U.S. Demographic Shifts

Long-term Trends and Drivers and Their Implications for Emergency Management

May 2011

Overview

The U.S. population will continue to grow in both numbers and diversity. The key demographic trends and drivers with the potential to affect emergency management activities are:

- Overall U.S. population growth
- Increase in the elderly population
- Increase in racial and ethnic diversity
- Increase in urban sprawl and growth of "megaregions"
- Increase in coastal population density
- Shifts in U.S. demographic structure

This document contains preliminary research conducted on behalf of the Strategic Foresight Initiative (SFI) on the U.S. Demographic Shifts driver. This research is intended to serve as a discussion point for further discussions, and does not represent a forecast by the Federal Emergency Management Agency (FEMA). This paper is a starting point for conversations around a highly complex topic, and SFI encourages feedback about this paper from the emergency management community.

SFI is a collaborative effort of the emergency management community that is being facilitated by FEMA. SFI was launched so the emergency management community can seek to understand how the world is changing, and how those changes may affect the future of emergency management. It will do so by encouraging members of the community to think about how the world may look over the next 15 years, and what steps the community should begin taking to thrive in that world. Participants in SFI include emergency managers at the Federal, state, and local level, subject matter experts on relevant topics, and other stakeholders.

Anybody who would like more information about SFI should contact the team at FEMA-OPPA-SFI@fema.gov.

Key Trends and Drivers

The U.S. Census Bureau projects the U.S. population will grow 42% between 2010 and 2050.[1] The 2010 Census determined the US population to be approximately 309 million persons.[2] The Census Bureau estimates it will rise to 439 million by 2050.[3] Based on trends of the last half century, it is estimated that the majority of that population growth (82%) will be due to immigrants and their descendants.[4]

There will be a significant increase in the elderly population (age 65 years and older) as the "Baby Boom" generation enters this demographic group. In 2011, the first of the approximately 76 million persons who were born during the "Baby Boom" between 1946 and 1964, will reach age 65.[5] As the boomers age, the percentage of Americans who are elderly is estimated to nearly double from 12% of the total population in 2000 to 21% in 2050.[6] The oldest segment of the elderly, Age 85 years and older, currently 1.4% of the population, is projected to reach to 4.3% by 2050.[7]

The U.S. is becoming more racially and ethnically diverse. As of July 2008, minorities accounted for 48% of all births in the U.S. This figure is projected to be at 50% or more by 2012.[8] Immigration will also change the racial and ethnic makeup of the country. In 2004 the leading source countries for legal immigrants were Mexico, India, the Philippines, China, Vietnam, and the Dominican Republic.[9] Census Bureau projections for 2050 show the Asian population doubling from the present 4% to 8% and the Hispanic (of any race) population doubling from 12% to 24%. The African-American population also will rise from 13% to 15%. Concurrently, the White population is projected to decline from 81% to 72% of the total population by 2050.[10] The elderly population also will become more diverse with minorities rising from 20% to 42% of that population group by 2050.[11] The growth in the variety of languages other than English spoken in the United States reflects these demographic and immigration trends. In the recent Census Bureau American Community Survey, 55.4 million people identified themselves as speaking a language other than English at home. Spanish is the most commonly spoken non-English language (62%) followed by other European languages (19%), Asian and Pacific Island languages (15%), and those in the category of "Other" (4%; these include Native American languages, African languages, Arabic, and Hebrew). Of these 55.4 million, 40% or higher self-identified as speaking "English less than 'very well.'" This limited English speaking group of persons is spread throughout thirty-two states, but is most highly concentrated in the West and Southeast.[12] The most common non-English languages spoken in those areas are Spanish, Chinese, Korean, and Vietnamese.[13] The use of these specific languages has grown continuously in the last three decades. Between 1980 and 2007, the number of self-identified speakers of Spanish increased 210.8%, Chinese 290.7%, Korean 299%, and Vietnamese 510.9%. [14] Factors contributing to the concentration of languages in specific areas include employment opportunities, family and community connections, and if the area acts as a gateway point of entry into the United States.[15] Unauthorized immigration also contributes to the growing racial and ethnic diversity. 60% of all unauthorized immigrants are from Mexico. The remainder of the unauthorized immigrant population hails from other Latin American countries (29%), Asia (11%), Europe and Canada (4%), and Africa/Other (4%).[16] As a portion of the total population, unauthorized immigrants rose steadily from 8.4% in 2000 to 12% in 2007. A downward trend now has begun with the unauthorized immigrant population falling

from 11.6% in 2008 and 11.1% in 2009. Factors that may account for this decline include the downturn in the U.S. economy, changes in levels of immigration enforcement, economic and demographic situations in the countries of origin, and strategies used by potential migrants.[17]

