# NORTH AMERICA 2.0

## Forging a Continental Future

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# Demographic Dynamics in North America

By Agustín Escobar Latapí, Víctor M. García-Guerrero, and Claudia Masferrer

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Mexico, the United States and Canada – the three countries of North America – are currently going through an advanced stage of the demographic transition. This transition is characterized by a shift from a demographic context of high, sustained levels of fertility and mortality to low levels of both. Within this process, the decline in mortality precedes the decline in fertility, and therefore implies high levels of population growth.

What sets North America apart is that its modest level of population growth affords it a significant asset for the next 30 years.[1] Unlike Europe and China, the level and kind of population growth that North America is set to experience will lead to the prevalence of the working-age population over the dependent population (children and the elderly). This in turn forecasts economic growth and an ability to invest in further economic and productivity growth. From a demographic point of view, North America is set to increase its contribution to the global economy for the next 30 years—if population change and migration are managed correctly. At a later stage, as the population ages and retires, large investments will have to be made in the care economy.

As a region, the estimated population of the three North American countries in the period 2015–2019 was almost 480 million: 321 million people lived in the United States, 122 million in Mexico, and 36 million in Canada. In all, the North American population is comparable to that of the European Union (432 million).[2] Clearly, the total population of each country differs substantially, and this difference in size has important implications for the demographic profile of the region as a whole. Today, two in every three people in North America live in the United States. Between 1960 and 1965, the relative presence of the United States was even higher: more than three out of every four North Americans resided in the United States. The population of Mexico eight decades ago was almost the same size as the population in Canada today (37 million), and the United States was ten times larger than Canada (187 million vs. 18 million).[3]

The latest estimates from the United Nations *World Population Prospects* (Figure 1), show that by 2015–2020, both Mexico and Canada had an annual average population growth rate close to 1 percent.[4] In other words, every year the population increased by one person per every hundred inhabitants. However, the United States has a lower population growth rate today, close to 0.5 percent. This means that today in the United States, the population grows by five people per thousand every year. However, when comparing population growth over time, change occurred at different rates within the three countries. Whereas Canada and Mexico had growth rates of 25 percent and 30 percent, respectively, during the 1950–1955 period, the United States grew at a rate of 15 percent. Mexico continued increasing at this rate until the 1965–1970 period, while the rates in Canada and the United States where already declining. This comparison shows how the three countries have gone through different stages of the demographic transition at different rates over the past 70 years.

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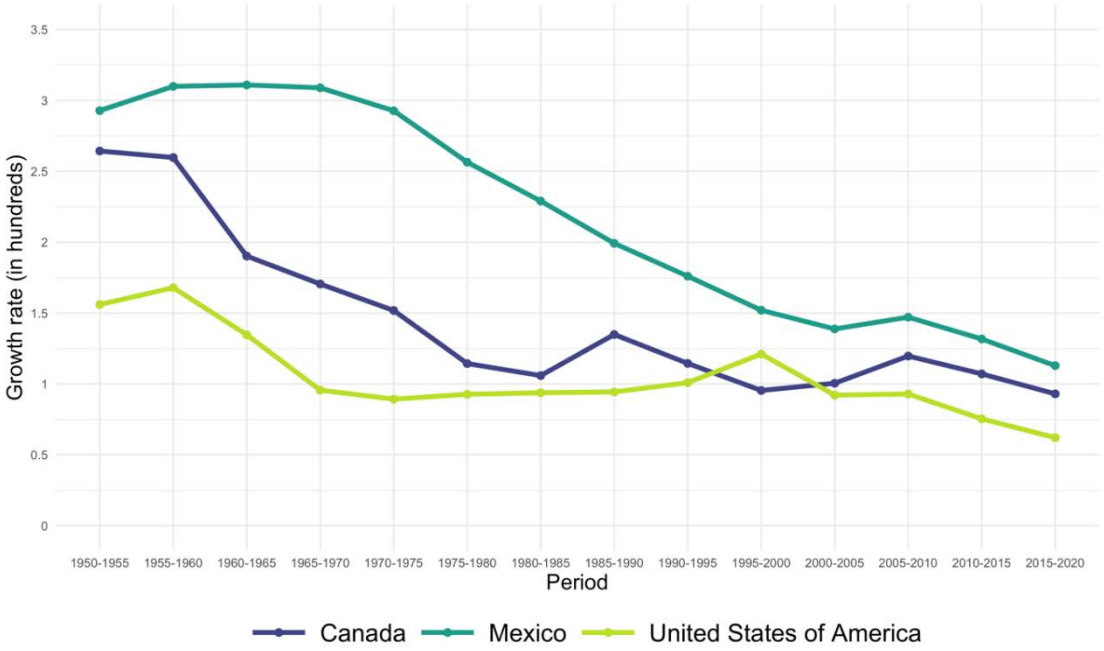
[1] United Nations, *World Population Prospects: The 2019 Revision* (New York: United Nations, 2019), http://www.wittgensteincentre.org/dataexplorer.

[2] United Nations, *World Population Prospects* (2019). The United Kingdom is not considered a member of the European Union in the 2015–2019 period.

[3] United Nations, *World Population Prospects* (2019).

[4] Rates are estimated for five-year periods.

**Figure 1. Growth Rate (in Hundreds), 1950–2020**




Source: United Nations, *World Population Prospects* (2019).
Notes: Average exponential rate of growth of the population over a given period is expressed as a percentage.

The migration component has had a key role in each country's rate of growth. Population growth is determined by an interaction of the three basic demographic components: mortality, fertility, and migration. To gain a better understanding of the dynamics of population change in North America, each of these components will need to be examined in order to provide an overview of the most likely future population scenarios.

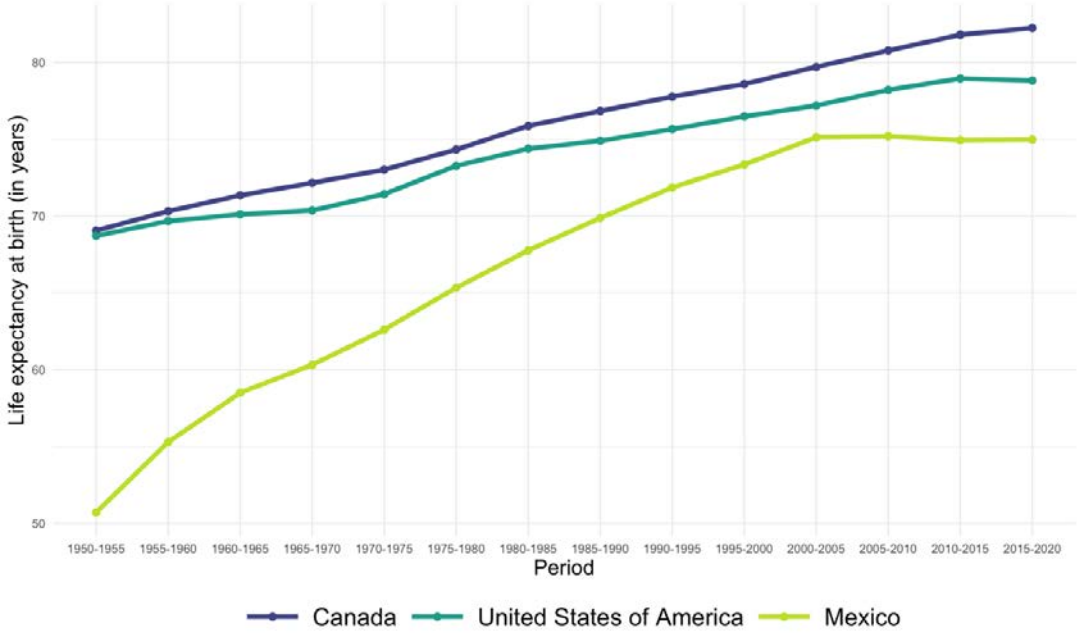
## Mortality

Since 1950, Canada has had the lowest levels of mortality in North America, followed by the United States. In the 1950–2020 period, the net mortality rate stabilized around 7.5 deaths per thousand people in Canada. The United States was about to reach this same level in the period 2005–2010. Mexico's mortality rate has shifted from levels higher than those of Canada and the United States in the 1950s—close to 17 deaths per thousand people—to levels below those of the other countries by 2015–2020, with slightly more than 5 deaths per thousand people. These relative levels are explained mainly by differences in the age structures of the population of the three countries. Canada and the United States have older populations, whereas Mexico still has a young population that currently is enjoying the benefit of past decreases in mortality rates. Aging inevitably increases net mortality rates.

Since the period 2005–2010, mortality has increased in both Mexico and the United States. These increases are driven by different factors, but the rise in mortality for those of younger ages is key for explaining the increase in both countries. As shown in Figure 2, all three countries increased their life expectancy at birth through the 20th century. (Life expectancy in the United States is

lower than in other high-income countries, mainly because of its social policies.)[5] Canada and the United States started at higher levels than Mexico, with almost 20 years more than Mexico in the 1950–1955 period. However, as a result of the institutionalization of Mexico's public health services, as well as various programs and policies to eradicate infectious/contagious diseases and reduce maternal-infant mortality, by the end of the 20th century Mexico managed to increase its life expectancy by more than 25 years, converging with the levels attained by Canada and the United States.

