Coordinated Population Forecast for Harney County, its Urban Growth Boundaries (UGB), and Area Outside UGBs 2018-2068

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Portland State University. Population Research Center, Nicholas Chun, Kevin Rancik, Rhey Haggerty, Joshua Ollinger, and Charles Rynerson

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Coordinated Population Forecast for Harney County, its Urban Growth Boundaries (UGB), and Area Outside UGBs
2018-2068

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

June 30, 2018

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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 and Data for Developing Coordinated Population Forecasts*—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.

• *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 (2018-2068).
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Modified Methodology

The Population Research Center, in consultation with DLCD, has identified cost savings associated with a modified methodology for the latter half of the 50-year forecast period (years 26 to 50). Based on feedback we have received, a 25-year forecast fulfills most requirements for local planning purposes and, in an effort to improve the cost effectiveness of the program; we will place more focus on years 1 through 25. Additionally, the cost savings from this move will allow DLCD to utilize additional resources for local government grants. To clarify, we use forecast methods to produce sub-area and county populations for the first 25 years and a modified projection method for the remaining 25 years. The description of our forecast methodology can be accessed through the forecast program website (www.pdx.edu/prc/opfp), while the summary of our modified projection method is below.

For years 26-50, PRC projects the county population using the annual growth rate from the 24th-25th year. For example, if we forecast a county to grow .4% between the 24th and 25th year of the forecast, we would project the county population thereafter using a .4% AAGR. To allocate the projected county population to its sub-areas, we extrapolate the change in sub-area shares of county population observed in years 1-25 and apply them to the projected county population.

Comparison to Cycle 1 (2015-17)

To keep up to date with local trends and shifting demands, OPFP regularly updates coordinated population forecasts for Oregon’s areas. Beyond the modification to our methodology and additional forecast region (from three regions to four), there are differences between the 2018 updated forecast for Harney County and the 2016 version. Overall, the 2018 forecast is similar to last round by 2043, though we expect population decline to occur more gradually. These county-level differences translate to the sub-areas, though our expectations of future sub-area shares of county population are generally consistent with last round. The full breakdown of differences by county and sub-area is stored here: www.pdx.edu/prc/cycle-2-region-1-documents.
Executive Summary

Historical

Different parts of the county experience different growth patterns. Local trends within UGBs and the area outside them collectively influence population growth rates for the county as a whole.

Harney County’s total population declined in the 2000s, with an average annual growth rate of -0.2 percent (Figure 1); however, the Hines UGB experienced slight population growth during this same period, posting an average annual growth rate of 0.2 percent. The Burns UGB experienced a growth rate of -0.7 percent, which is below that of the county as a whole.

Harney County’s population decline in the 2000s was the result of net out-migration. An aging population not only led to an increase in deaths but also resulted in a smaller proportion of women in their childbearing years. This, along with more women having children at older ages has led to births stagnating and a transition to a natural decrease (more deaths than births). Harney County experienced population loss in a majority of years between 2000 and 2013, though in recent years has grown due to a small net in-migration (Figure 12).

Forecast

Total population in Harney County as a whole as well as within its sub-areas will likely decline at a slow rate in both the near-term (2018 to 2043) and long-term (2043-2068) (Figure 1). This forecasted decline is primarily driven by an aging population and a natural decrease outpacing net in-migration. Harney County’s total population is forecast to decline by 302 over the next 18 years (2018-2043) and by 822 over the entire 50-year period (2018-2068). Most of this population decline is expected in areas outside the UGBs, which is forecasted to decline at a faster rate than either of the UGBs in Harney County.
Figure 1. Harney County and Sub-Areas—Historical and Forecast Populations, and Average Annual Growth Rates (AAGR)

