

Demographics as a Driver of Change in the U.S. Forest Sector

Robert L. Olson

Abstract: Demographic trends such as rapid population growth, urban expansion, regional population shifts, amenity migration, an “elder boom,” and increasing ethnic and cultural diversity will require adaptive responses by planners and forest managers. Urban forestry will become more important and doing it well will require better integration of forest management with urban planning and better coordination across organizations and fields of knowledge. Fostering fire resilience will need to become a major focus of effort as more people and structures are located in fire-prone wildland areas. More accessible infrastructure will be needed for an aging population. Better understanding of how ethnic and racial minorities view and use forest resources will be useful as they become an ever-larger proportion of the population. The sooner the scale of these challenges is appreciated, the more likely they are to be met well.

KEY WORDS: population growth, urban expansion, regional population shifts, amenity migration, aging population, diversity, wildland-urban interface, accessible infrastructure

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Robert L. Olson is senior fellow, recently retired, at the Institute for Alternative Futures; director of research at the institute for 15 years. To contact, email at bobolson2020@gmail.com.

Introduction

We may not be demographers, but all of us are regularly exposed to the language and concepts of demography. We have a good idea of what terms like “urban sprawl,” “millennials,” and “diversity” mean and we know that changes in where people live and the character of our Nation’s population can affect our lives. These same demographic factors will be important in shaping the future of America’s forests.

This paper examines some key areas of demographic change that will influence U.S. forests over the next two decades. It begins by reviewing current trends; then it looks at forecasts for the next 20 years and explores potential implications of these trends for forestry and the forest sector.

Demography is an area where projections of the future are well developed and generally more reliable than forecasts of other aspects of change. However, it is important to keep in mind that there are still significant uncertainties. For example, projections of urban sprawl could be derailed by greater adoption of Smart Growth policies and increasingly severe forest fires and storms could influence where people choose to live. This paper presents both standard projections and uncertainties for consideration by forest planners and managers.

Current Trends

Population

The U.S. population grew by 11.5 percent between 2000 and 2017, from 282,896,000 to 326,922,000 (Worldometer 2017). This is the fastest rate of population growth of any developed nation.

Urban Land Use

Incorporated places or “cities” are home to 62.7 percent of the U.S. population and cover 3.5 percent of the U.S. land area (U.S. Census

Bureau 2015). By a broader definition, 81 percent of the U.S. population lives in “urban areas,” up from 75 percent in 1990 (Center for Sustainable Systems 2019). Low-density housing developments in suburban and exurban areas have been the major factor in increasing urban land use over the past 50 years. Areas settled at suburban and exurban densities (6 to 250 houses per 100 hectares, or 1 house per 1 to 40 acres, on average) cover more than 15 times the land area settled at urban densities (1 house per 250 km² or less) and covered 5 times more land area in 2000 than in 1950 (U.S. Census Bureau 2012).

Regional Shifts

A regional shift of population to the Sun Belt has been underway for several decades. The Great Recession of 2007 to 2009, and the economic sluggishness that followed, interrupted growth in the South and West, but growth has now resumed.

Amenity Migration

Growth has also been occurring in rural areas with attractive scenery and cultural amenities, including the Rocky Mountain and Pacific Coast regions, along the southern Atlantic coast and Gulf of Mexico, and in the Ozark Mountains and southern Appalachia. This movement was first documented in the 1950s (Ullman 1954) and it has been accelerating ever since. Recreational opportunities, forests, lakes, seashores, and mountains attract both part-time and full-time residents, retirees, and professionals able to telecommute.

Elder Boom

The United States reached a new milestone in 2017: There are now 50 million people over the age of 65, up from 20 million in 1970 and 35 million in 2000. During the decade 2000 to 2010 the population of older people began growing faster than the Nation’s population as a whole, and the rate of growth increased further after 2011 when the first of the approximately

76 million persons who were born during the “baby boom” between 1946 and 1964 reached age 65 (SeniorCare.com 2017).

Growing Diversity

Whites made up about 85 percent of the U.S. population in 1965, with most of the remaining 15 percent African American. Since then, the white majority has shrunk to just over 60 percent, Hispanics make up about 18 percent, and Asians make up about 6 percent. The percentage of African Americans has stayed roughly constant.

