

6-2015

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

Portland State University. Population Research Center

Xiaomin Ruan  
*Portland State University*

Risa Proehl  
*Portland State University*

Jason R. Jurjevich  
*Portland State University, jjason@email.arizona.edu*

Kevin Rancik  
*Portland State University*

*See next page for additional authors*

Follow this and additional works at: <https://pdxscholar.library.pdx.edu/opfp>



Part of the [Urban Studies and Planning Commons](#)

**Let us know how access to this document benefits you.**

---

## Recommended Citation

Ruan, Xiaomin, R. Proehl, J. Jurjevich, K. Rancik, J. Kessi, C. Gorecki, and D. Tetrick, "Coordinated Population Forecast for Deschutes County, its Urban Growth Boundaries (UGB), and Area Outside UGBs 2015-2065. Portland State University Population Research Center, June 2015.

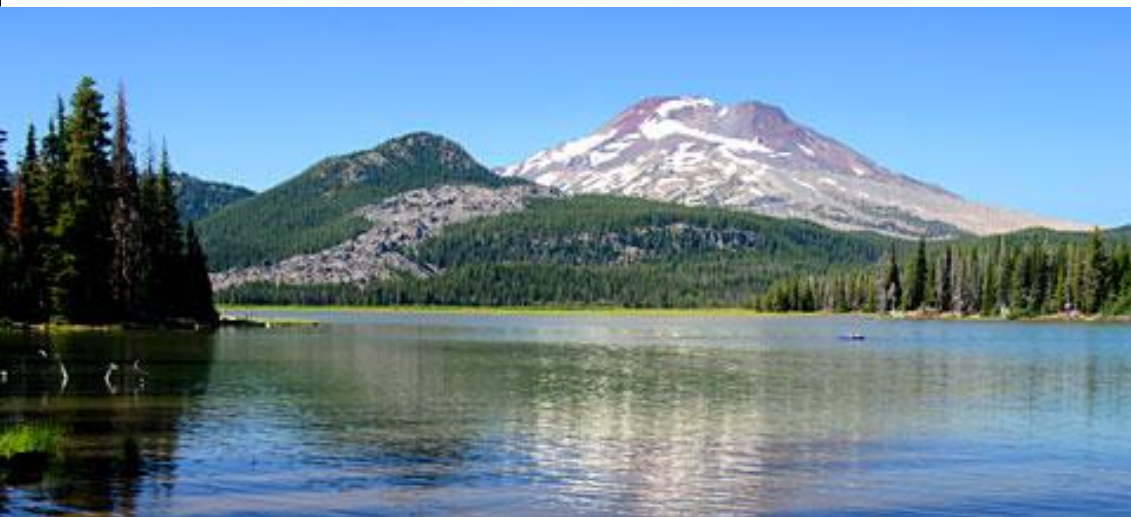
This Report is brought to you for free and open access. It has been accepted for inclusion in Oregon Population Forecast Program by an authorized administrator of PDXScholar. Please contact us if we can make this document more accessible: [pdxscholar@pdx.edu](mailto:pdxscholar@pdx.edu).

---

**Authors**

Portland State University. Population Research Center, Xiaomin Ruan, Risa Proehl, Jason R. Jurjevich, Kevin Rancik, Janai Kessi, Carson Gorecki, and David Tetrick

# Coordinated Population Forecast



**2015**

Through

**2065**

## Deschutes County

Urban Growth  
Boundaries (UGB)  
& Area Outside UGBs

**Coordinated Population Forecast for Deschutes  
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**

**June, 2015**

This project is funded by the State of Oregon through the Department of Land Conservation and Development (DLCD). The contents of this document do not necessarily reflect the views or policies of the State of Oregon.

## **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, Graduate Research Assistant*

*David Tetrick, Graduate Research Assistant*

*The Population Research Center and project staff wish to acknowledge and express gratitude for support from the Forecast Advisory Committee (DLCD), the hard work of our staff Deborah Loftus and Emily Renfrow, data reviewers, and many people 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 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 (i.e., 2015-2065). These tables are also located in [Appendix C](#) of this report.

# Table of Contents

Executive Summary.....	6
Historical Trends .....	8
Population.....	8
Age Structure of the Population .....	9
Race and Ethnicity.....	10
Births .....	11
Deaths .....	13
Migration .....	13
Historical Trends in Components of Population Change .....	14
Housing and Households .....	15
Assumptions for Future Population Change .....	17
Assumptions for the County and Larger Sub-Areas.....	17
Assumptions for Smaller Sub-Areas.....	18
Supporting Information and Specific Assumptions .....	18
Forecast Trends.....	19
Forecast Trends in Components of Population Change .....	21
Glossary of Key Terms.....	24
Appendix A: Supporting Information .....	25
Appendix B: Specific Assumptions .....	33
Appendix C: Detailed Population Forecast Results.....	34

