Vital Statistics and Components of Population Change

Nebraska State Data Center Summer Conference
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Thursday, August 14, 2008
A population changes in 2 ways . . .

- **Natural Change**
  - How many births and deaths are occurring
    - Births > Deaths = Natural Increase (Gain)
    - Births < Deaths = Natural Decrease (Loss)

- **Net migration**
  - How many people are moving into & out of an area
    - Inmigrants > Outmigrants = Net Inmigration (Gain)
    - Inmigrants < Outmigrants = Net Outmigration (Loss)
Migration is a somewhat complex topic . . .

- People are moving (changing living quarters) often these days
  - 18.5% of Nebraskan’s moved in the last year; 23.2% for Lancaster County (2006 ACS)
- There are various types of moves
  - Local (within the same geography)
  - Across boundaries in the U.S.
    - State to State; County to County
    - Called Domestic or Internal migration
  - International
Migration Considerations

- Movement within the same geography doesn’t affect population totals
  - One part of a city to another
  - For a state, movement from one county to another

- Regional implications to domestic migration
  - Inmigrant from Iowa may have different characteristics than one from New York (age, culture, driving)

- People leaving the U.S. permanently to live in another country aren’t counted by our Census
More migration considerations

- Military movements (international vs. domestic)
- Legal vs. illegal international migration
  - Census doesn’t usually distinguish, just counts “people” in most data; most “illegal” data for U.S.
- Inmigrants from abroad may live in another state before relocating locally
  - That’d be one international and one domestic move
- Special cases: adoptions, refugees, prisoners, etc. – How quickly are they accounted for?
Census migration data

- Census 2000: Asked about residence 5 yrs ago
- ACS: Annually asks about residence 1 yr ago
  - Many tables and crosstabulations provided, PUMS
- Estimates program: shows county and state domestic and international totals since 2000
- Census 2010: Will not ask directly, will be able to calculate for the decade based on birth and death totals
- Other surveys and specialized products
Figure 2: Nebraska Components of Population Change: 1930 to 2006

Source: Vital Statistics, Nebraska Health and Human Services System; Annual Estimates, U.S. Census Bureau - released 12-27-07

Net migration often negative, natural increase every year, NM > NC in 95, 96
Births (& Natural Change) are at their highest levels in 25 years (1982)

Sources: Nebraska Health and Human Services, 1970-2000 Decennial Censuses and Annual Estimates Program (released 5-1-08), U.S. Census Bureau

But women of reproductive age have declined, so why are births up??
Birth rates vary by mom’s age
(2006 Nebraska Data)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>2006 Birth Rate*</th>
<th>2006 Births</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>33.5</td>
<td>2,111</td>
</tr>
<tr>
<td>20-24</td>
<td>102.6</td>
<td>6,820</td>
</tr>
<tr>
<td>25-29</td>
<td>152.9</td>
<td>8,566</td>
</tr>
<tr>
<td>30-34</td>
<td>114.0</td>
<td>6,058</td>
</tr>
<tr>
<td>35-39</td>
<td>47.4</td>
<td>2,592</td>
</tr>
<tr>
<td>40-44</td>
<td>8.4</td>
<td>512</td>
</tr>
</tbody>
</table>

* Birth rate=Births per 1,000 women (of that age)
Use official counts/estimates program, not ACS.
Figure 6c: Comparison of Nebraska Birth and Fertility Rates by Age Group of Mother: 1960 - 2006 (Births per 1,000 Women in Age Category)

Sources: 1960 CDC Natality Report; NE Health and Human Services Special Tabulation; Decennial Censuses and Estimates Program (Rel. 5-1-08), U.S. Census Bureau
2000 Nebraska Population by Sex and Five-Year Age Group

Source: Decennial Census, U.S. Census Bureau

Green lines depict the depression cohort; red checker shows the "baby boom"; pink represents the "baby boom echo".
Figure 3: 2007 Nebraska Population by Sex and Five-Year Age Group

Source: Annual Estimates Program, U.S. Census Bureau, released 5-1-08

Green lines depict the depression cohort; red checker shows the "baby boom"; pink represents the "baby boom echo".
Rising Births & Declining Women Age 15-44 are pushing the fertility rate up