This dramatic change in the Nation’s racial and ethnic makeup over the past 50 years is the result of high rates of immigration. Nearly 59 million immigrants have arrived in the United States over this period, mostly from Latin America and Asia. Contrary to popular imagery, Asia has now replaced Latin America

(including Mexico) as the largest source of new immigrants (Cohn and Caumont 2016). As a sign of things to come, there are now more students of color than white students in U.S. public schools (Carr 2016).

A Look 20 Years Ahead

Population

The U.S. population is expected to grow from 327 million today to 383 million by 2040 and to nearly 400 million by 2050 (Sen 2016). This projection means that between 2013 and 2050, the U.S. population could grow more than the population of all the other 19 largest “more developed” countries combined, a development made possible because the populations of several of those countries will actually decrease (Table 1). Immigration is expected to drive most of this anticipated growth, so major

Table 1.—Actual and projected population in the 20 largest “more developed” countries (Source: Sen 2016)

Country	Mid-2013 population	Projected 2050 population	Change from 2013 to 2050
----- (millions) -----			
United States	316.2	399.8	83.6
Russia	143.5	132.4	-11.1
Japan	127.3	97.1	-30.2
Germany	80.6	76.2	-4.4
United Kingdom	64.1	78.8	14.7
France	63.9	72.3	8.4
Italy	59.8	62.2	2.4
South Korea	50.2	48.1	-2.1
Spain	46.6	42.3	-4.3
Ukraine	45.5	33.9	-11.6
Poland	38.5	34.3	-4.2
Canada	35.3	48.4	13.1
Australia	23.1	34.2	11.1
Romania	21.3	18.5	-2.8
Netherlands	16.8	17.9	1.1
Belgium	11.2	13.1	1.9
Greece	11.1	9.7	-1.4
Portugal	10.5	8.7	-1.8
Czech Republic	10.5	10.6	0.1
Hungary	9.9	9.1	-0.8

changes in U.S. immigration policy could affect the growth rate.

Urban Land Use

There is much uncertainty about how far urban growth will penetrate into forest and agricultural land over the decades ahead. A classic study of urban growth and its estimated impact on the U.S. forest resource made projections based on the assumption that the rate of urban growth that occurred between 1990 and 2000 would continue out to 2050. By this supposition, urban land in the conterminous United States would increase from 3.1 percent of the Nation's land area in 2000 to 8.1 percent in 2050 (Nowak and Walton 2005). A more recent study estimates that urban land in the lower 48 states will increase to between 10 percent and 12 percent of the U.S. land area by 2050 (Wear 2011).

Population growth is the single largest factor in these estimates, but there are clearly other dynamics involved because urban areas have been spreading at about twice the rate that population has been growing (U.S. Department of Housing and Urban Development 2000).

Research stretching back over several decades shows that the other largest driver of urban expansion is public policy that subsidizes urban sprawl in the form of new water and sewer lines, roads, schools, emergency services, and incentives to new businesses and industries to locate in low-density areas (Transit Research Board 1998). Wider use of Smart Growth policies could have a large restraining effect on urban sprawl (American Planning Association 2012). Adequate Public Facilities Ordinances (APFOs) are an example of a Smart Growth policy; they make low-density development pay its own way by requiring that infrastructure like roads and sewer lines be fully paid for before new development takes place.

Economic conditions can strongly affect urban expansion. People flocked to ever more-distant suburbs and exurbs in the early 2000s as easy mortgages fueled a housing bubble. But when the bubble burst, these distant places took the biggest hit. Growth stalled and the news media carried pictures of abandoned or never lived-in houses in "ghost subdivisions" (Roth 2008).

The cost of gasoline could emerge over the next decades as another factor influencing urban expansion. Suburban and exurban development has been made possible by low-cost energy. Adjusted for inflation, the cost of gasoline today is lower than it was in 1931. Most energy analysts believe that oil will remain available over the decades ahead but will become more expensive due to both policy—putting a price on carbon to mitigate climate change—and the increasing cost of extracting oil from more challenging and remote sites. While the shale oil and gas boom through hydraulic fracturing (fracking) has decreased U.S. prices for natural gas, it has had limited impact on gasoline prices (Kilian 2016). A small set of analysts believes that we are near "peak oil." This condition is the point where global production will begin a steep decline while demand continues to increase, sending oil prices soaring; suburbia would soon be harshly devalued and exurbia abandoned (Kunstler 2006). Even if such a dark future is unlikely, if not impossible, it does seem plausible that gasoline prices will increase over the next years. But whether the increase will be enough to have an impact on urban sprawl is uncertain. Progress in the development of electric vehicles and batteries and the rate at which electric vehicles penetrate the transportation system are additional sources of uncertainty.

