDA HUNTER

BA BCom Melb, MGovt & MComm Law ANU

SUPERVISOR:

Professor James Raymer

CO-SUPERVISORS:

Professor Peter McDonald and A/Professor Heather Booth

The geodemographic and life course dimensions of population ageing in Australia

This study examines demographic change in Australia over the period 1901 to 2011 and a future projection period of 2011 to 2031. It focuses on the population aged sixty-five years and over and how it varies across space and time by population size, structure, characteristics and life course. In 2015 thesis development was progressed and the candidate completed their final review and presented to the Department of the Prime Minister and Cabinet on key findings and policy directions.

XIAOGUANG JIA

BS Fudan University, MS Fudan University

SUPERVISOR:

Professor Zhongwei Zhao

CO-SUPERVISOR:

A/Professor Heather Booth

An agent-based decision model of life course events: Marriage, human reproduction and family formation

This thesis is both a methodological exploration and a pragmatic application of the relatively new computer simulation approach – agent-based modelling and simulation (ABMS) – in population studies. Three salient life course events are integrated into a systematic framework, which include

partnership formation or marriage, human reproduction or transition to parenthood, and family formation. Particularly, the modelling of fertility also includes the decision of the offspring's sex or sex composition, and the modelling of household focuses on its mutual relationship with intra-household old-age informal care. Unlike some pure agent-based models, the holistic model here is not only solely built on a micro-level behavioural analysis of heterogeneous individuals but also includes some endogenous macro-level feedback mechanisms and the dynamics of the micro-macro link/gap. The agent-based approach is compared with other possible methods, such as formal mathematical models, statistical analysis and microsimulation. The model is designed for a more general purpose to explain the phenomena of population changes, especially during a relatively long or transitional period. As an example, the model can be used to shed light on the dramatic population changes and related social norm variations in China since the 1950s, which may lead to better prediction of population changes in the future.

Progress and achievements in 2015 include the philosophical reflection of demography and its paradigm shift in the history of science, the theoretical framework of life course events from a systematic perspective, and some rough sub-models of the marriage module and fertility module.

MARIJAN JUKIC

BA MSc Geography University of Zagreb, MSc Demography University of Southampton, PhD Population Geography University of Zagreb

SUPERVISOR:

A/Professor Heather Booth

CO-SUPERVISOR:

Professor Zhongwei Zhao

Modelling residential Aged Care in Australia

The research is currently looking at the system of residential aged care modelled by 5 models: (a) the probability of applying for care; (b) the probability of successful applications; (c) the probability of being admitted to residential care; (d) probabilities of changing disability levels; and (e) probability of exit from residential care. Comprehensive administrative and survey data will be utilised to explore potentially useful techniques for extracting transition probabilities (for key variables) and constructing a microsimulation model

of residential aged care. A multi-state model of change of care needs has also been tested. The research results are expected to have important implications for the residential aged care policies in Australia in terms of providing a better understanding and more accurate projections for the future of aged care.

MAHIN RAISSI

BS MA Tehran

SUPERVISORS:

A/Professor Robert Ackland
and A/Professor Heather Booth

CO-SUPERVISOR:

Dr Lexing Xie

Online social networks and subjective wellbeing of older Australians: Network homogeneity, social capital and negative interactions

The project aims to understand the relationship between (online) social networks and subjective wellbeing of older Australians (50+) by examining the mechanisms and processes of behaviour transmission in social networks. As a component of the Social Networks and Ageing Project (SNAP), a Facebook application called Australian Seniors' Online Networks (AuSON) was developed and released in October 2012. AuSON collects information about participants' social

networks, social capital and wellbeing. Many Facebook users who are mainly Australian seniors (50+) or others who are friends with them have used AuSON. During 2015, the eight chapters of the thesis have been written and reviewed by the supervisory panel. The major progress during the last year was related to adding a new chapter of analysis examining the validity of data collected from Facebook for social research, particularly in the context of wellbeing of older people. The results of this chapter have been presented in the 'Computational approaches to studying networks in text, language and society' workshop that was held on 5th November 2015 at the Australian National University. The final revisions of the eight chapters will be completed during February and March this year. The expected submission date for this PhD thesis is March 30, 2016.

MARIA PILAR RIOSECO LOPEZ

*Licentiate in Psychology Pontificia
Universidad Catolica de Chile,
MSocRes ANU*

SUPERVISORS:

A/Professor Heather Booth
and A/Professor Robert Ackland

CO-SUPERVISORS:

Dr Tim Windsor and
Professor Hal Kendig

The role of social connectedness in the process of retirement in Australia

Retirement is a key area of social and policy research in the context of population ageing. However, little is known about the role of social connectedness in the retirement transition. Analysis of the Social Networks and Ageing Project (SNAP) data showed a significant association between social connectedness and retirement status and expected time to retirement. Longitudinal analysis using the Household, Income and Labour Dynamics in Australia (HILDA) survey showed that retirement has a significant effect on different aspects of social connectedness, and changes in social connectedness over time differ by retirement status. In addition, differences between males and females indicate that gender plays a key role in the association between social connectedness and the process of retirement. The candidate submitted her thesis in December 2015.

PHD STUDENTS LOCATED AT THE CRAWFORD SCHOOL OF PUBLIC POLICY, ANU

ALIZA HUNT

*BA(Hons) Psychology, ANU,
Dip Modern Languages, Melbourne.*

SUPERVISOR:

Professor Peter McDonald

CO-SUPERVISORS:

Professor Steve McEachern
and Dr Zachary Steel

Meeting the mental health needs of elderly Indonesians

The project is undertaken as part of a larger national level survey of Indonesia's older persons modelled after the US Health and Retirement (HRS) Survey and the Survey of Health, Aging and Retirement in Europe (SHARE). It focuses on the mental health profile of Indonesia's rapidly expanding ageing population to provide a more nuanced understanding of one of the country's potential obstacles to sustained development and economic growth. The method used utilises a cultural psychological framework to critically analyse existing national level data in combination with a three stage epidemiological survey of older persons and their carers (N=3500). Specifically the thesis will critically explore mental illness prevalence, predictions, relationship with disability, as well as

utilised, available and ideal treatment to better understand opportunities to fulfil unmet needs in Indonesia's elderly population.

MATTHEW KIDMAN

BA LLB Macq.

SUPERVISOR:

Professor Peter McDonald

CO-SUPERVISOR:

Professor Alex Frino

The impact of population ageing on the prices of domestic housing and equities in Australia

This thesis looks at the impact ageing will have on Australian house and equity prices between 2016 and 2050. Australia has approximately \$6 trillion invested in these two asset classes or about 4 times the annual gross domestic product. Previous studies, emanating mainly from the USA, have been inconclusive and any pricing forecasts have proven to be wildly inaccurate. The overwhelming belief is that ageing will have an impact on pricing of these assets. Core to this belief is that the large baby boomer cohort, those born between 1946 and 1964, bid up asset prices during their working lives. As they enter their post working lives they will similarly place downward pressure on asset prices as

RESEARCH TRAINING & MENTORING

they look to divest and fund their retirements. This theory is based upon the life-cycle hypothesis developed in 1954. Australia is a key country to study in this area. It represents the high population growth and gentle ageing model. There is a high probability that this population model will see support for asset prices even though the baby boomers are starting to retire.

PHD STUDENT LOCATED AT THE COLLEGE OF BUSINESS AND ECONOMICS, ANU

ARM NAKORNTHAB
MA U.Va.

SUPERVISOR:
Dr Cagri Kumru

Annuities and estate taxation in an entrepreneurship model

There is an extensive literature exploring the reasons behind thin annuity markets, and a separate line of literature that analyses the implications of estate taxation. The literature is silent on the impact of estate taxation on annuity purchase. In this project, annuity buying decisions will be explored by employing a model that incorporates estate taxation, bequest motives, and entrepreneurship, accounting for the correct

wealth distribution. This project will contribute to our understanding of the annuity puzzle since estate taxation affects savings for the old. In sum, this computationally challenging project will extend our understanding of annuity buying decisions substantially.

PHD STUDENTS LOCATED IN THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF SYDNEY

JOHANNE ELIZABETH BRADY
BA (Hons) UNSW

SUPERVISOR:
A/Professor Kate O'Loughlin
CO-SUPERVISOR:
Dr Jennifer Smith-Merry

Meanings of Parkinson's disease in an Australian community setting from the perspectives of people diagnosed and partner-carers

This sociological study explores the effect of Parkinson's disease on a person's identity and forms of social interaction. The main empirical study constitutes part of a doctoral thesis that includes an analysis of other texts that construct social meanings of Parkinson's disease in society. Qualitative data was collected via interviews and focus groups with members (>55) of nominated

Parkinson's support groups in Sydney. An interpretive and constructive thematic analysis of the data has revealed varying social factors influence peoples' perceptions and meanings of ageing and the symptomology of Parkinson's disease. Nuanced meanings of Parkinson's disease in everyday life contexts have potential to inform the type of support that people diagnosed and partners/carers need to maintain their quality of life.

CLAIRE O'CONNOR
BSc Med UWS, MOT (Hons) Syd.

SUPERVISOR:
Professor Lindy Clemson
CO-SUPERVISORS:
Dr Eneida Mioshi, Professor Henry Brodaty, A/Professor Olivier Piguet and A/Professor Kate O'Loughlin

Understanding behaviour and function in frontotemporal dementia (FTD): Developing better assessments and intervention approaches

This thesis will explore the relationships between behaviour and functional ability across the behavioural and language variants of FTD. A feasibility trial will be conducted of a Tailored Activity Program (TAP) specifically designed for FTD cohorts to improve activity engagement, reduce

difficult behaviours in people with FTD, and alleviate carer burden. Data collection through the TAP project is nearly ready for analysis. Oral presentations from the project have been presented at an international (Washington, USA) and a domestic conference. One manuscript has been published, another is currently under review and two others are in the final stages of preparation for submission for review in academic journals.

DOROTHY DUDLEY
BBus UTS, MASS ACAP

SUPERVISOR:
A/Professor Kate O'Loughlin
ASSOCIATE SUPERVISOR:
Dr Vanessa Loh

Understanding personal goals in retirement and their relationship with life satisfaction: An Australian perspective

This sociological research project aims to understand the existence and nature of personal goals held by Australian retirees aged 55 to 90 years. It will examine the influence of personal goals on subjective wellbeing and their impact on successful ageing. A review of the literature and an initial phase of quantitative analysis employing the Household

Income and Labour Dynamics in Australia 2011 dataset completed in 2014 informed the design of the primary qualitative research phase, which received ethics approval in April this year. The qualitative recruitment and fieldwork was completed in November 2015, comprising a series of individual and paired in-depth interviews with 60 participants from a range of suburbs in Sydney and Newcastle.

KYLIE WALES
BAppSc Occupational Therapy UWS
SUPERVISOR:
Professor Lindy Clemson
CO-SUPERVISORS:
A/Professor Natasha Lannin and Professor Glenn Salkeld

Measuring function and cost effectiveness in occupational therapy home discharge planning

Best practice guidelines for occupational therapy discharge planning have not been identified or evaluated for their clinical or cost effectiveness. In addition, a lack of information exists as to how function should be assessed. Improving function is a key outcome in occupational therapy discharge planning for older adults. A cost-effectiveness analysis of occupational therapy discharge planning practice is currently being

undertaken on the NHMRC-funded HOME trial. A further two studies are being conducted around the assessment of older adults, one is a validation study conducted in a metropolitan hospital and the second is a systematic review on 28 assessment tools that have previously been used with older adults to measure function. The systematic review has now been accepted for publication.

JACQUELINE WESSON

*BAppSc Occupational Therapy
Cumberland College, MA Macq.*

SUPERVISOR:

Professor Lindy Clemson

CO-SUPERVISORS:

Professor Henry Brodaty and Dr Simone Reppermund

Evaluating functional cognition and performance of everyday tasks in older people with dementia – the validity, reliability and usefulness of the Allen's model of cognitive disability

Assessment for dementia/MCI includes assessment of everyday functioning. However, objective, reliable and valid measurement tools are lacking. Occupational therapy (OT) functional assessments, while commonly used, have shortcomings. Allen's Cognitive Disabilities Model is an OT model offering information about cognition

during functional task performance, as measured by the Large Allen's Cognitive Level Screen-5 (LACLS-5). The project aims to explore psychometric properties of the LACLS-5 with a community sample of older people and examine the relationship of performance on this tool with other standardised measures of everyday function and cognitive measures. Data is currently being analysed for cross sectional and longitudinal studies. In addition, a systematic review of 21 performance based measures used to assess everyday activities has been completed and submitted for publication.

LYNDA WOODWARD

*BPhysio BSc Biotech (Hons)
N'cle (NSW)*

SUPERVISOR:

Professor Lindy Clemson

CO-SUPERVISORS:

A/Professor Cathie Sherrington and A/Professor Karen Willis

Exploring the perceptions and experiences of older people in the 'Stepping on after hip fracture' program

Using qualitative thematic analysis, the study aims to determine whether older men and women who have had a fall-related lower limb fracture have different experiences related with

their journey after having a fall, acute treatments related with their fall and fracture, and pre and post participation in a long-term exercise self-management falls prevention program. Analysis continues on in-depth interviews with 17 men and 16 women, with preliminary findings suggesting that these older men and women do have differing experiences with certain aspects of this journey.

PHD STUDENTS LOCATED AT THE CENTRE FOR EDUCATION AND RESEARCH ON AGEING, UNIVERSITY OF SYDNEY

KATE MILLEDGE

*BNutrition and Dietetics (Hons)
University of Wollongong*

SUPERVISOR:

Dr Vasant Hirani

CO-SUPERVISOR:

Professor Robert Cumming

Study of the inter-relationships between food choice, nutritional status, oral health, frailty and polypharmacy among older Australian men

The thesis aims to describe the dietary intake and nutritional status of older Australian men in the ongoing CHAMP study. Protocols for a systematic review focusing on Oral Health and Dietary Intake in Community Dwelling Older

Adults are currently being developed. It will also include an analysis of the associations between dietary intake, oral health, frailty and polypharmacy using Network Modelling. Data is currently being collected through two separate interviews.

ROSILENE WAERN

BNut MND Syd., APD AN

SUPERVISOR:

Professor Robert Cumming

CO-SUPERVISORS:

Professor Margaret Allman-Farinelli, Dr Vasant Hirani and Dr Thomas G Trivison

Geometric Framework and nutrition in old age

Nutritional intake is one of the most important modifiable factors affecting health in older age. In 2015, we published a manuscript describing the nutritional profile of men aged ≥75 years participating in the Concord Health and Ageing in Men Project – a longitudinal cohort study on older men in Sydney, Australia. In this manuscript we investigated factors related to poor intake of energy and key nutrients (protein, iron, zinc, riboflavin, calcium and vitamin D) and found that the dietary intake of men living in Australia is adequate for most of the nutrients evaluated except for vitamin D and calcium intakes.

However, Italian and Greek-born men had a low intake of key nutrients, and overall, only half of the participants met the requirements of five key nutrients. Also in 2015, we presented at two international conferences, one of which we received a prize for best poster presentation. In 2016 we aim to publish a manuscript that discusses the associations between macronutrient intake and health outcomes in CHAMP men using the Geometric Framework.

PHD STUDENTS LOCATED AT THE FLINDERS CENTRE FOR AGEING STUDIES, FLINDERS UNIVERSITY

VICTORIA ALLEN

BPsych (Hons) Flinders

SUPERVISOR:

Dr Tim Windsor

ASSOCIATE SUPERVISOR:

Professor Mary Luszcz

Daily stress and emotion regulation in younger and older adults: An intensive micro-longitudinal study

This project involves one large-scale study exploring age differences in emotion regulation and daily processes, and how such differences relate to psychological wellbeing, physical health, mental health, and interpersonal relationships/social

RESEARCH TRAINING & MENTORING

support. An intensive micro-longitudinal design will be employed allowing relationships between key variables to be explored at daily, cross-sectional, and prospective levels. The project has received full ethics approval and software for the project has been finalised. Data collection is currently underway and preliminary data is being analysed.

RACHEL CURTIS

BPsych (Hons) Flinders

SUPERVISOR:

Dr Tim Windsor

CO-SUPERVISOR:

Professor Mary Luszcz

Do perceptions of control predict activity engagement in older adults?

Perceptions of control may contribute to older adults' ability to maintain their activity as they age, as individuals with high perceived control are likely to engage in more difficult tasks and persist to overcome challenges that may hinder activity. This research examines associations of control beliefs with activity engagement in older adults in a series of studies utilising multiple data sources. Longitudinal analysis of data from the Australian Longitudinal

Study of Ageing showed that perceived control moderates the negative effects of functional disability on social activity. Additional studies using German longitudinal and Australian daily diary data are in progress.

PHD STUDENTS LOCATED AT THE FACULTY OF HEALTH AND MEDICINE, UNIVERSITY OF NEWCASTLE

YODI CHRISTIANI

MD Gadjah Mada University, MPH ANU

SUPERVISOR:

Professor Julie Byles

CO-SUPERVISORS:

Dr Meredith Tavenor and A/Professor Paul Dugdale

Urban women's health inequalities and their determinants in Indonesia

The research focuses on women's health in Indonesia's urban area, covering disease morbidity and priority health problems among women across different age groups and their inequalities; the impact of urban living on women's health; and policy responses to the increasing burden of chronic conditions among the population related to demographic change. Results from the study have been disseminated in journal articles and a policy brief distributed to key stakeholders in Indonesia.

CASSIE CURRYER

BSocSc (Hons) N'cle, AdvDip Local & Applied Family History, UNE

SUPERVISOR:

Professor Julie Byles

CO-SUPERVISOR:

Professor Mel Gray

A view of home: Older people, housing and social policy in Australia

This thesis aims to explore the nexus between aged care policies, housing, and choice in Australia. This study focuses on women who were born during the post second-world war baby boom and who are single and do not have children. Women who are ageing without children are potentially vulnerable to precarious or inadequate housing and unmet need for care. Given the policy emphasis on ageing in place and consumer directed care, greater knowledge of those consumers who might have unique needs as they age is vital to improve housing and aged care policy responsiveness.

PARIVASH EFTEKHARI

PhD TMU Iran

SUPERVISOR:

Professor Julie Byles

CO-SUPERVISOR:

Ms Peta Forder

Quality care in older Australian women with asthma

In 2015 an application for ALSWH and MBS-PBS linkage data for the 1946-51 cohort was submitted and access to the data was granted, providing more depth to the study. Data analysis for ALSWH participants from 1921-26 and 1946-51 cohorts linked with the MBS database was performed for asthma specific items investigated. Other MBS item utilisation and variables affecting item use were then explored among women based on their asthma status in both cohorts. The outcome of these studies will be published as a short report and an original article is being prepared for submission. Additionally, an abstract to present the results to the 2016 American Thoracic Society conference (ATS) in San Francisco, CA was accepted.

TAZEEN MAJEED

MPH N'cle (NSW), MBBS Dow University of Health Sciences

SUPERVISOR:

Professor Julie Byles

CO-SUPERVISOR:

Peta Forder

Life course impact of chronic diseases on patterns of workforce participation: A gendered approach

This research project was comprised of four studies, with an objective to 'identify patterns of workforce participation over the life course, and explore their associations with chronic diseases and various socioeconomic factors among men and women'. Results from the studies indicate that workforce participation patterns over the life course are very different for men and women. While men mostly engaged in full time paid work, women were more likely to work part time. Also, many men may decrease work after age 55, and many women had lower workforce participation over the life course. The work patterns of young women without children were very similar to men with the majority of them working full time. Chronic diseases and other early and adult life factors were associated with work patterns, but varied by gender. These associations were also dependent on how men and women responded to their long term health issues and various circumstances affecting them over the life course.

The findings were disseminated on a higher scientific level in the form of various national and

international conference presentations and five peer-reviewed papers, four of which are published/accepted in reputable international journals. This thesis was submitted in October 2015.

XIAOYUE (LUNA) XU

MSc Nursing University of Bedfordshire, BN Bengbu Medical College

SUPERVISOR:

A/Professor John Hall

CO-SUPERVISORS:

Professor Julie Byles and Dr Zumin Shi

Dietary intake, diet quality, dietary pattern and nutrition-related non-communicable diseases (NR-NCDS) among the older Chinese population

The thesis evaluates the dietary intake, diet quality, and association between dietary pattern and chronic diseases among older Chinese people. Five papers, which evaluated macronutrient intake, dietary intake, diet quality, the association between dietary patterns and obesity, and the association between dietary patterns and anaemia, have been published in high quality peer-review journals. Another two papers are currently under review. One paper evaluates the cross-sectional association

between dietary patterns and hypertension. The other evaluates the dietary transition, and also examines the longitudinal association between dietary patterns and obesity.

PHD STUDENT LOCATED AT THE INSTITUTE OF HEALTH AND SOCIETY, NEWCASTLE UNIVERSITY, UK

ANDREW KINGSTON

BSc Mathematics (Hons) N'cle (UK), MSc Medical Statistics Leicester (UK), CStat Royal Statistical Society, UK

SUPERVISOR:

Professor Carol Jagger

CO-SUPERVISOR:

Professor Tom Kirkwood

Trajectories and transitions of disability in the very old (85+ years)

This thesis explores trajectories and transitions of disability in the very old; its causes, mechanisms, dynamics and development. It models trajectories using different statistical techniques, in particular group based trajectory modelling accounting for non-random subject attrition. The research also focuses on multi-state modelling in continuous time and examining the impact of various factors on the incidence and progression of disability and extending this to life expectancy calculation. A paper which has exposed

specific trajectories of disability in the very old and the impact of life-course socioeconomic status is currently under review. This thesis was submitted in December 2015.

PHD STUDENT LOCATED AT THE JEFFREY CHEAH SCHOOL OF MEDICINE AND HEALTH SCIENCES, MONASH MALAYSIA

SARASWATHY VENKATARAMAN

BA Occup Therapy St Catherine's University, USA, MHSc Geront. University of Sydney

SUPERVISOR:

Professor Helen Bartlett

CO-SUPERVISORS:

Associate Professor Jennie Oxley, Associate Professor Louise Farnworth, Professor Lesley Day

The study primarily involved exploring these aged care environments (indoors) and gaining a better understanding about how the environment along with its underlying hazards potentially influenced the wellbeing and safety of residents. The PhD thesis is currently being written in stages.

The overall aim of this research is to understand the potential factors associated with risk of falling among the older population residing in long-term aged care facilities and shelter homes in Malaysia, with a particular focus on the physical environmental factors and current fall prevention strategies. This thesis focuses on the influence of the environment upon the safety and wellbeing of its residents. Emphasis is given towards better understanding the current process utilised within long-term aged care environments to identify underlying physical hazards.



SECTION

3

EXTERNAL LINKAGES

SECRETARY OF THE TREASURY JOHN FRASER
SPEAKING AT 'INTERPRETING THE IGR' PUBLIC FORUM

INDUSTRY & GOVERNMENT LINKS

Australia was one of the first nations to produce an official government Intergenerational Report (IGR) in 2002; the latest was published in March 2015, delivering a document which assesses our changing demography and where this will take us long term.

IN RESPONSE TO STRONG INTEREST IN THE FOURTH IGR, CEPAR, IN COLLABORATION WITH THE COMMONWEALTH TREASURY, ORGANISED A PUBLIC FORUM TO INTERPRET ITS FINDINGS AND WHAT THEY MIGHT MEAN FOR CURRENT POLICIES AND FOR COMMONWEALTH FINANCES TO 2055.

We assembled a range of leading experts in Canberra in April to consider how Australia should address the challenges, and opportunities, of what the

then Treasurer The Hon Joe Hockey MP referred to as an 'ageing boom', considering the notion of different stages of retirement and how older people may transition between states of health and wealth.

In his opening address to the forum, the Treasurer focused on labour force participation and productivity, and the need for greater flexibility to increase workforce participation and employment of older people. This was followed by two panel sessions featuring senior government officials, community leaders and CEPAR researchers, delivering multiple and informed perspectives on population ageing. Topics included the impact of population ageing on economic growth, workforce and public finances in Australia, and government supported programs such as retirement provision, health and aged care.

Such issues are also of concern throughout the Asia Pacific. In September CEPAR co-hosted, with UNSW International, a symposium on Ageing in the Asia Pacific which addressed population ageing in the world's most rapidly ageing region. This was the inaugural event of

the Association of Pacific Rim Universities' (APRU) new Population Ageing Research Hub, led by CEPAR, at UNSW, and a new opportunity for research exchange and collaboration on aspects of demographic changes.