Figure 5: Nebraska Fertility Rate: 1970 - 2006
(Births per 1,000 Women Age 15-44)

Sources: Nebraska Health and Human Services, 1970-2000 Decennial Censuses and Annual Estimates Program (released 5-1-08), U.S. Census Bureau
Fertility rates are increasing among Nebraska’s 3 major race/ethnic groups

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>White non-Hispanic</th>
<th>Black non-Hispanic</th>
<th>Hispanic</th>
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<tbody>
<tr>
<td>1989</td>
<td>68.7</td>
<td>63.7</td>
<td>98.9</td>
<td>87.7</td>
</tr>
<tr>
<td>1990</td>
<td>69.1</td>
<td>64.1</td>
<td>97.2</td>
<td>93.7</td>
</tr>
<tr>
<td>1991</td>
<td>67.2</td>
<td>61.8</td>
<td>92.7</td>
<td>104.1</td>
</tr>
<tr>
<td>1992</td>
<td>65.2</td>
<td>59.4</td>
<td>90.4</td>
<td>111.5</td>
</tr>
<tr>
<td>1993</td>
<td>64.5</td>
<td>58.2</td>
<td>86.3</td>
<td>115.6</td>
</tr>
<tr>
<td>1994</td>
<td>64.1</td>
<td>57.4</td>
<td>85.5</td>
<td>113.2</td>
</tr>
<tr>
<td>1995</td>
<td>63.7</td>
<td>57.1</td>
<td>79.3</td>
<td>119.1</td>
</tr>
<tr>
<td>1996</td>
<td>63.4</td>
<td>56.5</td>
<td>75.8</td>
<td>124.5</td>
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<tr>
<td>1997</td>
<td>63.4</td>
<td>55.9</td>
<td>75.7</td>
<td>121.0</td>
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<tr>
<td>1998</td>
<td>64.1</td>
<td>56.3</td>
<td>74.1</td>
<td>122.9</td>
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<tr>
<td>1999</td>
<td>65.4</td>
<td>57.3</td>
<td>75.1</td>
<td>117.0</td>
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<tr>
<td>2000</td>
<td>67.5</td>
<td>59.4</td>
<td>83.0</td>
<td>120.9</td>
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<td>2001</td>
<td>68.4</td>
<td>59.8</td>
<td>82.4</td>
<td>128.5</td>
</tr>
<tr>
<td>2002</td>
<td>70.3</td>
<td>60.6</td>
<td>85.3</td>
<td>137.3</td>
</tr>
<tr>
<td>2003</td>
<td>72.0</td>
<td>62.2</td>
<td>86.6</td>
<td>136.7</td>
</tr>
<tr>
<td>2004</td>
<td>73.6</td>
<td>63.7</td>
<td>91.6</td>
<td>133.1</td>
</tr>
<tr>
<td>2005*</td>
<td>73.4</td>
<td>66.1</td>
<td>90.8</td>
<td>143.9</td>
</tr>
<tr>
<td>2006*</td>
<td>75.4</td>
<td>67.3</td>
<td>101.9</td>
<td>145.2</td>
</tr>
</tbody>
</table>

* The birth reporting form changed in 2005 so the time series by race is not be directly comparable before/after this change.
One Factor in Recent Rising Births is Declining Induced Abortions

Figure 11: Number of Induced Abortions and Ratio of Abortions to Live Births:
Nebraska 1974 to 2006

Source: 2002-2006 Nebraska Statistical Report of Abortions, Nebraska Health and Human Services System

* Ratio equals abortions per 1,000 live births

2006 Induced Abortions Occurring in the State were the fewest ever recorded
Births to Unmarried Women Have Risen Dramatically

Figure 10: Percentage of Births to Unmarried Mothers: Nebraska 1960 to 2006

Source: Annual Nebraska Vital Statistics Reports, Nebraska Health and Human Services System
Looking at Rates Provides Additional Information

Table 5: Births and Fertility Rates for Unmarried and Married Nebraska Women: 1960 to 2006