**Figure 2. Life Expectancy at Birth, 1950–2020**




Source: United Nations, *World Population Prospects* (2019).
Note: This chart expresses the average years of life expected by a hypothetical cohort of individuals who would be subject throughout their lives to the mortality rates of a given period.

Canada continued to increase its life expectancy over the 21st century. Conversely, Mexico and the United States have gone through periods of stagnation – and even slight decline – in their life expectancy, diverging from Canada. According to various studies, the increase in preventable diseases (mainly related to the opioid crisis) has affected the survival of the adult population in the United States.[6] Nevertheless, Canada has seen similar trends.[7] Recent life tables for Canada also have shown a stagnation in males' life expectancy since 2016, affecting British Columbia and

[5] M. Avendano and I. Kawachi, "Why Do Americans Have Shorter Life Expectancy and Worse Health Than Do People in Other High-Income Countries?," *Annual Review of Public Health* 35 (2014), 307–25.
[6] H. Jalal, J. M. Buchanich, M. S. Roberts et al., "Changing Dynamics of the Drug Overdose Epidemic in the United States from 1979 through 2016," *Science* 361, no. 6408 (2018): eaau1184, doi:10.1126/science.aau1184; R. K. Masters, A. M. Tilstra, and D. H. Simon, "Explaining Recent Mortality Trends among Younger and Middle-Aged White Americans," *International Journal of Epidemiology* 47, no. 1 (2017): 81–88; and P. A. Muennig, M. Reynolds, D. S. Fink et al., "America's Declining Well-Being, Health, and Life Expectancy: Not Just a White Problem," *American Journal of Public Health* 108, no. 12 (2018): 1626–31.
[7] N. B. King, V. Fraser, C. Boikos et al., "Determinants of Increased Opioid-Related Mortality in the United States and Canada, 1990–2013: A Systematic Review," *American Journal of Public Health* 104, no. 8 (2014): e32–e42.

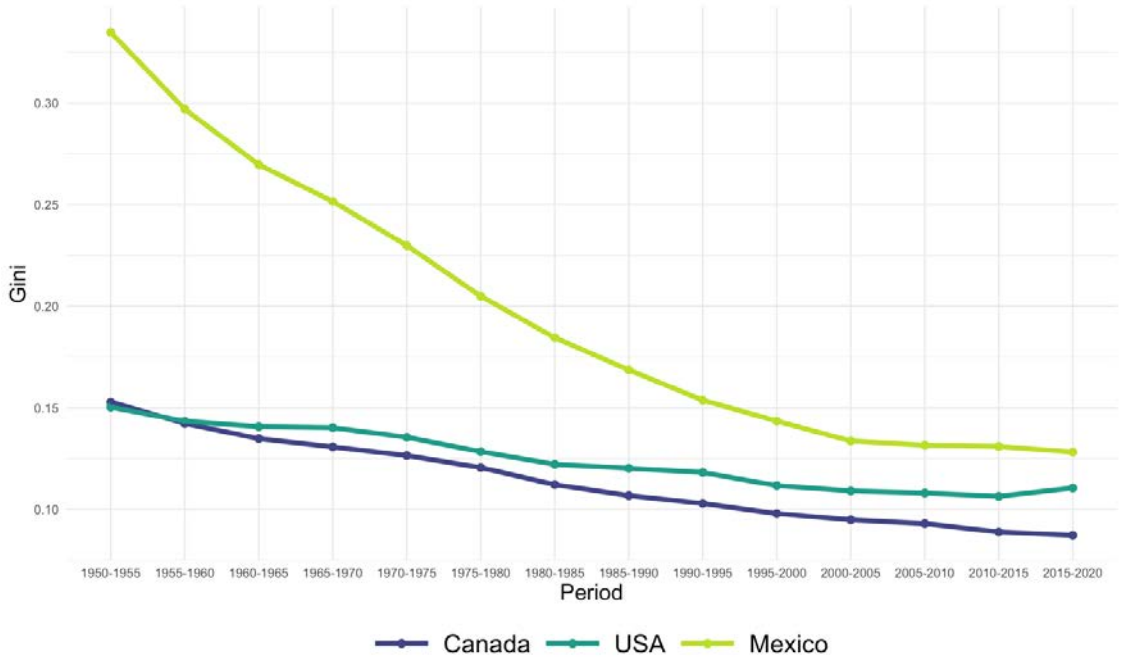
Ontario particularly.[8] In Mexico, two problems have affected the life expectancy of different populations: an increase in endocrinal diseases has had an impact on the population aged 50 and older, and an increase in homicides resulting from the so-called War on Drugs has harmed the young population aged 15 to 45 years old.[9]

To measure the variability in age at death of individuals between countries, it is helpful to calculate the Gini coefficient in length of life. The interpretation of the Gini coefficient in inequality of age at death is similar to the indicator used in econometrics to measure income or wealth inequality among individuals or households.[10] In this way, the density and distribution functions of income are extrapolated to age at death in terms of life table functions.[11] The estimation of the Gini coefficient for age at death considers the distribution of life of a person (from birth to death) and the total cumulative deaths of the population. In this sense, a higher Gini (close to one) means an unequal distribution of survivorship in a population, in which survivorship is concentrated in some age groups. By contrast, a small Gini (close to zero) means a more equal distribution of survivorship in a population, with survivorship equally distributed over age. In demography, the former is known as the *rectangularization* of the survival curve.

Figure 3 shows the evolution of inequality of length of life for Canada, Mexico, and the United States between 1950 and 2020. Canada and the United States had similar Gini coefficients in the 1960s, but in the years that followed their values diverged. The data show an overall decline of inequality for the three countries, with Mexico declining the fastest. In the 2015–2020 period, the Gini coefficient for Mexico reached the level that the other two countries had reached by 1980. Since 1960, inequality in age at death in the United States has been greater than in Canada and has continued to diverged, widening the gap between them. One notable aspect is the small increase in inequality in the United States for the last period. In other words, variability in age at death in 2015–2020 reversed the trend, likely a result of the increase in mortality and decline in life expectancy caused by the abovementioned opioid crisis specifically and U.S. social policies in general.

**Figure 3. Inequality in Age at Death, 1950–2020**

[8] "Life Tables, 2016/2018," Life Tables, Canada, Provinces and Territories, Statistics Canada, 2020, https://www150.statcan.gc.ca/n1/en/catalogue/84-537-X.
[9] V. Canudas-Romo, J. M. Aburto, V. M. García-Guerrero et al., "Mexico's Epidemic of Violence and Its Public Health Significance on Average Length of Life," *Journal of Epidemiology and Community Health* 71, no. 2 (2017): 188–93; and V. Canudas-Romo, V. M. García-Guerrero, and C. J. Echarri-Cánovas, "The Stagnation of the Mexican Male Life Expectancy in the First Decade of the 21st Century: The Impact of Homicides and Diabetes Mellitus," *Journal of Epidemiology and Community Health* 69, no. 1 (2015): 28–34.
[10] S. Anand, *Inequality and Poverty in Malaysia: Measurement and Decomposition* (Washington, DC: World Bank, 1983); A. B. Atkinson, "On the Measurement of Inequality," *Journal of Economic Theory* 2, no. 3 (1970): 244–63; A. B. Atkinson, *The Economics of Inequality* (London: Oxford University Press, 1975); and A. Sen, "Poverty, Inequality and Unemployment: Some Conceptual Issues in Measurement," *Economic and Political Weekly* 8, nos. 31/33 (1973): 1457–64.
[11] V. M. Shkolnikov, E. E. Andreev, and A. Z. Begun, "Gini Coefficient as a Life Table Function Computation from Discrete Data, Decomposition of Differences and Empirical Examples," *Demographic Research* 8 (2003): 305–58.




Source: United Nations, *World Population Prospects* (2019).

Regional gains in life expectancy, and falling inequality in mortality rates, are positive indicators for the future of the overall population of North America. However, Mexico's stagnation after 2005 related to the War on Drugs and the United States' and Canada's slower or reversed gains related to the opioid crisis (and possibly also by problems derived from U.S. healthcare costs), call for effective action by all three governments.