## Table of Figures

Figure 1. Deschutes County and Sub-Areas—Historical and Forecast Populations, and Average Annual Growth Rates (AAGR).....	7
Figure 2. Deschutes County—Total Population by Five-year Intervals (1975-2010 and 2010-2014).....	8
Figure 3. Deschutes County and Sub-areas—Total Population and Average Annual Growth Rate (AAGR) (2000 and 2010) .....	9
Figure 4. Deschutes County—Age Structure of the Population (2000 and 2010) .....	10
Figure 5. Deschutes County—Hispanic or Latino and Race (2000 and 2010).....	11
Figure 6. Deschutes County and Oregon—Total Fertility Rates (2000 and 2010) .....	11
Figure 7. Deschutes County—Age Specific Fertility Rates (2000 and 2010).....	12
Figure 8. Oregon—Age Specific Fertility Rates (2000 and 2010) .....	12
Figure 9. Deschutes County and Sub-Areas—Total Births (2000 and 2010) .....	13
Figure 10. Deschutes County and Sub-Areas—Total Deaths (2000 and 2010).....	13
Figure 11. Deschutes County and Oregon—Five-year Migration Rates (2000-2010) .....	14
Figure 12. Deschutes County—Components of Population Change (2000-2014).....	15
Figure 13. Deschutes County and Sub-Areas—Total Housing Units (2000 and 2010) .....	16
Figure 14. Deschutes County and Sub-Areas—Persons per Household (PPH) and Occupancy Rate .....	16
Figure 15. Deschutes County—Total Forecast Population by Five-year Intervals (2015-2065) .....	19
Figure 16. Deschutes County and Larger Sub-Areas—Forecast Population and AAGR.....	20
Figure 17. Deschutes County and Larger Sub-Areas—Share of Countywide Population Growth .....	20
Figure 18. Deschutes County and Smaller Sub-Areas—Forecast Population and AAGR.....	21
Figure 19. Deschutes County and Smaller Sub-Areas—Share of Countywide Population Growth .....	21
Figure 20. Deschutes County—Age Structure of the Population (2015, 2035, and 2065) .....	22
Figure 21. Deschutes County—Components of Population Change, 2015-2065 .....	23
Figure 22. Deschutes County—Population by Five-Year Age Group .....	34
Figure 23. Deschutes County's Sub-Areas—Total Population .....	35



# Executive Summary

## Historical

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

Deschutes County's total population has grown rapidly since 2000, with an average annual growth rate of more than three percent between 2000 and 2010 (Figure 1); in addition, most of its sub-areas experienced even more rapid population growth during the 2000s. Sisters and La Pine posted the highest average annual growth rates at 7.8 and 6.3 percent, respectively, during the 2000 to 2010 period.

Deschutes County's positive population growth in the 2000s was the direct result of substantial net in-migration and steady natural increase (i.e., more births than deaths). 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. This along with more women choosing to have fewer children and have them at older ages has led to slower growth in births. The more rapid growth in deaths relative to that of births caused natural increase—the difference between births and deaths—to shrink between 2007 and 2014. While net in-migration and steady natural increase contributed to population growth during the early and middle years of the last decade, it is clear that in more recent years (i.e., 2010 to 2014) net in-migration played the most prominent role in population growth.

## Forecast

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

Even so, Deschutes County's total population is forecast to increase by more than 78,000 over the next 20 years (2015-2035) and by more than 186,000 over the entire 50 year forecast period (2015-2065). Sub-areas that showed strong population growth in the 2000s are expected to experience similar rates of population growth during the forecast period.

**Figure 1. Deschutes County and Sub-Areas—Historical and Forecast Populations, and Average Annual Growth Rates (AAGR)**

	Historical			Forecast				
	2000	2010	AAGR (2000-2010)	2015	2035	2065	AAGR (2015-2035)	AAGR (2035-2065)
<i>Deschutes County</i>	115,367	157,733	3.2%	170,606	249,037	357,345	1.9%	1.2%
Bend <sup>1</sup>	52,041	76,858	4.0%	85,737	132,209	194,793	2.2%	1.3%
La Pine	899	1,653	6.3%	1,687	3,014	5,836	2.9%	2.2%
Redmond	15,524	26,508	5.5%	27,715	39,812	64,785	1.8%	1.6%
Sisters	961	2,038	7.8%	2,315	4,375	7,212	3.2%	1.7%
Outside UGBs	45,942	50,676	1.0%	53,151	69,627	84,719	1.4%	0.7%

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

<sup>1</sup> For simplicity each UGB is referred to by its primary city's name.