High impact research and sustainable two-way engagement with Asia are two of our priorities and this Hub has the potential to provide multi-faceted insight into the causes and consequences of population ageing, and evidence to inform better public policy, product and service development and delivery in the Asia Pacific region.

Throughout 2015 our researchers participated in a range of end-user engagement activities. Highlights included Centre Director John Piggott's discussion of tax reforms at the Australian Financial Review's Banking and Wealth Summit; Chief Investigator (CI) Peter McDonald's participation in a series of briefings with the Department of Immigration and Border Protection; Associate Investigators (AIs) Hazel Bateman's and Julie Byles' contributions to discussions about gender, wealth and health at the COTA National Policy Forum;

Research Fellow (RF) George Kudrna's participation in roundtables with AMP and the Productivity Commission; and RF Bei Lu accompanying a delegation from China's Ministry of Finance to Canberra for insight into the Australian welfare system.

The 23rd annual Colloquium of Superannuation Researchers addressed key issues raised by the 2014 Financial System Inquiry and included a lively opening roundtable on the Inquiry's recommendation for a comprehensive income product for retirement (CIPR).

As part of our commitment to external engagement a dedicated Stakeholder Relationships Manager was appointed to assist CEPAR support existing partnerships, build new collaborations, and continue to deliver value to those we engage with – governments, the professional and corporate sectors, and the community.

We are also in the process of expanding CEPAR's national footprint through engagement with State Governments. We have already had meetings with key departments starting with eastern states – NSW, QLD – and will expand our reach throughout 2016 with a view to organising a roundtable with State Government departments later in the year.

At CEPAR we are all looking forward to continuing to develop and contribute to collaborative research initiatives with local and global significance. By engaging with government and industry, we hope to influence policy and practice in Australia and throughout the region.

Professor Michael Sherris
Chair, Outreach Subcommittee

EVENTS

INTERPRETING THE 2015 INTERGENERATIONAL REPORT – A CEPAR PUBLIC FORUM

The Intergenerational Report (IGR) is the Australian Government's periodic assessment of where our changing demography is taking us in the long term. The most recent IGR was released in March 2015 and attracted greater media and political attention than previously, perhaps reflecting a growing public and political awareness of the challenges and opportunities that population ageing presents.

In April, CEPAR organised a public forum to promote community awareness and understanding of the 2015 Report, and the issues it raises. Opened by then Treasurer The Hon Joe Hockey MP, the forum brought together multiple and informed perspectives on population ageing.

Drawing on our multidisciplinary research team and strong partnerships with industry, government and community groups, CEPAR assembled a range of leading experts to interpret its projections of how demographic change combined with current policies will impact

Commonwealth finances to 2055. Over 250 representatives from government departments, peak bodies, community organisations and interest groups attended the forum as well as interested members of the general public.

The keynote address by the Treasurer focused on labour force participation and the role of older people. Following Mr Hockey's address, CI Peter McDonald explained the demographic assumptions and senior Government representative Matt Crooke (Treasury) described how the IGR was prepared.

Chaired by CEPAR Director John Piggott, the first of two panel sessions saw CEPAR's Hal Kendig and Peter Whiteford join Sean Innis (Department of Social Services), and Melbourne University health economist Philip Clarke to discuss Retirement and Health; a second panel comprising Treasury Secretary John Fraser, former AMP CEO Craig Dunn, COTA Chief Executive Ian Yates, and AI Hazel Bateman, chaired by CEPAR's Advisory Board Chair Marc de Cure, then attempted to answer the key question 'Where do we go from here?'

With the proportion of Australians aged over 65 expected to more than double by 2050, both panels considered how Australia should address the challenges, and opportunities, of what the Treasurer referred to as an 'ageing boom'.

Understanding future challenges requires an appreciation of our confidence in the numbers. CI Hal Kendig pointed out that the IGR is about projections, not predictions; and these projections are based, as CI Peter McDonald illustrated, on demographic assumptions which are already 'outstandingly different from 2002', when the first IGR was produced.

CEPAR research into 'ageing well' informed discussion about how people stay healthy and independent in the phases following retirement, before the onset of older age and reduced mobility and cognition. Further discussion ranged across accumulation and decumulation phases of superannuation, retirement timing, longevity risk, individual financial decision making, and aged care design and delivery.

'Effective engagement with external stakeholders is an integral part of CEPAR's research activity and the 2015 IGR provided a perfect opportunity to lead debate about one of the most important challenges of the

21st century,' said Professor John Piggott.

'Australia leads the way in promoting awareness of the social and economic consequences of changes in demographic structure and establishing policies that will have a strong influence on the quality of life of older people.

'The IGR public forum is an excellent example of how CEPAR works closely with the government, corporate and community sectors to inform and stimulate discussion about the potential impacts of demographic change in Australia.'



CEPAR RESEARCH FELLOW GEORGE KUDRNA ASKS A QUESTION OF THE TREASURER

23RD ANNUAL COLLOQUIUM OF SUPERANNUATION RESEARCHERS

The 23rd Annual Colloquium of Superannuation Researchers, co-hosted by CEPAR and the School of Risk and Actuarial Studies in the UNSW Business School, took place from 6 - 7 July 2015.

More than 70 participants attended this annual event which brings together Australian and international academics, governments and industry to discuss and debate contemporary pension and superannuation issues.

The opening plenary on The Treasury's Financial System Inquiry (FSI) recommendations for a comprehensive income product for retirement (CIPR) featured a roundtable with Mr Jeremy Cooper (Chair,

Retirement Income, Challenger), CEPAR's Director John Piggott, CEPAR Partner Investigator Professor Olivia S. Mitchell (Wharton Business School) and Mr Richard Boyfield (Mercer).

Mr Cooper described the local superannuation environment as 'wired up for accumulation and not tooled to deliver a combination of products', while Mr Boyfield discussed the inflexibility of current legislation and the need for Australians to change their mindset about wealth management in retirement. Professor Mitchell contributed an international perspective with her observations from the US, which is currently having similar conversations about CIPRs, and her role on the Chilean Pension Reform Commission.



PARTNER INVESTIGATOR OLIVIA S. MITCHELL, RICHARD BOYFIELD (MERCER), CENTRE DIRECTOR JOHN PIGGOTT AND JEREMY COOPER (CHALLENGER) AT THE 23RD ANNUAL COLLOQUIUM OF SUPERANNUATION RESEARCHERS

The Colloquium also featured presentations by nine CEPAR personnel on their research projects which included 'Assessing Pension Tax Regimes: An Australian Perspective' and

'A Lifetime Model of Labor Supply and Asset Allocation of Australians: Estimation and Policy Implications'.



PROFESSOR OLIVIA S. MITCHELL
BA Harvard, MA PhD
Wisconsin-Madison
PARTNER INVESTIGATOR

Dr Olivia S. Mitchell is International Foundation of Employee Benefit Plans Professor, and Professor of Business Economics/Policy and Insurance/Risk Management, at the Wharton School of the University of Pennsylvania. She is also the

Executive Director of the Pension Research Council and the Boettner Center on Pensions and Retirement Research; is a Fellow of the Wharton Financial Institutions Center and the Leonard Davis Institute; and sits on the Board of the Penn Aging Research Center. Concurrently Dr Mitchell is a Research Associate at the National Bureau of Economic Research and a Co-Investigator for the Health and Retirement Study

at the University of Michigan.

Dr Mitchell's main areas of research and teaching are international private and public insurance, risk management, public finance, and compensation and pensions. Her extensive publications (25 books and more than 180 articles) analyse pensions and healthcare systems, wealth, health, work, wellbeing, and retirement.

She served on President Bush's Commission to Strengthen Social Security and the US Department of Labor's ERISA Advisory Council. She has spoken for groups including the World Economic Forum; the International Monetary Fund; the Investment Company Institute; the White House Conference on Social Security and the President's Economic Forum.

INDUSTRY & GOVERNMENT LINKS

INFLUENCING POLICY AND PRACTICE

In addition to participating in CEPAR outreach events, CEPAR personnel contributed to the development of government policy and business practice in a number of ways in 2015.

For example, John Piggott participated in the Actuaries Institute's Housing Working Group through 2015, along with a number of actuaries. The Working Group focused on how housing wealth might be used to buttress wellbeing in retirement. It proposed partial protection (up to a cap) from the Age Pension means test for capital accessed under home equity release schemes and downsizing; improved regulation of all home equity release schemes and providers to ensure security of tenure; simpler disclosures and appropriate licensing arrangement; and regulatory protection for the elderly to help prevent financial abuse.

Al Bateman provided expert advice to the Commonwealth Treasury in relation to the Tax White Paper and the review of Retirement Income Streams. Further contributing to the discussion of retirement income streams, John Piggott accepted invitations to join the three Steering Groups of the Committee for Sustainable Retirement Incomes (CSRI). CEPAR is contributing a number of background papers to this group to aid its deliberations, including work on adequacy, incentives, and means test design.

Director John Piggott and Research Fellows Rafal Chomik and George Kudrna were invited to brief NSW Treasury on the 2015 Intergenerational Report, and its implications at a State-level. Concentrations of ageing populations are found, for example, on the northern seaboard in towns such as Port Macquarie, and planning needs to consider infrastructure including housing, public transport and long-term care arrangements.

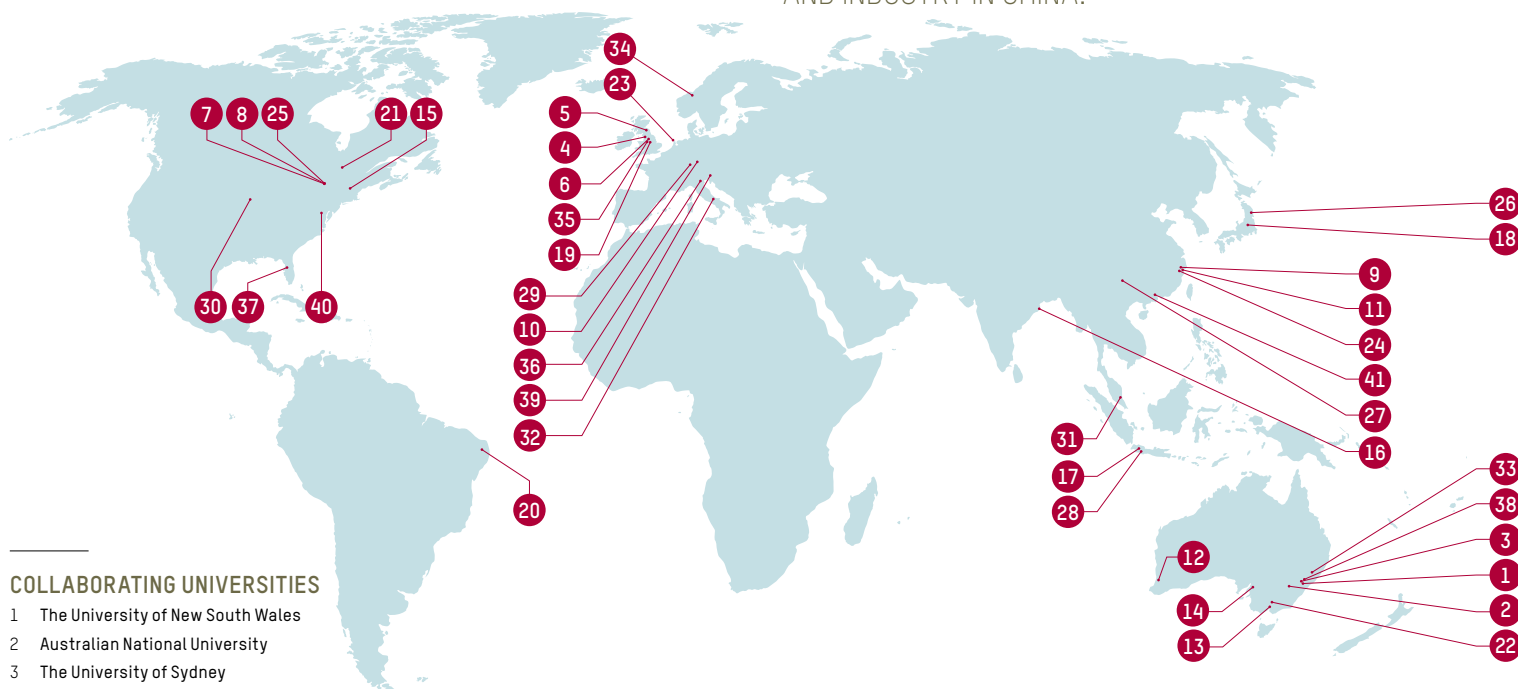
Cl McDonald's expertise was called upon by the Department of Immigration and Border Protection throughout the year. In a series of briefings he provided advice on the 2016-17 Australian Migration Programme; asylum seekers; and the Skilled Migration and Temporary Activity Visa Programmes. In addition, he briefed the Productivity Commission on migrant intake into Australia and the Department of Social Services on old age discrimination in the workforce.

Complete details of contributions in 2015 are listed on pages 142-143.

NATIONAL & INTERNATIONAL LINKS

THROUGHOUT 2015, CEPAR EMPLOYED A NUMBER OF STRATEGIES TO FORGE AND STRENGTHEN BOTH NATIONAL AND INTERNATIONAL LINKS. THESE INCLUDED JOINT CONFERENCES AND WORKSHOPS AND INTERNATIONAL DELEGATIONS AND VISITS. ESTABLISHING A DEDICATED RESEARCH HUB FOR POPULATION AGEING RESEARCH IN

THE ASIA PACIFIC WAS A KEY ACHIEVEMENT IN 2015, AND WILL PROVIDE ONGOING OPPORTUNITIES FOR NEW RELATIONSHIPS AND RESEARCH COLLABORATIONS. SIMILARLY, CEPAR'S NEW AUSTRALIA-CHINA POPULATION AGEING RESEARCH HUB WILL DEVELOP INSTITUTIONAL LINKS AND JOINT RESEARCH PROJECTS WITH ACADEME AND INDUSTRY IN CHINA.



PARTNER UNIVERSITIES

- 4 School of Social Sciences University of Manchester
- 5 Institute for Ageing and Health University of Newcastle (UK)
- 6 School of Economics University of Nottingham
- 7 Department of Economics University of Pennsylvania
- 8 Wharton School University of Pennsylvania

ASSOCIATED UNIVERSITIES/INSTITUTIONS

- 9 Brookings-Tsinghua Centre for Public Policy
- 10 CESifo
- 11 Chinese Academy of Social Sciences
- 12 Curtin University
- 13 Deakin University
- 14 School of Psychology Flinders University
- 15 Department of Global Health and Population (GHP) Harvard University
- 16 Indian Statistical Institute
- 17 Indonesian National Population and Family Planning Board

- 18 Institute for Economic Research Hitotsubashi University
- 19 Institute for Fiscal Studies
- 20 Instituto de Estudos de Saúde Suplementar (IESS)
- 21 Michigan Retirement Research Center (MRRC)
- 22 School of Primary Health Care and Emerging Researchers in Ageing Initiative Monash University
- 23 Netspar
- 24 Research Centre for Ageing and Health Services Peking University
- 25 Gerontology Centre Pennsylvania State University

- 26 Research Institute for Policies on Pension and Ageing
- 27 Southwestern University of Finance and Economics
- 28 Statistics Indonesia
- 29 Department of Economics St Gallen University
- 30 Department of Psychology University of Kansas
- 31 Faculty of Economics and Administration University of Malaya
- 32 Centre for Studies in Economics and Finance University of Naples Federico II
- 33 Research Centre for Gender, Health and Ageing The University of Newcastle (Australia)

- 34 Ragnar Frisch Centre for Economic Research University of Oslo
- 35 Nuffield College University of Oxford
- 36 Department of Economics University of Parma
- 37 School of Aging Studies University of South Florida
- 38 Centre for the Study of Choice University of Technology, Sydney
- 39 Faculty of Economics University of Trieste
- 40 The World Bank
- 41 College of Public Administration Zhejiang University

NATIONAL & INTERNATIONAL LINKS

ESTABLISHING AN ASIA-PACIFIC RESEARCH HUB

In 2015 CEPAR, in collaboration with UNSW, led the establishment of a new Asia Pacific-wide Research Hub launched on 28 September by Professor Les Field AM, Deputy Vice-Chancellor (Research) and Vice-President at UNSW.

The Association of Pacific Rim Universities' (APRU) Population Ageing Research Hub brings together world class researchers from different disciplines and provides opportunities for increased research collaboration on the topic of population ageing in the region. An inaugural symposium, Ageing in the Asia Pacific, was co-hosted by CEPAR and UNSW International with four research themes: Aged Care,

Elderly Wellbeing, Economics & Demographics, and Physiological & Biological Issues. Featuring 50 papers and posters from 20 universities in 12 countries, it provided a new platform for international academics and young researchers to share their work, and develop networks with the capacity for future research collaboration.

Keynote presenters included James P. Smith from the RAND Corporation, Professor Henry Brodaty, Director of the Centre for Healthy Brain Ageing (CHeBA) at UNSW and Philip O'Keefe, Lead Economist Human Development, Asia Pacific, The World Bank and member of CEPAR's Advisory Board.

'CEPAR looks forward to contributing to collaborative research initiatives with global significance across

the APRU network. By engaging with government and industry, we hope to influence policy and practice in the region,' said Professor Piggott.

The Population Ageing Research Hub will be hosted by CEPAR/UNSW for three years, with Professor Piggott acting as Chair of the Hub.

The Hub Steering Group comprises ten members drawn from APRU universities, including CIs McDonald and Cumming.



CENTRE DIRECTOR JOHN PIGGOTT AND UNIVERSITY OF INDONESIA DELEGATION AT THE AGEING IN THE ASIA PACIFIC SYMPOSIUM



PROFESSOR ROBERT CUMMING
MBBS UNSW, MPH PhD Syd.
CHIEF INVESTIGATOR AND
UNIVERSITY OF SYDNEY
NODE LEADER

Robert Cumming is Professor of Epidemiology and Geriatric Medicine at the University of Sydney. He shares his time between the School of Public Health at the University of Sydney and the Centre for

Education and Research on Ageing (CERA) at Concord Hospital. He has an international reputation for his research on osteoporosis, falls and fractures.

His research on falls prevention in older people has had major impact on policy and practice in this important field. Much of his research brings together biological, psychosocial and medical aspects of ageing. In recent

years he has extended his work to the study of ageing and health in developing countries in Asia and sub-Saharan Africa.

He is currently the Chair of the National Dementia Guidelines Committee for the NHMRC Cognitive Decline Partnership Centre. He is a member of the Australian Institute of Health and Welfare's National Arthritis and Musculoskeletal

Conditions Monitoring Advisory Group and serves on the editorial board of *Osteoporosis International*. He is a Life Member of the Australasian Epidemiological Association.

CONSOLIDATING LINKS WITH CHINA

Significant progress was made in CEPAR's establishment of a dedicated Hub focused on population ageing in China. Partner Investigator Hanming Fang was appointed as Scientific Director of the Hub, bringing important connection with prestigious groups working in China; and Dr Katja Hanewald was appointed as a full-time Senior Research Fellow to support the Hub's development.

A highlight of the Hub's activities in 2015 was a workshop focused on the Chinese economy in August. Presentations from Australian and Chinese academics reflected on some of the dramatic

changes which have occurred in China over the past 30 years including the Chinese housing boom; provided insight into public governance; and examined population age structure, sectoral change and economic growth. The workshop was the first in a planned series on the Chinese economy aimed at bringing together national and regional groups focused on the issue.

The award of a 2015 Linkage Grant for a project focused on long-term care (LTC) financing and policy further bolstered CEPAR's research program focused on population ageing in China. In partnership with Zhejiang University's Institute for Population and Development Studies the project will draw on a unique pilot of LTC delivery in China, to estimate

and assess LTC cost and usage, and link this with international experience to quantify the impacts of alternative policy structures. The aim is to deliver significantly improved projections of LTC usage and costs that will be of critical importance to governments and the insurance industry, globally. Further details about the project are provided on page 94.

In late October 2015 we learnt that another major project involving several CEPAR researchers was successful in its bid for Discovery Project funding. 'Ageing in China and Australia: Promoting health, productivity and wellbeing' aims to provide insights into the ways in which life-span development and social change in China have

influenced the development of policies to support the health, productivity and wellbeing of China's rapidly ageing population. It builds on the research program focused on comparative ageing in Asia described on page 89.

As part of our outreach activities we participated in an introductory study tour to Australia by officials from Chinese government departments, coordinated by the Australian Human Rights Commission. We hosted the group at CEPAR and provided insight into current Australian practice and experience in promoting and protecting the rights of older persons, highlighting the range of issues affecting older persons including discrimination, stereotyping, protecting rights in aged care, elder abuse, economic

security and employment, social participation, women and ageing, and social welfare.

Research Fellow Dr Bei Lu also accompanied a delegation from China's Ministry of Finance to Canberra in November. This visit, co-hosted by CEPAR and The World Bank, provided delegates with insight into the Australian welfare system.

CEPAR also hosted visits from individual researchers from Chinese institutions. The UNSW node hosted visitors from Zhejiang and Renmin Universities and the CEPAR team based at ANU's Centre for Research on Ageing, Health and Wellbeing hosted a visiting delegation from Xi'an Jiaotong's School of Public Policy and Administration.



PROFESSOR HANMING FANG

BA Fudan, MA Virginia,
PhD Pennsylvania

PARTNER INVESTIGATOR AND
SCIENTIFIC DIRECTOR OF CEPAR'S
AUSTRALIA-CHINA POPULATION
AGEING RESEARCH HUB

Hanming Fang is Class of 1965 Term Professor of Economics at the University of Pennsylvania and a Research Associate at the National Bureau of Economic Research

(NBER) where he is also the Director of its Chinese Economy Working Group.

Professor Fang is an applied microeconomist with broad theoretical and empirical interests focusing on public economics. His research covers topics ranging from discrimination, social economics, welfare reform, psychology and economics, to public good provision mechanisms,

auctions, health insurance markets and population ageing.

He is currently working on issues related to insurance markets, particularly the interaction between the labour market and the US health insurance reform as well as the interaction between insurance markets and population ageing. He also studies issues related to discrimination and affirmative

action. He serves as a co-editor of the *International Economic Review*.

Professor Fang received his PhD in Economics from the University of Pennsylvania in 2000. Before joining the Penn faculty, he held positions at Yale University and Duke University.

NATIONAL & INTERNATIONAL LINKS

To further develop linkages with Chinese organisations, CEPAR personnel visited Fudan University, Zhejiang University, East China Normal University and Sun Yat-sen University.

CI McDonald's appointment to the International Scientific Advisory Board of the Institute for Asian Demographic Research based at Shanghai University further strengthened our links with China.

CEPAR AND INDONESIA

A unique project led by CI Peter McDonald and AI Iwu Utomo is underway in rural Indonesia where they are examining the life situations of Indonesians aged 60+ living in villages where most of the younger generation (their children) have moved to the cities. Initially a pilot project to interview people aged 60+ in two villages in Java, and one in West Sumatra, this will be extended to eight more villages in other parts of Indonesia following the award of a recent ARC Discovery grant. It also has the support of the main government agencies in

Jakarta, and of leading Indonesian universities which will provide funding for participation by a further four villages. The results will be published in a series of policy papers to be presented to the Indonesian National Development Planning Board. Further details are provided on page 91.

Peter McDonald also delivered several presentations about demographic change in Indonesia including 'New estimates of the demography of Indonesia', to the 3rd Asian Population Conference held in Kuala Lumpur.

A CEPAR-NETSPAR NEXUS

In 2015 CEPAR and the Network for Studies on Pensions, Aging and Retirement (NetSPAR) continued their collaboration on a large-scale research program focused on mandatory pre-funded retirement income systems. Funded by the ARC, in collaboration with partners APG in the Netherlands and AMP and PwC in Australia, the project investigates the critical elements of retirement income design in two countries with established and high quality mandatory pre-funded systems: Australia and the Netherlands.

The project has two distinct parts, with CEPAR CI Michael Sherris leading work on retirement products within a stochastic lifecycle structure and Professor Bateman leading the program on choice and behavioural finance. A preliminary survey of individuals in both countries, which will take place in the first quarter of 2016, aims to identify preferences for pension products including annuities, lump sum or phased withdrawals. Analysis will look for any link between economic

preferences and cultural differences, and whether there are any specific cultural attributes which determine choices and behaviours in both countries.

CEPAR's Director, John Piggott, and NetSPAR's Scientific Director, Theo Nijman, are committed to building an ongoing, collaborative research program on topics of relevance to policymakers and industry practitioners. To facilitate this, both institutions have promoted opportunities to bring researchers from the two organisations together. In 2015 CEPAR Research Fellow Jennifer Alonso Garcia and AI Hazel Bateman visited NetSPAR.