<table>
<thead>
<tr>
<th></th>
<th>Historical</th>
<th></th>
<th>Forecast</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Harney County</td>
<td>7,609</td>
<td>7,422</td>
<td>-0.2%</td>
<td>7,344</td>
<td>7,042</td>
<td>6,522</td>
</tr>
<tr>
<td>Burns</td>
<td>3,148</td>
<td>2,929</td>
<td>-0.7%</td>
<td>2,948</td>
<td>2,957</td>
<td>2,886</td>
</tr>
<tr>
<td>Hines</td>
<td>1,687</td>
<td>1,714</td>
<td>0.2%</td>
<td>1,713</td>
<td>1,760</td>
<td>1,754</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>2,774</td>
<td>2,779</td>
<td>0.0%</td>
<td>2,684</td>
<td>2,324</td>
<td>1,882</td>
</tr>
</tbody>
</table>

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

Note: For simplicity each UGB is referred to by its primary city’s name.
14-Year Population Forecast

In accordance with House Bill 2254, which streamlined the UGB process based on long-term housing and employment needs, Figure 2 provides a 14-year population forecast (2018-2032) for the County and its sub-areas. Populations at the 14th year of the forecast were interpolated using the average annual growth rate between the 2030-2035 period. The population interpolation template is stored here: www.pdx.edu/prc/cycle-2-region-1-documents.

Figure 2. Harney County and Sub-Areas—14-Year Population Forecast

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2032</th>
<th>14-Year Change</th>
<th>AAGR (2018-2032)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harney County</td>
<td>7,344</td>
<td>7,292</td>
<td>-52</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Burns</td>
<td>2,948</td>
<td>2,962</td>
<td>15</td>
<td>0.0%</td>
</tr>
<tr>
<td>Hines</td>
<td>1,713</td>
<td>1,744</td>
<td>31</td>
<td>0.1%</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>2,684</td>
<td>2,585</td>
<td>-98</td>
<td>-0.3%</td>
</tr>
</tbody>
</table>

Note: For simplicity each UGB is referred to by its primary city’s name.
**Historical Trends**

Different growth patterns occur in different parts of Harney County. Each of Harney 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 analyzed include age composition of the population, race and ethnicity, births, deaths, migration, the number of housing units, occupancy rate, and persons per household (PPH). It should be noted that population trends of individual sub-areas often differ from those of the county as a whole. However, population growth rates for the county are collectively influenced by local trends within its sub-areas.

**Population**

Harney County’s total population grew from roughly 7,150 in 1975 to about 7,360 in 2017 (Figure 3), though it has been in decline since 2000. During this 40-year period, the county experienced the highest growth rates during the late 1970s, which coincided with a period of relative economic prosperity. During the early 1980s challenging economic conditions yielded population decline. During the early 1990s population growth rates again increased, but since then Harney County has experienced steady, but negative, population decline between 2000 and 2017.

**Figure 3. Harney County—Total Population by Five-year Intervals (1975-2017)**

During the 2000s, Harney County’s average annual population growth rate stood at -0.2 percent (Figure 4). Burns recorded an average annual growth rate of -0.7 percent, which resulted in a decline of the UGBs population as a share of the county population. Hines experienced slight growth, recording an average annual growth rate of 0.2 percent and increasing slightly as a share of the county population.
Figure 4. Harney County and Sub-areas—Total Population and Average Annual Growth Rate (AAGR) (2000 and 2010)\textsuperscript{1}

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Harney County</td>
<td>7,609</td>
<td>7,422</td>
<td>-0.2%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>-0.0%</td>
</tr>
<tr>
<td>Burns</td>
<td>3,148</td>
<td>2,929</td>
<td>-0.7%</td>
<td>41.4%</td>
<td>39.5%</td>
<td>-1.9%</td>
</tr>
<tr>
<td>Hines</td>
<td>1,687</td>
<td>1,714</td>
<td>0.2%</td>
<td>22.2%</td>
<td>23.1%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>2,774</td>
<td>2,779</td>
<td>0.0%</td>
<td>36.5%</td>
<td>37.4%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

Sources: U.S. Census Bureau, 2000 and 2010 Censuses.
Note: For simplicity each UGB is referred to by its primary city’s name.

Age Structure of the Population

Similar to most areas across Oregon, Harney County’s population is aging. An aging population significantly influences the number of deaths but also yields a smaller proportion of women in their childbearing years, which may result in a slowdown or decline in births. The shift in the age structure from 2000 to 2010 illustrates this phenomenon (Figure 5). Further underscoring the countywide trend in aging—the median age went from about 39.8 in 2000 to 45.2 in 2010\textsuperscript{2}.