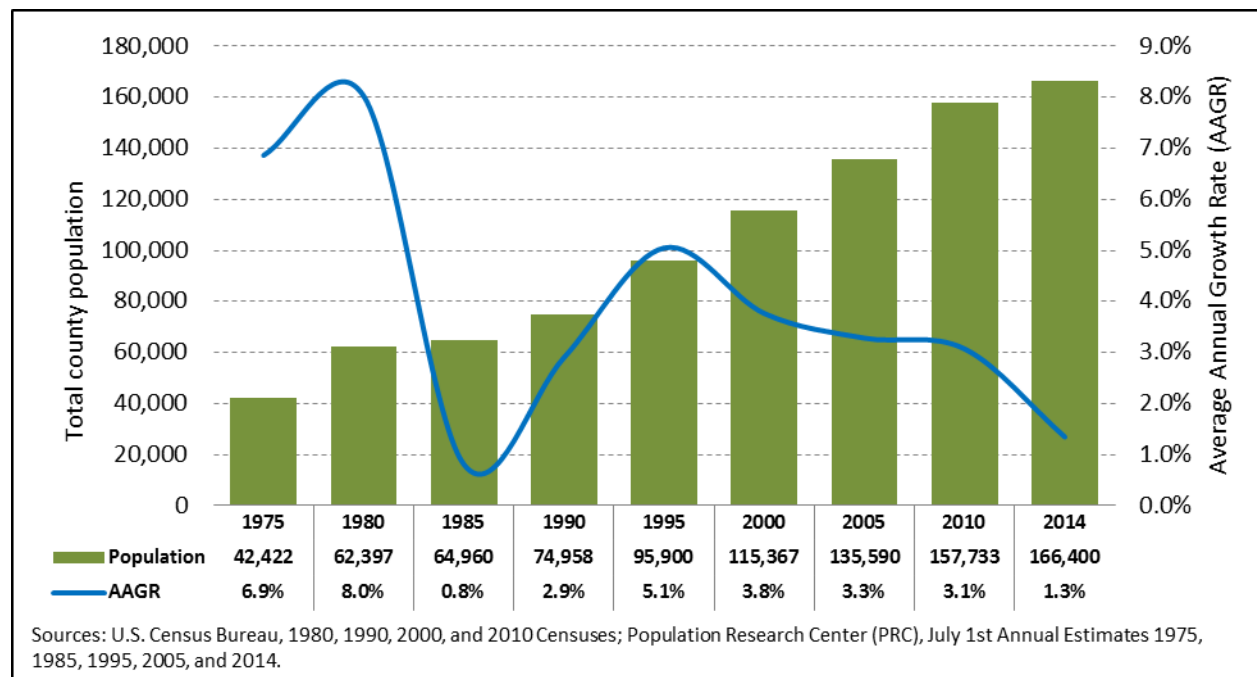
## Historical Trends

Different growth patterns occur in different parts of the county. Each of Deschutes 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, migration, and number of [housing units](#) as well as the [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, in general, population growth rates for the county are collectively influenced by local trends within its sub-areas.

## Population

Deschutes County’s total population grew by just under 300 percent between 1975 and 2014—from roughly 42,000 in 1975 to more than 166,000 in 2014 (Figure 2). During this approximately 40-year period, the county realized the highest growth rates during the late 1970s, which coincided with a period of relative economic prosperity. During the early 1980s, challenging economic conditions, both nationally and within the county, yielded a sharp decline in population growth. Since 1985, the county has experienced substantial population growth—averaging just over two percent per year. During the 2000s, population growth remained positive and averaged a little more than three percent per year—in spite of the Great Recession of the late 2000s.

**Figure 2. Deschutes County—Total Population by Five-year Intervals (1975-2010 and 2010-2014)**



Deschutes County’s population change is the sum of its parts, in this sense countywide population change is the combined population growth or decline within each UGB and the area outside UGBs. During the 2000s, Deschutes County’s average annual population growth rate stood at 3.2 percent, but the growth rate varied to a large degree in sub-areas across the county. All of the UGBs realized average annual growth rates that were well above three percent, with Sisters recording the highest at nearly

eight percent (Figure 3). The area outside UGBs experienced an average annual growth rate below that of the county as a whole and declined as a share of total county population between 2000 and 2010.

**Figure 3. Deschutes County and Sub-areas—Total Population and Average Annual Growth Rate (AAGR) (2000 and 2010)**

	2000	2010	AAGR (2000-2010)	Share of County 2000	Share of County 2010
<i>Deschutes County</i>	115,367	157,733	3.2%	100.0%	100.0%
Bend <sup>1</sup>	52,041	76,858	4.0%	45.1%	48.7%
La Pine	899	1,653	6.3%	0.8%	1.0%
Redmond	15,524	26,508	5.5%	13.5%	16.8%
Sisters	961	2,038	7.8%	0.8%	1.3%
Outside UGBs	45,942	50,676	1.0%	39.8%	32.1%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses

<sup>1</sup> For simplicity each UGB is referred to by its primary city's name.

