

## *World Population and Human Capital in the Twenty-First Century*

edited by Wolfgang Lutz, William P. Butz and Samir KC

United Kingdom: Oxford University Press 2014

ISBN: 978-0198703167

Hardcover, \$151.16, 1072 pp.

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As indicated in the acknowledgements, this book is the result of a enormous undertaking; the 12 chapters plus an epilogue include 26 lead authors, 46 contributing authors, 62 experts who attended meta-expert meetings, plus 550 source experts who completed questionnaires on underlying “major forces” regarding each demographic process, and provided quantitative assumptions for the given countries. It is also appropriate that the volume is published as a hard-copy book. With the uncertain long-term viability of electronic files, it will be important to have a surviving copy hundreds of years from now. In many regards, projections tell us more about the present than the future, and this book tells us much about the current thinking on population dynamics. It provides an excellent summary of the state of the discipline, as it concerns itself with the determinants of fertility, mortality, migration, the changing population composition by education, and the meaning of age.

It was smart of the team from the Wittgenstein Centre for Demography and Global Human Capital to systematically build population composition by level of education, along with age and sex composition, into the multi-state probabilistic projections (to 2060 with extensions to 2100), for 171 countries and 7 world regions. For instance, female education is an important determinant of child mortality and of fertility, just as education is a determinant of both the propensity to migrate and the potential of migrants to integrate. Education also alters the impact of population numbers, on questions from the meaning of “old age” to the capacity for sustainable development. The chapter “Re-measuring population aging” includes the sub-title “Retiring the old age dependency ratio” and a focus on the proportion of the population with less than 15 years of remaining life expectancy. Wolfgang Lutz further argues in the Epilogue that a more educated population empowers people with regard to economic growth, democracy and adaptive capacity, and it also means fewer disabled people and a below replacement “optimal” fertility.

Only four of the 555 source experts were from Canada (0.5 per cent of the world population), no Canadians were involved in the meta-expert meetings, and I only spotted one reference to a Canadian article among the hundreds of citations. Nonetheless, Canada is well represented, including 30 page references in the excellent index, plus data for Canada are presented in pages 730 and 731. For instance, in the discussion of family policy, Canada is placed among the English-speaking countries of the OECD that “provide much less support in time and in kind for working parents with very young children,” but “financial support is more generous—if primarily targeted to low-income families and preschool children.” Canada is among the countries that have seen increases in fertility since 2000; some of these countries (including Canada) were negatively affected by the economic recession of 2008 (p. 70). For mortality in low-mortality countries, Canada is placed with the USA; however, it is observed that the life expectancy gap between the two countries has grown from 0.4 years in 1950–55 to 2.5 years in 2005–10, with USA having “higher prevalence rates of smoking, obesity, and violence, along with limited access to health care” (p. 231). For international migration, Canada is among the top ten destination countries in the more-developed world, as a percentage of the receiving population; Luxembourg is highest, with immigrants in the five-year period 2005–10 representing 9 per cent of the population; next are New Zealand, Australia, and Spain at 6 per cent, Ice-

land, Canada, Switzerland, Ireland, and Norway at 4 per cent, and Sweden at 3 per cent (USA does not make the list). We are in good company!

It is worth reviewing the observations of authors, and associated experts, on the determinants of fertility, mortality, and migration (see p. 32 for the six major forces on the future of fertility, six for mortality, and five for international migration). For fertility in North America, the authors settle on two factors that have positive effects on fertility—(1) work practices become more flexible; and (2) immigration from high fertility countries will increase—and two factors that have negative effects—(3) voluntary childlessness is increasingly socially accepted; and (4) economic unpredictability means uncertain life course planning. On economic questions more broadly, the authors propose that “fertility has exhibited a pro-cyclical relationship with economic growth for more than a hundred years” (p. 67). With the 2010 *total fertility rate* (TFR) of 1.65, Canada is in the upper portion of low-fertility countries, where 2010 fertility levels vary from 2.0 to 2.1 in France and New Zealand to 1.0–1.1 in Hong Kong, Korea, and Taiwan (p. 117). For all “low-fertility” countries (current TFR below 2.9), the projected median fertility in 2050 is 1.57, with the 80 per cent probability placed in the range of 1.07 to 2.13. This compares to the United Nations projections, which use a mean of 1.84 for 2050 in this set of countries (p. 103).

For mortality in low-mortality countries, the following “most likely determinants of future mortality” are discussed: smoking, obesity, biomedical progress, environmental changes, and socio-economic status. There is also an excellent review of the epidemiological transition, including the cardiovascular revolution, and a presentation of the debate between optimists and pessimists on future gains in life expectancy. For the Americas, the assumption of further gains in life expectancy are based on “continued improvements in health behaviours, including further decreases in smoking, drinking, and drug abuse, as well as increases in physical activity to counteract trends in obesity” (p. 261). These are also seen to be linked with continued progress in educational attainment. While there were more optimists than pessimists, the pessimists would emphasize negative health behaviours and reductions in government support, especially if the healthcare system loses its effectiveness with larger proportions of old-age populations and less family support (more divorces and fewer children).

The forces affecting international migration are placed within the Massey framework that starts with (1) the geography and timing of the initiation of migration flows, then (2) the continuation of migration flows, to further consider (3) economic forces, development, and emigration, (4) migration as an adaptation strategy to climate and environmental change, and finally (5) shocks to the system in terms of violence, political upheaval, and displacement. Bi-regional models are used, where the total 5-year international migration changes from 37 million in 2005–10 to low, medium, and high assumptions for 2045–50 of 30, 34, and 52 million, respectively (p. 381).

In the medium or most likely scenario, world population reaches a peak of 9.4 billion in 2070, which is lower than in the United Nations projections. In the five scenarios presented, those labeled “rapid development” and “conventional development” (limited attention to sustainability) show a peak world population of 8.5 to 8.6 billion around 2050. In the “stalled development” scenario, the population is still growing at 12.8 billion in 2100. Both the “medium inequality” and “high inequality” scenarios show a peak around 2075, at 9.4 and 9.5 billion, respectively.

For Canada, the medium assumptions for 2050 are a fertility of 1.79 (compared to 1.65 in 2010), with male life expectancy increasing from 78.2 to 86.3 and female from 82.8 to 90.9 years. The annual immigration changes from 297,000 in 2005–10 to 291,000 in 2045–50, and emigration from 60,000 to 47,000 (p. 730–31). Across the five scenarios, the 2050–55 TFR ranges from 1.37 to 2.24, the female life expectancy from 87.8 to 96.6 and the net annual migration from 103,000 to 410,000. In the medium scenario, the 2050 population is 46.9 million, with other scenarios in the range of 37.1 to 60.1 million. There are three scenarios where the population is still growing between 2075 and 2100, from 53.2 to 54.8 million in the medium inequality scenario, from 57.0 to 60.3 million in the “rapid development” scenario, and from 82.6 to 101.2 million in the “conventional development” case, where there is limited attention to sustainability. In the “stalled development” scenario, Canada’s population reaches a peak around 2040 at 37.3 million, and in the “high inequality” case the peak is around 2075 at 47.0 million. In the medium scenario, the proportion aged 65+ increases from 14 per cent in 2010 to 26 per cent in 2050, and the proportion of the population with less than 15 years of remaining life expectancy increases from 9 to 12 per cent.

Let us hope that the rapid development or medium inequality scenarios are a better prognosis (with peak world population of 8.5 billion in 2050 or 9.4 billion in 2075, respectively), and that the world manages to avoid the stalled development course, where the 2100 population is projected at 12.8 billion.