Broadening demographic horizons: demographic studies beyond age and gender

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Demography is generally defined as the scientific study of changes in the size and the structure of populations. While the meaning of population size is relatively clear, there are many different population structures that can be analyzed. Demography conventionally focuses on age and sex structures, and many of our core models are defined in terms of age and sex. But there are other important dimensions that are the subject of demographic analysis and modelling, such as place of residence, ethnicity/race, marital status, educational attainment, labor force participation status, and health status. Explicitly addressing the changing structures of populations along these broader demographic dimensions make demography more relevant for the rest of the world. Moreover, as these dimensions often represent important sources of population heterogeneity, studying them can improve our understanding of population dynamics in itself. In recent years, there have been exciting developments that have broadened the demographic perspective along these lines of multi-dimensionality, and that have contributed new methods to the demographer's conventional tool kit.

This volume of the Yearbook presents a selected set of papers that in one way or another challenge conventional ideas about how demographic studies are conceived and carried out. These papers cover concepts and developments related to multiregional, multistate, and probabilistic population forecasts; population projections by education and labor force status; and causal models of migration.

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The complexity of the demographic transition and its links with the educational transition and urbanization processes, and the need for a multidimensional context when analyzing the relationship between birth intentions and birth outcomes, are among the other topics discussed in the Yearbook. To further broaden our understanding of the consequences of demographic change, differentials in life expectancy and economic activities are discussed in light of pension reforms and projected economic dependency ratios.

The papers are organized into three sections: the first section is a set of four short non-referred discussions; The second section consists of seven research papers; while the third section includes two papers that focus on data issues. All of these contributions help to broaden the horizons of demographic research.

Demographic Debate

The paper by Butz asks an important question at the core of demographic studies: "Are there principles of demography that lend coherence to the field?" The question has two parts: (1) Are there principles of demography; and, (2) do they provide a coherent intellectual scaffolding upon which demographic studies can be built? The answers given by Butz provide us with a clearer understanding of what demography is, and of what it can become.

The paper by Cohen, Brunborg, and Xu tackles a difficult question that has bedeviled demographers for decades: How we can determine which multiregional population forecast is the most plausible? The paper shows how Taylor's Law could be used to choose the best among six forecasts of Norwegian county populations. Their method has wide applicability, and broadens our understanding of how forecasts will be assessed in the future.

The field of probabilistic population forecasting was first developed in 1949 by Finnish demographer L. Törnquist, but evolved slowly in the decades that followed. Keyfitz (1981) injected new momentum into this field by encouraging demographers to present forecasts in terms of ranges. The paper by Keilman presents general principles that can guide demographers in the production of probabilistic population forecasts, and stresses the need for the development of probabilistic forecasts of populations by level of education.

The paper by Rees reflects on the evolution of multi-dimensional demography through applications that explicitly incorporate education into more conventional models focused solely on age and gender. The author explores the advantages as well as the challenges associated with this approach, and provides a critical assessment of recent efforts to advance this research, as documented in the 1,000+-page Oxford University Press volume 'World Population and Human Capital in the 21st Century' (Lutz et al. 2014). In the paper, Rees attempts to summarize the massive amount of material covered in this volume in order to make it accessible to a broader readership, while also providing suggestions about how this approach could be updated and extended in the future.

Research Articles

The demographics of the Muslim population, which accounts for up to 24% of the world's population, are considered in the paper by Abbasi-Shavazi and Jones. Demographic trends in nine Muslim-majority countries (which cover 73% of the Muslim-majority population) are studied in detail. The authors explore the cultural and socioeconomic diversity of these Islamic countries, and its role in enabling these populations to reap the demographic dividend. The article notes that in recent years, fertility and mortality have been declining in the Muslim countries studied, except for Niger, Afghanistan, and Pakistan; and that literacy and mean years of schooling among women have been increasing, albeit at different levels and paces across countries. The authors also point out, however, that despite improvements in educational attainment among the younger female cohorts, female labor force participation continues to be lower in Muslim countries in Africa and the Middle East than in Asia. Low levels of gender equity and cultural objections to women's participation in the labor market are cited as possible explanations for these observed trends.

