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## LONG TERM DEMOGRAPHIC UNCERTAINTY AND WATER DEMAND IN NEW MEXICO

Jim Peach

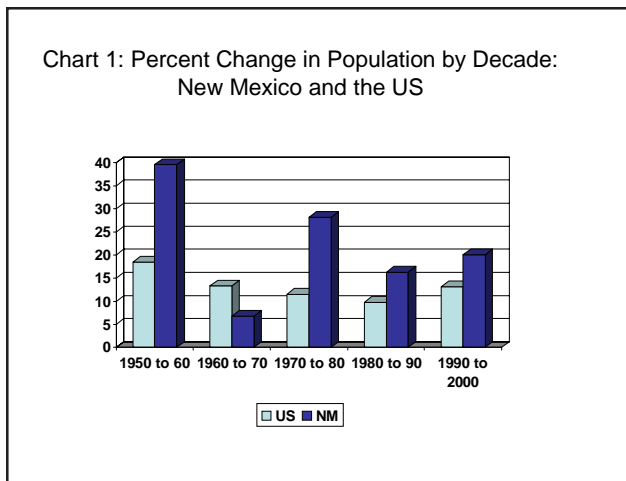
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The fiftieth anniversary of this conference is an opportune time to take a brief look at demographic trends in New Mexico over the last fifty years and to speculate on demographic trends over the next fifty years. The New Mexico population, its rate of growth, its age structure, and its geographic distribution are important determinants of water demand.<sup>1</sup> Examining demographic trends in New Mexico over the last fifty years is a relatively easy task. Because demographic events often last a long time, looking backwards can tell us a great deal about what might happen in the future. But there will be major demographic surprises in New Mexico during the next half century.

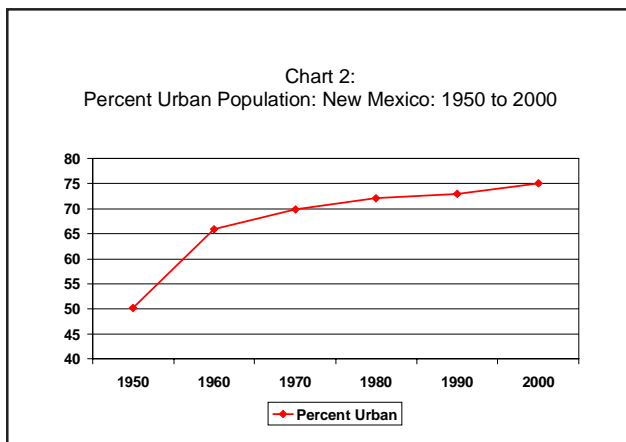
### **A Look Back: 1950 to 2000**

Over the last half century, the population of the United States nearly doubled (an 87 percent increase) from 151 million in 1950 to 281 million in 2000.<sup>2</sup> New Mexico's population nearly tripled in the same time span, increasing from 681 thousand persons in 1950 to 1.8 million persons in 2000. As Chart 1 indicates, New Mexico's population growth rate was higher than the national growth rate in all but one of the last five decades. The single exception was from 1960 to 1970 – a decade in which economic conditions in New Mexico were particularly weak. In the 1960s, Walker Air Force Base in Roswell closed, and Roswell is just now regaining the population it lost as a result. Oil prices

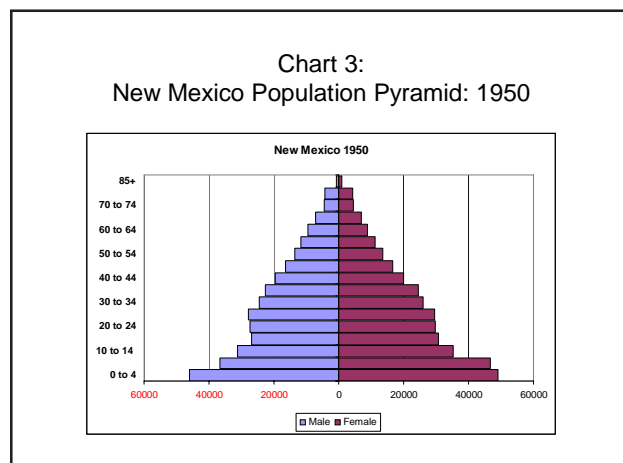
were also very low in the 1960s and the state economy suffered as a result. But the 1960s in New Mexico were a notable exception to long-term trends. During the 1950s when the nation was experiencing its most rapid population growth of the 20<sup>th</sup> century, New Mexico's population increased (39.6 percent) at more than double the national growth rate (18.5 percent). New Mexico was not unique among western states during the latter half of the century. Nearly all western states were growing rapidly.