Continued economic and population growth in metropolitan areas will contribute to greater urban sprawl and growth of "megaregions."[18] Metropolitan areas once were distinctly separate from one another (e.g. Boston vs. New York City). Over the last several decades, economic and population growth has caused these areas to sprawl outwards into megaregions, or metropolitan areas linked together by proximity, interlocked economic systems, and common transportation systems. [19] In many cases, this growth was not in urban centers, but instead in suburban areas that have comparatively lower population densities. Additionally, many of these metropolitan areas have sprawled outwards so far they now abut or overlap one another creating megaregions.[20]

Continued economic and population growth in coastal counties will result in increasing population density along the nation's coastlines. Coastal county growth is linked to the megaregion phenomenon. Since 1960, the space between older metropolitan counties has filled with new metropolitan areas to create "almost unbroken bands along the country's coastline perimeter."[21] The population along the Atlantic, Pacific, and Gulf coasts grew from 47 million persons in 1960 to 87 million in 2008.[22] The level of overall coastal population growth since 1980 is similar to the rest of the nation. However, the limited space for development in coastal areas results in greater population density. Excluding Alaska, non-coastal counties average 98 persons per square mile while coastal counties average 300 persons per square mile.[23] The most densely populated coastal county in the nation, New York County, NY (Manhattan), contains almost 72,000 persons per square mile.[24]

Shifts in the U.S. demographic structure will continue. While megaregions and coastal communities grow, other communities will continue to decline in population. In 1900, eighteen of the nation's twenty largest cities were located in the northeast area of the country between the Mississippi and Ohio Rivers. These cities grew in prosperity and population due to their prominence as manufacturing and transportation centers.[25] As steel mills and factories shut down and new modes of transportation evolved, this "rust belt" region experienced population decline. Since 1950, once vibrant metropolitan areas such as Detroit, Cleveland, Pittsburgh, St. Louis, and Buffalo have lost over half of their population.[26] This has resulted in large sections of these cities being abandoned. The depopulation of this area will continue for the foreseeable future.

Implications for Emergency Management

Unequal population growth and distribution among the nation's regions will require emergency managers to conduct more strategic planning. Much of population growth is towards coastal regions and flood-prone areas. Regions projecting the greatest future population growth are the California Coast, Northwest Coast, the Southeast, and Gulf Coast .[27] These areas also comprise the Cascadia, Northern and Southern California, Gulf Coast, and Southern Florida megaregions.

Growth in the elderly population creates both opportunities and challenges in an emergency environment. Elderly populations may have long experience and thus great investment in their communities. Many elderly are fit and mobile and will not require additional assistance. They thus are a potential resource for emergency managers in planning and response. As a whole, however, the elderly often have unique needs that must be considered by emergency managers. The elderly, especially those living in nursing homes and assisted living facilities, may require medical personnel and/or family members to accompany them as caregivers during evacuations. Evacuation vehicles and aircraft must have enough space to accommodate evacuees, caregivers and medical equipment (e.g. wheel chairs, walkers, beds, and oxygen bottles). Shelter Managers must consider the need for medical staff, medical equipment and medication supply and distribution. They also need to plan the physical space required to accommodate the elderly, persons with disabilities and people with chronic illnesses (some elderly persons fall into all three categories).

