On the occasion of several anniversaries (40 years population research at IIASA, 40 years Vienna Institute of Demography and 5 years Wittgenstein Centre), the Centre hosted a high level symposium under the title "Demography that Matters". The symposium took place on 9 September 2015 at the new campus of the Vienna University of Economics and Business (WU). The event included an extended presentation of research highlights and plans followed by festivities. Besides the three leaders of IIASA, ÖAW and WU, high level politicians, Rudolf Hundstorfer (Minister for Social Affairs at that time) and Sophie Karmasin (Minister for Family at that time) gave speeches. The Centre directors concluded the festive event with a roundtable discussion on how demography matters in the 21st century.

Demography and Democracy
Wittgenstein Centre Opening Symposium (2011)

The Symposium held at the Parliament in Vienna, Austria, on 29 September 2011, was in celebration of the opening of the new Wittgenstein Centre for Demography and Global Human Capital (WIC). The inaugural Wittgenstein Symposium involved scientists, policy advisors and academics from the developed and the developing world. The event explored the relationship between demography, education, and democracy across continents and cultures. Participants also discussed the benefits of focusing international development priorities toward education and health.

The opening ceremony can be watched online.

Demography that Matters
Celebrating 40 years of Population Research (2015)

On the occasion of several anniversaries (40 years population research at IIASA, 40 years Vienna Institute of Demography and 5 years Wittgenstein Centre), the Centre hosted a high level symposium under the title "Demography that Matters". The symposium took place on 9 September 2015 at the new campus of the Vienna University of Economics and Business (WU). The event included an extended presentation of research highlights and plans followed by festivities. Besides the three leaders of IIASA, ÖAW and WU, high level politicians, Rudolf Hundstorfer (Minister for Social Affairs at that time) and Sophie Karmasin (Minister for Family at that time) gave speeches. The Centre directors concluded the festive event with a roundtable discussion on how demography matters in the 21st century.

The Symposium at the plenary hall of the Austrian Parliament
Photo: Parlamentsdirektion/Carina Ott
Sir David King spoke at the event
Photo: Parlamentsdirektion/Carina Ott

You may also read this report online to be able to access all links: www.wittgensteincentre.org/en/reports.htm
Message from the Directors

The Wittgenstein Centre for Demography and Global Human Capital (IIASA, VID/ÖAW, WU), abbreviated as WIC, was established on the basis of the Wittgenstein Award 2010 with the vision to use the enormous and still untapped potential of multi-dimensional demographic methods developed in and around IIASA during the 1970s and 80s to analyse and forecast broader socioeconomic changes that explicitly include into the models more relevant demographic characteristics than just the conventional age and sex. In particular, the theoretical and empirical analysis of changes in educational attainment (as a proxy for human capital) is a promising direction of research which helps to make demography more relevant for answering a broad range of important social, economic and even human-environment questions.

Another unifying theoretical concept is the model of “Demographic Metabolism” (introduced by Ryder and operationalised by Lutz) which describes how societies change as a function of young cohorts with different characteristics replacing older ones. It formalises the widely held view that the entry of new generations brings change into organisations and societies. Combined with multi-dimensional demographic methods it becomes a powerful tool for forecasting socioeconomic change. It may be the only model in the social sciences with predictive power for decades.

Over the past years this multi-dimensional approach has already shown its immediate practical potential for dealing with key policy challenges of our rapidly changing world, along the way providing new and sometimes surprising answers to such questions as: What is the desirable level of fertility and how can it be measured and assessed? Will population ageing actually result in the often feared massive increase in disability? Is population ageing a threat to economic wellbeing? Does Europe need migrants for demographic reasons? Can education help to slow cognitive ageing and what should be the priority investments for our ageing Western populations? What are the drivers of continued population growth in Africa and what are the best investments for enhancing the adaptive capacity for coping with already unavoidable climate change? Using these multi-dimensional demographic approaches researchers at the WIC deal with many such questions in an innovative way.

Based on this joint vision, the WIC was established to bundle the existing strengths in demography in the Vienna area to create the critical mass for a globally leading research centre. It is not a separate legal entity but rests on three pillars (IIASA, VID/ÖAW and WU) which will be described on the following pages. Over the first seven years of its existence it has already had a significant impact in terms of publications and advancing our vision. On top of its rather limited core funding it has acquired significant competitive funding, not least in the form of already eight ERC grants. In this brochure, we provide an overview over these activities and hope you find it an interesting read.

WIC Directors

Wolfgang Lutz is founding director of the Wittgenstein Centre. He holds a PhD in demography from the University of Pennsylvania and joined IIASA in October 1988, where he is program director of the World Population (POP) Program. Since 2002 he is also director of VID and since 2008 full professor of applied statistics (part time) at WU. He is also professional research fellow at the Oxford Martin School (UK) and at Shanghai University (China). He works on fertility, population projections, population-development-environment interactions and human capital formation. He is member of the Austrian Academy of Sciences, the Finnish Societas Scientiarum, the German National Academy Leopoldina, the US National Academy of Sciences, and the World Academy of Sciences (TWAS).

Jesus Crespo Cuaresma is director of economic analysis at the Wittgenstein Centre and has an oversight function of three WIC research groups. He is professor of economics at the Vienna University of Economics and Business (WU), and research scholar at the International Institute of Applied Systems Analysis (IIASA). He studied Economics at the University of Sevilla (Spain) and received his PhD from the University of Vienna. He has published numerous articles in renowned scientific journals and acts as a scientific consultant to the World Bank and the Austrian Institute of Economic Research. Professor Crespo Cuaresma’s scientific fields of interest include applied econometrics, macroeconomics, economic growth, human capital and economic policy.

Alexia Fürnkranz-Prskawetz is director at the Wittgenstein Centre and executive director at VID, the largest institute of the WIC. She is also professor at the Institute of Statistics and Mathematical Methods in Economics at the Vienna University of Technology. Professor Fürnkranz-Prskawetz holds a doctorate in mathematical economics and a second doctorate (Habilitation) in population economics and applied econometrics from the Vienna University of Technology. She works in the field of the economics of population and individual ageing, long run economic growth, agent based models and environmental economics. Alexia Fürnkranz-Prskawetz has published numerous articles in refereed scientific journals and edited special issues of economic and demographic journals.

Raya Mutabak is director of population, environment and sustainable development at the Wittgenstein Centre and also research group leader of the corresponding WIC research group. She holds a DPhil in sociology from the University of Oxford (UK). She is a senior lecturer (associate professor) in geography and international development at the School of International Development, University of East Anglia (UK). Her research focuses on differential vulnerability, climate change adaptation and mitigation, health, migration and education and sustainable development. She has published numerous articles in refereed scientific journals and has conducted commissioned research for UNICEF and UNESCO.

Sergei Scherbov is director of demographic analysis at the Wittgenstein Centre. Demographic analysis has a very prominent role among activities of the Centre, as the size, composition and structure of populations affect almost every aspect of our lives. Demographic analysis is about methods of measuring dimensions and dynamics of populations. Development of population size and its composition to a large extent defines the whole subject of demography. Sergei Scherbov is deputy program director of IIASA’s World Population Program (POP) and research group leader of WIC’s population ageing group. He is also affiliated professor at the College of Population Studies, Chulalongkorn University (Thailand).
International Institute for Applied Systems Analysis – IIASA: Founded in 1972, IIASA is an international scientific institute that conducts policy-oriented research into problems that are too large or complex to be solved by a single country or academic discipline. IIASA is non-governmental in nature and has currently 24 national member organisations (national academies or research councils) to scientifically address difficult problems like climate change that have a global reach and can be resolved only by international cooperative action. Funded by research funding agencies in Africa, the Americas, Asia, Europe, and Oceania, IIASA is independent and unconstrained by political or national self-interest.