\textsuperscript{1} When considering growth rates and population growth overall, it should be noted that a slowing of growth rates does not necessarily correspond to a slowing of population growth in absolute numbers. For example, if a UGB with a population of 100 grows by another 100 people, it has doubled in population. If it then grows by another 100 people during the next year, its relative growth is half of what it was before even though absolute growth stays the same.

\textsuperscript{2} Median age is sourced from the U.S. Census Bureau’s 2000 and 2010 Censuses.
Race and Ethnicity

While the statewide population is aging, another demographic shift is occurring across Oregon: minority populations are growing as a share of total population. A growing minority population affects both the number of births and average household size. In Harney County, this trend is negligible though the African American alone and Two or More/Other Races groups were the subgroups that grew in the 00’s (Figure 6). This increase in minority populations brings with it several implications for future population change. First, both nationally and at the state level, fertility rates among Hispanic and minority women tend to be higher than among White, non-Hispanic women. However, it is important to note more recent trends show these rates are quickly decreasing. Second, Hispanic and minority households tend to be larger relative to White, non-Hispanic households.
While higher, historic fertility rates for Harney County mirror statewide trends in Oregon as a whole (Figure 7). Total fertility rates were lower in Harney County in 2010 compared to 2000, similar to the state, because of delayed childbearing. At the same time, fertility for women over 30 was stable in both Harney County and Oregon (Figure 8). Total fertility in the county remains at replacement fertility (2.1), indicating that future cohorts of women in their birth-giving years will remain stable overtime without the influence of net in/out-migration.
Figure 8. Harney County—Age Specific Fertility Rate (2000 and 2010)

Figure 9 shows the number of historic and forecasted births for the county. The number of annual births remained relatively unchanged from 2000-10 and 2010-15. Due to a stable number of women in their birth giving years and a high fertility rate, births are expected to remain stable throughout the forecast period.

Figure 9. Harney County—Average Annual Births (2010 - 2045)
Deaths
The population in the county, as a whole, is aging and contrary to the statewide trend, people of all ages are not necessarily living longer\(^3\). For both Harney County and Oregon the survival rates changed little between 2000 and 2010, underscoring the fact that mortality is the most stable component, relative to birth and migration rates, of population change. Even so, the total number of countywide deaths increased slightly from 2000-10 and 2010-15 and is expected to increase steadily overtime (Figure 10).

Figure 10. Harney County—Average Annual Deaths (2010 - 2045)

![Harney County—Average Annual Deaths](image)

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 11 shows the historical age-specific migration rates by five-year age group, both for Harney County and for Oregon. The migration rate is shown as the number of net migrants per person by age group.

Harney County's migration rates generally reflect the patterns of many other Oregon counties. Young adults (20-29) leave the county seeking higher education and employment opportunities, but return in their 30’s with their children. Retirees made up a large proportion of net in-migrants in the 00’s, but left the county shortly thereafter to areas with medical facilities and end-of-life care.

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\(^3\) Researchers have found evidence for a widening rural-urban gap in life expectancy. This gap is particularly apparent between race and income groups and may be one explanation for the decline in life expectancy in the 2000s. See the following research article for more information. Singh, Gopal K., and Mohammad Siahpush. “Widening rural-urban disparities in life expectancy, US, 1969-2009.” American Journal of Preventative Medicine 46, no. 2 (2014): e19-e29.
Historical Trends in Components of Population Change

In summary, Harney County’s population decline during the 2000s was the result of inconsistent natural increase and somewhat steady net out-migration (Figure 12). Deaths offset births during this period and little movement in and out of the county resulted in meager population change. However, the average annual growth rate has slightly increased since 2014, as net-migration has seen a slight increase.

Figure 12. Harney County—Components of Population Change (2001-2016)
Housing and Households

The total number of housing units in Harney County increased rapidly during the middle years of this last decade (2000 to 2010), but this growth slowed with the onset of the Great Recession in 2008. Over the entire 2000 to 2010 period, the total number of housing units increased by 8.5 percent countywide; this was more than 300 new housing units (Figure 13). Hines captured a larger share of the growth in total housing units than Burns, recording a 13 percent increase (92 housing units) from 2000 to 2010. The areas outside the UGBs experienced the most growth in total housing units (190), capturing the largest increase in housing units as a share of the countywide total.