**Fertility**

Fertility decline is a key characteristic of the demographic transition.[12] In recent decades, most of the countries in the world have gone from a regime of very high fertility to fertility closer to a level of replacement—around 2.1 children per woman—although some poorer countries continue to have fertility rates above replacements. Latin America and the Caribbean are transitioning toward lower fertility demographics; this decline, however, is heterogeneous, and Mexico declined after other Latin American countries.[13] Globally, fertility decline has been attributed to changes in family behavior, cultural dynamics, and gender roles; the greater incorporation of women in the labor market; and a number of economic factors.[14] In more recent years, the 2008 financial crisis and the

[12] J. C. Caldwell, "The Globalization of Fertility Behavior," in J. C. Caldwell, *Demographic Transition Theory* (Dordrecht: Springer Netherlands, 2006), 249–71.
[13] W. Cabella and I. Pardo, *Hacia un régimen de baja fecundidad en América Latina y el Caribe, 1990–2015* (Rio de Janeiro: ALAP, 2014); and F. Juárez, J. Quilodrán, and M. E. Zavala de Cosío, "De una fecundidad natural a una controlada: México 1950–1980," *Estudios demográficos y urbanos* 4, no. 1 (1989): 5–51.
[14] M. Dribe, J. D. Hacker, and F. Scalone, "The Impact of Socio-economic Status on Net Fertility during the Historical Fertility Decline: A Comparative Analysis of Canada, Iceland, Sweden, Norway, and the USA," *Population Studies* 68, no. 2 (2014): 135–49; F. Goldscheider, E. Bernhardt, and T. Lappegård, "The Gender Revolution: A Framework for Understanding Changing Family and Demographic Behavior," *Population and Development Review* 41, no. 2 (2015): 207–39; C. Hakim, "A New Approach to Explaining Fertility Patterns: Preference Theory," *Population and Development Review* 29, no. 3 (2003): 349–74; R. Lesthaeghe and J.

subsequent Great Recession appear to have played a role in further reducing fertility in developed countries.[15]

Regarding fertility in North America, by 2020 the three countries will converge to fertility levels below the replacement figure of 2.1 children per woman (see Figure 4). Over the past seven decades, Mexico had the fastest decline of the three countries. Canada, the United States, and Mexico decreased their fertility by 26, 24, and 45 births per every thousand inhabitants, respectively. In Mexico, this decline was driven by the government's family planning policies, which starting in the 1970s improved access to contraceptives and led to other sexual and reproductive health policies in the 1990s.[16]

Although very high fertility poses challenges for individuals, families, and governments, very low fertility is also problematic for sustainability. Many countries have implemented family-friendly or immigration policies aimed at reversing this trend and increasing fertility and population growth.[17] Canada, where fertility has been below replacement levels since the 1970s, has explicitly aimed at increasing fertility, although fertility behavior, policies, and context differ between provinces.[18] Even as some provinces implemented their own family policies, the Canadian government sought to compensate for low natural population growth through immigration and established an explicit immigration policy with a demographic perspective. Contrary to Canada, the United States did not develop an explicit immigration policy to compensate for fertility decline, but implicitly, immigration did have an effect on fertility. Overall, immigration contributed to fertility, with Mexican immigration in particular having an effect.[19] The years of increasing immigration coincided with the observed increase in total fertility rate in the 1980–2010 period (Figure 4). Just

Surkyn, "Cultural Dynamics and Economic Theories of Fertility Change," *Population and Development Review* 14, no. 1 (1988), 1-45.

[15] A. Cherlin, E. Cumberworth, S. P. Morgan et al., "The Effects of the Great Recession on Family Structure and Fertility," *The ANNALS of the American Academy of Political and Social Science* 650, no. 1 (2013): 214–31; and T. Sobotka, V. Skirbekk, and D. Philipov, "Economic Recession and Fertility in the Developed World," *Population and Development Review* 37, no. 2 (2011): 267–306.

[16] F. Alba and J. E. Potter, "Población y desarrollo en México. Una síntesis de la experiencia reciente," *Estudios demográficos y urbanos* 1, no. 1 (1986): 7–37; and M. E. Zavala de Cosío and J. Ferreiro, *Cambios de fecundidad en México y políticas de población* (Mexico: El Colegio de México, Fondo de Cultura Económica, 1992).

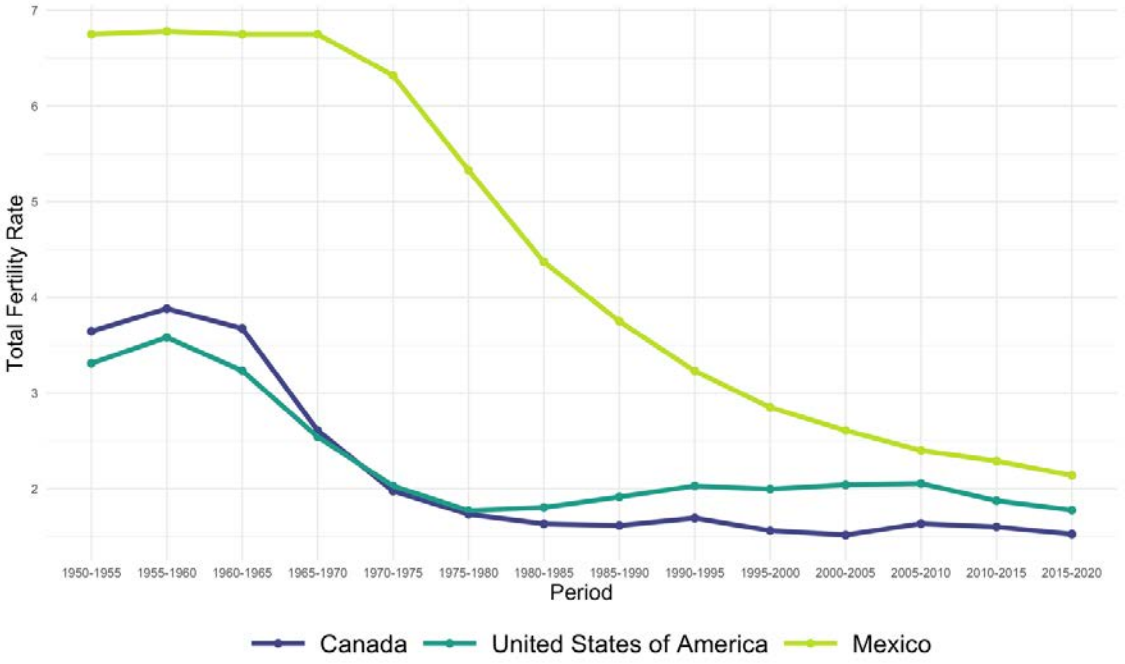
[17] F. G. Castles, "The World Turned Upside Down: Below Replacement Fertility, Changing Preferences and Family-Friendly Public Policy in 21 OECD Countries," *Journal of European Social Policy* 13, no. 3 (2003): 209–27; and D. Coleman, "Immigration and Ethnic Change in Low-Fertility Countries: A Third Demographic Transition," *Population and Development Review* 32, no. 3 (2006): 401–46.

[18] R. Beaujot, C. J. Du, and Z. Ravanera, "Family Policies in Quebec and the Rest of Canada: Implications for Fertility, Child-care, Women's Paid Work, and Child Development Indicators," *Canadian Public Policy* 39, no. 2 (2013): 221–40; D. Gauvreau and B. Laplante, "Fertility in Canada during the Baby Boom. The Divergence and Convergence of Behaviors" [La fécondité au Canada durant le baby-boom. Divergence et convergence des comportements], *Annales de démographie historique* 132, no. 2 (2016): 65–110; and B. Laplante and A. L. Fostik, "Disentangling the Quebec Fertility Paradox: The Recent Evolution of Fertility within Marriage and Consensual Union in Quebec and Ontario," *Canadian Studies in Population* 42, nos. 1–2 (2015): 81–101.

[19] S. H. Jonsson and M. S. Rendall, "The Fertility Contribution of Mexican Immigration to the United States," *Demography* 41, no. 1 (2004): 129–50.

as Mexican fertility had an effect on the United States, high emigration levels, especially in the post-1990 period, reduced population growth and its reproductive potential in Mexico.[20]

**Figure 4. Total Fertility Rate, 1950–2020**




Source: United Nations, *World Population Prospects* (2019).
Note: The total fertility rate is the average number of live births that a hypothetical cohort of women would have at the end of their reproductive period if they were subject during their whole lives to the fertility rates of a given period. It is expressed as live births per woman.