World Population Program (POP): Since 1974 IIASA’s research agenda has included an explicit focus on population analysis. Wolfgang Lutz followed Andrei Rogers (1974-84) and Nathan Keyfitz (1984-94) in 1994 as leader of the World Population Program. In the context of the Wittgenstein Centre POP focuses primarily on global population trends and the analysis of population in sustainable development. Human population matters for sustainable development in two important ways. First, it is an agent of change, bringing about many of the environmental, economic, and social changes that continually challenge the sustainability of our current development paths. Second, the human population and its living conditions are the ultimate objects of development, with long-term human survival, health and well-being serving as criteria for judging whether development is sustainable.
Vienna Institute of Demography (VID): Founded in 1975 under the name Institut für Demographie, the institute was closely linked to the Austrian Central Statistical Office whose president was also the first director of the institute. Later on the head of the demographic branch of the Statistical Office, Richard Gisser, followed as director. In 2001 the ÖAW received additional government funding and decided that the demographic institute should broaden its focus and become more international with Wolfgang Lutz as external director. In 2002 the institute changed its name to Vienna Institute of Demography (VID) recruiting scientists from around Europe and developing a specific focus on comparative European demography.

In summer 2015 the Centre celebrated 40 years population research at IIASA and VID as well as the 5 year anniversary of the Wittgenstein Centre at its high level symposium “Demography that matters”. This event took place on 9 September 2015 at the new campus of the Vienna University of Economics and Business. The ceremonial act also acknowledged the opening of the new premises from both, VID and WU’s Demography Group, in building D5 at Campus WU (see p. 3).

Vienna University of Economics and Business – WU: The mission of the Vienna University of Economics and Business (German: Wirtschaftsuniversität) goes well beyond providing a high-quality education for the university’s over 23,000 students, which makes it Europe’s biggest Business School. Research-led teaching is important to WU. This includes not only strengthening WU’s profile as a research university, but also participating in public discourse with society and exchanging knowledge with all relevant stakeholders.

Demography Group: In 2008 Wolfgang Lutz was appointed professor of applied statistics (full professor - part time) at WU and belongs to the Department of Socioeconomics. The main reason for seeking this appointment was the need for the growing demographic research community in the Vienna area to have a university link through which academic degrees can be offered and young researchers be recruited. Population is taught as a concentration area in the English MSc Program Socio-Ecological Economics and Policy (SEEP) with annually around 30 students choosing this concentration area and 5-8 writing their MSc thesis in demography. Recently there have been 2-3 doctorates in demography per year, and on average one habilitation (qualification for full professorship in the German-speaking academic system).
The scientific goal of the Wittgenstein Centre’s research is to significantly advance the global frontier in modelling and understanding the drivers and consequences of changing population structures around the world – past, present and likely future. We explicitly address multiple dimensions of population structures that go beyond the conventional analysis by age and sex. Substantively, we focus particularly on the roles of human capital formation and global population ageing and on the interactions of these trends with the social, economic and natural environment. We use the rich methodological toolbox of demography and in particular the methods of multi-dimensional population dynamics for quantitatively addressing the “quality dimension” of changing human populations. As shown in the chart, the research of WIC can be structured into four broad research themes that together form a coherent and comprehensive research agenda. These four themes focus on human capital formation and depletion, on modelling population dynamics, and on studying the interactions with the social, economic and natural environment. This focus on human capital is based on the broader understanding of demography as studying the changing size and structures of populations (definition according to IUSSP, the International Union for the Scientific Study of Population) notably by important sources of heterogeneity that go beyond the conventional age and sex. It applies the methods of multi-dimensional population dynamics (developed in and around IIASA in the 1970s) and gives special attention to education, health and labour force participation as constituents of human capital.
The Family and Fertility research group studies global fertility trends and family changes in low-fertility countries and regions. Our strength lies particularly in applying a comparative perspective which puts emphasis on the institutional, socio-economic and cultural determinants of family plans and their realisation. Our recent work has focused on educational differentials in fertility preferences and family behaviour across countries and over time. These topics are studied within a broader context of intergenerational relations and the shift to later parenthood. We are also engaged in analysing the consequences of the recent economic recession on marriage and fertility in Europe. The group is developing life course and couple-level perspectives on family, reproductive plans, gender division of work and fertility as well as their interrelations. Our research is actively supported by the development of several international open-access databases, especially the Human Fertility Database (HFD) and the Human Fertility Collection (HFC). – two collaborative projects with the Max Planck Institute for Demographic Research in Rostock – and a database on Cohort Fertility and Education (CFE) established in 2013.

Projects

Early Fertility Desires: Hidden Drivers of Union Formation? – FERTUFORM
PI: Natalie Nitsche | FWF/M4288-Ge6 | 2017–2019
This project aims at studying and understanding how childbearing preferences early in life may drive union-formation outcomes.

FamiliesAndSocieties
This work packageanalysed the impact that family-related policies have on the long run on well-being and on satisfying family needs.

Fertility, Reproduction and Population Change in 21st Century Europe – EURREP
PI: Tomas Sobotka | ERC-2011-256238 | 2012–2017
This project analysed key issues related to fertility, reproduction and their implications in low-fertility societies.

Couples and Childbearing: New Approaches to the Study of Fertility Outcomes and Family Formation Across Europe – COUPPER
In order to understand childbearing behaviour, partnership formation and the characteristics, behaviour and interactions of both partners were included.

Reproductive Decision-making and Human Capital – ReCap
PI: Maria Rita Testa | FWF/V318-Elise Richter Grant | 2014–2016
This project aimed at investigating the dynamics between reproductive decision-making and human capital.
2 Demography of Education

Research Group Leader: Bilal Barakat

This research group uses mixed methods to conduct population-centred analyses of education policy and development, both globally and in a local context. Our research on education across the world takes the view that individual education behaviour and outcomes, as well as their aggregate dynamics at the population level, can usefully be studied as demographic events and characteristics. This leads to both a substantive focus on the role of education in demographic processes such as the fertility and mortality transition and migration, but also to the application and transfer of demographic methods of analysis to the field of education. We combine this firm grounding in quantitative demographic analysis with a range of social science methodologies of a qualitative nature, to take account of the particularities, conventions, and concerns of the education domain. This combination of methodological perspectives allows us to gain new insights on the demographic, socio-economic, long-term, and spatial dimensions both of international educational development in low-income and transitional countries and of higher education in particular countries with high levels of schooling.

Projects

Global Migration and Educational Expansion: Scenarios and Projections of Population-Level Interactions – MIGRED
Pt: Bilal Barakat
UNESCO Global Education Monitoring Report (GEMR) 2017–2018

The purpose of this cross-country analysis of data on international migration and education is to produce a background report for the Global Education Monitoring Report (GEMR).

Education and the Sustainable Development Goals (SDGs)

1) A research study for the International Commission on Financing Global Education Opportunity provided a comprehensive review of synergies and trade-offs between SDG 4 on education and other SDGs, as well as a projection-based assessment of the feasibility of meeting the education SDGs.

2) A research study for the Global Education Monitoring Report (GEMR), assessed the potential contribution of an ambitious, but resource-constrained educational expansion path to selected other health and economic development goals.

Age-period-cohort Perspectives on Educational Measurement

This research projects looks at international education statistics that are frequently misinterpreted as relating unambiguously to specific reporting years. In reality, and similarly to demographic events, the underlying processes are best understood as varying along age, time (period), and cohort dimensions, and the correct interpretation of single-period summaries as ‘synthetic cohorts’ is subject to certain constraints.
The main objective of the research group on Health and Longevity (HELO) is to disentangle the complex causation of healthy ageing. We want to better understand the factors and causal mechanisms that enable some groups of people to live longer and healthier than others. Existing knowledge about the central drivers of healthy ageing is still incomplete. This partial knowledge is like a huge jigsaw puzzle of which many—not all—pieces are at hand, but without knowing for many of them the right position in the big overall picture. Our research is organized toward the aim to add key pieces to this puzzle, which will contribute to a better understanding of the determinants of healthy ageing. The work of HELO can be characterised by four specific features which distinguish our studies inside the community of health and mortality researchers: (1) Concentration on differentials in health and longevity with a particular focus on quasi-experimental settings, (2) introduction of new hypotheses to explain extent and trends of differentials in health and longevity, (3) Estimation of levels and differentials in health and longevity in terms of life years, (4) Application-oriented development of innovative methods to estimate life expectancy and health expectancy for specific subpopulations.