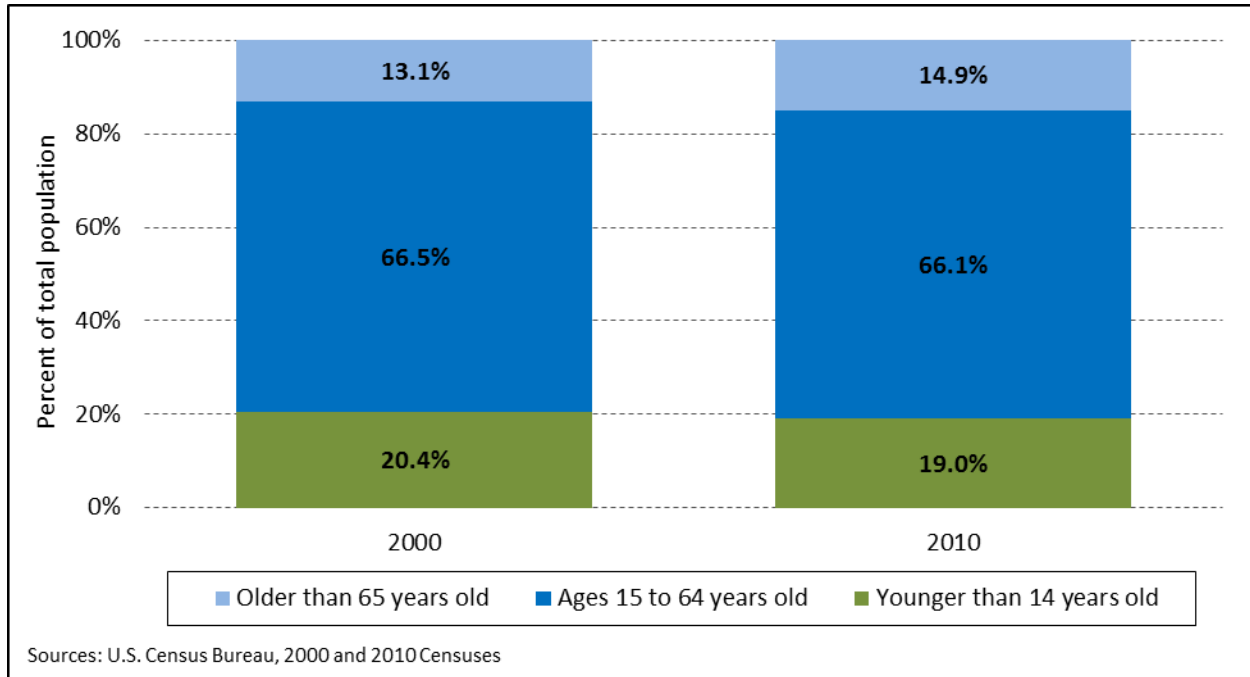
## Age Structure of the Population

Similar to most areas across Oregon, Deschutes 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 decline in births. This demographic trend underlies some of the population change that has occurred in recent years. From 2000 to 2010 the proportion of county population 65 or older grew from just over 13 percent to approximately 15 percent (Figure 4).<sup>1</sup> Further underscoring the countywide trend in aging—the median age went from about 38 in 2000 to 40 in 2010.<sup>2</sup>

<sup>1</sup> The population over the age of 65 calculated as a proportion of the working age population is known as the elderly dependency ratio. In general this dependency ratio has been growing more rapidly in recent years.

<sup>2</sup> Median age is sourced from the U.S. Census Bureau's 2000 and 2010 Censuses

**Figure 4. Deschutes County—Age Structure of the Population (2000 and 2010)**



## **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. The Hispanic population within Deschutes County increased substantially from 2000 to 2010 (Figure 5), while the White, non-Hispanic population increased by a smaller amount (in relative terms) over the same time period. This increase in the Hispanic population and other 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 have tended to be higher than among White, non-Hispanic women. Second, Hispanic and minority households tend to be larger relative to White, non-Hispanic households.

**Figure 5. Deschutes County—Hispanic or Latino and Race (2000 and 2010)**

Hispanic or Latino and Race	2000		2010		Absolute Change	Relative Change
	<i>Total population</i>	115,367	100.0%	157,733	100.0%	42,366
Hispanic or Latino	4,304	3.7%	11,718	7.4%	7,414	172.3%
Not Hispanic or Latino	111,063	96.3%	146,015	92.6%	34,952	31.5%
White alone	107,177	92.9%	139,470	88.4%	32,293	30.1%
Black or African American alone	207	0.2%	524	0.3%	317	153.1%
American Indian and Alaska Native alone	875	0.8%	1,197	0.8%	322	36.8%
Asian alone	831	0.7%	1,412	0.9%	581	69.9%
Native Hawaiian and Other Pacific Islander alone	81	0.1%	183	0.1%	102	125.9%
Some Other Race alone	77	0.1%	141	0.1%	64	83.1%
Two or More Races	1,815	1.6%	3,088	2.0%	1,273	70.1%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses

## Births

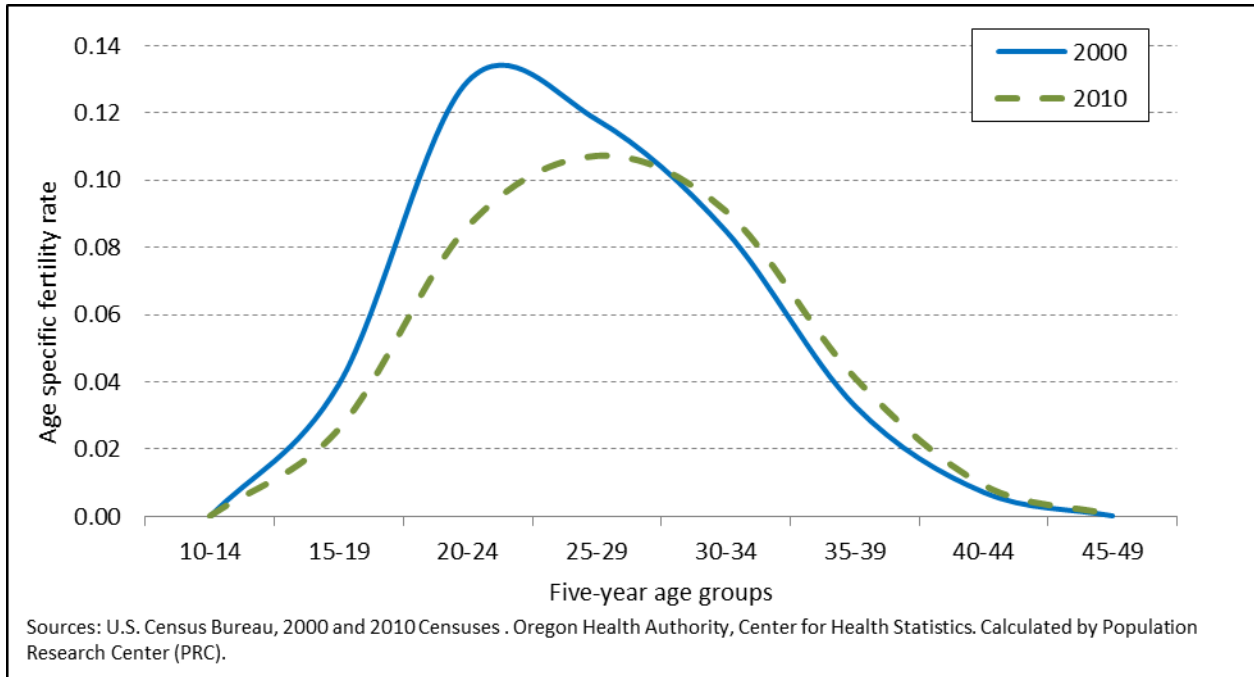
Historical fertility rates for Deschutes County mirror trends similar to Oregon as a whole; while total fertility rates decreased for both the county and state from 2000 to 2010 (Figure 6), fertility for older women marginally increased in both Deschutes County and Oregon (Figure 7 and Figure 8). As Figure 7 demonstrates, fertility rates for younger women in Deschutes County are lower in 2010 compared to those in 2000, and women are choosing to have children at older ages. While these statistics largely mirror statewide changes, the decline in total fertility in Deschutes County during the 2000s was slightly more pronounced than the statewide decline during this same period. At the same time, total fertility in the county remains below [replacement fertility](#).

**Figure 6. Deschutes County and Oregon—Total Fertility Rates (2000 and 2010)**

	2000	2010
<b>Deschutes County</b>	2.06	1.81
<b>Oregon</b>	1.98	1.79

Sources: U.S. Census Bureau, 2000 and 2010 Censuses.  
Oregon Health Authority, Center for Health Statistics.  
Calculations by Population Research Center (PRC).