Urban expansion could also be influenced by changes in people's preferences about where and how they want to live. Surveys suggest that growing numbers of people say they prefer walkable communities over car-dependent ones (National Association of Realtors 2015). A segment of millennials appears to prefer city to

suburban living, at least for their present stage of life. For a few years starting in 2011, dense counties at the center of large metropolitan areas actually grew faster than the exurbs. Updated Census Bureau county population estimates, though, show that the exurbs have again begun growing faster than more urban places (Badger 2015).

Demographers are unsure about what is happening largely because it is hard to untangle people's preferences from economic conditions. Does the so-called "return to the city" reflect lasting changes in preferences among some population groups? Will urban expansion be slower than earlier estimates suggest? Demographers are waiting for more data to give more definitive answers.

Regional Shifts

If current trends in regional population distribution continue, the U.S. population will be even more concentrated in the South and West. Recent projections by the Demographics Research Group at the University of Virginia foresee the most rapid population growth over the next 25 years occurring in Texas, Colorado, Utah, and Florida, with rapid growth also in California, Georgia, North Carolina, and Virginia. Nearly a dozen states in the Northeast and Midwest are projected to lose population between 2030 and 2040; the largest percentage losses would take place in West Virginia, Vermont, Maine, Illinois, and Michigan (Sen 2016).

On a 20- to 30-year time scale, however, it is possible that drought and related water shortages, wildfire, extreme heat, extreme precipitation, hurricanes, storm surge flooding, and other impacts of climate change could disrupt current trends. A recent analysis of locations likely to be most attractive for minimizing impacts of climate change

highlights Maine and states around the Great Lakes that standard projections assume will lose population (Bromwich 2016).

Amenity Migration

The U.S. population is likely to continue moving to scenic rural areas over the next two decades. Researchers have identified a wide range of factors driving this trend, including tax laws, industrial restructuring that has taken away previous rural jobs but made areas more attractive to migrants, the decline of commercial forest operations, retirement of baby boomers, the decreasing real cost of transportation, growth of the digital economy and telecommuting, a value shift from consumption of things to consumption of experiences, and the pursuit of a rural or small town "idyll" away from the congestion and pressures of big city life (Gosnell and Abrams 2011). When a trend is driven by so many determinants, it is likely to be robust.

Elder Boom

As the baby boom generation ages, the percentage of the U.S. population 65 and over is estimated to nearly double, from 12 percent of the total population in 2000 to 21 percent in 2050. The population of older people is projected to reach 80 million by 2040 and nearly 100 million by 2060 (Mather 2015).

Diversity

The United States will become much more diverse over the decades ahead. The Census Bureau projects that minority groups will collectively represent a majority of the U.S. population by 2044. Other researchers believe it will take until 2055 or even longer to reach this point (Horowitz 2016), but there seems little doubt that we will become a minority-majority nation sometime within the next 30 to 40 years (Fig. 1).