The paper by Caselli and Lipsi focuses on pension reforms in Italy and their differential impact by gender and educational group. The authors observe that since women and higher educated individuals have relatively long lives, and women retire relatively early, changes in the legislated conversion factor (LCF) and increases in the minimum retirement age may result in different effects across gender and education. They argue that by ignoring the differential life expectancy, the pension system – despite being based on actuarial fairness – implicitly redistributes from individuals with lower life expectancy to individuals with higher life expectancy. Specifically, their analysis shows that by assuming an average LCF, men and low educated individuals are penalized more by the pension reform than women and higher educated individuals. Caselli and Lipsi conclude by stating that the social inequalities certain groups have already experienced through their working lives and pension contributions should not be intensified by pension systems that ignore differential life expectancy in calculating the LCF.

The paper by Prskawetz and Hammer considers the role of changes in the educational composition on economic dependency ratios for Austria up to 2050. Two alternative dependency ratios are considered: the first is based on age-, gender-, and education-specific employment rates; and the second is based on age- and education-specific consumption and income from the National Transfers Accounts project (whereby the first indicator only considers the share of dependent people, while the second indicator also accounts for the degree of dependency). Higher educated individuals enter and exit the labor market at older ages and have higher incomes than lower educated individuals. By combining age-, gender-, and education-specific economic activities as of 2010 with simulated changes in age, gender, and educational compositions, the analysis indicates that economic dependency could be reduced through higher levels of educational attainment.

The paper by Raymer et al. analyzes a frequently ignored aspect of multistate population projections: namely, that the data used to define people's characteristics are often self-reported. In the case of Australia, which is the focus of the paper, the self-identification of the indigenous population in particular can cause data problems. The authors note that when indigenous people migrate to areas where the indigenous population is smaller, they sometimes change their self-identification, which can in turn affect the measurement of migration rates. By showing how changes in self-identification over time can impact population projections, Raymer et al. broadens our understanding of the role of self-reported data in population forecasting.

Most models of migration built into population forecasts are purely statistical. The paper by Willekens challenges this approach and recommends that demographers think about the causal mechanisms that underlie migration. By listing 12 detailed characteristics that a causal model of migration should have, the authors provide a roadmap for the development of future causal models of migration that takes us beyond our current horizons.

The paper by Testa and Rampazzo studies the relationships between birth intentions and outcomes in a multidimensional context. The authors point out that like in many other facets of life, the link between intentions and outcomes is not simple, as events involving partnership, housing, work, and education all interact with fertility intentions and outcomes. Using data from Generations and Gender Surveys to disentangle these complex interactions, the analysis provides us with a richer and a more nuanced understanding of the link between birth intentions and outcomes.

The Sanderson et al. paper uses the UN's machinery for making stochastic population forecasts, which produces probabilistic forecasts of population age structures and sizes, as well as consistent stochastic life tables. Based on their new measures and the UN probabilistic forecasts, Sanderson et al. show that in today's high- and middle-income countries, population aging is likely to come to an end well before the end of the century. This analysis goes beyond the current demographic horizons by showing that population aging is a transitory phenomenon.

Data & Trends

The paper by Gailey and Lutz summarizes the 2018 update of the 2014 demographic scenarios published in 'World Population and Human Capital in the 21st Century' (Lutz et al. 2014). This recent update was produced by CEPAM (Centre for Population and Migration), which is a collaboration between IIASA's World Population Program and the Joint Research Centres (JRC) of the European Commission (European Commission 2018). These new scenarios provide detail by level of education for 201 countries, and by labor force status for the EU countries. In addition to the fertility, mortality, and migration scenarios included

in the earlier assessment, three migration scenarios are distinguished: no migration, a continuation of recent migration rates, and a doubling of recent migration rates.

The paper by Luy and Köppen introduces the new concept of 'express transitioning'. The countries that have experienced express transitioning are those that have passed through the demographic transition relatively quickly. Luy and Köppen show that these countries are systematically different from the countries that underwent slower demographic transitions, especially with regard to urbanization and education. The addition of the concept of express transitioning broadens our understanding of the dynamics of population change.

References

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