Projects


PI: Marc Luy | City of Vienna | 2016–2017

The absolute and relative increase of retired people entails increasing pressure on the social security systems. Policymakers intend to reduce this burden by increasing the statutory pension age. This study investigated the effects of a longer working life time on health and life quality of order members, who do not have a classic pension age, to better assess the consequence of a longer working life time on health and life quality of order members, by increasing the statutory pension age. This study investigated the effects on the social security systems. Policymakers intend to reduce this burden by increasing the statutory pension age. This study investigated the effects of a longer working life time on health and life quality of order members, who do not have a classic pension age, to better assess the consequence of a longer working life time on health and life quality of order members, by increasing the statutory pension age. This study investigated the effects on the social security systems. Policymakers intend to reduce this burden by increasing the statutory pension age.


PI: Marc Luy | Horizon 2020 Programme: 725187-LETHE-ERC-2016-COG | 2017–2022

This project aims at extending our knowledge on the technical characteristics and the usability of the Health Expectancy indicator. It is presented on page 35.

HEMOX

The Male-Female Health Mortality Paradox

What is the subject of the research? Why is it of interest?

The main objective of the project was to advance the understanding of the “gender and health paradox”, describing the phenomenon that women live longer than men but experience worse health. We extended the state-of-the-art by the “CroHaM hypothesis” (Cross-sectional association between Health and Mortality) which states that the well-established longitudinal health compression and health expansion effects exist equivalently in a cross-sectional context regarding health differences between populations with different levels of life expectancy. Consequently, we hypothesised that women spend more life years in poor health than men not because they are female, but because they are the sex with higher life expectancy.

How did you approach the research? We tested our hypothesis in a series of quasi-experimental settings in which we investigated the association between longevity and life years spent in poor health across subpopulations with different levels of life expectancy and corresponding gender gaps. The initial tests were done with Catholic nuns and monks for whom we collected information about health and mortality by two surveys conducted in 2012 and 2014. In a next step, we extended this quasi-experiment to other subpopulations of the general population with different levels of life expectancy. In total, we could identify more than 30 subgroups for which we estimated life expectancy and healthy life years.

What did you find out (so far)? Why are the results important?

In line with the CroHaM hypothesis we found that the disadvantage of women in healthy life years is mostly a direct consequence of their advantage in longevity. The remaining disadvantages of women in healthy life years after controlling for this “longevity effect” are eliminated when gender differences in health reporting are adjusted for. Based on these results we developed an explanation model for the “gender and health paradox” which does also advance our general understanding of the mechanisms behind healthy ageing. This makes the project outcomes highly relevant for society because they can influence corresponding public health measures.

Key facts

PI: Marc Luy
Time frame: 01.04.2011–30.09.2015
Website

This project has received funding from the European Research Council under the European Union’s Seventh Framework Programme (FP7/2007-2013) / ERC grant agreement no 265265.
How did you approach the research?

Any informed choice among alternative possible migration policies requires an ex ante assessment of the likely consequences. This is what the project tries to do through applying methods of multi-dimensional demographic macro- and micro-simulations and showing what would be the long-term implications of alternative possible migration scenarios on the future labour force in Europe, its productivity, social cohesion and the integration of migrants. It will also consider possible consequences for sending countries in terms of brain drain and circular migration.

Key facts

- **Acronym:** CEPAM
- **Project Leaders:** Wolfgang Lutz and Alain Belanger

Time Frame: By the end of 2018 the first results shall be communicated in order to provide a scientific basis for the new European Commission to define their new migration policies.
Demographic analyses with a focus on Austria are on the research agenda of this group. Using quantitative data and methods, fertility and families are core research topics, forced migration and ageing are also explored. The group has a service function regarding socio-demographic survey data on Austria for the Centre and the scientific community at large. Activities can be grouped into three main areas:

1) Co-organising national surveys and analyzing these data: the group is involved in the “Generations and Gender Survey GGS” and the “Survey of Health, Ageing and Retirement in Europe SHARE”, two European panel studies. The Centre is represented in the Consortium Board of the GGS.

2) Survey research on migration in Austria. This research line was developed very recently, along with the steep increase of refugee-seeking people in Europe in 2015. Researchers from all three pillars of the Centre joined for a pioneering survey aiming to uncover the characteristics of displaced persons, which already started in 2015.

3) Research data from Austrian official statistics (STAT): Cooperation with STAT has played an important role from the very beginning. Several joint ventures concerned matching of census populations and the deceased for studying mortality. The VID regularly commissions questions on childbearing in the Austrian micro-census.

Projects

Running Against the Clock – RAC
PI: Isabella Buber-Ennser | FWF-028071-G22 | 2015–2017
Countries in Europe and around the world have witnessed a major family transformation in the past decades. The main research aim of this project is to investigate the influence of life course circumstances on the realisation of individuals' fertility plans in Austria.

Realising Fertility in Vienna
PI: Isabella Buber-Ennser
City of Vienna | 2015–2016
Using longitudinal data of the Generations and Gender Programme (GGP) the project addresses differences between Vienna and other parts of Austria in childbearing intentions and their realisation. In addition, realisation in Vienna was compared to realisation in other European capitals like Prague or Budapest.

Childlessness of Highly Educated Women – KILAK
PI: Isabella Buber-Ennser
German Procurement Agency of the Federal Ministry of the Interior/B111-1427/10/VV | 2011–2012
The project focused on university degree holders in four European countries (Western Germany, Austria, France and Norway) and aimed to find out how different life domains are associated with fertility intentions and childlessness.

SHARE-PERSONAs
CURE-Elderly-Personas are designed to be applied in AAL (Ambient Assisted Living). The project applied the so-called “persona method”, a powerful approach to focus on needs and characteristics of target users.

DiPAS Displaced Persons in Austria Survey

What is the subject of the research? Why is it of interest?

Given the social impact of the large number of individuals applying for asylum across Europe in 2015, it is important to study who these persons are in terms of their skills, motivations, and intentions. The project aims to provide empirical evidence on recent inflows of displaced persons to Austria, and to Europe at large. Research focuses on education, values, attitudes, occupational profile and the match with the host society’s labour market, the family context including the potential for family reunification, and methodological aspects of surveys on displaced persons. DiPAS enabled the team to carry out cutting-edge research and to attain unique expertise in an area that will gain increasing relevance in the years to come.

What did you approach the research?

The research group initiated a survey known as the ‘Displaced Persons in Austria Survey (DiPAS)’ among asylum-seekers and refugees who arrived in Austria in 2015. Researchers from all three pillars of the WIC with different academic and cultural backgrounds joined, including the Syrian demographer Al Zalak. In fall 2015, more than 500 adult displaced persons originating mainly from Syria, Iraq and Afghanistan and residing in and around Vienna were interviewed in Arabic, Dari, Farsi and English. Including detailed information on partner and children yielded a unique dataset of almost 1500 persons. The survey focused on socio-demographic characteristics, in particular human capital, attitudes and values.

How did you approach the research?

The research group has initiated a survey known as the ‘Displaced Persons in Austria Survey (DiPAS)’ among asylum-seekers and refugees who arrived in Austria in 2015. Researchers from all three pillars of the WIC with different academic and cultural backgrounds joined, including the Syrian demographer Al Zalak. In fall 2015, more than 500 adult displaced persons originating mainly from Syria, Iraq and Afghanistan and residing in and around Vienna were interviewed in Arabic, Dari, Farsi and English. Including detailed information on partner and children yielded a unique dataset of almost 1500 persons. The survey focused on socio-demographic characteristics, in particular human capital, attitudes and values.

What did you find out? Why are the results important?

The surveyed population comprised mainly young families with children, particularly those coming from Syria and Iraq. Their educational level is high compared with the average level in the country of origin. A vast majority of respondents are Muslims, rating their religiosity at medium levels. Judging from stated attitudes towards gender equity, interviewed men seem to have more liberal attitudes than their compatriots. In addition, the applied methodological technique and experiences during the fieldwork provide valuable insights. DiPAS provides data for political decision-making and the societal dialogue. Its findings help to inform assessments about the integration potential of refugees into the host society.

Key facts

PI: Isabella Buber-Ennser
DiPAS turned out to be the first social survey not only in Austria, but in Europe, focusing on the persons seeking asylum in Europe in 2015. Isabella Buber-Ennser, Judith Kohlenberger and Bernhard Rengs were the core team carrying out this landmark survey. Zakarya Al Zalak (IIASA), a Syrian demographer and director at the Technical Statistical Institute in Damascus was part of the team and provided valuable scientific as well as cultural knowledge. A first peer-reviewed article was published in the renovated US-journal PLoS-ONE in 2016. In 2017, a follow-up survey was carried out, focusing on first steps in the host society.