JOINT WORKSHOPS

One of the ways in which we facilitate global discussion of the implications of population ageing as well as increase the visibility of the Centre, is through the hosting of special events which bring together international experts around a particular issue.

CEPAR hosted several workshops in 2015 featuring eminent researchers sharing their work in key areas.



ASSOCIATE INVESTIGATOR DR IWU UTOMO INTERVIEWING DOCTORS AND MIDWIVES AT MIRIT-KEBUMEN COMMUNITY HEALTH CENTRE (PUSKESMAS), INDONESIA

THE 2ND CEPAR JOINT WORKSHOP WITH THE CESIFO GROUP

In 2014, CEPAR joined forces with leading European research organisation, CESifo, to explore issues related to pension policy design in the context of global population ageing. CEPAR and CESifo delivered the first of two interrelated workshops in Sydney in 2014, with the second in Munich in September 2015.

The 2015 workshop looked at issues and practice, with presentations on Australia, Germany, Portugal, Denmark, and the UK - a group of countries with remarkably diverse pension tax designs. CEPAR was represented by Hazel Bateman, Rafal Chomik, Robert Holzmann, George Kudrna, John Piggott and Alan Woodland across

sessions which included discussion of pension cuts versus tax increases, and country-specific questions relating to taxing pensions. Participation in this group provides CEPAR with a global perspective, which enriches our interactions with partners both in Australia and elsewhere. See pages 66 – 67 for details about the compilation of a volume comprising papers presented at the workshop.

RETIREMENT INCOME MODELLING WORKSHOP

In November CEPAR organised a Retirement Income Modelling Workshop featuring Professor Ayse Imrohoroglu of the University of Southern California, and Sagiri Kitao from Keio University. Participants were drawn from UNSW and other Australian universities, as well as the Commonwealth

Treasury. Professor Imrohoroglu sparked a lively discussion with her presentation of a model capturing the role of family support, changes in demographics, and increases in the productivity growth rate and the Chinese saving rate. This was followed by six further sessions which focused on a range of topics including the value of life care annuities, ageing and housing, and the effects of superannuation on housing, wealth and the Age Pension.

WORKSHOP ON THE ECONOMICS OF HEALTH AND AGEING

CEPAR co-hosted the annual Summer Workshop on the Economics of Health and Ageing in collaboration with the Health Economics Group of the Centre for Applied Economic Research (CAER).

Held in January 2015, the workshop discussed topics including ageing and health expenditure and investment in health and human capital across the life-cycle.

WORKSHOP ON EMERGING ECONOMIES

In November CEPAR and UNSW co-hosted a two day Workshop on Emerging Economies to discuss current applied and theoretical research with a special focus on the Asia-Pacific region. The workshop considered intergenerational and structural transition in two of the world's most populous economies, India and China, and the economics of health and family in the emerging economies of Peru and the Philippines, also featured.

EXPANDING OUR NETWORKS INTERNATIONAL PENSION RESEARCH NETWORK

As part of its international linkage strategy, CEPAR played a pivotal role in the establishment of the International Pension Research Network in 2015. CEPAR is one of four foundation members which will develop the initiative to deliver a series of international conferences, the first of which will be hosted by the OECD in June 2016. The conference series will provide a major forum for international leadership on pensions and will provide further opportunities for CEPAR to deepen its collaborative relationships with the other three foundation members: Wharton, NetSPAR and Towers Watson.



PROFESSOR ROBERT HOLZMANN
HONORARY PROFESSOR

Robert Holzmann holds the chair of Old Age Financial Protection at the University of Malaya in Kuala Lumpur, is a Research Fellow of IZA and CESifo, and a Fellow of the Austrian Academy of Science. He also serves as a consultant on pensions, financial literacy

and education, labour market and migration issues. From 1997 to 2011 he held various positions at the World Bank including Sector Director for Social Protection and Labor. Before joining the Bank he was a professor in Germany and Austria and senior economist at the IMF and OECD. He has published 34 books and over 150 articles on social, fiscal and financial policy issues.

In 2015 Robert co-convened the second CEPAR joint workshop with CESifo and is playing a leading role in the preparation of a volume of the workshop papers to be considered for publication by MIT Press in 2016.

NATIONAL & INTERNATIONAL LINKS

INTERNATIONAL INSURANCE SOCIETY RESEARCH NETWORK

In 2015 CEPAR also became a member of the newly established International Insurance Society (IIS) Research Network. The network of 20 members, which includes major groups working in Asia, the US, and the UK, will provide another mechanism for connection and the development of multi-centre research projects. In addition, CEPAR's membership of the IIS's Thought Center Core Network will provide an opportunity to share CEPAR research and contribute to an ongoing dialogue about the major issues in the field.

INTERNATIONAL VISITORS

The Centre hosted 33 international visitors in 2015. These visitors ranged from experts with distinguished reputations in their fields to early career researchers interested in developing research programs in the area of population ageing. They participated in a range of CEPAR events and activities, contributed to the development and execution of research projects and brought an international perspective to bear on the research program.

Our visitors also contribute to our program of outreach to the wider community through distinguished lectures and public presentations. 2015 highlights included:

LAURA N. GITLIN

Dr Gitlin is the founding director of the Center for Innovative Care in Aging at Johns Hopkins University. In her public lecture hosted by the University of Sydney's Faculty of Health Sciences CEPAR node in March 2015, Dr Gitlin discussed strategies for identifying and addressing the unmet needs of people with dementia and family caregivers living at home. Her presentation, 'We Can Do Better: Helping People with Dementia and Their Families Live at Home with Quality of Life', used case studies and referred to the COPE (Care of Persons with Dementia in their Environment) project to discuss issues, and identify strategies and tactics for active engagement with home-based patients. She also emphasised the importance for the care giver to take care of her/himself.

AMBER WATTS

In October, CEPAR and the ANU Centre for Research on Ageing, Health and Wellbeing (CRAHW) hosted a public lecture by Assistant Professor Watts of the University of Kansas. 'Neighbourhood characteristics predict health and cognitive function in older adults' described the evaluation of the role of these characteristics on metabolic and cognitive function, and cognitive decline in older adults with and without mild Alzheimer's disease.

Watts visited CRAHW between August and December to work with Chief Investigator Kaarin Anstey on research examining physical activity and cognitive ageing. This project considers the benefits of physical activity that occur throughout adulthood, and how physical activity interacts with a key genetic risk factor for cognitive ageing – a gene called BDNF*MET. See page 47 for further details.

Two further public lectures in 2015 hosted by CEPAR and CRAHW featured visitors to our ANU node;

RUTH PETERS

Dr Ruth Peters, Imperial College, London, is interested in risk and protective factors for dementia, and her current work focus is on the use of different antihypertensives, frailty and risk and benefit of treatment in the very elderly. Her November lecture, 'ABC and D: Ageing, Blood Pressure, Calcium Channel Blockers and Dementia' described some remaining controversies with regard to goal blood pressure and antihypertensive type.

MORTEN WAHRENDORF

Dr Morten Wahrendorf, from the University of Dusseldorf, delivered his lecture, 'Long-term effects of work and employment conditions on health and wellbeing in later life: results from SHARE and ELSA' in December.

'We have looked at links between work and employment conditions, and health in later life using data collected in European studies. The results illustrate clear differences in employment histories between men and women, between countries and highlight the importance of continuous employment for health and wellbeing in later life,' he said.

CEPAR hosted visits from the following researchers in 2015:

DR DANIEL ALAI

University of Kent
19 August – 9 September 2015

ASSOCIATE PROFESSOR ROSS ANDEL

University of South Florida
August 2015 – August 2016

NATALIA ARANCO

Towers Watson
27 September – 7 October 2015

DR SEVERINE ARNOLD

University of Lausanne
31 March – 3 April 2015

MATEJ BALCO

Matej Bel University
January – July 2015

PROFESSOR VLADIMIR CANUDAS-ROMO

Max Planck Institute of Demography
15 – 31 December 2015

PROFESSOR LAURA GITLIN

Johns Hopkins University
23 March – 5 April 2015

ASSISTANT PROFESSOR ANDREW GRIFFEN

University of Tokyo
1-9 August 2015

TIANAN GU

Renmin University
17 – 28 August 2015

PROFESSOR GARY HANSEN

University of California, Los Angeles
25 – 31 August 2015

SENIOR RESEARCH FELLOW ERIK HERNÆS

The Ragnar Frisch Centre for Economic Research, University of Oslo
16 January – 30 March 2015

**ASSOCIATE PROFESSOR
MINCHUNG HSU**
National Graduate Institute
for Policy Studies
25 – 31 August 2015

PROFESSOR AYSE IMROHOROGLU
USC Marshall
3 – 10 December 2015

DR QUANGBAO JIANG
Xi'an Jiaotong University
7 September 2015

PROFESSOR SAGIRI KITAO
Keio University
9 – 10 December 2015

DR ZINOVIIY LANDSMAN
University of Haifa
17 August – 9 September 2015

PROFESSOR JIE LI
Xi'an Jiaotong University
7 September 2015

**ASSISTANT PROFESSOR
JAIME LONDOÑO**
Universidad Nacional de Colombia
9 – 18 December 2015

PROFESSOR MOSHE MILEVSKY
York University
17 – 21 August 2015

PROFESSOR OLIVIA S. MITCHELL
Wharton School
4 – 11 July 2015

PROFESSOR ANNAMARIA OLIVIERI
University of Parma
18 – 28 August 2015

DR MICHAEL ORSZAG
Towers Watson
17 August 2015

DR SOPHIE PENNEC
Institut des etudes
Demographiques
4 – 5 August 2015

DR RUTH PETERS
Imperial College, London
20 November 2015

PROFESSOR ERMANN PITACCO
University of Trieste
21 – 30 August 2015

PROFESSOR TRI BUDI RAHARDJO
University of Indonesia
27 – 29 September 2015

PROFESSOR LI SHUZHUO
Xi'an Jiaotong University
7 September 2015

DR BRAM VANHOUTTE
University of Manchester
5 January – 16 February 2015

**ASSISTANT PROFESSOR
AMBER WATTS**
University of Kansas
28 August – 18 December 2015

DR MORTEN WAHRENDORF
University of Dusseldorf
14 – 15 December 2015

DR DONGLANG YANG
Xi'an Jiaotong University
7 September 2015

MINGXU YANG
Zhejiang University
June – September 2015

PROFESSOR PETER ZWEIFEL
University of Zurich
2 November – 4 December 2015

INTERNATIONAL VISITS

CEPAR investigators were invited to visit a number of leading research institutions in 2015:

JENNIFER ALONSO GARCIA
Universite Catholique de Louvain
14 – 18 September 2015

University of Tilburg
20 September – 2 October 2015

KAARIN ANSTEY
Cambridge University
27 March 2015

Department of Health, UK
30 March 2015

Imperial College London
31 March 2015

King's College London and
University of Exeter
1 April 2015

Johns Hopkins University
27 July 2015

University of Copenhagen
26 August 2015

World Health Organisation,
Switzerland
3 September 2015

HEATHER BOOTH
European Research Council,
Belgium
7 – 8 October 2015

Institut des etudes
Demographiques
14 – 16 October 2015

JULIE BYLES
Hohenheim University
8 – 9 January 2015

ELENA CAPATINA
National Graduate Institute for
Policy Studies
26 February – 4 March 2015

ESTER CERIN
University of British Colombia
16 – 19 February 2015

The University of Hong Kong
15 – 30 November 2015

YODI CHRISTIANI
Monash University, Malaysia
1 November – 5 December 2015

LINDY CLEMSON
Health Quality and Safety
Commission New Zealand
31 August – 4 September 2015



ERIK HERNÆS
Cand oecon Oslo
ASSOCIATE INVESTIGATOR

Erik Hernæs is a Senior Research Fellow at the Ragnar Frisch Centre for Economic Research at the University of Oslo, one of Norway's leading economics research centres. Erik's primary research interests are related to pension economics and he is

currently leading a project on evaluating the labour market effects of Norwegian pension reform.

After working at Statistics Norway, he became the inaugural Director of the Frisch Centre in 1999. He was one of the first researchers to organise administrative register data and use these for econometric analysis. This is now a major research focus of the Frisch Centre.

Erik has published on productivity, education, unemployment and retirement, in the *Scandinavian Journal of Economics*, *Oxford Bulletin of Economic Research*, *Journal of Pension Economics and Finance*, *Journal of Health Economics*, *Journal of Labor Economics* and in volumes published by the NBER, Kluwer, Edward Elgar and Routledge.

NATIONAL & INTERNATIONAL LINKS

122

ROBERT CUMMING

Mongolian National Gerontology Centre, Mongolian National University of Medical Sciences
26 – 27 October 2015

RACHEL CURTIS

German Centre of Gerontology
6 – 31 July 2015

XIAODONG FAN

The University of Wisconsin-Madison
29 December 2014 – 20 February 2015

DIANE HOSKING

University of Bamberg
1 – 2 September 2015

FEDOR ISKHAKOV

University of Copenhagen, University of Zurich
26 January – 2 February 2015

Nuffield College, Oxford University
18 April – 4 May 2015

Centre for Microdata Methods and Practice, University College London
8-9 December 2015

GEORGE KUDRNA

Michigan Retirement Research Centre
16 – 21 April 2015

University of Wuerzburg
21 – 27 June 2015

CAGRI KUMRU

University of Wuerzburg
23 August – 9 September 2015

University of Wisconsin
10 – 20 September 2015

BEI LU

Zhejiang University
29 February – 3 March 2015
21 – 24 May 2015

SHIKO MARUYAMA

Rockwool Foundation
26 April – 9 May 2015

Waseda University
10 May – 2 June 2015

PETER MCDONALD

Indonesian National Planning Board, Statistics Indonesia
12 – 16 January 2015

East-West Population Institute
2 – 6 March 2015

KATE O'LOUGHLIN

University of Leeds
27 – 30 April 2015

JOHN PIGGOTT

Zhejiang University
29 February – 3 March 2015

Institute for Fiscal Studies
September 2015

ADAM WENQIANG SHAO

Institut de Science Financière et d'Assurances (ISFA), Longevity Group (Groupe de Travail sur la Longévité)
10 – 24 September 2015

Fudan University
16 – 20 November 2015

YANG SHEN

East China Normal University, Sun Yat-Sen University
31 March – 20 April 2015

MICHAEL SHERRIS

University of Trieste
6-10 July 2015

University of Parma
15 – 18 July 2015

ANDRES VILLEGAS

Universidad de Antioquia
9-10 November 2015

ALAN WOODLAND

Hitotsubashi University
15 – 21 February 2015



CHIEF INVESTIGATOR ROBERT CUMMING AT THE MONGOLIAN NATIONAL GERONTOLOGY CENTER

SECTION 4

PERFORMANCE INDICATORS
& FINANCIAL STATEMENT

2015 KEY PERFORMANCE INDICATORS

MEASURE	2015 TARGET	2015 RESULT
RESEARCH FINDINGS		
Total research outputs	55	362
– Refereed journal articles	20	146
– Percentage appearing in top tier journals ³	30%	51%
Invited talks/papers/keynotes given at major international meetings	12	12
Commentaries about the Centre’s achievements		
– Media releases	8	14
– Articles	6	98
RESEARCH TRAINING AND PROFESSIONAL EDUCATION		
Attended professional training courses for staff and postgraduate students	6	8
Centre attendees at all professional training courses	16	41
New PhD students working on core Centre research and supervised by Centre staff	6	3
New postdoctoral researchers recruited to the Centre working on core Centre research	1	2
New Honours students working on core Centre research and supervised by Centre staff	4	1
Postgraduate completions	5	6
Early Career Researchers working on core Centre research	9	19
Students mentored	150	700
Mentoring programs	2	6
INTERNATIONAL, NATIONAL AND REGIONAL LINKS AND NETWORKS		
International visitors and visiting fellows	11	33
National and international workshops held/organised by the Centre	2	8
Visits to overseas universities or organisations	8	42
Interdisciplinary research: Research projects and papers co-authored by writers with different disciplinary backgrounds	2	11

³ Based on UNSW List of Top Quality Research Outlets

MEASURE	TARGET	RESULT
END-USER LINKS		
Government, industry and business community briefings	5	56
Public awareness programs	2	4
Currency of information on the Centre's website (number of updates per year)	10	Updated at least weekly
Website hits	7,000	15,774 sessions/ 44,835 page views
Public talks given by Centre staff	15	18
ORGANISATIONAL SUPPORT		
Annual cash contributions from Collaborating Organisations	\$938,250	\$1,289,961
Annual in-kind contributions from Collaborating Organisations	\$1,096,830	\$2,155,286
Annual cash contributions from Partner Organisations	\$150,000	\$150,000
Annual in-kind contributions from Partner Organisations	\$729,722	\$993,903
OTHER RESEARCH INCOME SECURED BY CENTRE STAFF⁴		
– ARC Grants	\$250,000	\$1,472,372
– Other Australian Competitive Grants	\$250,000	\$902,105
– Other Commonwealth, State and Local Government Grants	\$125,000	\$30,479
– Industry/Private Sector Grants	\$125,000	\$227,156
Number of new organisations collaborating with, or involved in, the Centre	2	3
NATIONAL BENEFIT		
Contribution to the National Research Priorities and the National Innovation Priorities		
– Public conferences	2	4
– Government and industry briefings	5	56
– Communiques etc	12	112

⁴ Includes all new grants awarded since the Centre's inception where a CEPAR Chief Investigator and/or Research Fellow is included in the research team as a Chief Investigator. Only 2015 income is shown.

A3 BOOK – EDITED

- 1 Zhao, Z. and Hayes, A. (Eds.) (2015). *Handbook of Asian Demography*. Routledge.

B BOOK CHAPTERS

- 1 Bateman, H. (2015). How will China Finance its Pension System in the Future? In F. Prettenhaler, L. Meyer and W. Polt (Eds.), *Demographic and Climate Change*. (pp 11-19). Austrian Academy of Social Sciences.
- 2 Bateman, H. (2015). Structuring the Payout Phase in a Defined Contribution Scheme in High Income Countries: Experiences of Australia and New Zealand. In M. Asher and F. Kimura (Eds.), *Strengthening Social Protection in East Asia*. (pp 73-105). Routledge.
- 3 Bielak, A.A.M. and Anstey, K.J. (2015). Intraindividual Variability in Attention across the Adult Lifespan. In M. Diehl, K. Hooker and M.J. Sliwinski (Eds.), *Handbook of Intraindividual Variability across the Life Span*. (pp 160-163). Routledge.
- 4 Booth, H. (2015). The Process of Population Ageing and its Challenges in Asia. In Z. Zhao and A. Hayes (Eds.), *Handbook of Asian Demography*. Routledge.
- 5 Byles, J.E. and Tavener, M. (2015). Health of Older People. In R. Detel, M. Gulliford, Q. Abdool Karim, and C.C. Tan (Eds.), *The Oxford Textbook of Global Public Health*. (p 1408). Oxford University Press.
- 6 Keane, M. (2015). Panel Data Discrete Choice Models of Consumer Demand. In B. Baltagi (Ed.), *The Oxford Handbook of Panel Data*. (pp 548-582). Oxford University Press.

- 7 Kiely, K.M., Burns, R.A. and Anstey, K.J. (2015). Dynamic Analyses to Optimise Ageing (DYNOPTA). In N. Pachana (Ed.), *Encyclopaedia of Geropsychology*. Springer Online. Available 18 April 2015. doi: 10.1007/978-981-287-080-3_53-1.
- 8 Kiely, K.M. and Anstey, K.J. (2015). Common Cause Theory in Aging. In N. Pachana (Ed.), *Encyclopaedia of Geropsychology*. Springer Online. Available 16 September 2015. doi: 10.1007/978-981-287-080-3_118-1.
- 9 Mortby, M.E. and Anstey, K.J. (2015). Mental Health and Ageing. In N. Pachana (Ed.), *Encyclopaedia of Geropsychology*. Springer Online. Available 8 September 2015. doi: 10.1007/978-981-287-080-3_1-1.
- 10 Windsor, T.D. and Luszcz, M.A. (2015). The Australian Longitudinal Study of Ageing (ALSA). In N. Pachana (Ed.), *Encyclopaedia of Geropsychology*. Springer Online. Available 14 April 2015. doi: 10.1007/978-981-287-080-3_41-1.

C1 JOURNAL ARTICLES: ARTICLES IN SCHOLARLY REFEREED JOURNALS

- 1 Alai, D.H., Landsman, Z. and Sherris, M. (2015). A Multivariate Tweedie Lifetime Model: Censoring and Truncation. *Insurance: Mathematics and Economics*, 64, 203-213. doi: 10.1016/j.insmatheco.2015.05.011.
- 2 Alai, D.H., Landsman, Z. and Sherris, M. (2015). Multivariate Tweedie Lifetimes: The Impact of Dependence. *Scandinavian Actuarial Journal*. doi: 10.1080/03461238.2015.1007891. In press (available online February 2015).
- 3 Alsalam, M.O., Forder, P.M., Milton, A.H., McEvoy, M.A. and Byles, J.E. (2015). Associations Between Medication Use and Mental Health in Older Women: A Cross-sectional Analysis of 5,502 Women Aged 76 to 81. *Journal of the American Geriatrics Society*, 63(6), 1254-1255. doi: 10.1111/jgs.13497.
- 4 Andrews, S., Das, D., Anstey, K.J. and Easta, S. (2015). Interactive Effect of APOE Genotype and Blood Pressure on Cognitive Decline: The PATH Through Life Study. *Journal of Alzheimer's Disease*, 44(4), 1087-1098. doi: 10.3233/JAD-140630.
- 5 Anstey, K.J., Bahar-Fuchs, A., Herath, P., Kim, S., Burns, R.A., Rebok, G. and Cherbuin, N. (2015). Body Brain Life: A Randomized Controlled Trial of an Online Dementia Risk Reduction Intervention in Middle-aged Adults at Risk of Alzheimer's Disease. *Alzheimer's & Dementia: Translational Research & Clinical Interventions*, 1(1), 72-80. doi: 10.1016/j.trci.2015.04.003.
- 6 Anstey, K.J., Eramudugolla, R., Hosking, D.E., Lautenschlager, N.T. and Dixon, R.A. (2015). Bridging the Translation Gap: From Dementia Risk Assessment to Advice on Risk Reduction. *Journal of the Prevention of Alzheimer's Disease*, 2(3), 189-198. doi: 10.14283/jpad.2015.75.

- 7 Anstey, K.J., Sargent-Cox, K., Eramudugolla, R., Magliano, D. and Shaw, J. (2015). Association of Cognitive Function with Glucose Tolerance and Trajectories of Glucose Tolerance over 12 years in the AusDiab Study. *Alzheimer's Research & Therapy*, 7(48). doi: 10.1186/s13195-015-0131-4.
- 8 Ashby-Mitchell, K., Jagger, C., Fouweather, T. and Anstey, K.J. (2015). Life Expectancy with and without Cognitive Impairment in Seven Latin American and Caribbean Countries. *Plos One*, 10(3). doi: 10.1371/journal.pone.0121867.
- 9 Ashby-Mitchell, K., Peeters, A. and Anstey, K.J. (2015). Role of Dietary Pattern Analysis in Determining Cognitive Status in Elderly Australian Adults. *Nutrients*, 7(2), 1052-1067. doi: 10.3390/nu7021052.
- 10 Austen, S., Jefferson, T., Lewin, G., Ong, R. and Sharp, R. (2015). Work Ability, Ageing and Intention to Leave Aged Care Work. *Australasian Journal on Ageing*. doi: 10.1111/ajag.12187. In press (available online September 2015).
- 11 Austen, S., Jefferson, T., Lewin, G., Ong, R. and Sharp, R. (2015). Care Roles and Employment Decision-making: The Effect of Economic Circumstance. *Journal of Industrial Relations*, 57(5), 665-685. doi: 10.1177/0022185615590906.
- 12 Austen, S., Jefferson, T., Sharp, R., Ong, R. and Lewin, G. (2015). Recognition: Applications in Aged Care Work. *Cambridge Journal of Economics*. doi: 10.1093/cje/bev057. In press (available online August 2015).
- 13 Barnett, A., Cerin, E., Cheung, M.C. and Chan, W.M. (2015). An In-depth Pilot Study on Patterns, Destinations, and Purposes of Walking in Hong Kong Older Adults. *Journal of Aging and Physical Activity*, 23(1), 144-152. doi: 10.1123/JAPA.2013-0026.
- 14 Barnett, A., Cerin, E., Ching, C., Lee, R. and Johnston, J.M. (2015). Neighbourhood Environment, Sitting Time and Motorised Transport in Older Adults: A Cross-sectional Study. *BMJ Open*, 5(4). doi: 10.1136/bmjopen-2014-007557.
- 15 Barnett, J.C., Bahar-Fuchs, A., Cherbuin, N., Herath, P. and Anstey, K.J. (2015). Interventions to Prevent Cognitive Decline and Dementia in Adults without Cognitive Impairment: A Systematic Review. *Journal of Prevention of Alzheimer's Disease*, 2(1), 38-45. doi: 10.14283/jpad.2015.36.
- 16 Barnett, A., Cerin, E., Vandelanotte, C., Matsumoto, A. and Jenkins, D. (2015). Validity of Treadmill- and Track-based Individual Calibration Methods for Estimating Free-living Walking Speed and V02 using the Actigraph Accelerometer. *BMC Sports Science, Medicine and Rehabilitation*, 7(29). doi: 10.1186/s13102-015-0024-7.
- 17 Bateman, H., Dobrescu, L.I., Newell, B.R., Ortmann, A. and Thorp, S. (2015). As Easy As Pie: How Retirement Savers use Prescribed Investment Disclosures. *Journal of Economic Behavior and Organisation*. doi: 10.1016/j.jebo.2015.10.020. In press (available online November 2015).