Housing growth rates may differ from population growth rates because (1) the numbers of total housing units are smaller than the numbers of people; (2) the UGB has experienced changes in the average number of persons per household; or (3) occupancy rates have changed (typically most pronounced in coastal locations with vacation-oriented housing). However, the patterns of population and housing change in Harney County are relatively similar.

Figure 13. Harney County and Sub-Areas—Total Housing Units (2000 and 2010)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Harney County</td>
<td>3,533</td>
<td>3,835</td>
<td>0.8%</td>
</tr>
<tr>
<td>Burns</td>
<td>1,531</td>
<td>1,551</td>
<td>0.1%</td>
</tr>
<tr>
<td>Hines</td>
<td>711</td>
<td>803</td>
<td>1.2%</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>1,291</td>
<td>1,481</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Share of County 2000</th>
<th>Share of County 2010</th>
<th>Change (2000-2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harney County</td>
<td>100.0%</td>
<td>100.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Burns</td>
<td>43.3%</td>
<td>40.4%</td>
<td>-2.9%</td>
</tr>
<tr>
<td>Hines</td>
<td>20.1%</td>
<td>20.9%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>36.5%</td>
<td>38.6%</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Sources: U.S. Census Bureau, 2000 and 2010 Censuses
Note: For simplicity each UGB is referred to by its primary city’s name.

Average household size, or PPH, in Harney County was 2.3 in 2010, a small decline from 2000 (Figure 14). Harney County’s PPH in 2010 was lower than for Oregon as a whole, which had a PPH of 2.5. PPH varied slightly across the county’s UGBs, with all of them falling between 2.1 and 2.5 persons per household. In 2010, the highest PPH was in the areas outside the UGBs with 2.5 and the lowest in Burns at 2.1.

Occupancy rates tend to fluctuate more than PPH. This is particularly true in smaller UGBs where fewer housing units allow for larger relative changes in occupancy rates. From 2000 to 2010 the occupancy rate in Harney County decreased slightly (Figure 14). This drop in occupancy rates was not uniform across all sub-areas, as Burns experienced a slight increase of 0.5 percent from 2000 to 2010.
Table 14. Harney County and Sub-Areas—Persons per Household (PPH) and Occupancy Rate

<table>
<thead>
<tr>
<th></th>
<th>Persons Per Household (PPH)</th>
<th>Occupancy Rate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Harney County</td>
<td>2.5</td>
<td>2.3</td>
<td>-7.1%</td>
</tr>
<tr>
<td>Burns</td>
<td>2.5</td>
<td>2.1</td>
<td>-13.2%</td>
</tr>
<tr>
<td>Hines</td>
<td>2.3</td>
<td>2.3</td>
<td>-2.4%</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>2.5</td>
<td>2.5</td>
<td>-2.8%</td>
</tr>
</tbody>
</table>

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

Note: For simplicity each UGB is referred to by its primary city's name.
Assumptions for Future Population Change

Evaluating past demographic trends provides clues about what the future will look like and helps determine assumptions of likely scenarios for population change. Assumptions about fertility, mortality, and migration were developed for Harney County’s overall population forecast. Harney County did not contain any large sub-areas⁴; population change for smaller sub-areas is determined by the change in the number of total housing units, PPH, occupancy rates, and group quarters population. Assumptions around these components of growth are derived from observations of historic building patterns, current plans for future housing development, and household demographics. Our forecast period is 2018-2068.

Assumptions for the County

During the forecast period, the population in Harney County is expected to age more quickly during the first half of the forecast period and then remain relatively stable over the forecast horizon. While fertility rates are higher than they were in 2010, they are expected to slightly decline throughout the forecast period (2.47 in 2015 to 2.32 in 2043).

Changes in survival rates are more stable than fertility and migration; overall life expectancy is expected to increase slightly throughout the forecast period. In spite of this trend, Harney County’s aging population life will increase the overall number of deaths throughout the forecast period.