Website

22
Forecasting and Ageing

Research Group Leader: Sergei Scherbov

The focus of the research group is on population dynamics, demographic analysis and forecasting as well as in particular analysis and forecasting of ageing. Main themes of the research are population projections (issues related to projections, such as deriving scenarios on fertility, mortality and migration), methodological issues of projecting mortality and migration, and population ageing. The group comprehensively reassesses population ageing based on innovative alternative definitions of age and ageing. New scientific knowledge is produced that is useful in policy formulation and that can educate the public about population ageing and its consequences. Among other things, the group ascertains the extent to which advanced societies are actually ageing in multiple dimensions, including health, cognitive abilities, and remaining life expectancy at certain ages. By addressing such fundamental issues this group has a pronounced impact on future population ageing research. The research builds on a new concept: the characteristics approach to the measurement of population ageing. When looking at characteristics other than chronological age the whole picture of ageing looks very different and much less alarming compared to traditional measures of ageing. A strength of the developed approach is the conversion of characteristics related to ageing to the age metric, which allows comparisons of ageing based on very different indicators in a standard way.

How did you approach the research?

We developed a new paradigm in conceptualising population ageing: the characteristics approach to the measurement of population ageing. The hallmark of the approach is the simultaneous use of changing characteristic schedules together with changing age structures. The approach includes conventional measure of chronological age but is far more general. The initial focus was made on four characteristics: chronological age, as a quantitative benchmark against which importance of the other characteristics is to be assessed; remaining life expectancy, which allows comparisons of ageing when using conventional measures of ageing and newly developed ones that take into account the changing characteristics of people. Newly developed measures show much less ageing in the future. We showed that the faster the projected increase in life expectancy the lower the projected speed of ageing. Our approach could be used to define the speed of ageing based on different characteristics of people, life table indicators or derived from survey data on health status, physical or cognitive measures.

What did you find out? Why are the results important?

We look at ageing as a multi-dimensional process and developed new indicators of ageing that account for that. Traditionally, only one dimension – chronological age – is used to analyse ageing. We showed very big differences in the past, present and forecasted speed and level of ageing when using conventional measures of ageing and newly developed ones that take into account the changing characteristics of people. Newly developed measures show much less ageing in the future. We showed that if the population is ageing, then the speed at which it is doing so is much lower than previously estimated. This has strong implications for both research and policy. People’s behaviour is defined by their characteristics and not solely chronological age.

What is the subject of the research? Why is it of interest?

Life expectancies in the EU and in many other countries around the world are increasing significantly. Age-specific health statuses have also generally been improving. In contrast to these profound changes, the concepts that demographers have used to analyse ageing on a population level have remained largely static. The substantial changes in life expectancy and health status have rendered these traditional demographic measures such as the proportion above age 65 inadequate for the analysis of ageing at the population level in the 21st century. This research comprehensively reassesses population ageing based on innovative alternative definitions of age and ageing. This new approach has strong implications for both research and policy. People’s behaviour is defined by their characteristics and not solely chronological age.

Projects

Ageing Trajectories of Health: Longitudinal Opportunities and Synergies – ATHLOS
This project aims to achieve a better understanding of ageing by identifying patterns of healthy ageing pathways or trajectories and their determinants, the critical points in time when changes in trajectories are produced, and to propose timely clinical and public health interventions.

Reassessing Ageing from a Population Perspective – Re-Ageing
PI: Sergei Scherbov | ERC Advanced Grant /323947-Re-Aging | 2013-2019
This project develops new approaches to the study of age and ageing that are appropriate for 21st century conditions.

Key facts

The results of the project are used in the latest UN World Population Aging 2017 Highlights and World Population Aging 2017 Report.

Website

This project receives funding from the European Research Council under the European Union’s Seventh Framework Programme (FP7/2007-2013) under grant agreement No 323947.
Human Capital Modelling

Research Group Leader: Samir KC

The research group on Human Capital Modelling addresses a core topic of the Wittgenstein Centre by extending conventional methods of population dynamics in a multi-dimensional way to explicitly include educational attainment as well as in some cases labour force participation and health status. This is based on the well-established toolbox of multi-state demography – which has been developed in and around IIASA’s Population Program in the 1970s. In this context, it has been argued that educational attainment is an individual characteristic that constitutes the third most important source of observable population heterogeneity after age and sex and therefore should be routinely included as an additional dimension in all demographic analyses whenever data permit to do so.

Since fertility and mortality tend to vary systematically by level of education, explicitly incorporating this demographic dimension in population projections also results in different aggregate outcomes as compared to projections disregarding this source of heterogeneity. In addition, the explicit focus on educational attainment also adds the “quality dimension” to demographic analysis thus making demography more relevant for a large number of economic, social and political science considerations.

Currently, the research group considers the further expansion of the multi-dimensional approach to also explicitly consider rural/urban places of residence as well as sub-regions of big countries.

Projects

Combining Traditional and Emerging Big Data Sources to Model Population Movement Patterns – BIGMIG
Pi: Guy Abel | Anniversary Fund of the City of Vienna for the OeAW/STE0059 | 2015–2017

The overall aim of this project is to provide both insights into the differences between traditional data and big data on movement patterns and confine available data to provide synthetic estimates of the time flows with uncertainty.

Addressing Human Heterogeneity in Systems Models – SCHEMA

In the context of a cross-cutting project on accounting for social heterogeneity across several IIASA models and programs this research group has been carrying out a detailed 5-dimensional case study on India in which the population of all Indian states has been stratified by age, sex, education and urban/rural place of residence. This project is also carried out in collaboration with the Asian MetaCentre for Population and Sustainable Development and its headquarters ADRI (Asian Demographic Research Institute).

World Population and Human Capital in the 21st Century: Population Scenarios by Age, Sex and Level of Education for all Countries to 2100

What is the subject of the research? Why is it of interest?

In 2011-13 the Wittgenstein Centre produced the first consistent set of world population scenarios by age, sex and six levels of educational attainment on the basis of individual countries to the end of the century. The assumptions on future fertility, mortality, migration and education trends were informed by a major international inquiry involving over 550 of population experts. A number of alternative scenarios were defined following the narratives of the SSPs (Shared Socioeconomic Pathways) which are being used by a broad consortium of international modeling teams in the context of integrated assessment and climate change.

How did you approach the research?

These world population projections differ from the widely used UN population projections in several respects. Firstly, they go beyond the conventional projections based on age and sex only by consistently adding educational attainment as a third demographic dimension and considering education-specific fertility and mortality differentials. Secondly, they blend statistical time series modelling with country-specific expert knowledge and systematic expert assessments about the validity of scientific arguments supporting the assumption of alternative future trends. Finally, unlike the UN projections which are based on statistical extrapolations, these scenarios are based on comprehensive substantive narratives that also consider interdependencies between demographic and other social, economic and environmental trends.

What did you find out (so far)? Why are the results important?

One of the most important findings shows that female education is a major driver of future world population growth and in particular the speed of fertility decline in Africa. Depending on the speed of future education expansion among women, world population scenarios differ by more than one billion people. The explicit information about education also shows the future potentials for economic growth and environmental resilience. A comparison between India and China, e.g. shows that despite of more rapid population ageing China’s population has a much broader general education whereas India had focused on elitist education while until recently leaving half of the population mostly women without formal education.

Key facts

- Book title: World Population and Human Capital in the Twenty-First Century
- Editors: Wolfgang Lutz, William P. Butz, Samir KC
- © 2014 – Oxford University Press, 1074 pages
- Paperback version
- Book title: World Population and Human Capital in the Twenty-First Century
- An overview
- Editors: Wolfgang Lutz, William P. Butz, Samir KC
- © 2017 – Oxford University Press, 680 pages
- Recent update of scenarios in a new book
- Book title: Demographic and Human Capital Scenarios for the 21st Century
- Editors: W. Lutz, A. Goujon, S. KC, M. Stonawski, N. Stilianakis
- © 2018 – European Commission
- This book presents an update of the scenarios of the Oxford University Press (OUP) named above. For details please refer to page 62.
The research in the Human Capital Data Lab primarily aims at maintaining and offering a database of up to date, harmonised and validated shares of population by levels of education for all countries in the world. We further develop back projections and historical reconstruction of educational attainment for the 20th century for as many countries as possible, together with the collection of historical data on literacy, and of sub-national data (mostly urban/rural) by levels of educational attainment. The main activities of collection, harmonisation and validation of the education data provide the basis for the analysis of consistent time series and how the diffusion of education has varied across generations, countries and gender. This information is essential to study the role played by changes in education in social, economic, environmental, technological models for the past and the future. We further aim to develop the human capital data visualisation aspects, providing one or more interfaces where our datasets can be visualised and downloaded. The Data Lab is also interested in the global dimension of religion as a characteristic of individuals and how demographic changes affecting the main religious affiliations shape the religious landscape of the world.