- 18 Bateman, H., Eckert, C., Geweke, J., Louviere, J., Satchell, S. and Thorp, S. (2015). Risk Presentation and Portfolio Choice. *Review of Finance*. doi: 10.1093/rof/rfv001. In press [available online March 2015].
- 19 Bateman, H., Lai, A. and Stevens, R. (2015). Risk Information and Retirement Investment Choices under Prospect Theory. *Journal of Behavioral Finance*, 16(4), 279–296. doi: 10.1080/15427560.2015.1095749.
- 20 Black, D.A., Wilson, L.A., O’Loughlin, K., Noone, J., Kendig, H. and Butcher, J. (2015). Housing Type, Location of Residence and Health Status in Australian Baby Boomers: Results from the Australian Baby Boomer (ABBA) Study. *Australasian Journal on Ageing*, 34(1), 43–46. doi: 10.1111/ajag.12119.
- 21 Brotherton, M., Stancliffe, R., Wilson, N. and O’Loughlin, K. (2015). Supporting Workers with Intellectual Disability in Mainstream Employment to Transition to Socially-inclusive Retirement. *Journal of Intellectual and Developmental Disability*. doi: 10.3109/13668250.2015.1078878. In press [available online October 2015].
- 22 Browning, C. and Thomas, S. (2015). Implementing Chronic Disease Self-management Approaches in Australia and the United Kingdom. *Frontiers in Public Health*, 2(162). doi: 10.3389/fpubh.2014.00162. In press [available online April 2015].
- 23 Burns, R.A. and Ma, J. (2015). Examining the Association between Psychological Wellbeing with Daily and Intra-individual Variation in Subjective Wellbeing. *Personality and Individual Differences*, 82, 34–39. doi: 10.1016/j.paid.2015.02.023.
- 24 Burns, R.A., Browning, C.J. and Kendig, H. (2015). Examining the 16-year Trajectories of Mental Health and Wellbeing through the Transition into Widowhood. *International Psychogeriatrics*, 27(12), 1979–1986. doi: 10.1017/S1041610215000472.
- 25 Burns, R.A., Butterworth, P., Browning, C., Byles, J., Luszcz, M., Mitchell, P., Shaw, J. and Anstey, K.J. (2015). Examination of the Association between Mental Health, Morbidity, and Mortality in Late Life: Findings from Longitudinal Community Surveys. *International Psychogeriatrics*, 27(5), 739–746. doi: 10.1017/S1041610214002051.
- 26 Capatina, E. (2015). Life-cycle Effects of Health Risk. *Journal of Monetary Economics*, 74, 67–88. doi:10.1016/j.jmoneco.2015.06.002.
- 27 Chapman, A., Liu, S., Merkouris, S., Enticott, J.C., Yang, H., Browning, C.J. and Thomas, S.A. (2015). Psychological Interventions for the Management of Glycemic and Psychological Outcomes of Type 2 Diabetes Mellitus in China: A Systematic Review and Meta-analyses of Randomized Controlled Trials. *Frontiers in Public Health*, 3(252). doi: 10.3389/fpubh.2015.00252.
- 28 Cherbuin, N., Kim, S. and Anstey, K.J. (2015). Dementia Risk Estimates Associated with Measures of Depression: A Systematic Review and Meta-analysis. *BMJ Open*, 5(12). doi:10.1136/bmjopen-2015-008853.
- 29 Cherbuin, N., Sargent-Cox, K., Fraser, M., Sachdev, P. and Anstey, K.J. (2015). Being Overweight is associated with Hippocampal Atrophy: The PATH Through Life Study. *International Journal of Obesity*, 39(10). 1509–1514. doi: 10.1038/ijo.2015.106.
- 30 Cho, D., Hanewald, K. and Sherris, M. (2015). Risk Analysis for Reverse Mortgages with Different Payout Designs. *Asia-Pacific Journal of Risk and Insurance*, 9(1), 77–105. doi: 10.1515/apjri-2014-0012.
- 31 Chomik, R. and Piggott, J. (2015). Population Aging and Social Security in Asia. *Asian Economic Policy Review*, 10(2), 199–222.
- 32 Chomik, R. and Piggott, J. (2015). Superannuation and Retirement Incomes. *JASSA*, 1(2015), 43–49.
- 33 Christiani, Y., Byles, J.E., Tavener, M. and Dugdale, P. (2015). Socioeconomic Related Inequality in Depression among Young and Middle-adult Women in Indonesia’s Major Cities. *Journal of Affective Disorders*, 182, 76–81. doi: 10.1016/j.jad.2015.04.042.
- 34 Christiani, Y., Byles, J.E., Tavener, M. and Dugdale, P. (2015). Assessing Socioeconomic Inequalities of Hypertension among Women in Indonesia’s Major Cities. *Journal of Human Hypertension*, 29(11), 683–688. doi: 10.1038/jhh.2015.8.
- 35 Clemson, L., Kendig, H., Mackenzie, L. and Browning, C. (2015). Predictors of Injurious Falls and Fear of Falling Differ: An 11-year Longitudinal Study of Incident Events in Older People. *Journal of Aging Health*, 27 (2), 239–256. doi: 10.1177/0898264314546716.
- 36 Crisp, D., Windsor, T., Butterworth, P. and Anstey, K.J. (2015). Adapting to Retirement Community Life: Changes in Social Networks and Perceived Loneliness. *Journal of Relationships Research*, 6(e9). doi: 10.1017/jrr.2015.5.
- 37 Curtis, R.G., Windsor, T.D. and Luszcz, M.A. (2015). Perceived Control Moderates the Effects of Functional Limitation on Older Adults’ Social Activity: Findings from the Australian Longitudinal Study of Ageing. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbv088. In press [available online September 2015].
- 38 De Bourdeaudhuij, I., van Dyck, D., Salvo, D., Davey, R., Reis, R., Schofield, G., Sarmiento, O., Mitás, J., Christiansen, L., Macfarlane, D., Sugiyama, T., Aguinaga-Ontoso, I., Owen, N., Conway, T., Sallis, J. and Cerin, E. (2015). International Study of Perceived Neighbourhood Environmental Attributes and Body Mass Index: IPEN Adult Study in 12 Countries. *International Journal of Behavioral Nutrition and Physical Activity*, 12(62). doi: 10.1186/s12966-015-0228-y.
- 39 de Luca, K., Parkinson, L., Pollard, H., Byles, J.E. and Blyth, F. (2015). How is the Experience of Pain Measured in Older, Community-dwelling People with Osteoarthritis? A Systematic Review of the Literature. *Rheumatology International*, 35(9), 1461–1472. doi: 10.1007/s00296-015-3268-3.
- 40 Delbaere, K., Valenzuela, T., Woodbury, A., Davies, T., Yeong, J., Steffens, D., Miles, L., Pickett, L., Zijlstra, G., Clemson, L., Howard, K. and Lord, S.R. (2015). Evaluating the Effectiveness of a Home-based Exercise Programme Delivered through a Tablet Computer for Preventing Falls in Older Community-dwelling People over 2 years: Study Protocol for the Standing Tall Randomised Controlled Trial. *BMJ Open*, 5(10). doi: 10.1136/bmjopen-2015-009173.
- 41 Dobson, A.J., Hockey, R., Brown, W.J., Byles, J.E., Loxton, D.J., McLaughlin, D.P., Tooth, L.R. and Mishra, G.D. (2015). Cohort Profile Update: Australian Longitudinal Study on Women’s Health. *International Journal of Epidemiology*. doi: 10.1093/ije/dyv110. In press [available online June 2015].
- 42 Donald, S., Bateman, H., Buckley, R. and Liu, K. (2015). Too Connected to Fail: The Regulation of Systemic Risk within Australia’s Superannuation System. *Journal of Financial Regulation*. doi: 10.1093/jfr/fjv010. In press [available online December 2015].
- 43 Fan, K., Shen, Y., Siu, T.K. and Wang, R. (2015). Pricing Annuity Guarantees under a Double Regime-switching Model. *Insurance: Mathematics and Economics*, 62, 62–78. doi:10.1016/j.insmatheco.2015.02.005.

RESEARCH OUTPUTS

- 44 Finch, C., Stephan, K., Shee, A., Hill, K., Haines, T., Clemson, L. and Day, L. (2015). Identifying Clusters of Falls-related Hospital Admissions to Inform Population Targets for Prioritising Falls Prevention Programmes. *Injury Prevention*, 21(4), 254-259. doi: 10.1136/injuryprev-2014-041351.
- 45 Fleig, L., McAllister, M., Chen, P., Iverson, J., Milne, K., McKay, H., Clemson, L. and Ashe, M. (2015). Health Behavior Change Theory Meets Falls Prevention: Feasibility of a Habit-based Balance and Strength Exercise Intervention for Older Adults. *Psychology of Sport and Exercise*. doi: 10.1016/j.psychsport.2015.07.002. In press [available online July 2015].
- 46 Fong, J.H.Y., Sherris, M. and Yap, J. (2015). Forecasting Disability: Application of a Frailty Model. *Scandinavian Actuarial Journal*. doi:10.1080/03461238.2015.1092168. In press [available online October 2015].
- 47 Fong, J.H.Y., Shao, A.W. and Sherris, M. (2015). Multistate Actuarial Models of Functional Disability. *North American Actuarial Journal*, 19(1), 41-59. doi: 10.1080/10920277.2014.978025.
- 48 Gaille, S. and Sherris, M. (2015). Causes-of-Death Mortality: What Do We Know on their Dependence? *North American Actuarial Journal*, 19(2), 116-128. doi: 10.1080/10920277.2015.1011279.
- 49 Gautam, P., Anstey, K.J., Wen, W., Sachdev, P.S. and Cherbuin, N. (2015). Cortical Gyrfication and its Relationships with Cortical Volume, Cortical Thickness, and Cognitive Performance in Healthy Mid-life Adults. *Behavioural Brain Research*, 287, 331-339. doi: 10.1016/j.bbr.2015.03.018.
- 50 Ginnivan, N. (2015). Media Portrayal of Older People: The Good, the Bad, and the Absent. *Generations Review*, 25(2), 4-8.
- 51 Gnjidic, D., Wilson, N., March, L., Cumming, R.G., Cameron, I. and Hilmer, S.N. (2015). Statin Utilisation Patterns in Older Australians Living in Residential Care: One-year prevalence study. *Internal Medicine Journal*, 45(1), 106-109. doi: 10.1111/imj.12633.
- 52 Gresham, E., Forder, P., Chojenta, C., Byles, J.E., Loxton, D. and Hure, A. (2015). Agreement between Self-reported Perinatal Outcomes and Administrative Data in New South Wales, Australia. *BMC Pregnancy and Childbirth*, 15(161). doi: 10.1186/s12884-015-0597-x.
- 53 Gustafson Sr., D., McTavish, F., Gustafson Jr., D., Mahoney, J., Johnson, R., Lee, J., Quanbeck, A., Atwood, A., Isham, A., Veeramani, R. and Clemson, L. (2015). The Effect of an Information and Communication Technology (ICT) on Older Adults' Quality of Life: Study Protocol for a Randomized Control Trial. *Trials*, 16(191). doi: 10.1186/s13063-015-0713-2.
- 54 Haffner, M., Ong, R. and Wood, G. (2015). Mortgage Equity Withdrawal and Institutional Settings: An Exploratory Analysis of Six Countries. *International Journal of Housing Policy*, 15(3), 235-259. doi: 10.1080/14616718.2015.1048091.
- 55 Hanewald, K., Post, T. and Sherris, M. (2015). Portfolio Choice in Retirement - What is the Optimal Home Equity Release Product? *Journal of Risk and Insurance*. doi: 10.1111/jori.12068. In press [available online February 2015].
- 56 Harris, M.L., Byles, J.E., Sibbritt, D.W. and Loxton, D. (2015). "Just Get On With It": Qualitative Insights of Coming to Terms with a Deteriorating Body for Older Women with Osteoarthritis. *Plos One*, 10(3). doi: 10.1371/journal.pone.0120507.
- 57 He, X. and Zhu, R. (2015). Fertility and Female Labour Force Participation: Causal Evidence from Urban China. *The Manchester School*. doi: 10.1111/manc.12128. In press [available online September 2015].
- 58 Hirani, V., Blyth, F., Naganathan, V., Le Couteur, D.G., Seibel, M., Waite, L.M., Handelsman, D.J. and Cumming, R.G. (2015). Sarcopenia is associated with Incident Disability, Institutionalisation and Mortality in Community Dwelling Older Men: The Concord Health and Ageing in Men Project. *Journal of the American Medical Directors Association*, 16(7), 607-613. doi: 10.1016/j.jamda.2015.02.006.
- 59 Hirani, V., Blyth, F., Cumming, R.G., Naganathan, V., Handelsman, D.J., Le Couteur, D.G., Waite, L.M. and Seibel, M.J. (2015). Active Vitamin D (1,25 Dihydroxyvitamin D) is Associated with Chronic Pain in Older Australian Men: The Concord Health and Ageing in Men Project. *Journal of Gerontology Series A: Biological Sciences and Medical Sciences*, 70(3), 387-395. doi: 10.1093/gerona/glu126.
- 60 Hirani, V., Naganathan, V., Blyth, F., Le Couteur, D.G., Waite, L.M., Handelsman, D.J. and Cumming, R.G. (2015). Cross-sectional and Longitudinal Associations between Anaemia and Frailty in Older Australian Men: The Concord Health and Ageing in Men Project. *The Journal of Post-Acute and Long-term Care Medicine*, 16(7), 614-620. doi: 10.1016/j.jamda.2015.02.014.
- 61 Hosking, D.E., Sargent-Cox, K.A. and Anstey, K.J. (2015). An Australian Survey of Cognitive Health Beliefs, Intentions, and Behaviours through the Adult Life Course. *Preventive Medicine Reports*, 2, 498-504. doi: 10.1016/j.pmedr.2015.06.008.
- 62 Hsu, B., Cumming, R.G., Blyth, F.M., Naganathan, V., Le Couteur, D.G., Seibel, M.J., Waite, L.M. and Handelsman, D.J. (2015). The Longitudinal Relationship of Sexual Function and Androgen Status in Older Men: The Concord Health and Ageing in Men Project. *Journal of Clinical Endocrinology and Metabolism*, 100(4), 1350-1358. doi: 10.1210/jc.2014-4104.
- 63 Hsu, B., Cumming, R.G., Seibel, M.J., Naganathan, V., Blyth, F.M., Bleicher, K., Dave, A., Le Couteur, D., Waite, L.M. and Handelsman, D.J. (2015). Reproductive Hormones and Longitudinal Change in Bone Mineral Density and Incident Fracture Risk in Older Men: The Concord Health and Ageing in Men Project. *Journal of Bone and Mineral Research*, 30(9), 1701-1708. doi: 10.1002/jbmr.2493.
- 64 Iredale, A.W., Kelly, P.J. and Cumming, R.G. (2015). Total Hospital Stay for Hip Fracture: Measuring the Variations Due to Pre-fracture Residence, Rehabilitation, Complications and Comorbidities. *BMC Health Services Research*, 15(17). doi: 10.1186/s12913-015-0697-3.
- 65 Iskhakov, F. (2015). Multidimensional Endogenous Gridpoint Method: Solving Triangular Dynamic Stochastic Optimization Problems without Root-finding Operations. *Economic Letters*, 135, 72-76. doi: 10.1016/j.econlet.2015.07.033.
- 66 Iskhakov, F., Rust, J. and Schjerning, B. (2015). Recursive Lexicographical Search: Finding all Markov Perfect Equilibria of Finite State Directional Dynamic Games. *Review of Economic Studies*. doi: 10.1093/restud/rdv046. In press [available online October 2015].
- 67 Iskhakov, F., Thorp, S. and Bateman, H. (2015). Optimal Annuity Purchases for Australian Retirees. *Economic Record*, 91(293), 139-154. doi: 10.1111/1475-4932.12183.

- 68 Jacka, F.N., Cherbuin, N., Anstey, K.J. and Butterworth, P. (2015). Does Reverse Causality Explain the Relationship between Diet and Depression? *Journal of Affective Disorders*, 175, 248-250. doi: 10.1016/j.jad.2015.01.007.
- 69 Jacka, F.N., Cherbuin, N., Anstey, K.J., Sachdev, P. and Butterworth, P. (2015). Western Diet is associated with a Smaller Hippocampus: A Longitudinal Investigation. *BMC Medicine*, 13(215). doi: 10.1186/s12916-015-0461-x.
- 70 Jackson, C.A., Jones, M., Tooth, L., Mishra, G.D., Byles, J.E. and Dobson, A. (2015). Multimorbidity Patterns are Differentially Associated with Functional Ability and Decline in a Longitudinal Cohort of Older Women. *Age and Ageing*, 44(5), 810-816. doi: 10.1093/ageing/afv095.
- 71 Jackson, C.A., Mishra, G., Tooth, L., Byles, J.E. and Dobson, A. (2015). Moderate Agreement between Self-reported Stroke and Hospital-recorded Stroke in Two Cohorts of Australian Women: A Validation Study. *BMC Medical Research Methodology*, 15(7). doi: 10.1186/1471-2288-15-7.
- 72 Jagger, C., Matthews, F.E., Wohland, P., Fouweather, T., Stephan, B.C.M., Robinson, L., Arthur, A. and Brayne, C. (2015). A Comparison of Health Expectancies over Two Decades in England: Results of the Cognitive Function and Ageing Study I and II. *The Lancet*. doi: 10.1016/S0140-6736(15)00947-2. In press [available online December 2015].
- 73 Jang, H., Clemson, L., Lovarini, M., Willis, K., Lord, S. and Sherrington, C. (2015). Cultural Influences on Exercise Participation and Fall Prevention: A Systematic Review and Narrative Synthesis. *Disability and Rehabilitation*. doi: 10.3109/09638288.2015.1061606. In press [available online June 2015].
- 74 Jeon, Y.H., Simpson, J.M., Li, Z., Cunich, M.M., Thomas, T.H., Chenoweth, L. and Kendig, H. (2015). Cluster Randomized Controlled Trial of An Aged Care Specific Leadership and Management Program to Improve Work Environment, Staff Turnover, and Care Quality. *Journal of American Medical Directors Association*, 16(7), 629.e19-629.e28. doi: 10.1016/j.jamda.2015.04.005.
- 75 Keane, M. (2015). Effects of Permanent and Transitory Tax Changes in a Life-cycle Labor Supply Model with Human Capital. *International Economic Review*, 56(2), 485-503. doi: 10.1111/iere.12112.
- 76 Keane, M. and Rogerson, R. (2015). Reconciling Micro and Macro Labor Supply Elasticities: A Structural Perspective. *Annual Review of Economics*, 7, 89-117. doi: 10.1146/annurev-economics-080614-115601.
- 77 Keane, M. and Stavrunova, O. (2015). Adverse Selection, Moral Hazard and the Demand for Medigap Insurance. *Journal of Econometrics*. doi: 10.1016/j.jeconom.2015.08.002. In press [available online September 2015].
- 78 Kendig, H. and Nazroo, J. (2015). Life Course Influences on Inequalities in Later Life: Comparative Perspectives. *Journal of Population Ageing*. doi: 10.1007/s12062-015-9138-7. In press [available online December 2015].
- 79 Kendig, H., Loh, V., O'Loughlin, K., Byles, J.E. and Nazroo, J.Y. (2015). Pathways to Well-Being in Later Life: Socioeconomic and Health Determinants across the Life Course of Australian Baby Boomers. *Journal of Population Ageing*. doi: 10.1007/s12062-015-9132-0. In press [available online August 2015].
- 80 Kiely, K.M., Mitchell, P., Gopinath, B., Luszcz, M.A., Jagger, C. and Anstey, K.J. (2015). Estimating the Years Lived with and without Age-related Sensory Impairment. *Journal of Gerontology Series A: Medical Sciences*. doi: 10.1093/gerona/glv198. In press [available online October 2015].
- 81 Kim, S., Sargent-Cox, K. and Anstey, K.J. (2015). A Qualitative Study of Older and Middle-aged Adults' Perception and Attitudes towards Dementia and Dementia Risk Reduction. *Journal of Advanced Nursing*, 71(7), 1694-1703. doi: 10.1111/jan.12641.
- 82 Kudrna, G., Tran, C. and Woodland, A. (2015). The Dynamic Fiscal Effects of Demographic Shift: The Case of Australia. *Economic Modelling*, 50, 105-122. doi: 10.1016/j.econmod.2015.05.010.
- 83 Lai, J., Hure, A., Oldmedow, C., McEvoy, M., Byles, J.E. and Attia, J. (2015). Prospective Study on the Association between Diet Quality and Depression in Mid-aged Women over 9 years. *European Journal of Nutrition*. doi: 10.1007/s00394-015-1078-8. In press [available online October 2015].
- 84 Lee, D., Day, L., Finch, C., Hill, K., Clemson, L., McDermott, F. and Haines, T. (2015). Investigation of Older Adults' Participation in Exercises Following Completion of a State-wide Survey Targeting Evidence-based Falls Prevention Strategies. *Journal of Aging and Physical Activity*, 23(2), 256-263. doi: 10.1123/japa.2014-0012.
- 85 Leigh, L., Byles, J.E., Chojenta, C. and Pachana, N.A. (2015). Late Life Changes in Mental Health: A Longitudinal Study of 9683 Women. *Aging & Mental Health*. doi: 10.1080/13607863.2015.1060943. In press [available online July 2015].
- 86 Leigh, L., Hudson, I.L. and Byles, J.E. (2015). Sleeping Difficulty, Disease and Mortality in Older Women: A Latent Class Analysis and Distal Survival Analysis. *Journal of Sleep Research*, 24(6), 648-657. doi: 10.1111/jsr.12324.
- 87 Liu, D.W.Y., Fairweather-Schmidt, K., Burns, R.A. and Roberts, R.M. (2015). The Utility of Non-specific Measures of Resilience across the Lifespan: An Investigation of Structural Invariance across Gender and Age Cohorts. *Australian Journal of Psychology*. doi: 10.1111/ajpy.12091. In press [available online March 2015].
- 88 Lo, T., Parkinson, L., Cunich, M. and Byles, J.E. (2015). A 6-year Trend of the Healthcare Costs of Arthritis in a Population-based Cohort of Older Women. *Expert Review of Pharmacoeconomics & Outcomes Research*. doi: 10.1586/14737167.2016.1096199. In press [available online November 2015].
- 89 Lo, T., Parkinson, L., Cunich, M. and Byles, J.E. (2015). Factors Associated with Higher Healthcare Costs in Individuals Living with Arthritis: Evidence from the Quantile Regression Approach. *Expert Review of Pharmacoeconomics & Outcomes Research*, 15(5), 833-841. doi: 10.1586/14737167.2015.1037833.
- 90 Loxton, D., Powers, J., Anderson, A., Townsend, N., Harris, M., Tuckerman, R., Pease, S., Mishra, G. and Byles, J.E. (2015). Online and Offline Recruitment of Young Women for a Longitudinal Health Survey: Findings from the Australian Longitudinal Study on Women's Health 1989-95 cohort. *Journal of Medical Internet Research*, 7(5), e109. doi: 10.2196/jmir.4261.
- 91 Lu, B., Liu, X. and Piggott, J. (2015). Informal Long Term Care in China and Population Ageing: Evidence and Policy Implications. *Population Review*, 54(2), 28-41.
- 92 Luders, E., Cherbuin, N. and Kurth, F. (2015). Forever Young(er): Potential Age-defying Effects of Long-term Meditation on Gray Matter Atrophy. *Frontiers in Psychology*. doi: 10.3389/fpsyg.2014.01551. In press [available online January 2015].