**Figure 7. Deschutes County—Age Specific Fertility Rates (2000 and 2010)**



**Figure 8. Oregon—Age Specific Fertility Rates (2000 and 2010)**

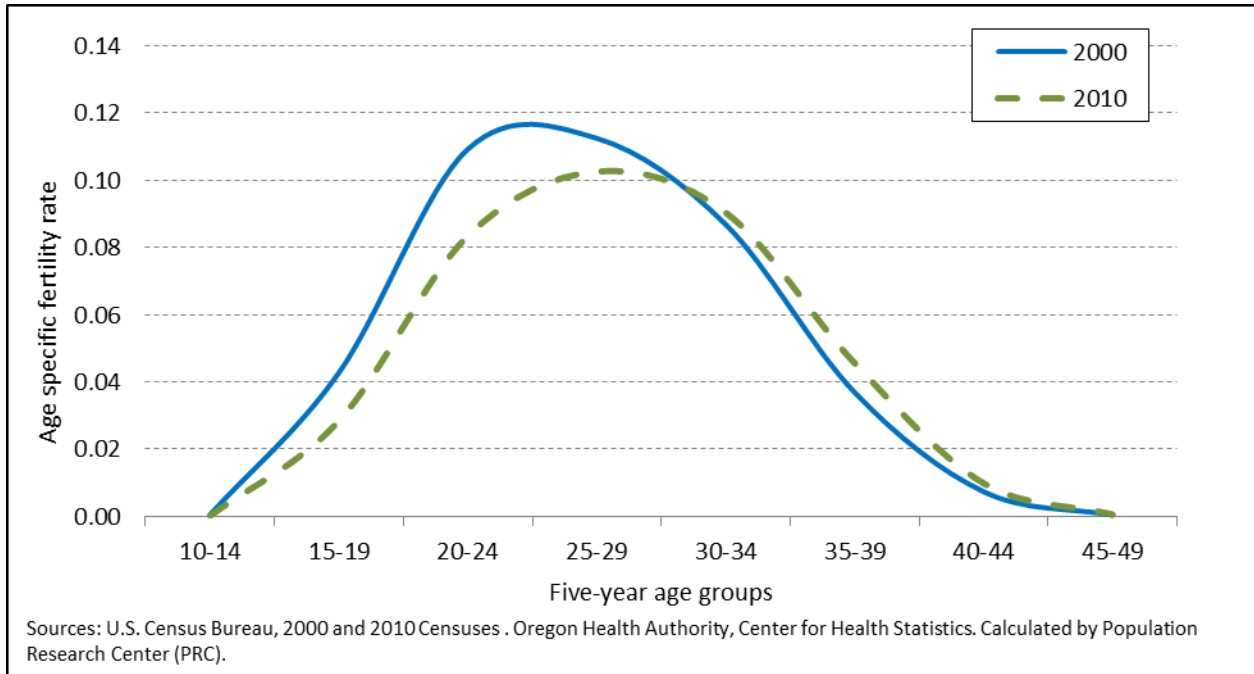


Figure 9 shows the number of births by the area in which the mother resides. Please note that the number of births fluctuates from year to year. For example a sub-area with an increase in births between two years could easily show a decrease for a different time period; however for the 10-year

period from 2000 to 2010 the county as a whole and all UGBs saw an increase in births, while the area outside UGBs recorded a decrease in births (Figure 9).

**Figure 9. Deschutes County and Sub-Areas—Total Births (2000 and 2010)**

	2000	2010	Absolute Change	Relative Change	Share of County 2000	Share of County 2010
<i>Deschutes County</i>	1,438	1,709	271	18.8%	100.0%	100.0%
Bend	747	934	187	25.0%	52.0%	54.7%
Redmond	274	408	135	49.3%	19.0%	23.9%
Smaller UGBs <sup>1</sup>	28	38	10	35.1%	2.0%	2.2%
Outside UGBs	389	328	-61	-15.6%	27.1%	19.2%

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

<sup>1</sup> Smaller UGBs are those with populations less than 8,000 in forecast launch year.

## Deaths

While the population in the county as a whole is aging, more people are living longer. For Deschutes County in 2000, life expectancy for males was 77 years and for females was 80 years. By 2010, life expectancy had increased to 79 for males and 83 for females. For both Deschutes 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 countywide deaths increased (Figure 10).

**Figure 10. Deschutes County and Sub-Areas—Total Deaths (2000 and 2010)**

	2000	2010	Absolute Change	Relative Change	Share of County 2000	Share of County 2010
<i>Deschutes County</i>	916	1,250	334	36.5%	100.0%	100.0%
Bend	418	585	167	40.0%	45.6%	46.8%
Redmond	140	203	63	44.8%	15.3%	16.3%
All other areas <sup>2</sup>	358	462	104	29.1%	39.1%	36.9%

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

<sup>2</sup> All other areas includes some larger UGBs (those with populations greater than 8,000), all smaller UGBs (those with populations less than 8,000), and the area outside UGBs. Detailed, point level death data were unavailable for 2000, thus PRC was unable to assign deaths to some UGBs.

## Migration

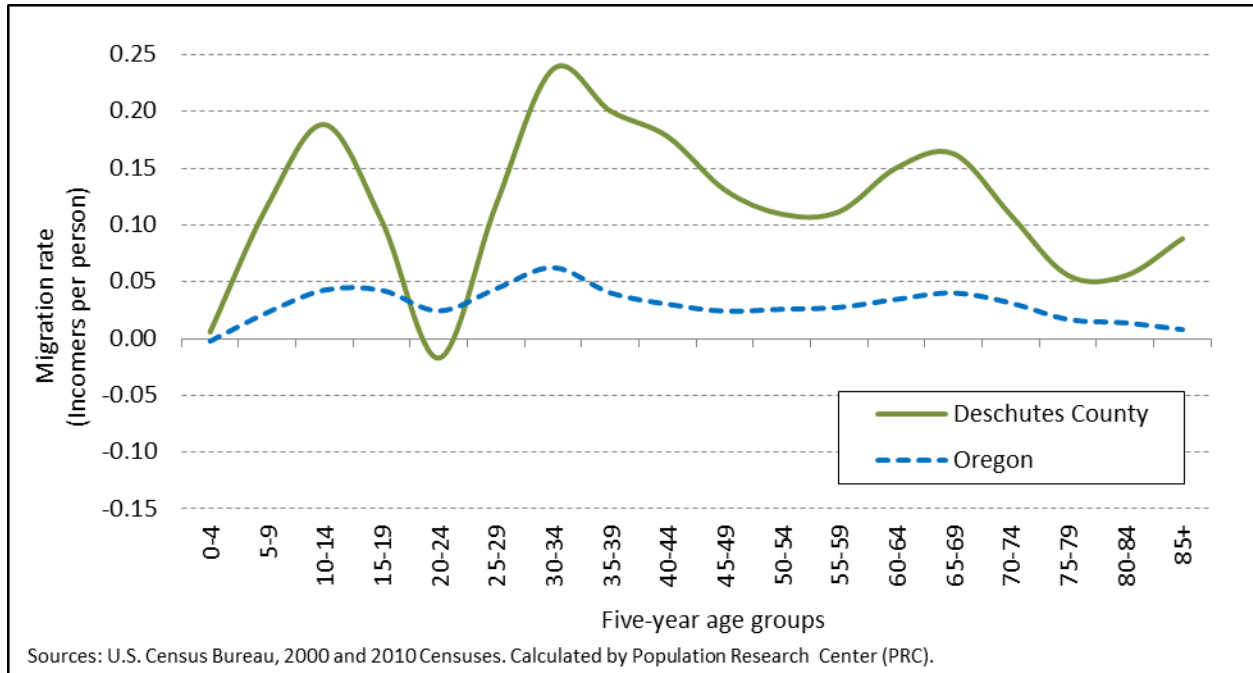
The propensity to migrate is strongly linked to age and stage of life. As such, age-specific migration rates are critically important for assessing these patterns across five-year age cohorts. Figure 11 shows the historical age-specific migration rates by five-year age group, both for Deschutes County and Oregon. The migration rate is shown as the number of net migrants per person by age group.