Emergency managers must effectively serve the growing racial and ethnic communities. Economically disadvantaged communities often are the most at risk during a disaster. Historically, there have been higher rates of poverty among African-Americans and Hispanics as compared to population as a whole. If this trend continues, a significant portion of these communities will be among the most vulnerable in a disaster situation. Low-cost affordable housing, the housing most desired by disadvantaged communities, is typically the most threatened during disasters.[28] Language barriers, especially for Asian Americans and Hispanic Americans (the two largest groups) must be addressed by the emergency management community to ensure messages, instructions, evacuation, disaster claims information, sheltering, and assistance reaches these communities. Minorities and immigrants may also be reluctant to seek help from emergency response personnel, especially if they are undocumented immigrants. Following Hurricane Andrew in 1992, aid workers and uniformed immigration officers who offered assistance often were distrusted by the minority community.[29] Personal and cultural experiences may also shape the behavior of disaster victims. After the 1999 Loma Prieta earthquake in California, Central American refugee families were terrified by the tent shelters set up for evacuees because they resembled areas set up by the death squads in their home countries.[30] During recent California wildfire outbreaks, many undocumented immigrants refused to evacuate from endangered areas or seek assistance due to fear of deportation.[31]

Urban sprawl and megaregions create a variety of emergency management challenges. Greater populations and resources can increase community capacity to respond to disasters, but also can increase community vulnerability to disasters. In the suburbs, a more spread out population leads to increased response times for emergency vehicles.[32] Evacuation of large urban populations will significantly impact surrounding areas. Outlying communities may feel overwhelmed by a huge influx of people and resist evacuation of urban dwellers. The capacity of outlying communities may not be sufficient to meet demand. Emergency managers must carefully plan evacuation procedures and routes for optimum movement of large populations. Texas emergency managers had to reconsider their evacuation plans after thousands of people evacuating from Houston and the Texas coast were trapped for hours in a massive traffic jam prior to Hurricane Rita making landfall.[33] Effective evacuation of large, metropolitan populations may not be feasible; emergency managers may have to consider shelter-in-place strategies.

Emergency Managers must plan to serve the remaining residents in depopulating areas in constrained budget environments. Communities experiencing population decline may not have the tax base to support emergency management activities. The size of the area of urbanization and the accompanying infrastructure that needs support, however, remains the same.[34] Abandoned factories, office buildings, and homes may contain combustible or toxic substances that could cause fires or release toxins into the environment. Deteriorating infrastructure (roads, water, sewer, and electricity) can both cause an emergency situation (e.g. bridge collapse) and hamper an emergency response (e.g. emergency escape routes on poorly maintained roads).

Correlation to Other Drivers

- **Climate Change:** As population numbers and density increase, developers may seek to build in high risk areas such as flood plains and marginal coastal properties. As sea levels rise, homes and business along coastal areas will be more prone to flooding. Changes in weather patterns may create flooding or drought in presently sustainable areas resulting in climate-induced migration. This migration may occur gradually over a period of time as the climate slowly, but noticeably changes or be a mass migration in response to a sudden climate disruption.[35] Climate migration may take place within or between nations possibly resulting in internal disorders or international incidents.

- **Critical Infrastructure**: Much of the current infrastructure (roads, bridges, water systems, electric grid, dams, and levees) is decades old.[36] The American Society of Civil Engineers' recent report card on the nation's infrastructure gave it an overall grade of D with nothing above a C plus.[37] Significant growth in population will dramatically increase the stress on critical infrastructure.

- **Evolving Terrorist Threat**: Some of the most densely populated areas are potential high priority terrorist targets (New York City and Silicon Valley). There is potential for domestic terrorism due to anti-minority/anti-immigrant sentiments as the population becomes more racially and ethnically diverse. Immigration laws, policies, and procedures are being formulated to address the threat of terrorists and terrorist sympathizers attempting to immigrate into the United States (e.g. Homeland Security Presidential Directive 2: Combating Terrorism Through Immigration Policies).

- **Government Budgets**: The ratio of population to resources will create issues and constraints. Communities in population decline may not have the tax base to support required emergency management services. Areas experiencing rapid population growth must decide where emergency management is on their budgeting priority list. Governments at all levels must consider budgeting for the growth, maintenance and protection of infrastructure.

Conclusions & Questions

- **Emergency managers must account for the growth in elderly-specific requirements in response plans.** What special capabilities will be needed to evacuate larger elderly

populations? Will communities have the resources, budgetary and physical, to plan and execute the evacuation and care of the elderly? As the elderly population grows and its needs expand, will younger age cohorts become resentful?

- **Emergency managers must account for racial and ethnic diversity of the population in response plans.** How will emergency situations be affected by language and cultural barriers? Will programs to reach out to minority communities be successful? Can minority/immigrant suspicions of government officials and messages be alleviated?