Migration is the most volatile and challenging demographic component to forecast due to the many factors influencing migration patterns. Economic, social, and environmental factors such as employment, educational opportunities, housing availability, family ties, cultural affinity, climate change, and natural amenities occurring both inside and outside the study area can affect both the direction and the volume of migration.

We assume rates will change in line with historical trends unique to Harney County. Net out-migration of younger persons and net in-migration of families and retirees will persist throughout the forecast period. Countywide average annual net in-migration is expected to hold steady throughout the forecast period. Net in-migration is not expected to offset growing natural decrease, which results in a slight population decline through the forecast period.

Assumptions for Smaller Sub-Areas

Rates of population growth for the smaller UGBs are determined by corresponding growth in the number of housing units as well as changes in housing occupancy rates and PPH. The change in housing unit growth is much more variable than change in housing occupancy rates or PPH.

We assume occupancy rates and PPH will remain relatively stable over the forecast period. Smaller household size is associated with an aging population in Harney County and its sub-areas.

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⁴ County sub-areas with populations greater than 7,000 in the forecast launch year were forecast using the cohort-component method. County sub-areas with populations less than 7,000 in forecast launch year were forecast using the housing-unit method. 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.
If planned housing units were reported in the surveys, we accounted for them being constructed over the next 5-15 years (or as specified by local officials). Finally, for sub-areas where population growth has been flat or declining, and there is no planned housing construction, we temper population change.
Forecast Trends

Under the most-likely population growth scenario for Harney County, countywide and sub-area populations are expected to decline over the forecast period. The countywide population growth rate is forecast to peak in 2020 and then slowly decline throughout the forecast period. A reduction in population growth rates is driven by both (1) an aging population—contributing to steady increase in deaths—as well as (2) the tapering of net in-migration in the long run to account for uncertainty.

Harney County’s total population is forecast to decline by 822 persons (11.2 percent) from 2018 to 2068, which translates into a total countywide population of 6,522 in 2068 (Figure 15). The population is forecast to grow at the highest rate—over .2 percent per year—during the near-term (2018-2020). This anticipated population growth in the near-term is based on two core assumptions: (1) net in-migration and housing construction will continue into 2020; (2) net in-migration of retirees will continue.

Figure 15. Harney County—Total Forecast Population by Five-year Intervals (2018-2068)

Harney County’s two UGBs—Burns and Hines—are forecast to experience a combined population growth of 57 from 2018 to 2043 and a combined population decline of 77 from 2043 to 2068 (Figure 16). A majority of the projected growth during the first half of the forecast period will occur in Hines, and the population in Hines is expected to hold fairly steady throughout the second half of the 50-year period. The Burns UGB will experience slight growth during the first half of the forecast period, but then decline for the second half of the 50-year period.

Even still, both UGBs are projected to grow as shares of the total county population; Burns is expected to capture 44.3 percent of countywide population and Hines is expected to capture 26.9 percent of countywide population by 2068, which reflect increases from 2018 of roughly 4 percent and 3.5 percent.
respectively. These increases are the result of forecasted population decline in areas outside the UGBs. Population outside the UGBs is expected to decline by 360 people from 2018 to 2043 and 443 from 2043 to 2068, reducing its share of countywide population by 7.5 percent throughout the forecast period.

**Figure 16. Harney County and Sub-Areas—Forecast Population and AAGR**

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2043</th>
<th>2068</th>
<th>AAGR (2018-2043)</th>
<th>AAGR (2043-2068)</th>
<th>Share of County 2018</th>
<th>Share of County 2043</th>
<th>Share of County 2068</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harney County</td>
<td>7,344</td>
<td>7,042</td>
<td>6,522</td>
<td>-0.2%</td>
<td>-0.3%</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Burns</td>
<td>2,948</td>
<td>2,957</td>
<td>2,886</td>
<td>0.0%</td>
<td>-0.1%</td>
<td>40.1%</td>
<td>42.0%</td>
<td>44.3%</td>
</tr>
<tr>
<td>Hines</td>
<td>1,713</td>
<td>1,760</td>
<td>1,754</td>
<td>0.1%</td>
<td>0.0%</td>
<td>23.3%</td>
<td>25.0%</td>
<td>26.9%</td>
</tr>
<tr>
<td>Outside UGBs</td>
<td>2,684</td>
<td>2,324</td>
<td>1,882</td>
<td>-0.6%</td>
<td>-0.8%</td>
<td>36.5%</td>
<td>33.0%</td>
<td>28.9%</td>
</tr>
</tbody>
</table>

Source: Forecast by Population Research Center (PRC)
Note: For simplicity each UGB is referred to by its primary city’s name.