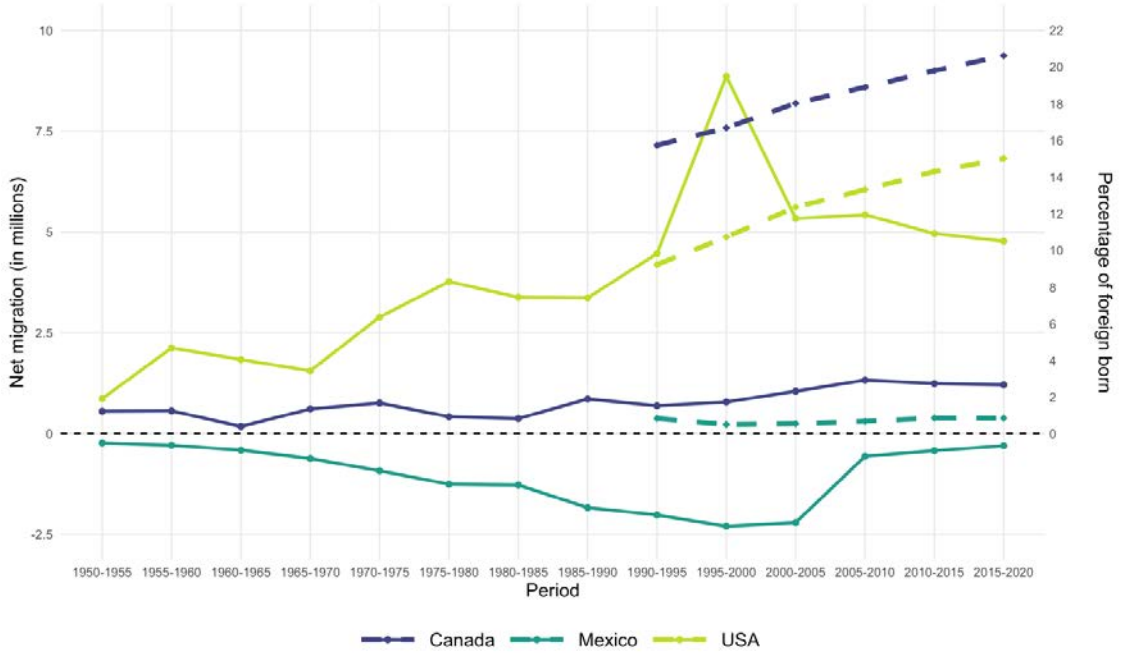
## International Migration

Although the demographic patterns and trends of migration have changed over time, for the past 130 years migration has played a central role in the construction of all three North American societies.[21] Canada and the United States are among the world's top immigration countries, whereas Mexico traditionally has been an emigration country. These trends have been present since 1950; however, there are a number of caveats. First, net migration in millions has been positive for Canada and the United States over these seven decades (see Figure 5, solid lines). However, the 1990s was the decade with the highest net migration in the United States. Between 1995 and 2000, the difference between migrants arriving and leaving the country was almost 9 million, but has been declining since then. Second, Mexico's net migration balance was increasingly negative until the period 1995–2000, when it reached a deficit of 2.5 million. This deficit began to diminish after that point, although it is still negative today. Third, the percentage of foreign-born residents living in each country has increased steadily over the period, but the relative presence of immigrants in each country shows stark contrasts (Figure 5, dashed lines). More than one in every five Canadian

[20] G. H. Hanson and C. McIntosh, "The Great Mexican Emigration," *The Review of Economics and Statistics* 92, no. 4 (2010): 798–810.
[21] C. Masferrer, S. E. Giorguli-Saucedo, and V. M. García-Guerrero, "Contemporary Migration Patterns in North and Central America," in *The SAGE Handbook of International Migration*, ed. C. Inglis, W. Li, and B. Khadria (London: SAGE Publications, 2019), 342–57.

residents was born abroad, and one in six U.S. residents is an immigrant. Meanwhile, less than 1 percent of Mexican residents is foreign-born.

**Figure 5. Net Migration in Millions (Solid Lines), 1950–2020, and Percentage of Foreign Born (Dashed Lines), 1990–2020**




Source: United Nations, *World Population Prospects* (2019).
Note: Net migration (the number of immigrants minus the number of emigrants) is expressed in millions.

Migration redistributes population and regulates aging in origin and destination countries. Migration also slows down population aging, as it increases the reproductive potential of receiving countries, and it will have a larger effect in countries with low fertility or declining population size.[22] To understand the demographic impacts of migration on population aging, one must examine the age structure of the arriving immigrant population.[23] Studies suggest that immigration has not offset population aging, but rather has sustained population growth and modified the age structure of the United States and Canada, as well as Europe.[24] This finding is particularly important for Canada,

[22] L. A. Gavrilov and P. Heuveline, "Aging of Population," in *The Encyclopedia of Population*, ed. P. Demeny and G. McNicoll (New York, Macmillan Reference, 2003), 32–37.
[23] J. M. Alho, "Migration, Fertility, and Aging in Stable Populations," *Demography* 45, no. 3 (2008): 641–50.
[24] For the United States, see A. I. Canales, "Inmigración y envejecimiento en Estados Unidos. Una relación por descubrir," *Estudios demográficos y urbanos* 30, no. 3 (2015): 527–66; and J. S. Passel and D. V. Cohn, *Immigration Projected to Drive Growth in U.S. Working-Age Population Through at Least 2035* (Washington, DC: Pew Research Center, 2017). For Canada, see R. Beaujot, "Effect of Immigration on Demographic Structure," *PSC Discussion Papers Series* 16, no. 9 (2002): 1; and R. Beaujot, "Effect of Immigration on the Canadian population: Replacement Migration?," *PSC Discussion Papers Series* 17, no. 3 (2003): 1. For Europe, see D. Coleman, "The Demographic Effects of International Migration in Europe," *Oxford Review of Economic Policy* 24, no. 3 (2008), 452–76; W. Lutz and A. Bélanger, "Demographic Change and the Drivers of Future Migration into Europe," Approach, methodology and work plan of the JRC/IIASA Centre of Expertise on Population and Migration (Laxenburg, Austria: International Institute for Applied Systems Analysis, 2017); W. Lutz and S. Scherbov, Can Immigration Compensate for Europe's Low Fertility? IIASA Interim Report (Laxenburg, Austria: International Institute for Applied Systems Analysis, 2002); and D. Philipov and J. Schuster, "Effect of Migration on Population Size and Age Composition in

which has the lowest fertility in North America and has seen the steepest fertility decline since 1960. Canadian immigration policy has explicitly recognized this trend as a concern; since the 1980s, Canada has admitted an annual number of new immigrants as permanent residents equivalent to 1 percent of the population.[25] The effect of international migration in the aging process of less-developed countries has not been the focus of much attention until recently, because the impacts of outmigration have been studied less than the impact of immigration in developed countries.[26] A recent study for North and Central America shows that future migration may slow the aging process in Canada and the United States, have a small effect in Mexico, and accelerate it in El Salvador.[27]

J. Edward Taylor, Diane Charlton, and Antonio Yúnez-Naude have identified labor scarcity as an explanation for difficulties facing the United States' farm economy.[28] One reason for this labor scarcity, oddly enough, is the imbalance in population dynamics caused by previous emigration from Mexico to the United States, often for farm work. For instance, Agustín Escobar Latapí's analysis showed one example of this relationship: substantial emigration from Mexico's traditional emigration region – mostly the rural center-west of the country – created a dent in the age pyramid in rural Mexico that led to a regional population decline as many young workers left the country.[29] Such instances of labor emigration from rural areas has accelerated Mexico's demographic transition. The population depletion of areas with heavy emigration helps explain why Mexico–U.S. migration slowed after 2008.

As the populations of Canada and the United States continue to age, the demand for migrant labor will continue and possibly even rise for particular occupations and labor market sectors. However, the migrant populations that provide such labor are by no means an inexhaustible resource, as they might have seemed in decades past. For at least 90 years, Mexico has supplied the U.S. agricultural economy with laborers, to the extent that most U.S. farm workers in the present day are Mexican-born. During some periods, the vast majority of these workers returned to Mexico and created a new generation of Mexican citizens. At other times, however, a large portion of migrant Mexican workers moved out of U.S. agriculture and into other economic sectors, including service industries, construction, and manufacturing. As they did so, they settled in U.S. cities and contributed to the expansion of the Mexican-American population. Today, experts point at labor scarcity in U.S. *and Mexican* agriculture.[30] Mexican workers account for almost all of the rural workforce in Mexico, more than 80 percent of the farm workforce in the United States, and a little under half of the farm

Europe," European Demographic Research Papers, Vienna Institute of Demography, 2010, https://www.oeaw.ac.at/vid/download/edrp_2_10. pdf.

[25] N. Kelley and M. J. Trebilcock, *The Making of the Mosaic: A History of Canadian Immigration Policy* (Toronto: University of Toronto Press, 2010).

[26] N. Renuga Nagarajan, A. A. C. Teixeira, and S. T. Silva, "An Empirical Analysis of the Demographic Trends in Least Developed Countries," *Ageing International* 42, no. 3, (2017): 251–73.

[27] V. M. García-Guerrero, C. Masferrer, and S. E. Giorguli-Saucedo, "Future Changes in Age Structure and Different Migration Scenarios," *Revista Latinoamericana de Población* 13, no. 25 (2019): 36–53.

[28] J. E. Taylor, D. Charlton, and A. Yúnez-Naude, "The End of Farm Labor Abundance," *Applied Economic Perspectives and Policy* 34, no. 4 (2012): 587–98.

[29] A. Escobar Latapí, "Jornaleros en México" (paper presented at the Seminario sobre jornaleros, Wilson Center, Washington, DC, July 18, 2018).

[30] Taylor, Charlton, and Yúnez-Naude, "The End of Farm Labor Abundance."

workforce in Canada.[31] Agricultural employers in all three countries increasingly rely on each other to mobilize Mexican workers when growing and picking seasons complement each other. However, Mexico's waged agricultural employment is rising faster than its overall labor force, in line with Mexico's rapidly growing agricultural exports. Higher wages and more secure pathways for legal immigration and employment may not entirely solve the problem of labor scarcity, but both trends have helped legalize labor mobility and improve incomes in rural Mexico, thus reducing rural poverty levels.

Yet even with an available and willing migrant labor force to fill the demand for workers, a sustainable immigration policy requires a suitable framework to facilitate legal movement across borders. Although no North American country has a formal regional immigration policy, the United States and Canada operate significant de facto regional policies, centered on two major current initiatives. Both countries have temporary worker programs—the H-2A and H-2B nonimmigrant worker visas in the United States, and the Seasonal Agricultural Worker Program and Temporary Foreign Worker Program in Canada—that rely mostly on "unskilled" Mexican workers in farm and nonfarm jobs. NAFTA (North American Free Trade Agreement) also included a section on migration, intended to provide visa-free travel for selected professionals from all three countries, and as of July 2020 this section continues to operate under USMCA (United States–Mexico–Canada Agreement). Until 2001, closer cooperation in migration was expected, and conversations were held to advance it. Improved regional cooperation in terms of migration can only benefit employers and employees alike.