RESEARCH OUTPUTS

- 93 Luo, H., Wong, G.H.Y., Lum, T.Y.S., Luo, M., Gong, C.H. and Kendig, H. (2015). Health Expectancies in Adults Aged 50 Years or Older in China. *Journal of Aging Health*. doi: 10.1177/0898264315611663. In press [available online October 2015].
- 94 Luszc, M.A., Anstey, K.J., Ghisletta, P. (2015). Subjective Beliefs, Memory and Functional Health: Change and Associations over 12 Years in the Australian Longitudinal Study of Ageing. *Gerontology*, 61(3), 241-250. doi: 10.1159/000369800.
- 95 Mackenzie, L., Curryer, C. and Byles, J.E. (2015). Narratives of Home and Place: Findings from the Housing and Independent Living Study. *Ageing and Society*, 35(8), 1684-1712. doi: 10.1017/S0144686X14000476.
- 96 Magnani, E. and Zhu, R. (2015). Social Mobility and Inequality in Urban China: Understanding the Role of Intergenerational Transmission of Education. *Applied Econometrics*, 47(43), 4590-4606. doi: 10.1080/00036846.2015.1031877.
- 97 Majeed, T., Forder, P., Mishra, G. and Byles, J.E. (2015). Women, Work, and Illness: A Longitudinal Analysis of Workforce Participation Patterns for Women Beyond Middle Age. *Journal of Women's Health*, 24(6), 455-465. doi: 10.1089/jwh.2014.5009.
- 98 Majeed, T., Forder, P., Mishra, G., Kendig, H. and Byles, J.E. (2015). A Gendered Approach to Workforce Participation Patterns over the Life Course for an Australian Baby Boom Cohort. *Journal of Vocational Behavior*, 87, 108-122. doi: 10.1016/j.jvb.2014.12.004.
- 99 Marshall, A. and Nazroo, J. (2015). Trajectories in the Prevalence of Self-reported Illness around Retirement. *Journal of Population Ageing*. doi: 10.1007/s12062-015-9130-2. In press [available online August 2015].
- 100 Maruyama, S. and Nakamura, S. (2015). The Decline in BMI among Japanese Women after WWII. *Economics and Human Biology*, 18, 125-138. doi: 10.1016/j.ehb.2015.05.001.
- 101 Mavromaras, K. and Zhu, R. (2015). Labour Force Participation. *Oxford Economic Papers*, 67(2), 310-333. doi: 10.1093/oepp/gpu054.
- 102 McDonald, P. (2015). Asia's Silver Tsunami. *East Asia Forum Quarterly*, 7(4), 8-10.
- 103 McDonald, P. (2015). International Migration and Employment in Australia. *Population Review*, 54(2), 1-12.
- 104 McDonald, P., Hosseini-Chavoshi, M., Abbasi-Shavazi, M. and Rashidian, A. (2015). An Assessment of Recent Iranian Fertility Trends Using Parity Progression Ratios. *Demographic Research*, 32(58), 1581-1602. doi: 10.4054/DemRes.2015.32.58
- 105 McFall, P.G., Wiebe, S.A., Vergote, D., Anstey, K.J. and Dixon, R.A. (2015). Alzheimer's Genetic Risk Intensifies Neurocognitive Slowing Associated with Diabetes in Non-Demented Older Adults. *Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring*, 1(4), 395-402. doi:10.1016/j.dadm.2015.08.002.
- 106 Meng, Q. and Shen, Y. (2015). Optimal Control of Mean-field Jump-diffusion Systems with Delay: A Stochastic Maximum Principle Approach. *Journal of Computational and Applied Mathematics*, 27, 13-30. doi:10.1016/j.cam.2014.10.011.
- 107 Navin Cristina, T., Stewart-Williams, J., Parkinson, L., Sibbritt, D. and Byles, J.E. (2015). The Identification of Diabetes, Heart Disease, Hypertension and Stroke in Mid- and Older-aged Women: Comparing Self-report and Administrative Hospital Data Record. *Geriatrics and Gerontology International*. doi: 10.1111/ggi.12442. In press [available online January 2015].
- 108 O'Brien, C., Clemson, L. and Canning, C. (2015). Multiple Factors, Including Non-motor Impairments, Influence Decision Making with Regard to Exercise Participation in Parkinson's Disease: A Qualitative Enquiry. *Disability and Rehabilitation*. doi: 10.3109/09638288.2015.1055377. In press [available online June 2015].
- 109 O'Connor, C.M., Clemson, L., Brodaty, H., Gitlin, L.N., Piguet, O. and Mioshi, E. (2015). Enhancing Caregivers' Understanding of Dementia and Tailoring Activities in Frontotemporal Dementia: Two Case Studies. *Disability and Rehabilitation*. doi: 10.3109/09638288.2015.1055375. In press [available online June 2015].
- 110 Ong, R., Wood, G., Austen, S., Jefferson, T. and Haffner, M. (2015). Housing Equity Withdrawal in Australia: Prevalence, Patterns and Motivations in Mid-to-late Life. *Housing Studies*, 30(7), 1158-1181. doi: 10.1080/02673037.2015.1009875.
- 111 Parkinson, L., Magin, P., Thomson, A., Byles, J.E., Caughey, G., Etherton-Beer, C., Gnjdic, D., Hilmer, S., Lo, T., McCowan, C., Moorin, R. and Pond, D. (2015). Anticholinergic Burden in Older Women: Not Seeing the Wood for the Trees? *Medical Journal of Australia*, 202(2), 91-97. doi: 10.5694/mja14.00336.
- 112 Peeters, G.M., Jones, M., Byles, J.E. and Dobson, A.J. (2015). Long-term Consequences of Noninjurious and Injurious Falls on Well-being in Older Women. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 70(12), 1519-1525. doi: 10.1093/gerona/glv102.
- 113 Pritchard, E., Barker, A., Day, L., Clemson, L., Brown, T. and Haines, T. (2015). Factors Impacting the Household and Recreation Participation of Older Adults Living in the Community. *Disability and Rehabilitation*, 37(1), 56-63. doi: 10.3109/09638288.2014.902508.
- 114 Radford, K., Mack, H.A., Draper, B., Chalkley, S., Delbaere, K., Daylight, G., Cumming, R.G., Bennett, H. and Broe, G.A. (2015). Comparison of Three Cognitive Screening Tools in Older Urban and Regional Aboriginal Australians. *Dementia and Geriatric Cognitive Disorders*, 40(1-2), 22-32. doi: 10.1159/000377673.
- 115 Ren, Y., Yang, H., Browning, C., Thomas, S. and Liu, M. (2015). Performance of Screening Tools in Detecting Major Depressive Disorder among Patients with Coronary Heart Disease: A Systematic Review. *Medical Science Monitor*, 21, 646-653. doi: 10.12659/MSM.892537.
- 116 Rowley, S., Ong, R. and Haffner, M. (2015). Bridging the Gap between Housing Stress and Financial Stress: The Case of Australia. *Housing Studies*, 30(3), 473-490. doi: 10.1080/02673037.2014.977851.
- 117 Sazlina, S.G., Browning, C.J. and Yasin, S. (2015). Effectiveness of Personalized Feedback Alone or Combined with Peer Support to Improve Physical Activity in Sedentary Older Malays with Type 2 Diabetes: A Randomized Controlled Trial. *Frontiers in Public Health*, 3(178). doi: 10.3389/fpubh.2015.00178.
- 118 Scherger, S., Nazroo, J. and May, V. (2015). Work and Family Trajectories: Changes across Cohorts Born in the First Half of the 20th Century. *Journal of Population Ageing*. doi: 10.1007/s12062-015-9128-9. In press [available September 2015].
- 119 Shao, A.W., Hanewald, K. and Sherris, M. (2015). Reverse Mortgage Pricing and Risk Analysis Allowing for Idiosyncratic House Price Risk and Longevity Risk. *Insurance: Mathematics and Economics*, 63, 76-90. doi:10.1016/j.insmatheco.2015.03.026.

- 120 Shao, A.W., Sherris, M. and Fong, J.H.Y. (2015). Product Pricing and Solvency Capital Requirements for Long-term Care Insurance. *Scandinavian Actuarial Journal*. doi: 10.1080/03461238.2015.1095793. In press [available online October 2015].
- 121 Shen, Y. (2015). Mean-variance Portfolio Selection in a Random Environment with Unbounded Coefficients. *Automatica*, 55, 165-175. doi:10.1016/j.automatica.2015.03.009
- 122 Shen, Y. and Zeng, Y. (2015). Optimal Investment-reinsurance for Mean-variance Insurers with Square-root Factor Process. *Insurance: Mathematics and Economics*, 62, 118-137. doi:10.1016/j.insmatheco.2015.03.009.
- 123 Shi, Z., Zhang, T., Byles, J.E., Martin, S., Avery, J.C. and Taylor, A.W. (2015). Food Habits, Lifestyle Factors and Mortality among Oldest Old Chinese: The Chinese Longitudinal Healthy Longevity Survey (CLHLS). *Nutrients*, 7(9), 7562-7579. doi: 10.3390/nu7095353.
- 124 Stewart, J., Browning, C. and Sims, J. (2015). Civic Socialising: A Revealing New Theory about Older People's Social Relationships. *Ageing and Society*, 35(4), 750-764. doi: 10.1017/S0146866X13001049.
- 125 Sugiyama, T., Inoue, S., Cerin, E., Shimomitsu, T. and Owen, N. (2015). Walkable Area within which Destinations Matter: Differences between Australian and Japanese Cities. *Asia-Pacific Journal of Public Health*, 27(2), NP2757-NP2763. Doi: 10.1177/1010539512466911
- 126 Tavenner, M., Thijsen, A., Hubbard, I.J., Francis, J.L., Grennall, C., Levi, C. and Byles, J.E. (2015). Acknowledging How Older Australian Women Experience Life After Stroke: How does the WHO 18-item Brief ICF Core Set for Stroke Compare. *Health Care Women International*, 36(12), 1311-1326. doi: 10.1080/07399332.2015.1055747.
- 127 Thristiawati, S., Booth, H., Hull, T. and Utomo, I. (2015). Self-rated Health of Older Persons in Indonesia. *Asian Population Studies*, 11(1), 44-66. doi: 10.1080/17441730.2015.1010468.
- 128 Van Cauwenberg, J., Cerin, E., Timperio, A., Salmon, J., Deforche, B. and Veitch, J. (2015). Park Proximity, Quality and Recreational Physical Activity among Mid-older Aged Adults: Moderating Effects of Individual Factors and Area of Residence. *International Journal of Behavioral Nutrition and Physical Activity*, 12(46). doi: 10.1186/s12966-015-0205-5.
- 129 van Dyck, D., Cerin, E., De Bourdeaudhuij, I., Hinckson, E., Reis, R., Davey, R., Sarmiento, O., Mitas, J., Troelsen, J., Macfarlane, D., Salvo, D., Aguinaga-Ontoso, I., Owen, N., Cain, K. and Sallis, J. (2015). International Study of Objectively-measured Physical Activity and Sedentary Time with Body Mass Index and Obesity: IPEN Adult Study. *International Journal of Obesity*, 39(2), 199-207.
- 130 van Dyck, D., Cerin, E., De Bourdeaudhuij, I., Salvo, D., Christiansen, L.B., Macfarlane, D., Owen, N., Mitas, J., Troelsen, J., Aguinaga-Ontoso, I., Davey, R., Reis, R., Sarmiento, O.L., Schofield, G., Conway, T.L. and Sallis, J.F. (2015). Moderating Effects of Age, Gender and Education on the Associations of Perceived Neighbourhood Environment Attributes with Accelerometer-based Physical Activity: The IPEN Adult Study. *Health and Place*, 36, 65-73. doi:10.1016/j.healthplace.2015.09.007.
- 131 Vanhoutte, B. and Nazroo, J. (2015). Life Course Pathways to Later Life Wellbeing: A Comparative Study of the Role of Socio-economic Position in England and the U.S. *Journal of Population Ageing*. doi: 10.1007/s12062-015-9127-x. In press [available online July 2015].
- 132 Waern, R., Cumming, R.G., Blyth, F., Naganathan, V., Allman-Farinelli, M., Le Couteur, D., Simpson, S.J., Kendig, H. and Hirani, V. (2015). Adequacy of Nutritional Intake among Older Men Living in Sydney, Australia - Findings from the Concord Health and Ageing in Men Project. *British Journal of Nutrition*, 114(5), 812-821. doi: 10.1017/S0007114515002421.
- 133 Waern, R., Cumming, R.G., Trivison, T., Blyth, F., Naganathan, V., Allman-Farinelli, M. and Hirani, V. (2015). Relative Validity of a Diet History Questionnaire against a Four-day Weighed Food Record among Older Men in Australia: The Concord Health and Ageing in Men Project (CHAMP). *Journal of Nutrition, Health and Aging*, 19(6), 603-610.
- 134 Windsor, T.D., Curtis, R.C. and Luszcz, M.A. (2015). Sense of Purpose as a Psychological Resource for Aging. *Developmental Psychology*, 51(7), 975-986. doi: 10.1037/dev0000023.
- 135 Windsor, T.D., Fiori, K.L., Curtis, R., Rioseco, P. and Booth, H. (2015). Structural and Functional Social Network Attributes Moderate the Association of Self-rated Health with Mental Health in Midlife and Older Adults. *International Psychogeriatrics*. doi:10.1017/S1041610215001143. In press [available online July 2015].
- 136 Windsor, T.D., Gerstorf, D. and Luszcz, M.A. (2015). Social Resource Correlates of Levels and Time-to-death-related Changes in Late-life Affect. *Psychology and Aging*, 30(1), 136-148. doi: 10.1037/a0038757.supp.
- 137 Wong, A., Sherris, M. and Stevens, R. (2015). Natural Hedging Strategies for Life Insurers: Impact of Product Design and Risk Measure. *Journal of Risk and Insurance*. doi: 10.1111/jori.12079. In press [available online June 2015].
- 138 Woods, M. and Kendig, H. (2015). The Intergenerational Report 2015: A Limited and Political View of our Future. *Australasian Journal on Ageing*, 34(4), 217-219. doi: 10.1111/ajag.12293.
- 139 Wu, S., Stevens, R. and Thorp, S. (2015). Cohort and Target Age Effects on Subjective Survival Probabilities: Implications for Models of the Retirement Phase. *Journal of Economic Dynamics*, 55, 39-56. doi: 10.1016/j.jedc.2015.03.003.
- 140 Xu, X., Hall, J., Byles, J.E. and Shi, Z. (2015). Assessing Dietary Quality of Older Chinese People using the Chinese Diet Balance Index (DBI). *Plos One*, 10(3). doi: 10.1371/journal.pone.0121618.
- 141 Xu, X., Hall, J., Byles, J.E. and Shi, Z. (2015). Dietary Pattern is associated with Obesity in Older People in China: Data from China Health and Nutrition Survey (CHNS). *Nutrients*, 7(9), 8170-8188. doi: 10.3390/nu7095386.
- 142 Xu, X., Hall, J., Byles, J.E. and Shi, Z. (2015). Do Older Chinese People's Diets meet the Chinese Food Pagoda Guidelines? Results from the China Health and Nutrition Survey 2009. *Public Health Nutrition*, 18(16), 3020-3030. doi: 10.1017/S1368980015000129.
- 143 Zhao, Z. (2015). Closing a Sociodemographic Chapter of Chinese History. *Population and Development Review*, 41(4), 681-686. doi: 10.1111/j.1728-4457.2015.00090.x.
- 144 Zhu, R. (2015). Heterogeneity in the Economic Returns to Schooling among Chinese Rural-urban Migrants, 2002-2007. *Economics of Transition*, 23(1), 135-167. doi: 10.1111/ecot.12057.
- 145 Zhu, R. (2015). Wage Differentials between Urban Residents and Rural Migrants in Urban China during 2002-2007: A Distributional Analysis. *China Economic Review*. doi: 10.1016/j.chieco.2015.04.002. In press [available online April 2015].
- 146 Zhu, R. and He, X. (2015). How Does Women's Life Satisfaction Respond to Retirement? A Two-stage Analysis. *Economic Letters*, 137, 118-122. doi: 10.1016/j.econlet.2015.11.002.

RESEARCH OUTPUTS

C2 JOURNAL ARTICLE: REFEREED JOURNAL, OTHER CONTRIBUTION

- 1 Clemson, L. (2015). Editorial. Research: A Viable and Meaningful Career Alternative for Occupational Therapists. *Australian Journal of Occupational Therapy*, 62(4), 227.
- 2 Tavener, M., Vo, K., Byles, J.E. (2015). Letter to the Editor: Work and Other Activities in Retirement. *Journal of the American Geriatrics Society*, 63(7), 1476-1477.

C5 UNPUBLISHED REPORTS

- 1 Alai, D.H., Landsman, Z. and Sherris, M. (2015). A Multivariate Tweedie Lifetime Model: Censoring and Truncation. CEPAR Working Paper Series 2015/02.
- 2 Alonso Garcia, J. and Devolder, P. (2015). Guarantee Valuation in Notional Defined Contribution Pension Systems. CEPAR Working Paper Series 2015/29.
- 3 Arnold, S. and Sherris, M. (2015). International Cause-specific Mortality Rates: New Insights from a Cointegration Analysis. CEPAR Working Paper Series 2015/06.
- 4 Ashby-Mitchell, K. (2015). The Road to Reducing Dementia Onset and Prevalence – Are Diet and Physical Activity Interventions Worth Investing in? Deebie Institute Issues Brief. 10.
- 5 Bateman, H. and Morris, N. (2015). Pension Fund Efficiency: An International Comparison of Australia's Performance. UNSW Business School Working Paper 2015ACTL16.

- 6 Booth, H., Riaseco, P. and Crawford, H. (2015). What can Reverse Causation tell us about Demographic Differences in the Social Network and the Social Support Determinants of Self-rated Health in Later Life? CEPAR Working Paper Series 2015/01.
- 7 Chang, Y. and Sherris, M. (2015). A Value Based Cohort Index for Longevity Risk Management. CEPAR Working Paper Series 2015/05.
- 8 Choi, C. and Yu, P. (2015). Health Status, Socio-economic Conditions and Retirement Decisions. CEPAR Working Paper Series 2015/16.
- 9 Chomik, R., Piggott, J., Woodland, A., Kudrna, G. and Kumru, C. (2015). Means Testing Social Security: Modelling and Policy Analysis. CEPAR Working Paper Series 2015/35.
- 10 Dabbs, E. and Kumru, C. (2015). How Well Does the Australian Aged Pension Provide Social Insurance? CEPAR Working Paper Series 2015/24.
- 11 Fan, X. (2015). Retiring Cold Turkey. CEPAR Working Paper Series 2015/20.
- 12 Fan, X. and De Varo, J. (2015). Does Job Hopping Help or Hinder Careers? The Signaling of Work History. CEPAR Working Paper Series 2015/23.
- 13 Fan, X., Fang, H. and Markussen, S. (2015). Mothers' Employment and Children's Educational Gender Gap. CEPAR Working Paper Series 2015/21.

- 14 Fan, X., Sadhadri, A. and Taber, C. (2015). Estimation of a Life-cycle Model with Human Capital, Labor Supply and Retirement. CEPAR Working Paper Series 2015/22.
- 15 Fung, M.C., Ignatieva, K. and Sherris, M. (2015). Managing Systematic Mortality Risk in Life Annuities: An Application of Longevity Derivatives. CEPAR Working Paper Series 2015/12.
- 16 Hernaes, E., Markussen, S., Piggott, J. and Roed, K. (2015). Pension Reform and Labor Supply - Flexibility vs. Prescription. CEPAR Working Paper Series 2015/37.
- 17 Hirani, V., Blyth, F., Naganathan, V., Le Couteur, D.G., Seibel, M., Waite, L.M., Handelsman, D.J. and Cumming, R.G. (2015). Cross-sectional and Longitudinal Associations between Sarcopenic Obesity and Activities of Daily Living (ADL) and Instrumental ADL (IADL) Disability in Community Dwelling Older Men: The Concord Health and Ageing in Men Project. CEPAR Working Paper Series 2015/14.
- 18 Hirani, V., Naganathan, V., Blyth, F., Le Couteur, D.G., Seibel, M., Waite, L.M., Handelsman, D.J. and Cumming, R.G. (2015). Sarcopenic Obesity is associated with Incident Frailty, Institutionalisation and Mortality in Community Dwelling Older Men: The Concord Health and Ageing in Men Project. CEPAR Working Paper Series 2015/15.

- 19 Holzmman, R. (2015). Taxing Pensions of an Internationally Mobile Labor Force: Portability Issues and Taxation Option. CEPAR Working Paper Series 2015/27.
- 20 Kendig, H., O'Loughlin, K., Hussain, R., Heese, K. and Cannon, L. (2015). Attitudes to Intergenerational Equity: Baseline Findings from the Attitudes to Ageing in Australia (AAA) Study. CEPAR Working Paper Series 2015/33.
- 21 Kudrna, G. (2015). Means Testing of Public Pensions: The Case of Australia. CEPAR Working Paper Series 2015/09.
- 22 Kudrna, G. and Tran, C. (2015). Budget Repair Measures: Tough Choices for Australia's Future. CEPAR Working Paper Series 2015/34.
- 23 Kudrna, G., Tran, C. and Woodland, A. (2015). The Dynamic Fiscal Effects of Demographic Shift: The Case of Australia. CEPAR Working Paper Series 2015/08.
- 24 Kudrna, G., Tran, C. and Woodland, A. (2015). Facing Demographic Challenges: Tax Hikes or Pension Cuts? CEPAR Working Paper Series 2015/10.
- 25 Kumru, C. and Loke, J. (2015). The Australian Retirement System: Seven Alternatives. CEPAR Working Paper Series 2015/25.
- 26 Kumru, C. and Piggott, J. (2015). Optimal Capital Income Taxation with Means-tested Benefits. CEPAR Working Paper Series 2015/36.
- 27 Kumru, C., Piggott, J. and Thanopoulos, A. (2015). A Note on Resource Testing and Temptation. CEPAR Working Paper Series 2015/32.

- 28 Liu, C. and Sherris, M. (2015). Immunization and Hedging of Longevity Risk. CEPAR Working Paper Series 2015/11.
- 29 Liu, X. (2015). The Income Elasticity of House Prices in New South Wales. CEPAR Working Paper Series 2015/19.
- 30 Lu, B., Yang, Z., Piggott, J. and Mi, H. (2015). How do Chinese Predict their Life Expectancy. CEPAR Working Paper Series 2015/18.
- 31 Pitacco, E. (2015). Actuarial Values in Long-term Care and Insurance Products. A Sensitivity Analysis. CEPAR Working Paper Series 2015/04.
- 32 Shao, A.W., Sherris, M. and Fong, J.H.Y. (2015). Product Pricing and Solvency Capital Requirements for Long-term Care Insurance. CEPAR Working Paper Series 2015/07.
- 33 Shen, Y., Sherris, M. and Ziveyi, J. (2015). Valuation of Guaranteed Minimum Maturity Benefits in Variable Annuities with Surrender Options. CEPAR Working Paper Series 2015/30.
- 34 Teppa, F., Thorp, S. and Bateman, H. (2015). Family, Friends and Framing: A Cross Country Study of Subjective Survival Expectations. UNSW Business School Working Paper 2015ACTL19.
- 35 Wu, S., Asher, A., Meyricke, R. and Thorp, S. (2015). Age Pensioner Profiles: A Longitudinal Study of Income, Assets and Decumulation. CEPAR Working Paper Series 2015/17.

- 36 Xu, M., Sherris, M. and Meyricke, R. (2015). Mortality Heterogeneity and Systematic Mortality Improvement. CEPAR Working Paper Series 2015/31.
- 37 Xu, Y., Sherris, M. and Ziveyi, J. (2015). The Application of Affine Processes in Multi-Cohort Mortality Model. CEPAR Working Paper Series 2015/13.