From 2000 to 2010, a small number of 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 both younger and older migrants.



It is likely that both young and old in-migrants moved into the county for the high quality of life the region has to offer, with its natural beauty and recreational amenities.

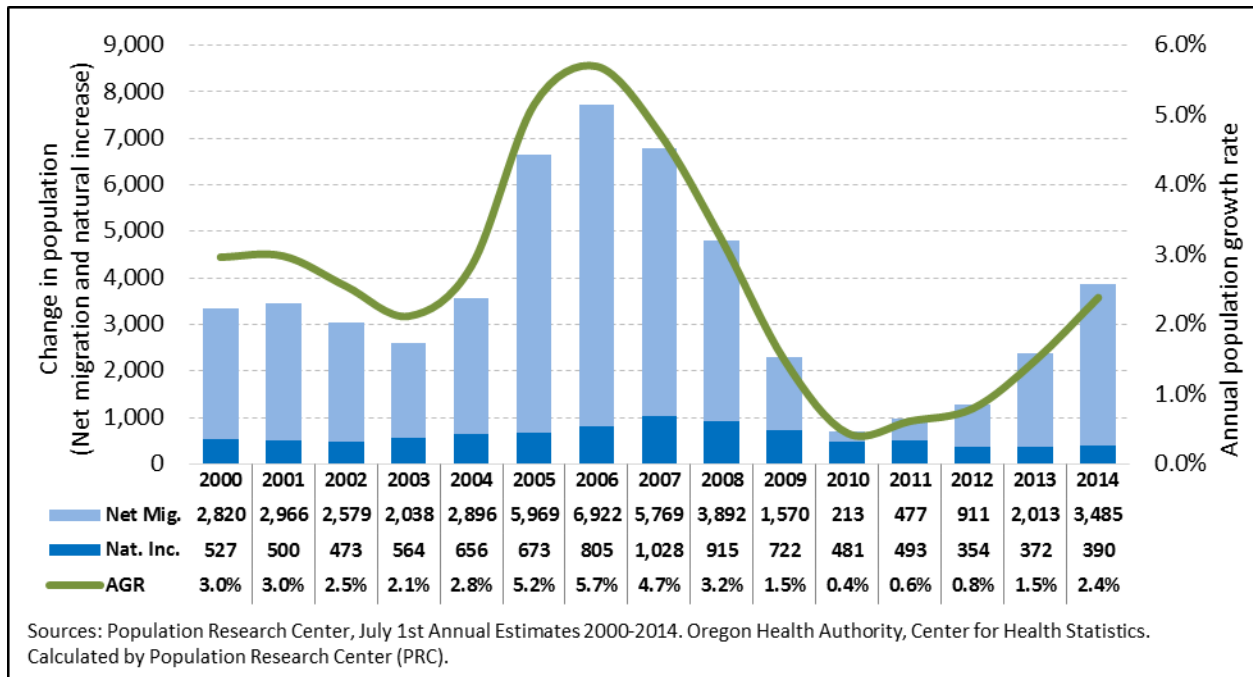
**Figure 11. Deschutes County and Oregon—Five-year Migration Rates (2000-2010)**



### Historical Trends in Components of Population Change

In summary, Deschutes County’s positive population growth in the 2000s was the result of substantial net in-migration and steady natural increase (i.e., more births than deaths) (Figure 21). 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. This along with more women choosing to have fewer children and have them at older ages has led to slower growth in births. The more rapid growth in deaths relative to that of births caused natural increase—the difference between births and deaths—to shrink between 2007 and 2014. While net in-migration and steady natural increase contributed to population growth during the early and middle years of the last decade, it is clear that in more recent years (i.e., 2010 to 2014) net in-migration played the most prominent role in population growth.

**Figure 12. Deschutes County—Components of Population Change (2000-2014)**



## Housing and Households

The total number of housing units in Deschutes County increased rapidly during the middle years of this last decade (2000 to 2010), but this growth slowed with the onset of the national recession in 2007. Over the entire 2000 to 2010 period, the total number of housing units increased by 47 percent countywide; this was more than 25,000 new housing units (Figure 13). Bend and Redmond UGBs captured the largest shares of the growth in total countywide housing units. In terms of relative housing growth Sisters grew the most during the 2000s, its total housing units increased nearly 130 percent (626 housing units) by 2010.