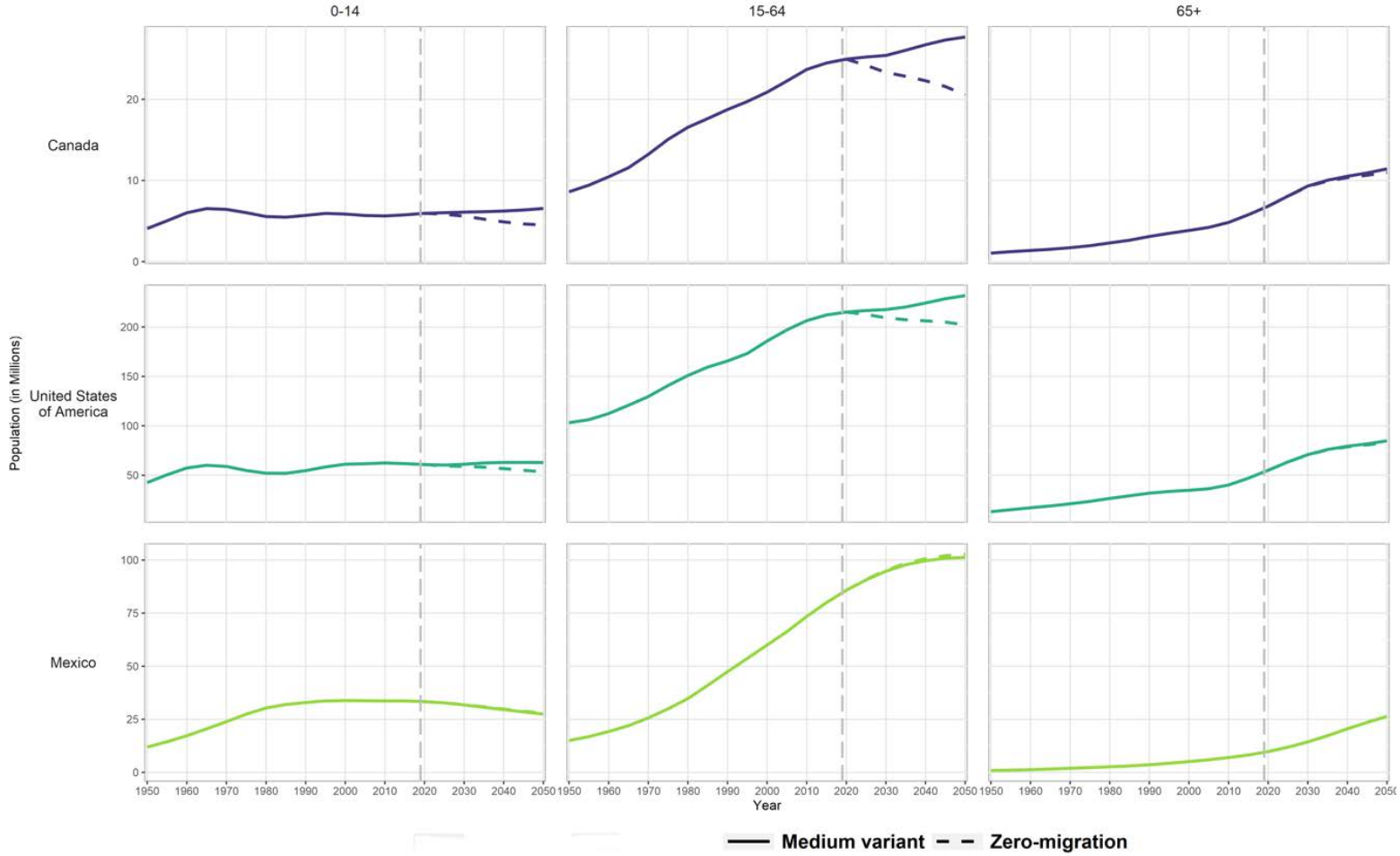
**Age Structure and Dependency Ratios**

The main effect of the combination of the three main demographic variables can be seen in the age structure of a particular population. Low fertility reduces the number of children, and high out-migration reduces a population's labor ages and reproductive potential. The high mortality seen in the last stages of the epidemiological transition reduces the elderly population, whereas mortality related to the first stages of the epidemiological transition reduces the population of infants and women of reproductive age.[32]

As mentioned in previous sections, immigration plays a key role in moderating demographic dynamics. In this context, Figure 6 shows the evolution of three broad age-groups in all three countries from 1950 to 2020—children and teenagers (aged 14 and younger), the working-age population (aged 15 to 64) and the retirement population (aged 65 and older)—as well as its projection under two migration scenarios (zero migration and constant net migration rates). Canada and the United States show a clear decline in projected population under a zero-migration scenario, particularly for the working-age population. The population decline for those below retirement age is greater in Canada than in the United States. However, this scenario does not appear to affect the population in Mexico, mainly because the constant migration scenario projections are similar to the recent patterns of zero migration.

[31] Mexico has a long-standing temporary migration agreement with Guatemala, in which Guatemala agricultural laborers work on Mexican plantations, mostly in the state of Chiapas. This agreement has been expanded to other states and sectors.
[32] A. R. Omran, "The Epidemiologic Transition: A Theory of the Epidemiology of Population Change. 1971," *The Milbank Quarterly* 83, no. 4 (2005): 731–57.

**Figure 6. Past and Projected Population for Three Age Groups under Two Migration Scenarios**




Source: United Nations, *World Population Prospects* (2019).

Notes: The two prospective migration scenarios compare the medium- and zero-migration variants, assuming medium fertility and normal mortality. The medium-variant projection assumes future levels of net migration will be constant until the period 2045–2050. The baseline considers country-specific policies regarding future international migration and takes into account recent fluctuations in migration stocks, as well as refugee and temporary labor flows.

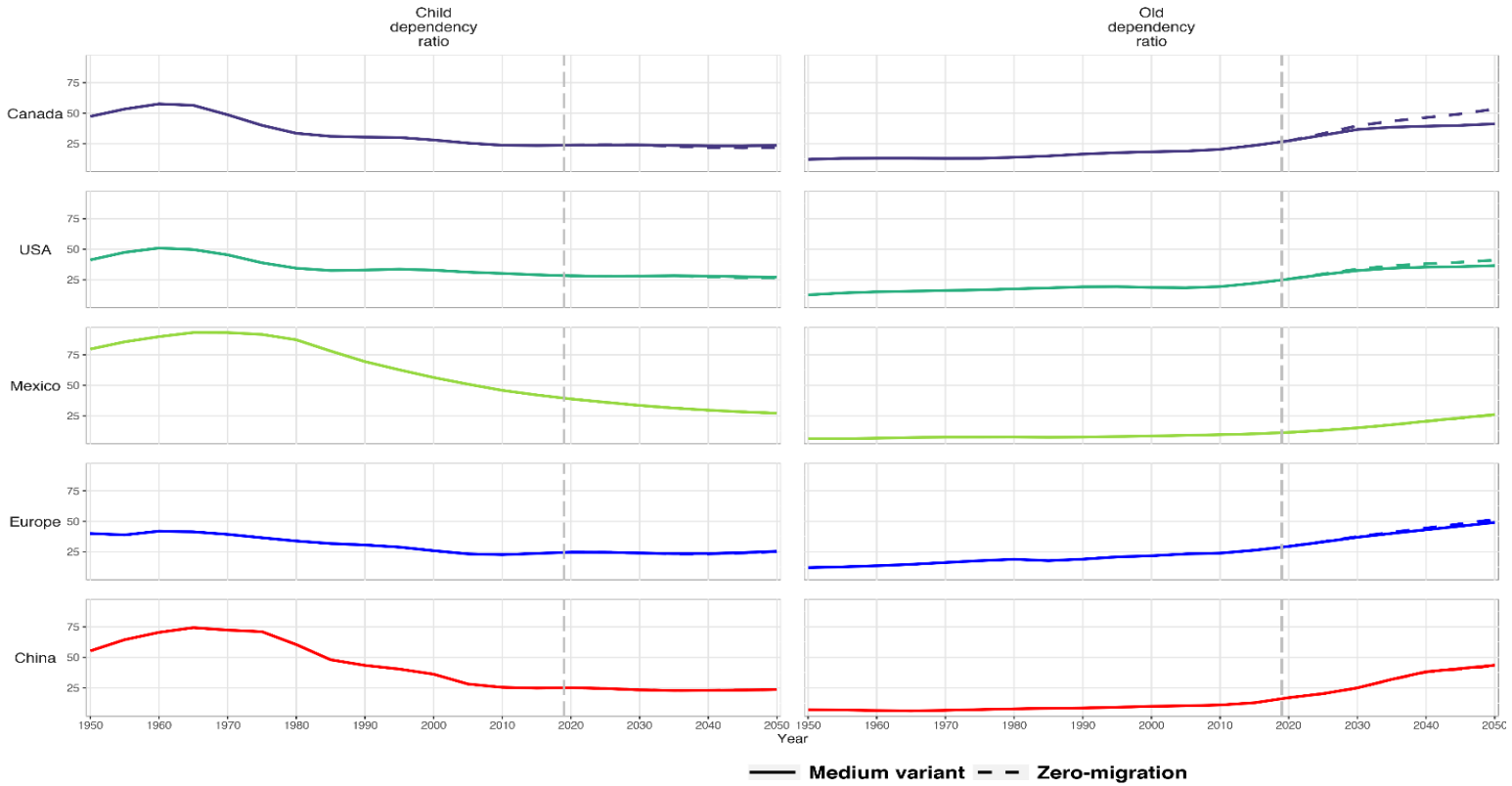
Figure 7 shows recent and projected trends for demographic dependency ratios—that is, the number of minors and elderly persons for every working-age person—for the three North American societies and, by way of comparison, China and Europe. Overall, dependency rates are crucial for the future of an economy because economic growth largely depends on labor force growth and, inversely, on the burden placed on workers by non-workers. These ratios also help define future economic stress and poverty levels because they indicate the extent to which one wage must support non-working populations. Economic stress on society, and future poverty levels, also naturally depend on the scope and scale of pension and retirement schemes on one hand, and childcare and basic education on the other. A society's emphasis on one or the other should depend on the phase of its demographic transition. Early on, childcare and basic education are key to a healthy, growing society; during later phases of the transition, pensions, retirement homes, or other provisions become crucial for the wellbeing of the elderly in particular and the population as a whole.

