Coordinated Population Forecast

Crook County

Urban Growth Boundaries (UGB) & Area Outside UGBs

2015 Through 2065
Coordinated Population Forecast for Crook County, its Urban Growth Boundaries (UGB), and Area Outside UGBs 2015-2065

Prepared by
Population Research Center
College of Urban and Public Affairs
Portland State University

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**Project Staff:**

Xiaomin Ruan, Population Forecast Program Coordinator  
Risa S. Proehl, Population Estimates Program Manager  
Jason R. Jurjevich, PhD. Assistant Director, Population Research Center  
Kevin Rancik, GIS Analyst  
Janai Kessi, Research Analyst  
Carson Gorecki, Research Assistant  
David Tetrick, Research Assistant

The Population Research Center and project staff wish to recognize and thank those who contributed to the development of these forecasts by answering questions, lending insight, providing data, or giving feedback.
How to Read this Report

This report should be read with reference to the documents listed below—downloadable on the forecast program website (http://www.pdx.edu/prc/opfp).

Specifically, the reader should refer to the following documents:

- **Methods**—Provides a detailed description and discussion of the forecast methods employed. This document also describes the assumptions that feed into these methods and determine the forecast output. *(Available for download with Final Report, June 30, 2015)*
- **Supporting Information**—Provides a complete copy of all survey results as well as any other information gleaned from local planning documents, city officials, etc. *(Available for download with Final Report, June 30, 2015)*
- **Forecast Tables**—Provides complete tables of population forecast numbers by county and all sub-areas within each county for each five-year interval of the forecast period (i.e., 2015-2065).
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Executive Summary

Historical

Different growth patterns occur in different parts of the County and these local trends within the Prineville UGB and the area outside the UGB collectively influence population growth rates for the county as a whole.

Crook County’s population as a whole has grown slowly since 2000; with average annual growth rates of less than one percent between 2000 and 2010 (Figure 1); however the area outside the Prineville UGB experienced more rapid population growth during the 2000s. Prineville, the only UGB, posted an average annual growth rate of 0.6 percent, while the area outside the UGB grew at an average annual rate of 1.2 percent during the 2000 to 2010 period.

Crook County’s fluctuating population growth in the 2000s was the direct result of substantial swings in net migration. At the same time an aging population not only led to an increase in deaths, but also resulted in a smaller proportion of women in their childbearing years and a consequent decline in births. The growing number of deaths and shrinking number of births left natural increase—the difference between births and deaths—negative beginning in 2011. While net in-migration and positive natural increase contributed to substantial population growth from 2005 to 2008, both these numbers shrunk during more recent years—leading to population decline between 2009 and 2012.

Forecast

Total population in Crook County as a whole as well as within its sub-areas will likely grow at a slightly faster pace in the first 20 years of the forecast period (2015 to 2035) than the last 30 years (Figure 1). The tapering of growth rates is largely driven by an aging population—a demographic trend which will lead to declining natural increase (births minus deaths). As natural increase declines, population growth will become increasingly reliant on net in-migration.

Even so, Crook County’s total population is expected to increase by more than 2,700 over the next 20 years (2015-2035) and by more than 4,500 over the entire 50-year forecast period (2015-2065). The Prineville UGB is forecast to show slightly stronger population growth—relative to the 2000s—in the initial 20-year forecast period, but is expected to slow substantially during the last 30 years. The area outside the UGB will most likely grow at a steadier rate than Prineville throughout the forecast period.
Figure 1. Historical and Forecast Populations, and Average Annual Growth Rates (AAGR) for Crook County and its Sub-Areas

<table>
<thead>
<tr>
<th></th>
<th>Historical</th>
<th></th>
<th>Forecast</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Crook County</td>
<td>19,182</td>
<td>20,978</td>
<td>0.9%</td>
<td>21,135</td>
<td>23,916</td>
<td>25,640</td>
</tr>
<tr>
<td>Prineville¹</td>
<td>10,540</td>
<td>11,213</td>
<td>0.6%</td>
<td>11,256</td>
<td>12,845</td>
<td>13,383</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>8,642</td>
<td>9,765</td>
<td>1.2%</td>
<td>9,879</td>
<td>11,071</td>
<td>12,257</td>
</tr>
</tbody>
</table>

Sources: U.S. Census Bureau, 2000 and 2010 Censuses; Population Research Center (PRC)

¹ For simplicity the Prineville UGB is referred to by its primary city’s name.
Historical Trends

Different growth patterns occur in different parts of the County. Each of Crook County's sub-areas was examined for any significant demographic characteristics or changes in population or housing growth that might influence their individual forecasts. Factors that were analyzed include age composition of the population, ethnicity and race, births, deaths, and migration. It should be noted that population trends of individual sub-areas often differ from those of the county as a whole. However, in general, population growth rates for the county are collectively influenced by local trends within its sub-areas.