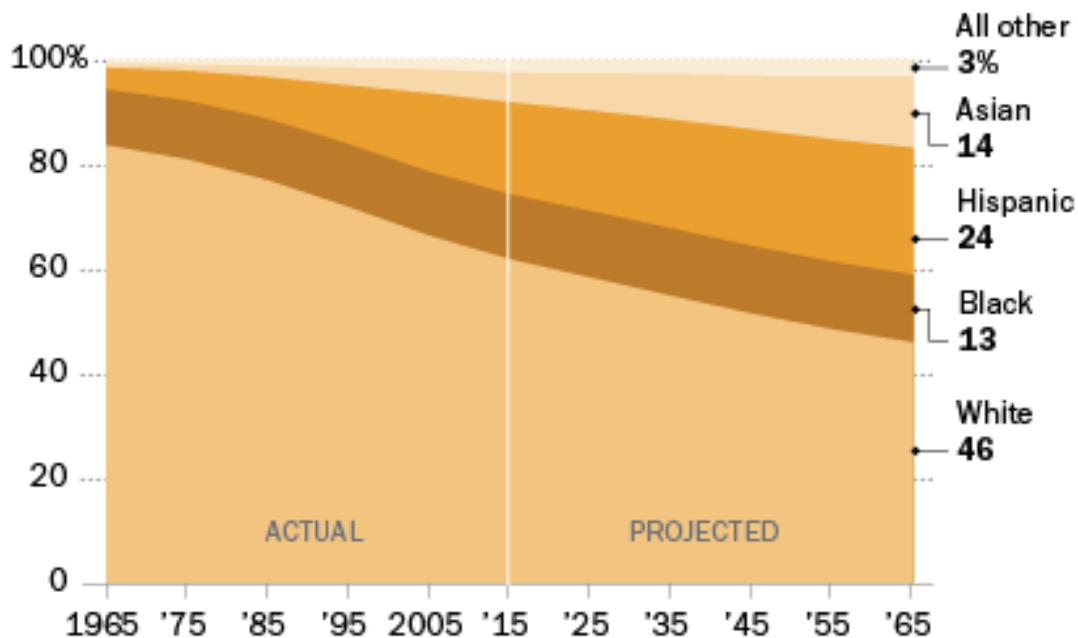


Figure 1.—The changing face of America, by year (reproduced from Pew Research Center 2015). Note: Whites, Blacks, and Asians include only single-race non-Hispanics; Asians include Pacific Islanders. Hispanics can be any race.

Implications for Forestry and the Forest Sector

Population growth and other factors are likely to cause over 5 percent of existing forest land outside of urban areas to be subsumed by urban growth between 2000 and 2050 (Nowak and Walton 2005). Southern states—especially Georgia, North Carolina, and Texas—are projected to have the highest total amount of forest area subsumed. Rhode Island, New Jersey, Massachusetts, Connecticut, and Delaware are likely to have the largest percentage of currently nonurban forest land transformed by urban growth.

As more forested land is impacted by urbanization, forest management objectives may need to continue shifting from commodity-based management toward management for a wide range of ecosystem functions and services, such as stormwater retention, water quality, shading and cooling, recreation, and health benefits (Daniel et al. 2012, Delphin et al. 2016, Li et al. 2017, Pickard et al. 2017).

Wise management for ecosystem services will require better integration of forest management with urban planning and better coordination across organizations and fields of knowledge (Bengston et al. 2004). The ideal to move toward is planning that begins with an understanding of the structure and function of ecosystems. Better management would also require effective public outreach and civic engagement using nontechnical language, engaging storytelling, and compelling visual imagery of urban landscapes that promote both human well-being and ecological health.

Growing amenity migration means more and more people and structures will live in the path of wildland fires—the wildland-urban interface (WUI). Governance of these areas can be difficult because it involves multiple scales, societal values, and institutions (Abrams et al. 2015, Paveglio et al. 2009, Steelman 2016). Forest management could shift to focus more on encouraging communities to become fire-resilient, fostering measures such as codes to make buildings more fire-resistant, and protection zone standards for eliminating

flammable vegetation adjacent to structures (Olson et al. 2015).

As the Elder Boom continues across several decades, forest managers and outdoor recreation planners will need to provide more accessible infrastructure to enable older people to continue engaging in outdoor recreation. Members of the baby boom generation typically think of themselves as younger than their chronological age and are likely to stay involved in outdoor activities longer than previous generations. Rapidly growing cultural diversity means that planners and managers with a nuanced understanding of how ethnic and racial minorities view and use forest areas are more likely to meet the needs of these outdoor recreationists (Bengston et al. 2008, Roberts et al. 2009).

Conclusions

Many demographic developments important for the future of forestry are highly likely if not quite certain. Population growth will continue in the United States at a faster rate than in any other developed nation. Ongoing expansion of urban areas will transform large areas of contiguous forest to a parcelized urban forest made up of parks, yards, and street trees amid impervious surfaces. Population will grow most rapidly in areas of the South and West. Migration to scenic rural and forested areas will continue to accelerate. The over-65 population will grow rapidly and what have been considered minority groups will become the majority. These developments will pose challenges for urban forestry and the entire profession of forest management. The sooner the scale of these challenges is appreciated, the more likely they are to be met well.

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