As seen in the figure, Canada and the United States have mostly stable child dependency ratios, at levels slightly above those of China and Europe. This slightly higher child dependency ratio—seemingly a negative factor—is a positive projection for the future, because it anticipates a higher level of labor force and population growth in the United States and Canada than in China and Europe. In Mexico, on the contrary, child dependency ratios have fallen rapidly and will continue to fall for the foreseeable future, albeit not to an extent that is troublesome for future economic needs. Both trends point to a future in which the economically active part of the population remains dominant in North America.

The elderly dependency ratios, by contrast, pose a starkly different scenario. Old-age dependency ratios are a key demographic parameter affecting social security programs, and can be a shadow price for social security benefits; for example, an old-age dependency ratio of 0.2 means that it costs each worker $0.20 to raise benefits for retirees by $1.00.[33] These ratios have been growing and will continue to grow for the foreseeable future, as all three populations age. For Canada, old age dependency is increasing moderately. Its future depends crucially on its current immigration policy, because a continued influx of foreign workers will be needed to maintain a dependency rate below 0.5 in the future. Old age dependency rates are slightly lower in the United States, where immigration plays a smaller (albeit positive) role. For both countries, however, trends point at a more gradual increase in this dependency ratio than in Europe or China. In Mexico, these ratios are still much lower than in the other two countries—aging is still at an early phase—but are poised to double in the next 30 years. For all three countries, aging will be a challenge. Whatever schemes they have in place to deal with it are being tested now, and will be further stressed in the future.

[33] J. A. Turner, "Population Age Structure and the Size of Social Security," *Southern Economic Journal* 50, no. 4 (1984): 1131–46.

**Figure 7. Past and Projected Child and Old Age Dependency Ratios (in Hundreds) under Two Migration Scenarios, 1950–2050**




Source: United Nations, *World Population Prospects* (2019).

Notes: The child dependency ratio is the ratio of the population under age 15 to those of working age (15–64); old age dependency is the ratio of the population aged 65 and over to those of working age. They are expressed as number of dependents per 100 persons of working age. The two prospective migration scenarios compare medium- and zero-migration variants. Both projections assume medium fertility and normal mortality. The medium-variant projection assumes future levels of net migration will be constant until the period 2045–2050. The baseline considers country-specific policies regarding future international migration and takes into account recent fluctuations in migration stocks, as well as refugee and temporary labor flows.

Since 2008, Mexico has received a net inflow of Mexican returnees and U.S.-born immigrants.[34] A large majority of the U.S.-born population living in Mexico – half a million individuals – are U.S.-born minors who are living with at least one Mexican parent and may be dual citizens.[35] If they receive sufficient education, they will make substantial contributions to economic growth in both countries.[36] However, many studies point to the challenges that returnees and U.S.-born immigrants face when attempting to integrate into educational institutions, the Mexican labor market, and Mexican society in general.[37]

Most of the returnees are concentrated in working-age population. However, an important group of the return flow consists of older, undocumented workers who spent long periods in the United States. They pose a challenge for Mexico. As Mexico's rural population ages, this demographic shift is compounded by the return of older migrants who spent their working years in Mexican urban areas or the United States. According to Escobar's appraisal of population dynamics in rural Mexico, since 1995 the elderly (age 60 and older) have been the fastest-growing group in rural areas.[38] Mexico's low social security affiliation rates, and the large number of returning Mexicans who were undocumented workers in United States and therefore were excluded from the U.S. social security system, have already begun to strain the few support systems available in Mexican rural society. Families must provide for their elderly, with little assistance from the older individual's savings or pensions. Government non-contributive pensions help, but they are below the cost of a basic goods basket, and their fiscal cost will only increase in the future.[39]

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[34] C. Masferrer and B. R. Roberts, "Going Back Home? Changing Demography and Geography of Mexican Return Migration," *Population Research and Policy Review* 31, no. 4 (2012): 465–96; and J. S. Passel, D. V. Cohn, and A. Gonzalez-Barrera, *Net Migration from Mexico Falls to Zero—and Perhaps Less* (Washington, DC: Pew Hispanic Center, 2012).

[35] C. Masferrer, E. R. Hamilton, and N. Denier, "Immigrants in Their Parental Homeland: Half a Million U.S.-born Minors Settle Throughout Mexico," *Demography* 56, no. 4 (2019): 1453–61.

[36] A. Escobar Latapí and C. Masferrer, eds., *La década en la que cambió la migración. Enfoque binacional del bienestar de los migrantes mexicanos en Estados Unidos y México* (Mexico City: El Colegio de México, forthcoming).

[37] M. Jacobo Suárez, "De ida y de vuelta: el impacto de la política migratoria estadounidense en México y su población retornada," *Carta Económica Regional* 114 (2016): 66-91; D. Medina and C. Menjívar, "The Context of Return Migration: Challenges of Mixed-Status Families in Mexico's Schools," *Ethnic and Racial Studies* 38, no. 12 (2015): 2123–39; V. Zúñiga and E. T. Hamann, "Going to a Home You Have Never Been To: The Return Migration of Mexican and American-Mexican Children," *Children's Geographies* 13, no. 6 (2014): 643–55; N. Denier and C. Masferrer, "The Payoff to Mexican Return Migration Before and After the Recession" (paper presented at the annual meeting of the Population Association of America, Chicago, 2017); E. Y. Gutiérrez Vázquez, "The 2000–2010 Changes in Labor Market Incorporation of Return Mexican Migrants, *Revista Latinoamericana de Población* 13, no. 24 (2019): 135–62; J. Hagan, R. Hernández-León, and J.-L. Demonsant, *Skills of the Unskilled: Work and Mobility among Mexican Migrants* (Berkeley: University of California Press, 2015); M. Solís Lizama, "Labor Reintegration of Return Migrants in Two Rural Communities of Yucatán, Mexico," *Migraciones internacionales* 9, no. 35 (2018): 185–212; L. Rivera Sánchez, "Reinserción social y laboral de inmigrantes retornados de Estados Unidos en un contexto urbano," *Iztapalapa: Revista de Ciencias Sociales y Humanidades* 34, no. 75 (2013): 29–56; and B. Román González, E. Carrillo Cantú, and R. Hernández-León, "Moving to the 'Homeland': Children's Narratives of Migration from the United States to Mexico," *Mexican Studies/Estudios Mexicanos 32* no. 2 (2016): 252–75.

[38] Escobar Latapí, "Jornaleros en México."

[39] Noncontributive pensions in Mexico were increased from an average 500 pesos (US$27) in 2018 to 1,250 pesos (US$67) per month in 2019. They are intended to be universal for everyone lacking social security. This amount is just under the arithmetic average of the urban and rural cost of the basic food basket. They have been promised to everyone aged 68 and over, and to indigenous Mexicans aged 65 and over.

Fewer than 50 percent of Mexican workers contribute to a retirement savings plan. According to Mexican government sources, only 40 percent of men and 23 percent of women are eligible for a contributive pension.[40] Three common aspects of employment account for this low contribution density: the large informal sector; the precarious nature of formal employment; and the movement of workers between covered and non-covered jobs, which prevents them from securing the length of time (or financial contributions) needed to qualify for contributive pensions. Only 28 percent of Mexico's population age 65 and older reports receiving a contributive pension. In fact, most of Mexico's elderly population relies on non-contributive pensions. Mexico City's government started a non-contributive pension scheme for the population age 70 and older in 2001. Starting in 2004, a federal cash transfer program became available nationwide, and soon it became universal. Between 1.5 and 1.65 million senior citizens used to receive these payments. By 2016, 80 percent of women and 83 percent of men at least age 65 received pensions from a non-contributive scheme. Starting in 2019, the amount paid to each person rose from about US$28 to US$67 per month. Nevertheless, for many older Mexicans, their standard of living often worsens significantly after their retirement.[41]

A similar problem is looming for workers in the United States. Retirement savings have much wider coverage than in Mexico, but currently, most workers fear they will not attain sufficient income to live comfortably after they retire.[42] Retirement readiness in the United States has been affected by volatile stock market prices (in which retirement savings and pension schemes are invested); falling real interest rates (for savings in banks and other deposit institutions), and lack of development of the Social Security system.[43] As the U.S. Social Security system currently pays out a smaller share of a person's active work income, individual retirement savings have also lost their ability to last for the duration of a retiree's life expectancy.