Projects

**Religious Denominations in Austria and Vienna after the Refugee Crisis**

*PI: Anne Goujon | Austrian Integration Fund (ÖIF) | 2016–2017*

This project was interested in the following research question: What is the impact of recent migration flows on the religious distribution of the Austrian and Viennese population in 2015 by age and sex, and how could the religious landscape be affected in the next 30 years according to several scenarios?

**Reconstructing Educational Attainment of Populations in the 20th Century – EDU20C**

*PI: Anne Goujon | Anniversary Fund of the City of Vienna for the OeAW | 2015–2017*

The EDU20C project provides a consistent and harmonised database on educational attainment covering the 20th century for as many countries as possible, using the methodology of back-projections.

**Forward Looking Analysis of Grand Societal Challenges and Innovative Policies – FLAGSHIP**

*PI: Dimitor Philipov/Anne Goujon | EU-FP7-EUP0208V | 2013–2015*

The FLAGSHIP Project aimed at driving change, supporting the policy shift from adapting to changes through short-term policy responses, towards anticipating, welcoming and managing changes properly.

**Past, Present and Future Prospects in Vienna 1950–2050 – WIREL**

*PI: Anne Goujon | WWTF Project SSH10-040 | 2011–2014*

WIREL is a research project that studied different demographic and religious forces that have shaped Vienna’s population composition throughout the past as well as the implications that such forces hold for the present and the future.

**What is the subject of the research? Why is it of interest?**

The Wittgenstein Centre Data Explorer presents the results of the set of population projections by levels of educational attainment produced by a large team of researchers at the Wittgenstein Centre and at other institutions. The project was documented in the Oxford University Press book edited by Lutz, Butz and IC in 2014 (see page 27). The Data Explorer also includes population projections developed for the Intergovernmental Panel on Climate Change (IPCC) according to a set of Shared Socioeconomic Pathways scenarios. Version 2.0 includes the back projections from 2010 to 1970. Version 2.0 updating the projections with more recent base-year data is under preparation and will be released in 2018.

**How did you approach the research?**

The main philosophy behind the Data Explorer was to be as comprehensive as possible. Therefore, all kinds of indicators are available for 195 countries, grouped by region and sub-regions. Most data are available by sex and by age up to 100+, from 1970 to 2100, according to 7 scenarios for the projections. The data can be viewed on the screen or downloaded. There is also a Graphic Explorer with pyramids of population by education that can be compared across time, countries and scenarios. Other graphs are available such as stacked area charts – to show the composition of the total population during a period – or maps. Country and region profiles are also available in PDF format.

**What did you find out? Why are the results important?**

The dataset has been used by the international global change community to assess the relationships between socioeconomic development and climate change (Lutz and IC 2014). In a similar way, it was incorporated in the analysis of the role of education to reduce vulnerabilities and increase resilience by UNDP. Some researchers have also used it to model the potential economic impact of future education trajectories in poverty stricken countries. As to the back-projections, they have been used to show the importance of education for economic growth, over demography in an analysis of the demographic dividend.

**How did you approach the research?**

The data can be viewed on the screen or downloaded. There is also a Graphic Explorer with pyramids of population by education that can be compared across time, countries and scenarios. Other graphs are available such as stacked area charts – to show the composition of the total population during a period – or maps. Country and region profiles are also available in PDF format.

**What did you find out? Why are the results important?**

The web interface was built by Guy Abel using Shiny for R. package version 0.11.1. Twelve out of the thirty indicators available present data on education, such as the gender gap in educational attainment of the population 15- or total fertility rates by mothers’ education. The work of more than 60 researchers is behind the data presented in the Data Explorer. 7,000 users visited the Data Explorer in 2017 and 11,000 sessions were recorded (google analytics).

**Key facts**

The Wittgenstein Centre Data Explorer presents the results of the set of population projections by levels of educational attainment produced by a large team of researchers at the Wittgenstein Centre and at other institutions. The project was documented in the Oxford University Press book edited by Lutz, Butz and IC in 2014 (see page 27). The Data Explorer also includes population projections developed for the Intergovernmental Panel on Climate Change (IPCC) according to a set of Shared Socioeconomic Pathways scenarios. Version 2.0 includes the back projections from 2010 to 1970. Version 2.0 updating the projections with more recent base-year data is under preparation and will be released in 2018.
Population Economics

Research Group Leader: Michael Kuhn

We explore the economic determinants and consequences of changes in population structure and dynamics, covering the process of human capital creation and depletion at the micro and macro level. We bridge the micro-macro nexus by developing and applying economic lifecycle and overlapping generation models, advanced microsimulation, and agent-based models using realistic demography. Key themes covered by our research 2011–2017: The analysis of lifecycle behaviour, focusing on health and education as forms of human capital. We have studied the efficiency of individual health investments, their relation to retirement, and the impact of increasing longevity and decreasing fertility on education, retirement, and economic growth. The analysis of intergenerational transfers by way of National Transfer Accounts, described as a highlight. Macro-economic modelling of health and healthcare. Particular emphasis was on studying the impact of medical progress and an expanding health care sector on economic performance and individual welfare (MEDPRO). The impact of social interactions on fertility. This research was based on advanced agent-based models and has contributed to the FamiliesAndSocieties project. The analysis of population processes and structures, such as the dynamics of union formation and fertility also contributed to the project.

Projects

Age-Specific Wellbeing and Transfer Accounts – AgeWellAccounts
Pi: Alexia Fürnkranz-Prskawetz
JPI More Years Better Lives 2017–2020
The project measures and analyses wellbeing from a life course perspective.

Medical Progress, Health Expenditure and Population Ageing – MEDPRO
Pi: Michael Kuhn | FWF/P26184-G11 | 2014–2017
The project employs a numerical intertemporal general equilibrium model with overlapping generations to study the dynamic relationship between medical progress, ageing dynamics, and health care expenditure.

Long-run Economic Perspectives of an Ageing Society – LEPAS
Co-Investigator (Leader of VID Workpackages): Alexia Fürnkranz-Prskawetz
European Commission FP7 Grant /217275 | 2009–2012
As partners to this collaborative EU FP7 project, we have developed and analysed economic lifecycle models to study individual incentives to invest in their health.

AGENTA
Ageing Europe – An Application of National Transfer Accounts for Explaining and Projecting Trends in Public Finances

What is the subject of the research? Why is it of interest?
The AGENTA project aims at explaining the past and forecasting the future of taxes and public transfers and services in the light of demographic change. AGENTA puts a special emphasis on the links between the public and the private sectors. Due to population ageing, each person in employment will have to support an increasing number of inactive elderly persons. It is of utmost importance for individuals and policy makers to understand to what extent demographic changes and the associated changes in individual behaviour affect the public transfer system. Incorrect projections and unmet expectations can result in economic hardship and a considerable loss of personal welfare.

How did you approach the research?
The analysis of the economic consequences of population ageing in the AGENTA project is based both on an empirical and a theoretical approach. The project is constructed along ten work packages that include the construction of European NTA and NTTA accounts, the analysis of the different retirement patterns throughout the EU 17, the study of the change in the age-reallocation of public expenditures over time, the implementation of general equilibrium models for simulation and projection of public transfer, and the construction of alternative indicators for the analysis of sustainability and fairness.

What did you find out?
- Changes in the age structure and in the educational composition of the population account for about a quarter of per capita income growth in Austria and Spain since 1870.
- Population ageing exerts pressure on pension funding. Current age patterns of public transfers are unsustainable for future generations.
- Delaying retirement improves substantially the fiscal sustainability of pensions.
- Investing in education contributes to the sustainability of pensions by boosting labour force participation, income and contributions.