**Forecast Trends in Components of Population Change**

As previously discussed, the number of in-migrants is forecast to outweigh the number of out-migrants in Harney County, creating a small amount of new residents that is expected to persist throughout the forecast period. This projected net in-migration represents a shift from historic average annual migration rates; the county experienced an average annual net out-migration rate of 19 from 2000 to 2010 and 3 from 2010-2020, but it is expected to experience an average annual net in-migration rate of 20 from 2020 to 2043 (Figure 17). The majority of these in-migrants are expected to be families and older individuals.

**Figure 17. Harney County—Average Annual Net In/Out-Migration (2000-2010, 2010-2020, and 2020-2043)**

Note: The average annual numbers were calculated for the 10 year periods (2000-2010 and 2010-2020) and the 23 year period (2020-2043).
In addition to in-migration, a key factor shaping Harney County’s forecast is the county’s aging population. The proportion of the county population that is 65 years or older is projected to increase from around 25 percent in 2018 to 31 percent in 2030, and this proportion is only expected to decrease to 29 percent by 2043 (Figure 18). For a more detailed look at the age structure of Harney County’s population, see the final forecast table published to the forecast program website (www.pdx.edu/prc/cycle-2-region-1-documents).

**Figure 18. Harney County—Age Structure of the Population (2018, 2030, and 2043)**

In summary, the population growth rate is expected to peak in 2020 and then taper off through the remainder of the forecast period (Figure 19). Net in-migration is expected to remain relatively steady throughout the forecast period, but this will not be enough to offset a growing natural decrease in the future.
Figure 19. Harney County—Components of Population Change (2015-2045)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net In/Out-Mig.</th>
<th>Net Inc./Dec.</th>
<th>AAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-15</td>
<td>-25</td>
<td>-0.4%</td>
<td>-0.2%</td>
</tr>
<tr>
<td>2015-20</td>
<td>18</td>
<td>0.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2020-25</td>
<td>19</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2025-30</td>
<td>21</td>
<td>-0.1%</td>
<td>-0.3%</td>
</tr>
<tr>
<td>2030-35</td>
<td>19</td>
<td>-0.3%</td>
<td>-0.3%</td>
</tr>
<tr>
<td>2035-40</td>
<td>19</td>
<td>-0.3%</td>
<td>-0.3%</td>
</tr>
<tr>
<td>2040-45</td>
<td>20</td>
<td>-0.3%</td>
<td>-0.3%</td>
</tr>
</tbody>
</table>

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

**Cohort-Component Method**: A method used to forecast future populations based on changes in births, deaths, and migration over time.

**Coordinated population forecast**: A population forecast prepared for the county along with population forecasts for its urban growth boundary (UGB) areas and non-UGB 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**: A method used to forecast future populations based on changes in housing unit counts, vacancy rates, the average numbers of persons per household (PPH), and group quarter population counts.

**Occupancy rate**: The proportion of total housing units that are occupied by an individual or group of persons.

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

**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. This is commonly estimated to be 2.1 children per woman.
Appendix A: Surveys and Supporting Information

Supporting information is based on planning documents and reports, and from submissions to PRC from city officials and staff, and other stakeholders. The information pertains to characteristics of each city area, and to changes thought to occur in the future. The cities of Burns and Hines did not submit survey responses.
Appendix B: Specific Assumptions

Burns

We assume the 5-year average annual housing unit growth rate to remain stable throughout the forecast period. We assume the occupancy rate to be steady at 86.1% and persons per household (PPH) to decline to 2.09 for the 25-year horizon. We assume the group quarters population to remain at 67.