OTHER OUTPUTS

- 1 Abalos, J. (May 2015). Poster Presentation. Gender Differences in Functional Difficulty and Health Expectancy among Older Persons in the Philippines. Population Association of America (PAA) 2015 Annual Meeting. San Diego, USA.
- 2 Abalos, J. and Oberos, M.A. (July 2015). Poster Presentation. Labor Force Participation of Older Persons in the Philippines: Trends, Patterns and Correlates. 3rd Asian Population Association (APA) Conference. Kuala Lumpur, Malaysia.
- 3 Allen, V. (November 2015). Poster Presentation. The Habitual and Daily Use of Emotion Regulation Strategies in Younger and Older Adults: A Micro-Longitudinal Study. The Gerontological Society of America's 68th Annual Scientific Meeting, Orlando, USA and at the RANZCP Faculty of Psychiatry of Old Age and APS Psychology and Ageing Special Interest Group Joint Conference, Adelaide, Australia.
- 4 Arthur, R. (2015). Poster Presentation. Does Anxiety Predict Cognitive Function? Findings from the PATH Through Life Study. Alzheimer's Disease International Conference, April, Perth, Australia and International Psychogeriatric Association International Annual Conference, October, Berlin, Germany.
- 5 Ashby-Mitchell, K. (January 2015). Poster Presentation. The Road to Reducing Dementia Onset and Prevalence – Are Diet and Physical Activity Interventions Worth Investing in? National Health and Medical Research Council Symposium. Sydney, Australia.
- 6 Brady, J. (April 2015). Poster Presentation. Person Diagnosed and Partner/Carer Perspectives on Living with Parkinson's Disease in Australia. IAGG-ER 8th Congress. Dublin, Ireland.
- 7 Byles, J.E., D'Este, C., Kowal, P., Curryer, C., Thomas, L., Yates, A., Baer, B., Bhushan, A., Vogel, J. and Jara, L. (2015). Gender & Ageing: Background Paper to the World Report on Ageing and Health. WHO, Geneva.
- 8 CEPAR. (2015). The Back-to-the-Future Fact Sheet. CEPAR, Sydney, Australia.
- 9 Ginnivan, N. (April 2015). Poster Presentation. Transitioning through Life Stages: Similarities and Differences between Young and Old in Two Differing Cultures. IAGG-ER 8th Congress. Dublin, Ireland.
- 10 Hirani, V., Naganathan, V., Blyth, F., Handelsman, D.J., Le Couteur, D.G., Waite, L.M. and Cumming, R.G. (April 2015). Poster Presentation. Associations between Anaemia and Frailty in Older Australian Men: The Concord Health and Ageing in Men Project. International Conference on Frailty & Sarcopenia. Boston, USA.
- 11 Hirani, V., Naganathan, V., Blyth, F., Handelsman, D.J., Le Couteur, D.G., Waite, L.M. and Cumming, R.G. (April 2015). Poster Presentation. Sarcopenic Obesity is associated with Frailty and Mortality in Community Dwelling Older Men: The Concord Health and Ageing in Men Project. International Conference on Frailty & Sarcopenia. Boston, USA.
- 12 Hosking, D.E. and Anstey, K.J. (September 2015). Poster Presentation. The Economics of Cognitive Impairment. APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 13 Jia, X. and Booth, H. (September 2015). Poster Presentation. A Historical Perspective on Population Ageing in Asia: Homogeneity or Heterogeneity? APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 14 Kendig, H. and Gong, C. (April 2015). Poster Presentation. Age Friendly Policies and Urban Inequalities in Australia. IAGG-ER 8th Congress. Dublin, Ireland.
- 15 O'Connor, C.M., Clemson, L., Brodaty, H., Hodges, J.R., Piguet, O., Gitlin, L.N. and Mioshi, E. (2015). Poster Presentation. The Tailored Activities Program (TAP) for the Management of Frontotemporal Dementia: A Case Study. Alzheimer's Association International Conference, July, Washington, USA and Forefront Asia Pacific FTD & MND Meeting, October, Sydney, Australia.
- 16 O'Donoghue-Jenkins, L. (October 2015). Poster Presentation. The Use of Secondments to Increase Knowledge Translation. 2015 NHMRC Symposium on Research Translation. Sydney, Australia.
- 17 Trinh, Q. and Kendig, H. (September 2015). Poster Presentation. Life Satisfaction of Older People in Vietnam. APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 18 Waern, R. (January 2015). Poster Presentation. The Geometric Framework Technique to Assess the Relationships between Nutrition and Frailty in a Sample of Australian Men. 9th Asia Pacific Conference on Clinical Nutrition. Kuala Lumpur, Malaysia.
- 19 Windsor, T.D., Hunter, M.L. and Browne-Yung, K. (2015). Ageing Well: Building Resilience in Individuals and Communities. Report to the South Australian Government Office of the Ageing.

E4 UNPUBLISHED CONFERENCE PRESENTATIONS

- 1 Abalos, J. (December 2015). Availability of Support and Provision of Care among Older Persons in the Philippines. 14th National Conference of Emerging Researchers in Ageing. Melbourne, Australia.
- 2 Abalos, J. (July 2015). Sex Differences in Functional Difficulty and Health Expectancy among Older Persons in the Philippines. The 3rd APA International Conference. Kuala Lumpur, Malaysia.
- 3 Abbasi-Shavazi, M. and Hosseini-Chavoshi, M. (October 2015). Demographic Perspective of the Iranian Diaspora: The Case of Iranians in Australia. International Conference on Migration: Patterns, Consequences and policy implications. Tehran, Iran.
- 4 Alai, D.H., Landsman, Z. and Sherris, M. (August 2015). Modelling Life Time Dependence for Older Ages using a Multivariate Pareto Distribution. AFIR/ERM and IACA Colloquia. Sydney, Australia.
- 5 Alonso Garcia, J. and Devolder, P. (August 2015). Guarantee Valuation in Unfunded Pension Systems. AFIR/ERM and IACA Colloquia. Sydney, Australia.
- 6 Arthur, R. (September 2015). Does Anxiety Predict Pathological Cognitive Decline in Older Adults? National Dementia & Knowledge Translation Forum. Sydney, Australia.

RESEARCH OUTPUTS

- 7 Ashby-Mitchell, K. (October 2015). The Mediterranean Diet is not Predictive of Cognitive Impairment in a Large Australian Longitudinal Population-based Study. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 8 Bateman, H. (September 2015). Pension Taxation in Australia: Country Issues and Research Questions. CEPAR-CESifo Workshop on Taxation of Pensions. Munich, Germany.
- 9 Bateman, H., Eckert, C., Iskhakov, F., Louviere, J., Satchell, S. and Thorp, S. (June 2015). Default and Naive Diversification Heuristics in Annuity Choice. International Association for Applied Econometrics (IAAE) 2015 Annual Conference. Thessaloniki, Greece.
- 10 Booth, H. (September 2015). Coherent Forecasting of Mortality. Workshop of the EAPS Health, Morbidity and Mortality Working Group. Prague, Czech Republic.
- 11 Booth, H. and Rioseco, P. (October 2015). Causation and Reverse Causation in the Association of Self-rated Health with Social Network and Social Support in Later Life. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 12 Brady, J. (July 2015). Bodies Ageing with and without Parkinson's Disease. 3rd International Sociological Association Forum of Sociology. Vienna, Austria.
- 13 Burns, R.A. (July 2015). Flourishing across the Lifespan: Implications of Wellbeing Theory for Late-life Development. APS Education and Developmental Psychology Conference. Melbourne, Australia.
- 14 Burns, R.A., Loh, V., Byles, J.E. and Kendig, H. (December 2015). The Impact of Childhood Parental Quality on Mental Health Outcomes in Older Adults. Society for Mental Health Research (SMHR) Annual Conference. Brisbane, Australia.
- 15 Byles, J.E. (October 2015). Longitudinal Studies on Ageing. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 16 Byles, J.E. (October 2015). Research Collaboration in the Asia-Oceania Region: Case Studies and Lessons Learned. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 17 Byles, J.E. (September 2015). Chronic Conditions, Physical Function and Health Care use across Four Age Cohorts of Australian Women. Population Health Congress 2015. Hobart, Australia.
- 18 Capatina, E., Hansen, G. and Hsu, M. (September 2015). Long Term Care and Family Structure Risk. APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 19 Capatina, E., Keane, M. and Maruyama, S. (2015). Investment in Health and Human Capital over the Life-cycle. Presented at the CEPAR Summer Workshop in the Economics of Health and Ageing, January, Sydney, Australia and The 7th International Conference of Macroeconomics and Policy, February, Tokyo, Japan.
- 20 Chomik, R. and Piggott, J. (September 2015). Tax Expenditures on Pensions: Concepts, Concerns and Misconceptions. CEPAR-CESifo Workshop on Taxation of Pensions. Munich, Germany.
- 21 Christian, J.C., Abalos, J. and Cruz, G. (July 2015). The Influence of Differences in Spousal Age and Education on Marital Satisfaction and Health Status of Older Persons in the Philippines. The 3rd APA International Conference. Kuala Lumpur, Malaysia.
- 22 Christiani, Y., Byles, J.E. and Tavener, M. (October 2015). Gender Inequalities in Health among Ageing Population in Indonesian Urban Areas: A Decomposition Analysis. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 23 Clemson, L., Lannin, N., Wales, K., Gitlin, L., Rubenstein, L., Barris, S., Mackenzie, L. and Cameron, I. (July 2015). Occupational Therapy Discharge Planning to Facilitate Transition from Hospital to Home: The Home Trial. 26th National Occupational Therapy Conference. Melbourne, Australia.
- 24 Coulter, M., Lannin, N., Eyres, L., Stevenson, M., Wales, K., Willman, A. and Clemson, L. (July 2015). Do our Acute Occupational Therapy Functional Assessments Predict Home Performance in Older Australians? 26th National Occupational Therapy Conference. Melbourne, Australia.
- 25 Cumming, R.G. (October 2015). Low Serum Testosterone is not a Cause of Poor Health in Older Men: Concord Health and Ageing in Men Project. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 26 Cumming, R.G. (November 2015). The Meaning of Evidence in Dementia Policy and Practice. NHMRC Cognitive Decline Partnership Centre Annual Meeting. Adelaide, Australia.
- 27 Curtis, R.G., Windsor, T.D., Anstey, K.J., Bielak, A. and Mogle, J. (November 2015). Within-person Associations of Daily Self-efficacy with Activity in Middle-aged and Older Adults. The Gerontological Society of America's 68th Annual Scientific Meeting. Orlando, USA.
- 28 Deetlefs, J., Bateman, H., Dobrescu, L.I., Newell, B., Ortmann, A. and Thorp, S. (July 2015). Suspicious Minds (Can be a Good Thing when Saving for Retirement). 23rd Annual Colloquium of Superannuation Researchers. Sydney, Australia.
- 29 Dobrescu, L.I., Fan, X., Bateman, H., Newell, B.R., Ortmann, A. and Thorp, S. (2015). Retirement Savings: A Tale of Decisions and Defaults. Presented at the International Association for Applied Econometrics (IAAE) 2015 Annual Conference, May, Thessaloniki, Greece, the Boulder Summer Conference on Consumer Financial Decision Making, June, Boulder, USA, the World Risk and Insurance Economics Congress, August, Munich, Germany and the International Conference on Institutions, Reforms and Economic Development, September, Beijing, China.
- 30 Fan, X. and Woodland, A. (July 2015). A Lifetime Model of Labour Supply and Asset Allocation of Australians: Estimation and Policy Implications. 23rd Annual Colloquium of Superannuation Researchers. Sydney, Australia.
- 31 Fan, X., Fang, H. and Markussen, S. (2015). Parental Employment, Absence and Children's Educational Gender Gap. Presented at the Labour Economics Workshop, University of Wisconsin-Madison, February, Madison, USA, the Applied Economics Workshop, California State University, East Bay, USA, the World Congress of the Econometric Society, May, Montreal, Canada and the 2015 Labour Econometrics Workshop, August, Sydney, Australia.
- 32 Fan, X. (June 2015). Simultaneous Multi-sector Search and Jobless Recovery. Sydney Macroeconomics Reading Group Workshop. Sydney, Australia.
- 33 Fang, H., Gu, Q., Xiong, W. and Zhou, L-A. (August 2015). Demystifying the Chinese Housing Boom. CEPAR China Workshop. Sydney, Australia.
- 34 Fung, M.C., Ignatieva, K. and Sherris, M. (August 2015). Managing Systematic Mortality Risk in Life Annuities: An Application of Longevity Derivatives. AFIR/ERM and IACA Colloquia. Sydney, Australia.
- 35 Ginnivan, N. (December 2015). Self-perceptions of Ageing from a Cross-cultural Perspective. Do Collectivist Cultures Provide a Buffering Effect for the Impact of Negative Stereotypes about Age? 14th National Conference of Emerging Researchers in Ageing. Melbourne, Australia.

- 36 Gong, C., Kendig, H. and He, X. (June 2015). Healthcare Utilization among Older People in China: Impacts of Socioeconomic Status, Medical Conditions, Life Styles and Health Insurance. Public Policy Challenges and Governance Innovation in an Aging Society. Shanghai, China.
- 37 Gong, C., Kendig, H. and Silverstein, M. (October 2015). Lifelong Factors towards Good Late Life Health in China. The Gerontological Society of America's 68th Annual Scientific Meeting. Orlando, USA.
- 38 Gong, C., Kendig, H. and Silverstein, M. (October 2015). Intergenerational Helping Relationships and its Impacts on Life Satisfaction of Older People: Evidence from China. The Gerontological Society of America's 68th Annual Scientific Meeting. Orlando, USA.
- 39 Hernaes, E., Markussen, S., Piggott, J. and Roed, K. (February 2015). Pension Reform and Labor Supply - Flexibility vs. Prescription. The 4th ANU-DPU Conference with CEPAR: The Labour Market, Migration and Ageing. Bangkok, Thailand.
- 40 Hirani, V., Naganathan, V., Blyth, F., Handelsman, D.J., Le Couteur, D.G., Waite, L.M. and Cumming, R.G. (April 2015). Sarcopenia Predicts Incident Disability, Institutionalisation and Mortality in Community Dwelling Older Men: The Concord Health and Ageing in Men Project. International Conference on Frailty & Sarcopenia. Boston, USA.
- 41 Hosseini-Chavoshi, M. and Abbasi-Shavazi, M.J. (July 2015). Population Trends and their Implications for New Policies in Iran. The 3rd APA International Conference. Kuala Lumpur, Malaysia.
- 42 Iskhakov, F. (2015). Solving and Estimating Discrete-Continuous Choice Models Using the Endogenous Gridpoint Method. Presented at the Summer School on Dynamic Discrete Choice Models: Econometric Models and Operations Research Methods, June, Montreal, Canada and the World Congress of the Econometric Society, August, Montreal, Canada.
- 43 Jukic, M. and Cumpston, R. (September 2015). Modelling Entry to Residential Aged Care in Australia. APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 44 Kendig, H., Gong, C., Mehta, K., Byles, J.E. and Klein, E. (2015). Australian Innovations in Empowering Older People. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 45 Kudrna, G. (April 2015). Means Testing of Public Pensions: The Case of Australia. Michigan Retirement Research Centre Researcher Workshop. Ann Arbor, USA.
- 46 Kudrna, G. (August 2015). Pension Reforms: The Experience of Australia. International Seminar on Social Security Reforms. Bali, Indonesia.
- 47 Kudrna, G. (January 2015). The Dynamic Fiscal Effects of Demographic Shift: The Case of Australia. 11th WEAI International Conference. Wellington, New Zealand.
- 48 Kudrna, G. (July 2015). Assessing Pension Tax Regimes: An Australian Perspective. 23rd Annual Colloquium of Superannuation Researchers. Sydney, Australia.
- 49 Kudrna, G. (September 2015). Taxation of Pension in Country-calibrated OLG Models. CEPAR-CESifo Workshop on Taxation of Pensions. Munich, Germany.
- 50 Kudrna, G. and Tran, C. (2015). Budget Repair Measures: Tough Choices for Australia's Future. Presented at the Sydney Macroeconomics Reading Group Workshop, November, Sydney, Australia and Budget Repair Measures: Tough Choices for Australia's Future, December, Sydney, Australia.
- 51 Kudrna, G., Tran, C. and Woodland, A. (September 2015). Facing Demographic Challenges: Pension Cuts or Tax Hikes. Presented at APRU Ageing in the Asia-Pacific Research Symposium, Sydney, Australia and the CEPAR-CESifo Workshop on Taxation of Pensions, Munich, Germany.
- 52 Liu, X. (September 2015). Household Housing Equity Portfolio Optimization. APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 53 Lu, B. (February 2015). Long Term Care in China and its Policy Implication. The 4th ANU-DPU Conference with CEPAR: The Labour Market, Migration and Ageing. Bangkok, Thailand.
- 54 Lu, B. and Yang, M. (July 2015). Estimating the Public Cost of LTC in China: A Means Tested Model. 23rd Annual Colloquium of Superannuation Researchers. Sydney, Australia.
- 55 Lusardi, A., Michaud, P.-C. and Mitchell, O.S. (July 2015). Using a Life Cycle Model to Evaluate Financial Literacy Program Effectiveness. 23rd Annual Colloquium of Superannuation Researchers. Sydney, Australia.
- 56 Magnani, E. (September 2015). Older Workers' Labour Market Performance: Integrating Labour Market's Supply-side and Demand-side Responses to Structural Change. APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 57 Majeed, T., Forder, P., Mishra, G. and Byles, J.E. (October 2015). Women, Work, and Illness: A Longitudinal Analysis of Workforce Participation Patterns for Women beyond Middle Age. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 58 Majeed, T., Forder, P. and Byles, J.E. (December 2015). Health Predictors of Workforce Participation over Time - Longitudinal Evidence for Young Women. 14th National Conference of Emerging Researchers in Ageing. Melbourne, Australia.
- 59 Maruyama, S. (April 2015). Gluttony or Sloth? The Driving Force behind the Long-term BMI Trend. 6th Australasian Workshop on Econometrics and Health Economics. Melbourne, Australia.
- 60 Maruyama, S. and Heinesen, E. (June 2015). Why Is Birthweight Important for Human Capital? The Twentieth SOLE Meetings/Fourth SOLE/EALE World Conference. Montreal, Canada.
- 61 McDonald, P. (April 2015). Demographic Change in the Asian Century: Implications for Australia and the Region. Prosperity in Asia: The Intergenerational Dimensions. Canberra, Australia.
- 62 McDonald, P. (December 2015). International Migration to Australia: The Development of a Targeted but Flexible Program. Graeme Hugo Colloquium. Canberra, Australia.
- 63 McDonald, P. (February 2015). Migration Policy in Australia. The 4th ANU-DPU Conference with CEPAR: The Labour Market, Migration and Ageing. Bangkok, Thailand.
- 64 McDonald, P. (July 2015). Ultra-low Fertility is a Gendered Issue. The 3rd APA International Conference. Kuala Lumpur, Malaysia.
- 65 McDonald, P. (June 2015). Regional Cooperation on Migration in an Interconnected World. Conference on Customs and Immigration: Past Reflections and Future Directions, Department of Immigration and Border Protection. Canberra, Australia.
- 66 McDonald, P. (November 2015). Family Migration: Outcomes and Issues. Ties that Bind - The Family in Migration Law and Policy Conference. Canberra, Australia.
- 67 McDonald, P. (November 2015). The Intergenerational Reports and what they say about Australia's Future. Annual Congress of Certified Public Accountants Australia. Canberra, Australia.

RESEARCH OUTPUTS

- 68 McDonald, P. and Rangkuti, H. (July 2015). New Estimates of the Demography of Indonesia, 1971-2010. The 3rd APA International Conference. Kuala Lumpur, Malaysia.
- 69 O'Connor, C.M., Clemson, L., Flanagan, E., Kaizik, C., Hodges, J.R., Piguet, O., Brodaty, H. and Mioshi, E. (July 2015). Trajectories of Functional Decline and Behavioural Changes in Primary Progressive Aphasia. Alzheimer's Association International Conference. Washington, USA.
- 70 O'Donoghue-Jenkins, L. (November 2015). The Relationship between Cognitive Decline and Hospital Admission: A Study Using Linked Data. Data Linkage Symposium. Canberra, Australia.
- 71 O'Loughlin, K., Feist, H. and Kendig, H. (August 2015). Exploring the Diversity within Baby Boomers in Australia. 1st International Symposium on Ageing & Old Age in Asia Pacific. Fukuoka, Japan.
- 72 Piggott, J. and Chomik, R. (February 2015). Payout Design. Pension Policy in India. Delhi, India.
- 73 Piggott, J. and Chomik, R. (February 2015). Social Security Policy in Asia: An Overview. The 4th ANU-DPU Conference with CEPAR: The Labour Market, Migration and Ageing. Bangkok, Thailand.
- 74 Piggott, J. and Chomik, R. (May 2015). Projecting the Fiscal Impact of Population Ageing. Interdisciplinary Research on Long-term Care and Healthy Aging. Hangzhou, China.
- 75 Pike, S., Lannin, N., Cusick, A., Wales, K., Ashford, S. and Turner-Stokes, L. (July 2015). A Systematic Review of Measurement Properties of Functional Assessments including their Validity as Measures of Everyday Activity Performance and Life Participation. 26th National Occupational Therapy Conference. Melbourne, Australia.
- 76 Rioseco, P. (October 2015). Retirement and Trajectories of Social Engagement. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 77 Shao, A.W., Chen, H. and Sherris, M. (September 2015). Managing Retirement Risks with Reverse Mortgage Loans and Long-term Care Insurance. Eleventh International Longevity Risk and Capital Markets Solutions Conference (Longevity 11). Lyon, France.
- 78 Shao, A.W., Sherris, M. and Fong, J.H.Y. (2015). Product Pricing and Solvency Capital Requirements for Long Term Care Insurance. Presented at the 23rd Annual Colloquium of Superannuation Researchers, July, Sydney, Australia and the World Risk and Insurance Economics Congress, August, Munich, Germany.
- 79 Shen, Y., Sherris, M. and Ziveyi, J. (August 2015). Valuation of Guaranteed Minimum Maturity Benefits in Variable Annuities with Surrender Options. AFIR/ERM and IACA Colloquia. Sydney, Australia.
- 80 Sherris, M. and Liu, C. (2015). Immunization and Hedging of Longevity Risk. Presented at 23rd Annual Colloquium of Superannuation Researchers, July, Sydney, Australia and the World Risk and Insurance Economics Congress, August, Munich, Germany.
- 81 Spicer, A., Stavrunova, O. and Thorp, S. (July 2015). How Portfolios Evolve in Retirement: Evidence from Australia. iHEA Congress. Milan, Italy.
- 82 Trinh, Q. and Kendig, H. (October 2015). Vietnamese Elderly's Living Arrangements and Determinants. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 83 Villegas, A. (November 2015). Riesgo de Longevidad: Modelamiento e Implicaciones en Pensiones y Rentas Vitalicias (Longevity Risk: Modelling and Implication for Pension and Annuities). V Simposio Internacional de Actuaría. Bogota, Colombia.
- 84 Wales, K., Clemson, L., Lannin, N. and Cameron, I. (July 2015). Selecting a Psychometrically Robust Functional Assessment for use with Older Adults: A Systematic Review. 26th National Occupational Therapy Conference. Melbourne, Australia.
- 85 Wales, K., Lannin, N. and Clemson, L. (July 2015). Measuring Functional Ability in Acute Hospitalised Older Adults: A Validation and Reliability Study. 26th National Occupational Therapy Conference. Melbourne, Australia.
- 86 Windsor, T.D., Curtis, R.G. and Luszcz, M.A. (November 2015). Financial Strain and Changes in Late-life Health over 18 years: Buffering Effects of Social Resources. The Gerontological Society of America's 68th Annual Scientific Meeting. Orlando, USA.
- 87 Windsor, T.D. and Ryan, L. (October 2015). Profiles of Aging Well Among Married Couples in the Health and Retirement Study. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 88 Woodland, A. (September 2015). Population Ageing, Education and Skill Premium in International Trade. ETSG (European Trade Study Group) Conference. Paris, France.
- 89 Wu, S., Bateman, H. and Stevens, R. (2015). Optimal Portfolio Allocation with Health Contingent Income Products: The Value of Life Care Annuities. Presented at the Optimal Portfolio Allocation with Health Contingent Income Products: The Value of Life Care Annuities, June, Liverpool, UK, the 23rd Annual Colloquium of Superannuation Researchers, July, Sydney, Australia, the World Risk and Insurance Economics Congress, August, Munich, Germany, the APRU Ageing in the Asia-Pacific Research Symposium, September, Sydney, Australia, the 7th Australasian Actuarial Education & Research Symposium, December, Gold Coast, Australia and the CEPAR Retirement Income Modelling Workshop, December, Sydney, Australia.
- 90 Xu, M. (2015). Portfolio Insurance Strategies for Target Annuitisation. Presented at the 19th International Congress on Insurance: Mathematics and Economics, June, Liverpool, UK, the 23rd Annual Colloquium of Superannuation Researchers, July, Sydney, Australia and the 7th Australasian Actuarial Education & Research Symposium, December, Gold Coast, Australia.
- 91 Xu, Y., Sherris, M. and Ziveyi, J. (2015). The Application of Affine Processes in a Multi-cohort Mortality Model. Presented at the 23rd Annual Colloquium of Superannuation Researchers, July, Sydney, Australia and the AFIR/ERM and IACA Colloquia, August, Sydney, Australia.
- 92 Yiengprugsawan, V., Healy, J. and Kendig, H. (September 2015). Regional Overview of Population Ageing and Non-communicable Diseases: Synergies and Implications for Health Systems in a Range of Asia-Pacific Countries. APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 93 Yiengprugsawan, V., Kendig, H., Byles, J., Healy, J. and Huntington, D. (October 2015). Comparative Country Study: Health System Responses to Non-communicable Diseases in Rapidly Ageing Asian Countries. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 94 Yu, Y. and McDonald, P. (September 2015). Mortality Change in the United States vs. Australia, France and Japan: 1950 to 2010. APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 95 Yu, Y. and Zhao, Z. (July 2015). Age Patterns and Sex Differentials of Mortality in Asia. The 3rd APA International Conference. Kuala Lumpur, Malaysia.
- 96 Yu, Y. and Zhao, Z. (July 2015). Mortality in Asia. The 3rd APA International Conference. Kuala Lumpur, Malaysia.