Our evidence-based policy proposals improve the decision-making of individuals and policy makers by showing which institutional adjustments ensure long-term fiscal sustainability in Europe.

Key facts
Pi: Alexia Fürnkranz-Prskawetz
Website
This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement FP7/2013-1-613447.
10 Population, Environment & Sustainable Development

Research Group Leader: Raya Muttarak

The research group applies demographic concepts and analytical tools to empirically assess the complex relationship between population dynamics, environment and sustainable development. Our approach highlights the central role human population plays in the global environmental system both as a driving force of environmental degradation and as an outcome; and 4) Climate-induced migration – investigating the role of climate change as a potential driver of migration.

Projects

APCC Special Report: Health, Demography and Climate Change
PI: Raya Muttarak | Austrian Climate and Energy Fund/KR16AC0K136S | 2017–2018

Addressing the complex relationship between climate change, health and population dynamics, this Special Report provides a comprehensive literature review of research on Austria and other research at European and global level.

Sustainable European Welfare Societies
PI: Raya Muttarak | Research Council of Norway/236930/H20 | 2014–2018

The project’s primary objective is to generate new knowledge about how research on Austria and other research at European and global level.

Welfare, Wealth and Work for Europe – Europe Moving Towards a new Path of Economic Growth and Social Development
Co-PI: Jesus Crespo Cuaresma | FP7-SSH-2011-1 | 2012–2016

The project aims at exploring science-based policies for Europe to participate more strongly in world growth, guarantee a maximum well-being of its population and reduce energy and material input, thus contributing to social and ecological sustainability. The research group unveiled the empirical relationship between education inequality changes and economic growth.

Two more ERC projects belong to this group:
- ERC Advanced Grant: Empowered Life Years (p. 34)
- ERC-PoC: Future Markets (p. 36)
EMPOWERED LIFE YEARS
The Demography of Sustainable Human Wellbeing

William Clark’s (2012) Wellbeing Function

Formalizing Grundtvig’s “meet the needs...”

\[ W = \text{RC} \cdot \mathbf{K} \]

\( W \) is “human well-being” (inter- and inter-generational)

\( \text{RC} \) is Capital assets (from which services flow)

– \( C_t \) = manufactured capital (factories, homes, roads)

– \( C_i \) = human capital (population, health, education)

– \( C_k \) = “natural capital” (ecosystems and (near services)

\( I \) is “Institutions” (laws, rules, norms, expectations)

\( K \) is “knowledge” (scientific, practical; innovation)

What is the subject of the research? Why is it of interest?

The project will theoretically develop, empirically estimate, test and forecast an indicator of human wellbeing whose trend over time can be used as a criterion to judge whether any development can be viewed as sustainable. It is based on life table methods and hence reflect the basic – but often overlooked fact – that being alive is a necessary prerequisite for enjoying any quality of life. But since mere survival is not sufficient as an ultimate goal for most people the person years lived at each age will be weighted with four different dimensions of empowerment: health, literacy, being out of poverty and life satisfaction. These are four dimensions of an indicator called YoGL (Years of Good Life).

How will you approach the research?

In addition to developing this comprehensive indicator the project addresses the most ambitious task of estimating a “production function” of wellbeing based on all essential determinants (such as the different capitals listed in the box above) including feedbacks from environmental change that have the potential of negatively impacting on future human wellbeing. It will also address effects of climate change on future human wellbeing considering differential vulnerability and adaptive capacity. To make this highly complex task a bit more manageable the study will include comprehensive case studies for specific populations at different levels of socioeconomic development and in different environmental settings.

Why are the results important?

This project addresses in a way “the mother of all research questions”. It tries to develop the most comprehensive scientific understanding about the preconditions for a good life on this planet.

The new indicator will also be tested in terms of its acceptability as comprehensively measuring wellbeing to people from very different cultures. It is (1) based on characteristics of people that can be flexibly aggregated to sub-populations; (2) has meaning in its absolute value in order to be comparable over time and across sub-populations; and (3) has a substantive interpretation in terms of some real-life analogy rather than just being an abstract index.

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What is the subject of the research? Why is it of interest?

The project aims at assessing the effects of the methodological features of “Health Expectancy” (HE). The general understanding is that this indicator simply extends the average “Life Expectancy” by one dimension. Technically, this is correct because the total number of life years is divided into two quality dimensions: life years spent in good health and those spent in poor health. However, incorporating this additional dimension to the life table makes the indicator extremely sensitive to certain measurement and estimation issues. This is an important problem because HE is not only becoming more and more used in health research. It is also the most important structural indicator in health policy.

How did you approach the research?

We browsed the literature and found that only a few of the specific measurement and estimation features which are likely to have significant effects on the HE indicator have been mentioned or demonstrated so far. However, this was done only incompletely, unsystematically, and in the majority of cases not in relation to a specific research question. And this is the major difference we want to make: we will assess the effects of these sensitivities by direct empirical application to the most important research questions.

These will include the expansion versus compression of morbidity debate as well as differences between socioeconomic status groups, between women and men, and between eastern and western Europe.

What did you find out (so far)? Why are the results important?

The probably most obvious example for HE’s estimation sensitivity is the definition of health. For example, when we calculate the proportions of European countries by level of change in HE from 2010 to 2013 on the basis of GALI the health indicator used by the European Commission, we find that only a little bit more than half of the countries are on a good way with increasing HEs. However, when we evaluate the progress with the GBD as health measure, the health indicator used by the WHO, the situation looks much different here, almost 95 percent of the populations are on a good or even very good track. This is an extreme difference to the GALI figures which leads to very different conclusions.

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FUTURE MARKETS – Demography-based Market Forecasting Tools

What is the subject of the research? Why is it of interest?
Demographic shifts, like the ageing and diversifying population in North America and Europe are reported to have considerable impact on currently observable and most likely on future consumption patterns. Baby-Boomers reaching retirement ages entail strong marketing implications for a number of industries and product or service categories (e.g., soda sales are declining due to increased prevalence of diabetes caused by the increasing share of elderly in the population and their demand for healthier low-sugar drinks). Likewise digital native Millennials are supposed to significantly impact future market trends (e.g., the rise of online streaming services and the paralleled decline of cable TV).

What did you find out? Why are the results important?
We demonstrate the capability of cohort analysis as a tool to study the dynamics of consumption patterns using purchase incidence rates of aggregate panel data in four fast moving consumer good categories (beer, wine, near water and organic food) ranging over a time horizon of 17 years. Our findings suggest that models which ignore cohort (APC: penetration rate) effects tend to underestimate variations in age group-specific forecasts (APC: penetration rate), which in turn might result in misleading managerial conclusions. The aggregated volume is also mainly driven by the future market size for wine and beer consumption (grey area indicating no net-migration scenario).

Key facts
PI: Wolfgang Lutz
Time Frame: 01.02.2013–31.01.2014
Website
This project has received funding from the European Research Council under grant agreement ERC-2012-PeC 324617.
This project was carried out at WU in collaboration with the institute Service Marketing and Tourism.

COHORT – The Demography of Skills and Beliefs in Europe

Project
Title: The Demography of Skills and Beliefs in Europe with a Focus on Cohort Change
Time Frame: 01.10.2009–31.03.2015
Website
This project has received funding from the European Research Council under grant agreement 242053-COHORT.

Data Sheets

European Demographic Data Sheets 2012, 2014, 2016, 2018

The European Demographic Data Sheets show key demographic data, population trends and projections. The 2012 and 2014 Data Sheets provide population projections from 2011/2013-2050 for 43/49 countries with and without migration. The European Demographic Data Sheet 2016 covers fertility, mortality, migration and population structure, including population ageing and their changes. The new online version, optimised for mobile devices, provides expanded data coverage, additional maps and population pyramids, ranking charts and details about data sources and definitions. It also allows the users to download all the data.


Data Sheet on Population Ageing 2018

The first Demographic Data Sheet focusing on population ageing comprehensively presents new measures of ageing, developed at IIAEA, for all countries in the world and world regions, including projections for 2050.

The Data Sheet 2018 shows population ageing trends and projections until 2050 with a focus on traditional and alternative indicators of population ageing for current and future population changes across the world.
The first Russian Demographic Data Sheet provides a comprehensive look at key demographic indicators and main population trends for all subjects of the Russian Federation, including population projections to 2035. The datasheet combines data for the national level, all regions and districts, and features maps, population pyramids, rankings, graphs, and a glossary. The Data Sheet is available online in English and Russian.