Canadian and U.S. retirement policies were similar in the 1980s and 1990s, but diverged after 1998. The current differences in social security policies include differences in the retirement age (that is, the age at which individuals may claim social security benefits), the age of leaving employment,

[40] Secretaría de Bienestar, *Programa para el Bienestar de las Personas Adultas Mayores* (Mexico: Secretaría de Bienestar, February 11, 2019), https://www.gob.mx/bienestar/acciones-y-programas/programa-para-el-bienestar-de-las-personas-adultas-mayores.
[41] B. Ramírez, *El sistema de pensiones en México, sus desafíos y opciones de reforma* (Mexico: Organización Internacional del Trabajo, 2018).
[42] Securities and Exchange Commission, *Perspectives on Retirement Readiness in the United States: A White Paper* (Washington, DC: Office of the Investor Advocate, Securities and Exchange Commission, 2016), https://www.sec.gov/advocate/staff-papers/white-papers/retirement-readiness-white-paper.pdf. As noted in the paper, the United States Bipartisan Policy Center's Commission on Retirement Security and Personal Savings finds that many Americans lack access to workplace retirement plans, and even those who have retirement plans may not be able to manage these funds properly to ensure a steady income in retirement, may not have home equity as a fallback to retirement savings, or may need to withdraw from their retirement accounts to meet short-term needs. Further, longer life expectancies have led to the risk of outliving retirement funds, and problems with the Social Security apparatus have reduced its ability to support an accepted share of retirees' incomes. The Center for Retirement Research at Boston College states that roughly half of working-age households are at risk of being unable to maintain their pre-retirement level of living, owing to decreased life expectancy, declining income replacement rates from Social Security, the move away from defined benefit to defined contribution retirement plans, increased out-of-pocket health costs for retirees, and the substantial decline in real interest rates since 1983.
[43] Securities and Exchange Commission, *Perspectives on Retirement Readiness in the United States*.

and the effect of part-time employment on social security income.[44] Compared to the United States, Canada has been more liberal over the past two decades: it did not change the retirement age, and it allows individuals to receive a social security pension while working without affecting their benefits. As a result, although Canadians retired later from the labor market than Americans, they often claimed a pension while switching to part-time employment.[45] In Canada, the employment rate of individuals age 55 or older increased for both men and women: between 1997 and 2010, it rose from 30.5 percent to almost 40 percent for men and from 15.8 percent to 28.6 percent for women.[46]

Since 1991, studies have shown increasing income inequality among retirees, as public policies provided incomplete protection in retirement with a stagnant public pension income and rising private pension income for top earners.[47] Nevertheless, later retirement is not necessarily the result of less generous and defined pensions, but may also be influenced by better health among older individuals, which may encourage them to keep working.[48]

**Educational Attainment in North America**

Educational attainment is essential to a knowledge economy, and both are indispensable to reaffirm North America as a geopolitical player at the forefront of progress in the world economy. In this respect, both Canada and the United States have undergone a transition in which most of their populations have either a postsecondary (after ninth grade) or a university education.[49] Figure 8 shows historical distributions of the levels of education in all three countries for the years 1950, 1970, 1990, 2000, and 2010, generated by the Wittgenstein Centre for Demography and Global Human Capital. Although the United States and Canada have different educational systems, 63 percent of the total population in both countries had some amount of postsecondary education by 2015.

Mexico, however, has recently completed a transition in which the vast majority of its population has completed primary or secondary education, but the population that has education beyond these levels is still a minority (12.5 million, near 10 percent of total population). The percentage of Mexican adults with postsecondary education is projected to remain comparatively small, particularly because most working-age adults are young and will still be in the labor market for several decades. Starting in 1997, primary and secondary enrollment was propelled by specific

[44] D. Latulippe and J. A. Turner, "Social Security Retirement Policy in Canada and the United States: Different Reforms, Different Outcomes," *Canadian Public Policy* 45, no. 4 (2019): 393–402. Policies in Quebec differ from the rest of Canada; see D. Béland and R. Kent Weaver, "Federalism and the Politics of the Canada and Quebec Pension Plans," *Journal of International and Comparative Social Policy* 35, no. 1 (2019): 25–40.
[45] Latulippe and Turner, "Social Security Retirement Policy in Canada and the United States."
[46] Y. Carrière and D. Galarneau, *Delayed Retirement: A New Trend* (Ottawa: Statistics Canada, 2011).
[47] J. Curtis and J. McMullin, "Dynamics of Retirement Income Inequality in Canada, 1991–2011," *Journal of Population Ageing* 12, no. 1 (2019): 51–68.
[48] P. Lefebvre, P. Merrigan, and P.-C. Michaud, *The Recent Evolution of Retirement Patterns in Canada*, Netspar Discussion Papers DP 09/2011-125 (Tilburg, Netherlands: Network for Studies on Pensions, Aging and Retirement, 2011), https://www.netspar.nl/assets/uploads/125_Michaud.pdf.
[49] The U.S. and Canadian educational systems are not comparable at the postsecondary (after ninth grade) level. The United States has a higher proportion of its population with university and postgraduate education. Canada, however, has significantly diverse postsecondary education systems.

conditional cash transfer programs and other actions.[50] University enrollment accelerated during the first decade after NAFTA took effect in 1994. From 1990 and until 2005, total university enrollment went from 1 million to 2.45 million.[51] Still, Mexico is among the four countries in the OECD (Organisation for Economic Co-operation and Development) with the lowest population percentage attaining a university education—23.4 percent of the adults aged 25 to 34.[52]

Since the 1950s, the proportion of the Canadian population with postsecondary education has increased continuously, though it has been slightly below that of the United States. According to the projections on educational attainment from the Wittgenstein Centre for Demography and Global Human Capital, this trend will reverse in the future, positioning Canada slightly over the United States.[53] By 2050, the proportion of population with a postsecondary education is projected to be 74 percent in Canada, compared to a projected 72 percent in the United States. In terms of the population with university or graduate studies, Canada has surpassed the United States since 1950, and in 2015, 47 percent of the Canadian population had at least university studies, versus 26 percent of U.S. population in the same year. This is projected to increase by 2050 to 55 percent of the Canadian population and 36 percent of the U.S. population.

Figure 9 shows projections for future levels of education in the three countries by the Wittgenstein Centre for Demography and Global Human Capital. The pyramids show the educational distribution of the population, based on trends projected from data collected until 2010. According to these projections, the educational attainment of the Mexican population is expected to increase, with an increase of population with postsecondary and university studies and beyond, although it is significantly lower than its two trading partners in North America. These projections suggest that most of the population in the United States and Canada will attain at least university education. Although Canadian immigration policy is explicit concerning the importance of attracting skilled immigrants in terms of their human capital and work experience, the United States has also counted on highly educated immigrants to maintain and enlarge its skilled and scientific community, and to be a global leader in technological development.