Births

Historical fertility rates for Crook County mirror trends similar to Oregon; while total fertility rates decreased for both the county and state from 2000 to 2010 (Figure 2), fertility for older women marginally increased in both Crook County and Oregon (Figure 3 and Figure 4). As Figure 3 demonstrates, fertility rates for younger women in Crook County are lower in 2010 compared to earlier decades, and women are choosing to have children at older ages. These statistics largely mirror statewide changes, with total fertility in the county and state remaining below replacement fertility.

Figure 2. Crook County and Oregon—Total Fertility Rates (2000 and 2010)

<table>
<thead>
<tr>
<th>Total Fertility Rate (TFR)</th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crook County</td>
<td>1.98</td>
<td>1.79</td>
</tr>
<tr>
<td>Oregon</td>
<td>1.98</td>
<td>1.79</td>
</tr>
</tbody>
</table>

Figure 3. Crook County—Age Specific Fertility Rate (2000 and 2010)

Figure 4. Crook County and Oregon—Age Specific Fertility Rate (2000 and 2010)

Figure 5 shows the number of births by the area in which the mother resides. Please note that the number of births fluctuates from year to year. It is worth noting that a sub-area with an increase in births between two years could easily show a decrease for a different time period; however for the 10-
year period from 2000 to 2010 the county as well as both of its sub-areas saw a decrease in births (Figure 5).

Figure 5. Crook County and Sub-Areas—Total Births (2000 and 2010)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2010</th>
<th>Absolute Change</th>
<th>Relative Change</th>
<th>Share of County 2000</th>
<th>Share of County 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crook County</td>
<td>214</td>
<td>181</td>
<td>(33)</td>
<td>-15.4%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Prineville(^1)</td>
<td>144</td>
<td>121</td>
<td>(23)</td>
<td>-16.2%</td>
<td>67.4%</td>
<td>66.9%</td>
</tr>
<tr>
<td>Outside UGB</td>
<td>70</td>
<td>60</td>
<td>(10)</td>
<td>-13.9%</td>
<td>32.6%</td>
<td>33.1%</td>
</tr>
</tbody>
</table>

Source: Oregon Health Authority, Center for Health Statistics. Aggregated by Population Research Center (PRC).

\(^1\) For simplicity the Prineville UGB is referred to by its primary city’s name.

Deaths
While the population in the county as a whole is aging, more people are living longer. For Crook County in 2000, life expectancy for males was 75 years and for females was 76 years. By 2010, life expectancy had increased to 78 for males and 81 for females. For both Crook County and Oregon, the survival rates changed little between 2000 and 2010—underscoring the fact that mortality is the most stable component of population change. Even so, the total number of county-wide deaths increased (Figure 6).

Figure 6. Crook County and Sub-Areas—Total Deaths (2000 and 2010)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2010</th>
<th>Absolute Change</th>
<th>Relative Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crook County</td>
<td>205</td>
<td>232</td>
<td>27</td>
<td>13.2%</td>
</tr>
</tbody>
</table>

Source: Oregon Health Authority, Center for Health Statistics. Aggregated by Population Research Center (PRC).

Migration
The propensity to migrate is strongly linked to age and stage of life. As such, age-specific migration rates are critically important for assessing these patterns across five-year age cohorts. Figure 7 shows the historical age-specific migration rates by five-year age group, both for Crook County and Oregon. The migration rate is shown as the number of net migrants per person by age group.

From 2000 to 2010, younger individuals (ages with the highest mobility levels) moved out of the county in search of employment and education opportunities, as well as military service. At the same time however, the county attracted a substantial number of older migrants—likely moving into the county to retire or moving closer to family members or to senior care facilities.
In summary, Crook County’s fluctuating population growth in the 2000s was the direct result of substantial swings in net migration (Figure 12). Meanwhile an aging population not only led to an increase in deaths, but also resulted in a smaller proportion of women in their childbearing years and a consequent decline in births. The growing number of deaths and shrinking number of births left natural increase—the difference between births and deaths—negative beginning in 2011. While net in-migration and positive natural increase contributed to substantial population growth from 2005 to 2008, both these numbers shrunk during more recent years—leading to population decline between 2009 and 2012.
Figure 8. Crook County—Components of Population Change (2000-2010)

Assumptions for Future Population Change

Evaluating past demographic trends provides clues about what the future will look like, and helps determine the most likely scenarios for population change. Past trends also explain the dynamics of population growth specific to local areas. Relating recent and historical population change to events that influence population change serves as a gauge for what might realistically occur in a given area over the long-term.