Progress in female education is critical for global sustainable development and better lives of future generations. This statement is illustrated by the 2015 Global Human Capital Data Sheet, which presents new population projections by age, sex, and level of educational attainment for the world, world regions, and 195 individual countries (24 countries with limited education data) with a time horizon to 2060. Browse, visualize, and download all data from the Wittgenstein Centre Data Explorer. For details please see p. 29.

The European Fertility Data Sheet 2015 provides an in-depth look at European fertility through a combination of data for all countries of Europe and for broader European regions, maps, tables, graphs and featured thematic boxes. The online version is optimized for mobile devices and provides expanded coverage, including additional maps, ranking charts as well as details about data sources and definitions. It also allows the users to download all the data. This Data Sheet was produced within the EURREP project (see p. 15).

The Data Sheet provides information on a range of demographic indicators from fertility to ageing to education levels for countries in Asia. The rise of human capital is particularly relevant for Asia, where the data sheet indicates that virtually all countries can expect further significant increases in their human capital – a major component of the wealth of Asian nations. Progress is especially impressive among younger women, who are likely to become more educated than men in a majority of Asian countries. A 2018 Asian Data Sheet is currently under preparation together with the Asian Demographic Research Institute (ADRI) in Shanghai (see page 46).

This Data Sheet provides a comprehensive portrait of the global flow of people in 2005–10. It features the flows between the top 50 sending and receiving countries, each country’s total immigration and emigration flow and the world’s 20 largest country-to-country flows. The Global Flow of People Explore new estimates of migration flows between and within regions for five-year periods, 1990 to 2010. Click on a region to discover flows country-by-country. www.global-migration.info

All Data Sheets and more data can be accessed online.
Population Network
research, latest publications and information on forthcoming
details of developments at the Centre and its pillars, current
collaborators and interested individuals are provided with
able development and since 2011 POPNET also acts as the
and institutes working in the field of population and sustain-

POPNET newsletter for an extensive network of researchers

Reaching out

Website (since 2011) and
WIC Twitter (since 2013)

In November 2011 the Centre’s website went online
for the first time and was relaunched in February
2015. The new website reflects the changed internal
structure and navigation is now clearer. WIC’s Twitter
account was started in 2013 and so far we have tweeted
nearly 2300 times and have almost 1500 followers.
We take care to present our research in an attractive
and interesting way and continuously update our web
spaces to keep readers informed about our research and staff as well as news and events.

Population Network
Newsletter
POPNET (since 1982)

Since 1982 the World Population Program distributes the
POPNET newsletter for an extensive network of researchers
and institutes working in the field of population and sustain-
able development and since 2011 POPNET also acts as the
newsletter of the Wittgenstein Centre. On a regular basis, collaborators and interested individuals are provided with
details of developments at the Centre and its pillars, current
research, latest publications and information on forthcoming
meetings and conferences.

Demografische Forschung
aus Erster Hand
DFAEH (since 2004)

DFAEH is co-published by the Max Planck Institute for Demograph-
ic Research, Rostock, in cooperation with the Vienna Institute of
Demography and the Wittgenstein Centre. Vienna, the Rostocker
Zentrum zur Erforschung des Demografischen Wandels as well as
the Federal Institute for Population Research in Wiesbaden.
The open access newsletter is published four times a year and is
available in both electronic and print versions. The editors, including
Wolfgang Lutz, want to intensify the dialogue between research
and the public. The newsletter is primarily addressed to journalists,
politicians and interested parties in neighbouring fields of work.
Presented are relevant studies for Germany and/or Austria.

Popular Outreach Paper (in German): Fit für die
Globalisierung durch Bildung

In this paper some of the key policy relevant findings of the Wittgenstein
Centre are communicated to a broader audience in Austria and Germany.
Countries such as Germany and Austria face the challenge of remaining
competitive on the global market in the context of demographic change
with their potential of gainfully employed persons declining, while ris-
ing countries in Asia are aspiring. Numerous global studies show that
investing in human capital is the main lever for securing prosperity and
quality of life in Europe in the long term. In order to cope with this, strong
efforts need to be made for universal high quality education including
a stronger focus on support for early childhood development as well as
lifelong learning for mature adults. In addition, investments in cut-
ting-edge research and innovation are necessary. An education-friendly
environment is a prerequisite for both. Germany and Austria also carry
responsibilities for global sustainable development partly through the
EU. There a focus and priority in international development cooperation
on universal education will also be a major contribution to long-term
development, a slowing of world population growth and global security.
The findings are presented in German with illustrative graphics.

Aesthetics of Change:
150 Years of the
University of Applied
Arts Vienna (2017–2018)

The jubilee exhibition at the Austrian Museum of Applied Arts (MAK) casts a glance back onto
150 years of the University’s history, while at the same time daring to look into the future. For the
latter part, the Wittgenstein Centre, represented by Judith Kohlenberger and Roman Hoffmann,
contributed insights from recent demographic research to explore the question of how migra-
tion will affect society, the arts and education.

The Global Flow
of People at
Weltmuseum
Wien (since 2017)

The new Weltmuseum Wien, which cele-
brated its Grand Reopening on 29 October
2017, commissioned the development of an
interactive installation for the permanent
exhibition “World in Motion”. This newly de-
veloped touch screen installation that allows
to explore migration and refugee flows be-
tween and within regions is based on the
online data visualisation “The Global Flow of People” created by Nikola Sander, Guy Abel and
Ramon Bauer at the Wittgenstein Centre for
Demography and Global Human Capital
IIASA, VID/DAW, WU) in 2014.

The Children’s University is held every year in July at various universities and research institutions in Austria. Children between 7 and 12 years of age can choose from a variety of courses from all academic disciplines and celebrate their successful completion in a final graduation ceremony. In the last years the Wittgenstein Centre represented by Isabella Buber-Ennser, Judith Kohlenberger and Maria Rita Testa, contributed sessions to the following topics: “How many people will live in Austria in the future?” and “Who are the refugees?”

MS Wissenschaft (2012 & 2013)

The Centre in cooperation with the Austrian Science Fund (FWF) participated in the interactive science exhibition on sustainability for students aged 10 to 14 years in 2012 and 2013. The MS Wissenschaft, an old cargo ship filled with interactive science exhibits, visits cities in Germany and Austria every year – 2012 under the theme “Future Project Earth” and in 2013 under the theme “Digital Society.” The Centre helped to create interactive exhibits that invited students to explore how human behaviour now can affect future generations.

How to Get to 100 – And Enjoy It (2015)

In cooperation with the Federal Ministry of Labour, Social Affairs, Health and Consumer Protection, the Centre presented the travelling exhibition “How to get to 100 – and enjoy it” developed by Population Europe at WU Vienna. It provides information about the life course of individuals as well as major population trends. Visitors can access texts, graphs, video interviews and interactive games through the use of iPads.

Popular Science Books

Zukunft denken. Werden es unsere Kinder besser haben?
Franz Fischler
Wolfgang Lutz

Parents all over the world hope that their children have better lives than their own. And today? What is the future of our children? Will global warming lead to more hunger and global migration? Will there be a rush of refugees from Africa and Asia? And will Europe become a “fortress”? Who will pay for the pensions in Austria and Germany if the birth rate continues to fall? Are all these conflicts preprogrammed and inevitable for demographic reasons? Answers to such questions for the future are provided by demographer Wolfgang Lutz and former EU Commissioner Franz Fischler. Their profound conversation, spiced with humor, gives hope for the future.

This book is available in German.

Education First! From Martin Luther to Sustainable Development

Wer überlebt? Bildung entscheidet über die Zukunft der Menschheit
Wolfgang Lutz
Reiner Klingholz

In this new book by Wolfgang Lutz and Reiner Klingholz, the authors argue that education is a key prerequisite for modern social and economic development, as well as for the successful achievement of the Sustainable Development Goals (SDGs). It makes the case for a global alliance on education as a strategy for future wellbeing on the planet.