One of the most important demographic changes over the last fifty years is often ignored. New Mexico became highly urbanized between 1950 and 2000. Chart 2 displays the percentage of the New Mexico population classified as urban for each census year. In 1950, barely half of the state's population (50.2 percent) lived in urban areas. A decade later this figure had increased to 65.4 percent, and by 2000, 75.0 percent of New Mexicans lived in urban areas.<sup>3</sup>

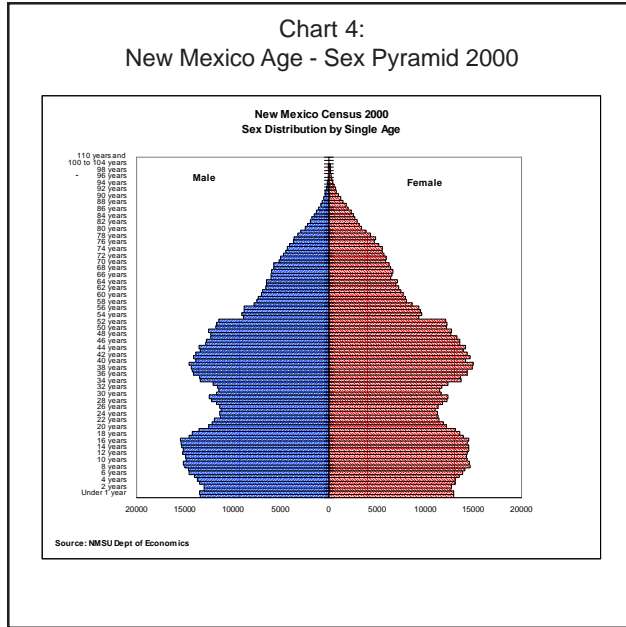


New Mexico grew rapidly during the last fifty years because: (a) the state had a relatively young population, (b) had relatively high total fertility rates, and (c) was attracting a great deal of in-migration. Chart 3 displays an age-sex pyramid for New Mexico in 1950. The shape of the chart is a classic 'pyramid' in which most of the population is relatively young. In 1950, New Mexico's population had a median age of 24.0 years, while the nation's median age was 30.2 years. New Mexico's crude birth rate (CBR) in 1950 was 34.1 per 1,000 – nearly 50 percent larger than the nation's CBR of 24.1. It is no wonder that the state's population was growing rapidly. Throughout the last half century, natural increase, the excess of births over deaths, has been an important contributor to New Mexico's rapid population growth. Between 1950 and 1960, natural increase accounted for about two-thirds of the increase in the state's population. By the 1980s and 1990s, natural increase accounted for about half of the state's population growth.

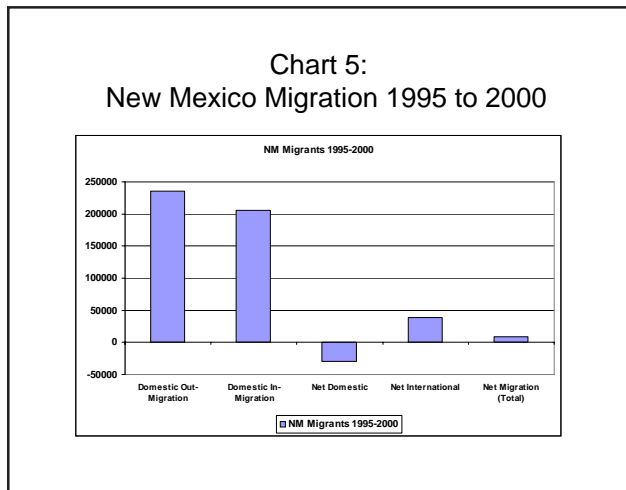


The 2000 Census reported that New Mexico's population had been aging rapidly. The aging of the state's population can be seen graphically in Chart 4, which contains a single year of age pyramid for New Mexico. The median age of New Mexico's population was 34.6 compared to the national figure of 35.3.