<table>
<thead>
<tr>
<th>Year</th>
<th>Births to Unmarried Mothers</th>
<th>Age 15-44 Unmarried Women</th>
<th>Rate per 1,000</th>
<th>Percentage Change per year</th>
<th>Births to Married Mothers</th>
<th>Age 15-44 Married Women</th>
<th>Rate per 1,000</th>
<th>Percentage Change per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>900</td>
<td>70,396</td>
<td>12.8</td>
<td>n/a</td>
<td>33,357</td>
<td>192,491</td>
<td>173.3</td>
<td>n/a</td>
</tr>
<tr>
<td>1970</td>
<td>2,072</td>
<td>106,139</td>
<td>19.5</td>
<td>5.3</td>
<td>23,805</td>
<td>189,400</td>
<td>125.7</td>
<td>-2.7</td>
</tr>
<tr>
<td>1980</td>
<td>3,165</td>
<td>145,459</td>
<td>21.8</td>
<td>1.1</td>
<td>24,170</td>
<td>208,777</td>
<td>115.8</td>
<td>-0.8</td>
</tr>
<tr>
<td>1990</td>
<td>5,048</td>
<td>135,337</td>
<td>37.3</td>
<td>7.1</td>
<td>19,314</td>
<td>194,486</td>
<td>99.3</td>
<td>-1.4</td>
</tr>
<tr>
<td>2000</td>
<td>6,697</td>
<td>172,681</td>
<td>38.8</td>
<td>0.4</td>
<td>17,946</td>
<td>192,960</td>
<td>93.0</td>
<td>-0.6</td>
</tr>
<tr>
<td>2006</td>
<td>8,617</td>
<td>186,038</td>
<td>46.3</td>
<td>3.2</td>
<td>18,105</td>
<td>170,524</td>
<td>106.2</td>
<td>1.4</td>
</tr>
</tbody>
</table>

1. Rates for unmarried increased each period while married decreased in all except 2000 – 2006

2. Married rate was 13.5 times higher than unmarried in 1960; 2.4 times higher currently in 2006

3. People are marrying later in life, affecting the numbers somewhat; baby boomers moving beyond age 44 impacts the numbers
Nebraska Population “Replacing” Itself

In 2006, the U.S was at 2,101 -- right at the replacement level

Figure 6d: Total Fertility Rate: Nebraska 1970 to 2006
(Total Births per 1,000 Women Over their Lifetime)

Replacement is considered 2,100
2 major points from the Nebraska Births Report

- Given Nebraska’s sex and age structure (pyramid), in the next several years the baby boom echo will move into their prime child-bearing years (25-34), so births and fertility rates are projected to continue increasing.

- Since most Nebraska counties have been experiencing net outmigration, those also having natural loss are destined to have population loss in the short term or until trends change.
Map 2: Natural Change (Births vs. Deaths) in Nebraska Counties: 1980s compared to 2000-2006

Natural Change in 1980s and 2000-2006
(Natural Increase = Births > Deaths; Natural Loss = Deaths > Births)

- **Red**: Natural Increase in both 1980s and 2000-2006 (48)
- **Pink**: Natural Increase in 1980s but Natural Loss in 2000-2006 (28)
- **Yellow**: Natural Loss in both 1980s and 2000-2006 (17)

Source: Nebraska Vital Statistics Reports, Nebraska Health and Human Services System

Prepared by: David Drozd, Center for Public Affairs Research, University of Nebraska at Omaha - July 16, 2008
Map 2: County Fertility Rates (Births per 1,000 Women Age 15-44): 2002 to 2006
(Based on Average Yearly Births and Average Female Population Age 15-44 from 2002 to 2006)

Births per 1,000 Women Age 15-44
Nebraska Fertility Rate = 72.8

- Less than 55.0 (14)
- 55.0 to 64.9 (31)
- 65.0 to 74.9 (31)
- 75.0 or more (17)

Sources: Nebraska Vital Statistics Reports, Nebraska Health and Human Services System; Population Estimates Program, U.S. Census Bureau, released 8-9-07
Prepared by: David Drozd, Center for Public Affairs Research, University of Nebraska at Omaha - July 15, 2008