- **Urban sprawl and the growth of megaregions will continue.** Can the infrastructure, economy and environment support this growth? Will floods, brownouts, traffic congestion, and environmental degradation become accepted as the norm?

- **Shifts in U.S. Demographic structure will result in depopulation of certain areas.** How will these areas fund emergency services and infrastructure in the face of a shrinking tax base? What programs, if any, will be implemented to provide oversight and disposition of abandoned properties?

---

[1] U.S. Census Bureau, "The Next Four Decades, The Older Population in the United States: 2010 to 2050," Population Estimates and Projections, P25-1138, May 2010, pg. 1. Available at: http://www.census.gov/prod/2010pubs/p25-1138.pdf.
[2] U.S. Census Bureau, "United States Census 2010." Available at: http://2010.census.gov/2010census/.
[3] U.S. Census Bureau, "The Next Four Decades," pg 1 and U.S. Census Bureau, "Demographic Trends in the 20th Century Census," Census 2000 Special Reports, November 2002, pp. 11 and 12. Available at: http://www.census.gov/prod/2002pubs/censr-4.pdf?bcsi_scan_A7447AD021B64C23=0&bcsi_scan_filename=censr-4.pdf. Population growth for forty year periods in the 20th century are: 1900-1930 – 41%; 1930-1970 – 36%; 1970-2010 – 34%. The U.S. population tripled throughout the 20th century, but at an overall slower rate as the century progressed. If the 2050 projections hold, they will mirror early 20th century gains.
[4] D'Vera Cohn and Jeffrey S. Passel, "U.S. Population Projections: 2005-2050," Pew Research Center, February 11, 2008. Available at: http://pewhispanic.org/files/reports/85.pdf, pg. 2. The authors note their projection could be affected by changes in immigration policy or other events.
[5] John Haaga, "Just How Many Boomers Are There?," Population Reference Bureau, December 2002. Available at: http://www.prb.org/Articles/2002/JustHowManyBabyBoomersAreThere.aspx.
[6] Laura B. Shrestha, "The Changing Demographic Profile of the United States." Congressional Research Service Report for Congress, May 5, 2006, pg. CRS-14. Available at: http://www.fas.org/sgp/crs/misc/RL32701.pdf.
[7] U.S. Census Bureau, "The 65 Years and Over Population 2000," Census 2000 Brief, C2KBR/01-10, October 2001, pg. 1. Available at: http://www.census.gov/prod/2001pubs/c2kbr01-10.pdf and U.S. Census Bureau, "The Next Four Decades," pg. 3.
[8] Sam Roberts, "Births to Minorities are Approaching Majority in U.S.," *The New York Times*, March 11, 2010. Available at: http://www.nytimes.com/2010/03/12/us/12census.html?_r=1.
[9] Shrestha, pg. CRS-12.
[10] U.S. Census Bureau, "U.S. Interim Projections by Age, Sex, Race, and Hispanic Origin,2004. Available at: http://www.census.gov/population/www/projections/usinterimproj/natprojtab01a.pdf and Shresha, pg, CRS-18. The Office of Management and Budget (OMB) and the U.S. Census Bureau consider race and Hispanic origin to be distinct. Therefore, Hispanic falls across all race categories.
[11] U.S. Census Bureau, "The Next Four Decades," pg. 4.
[12] U.S. Census Bureau, "Language Use in the United States: 2007," American Community Survey Reports, ACS-12, April 2010, pg. 3, 11. Available at: http://www.census.gov/hhes/socdemo/language/.
[13] Ibid., pgs. 12,13.
[14] Ibid., pg. 6.