- 97 Zhongwei, Z. (July 2015). Fertility Behaviours and Their Historical Changes in the East: Realities and Theories. The 3rd APA International Conference. Kuala Lumpur, Malaysia.
- 98 Zhongwei, Z., Zhu, Y. and Tu, E.J. (July 2015). The Attention of Summer Mortality Peaks: Observation Made in Taiwan 1971-2007. The 3rd APA International Conference. Kuala Lumpur, Malaysia.

INVITED PRESENTATIONS TO MAJOR INTERNATIONAL MEETINGS

- 1 Anstey, K.J. (July 2015). Is It Time To Go Beyond Randomized Controlled Trials? AAIC 2015. Washington, USA.
- 2 Anstey, K.J. (October 2015). Health Cognitive and Brain Ageing. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 3 Bateman, H. (June 2015). Challenges with Decumulation in Defined Contribution Plans. The International Forum of the Americas - Conference of Montreal. Montreal, Canada.
- 4 Burns, R.A. (August 2015). Wellbeing and its Improvability as National Goals: New Findings and Approaches to Understanding the Progression of Mental Health and Wellbeing in Older Adults. International Alliance of Research Universities Ageing Network Conference. Denmark, Copenhagen.
- 5 Byles, J.E. (October 2015). Empowering Older People: Evidence and Action. 10th IAGG Asia/Oceania Regional Congress. Chiang Mai, Thailand.
- 6 Chomik, R., McDonald, P. and Piggott, J. (October 2015). Population Ageing in Asia and the Pacific: Dependency Metrics for Policy. EWC-KOSTAT Conference on the Demographic Dividend and Population Aging in Asia. Honolulu, Hawaii.
- 7 Fast, J., Yeandle, S. and O'Loughlin, K. (April 2015). International Networking and Collaboration on Work and Care: Insights from Three Continents. IAGG-ER 8th Congress. Dublin, Ireland.
- 8 Hirani, V., Naganathan, V., Cumming, R.G., Blyth, F., Le Couteur, D.G., Waite, L.M., Handelsman, D.J. and Seibel, M. (January 2015). Active Vitamin D Metabolite and Haemoglobin Levels in Older Australian Men: The Concord Health and Ageing in Men Project. 9th Asia Pacific Conference on Clinical Nutrition. Kuala Lumpur, Malaysia.
- 9 Keane, M. (April 2015). Sargan Lecture: Estimating the Roles of Human Capital and the Extensive Margin. Annual Conference of the Royal Economic Society. Manchester, UK.
- 10 McDonald, P. (July 2015). International Migration and Employment in Australia. 8th International Conference on Population Geographies. Brisbane, Australia.
- 11 Piggott, J. (May 2015). Projecting the Fiscal Impact of Demographic Change. International Conference on Interdisciplinary Research on Long-term Care and Healthy Aging. Hangzhou, China.
- 12 Sherris, M. (October 2015). Longevity and Retirement Financing Research. CMO Workshop 15w5021: Recent Advances in Actuarial Mathematics. Oaxaca, Mexico.

SEMINAR PRESENTATIONS

- 1 Alai, D.H. (September 2015). Modelling Lifetime Dependence for Older Ages using a Multivariate Pareto Distribution. CEPAR and School of Risk and Actuarial Studies Pensions and Superannuation Seminar Series. Sydney, Australia.
- 2 Alonso Garcia, J. and Devolder, P. (August 2015). Guarantee Valuation in Notional Defined Contribution Pension Systems. CEPAR and School of Risk and Actuarial Studies Pensions and Superannuation Seminar Series. Sydney, Australia.
- 3 Arthur, R. (December 2015). Does Anxiety Predict Cognitive Decline in Older Adults. CRAHW Research Seminar. Canberra, Australia.
- 4 Byles, J.E. (July 2015). 19 to 90's: A Long View of Life from the Australian Longitudinal Study on Women's Health. ARCSHS Seminar. Melbourne, Australia.
- 5 Byles, J.E. (July 2015). Professional Networking Naturally. ERA/AAG Webinar. Online.
- 6 Chomik, R. (October 2015). Population Ageing in Asia: Dependency Metrics for Policy. CEPAR and School of Risk and Actuarial Studies Pensions and Superannuation Seminar Series. Sydney, Australia.
- 7 Cumming, R.G. (October 2015). Population Ageing and Health in Developing Countries. University of Public Health. Yangon, Myanmar.
- 8 Cumming, R.G. (October 2015). Prevention of Falls and Fractures in Older People. School of Public Health, Mongolian National University of Medical Sciences. Ulaanbaatar, Mongolia.
- 9 Cumpston, R., Gong, C. and Jukic, M. (September 2015). Helping Achieve the National Aged Care Alliance's (NACA) 2015 Blueprint. AAG Seminar. Canberra, Australia.
- 10 Dudley, D. (November 2015). Personal Goals in Retirement: Qualitative Research Phase, Design and Recruitment Review. HDR Seminar for Faculty of Health Sciences, The University of Sydney. Sydney, Australia.
- 11 Hosking, D. (August 2015). Quantifying the Cost of Cognitive Impairment: Volunteering and Cognitive Performance in the HILDA Survey. CEPAR ANU Seminar Series. Canberra, Australia.
- 12 Hosseini-Chavoshi, M. (February 2015). Fertility Trends in Iran based on Analysis of Parity Progression Ratios. Seminar at School of Demography, ANU. Canberra, Australia.
- 13 Iskhakov, F. (April 2015). Estimating Discrete-continuous Choice Models: Endogenous Grid Method with Taste Shocks. Higher School of Economics. Moscow, Russia.
- 14 Iskhakov, F. (February 2015). Endogenous Grid Point Methods: Solving Discrete-continuous Choice Models. Zurich Initiative on Computational Economics (ZICE). Zurich, Switzerland.
- 15 Iskhakov, F., Rust, K. and Schjerning, B. (December 2015). An Analysis of the Australian Social Security System using a Life-cycle Model of Labor Supply with Asset Accumulation and Human Capital. Presented at the Centre for Microdata Methods and Practice (CEMMAP), University College, London, UK and the Department of Economics, University of Copenhagen. Copenhagen, Denmark.
- 16 Iskhakov, F., Rust, K. and Schjerning, B. (December 2015). Soling and Estimating Discrete-continuous Choice Models Using the Endogenous Gridpoint Method. Centre for Microdata Methods and Practice (CEMMAP), University College. London, UK.
- 17 Kendig, H. (May 2015). Childhood Influences on the Well-being of the Babyboom Cohort. Australian Institute of Family Studies. Melbourne, Australia.
- 18 Kudrna, G. (April 2015). Superannuation Taxation in a Lifecycle Framework. Guest Lecture to UNSW Business School Class: Superannuation and Retirement Benefits.
- 19 Kudrna, G., Tran, C. and Woodland, A. (2015). Facing Demographic Challenges: Pension Cuts or Tax Hikes. CEPAR and School of Risk and Actuarial Studies Pensions and Superannuation Seminar Series, May, Sydney, Australia, and University of Wuerzburg Visitor Seminar Series, June, Wuerzburg, Germany.
- 20 Kumru, C. and Nakornthab, A. (October 2015). Estate Taxation in an Entrepreneurship Model. Department of Economics Seminar Series. Melbourne, Australia.

RESEARCH OUTPUTS

- 21 Maruyama, S. (2015). Do Siblings Free-ride in 'Being There' for Parents? Academia Sinica, January, Taiwan, Osaka University, February, Osaka, Japan and Tohoku University, June, Senadi, Japan.
- 22 Maruyama, S. (February 2015). Triptych on Gender Difference in the Long-term BMI Trend. Osaka University, Osaka, Japan and Hokkaido University, Sapporo, Japan.
- 23 Maruyama, S. (January 2015). Estimating Returns to Birthweight by Placenta Previa. National Taiwan University. Taiwan.
- 24 Maruyama, S. (June 2015). Why is Birthweight Important for Human Capital. Yokohama National University. Yokohama, Japan.
- 25 Maruyama, S. (May 2015). Weekend Babies. Waseda University. Tokyo, Japan.
- 26 McDonald, P. (2015). Demography and Security. National Security College, ANU, 12 February, 25 March, 4 June, 3 July and 24 November. Canberra, Australia.
- 27 McDonald, P. (March 2015). International Migration and Employment in Australia. Department of Education. Canberra, Australia.
- 28 O'Connor, C.M., Clemson, L., Brodaty, H., Hodges, J.R., Piguet, O., Gitlin, L.N. and Mioshi, E. (May 2015). The Tailored Activities Program (TAP) for Frontotemporal Dementia: Different Approaches for Different Subtypes. OT Practice in Dementia, UTS. Sydney, Australia.
- 29 Shen, Y. (June 2015). Lifetime Asset Allocation with Longevity Risk. CEPAR and School of Risk and Actuarial Studies Pensions and Superannuation Seminar Series. Sydney, Australia.
- 30 Sherris, M. (September 2015). Product Pricing and Solvency Capital Requirements for Long-term Care Insurance. Research School of Finance, Actuarial Studies and Applied Statistics, ANU. Canberra, Australia.
- 31 Sherris, M. and Liu, C. (July 2015). Immunization and Hedging of Longevity Risk. MIB School of Management. Trieste, Italy.
- 32 Spicer, A., Stavrunova, O. and Thorp, S. (September 2015). How Portfolios Revolve in Retirement - Evidence from Australia. CEPAR and School of Risk and Actuarial Studies Pensions and Superannuation Seminar Series. Sydney, Australia.
- 33 Villegas, A. (November 2015). A Comparative Study of two Population Models for the Assessment of Basis Risk in Longevity Hedges. CEPAR and School of Risk and Actuarial Studies Pensions and Superannuation Seminar Series. Sydney, Australia.
- 34 Villegas, A. (November 2015). Longevity Risks: Trends, Implications and Modelling. Actuarial Science and Finance Seminar Series, Universidad Nacional. Bogota, Colombia.
- 35 Woodland, A. and Chen, X. (February 2015). Population Ageing, Education and Skill Premium. Graduate School of Economics & Faculty of Economics, Hitotsubashi University. Tokyo, Japan.



CHIEF INVESTIGATOR PETER McDONALD PRESENTING AT 'INTERPRETING THE IGR' PUBLIC FORUM

- 36 Wu, S., Bateman, H. and Stevens, R. (October 2015). Optimal Portfolio Choice with Health Contingent Income Products: The Value of Life Care Annuity. Retired Actuaries Group of Institute of Actuaries, Australia. Sydney Australia.
- 37 Xu, M. (May 2015). Portfolio Insurance Strategies for Target Annuitisation. School of Risk and Actuarial Studies PhD Seminar Series. Sydney, Australia.

In 2015, CEPAR's external communication, through our on- and off-line media activity, continued to focus on the quality of relationships with individual journalists and with specific media outlets.

Our social media platforms are increasingly interacting with peer researchers, organisations and individuals in the sector of ageing research, policy development and service delivery.

Our website continues to attract significant traffic, with 44,835 page views throughout 2015. The largest spike in visitations occurred in April, when CEPAR organised the 'Interpreting the IGR' Public Forum which was covered extensively in the mainstream media.

'Legacy' media, especially the ABC (audio and television) and quality print mastheads, remain a key platform for CEPAR to reach opinion formers and attempt to stimulate and engage in public discussion around aspects of population ageing.

MAINSTREAM MEDIA

CEPAR's media approach has been strategic and proactive in its attempt to position key research findings and studies which reflect CEPAR's multidisciplinary program.

WEBSITE

The CEPAR website continues to deliver in its key function as the gateway to our activity, with increased traffic in 2015 searching, via the homepage, for information about CEPAR events and the latest news items. The CEPAR Working Paper series also attracted significant interest. Other popular content included videos of presentations delivered at the 2015 'Interpreting the IGR' Public Forum organised by CEPAR. Almost half of all visitors were new to CEPAR.

The website is CEPAR's key platform for

- CEPAR announcements
- Accessing research publications including
 - Research Briefs
 - Fact sheets
- Promoting and reporting on CEPAR events
- Accessing media releases and independent media coverage

- Downloading publications, including annual reports
- Identifying staff and their areas of research interest
- Employment and scholarship opportunities

ONLINE MEDIA

Our social media presence has grown significantly, particularly through Twitter and LinkedIn. While our number of Twitter followers has increased by 60%, a more important measure is the level of engagement we have with those we follow and who follow us, with an increase in comments and retweets of content relating to ageing trends in Australia and worldwide.

Our newsletter subscribers are also engaging with our content, with specific interest in following up information about research publications and events. The subscriber base, which now exceeds 1700, grew significantly in 2015 following the 'Interpreting the IGR' Public Forum and the APRU Ageing in the Asia-Pacific Research Symposium. This increases web traffic flow and the opportunity to highlight further outputs and activities.

PRINT (NEWSPAPERS AND MAGAZINES)

The Australian
Time to move forward on reverse mortgages
3 December 2015
featuring CEPAR research
Inside Story
Is welfare sustainable?
26 November 2015 featuring Peter Whiteford

East Asia Forum Quarterly
Growing old before growing rich
Oct-Dec 2015 featuring Peter McDonald

Sydney Morning Herald
and 137 other media outlets nationally
Will China's 'two-child' policy affect Australia's economy?
30 October 2015
featuring Bei Lu

The Senior
No, we're not spending the inheritance
1 October 2015 featuring CEPAR research

The Senior
Stop thinking, start acting to maintain a healthy brain
September 2015 featuring CEPAR research

Sunshine Coast Daily
Could tablet devices ease loneliness for elderly?
2 September 2015 featuring Pradeep Ray

Women's Weekly
The science of ageing
September 2015 featuring Hal Kendig

Life Health Insurance News
Demographic projections 'often wide of the mark'
29 July 2015 featuring Rafal Chomik

The Sydney Morning Herald
Early job hopping can limit employment opportunities
23 July 2015 featuring Xiaodong Fan

The Sydney Morning Herald
Push is on for GST changes as premiers and territory leaders gather for pre-COAG retreat
22 July 2015 featuring John Piggott

The Canberra Times
NRMA road safety trust awards \$700,000 in final round of funding
14 July 2015 featuring Kaarin Anstey

Australian Financial Review
How to make people read their superannuation statements
8 July 2015 featuring John Piggott

Australian Financial Review
Super governance: draft law 'doesn't work', expert says
8 July 2015 featuring CEPAR research/event

Australian Financial Review
Bruce Billson dismisses super review urged by Productivity Commission
8 July 2015 featuring John Piggott

Shanghai Morning Post
Pension funds in China
29 June 2015 featuring Bei Lu

INTOUCH
The future of retirement
Autumn 2015 featuring John Piggott

The Retiree
Why are pensioners spending big?
3 June 2015 featuring CEPAR research

China Daily Asia
Gold in gray
29 May 2015 featuring Rafal Chomik

Australian Financial Review
Keating warns of debt 'wastelands' if dividend tax regime changes
4 May 2015 featuring John Piggott

Australian Financial Review
Comprehensive reform of retirement incomes urged
4 May 2015 featuring Hal Kendig

AFR Smart Investor
Why you need \$2m to retire comfortably
4 May 2015 featuring John Piggott

Australian Financial Review
\$1 million in super is enough to retire on...
2 May 2015 featuring John Piggott

Australian Financial Review
Negative gearing cost to taxpayers falls 31pc
30 April 2015 featuring John Piggott

Australian Financial Review
Super tax reforms on panel's table
23 April 2015 featuring John Piggott

The Australian
Youth surge into labour force to ease baby-boomer ageing burden
20 April 2015 featuring Peter McDonald

The Saturday Paper
Taxation, inequality and the wealth gap
11 April 2015 featuring Peter Whiteford

Australian Financial Review
Treasury Secretary ponders 'tax deductible' parents
9 April 2015 featuring CEPAR research/event

Australian Financial Review
Hockey flags automatic rises to pension age
9 April 2015 featuring CEPAR research/event

The Australian
Pension reform agreement in reach
9 April 2015 featuring CEPAR research/event

The Age
'Fundamental rethink' of super says Treasury Secretary
8 April 2015 featuring CEPAR research/event

Australian Financial Review
Fundamental rethink needed on super, tax and housing, says John Fraser
8 April 2015 featuring CEPAR research/event

AAP, The Australian, The Daily Telegraph, The Cairns Post, Townsville Bulletin, Geelong Advertiser, Weekly Times Now, The Courier Mail, Herald Sun, Perth Now, The Mercury, The Age, The West Australian, Daily Mail
Merit linking pension to life span
8 April 2015 featuring CEPAR research/event

Herald Sun, Weekly Times Now, The Courier Mail, The Mercury, Geelong Advertiser, Townsville Bulletin, news.com.au, Perth Now
Budget to do more with less
8 April 2015 featuring CEPAR research/event

BioScience Technology
At 50, each body mass index unit increase hastens Alzheimer's 6.7 months
5 April 2015 featuring Kaarin J. Anstey

The Sydney Morning Herald
Living longer, living alone
20 March 2015 featuring Peter McDonald

The Sydney Morning Herald and Beaudesert Times
Turning negative perceptions of old age on their head
7 March 2015 featuring Hal Kendig and Kate O'Loughlin

The Age
Ageing boom not ageing bust
4 March 2015 featuring Hal Kendig

The Nation
Thai labour market faces dual challenges
28 February 2015 CEPAR research/event

The Age
Seven score and ten... Hockey's own goal on longevity
26 February 2015 featuring CEPAR research

Dagens Naeringsliv
Pisk eller gulrot? (translated: Carrot or stick?)
12 February 2015 featuring John Piggott

The Sydney Morning Herald
Forget the wisecracks, can you afford to live to 150?
3 February 2015 featuring John Piggott

The Age and The Sydney Morning Herald
Intergenerational Report: Who is to blame for your retirement shortfall?
2 February 2015 featuring John Piggott and Rafal Chomik

The Age
Joe Hockey's comments on living to 150 a Sarah Palin moment, says Bill Shorten
20 January 2015 featuring Hal Kendig

RADIO AND TELEVISION

ABC 702 Nightlife
How will you cope with Aged Care when it comes time?
4 November 2015 featuring Hal Kendig

ABC Radio News The World Today
2CC Canberra
Third of Australians living below the poverty line
9 September 2015 featuring Hal Kendig

ABC Radio Rockhampton
ABC Radio Sunshine Coast
Could tablet devices ease loneliness for elderly?
2 September 2015 featuring CEPAR research

666 ABC Canberra
Road safety skills of older drivers under scrutiny as the population ages
13 August 2015 featuring Kaarin J. Anstey

2GB Money News
Australian demographic data
22 July 2015 featuring Rafal Chomik

ABC Radio National Life Matters
Creative alternatives to retirement living
17 July 2015 featuring Hal Kendig

2GB Money Talk
No changes to superannuation
1 July 2015 featuring John Piggott

ACCTV
What you know and what you do are different!
24 June 2015 featuring CEPAR research

ABC SA Breakfast
Federal Budget 2015
13 May 2015 with Rafal Chomik
PRIME7
Merit linking pension to life span
8 April 2015 featuring CEPAR research/event

Sky News
Treasurer encourages employers to consider mature workers
8 April 2014 featuring CEPAR research/event

ABC TV
North coast grey vote crucial for state election win
16 March 2015 featuring Rafal Chomik

720 ABC Perth
The Abbott Government's proposal to reform the aged pension system
10 March 2015 featuring Rafal Chomik
3AW Mornings
Interview with Hal Kendig, Chief Investigator CEPAR
20 January 2015

Radio Seoul
South Korea and the rapid rise of an ageing population
6 January 2015 featuring Hal Kendig

ONLINE

INDAILY - Adelaide
Action needed to tackle ageism in the workplace
3 November 2015 featuring Hazel Bateman

BusinessThink, Cuffelinks
The golden years: John Piggott on the economics of increased longevity
21 October, 5 November 2015 featuring John Piggott

BusinessThink
What is the optimal system for funding retirement?
23 September 2015 featuring CEPAR research

msn Money
UPDATE: Did Robert Redford get it wrong on retirement?
4 September 2015 featuring John Piggott

Morningstar MarketWatch
Did Robert Redford get it wrong on retirement?
2 September 2015 featuring John Piggott

InTheBlack
Are annuities part of your retirement plan?
August 2015 featuring Michael Sherris

Australian Policy Online
A visual history of demographic projections in Australia
22 July 2015 featuring CEPAR research

ANZIIF Journal
An older Australia
July 2015 featuring John Piggott

Money Morning
Why aren't Aussie companies employing more senior people?
29 June 2015 featuring CEPAR event

Property Observer
Super, savings meant to fund retirement, not be bequeathed; academic
24 June 2015 featuring CEPAR research

NewMatilda
Why the Greens were right to do a pension deal with Scott Morrison
23 June 2015 featuring
Rafal Chomik

ARCHway
ARC Centre of Excellence plays important role in interpreting the 2015 IGR
Winter 2015 by CEPAR

ASSA
ASSA Fellows in the news
June 2015 featuring
Peter McDonald

The Conversation
Super, savings meant to fund retirement, not bequests
23 June 2015 by Rafal Chomik

Australian Ageing Agenda
Removing the rations: best way forward, or a fiction?
June 2015 featuring Hal Kendig

Business Spectator
A voice of reason on super
5 June 2015 featuring
CEPAR research

The Conversation
Why pensioners are cruising their way around budget changes
3 June 2015 featuring
CEPAR research

InTheBlack
How will companies deal with a growing number of workers over 65?
1 June 2015 featuring
CEPAR research

Men's Style
Forever young
Winter 2015 featuring Hal Kendig

Business Spectator
Yes, a million in super is plenty
29 May 2015 featuring
CEPAR research

PSNewsOnline
Award for population professor
21 May 2015 featuring
Peter McDonald

BusinessThink
The retirement years: who is going to pay?
20 May 2015 featuring
George Kudrna

BusinessThink
Budget 2015: is it what the nation needs?
20 May 2015 featuring
John Piggott

HealthCanal
ANU research looks at how ageing affects driving
16 May 2015 featuring
Kaarin J. Anstey

Property Observer
'Fair game' pensioner asset test in 2015 budget
12 May 2015 featuring
Rafal Chomik

Australian Ageing Agenda
Budget: ACAR to end in move to market system in home care
May 2015 featuring Hal Kendig

The Conversation
Missed opportunities on coherent pension policy reform
13 May 2015 by Hal Kendig

fatcat.com.au, The Conversation,
Senior Au
Budget brief: will I lose my age pension?
13/17 May 2015 by Rafal Chomik

IUSSP News
Former IUSSP President Peter McDonald receives Irene B. Taeuber Award
April 2015 featuring
Peter McDonald

BusinessThink
Tapping super for first homes
22 April 2015 featuring John Piggott and Ralph Stevens

ABC
ABC Fact Check: Are superannuation tax breaks fair, or do they favour the rich?
21 April 2015 featuring George Kudrna



'INTERPRETING THE IGR' PUBLIC FORUM

Cuffelinks
Retirement catches most people unplanned
23 April 2015 featuring
Hazel Bateman

Yahoo!7 Finance
Merit linking pension to life span
8 April 2015 featuring
CEPAR research/event

Professional Planner
Murray Inquiry struggles with some complexities of retirement income
30 March 2015 featuring
John Piggott

Crikey
Intergenerational report overlooks the valuable contributions of older people
24 March 2015 featuring
CEPAR research

The Conversation
Intergenerational Report lays uneven path for tough policy choices
6 March 2015 by Peter Whiteford

The Conversation
Hockey looks to 'armies' in Intergenerational Report: Experts react
5 March 2015 featuring Hal Kendig

The Conversation
The Intergenerational Report and reforming the Age Pension
5 March 2015 by Rafal Chomik

Australian Ageing Agenda
When the figures don't tell the full story
4 March 2015 featuring
CEPAR research

PRESENTATIONS TO GOVERNMENT, INDUSTRY AND THE BUSINESS COMMUNITY

- 1 Bateman, H. (February 2015). Retirement Saving and Spending Decisions: Lessons from Academic Research. AMP Staff. Sydney, Australia.
- 2 Bateman, H. (October 2015). Addressing the Poverty Crisis Facing Older Women. ECH Staff. Adelaide, Australia.
- 3 Bateman, H. (October 2015). Addressing the Poverty Crisis Facing Older Women. Anti-Poverty Week Leaders Forum. Adelaide, Australia.
- 4 Byles, J.E. (July 2015). Health Services Use: Longitudinal Studies on Health, Evidence to Inform Government Policy and Programme Development. Department of Health. Canberra, Australia.
- 5 Kendig, H. (March 2015). Understanding the Potential Implications of CDC for the Sector. ACSA Board. Melbourne, Australia.
- 6 Kumru, C. (March 2015). An Overview of Tax and Transfer Systems. Treasury. Canberra, Australia.
- 7 Lu, B. (April 2015). China's Ageing and Long Term Care Research. Australian Human Rights Commission China Human Rights Technical Cooperation Program Delegation. Sydney, Australia.
- 8 Lu, B. (November 2015). Australian Pension and Health Care Systems. Ministry of Finance of China. Canberra, Australia.
- 9 McDonald, P. (August 2015). Meeting the Needs of Older People in Rural Indonesia: Situational Analysis and Policy Approaches. Indonesian National Planning Board. Jakarta, Indonesia.
- 10 McDonald, P. (December 2015). Chinese and Asian Demographic Transition. Joint Meeting of the Australian Treasury and Chinese Ministry of Finance.
- 11 McDonald, P. (March 2015). International Migration and Employment in Australia. Australian Department of Education. Canberra, Australia.
- 12 McDonald, P. (November 2015). Engaging with Asia: Demographics. 2015 ANZSOG Executive Fellows Program. Canberra, Australia.
- 13 Piggott, J. (April 2015). Introduction to CEPAR. Australian Human Rights Commission China Human Rights Technical Cooperation Program Delegation.
- 14 Piggott, J. (November 2015). CEPAR's Research Program. 2015 Research Showcase. Business Advisory Council Meeting. Sydney, Australia.
- 15 Piggott, J. and Chomik, R. (February 2015). Financial System Inquiry. AMP Staff. Sydney, Australia.
- 16 Piggott, J. and Dobrescu, L.I. (March 2015). ASAP: Australian Survey on the Ageing Population. Department of Social Services. Canberra, Australia.
- 17 Shao, A.W. and Sherris, M. (September 2015). Product Pricing and Solvency Capital Requirements for Long-Term Care Insurance. RAGS, Actuaries Institute. Sydney, Australia.