New Mexico's fertility rates were also falling by the end of the 20<sup>th</sup> century. The national CBR in 2000 was 14.5 just below New Mexico's CBR of 15.0. A different way of looking at New Mexico's long term decline in fertility is that in 1950, there were 23,495 births and a population of 681,000. In 2000, there were 27,223 births and a population of 1.81 million persons in the state.



The 2000 Census also reported migration patterns in and out of the state and from abroad. Between 1995 and 2000, the Census reported that more people moved out of New Mexico to other states (235,512) than moved to New Mexico from other states (205,267). Thus, net domestic migration for New Mexico was minus 29,945 people. Net domestic out-migration was offset by 38,706 people from other nations who moved into New Mexico. The 1995 to 2000 migration data are depicted in Chart 5.



### The Next Fifty Years – almost

State population projections (from 2000 to 2030) released by the U.S. Bureau of the Census in April

2005 created quite a controversy in New Mexico. The Census Bureau projections were headline news across the state. A major business group in Albuquerque formed a task-force to examine the projections and to urge the Census Bureau to change them. Clearly, the business group is concerned about the possibility of a feedback loop in which the projections become a self-fulfilling prophecy. The logic of such concerns is easy to understand. If the Census Bureau (or others) predict a slowing of the rate of growth of population, then many businesses (particularly those looking for an expanding market) might find New Mexico to be a less desirable location. Consequently, the state’s population growth rate might in fact decline. Naturally, this is sensitive stuff from the perspective of those promoting the state’s virtues.

The Census Bureau’s 2005 projections are a bit surprising. According to the projections, New Mexico’s population will continue to grow, but at a much slower rate than the historical pattern. In 2000, the Census recorded a population in New Mexico of just over 1.8 million persons. The Bureau projects a state population of 2.1 million for 2030 – an increase of only 15.4 percent spread over three decades – a rate that is barely half of the national rate of 29.4 percent.

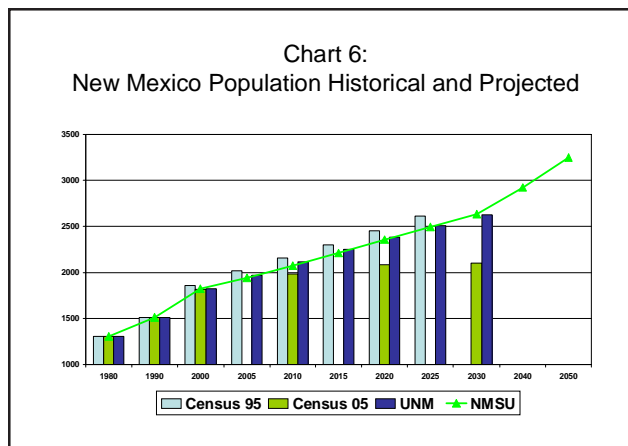
In contrast, New Mexico’s population increased by 16.3 percent in the 1980s (1.303 million to 1.515 million) and by 20.1 percent in the 1990s (1.515 million to 1.819 million). In both the 1980s and 1990s, New Mexico’s population growth rate was substantially higher than the nation’s growth rate (9.8 percent in the 1980s and 13.1 percent in the 1990s).

Young populations are often said to have what is commonly called demographic momentum – the tendency of a population to grow even if fertility rates are stable or falling. An aging population is typically a population that does not grow very fast. The Census Bureau projects that New Mexicans will be much older in 2030. Perhaps that aging population will include you and me. The Census Bureau’s projections indicate that the median age in New Mexico will reach 44.8 years in 2030 – an increase of 10.2 years from the state’s 2000 median age of 34.6. For a state traditionally known for its relatively young age distribution, the Bureau’s projections indicate that New Mexico would be the 6<sup>th</sup> oldest state. Only Florida, Maine, Montana, West Virginia, and Wyoming would have a higher median age in 2030.