Hines

We assume the 5-year average annual housing unit growth rate to remain stable throughout the forecast period. We assume the occupancy rate to be steady at 91.9% and persons per household (PPH) to decline to 2.22 for the 25-year horizon. We assume the group quarters population to remain at 52.

Outside UGBs

We assume the 5-year average annual housing unit growth rate to taper throughout the forecast period. We assume the occupancy rate and persons per household (PPH) to decline to 61% percent and 2.18 for the 25-year horizon, respectively. There is no group quarter population in this sub-area.
## Appendix C: Detailed Population Forecast Results

### Figure 20. Harney County—Population by Five-Year Age Group

<table>
<thead>
<tr>
<th>Group / Year</th>
<th>2018</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
<th>2043</th>
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<tbody>
<tr>
<td>00-04</td>
<td>415</td>
<td>431</td>
<td>394</td>
<td>379</td>
<td>371</td>
<td>376</td>
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<td>05-09</td>
<td>405</td>
<td>410</td>
<td>472</td>
<td>438</td>
<td>426</td>
<td>419</td>
<td>422</td>
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<tr>
<td>10-14</td>
<td>414</td>
<td>400</td>
<td>421</td>
<td>487</td>
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<td>235</td>
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<td>261</td>
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<tr>
<td>25-29</td>
<td>334</td>
<td>314</td>
<td>308</td>
<td>276</td>
<td>260</td>
<td>279</td>
<td>307</td>
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<td>35-39</td>
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<td>465</td>
<td>412</td>
<td>414</td>
<td>379</td>
<td>367</td>
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<td>40-44</td>
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<td>365</td>
<td>376</td>
<td>441</td>
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<td>374</td>
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<td>45-49</td>
<td>419</td>
<td>406</td>
<td>376</td>
<td>388</td>
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<td>50-54</td>
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<td>363</td>
<td>376</td>
<td>446</td>
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<td>436</td>
</tr>
<tr>
<td>60-64</td>
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<td>424</td>
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<td>65-69</td>
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<td>623</td>
<td>541</td>
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<td>432</td>
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<td>70-74</td>
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<td>75-79</td>
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<td>390</td>
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<tr>
<td>80-84</td>
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<td>245</td>
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<td>380</td>
<td>351</td>
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<tr>
<td>85+</td>
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<td>218</td>
<td>271</td>
<td>327</td>
<td>390</td>
<td>451</td>
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<td>Total</td>
<td>7,344</td>
<td>7,377</td>
<td>7,381</td>
<td>7,334</td>
<td>7,229</td>
<td>7,107</td>
<td>7,042</td>
</tr>
</tbody>
</table>

### Figure 21. Harney County’s Sub-Areas—Total Population

<table>
<thead>
<tr>
<th>Area / Year</th>
<th>2018</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
<th>2055</th>
<th>2060</th>
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<td>7,377</td>
<td>7,381</td>
<td>7,334</td>
<td>7,229</td>
<td>7,107</td>
<td>6,999</td>
<td>6,892</td>
<td>6,788</td>
<td>6,684</td>
<td>6,583</td>
<td>6,522</td>
</tr>
<tr>
<td>Burns UGB</td>
<td>1,948</td>
<td>2,961</td>
<td>2,950</td>
<td>2,964</td>
<td>2,960</td>
<td>2,953</td>
<td>2,960</td>
<td>2,947</td>
<td>2,942</td>
<td>2,923</td>
<td>2,898</td>
<td>2,886</td>
</tr>
<tr>
<td>Hines UGB</td>
<td>1,713</td>
<td>1,723</td>
<td>1,731</td>
<td>1,741</td>
<td>1,748</td>
<td>1,753</td>
<td>1,765</td>
<td>1,766</td>
<td>1,773</td>
<td>1,768</td>
<td>1,758</td>
<td>1,754</td>
</tr>
<tr>
<td>Outside UGB Area</td>
<td>2,684</td>
<td>2,693</td>
<td>2,700</td>
<td>2,629</td>
<td>2,521</td>
<td>2,401</td>
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<td>2,180</td>
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<td>1,993</td>
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<td>1,882</td>
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