[15] Ibid., pg. 8.
[16] D'Vera Cohn and Jefrey S. Passel, "U.S. Unauthorized Immigration Flows are Down Sharply Since Mid-Decade," Pew Hispanic Center, September 1, 2010. Available at: http://pewhispanic.org/reports/report.php?ReportID=126, pg. 4. The figures do not at up to 100% due to rounding.
[17] Ibid., pgs. ii and iii.
[18] Yoav Hagler, "Defining US Megaregions," America 2050, November 2009, pg. 6. The 11 megaregions are Northern California, Southern California, Southern Florida, Northeast, Piedmont, Arizona Sun Corridor, Cascadia (i.e. Pacific Northwest), Front Range, Gulf Coast, Texas Triangle, and Great Lakes. Available at: http://www.america2050.org/upload/2010/09/2050_Defining_US_Megaregions.pdf.
[19] Ibid, pg. 1.
[20] The emerging megaregion phenomenon was described in the 1960s by Herman Kahn and Anthony Wiener in their book *The Year 2000: A Framework for Speculation on the Next Thirty-three Years*, Macmillan Publishing Company, 1967. At that time, they predicted three "megalopolises:" Boswash (Boston to Washington), Chipitts (Chicago to Pittsburgh) and Sansan (San Francisco to San Diego). These correlate with Hagler's Northeast, Great Lakes, and Northern and Southern California regions. Kahn and Wiener's ideas are quoted in "What the 1970's will bring," *Changing Times, 22(1,) January 1968*, 6-16. Available at: http://books.google.com/books?id=egAEAAAAMBAJ&pg=PA11#v=onepage&q&f=false.
[21] U.S. Census Bureau, "Coastline Population Trends in the United States: 1960 to 2008," Population Estimates and Projections, P25-1139, May 2010, pg. 14. Available at: http://www.census.gov/prod/2010pubs/p25-1139.pdf.
[22] Ibid, pg. 1.
[23] Kristen M. Corssett, Thomas J. Cullliton, Timothy R. Goodspeed and Peter C. Wiley, "Population Trends Along the Coastal United States: 1980-2008," National Oceanic and Atmospheric Administration, September 2004, pp. 1, 6, 7. Available at: http://oceanservice.noaa.gov/programs/mb/supp_cstl_population.html.
[24] U.S. Census Bureau, "Coastline Population Trends," pg. 12.
[25] Edward L. Glaeser, "Bulldozing America's Shrinking Cities," *The New York Times*, June 16, 2009. Available at: http://economix.blogs.nytimes.com/2009/06/16/bulldozing-americas-shrinking-cities/.
[26] Justin B. Hollander, Karina Pallagst, Terry Schwarz and Frank J. Popper, "Planning Shrinking Cities," Rutgers University, January 9, 2009, pg. 3. Available at: http://policy.rutgers.edu/faculty/popper/ShrinkingCities.pdf.
[27] Data extrapolated from 2005, 2007 and 2008 U.S. Census Bureau Reports. Available at http://www.census.gov.
[28] Havidan Rodriguez, "Population composition, migration and inequality; the influence of demographic changes on disaster risk and vulnerability," *Social Forces* (Vol. 87, No. 2), University of North Carolina Press, December 2008. Available at: http://socialissues.wiseto.com/Articles/192851611..
[29] Ibid.
[30] Ibid.
[31] Amanda Martinez, "The Unseen Victims of California's Wildfires," New Media America, October 26, 2007. Available at: http://news.newamericamedia.org/news/view_article.html?article_id=d70074999a1b81cef632488c949812aa.
[32] American Journal of Preventive Medicine. "Urban Sprawl and Delayed Ambulance Arrival in the U.S." November 2009. Available at: http://www.ajpm-online.net/article/S0749-3797(09)00489-9/abstract.
[33] Blaine Harden and Sylvia Moreno, "Thousands Fleeing Rita Jam Roads From Coast," *The Washington Post*, September 23, 2005. Available at: http://www.washingtonpost.com/wp-dyn/content/article/2005/09/22/AR2005092200536.html.
[34] Aaron M. Renn, "Shrinking the Rust Belt," New Geography, July 1, 2009. Available at: http://www.newgeography.com/content/00883-shrinking-rust-belt.
[35] Tom Vandyck, "Will climate change prompt mass migration to Midwest?," Midwest Energy News, January 12, 2011. Available at: http://www.midwestenergynews.com/2011/01/12/will-climate-change-spur-migration-to-the-midwest/
[36] "Chart of the Day: America's Infrastructure," *The Economist*, December 22, 2010. Available at: http://www.economist.com/blogs/gulliver/2010/12/age_americas_infrastructure.
[37] "2009 Report Card for America's Infrastructure," American Society of Civil Engineers. Available at: http://www.infrastructurereportcard.org/.