**Conclusion**

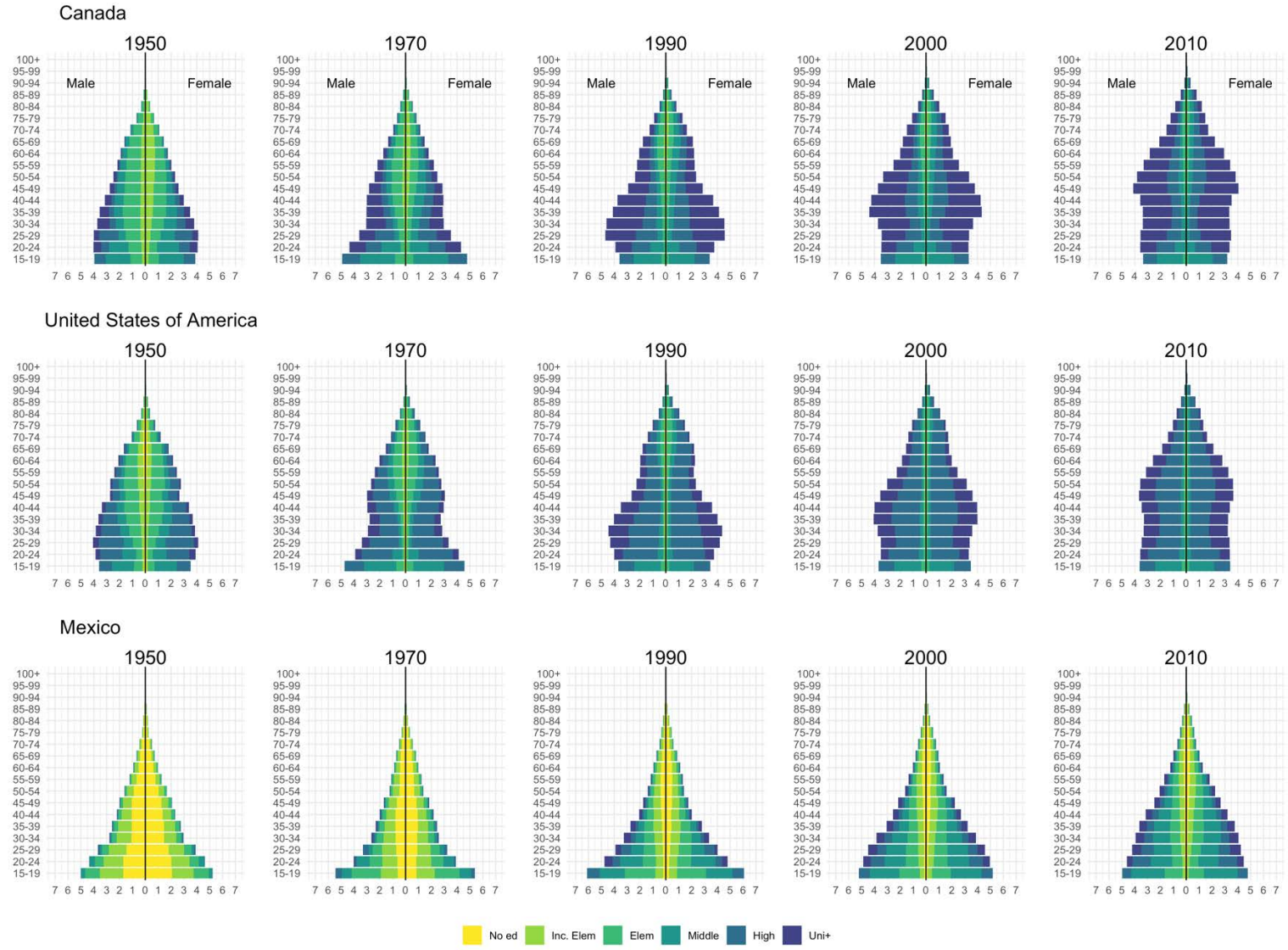
North America is one of the world's mega-economies, together with China and Europe. In terms of its demographic dynamics, it is better positioned than either Europe or China for a period of sustained economic growth. The three countries of the region are currently going through an

[50] J. R. Behrman, P. Sengupta, and P. Todd, "Progressing through PROGRESA: An Impact Assessment of a School Subsidy Experiment in Rural Mexico," *Economic Development and Cultural Change* 54, no. 1 (2005): 237–75; M. González de la Rocha, "La vida después de Oportunidades. Impacto del programa a diez años de su creación," in *Evaluación externa del Programa Oportunidades 2008. A diez años de intervención en zonas rurales (1997 – 2007). Tomo I, Efectos de Oportunidades en áreas rurales a diez años de intervención* (Mexico City: Secretaría de Desarrollo Social, 2008); and Z. M. Vang, J. Sigouin, A. Flenon et al., "Are Immigrants Healthier Than Native-Born Canadians? A Systematic Review of the Healthy Immigrant Effect in Canada," *Ethnicity & Health* 22, no. 3 (2017): 209–41.
[51] Á. Valle Flores, "La dinámica de la educación superior universitaria en cifras: La matrícula y el egreso de 1970 a 2005," in X Congreso Nacional de Investigación Educativa, 2009, https://www.comie.org.mx/congreso/memoriaelectronica/v10/pdf/area_tematica_16/ponencias/0539-F.pdf.
[52] OECD (Organisation for Economic Co-operation and Development), "Population with Tertiary Education (Indicator)," 2020, https://data.oecd.org/eduatt/population-with-tertiary-education.htm.
[53] Wittgenstein Centre for Demography and Global Human Capital, "Wittgenstein Centre Human Capital Data Explorer," 2019, http://dataexplorer.wittgensteincentre.org/wcde-v2/.

advanced stage of the demographic transition. They are converging in their main demographic indicators, though some country-level differences are significant. Overall, though, these country-level differences complement each other and provide a regional advantage. North America's population dynamics will help maintain the region as a global leader; consequently, migration will be a key component of demographic dynamics and regional economic sustainability.

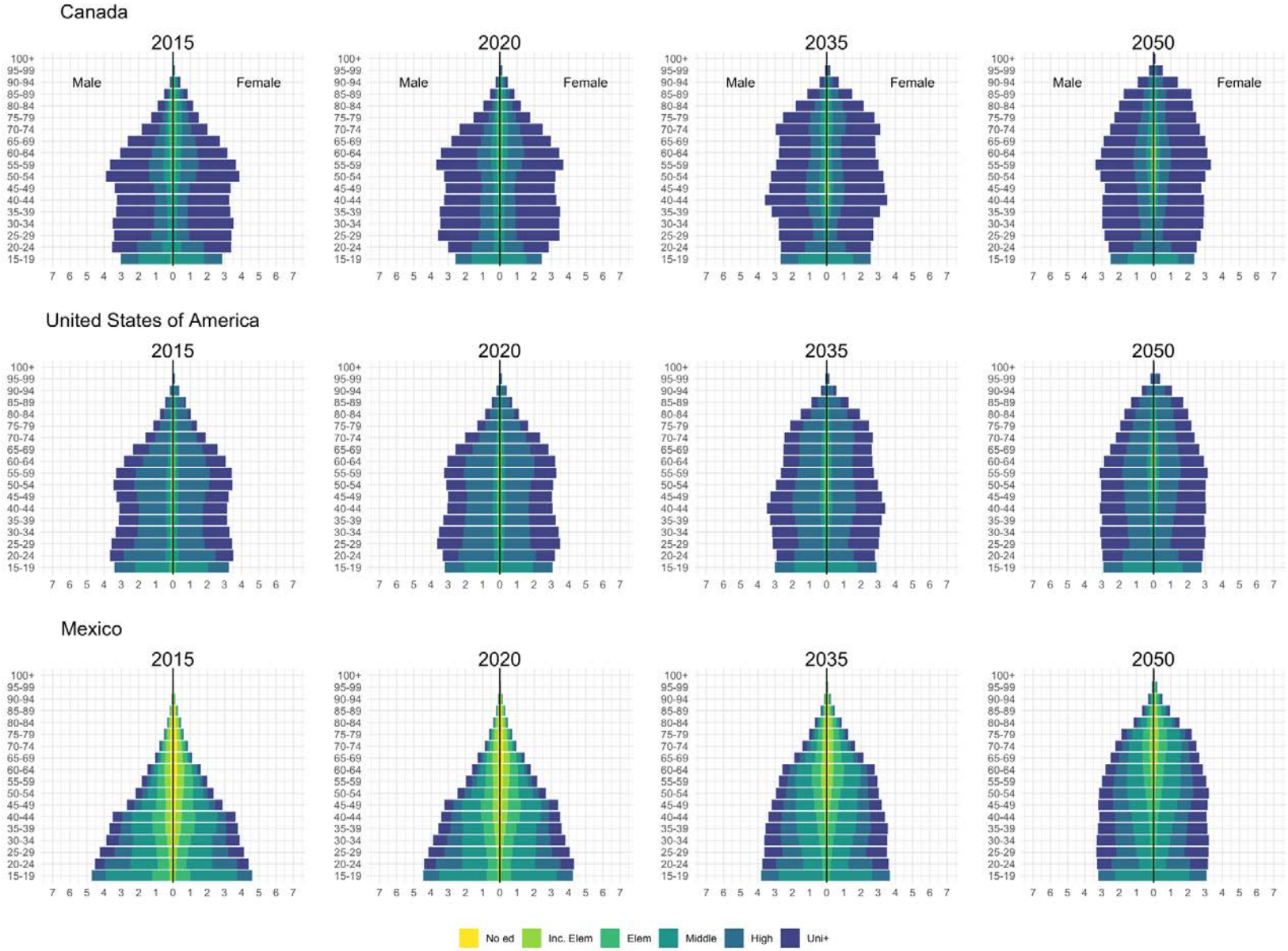
The data examined in this chapter inform a number of predictions for future regional dynamics. For instance, Mexico is expected to accelerate its educational transition, Canada will rely significantly on immigration to avoid a rapid rise in dependency rates, and the United States has been able to compensate for its fertility decline with immigration to maintain a functional working-age population. That said, North America's relatively favorable demographic dependency ratios need to be managed in a manner that allows the growing elderly population to maintain a reasonable level of living without diminishing the income and wellbeing levels of the working-age population. Therefore, each country must revise and update its pension and retirement schemes to cope with the realities of an aging population. Moreover, the aging populations of all three countries will require care and health services that their differing welfare and social security systems may not be fully equipped to handle. Although educational attainment is expected to increase across North America, this growth alone will not necessarily enable Canada, Mexico, or the United States to play a global leading role in knowledge-led social change. All three countries must prepare to meet the challenges posed by this change.

**Figure 8. Educational distributions, Canada, Mexico, and the United States, 1950–2010**




Source: Wittgenstein Centre for Demography and Global Human Capital, "Wittgenstein Centre Human Capital Data Explorer," 2018, http://dataexplorer.wittgensteincentre.org/wcde-v2/.

**Figure 9. Educational Projections, Canada, Mexico, and the United States, 2015–2050**




Source: Wittgenstein Centre for Demography and Global Human Capital, "Wittgenstein Centre Human Capital Data Explorer," 2019, http://dataexplorer.wittgensteincentre.org/wcde-v2/.