Assumptions about fertility, mortality, and migration were developed for Crook County’s population forecast as well as the forecasts for larger sub-areas\(^1\). The assumptions are derived from observations based on life course events, as well as trends unique to Crook County and its larger sub-areas. The forecast period is 2015-2065.

Assumptions for the County and Larger Sub-Areas

During the forecast period, as the population in Crook County is expected to continue to age, fertility rates will begin to decline in the near term and continue on this path throughout the remainder of the forecast period. Total fertility in Crook County is forecast to decrease, although only marginally, from a little more than 1.8 children per woman in 2015 to a little less than 1.8 children per woman by 2065. Similar patterns of declining fertility are expected within the county’s larger sub-areas.

Changes in mortality and life expectancy are more stable compared to fertility and migration. One influential factor affecting mortality and life expectancy is advances in medical technology. The county and larger sub-areas are projected to follow the statewide trend of increasing life expectancy throughout the forecast period—progressing from a life expectancy of 80 years in 2010 to 87 in 2060. However in spite of increasing life expectancy and the corresponding increase in survival rates, Crook County’s aging population will result in an overall increase in the number of deaths throughout the forecast period. Larger sub-areas within the county will experience a similar increase in deaths as their population ages.

Migration is the most volatile and challenging demographic component to forecast due to the many factors influencing migration patterns. Economic and social factors—such as employment, educational opportunities, housing availability, family ties, cultural affinity, and natural amenities—occurring both inside and outside the study area can affect both directionality and volume of migration. Net migration rates will change in line with historical trends unique to Crook County. Net out-migration of younger persons and net in-migration of older individuals will persist throughout the forecast period. County-wide, average annual net migration is expected to increase from 44 net in-migrants in 2015 to 295 net in-migrants in 2035. Over the last 30 years of the forecast period, average annual net migration is expected to be steadier, increasing to 314 net in-migrants by 2065. With natural increase diminishing in

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\(^1\) County sub-areas with populations greater than 8,000 in the forecast launch year were forecast using the cohort-component method. County sub-areas with populations less than 8,000 in forecast launch year were forecast using the housing-unit method. Crook County had no sub-areas with populations less than 8,000 in forecast launch year. See Glossary of Key Terms at the end of this report for a brief description of these methods or refer to the Methods document for a more detailed description of these forecasting techniques.
its potential to contribute to population growth, net in-migration will become an increasingly important component of population growth.
Forecast Trends

Under the most-likely population growth scenario in Crook County, county-wide and sub-area populations are expected to increase over the forecast period. The county-wide population growth rate is forecasted to peak in 2030 and then slowly decline throughout the forecast period. Forecasting tapered population growth is largely driven by an aging population, which will contribute to an increase in deaths, as well as a decrease in births—fewer women within child bearing years ages 10 to 49. The aging population will in turn contribute to declining natural increase over the forecast period. Net migration is expected to remain relatively steady throughout the forecast period, barely offsetting the declining natural increase. The combination of these factors will most likely result in a slowly declining population growth rate as time progresses through the forecast period.

Crook County’s total population is forecast to grow by a little more than 4,500 persons (21 percent) from 2015 to 2065, which translates into a total county-wide population of 25,640 in 2065 (Figure 9). The population is forecast to grow at the highest rate—approximately 0.6 percent per year—in the near-term (2015-2030). This anticipated population growth in the near-term is based on two core assumptions: 1) Crook County’s economy will continue to strengthen in the near-term, and; 2) an increasing number of Baby Boomers will retire to the county. The single largest component of growth in this initial period is net in-migration. More than 2,100 net in-migrants are forecast for the 2015 to 2030 period.

Figure 9. Crook County—Total Forecast Population by Five-year Intervals (2015-2065)

[Chart showing population growth from 2015 to 2065 with average annual growth rate (AAGR) for each year.]

Source: Forecast by Population Research Center (PRC).

Crook County’s only UGB, Prineville, will see population growth of nearly 1,600 from 2015 to 2035, but is expected to grow at a much slower rate during the second half of the forecast period, only adding a little
more than 500 people from 2035 to 2065. The Prineville UGB is expected to decline as a share of total county population over the forecast period.

Population outside the UGB will grow by nearly 1,200 people from 2015 to 2035, but is expected to grow at a slower rate during the second half of the forecast period, adding about the same amount of people (1,200) from 2035 to 2065. The population of the area outside the UGB will increase as a share of total county-wide population over the forecast period, composing 47 percent of the county-wide population in 2015 and about 48 percent in 2065.