But, this is not all. A previous set of Census Bureau state level projections released in 1996 indicated a

much different demographic picture of the state's population (U.S. Bureau of the Census 1996). In that set of projections, New Mexico was the second fastest growing state over the 1995 to 2025 period – trailing only California. By 2025, New Mexico's population was projected to increase to 2.612 million. In percentage terms, this would have been 40.4 percent compared to the 15.4 percent rate in the most recent projections.

Other population projections are available. Some of these are depicted in Chart 6. The most recent population projections of the University of New Mexico's Bureau of Business and Economic Research (BBER) show more rapid growth in the state than projected by the Census Bureau. BBER projects the state population to be 2.626 million in 2030 – an increase of 40.3 percent over the 2000 population. The baseline scenario of a demographic model constructed at NMSU produces a population figure for 2030 that is almost identical to the BBER projection (2.635 million persons) and a population of 3.2 million by the year 2050.



### So, what's going on?

The Census Bureau and most demographers use a method called the cohort-component method to project population (U.S. Bureau of the Census, April 2005b). A cohort is a group of people with the same characteristic – usually, age, race or sex. For example, we could talk about a cohort of 60 year old males. The components of population change are births, deaths and migration. The cohort component technique involves projecting the components of change for each cohort. For the state population projections, the Census Bureau, UNM and NMSU use a single year of age model. Simple enough, but the details matter.

The population of both the state and the nation is aging. And, despite a year or two of increased fertility rates, the overall trend in fertility has been decreasing for many years. The Census Bureau estimates that the TFR for New Mexico is 2.20198 (2000-2001). In simple terms, the TFR represents the expected number of children per woman over the woman's lifetime. The New Mexico figure is not much higher than the replacement TFR of 2.08.

An aging population will also have higher crude death rates (deaths per 1,000 persons) even if we assume that age specific rates remain constant. The crude death rate for New Mexico in 2000 is 7.96 per 1,000 persons. New Mexico's crude death rate will probably increase to nearly 11 per 1,000 by 2030.

Combining the aging of the population, a long term increase in crude death rates, and a long-term decrease in TFRs suggests that New Mexico's growth due to natural increase (births over deaths) will decline. Differences in fertility and mortality account for very little of the differences in the population projections discussed above.

Differences in the assumed patterns of migration account for nearly all of the variation in the state population projections. Indeed, if net-migration is set to zero, the NMSU model calculates a 2030 state population of 2,105,749 persons – a figure that is almost identical to the Census Bureau's (2005 vintage) projection for 2030 of 2,099,708 persons. The difference of 6,041 persons is trivial. Zero net migration to New Mexico is not a likely possibility over the next two or three decades.

In reference to water demand, it makes a great deal of difference whether New Mexico's population in 2030 is 2.1 or 2.6 million persons. No one knows for certain what the state's population will be in 25 or 50 years, but we can make some tentative conclusions. First, if we examine New Mexico's demographic trends from 1950 to 2000, the state's population: (a) was relatively young, (b) had relatively high birth rates, (c) was urbanizing rapidly, and (d) was growing rapidly. Second, New Mexico's population is aging and decreasing fertility rates do suggest a slow-down in the state's future population growth rates. Third, the

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Census Bureau's (2005 vintage) projections to the year 2030 seem inconsistent with the history of population growth in the state over the last fifty years. Fourth, other projections of the state's population are higher than those of the Census Bureau. Fifth, the critical difference between the Bureau's projections and others is most likely migration. Demographers and economists are almost always less certain about future migration trends than they are about fertility and mortality trends. There will almost certainly be demographic surprises over the next fifty years that no one can predict in advance.

### References

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U.S. Bureau of the Census. 2005. "State Projections: Methodology Summary Interim Population Projections for States by Age and Sex: 2004 to 2030" (<http://www.census.gov/population/www/projections/methodology.html>)

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### Endnotes

<sup>1</sup> Other determinants of the demand for water include the price of water, per capita income, the structure of industry within the state, technological change, and a host of other variables.

<sup>2</sup> Unless otherwise noted, all data were obtained from the website of the U.S. Census Bureau ([www.census.gov](http://www.census.gov)).

<sup>3</sup> Some changes have occurred in the Census Bureau's definition of urban areas. See [http://www.census.gov/geo/www/ua/ua\\_2k.html](http://www.census.gov/geo/www/ua/ua_2k.html) for an explanation.