- 18 Sherris, M. (2015). Longevity Risk Management Research. AMP Senior Actuaries. Sydney, Australia

BRIEFINGS, COMMITTEE MEMBERSHIPS AND PARTICIPATION IN ROUNDTABLE AND PANEL DISCUSSIONS

- 1 Anstey, K.J. (August 2015). Panellist: In Conversation with the DCRC Directors: 'Thinking about answers to the Big Questions'. National Dementia Research and Knowledge Translation Forum 2015. Sydney, Australia.
- 2 Anstey, K.J. (June 2015). Panellist: New Zealand Science Ministry Review.
- 3 Anstey, K.J. (October 2015). Roundtable Participant: Chifley Research Centre Future Leaders Forum.
- 4 Anstey, K.J. (September 2015). Member of NHMRC National Dementia Institute Expert Advisory Panel Meeting.
- 5 Bateman, H. (April 2015). Briefed Heather Sturgiss, Commonwealth Treasury, on the Retirement Incomes Streams Review. Sydney, Australia.
- 6 Bateman, H. (July 2015). Briefed Paul Tilley, Commonwealth Treasury, on Tax White Paper. Sydney, Australia.
- 7 Bateman, H. (March 2015). Panellist: Retirement Incomes. CIFR Financial System Inquiry Workshop III: The Final Report. Sydney, Australia.
- 8 Byles, J.E. (November 2015). Roundtable Participant: Healthy Ageing in China. Launch of the Research Report on the Ageing Health Status and Responses in China and World Health Organization and National Health and Family Planning Commission Policy. Beijing, China.
- 9 Byles, J.E. (September 2015). Panellist: Think Tank on Sustainable Funding of Public Hospitals: Financial Incentives for Cooperation across Sectors. Brisbane, Australia.
- 10 Kudrna, G. (April 2015). Participant in Superannuation Policy in Post-retirement Phase. Productivity Commission Research Roundtable. Canberra, Australia.
- 11 Kudrna, G. (March 2015). Participant in AMP Roundtable: Future of Wealth. AMP. Sydney, Australia.
- 12 McDonald, P. (December 2015). Briefed Department of Immigration and Border Protection on the 2016-17 Australian Migration Programme. Canberra, Australia.
- 13 McDonald, P. (February 2015). Participant in meeting on the Review of the Deregulation of the Skilled Migration and Temporary Activity Visa Programmes, Department of Immigration and Border Protection. Canberra, Australia.
- 14 McDonald, P. (January 2015). Participant in meeting on Singapore Immigration Policy, National Population and Talent Division, Prime Minister's Office, Singapore.
- 15 McDonald, P. (July 2015). Briefed Department of Social Services on Old Age Discrimination in the Workforce. Canberra, Australia.
- 16 McDonald, P. (June 2015). Briefed Department of Immigration and Border Protection on Asylum Seekers. Canberra, Australia.
- 17 McDonald, P. (June 2015). Meeting with International Protection Committee, Department of Immigration and Border Protection. Canberra, Australia.
- 18 McDonald, P. (March 2015). Briefed East-West Population Institute on Explanations of Low Fertility in Countries of the World. Honolulu, Hawaii.
- 19 McDonald, P. (May 2015). Briefed Department of Immigration and Border Protection on the Migration Intake to Australia. Canberra, Australia.
- 20 McDonald, P. (May 2015). Briefed Productivity Commission on Migrant Intake into Australia. Canberra, Australia.
- 21 Ong, R. (November 2015). Member of the Inquiry Panel: Housing Policies, Labour Force Participation and Economic Growth. Australian Housing and Urban Research Institute. Melbourne, Australia.
- 22 Ong, R. (September 2015). Briefed Productivity Commission on Housing Decisions of Older Australians. Sydney, Australia.
- 23 Piggott, J. (2015). Member of the Committee for Sustainable Retirement Incomes Steering Group.

- 24 Piggott, J. (2015). Member of the PwC Housing Working Group.
- 25 Piggott, J. (February 2015). Participant in Roundtable: What Retirement Looks Like: The Challenges ahead and the Responses Needed to Tackle them. Conexus Financial/ Perpetual with the Shadow Treasurer, Chris Bowen. Sydney Australia.
- 26 Piggott, J. (July 2015). Meeting with Office of the Treasurer on Tax White Paper. Canberra, Australia.
- 27 Piggott, J. and Bryant, D. (August 2015). Briefed Kathryn Greiner Chair, NSW Ministerial Advisory Committee on the Ageing (MACA), on CEPAR Research. Sydney, Australia.
- 28 Piggott, J. (September 2015). Participant in Health and Wellbeing: The Challenges of Opportunities of Big Data Roundtable. Sydney, Australia.
- 29 Piggott, J. and Bryant, D. (July 2015). Briefed Michael Meurer, Department of Health, Queensland, on CEPAR Research. Brisbane, Queensland.
- 30 Piggott, J. and Bryant, D. (July 2015). Briefed Wayne Briscoe, Department of Communities, Child Safety and Disability Services, Queensland, on CEPAR Research. Brisbane, Queensland.
- 31 Piggott, J. and de Cure, M. (April 2015). Briefed Simon Henderson, Bain and Company, on CEPAR Research. Canberra, Australia.
- 32 Piggott, J. and de Cure, M. (June 2015). Briefed Martin Bowles, Secretary of the Department of Health and Finn Pratt, Secretary of the Department of Social Services, on CEPAR Research. Canberra, Australia.
- 33 Piggott, J. and de Cure, M. (July 2015). Briefed Michael Thawley, Secretary of the Department of the Prime Minister and Cabinet, on CEPAR Research. Canberra, Australia.
- 34 Piggott, J. and de Cure, M. (August 2015). Briefed John Fraser, Secretary of the Treasury, on CEPAR Research. Canberra, Australia.
- 35 Piggott, J. and de Cure, M. (August 2015). Briefed Peter Varghese, Secretary of the Department of Foreign Affairs and Trade, on CEPAR Research. Canberra, Australia.
- 36 Piggott, J. and de Cure, M. (October 2015). Briefed Phil Lowe, Reserve Bank of Australia, on CEPAR Research. Canberra, Australia.
- 37 Piggott, J., Bateman, H. and Sherris, M. (March 2015). Briefed Michael Rice and Nathan Bonarius, Rice Warner. Sydney, Australia.
- 38 Piggott, J., Chomik, R. and Kudrna, G. (November 2015). Briefed NSW Treasury on CEPAR Research and Collaboration Opportunities. Sydney, Australia.
- 10 Cumming, R.G. (September 2015). Mongolia and Myanmar – What on Earth do they have in Common? APRU Ageing in the Asia-Pacific Research Symposium. Sydney, Australia.
- 11 Cumming, R.G. (October 2015). Health and Aged Care in Australia. Mongolian National Gerontology Center. Ulaanbaatar, Mongolia.
- 12 Kendig, H. (April 2015). Panellist: Retirement and Health. Interpreting the IGR. Canberra, Australia.
- 13 McDonald, P. (April 2015). Demography and the IGR. Interpreting the IGR. Canberra, Australia.
- 14 McDonald, P. (May 2015). International Migration and Employment in Australia. University of the Third Age. Canberra, Australia.
- 15 McDonald, P. (November 2015). The History of Demography at the Australian National University. The Inauguration of the ANU School of Demography. Canberra, Australia.
- 16 Piggott, J. (April 2015). Panellist: Aligning Tax Policy with Financial Systems Objectives. AFR Banking and Wealth Summit. Sydney Australia.
- 17 Piggott, J. and Chomik, R. (2015). Payout Design. ASIC Annual Forum, Sydney, Australia.
- 18 Whiteford, P. (April 2015). Retirement and Health Panel. Interpreting the IGR. Canberra, Australia.

PUBLIC TALKS

- 1 Anstey, K.J. (May 2015). Ageing, Health and Wellbeing Research. U3A. Canberra, Australia.
- 2 Anstey, K.J. (June 2015). Panellist: COTA Forum on Elder Abuse. Canberra, Australia.
- 3 Anstey, K.J. (September 2015). Research to Improve Older Driver Safety. Symposium ACT Road Safety Forum: Moving Forward Together. Canberra Australia.
- 4 Anstey, K.J. (December 2015). Knowledge Translation in Population Health – how we make evidence accessible to policy makers. Wicking Dementia Research and Education Centre. Hobart, Tasmania.
- 5 Bateman, H. (April 2015). Panellist: Where do we go from here? Interpreting the IGR. Canberra, Australia.
- 6 Bateman, H. (July 2015). Panellist: Richer or Poorer – Gender, Income and Wealth. COTA Australia National Policy Forum. Canberra, Australia.
- 7 Byles, J.E. (July 2015). Panellist: A Quality Life – Gender, Health and Wellbeing. COTA Australia National Policy Forum. Canberra, Australia.
- 8 Byles, J.E. (November 2015). Aged Care Facility Design and Operation. 1st Australia-China International Aged Care Summit. Beijing, China.
- 9 Chomik, R. (July 2015). An Ageing Australia: Preparing for the Future. Models to Support the Ageing Workforce: Reducing Staff Risk and Maintaining Capacity. Melbourne, Australia.

CENTRE FINANCE

CONSOLIDATED FINANCIAL STATEMENT 2011–2015

INCOME	2011 (\$)	2012 (\$)	2013 (\$)	2014 (\$)	2015 (\$)
ARC Centre Grant distributed as follows:					
University of New South Wales	1,203,350	1,344,910	1,287,115	1,326,010	1,349,778
Australian National University	313,000	330,162	582,759	600,372	611,108
University of Sydney	312,000	329,107	101,872	104,952	106,829
ARC Post Award Funding distributed as follows:					
University of New South Wales		205,026	205,026	40,026	40,026
Australian National University		255,000	340,000	85,000	
NSW Science Leveraging Fund distributed as follows:					
University of New South Wales		160,674	119,704		
University of Sydney		186,935	63,065		
University of New South Wales	678,000	678,000	678,000	678,000	678,000
Australian National University	130,250	13,730	350,420	221,380	221,380
University of Sydney	130,000	130,000	38,900	38,750	38,750
Department of Families, Housing, Community Services and Indigenous Affairs	50,000				
Department of Innovation, Industry, Science & Research			44,000	-11,205	
Department of Health and Ageing	45,455				
Commonwealth Treasury	50,000	50,000	50,000	50,000	50,000
Medibank	50,000		36,364		-1,563
AMP	50,000	50,000	50,000	50,000	50,000
PwC			50,000	50,000	50,000
Emerging Researchers in Ageing Conference					
Registration Fees	10,255				
Sponsorship	6,382	-2,000			
Academy of Social Sciences Australia		6,500			
Research Institute for Policies on Pension and Aging, Japan			56,000		
CEPAR International Conference Registration Fees			10,848		
UNSW Contestable Funds/Strategic Funds			27,226	195,371	351,831
Superannuation Colloquium Registration Fees				23,164	22,742
Total Income	\$3,028,692	\$3,738,044	\$4,091,299	\$3,451,820	\$3,568,881

NOTE 1: A total of \$250,000 was received in 2013, covering the period 2013–2017. \$50k is reported for 2015.

NOTE 2: Retrospective GST correction.

NOTE 1
NOTE 2

EXPENDITURE	2011 (\$)	2012 (\$)	2013 (\$)	2014 (\$)	2015 (\$)
Salaries	813,109	2,254,769	3,358,535	2,695,560	2,775,390
Scholarships	-	105,324	124,475	126,163	101,737
Travel	63,487	291,975	568,550	324,959	363,765
Emerging Researchers in Ageing initiative: annual contribution	60,000	69,803	54,771	50,783	85,850
Events	25,250	60,387	100,684	56,371	36,869
Other research related expenses	16,852	37,766	83,099	46,131	34,445
Recruitment and relocation expenses	16,935	47,648	5,344	8,636	26,409
Centre administration, consumables and IT maintenance	30,418	38,507	36,156	30,364	28,606
Equipment	16,738	49,336	24,743	9,391	40,287
Website, branding and marketing	48,403	94,800	86,273	67,805	50,150
Total Expenditure	1,091,192	3,050,315	4,442,631	3,416,163	3,543,508
Opening balance at the beginning of the year	-	1,937,500	2,625,229	2,273,897	2,309,554
Closing balance as at the year end	1,937,500	2,625,229	2,273,897	2,309,554	2,334,927

ESTIMATES OF FUTURE INCOME & EXPENDITURE

INCOME

The Centre's main source of funds in 2016 will continue to be the Australian Research Council (ARC). The administering and collaborating organisations, as well as the partner organisations will continue to make contributions at their contracted rates. UNSW will provide in 2016 an additional \$617,410 to support the hiring of research personnel associated with the establishment of a CEPAR research hub focused on population ageing in China plus \$50,000 supplementary support for research fellows based in CEPAR who are funded by a Laureate Fellowship grant. In combination, these contributions total \$3.7 million. Funds from other ARC grants held by Centre personnel will generate additional revenue.

EXPENDITURE

In 2016 the Centre plans to continue to fund a number of successful initiatives implemented in previous years as well as expand its engagement with stakeholders and the wider community. Salaries for ECRs will continue to account for a large portion of the Centre budget. We anticipate that we will spend about \$4.1 million in total, of which approximately \$3.3 million will be allocated to salaries and scholarship stipends. The activities described below will draw on 2016 income as well as funds carried forward from 2015.

PERSONNEL

It is anticipated that the Centre will spend approximately \$2.7 million in 2016 on research personnel, most of whom will be ECRs.

It is expected that 14 students will be supported by CEPAR scholarships in 2016 at a total cost of \$102,000. This includes scholarships for undergraduate and PhD students.

MENTORING OPPORTUNITIES FOR ECRS AND STUDENTS

CEPAR will continue to support the Emerging Researchers in Ageing (ERA) initiative in 2016 as well as offer workshops/master classes for ECRs and PhD students.

Funds will continue to be made available to support PhD student conference participation and provide opportunities for both research fellows and PhD students to spend time at one of our international partner organisations with the aims of enhancing their career experience, and building links between these key international hubs of ageing research and the next generation of researchers. CEPAR will also provide financial support for statistical training for PhD students.

The anticipated cost of these initiatives in 2016 is approximately \$170,000.

SUPPORT FOR PARTNER AND ASSOCIATE INVESTIGATORS

Funds will continue to be made available to support the involvement of our partner and associate investigators in the research program. It is anticipated that approximately \$110,000 will be spent in 2016 on travel and research assistance to support the development and execution of collaborative research projects.

OUTREACH AND DISSEMINATION OF RESEARCH FINDINGS

Conferences and workshops showcase the Centre's research, increase our international footprint, and provide opportunities for our industry partners to engage with the Centre. A roundtable on the development of a national longitudinal survey on the ageing demographic; a joint policy dialogue hosted in conjunction with the Crawford School of Public Policy; two symposia, one focused on age friendly cities and the other on cognitive health; the 23rd Annual Colloquium of Superannuation Researchers; plus a number of workshops are some of the events planned for 2016.

Leading international experts will visit the Centre under CEPAR's Distinguished Visitor Program and funds will be available for CEPAR personnel to visit international partners and present research findings at major conferences. A research brief on retirement incomes aimed at the wider community is also planned. It is expected that these activities will be supported by a combination of industry and collaborating university funds. Total estimated expenditure for outreach activities in 2016 is \$390,000.

OTHER

About \$600,000 will be spent on supporting the operation of the Centre. This includes salaries for administrative personnel, equipment, materials and other costs associated with the running of the Centre.

An estimated additional \$50,000 will be spent on support for surveys and data collection.

NEW GRANTS, AWARDS, PRIZES AND RECOGNITION

NEW GRANTS AWARDED TO RESEARCH TEAMS WHICH INCLUDED CEPAR CHIEF INVESTIGATORS

PIGGOTT, J., SHERRIS, M. AND YAO, X.
ARC Linkage Grant 2015:

Long-term care financing and policy: Insights from a pilot program in China

Total amount awarded: \$130,000

KERRIDGE, I., STEWART, C., CUMMING, R.G., EASTEL, S., KOWAL, E., WALDBY, C., LIPWORTH, W., CRITCHLEY, C., ANDERSON, W. AND MARLTON, P.
NHMRC Project Grant:

Biobank networks, medical research, and the challenge of globalisation

Total amount awarded: \$763,644

PIGGOTT, J. [ONE OF 50 RESEARCHERS AND ONLY NON-CHINESE PARTICIPANT]
Major National Science Foundation of China:

The basic scientific studies in ageing society

Total amount awarded: RMB 18,000,000

MCDONALD, P., TEMPLE, J. AND RICE, J.
Department of Social Services:

National Transfer Accounts for Australia

Total amount awarded: \$236,500

MCDONALD, P. AND SETYONALURI, D.
Australia Indonesia Centre:

Indonesian Data Archiving Project

Total amount awarded: \$15,387

NEW GRANTS AWARDED TO RESEARCH TEAMS INCLUDING CEPAR ASSOCIATE INVESTIGATORS ON TOPICS RELATED TO POPULATION AGEING INCLUDE:

BATEMAN, H., ORTMANN, A., THORP, S., DOBRESCU, L.I., NEWELL, B. AND DAVIS, J.
ARC Linkage Grant 2015:

Super financial security: Improving flexibility, trust and communication

Total amount awarded: \$475,385

BATEMAN, H., ECKERT, C., LOUVIERE, J. AND THORP, S.
Financial Literacy Australia Grant:

The relationship between financial literacy, attitudes and appropriate financial behaviour

Total amount awarded: \$120,000

BYLES, J.E., DOLJA-GORE, X., CHOJENTA, C., NAIR, K. AND TAVENER, M
NHMRC Project Grant:

Long term evaluation of uptake, impact and outcomes of the 75+ Health Assessment

Total amount awarded: \$199,875

DELBAERE, K., CLEMON, L., ZIJLSTRA, R., CLOSE, J., LORD, S. AND HOWARD, K.
NHMRC Project Grant:

Evaluating 'Standing Tall' – an engaging home-based exercise program using mobile technology for maximizing long-term adherence and preventing falls in older people: Randomized controlled trial

Total amount awarded: \$868,799

KIELY, K.M.
NHMRC Early Career Fellowship:

Estimating and alleviating the impacts of age-related sensory decline

Total amount awarded: \$309,436

WINDSOR, T.D., AND LUSZCZ, Office for the Ageing, South Australia:

Successful ageing: Building resilience in individuals and communities

Total amount Awarded: \$44,054

AWARDS, PRIZES AND RECOGNITION

KIMBERLY ASHBY-MITCHELL
Deeble Policy Institute Summer Scholarship 2015

JULIE BYLES
Research Excellence Award from the Hunter Medical Research Institute

Fellow of the Australian Academy of Health and Medical Sciences (FAAHMS)

CASSIE CURRYER
Vice-Chancellor's Award for Outstanding Research Candidate at the University of Newcastle

HAL KENDIG
Chairman's award 'for outstanding contribution to the development of gerontology and service to the Asia/Oceania Region of the IAGG'

KIM KIELY
Australian Association of Gerontology RM Gibson Award

OLIVIA S. MITCHELL
Named as one of the Top 10 Women in Economics by the World Economic Forum

PETER MCDONALD
Irene B. Taeuber Award, Population Association of America

ROSILENE WAERN
Young Investigator Award for poster presentation at 9th Asia Pacific Conference on Clinical Nutrition, Kuala Lumpur, Malaysia

SHANG WU
Best PhD Oral Presentation award at APRU Ageing in the Asia-Pacific Research Symposium

VASOONTARA YIENPRUGSAWAN
2016 Endeavour Research Fellowship

CONTACT DETAILS

**UNIVERSITY OF NEW SOUTH WALES
(ADMINISTERING ORGANISATION)**

Level Three, East Wing
223 Anzac Pde
Kensington Campus
UNSW Australia
Sydney NSW 2052

E cepar@unsw.edu.au
T +61 (2) 9931 9202
W cepar.edu.au

AUSTRALIAN NATIONAL UNIVERSITY NODE

Centre for Research on Ageing,
Health and Wellbeing
Florey, Building 54,
Mills Road
Australian National University
ACT 0200 Australia

E pamela.simpkins@anu.edu.au
T +61 (2) 6125 1535

Crawford School of Public Policy
ANU College of Asia & the Pacific
J.G. Crawford Building,
Australian National University
ACT 0200

E peter.mcdonald@anu.edu.au
T +61 (2) 6125 2129

UNIVERSITY OF SYDNEY NODE

Ageing, Work and Health Research Unit
Faculty of Health Sciences
Level 3, Building M
Cumberland Campus C42
East St
Lidcombe NSW 2141

E heather.kelly@sydney.edu.au
T +61 (2) 9351 9989

School of Public Health
Sydney Medical School
Edward Ford Building A27
The University of Sydney NSW 2006

E jessica.wang@sydney.edu.au
T +61 (2) 9351 2885

DESIGN

Peter Campbell Design

EDITING

Anne Gordon, Director of Operations, CEPAR

PHOTOGRAPHY

Daniel Coelho, Natural Exposure; Cath Muscat Photography;
Stuart Hay, Australian National University; Mark Graham; and
Jenny Evans.

PRINT

Finsbury Green