**Figure 10. Crook County and Larger Sub-Areas—Forecast Population and AAGR**

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2035</th>
<th>2065</th>
<th>AAGR (2015-2035)</th>
<th>AAGR (2035-2065)</th>
<th>Share of County 2015</th>
<th>Share of County 2035</th>
<th>Share of County 2065</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crook County</td>
<td>21,135</td>
<td>23,916</td>
<td>25,640</td>
<td>0.6%</td>
<td>0.2%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Prineville</td>
<td>11,256</td>
<td>12,845</td>
<td>13,383</td>
<td>0.7%</td>
<td>0.1%</td>
<td>53.3%</td>
<td>53.7%</td>
<td>52.2%</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>9,879</td>
<td>11,071</td>
<td>12,257</td>
<td>0.6%</td>
<td>0.3%</td>
<td>46.7%</td>
<td>46.3%</td>
<td>47.8%</td>
</tr>
</tbody>
</table>

*Source: Forecast by Population Research Center (PRC)*

1 For simplicity Prineville UGB is referred to by its primary city's name.

**Forecast Trends in Components of Population Change**
As previously discussed, a key factor in both declining fertility and increasing morbidity is Crook County's aging population. From 2015 to 2035 the proportion of county population 65 or older will grow from a little less than 24 percent to more than 34 percent. By 2065 about 44 percent of the total population will be 65 or older (Figure 11).

As the county-wide population ages—contributing to a slow growing population of women in years of peak fertility—total fertility in Crook County is expected to decline over the forecast period. This decline is in line with the forecast trend for the state. Average annual births are expected to decline, although slowly, over the forecast period; this, combined with the rising number of deaths, will lead to a natural decrease. The total number of deaths county-wide is expected to increase more rapidly in the near-term, followed by slower growth during the later years of the forecast period. This pattern of initial growth in the number of deaths is explained by the relative size and aging patterns of the Baby Boom and Baby Boom Echo generations. For example, in Crook County, deaths will begin to increase significantly during the 2030-2040 period as Baby Boomers succumb to morbidity and increase more rapidly again in the 2045-2055 period as children of Baby Boomers (i.e. Baby Boom Echo) experience morbidity.
Figure 11. Crook County—Age Structure of the Population (2015, 2035, and 2065)

Sources: Forecast by Population Research Center (PRC)
As the increase in the numbers of deaths outpaces births, population growth in Crook County will become increasingly reliant on net in-migration; and in fact positive net in-migration is expected to persist throughout the forecast period. The majority of these net in-migrants are expected to be middle-aged and older individuals.

In summary, declining natural increase and steady net in-migration will result in population growth reaching its peak in 2030 and then taper through the remainder of the forecast period (Figure 12). An aging population will not only lead to an increase in deaths, but a smaller proportion of women in their childbearing years will almost certainly result in a long-term decline in births. Net migration is expected to remain relatively steady throughout the forecast period, and therefore offset the decline in natural increase.

Figure 12. Crook County—Components of Population Change, 2015-2065

![Crook County—Components of Population Change by Five-Year Intervals (2015-2065)](image)

Source: Forecast by Population Research Center (PRC)
Glossary of Key Terms

**Cohort-Component Method**: Predicts future populations based on likely changes in births, deaths, and migration over time.

**Coordinated population forecast**: A population forecast adopted by all levels of government for the entire county, including urban growth boundary (UGB) areas, as well as areas outside UGBs within the county. A population forecast prepared concurrently for the county and for its city UGB areas and non-UGB unincorporated area.

**Housing unit**: A house, apartment, mobile home or trailer, group of rooms, or single room that is occupied or is intended for occupancy.

**Housing-Unit Method**: Predicts future populations based on changes in housing unit counts, vacancy rates, and the average numbers of persons per household (PPH).

**Occupancy rate**: The proportion of total housing units that are occupied by an individual or group of persons. If the individual or group is absent on Census Day (April 1), but will be returning soon, the housing unit is still considered occupied.

**Persons per household (PPH)**: The average household size (i.e. the average number of persons per occupied housing unit for a particular geographic area).

**Replacement Level Fertility**: The average number of children each woman needs to bear in order to replace the population (to replace each male and female) under current mortality conditions in the U.S.
Photo Credit: Chimney Rock area formations along the Crooked River south of Prineville. (Photo No. croDA0077) Gary Halvorson, Oregon State Archives
http://www.sos.state.or.us/archives/pages/records/local/county/scenic/crook/43.html