“This scholarly yet highly accessible volume by two renowned experts shows why education is under threat, and what should be done to counter this. The authors mobilise a fascinating array of compelling historical and current evidence which demonstrates the centrality of education to the creation of flourishing societies and show the dire consequences of its neglect. Anyone interested in education and development should read this book.” – Professor Ian Goldin, University of Oxford

This book shows convincingly that education has been a key driver of human development in all parts of the world. Quality education for all – especially for all girls – will be absolutely essential for achieving the Sustainable Development Goals.” – Ban Ki-Moon, The 8th Secretary General of the United Nations

This book is available in English and in German.
Selected WIC Events 2011–2017

A series of meetings and workshops on five continents for the discussion of assumptions and testing of methods as well as scientific consultancy w.r.t. fertility, mortality and migration for the new set of global population projections.

The annual “December-Conference” is dedicated to a pertinent scientific topic or third party funded project from WIC research groups. The results are presented in a special issue of the Vienna Yearbook of Population Research.

This economic demographic workshop focuses on economic analysis dealing with the interplay between demographic change and the labour market, health care and education in terms of empirical and theoretical contributions from both a micro- and macro-economic perspective.

This workshop's topic is heterogeneous dynamical systems and population systems, which allows to model dynamic processes realistically and to find a solution – “dynamic” referring to time as well as heterogeneity of the model components.

The Wittgenstein Centre is acting as host/organiser for a number of international conferences on various up-to-date topics.

In a regular Colloquium series taking place at the Vienna Institute of Demography researchers have the opportunity to present their work to the scientific community and receive feedback from their peers.
International Partnerships

Asian Demographic Research Institute at Shanghai University

In 2015, the University of Shanghai (China) established the Asian Demographic Research Institute (ADRI) with IIASA alumnus Leuven Jiang as its founding director. Wolfgang Lutz was appointed to serve as chair of the International Scientific Advisory Board of ADRI by University President Jin Donghan. Wittgenstein Centre researchers Samir KC and Guy Abel resumed the positions of full professors and leaders of the ADRI research pillars on human capital modelling and international migration, respectively.

ADRI also serves as the new headquarters of the Asian MetaCentre for Population and Sustainable Development Analysis – an ongoing collaboration among IIASA, National University of Singapore, Chulalongkorn University (Bangkok) and other partners with initial funding as a Welcome Trust regional centre of excellence. Building on some of the demographic methods developed at the Wittgenstein Centre the new institute will also create a platform for regional collaboration in demographic research and training through fostering research projects of common interest, holding annual Asian population fora, organizing demographic training workshops around the region, and hosting international visiting scholars. Being home to 60% of the world’s population, demographic research in Asia has traditionally been mostly carried out at the national level with ADRI now trying to strengthen comparative international work. In doing so, it also closely collaborates with the Asian Population Association (APA) hosting the 2018 Asian Population Conference in Shanghai.

JRC/IIASA Centre of Expertise on Population and Migration

On 20 June 2016, policymaker analysts, and researchers from around Europe came together to launch the new Centre of Expertise on Population and Migration, a joint effort between IIASA and the Joint Research Centre (JRC), under the scientific leadership of Wolfgang Lutz.

At the launch event in Brussels, EC-JRC Director General Vladimir Sucha said, “Migration is one of the biggest challenges we face today. Credible policies to tackle its various dimensions require solid evidence basis. The Commission’s Knowledge Centre for Migration and Demography has the ambition to become the reference point for relevant knowledge and credible data on migration. I am very glad that today we are also launching the first partnership of the Knowledge Centre, namely the Centre of Expertise on Population and Migration which is a joint initiative with IIASA and I am convinced of its valuable contribution to our work.”

The JRC/IIASA Centre of Expertise on Population and Migration is presented in detail on page 21.

Selected Publications in Leading Interdisciplinary and Demographic Journals

Science


Proceedings of the National Academy of Sciences


Nature Climate Change

Population Studies


Most Recent Research Updates


Global international migration is an ever-changing process. Migrant stock data, commonly used for the analysis of migration patterns, only manages to capture part of the dynamic nature of international migration. The indirect estimation methodology developed and applied in this paper provide migration flow estimates that are demographically consistent with past population totals, births, and deaths, and hence provide a more robust basis for understanding contemporary migration patterns where no comprehensive source of global migration flow data exists.

While estimated global migration flows are shown to generally increase over time, the percentage of the global population that migrates remains fairly steady at 0.65% of the global population over each five-year period. This result supports similar findings in the migration literature on the lack of empirical evidence for the acceleration in global international migration, but rather a shift in directions of flows linked to major geopolitical and economic shifts.

The bilateral estimates quantify trends in global international migration flows over the past 55 years for the first time. Traditional migration-receiving countries such as Australia, Canada, New Zealand, and the USA, have seen almost continuously increasing numbers of migrants arriving. More recent growth is evident in countries in Northern-, Southern-, and Western Europe. A growing number of migration flows were estimated along migrant corridors between countries in South Asia (such as Bangladesh, India, and Pakistan to West Asia, such as Qatar, Saudi Arabia, and the United Arab Emirates), and from Asia to North America. Large migrant transitions were also estimated in selected periods within Africa or Eastern Europe during times of armed conflicts or political change.

The Vienna Yearbook of Population Research has been published by the Vienna Institute of Demography of the Austrian Academy of Sciences since 1993. The Yearbook features peer-reviewed research articles addressing population research issues as defined and extensively documented in the OUP book, while adjusting the assumed near-term trends in light of the new empirical information on latest trends.

Since this new volume should serve as a basis for defining a detailed set of 10–15 alternative migration scenarios in terms of demography-based pull and push factors, it only included three “naive” migration scenarios: 1) Constant in- and out-migration rates as observed on average in the period 1960–2015, 2) double those rates, and 3) zero migration. These stylized scenarios can serve as a first basis for quantifying the potential effects of alternative migration trends. As a second step, they will be replaced with more detailed scenarios that correspond to possible alternative migration policies.
Summer Schools

Demography, Human Capital, and Economic Growth, 2017

From 19–23 June 2017, the Wittgenstein Centre, in collaboration with the Asian Demographic Research Institute hosted the first Asian Summer School at Shanghai University. A total of 20 junior and mid-career scientists from around the world were acquainted with how demographic trends and improving educational attainment impact economic growth around the Asia region. This also included discussions about the so-called first and second demographic dividends, and on the role of human capital as a determinant of economic development. Leading international scholars from Asia and Europe gave lectures providing overviews of the state of knowledge in these fields.

The Demography of Health and Education, 2016

From 6–15 June 2016, the Wittgenstein Centre organized a summer school for the first time, along with the International Network on Health Expectancies and the Disablement Process (REVES) Meeting 2016, hosting internationally renowned demographers and junior scientists.

Over ten days, 21 junior and mid-career scientists from around the world were acquainted with the latest research on health and disability in the context of population ageing, and with multi-dimensional methods for modeling population and human capital dynamics from a global perspective. Lectures and discussions were led by Wittgenstein Centre senior and junior scientists and notable international population researchers, including Eileen Crimmins (Davis School of Gerontology at the University of Southern California), Carol Jagger (Newcastle University Institute for Ageing and Institute of Health & Society), Mark D. Hayward (Department of Sociology at the University of Texas at Austin), Jean-Marie Robine (Research Director at INSERM), and Yasuhiko Saito (Nihon University). The topics ranged from redefining age and ageing to demographic methods of modeling educational attainment and human capital formation. The summer school was held around the 2016 REVES Meeting, an annual platform for the exchange of recent research on conceptual frameworks, international comparisons, methods, trends, determinants, and disparities of the factors that are decisive for human health and longevity. This year’s meeting was hosted and organized by the Wittgenstein Centre under the theme “Determinants of unusual and differential health expectancy”.

A summary of the summer school and REVES conference is available online

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Administration and Technical Services

The Wittgenstein Centre has a dedicated and dynamic administration (6.1 full-time equivalents) and technical services (1.6 full-time equivalents) team located at IIASA, VID/OAW and WU who shares the Centre’s office management activities across its three pillars. Providing administrative support to the directors, the various research groups and individual researchers in the implementation of their visions and ideas and ensuring smooth collaboration between the three institutions, we provide services in the following areas: Project Administration, Budgeting and Financial Planning, Grant Proposal Coordination, Event Management, Publications and Manuscript Management, Editing, Library Services, Communication and Outreach, Support for International Guests, IT Services, and Office Administration.

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