The rates of increase in the number of total housing units in the county, UGBs, and area outside UGBs are similar to the growth rates of their corresponding populations. The growth rates for housing may slightly differ than the rates for population because the numbers of total housing units are smaller than the numbers of persons, or the UGB has experienced changes in the average number of persons per household or in occupancy rates. However, the pattern of population and housing change in the county is relatively similar.

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

	AAGR			Share of	
	2000	2010	(2000-2010)	County 2000	County 2010
<i>Deschutes County</i>	54,583	80,139	3.8%	100.0%	100.0%
Bend <sup>1</sup>	22,511	36,117	4.7%	41.2%	45.1%
La Pine	523	942	5.9%	1.0%	1.2%
Redmond	6,373	11,092	5.5%	11.7%	13.8%
Sisters	483	1,109	8.3%	0.9%	1.4%
Outside UGBs	24,693	30,879	2.2%	45.2%	38.5%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses

<sup>1</sup> For simplicity each UGB is referred to by its primary city's name.

Occupancy rates tend to fluctuate more than PPH. This is particularly true in smaller UGB areas where fewer housing units allow for larger changes—in relative terms—in occupancy rates. From 2000 to 2010 the occupancy rate in Deschutes County declined slightly; this was most likely due to slack in demand for housing as individuals experienced the effects of the Great Recession. A slight drop in occupancy rates was mostly uniform across all sub-areas, but some smaller UGBs experienced more extreme declines in the occupancy rate.

Average household size, or PPH, in Deschutes County was 2.4 in 2010, down from 2.5 in 2000 (Figure 14). Deschutes County's PPH in 2010 was slightly lower than for Oregon as a whole, which had a PPH of 2.5. PPH varied across all sub-areas, with all of them falling between 2.3 and 2.6 persons per household. In 2010 the highest PPH was in Redmond with 2.6 and the lowest in La Pine at 2.3.

**Figure 14. Deschutes County and Sub-Areas—Persons per Household (PPH) and Occupancy Rate**

	Persons Per Household (PPH)			Occupancy Rate		
	2000	2010	Change 2000-2010	2000	2010	Change 2000-2010
<i>Deschutes County</i>	2.5	2.4	-2.5%	83.5%	80.0%	-3.6%
Bend <sup>1</sup>	2.4	2.4	-1.2%	93.6%	88.0%	-5.5%
La Pine	2.2	2.3	6.1%	76.7%	74.1%	-2.6%
Redmond	2.6	2.6	1.6%	94.3%	90.7%	-3.6%
Sisters	2.4	2.4	-0.4%	82.4%	76.4%	-6.0%
Outside UGBs	2.6	2.4	-5.6%	71.8%	67.0%	-4.8%

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

<sup>1</sup> 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 forecast for the future will look like, and helps determine the realm of likely possibilities. Past trends explain the dynamics of population growth particular to local areas. Relating recent and historical population change to events that influenced the 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 Deschutes County’s population forecast as well as the forecasts for larger sub-areas.<sup>3</sup> The assumptions are derived from observations based on life course events, as well as trends unique to Deschutes County and its larger sub-areas. Population change in the smaller sub-areas is determined by the change in the number of total housing units and PPH. Assumptions around housing unit growth as well as occupancy rates are derived from observations of historical building patterns and current plans for future housing development. In addition assumptions for PPH are based on observed historical patterns of household demographics—for example the average age of householder. The forecast period is 2015-2065.

### Assumptions for the County and Larger Sub-Areas

During the forecast period, as the population in Deschutes County is expected to continue to age, fertility rates will begin to decline in the near term and continue on this path throughout the forecast period. Total fertility in Deschutes County is forecast to decrease from 1.8 children per woman in 2015 to 1.7 children per woman by 2065. Similar patterns of declining total 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 81 years in 2010 to 88 in 2060. However, in spite of increasing life expectancy and the corresponding increase in survival rates, Deschutes County’s aging population and large population cohort reaching a later stage of life will increase the overall 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, 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 directionality and volume of migration. Net migration rates will change in line with historical trends unique to Deschutes County. Slight net out-migration of some younger persons and net in-migration of

---

<sup>3</sup> 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](#). 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.

both younger and older individuals will persist throughout the forecast period. Countywide, average annual net migration is expected to increase from 1,974 net in-migrants in 2015 to 3,955 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 4,588 net in-migrants by 2065. With natural increase diminishing in its potential to contribute to population growth, net in-migration will become an increasingly important component of population growth.

### **Assumptions for Smaller Sub-Areas**

Rates of population growth for the smaller UGBs are assumed to be 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.

Occupancy rates are assumed to stay relatively stable over the forecast period, while PPH is expected to decline slightly. Smaller household size is associated with an aging population in Deschutes County and its sub-areas.

In addition, for sub-areas experiencing population growth, we assume a higher growth rate in the near-term, with growth stabilizing over the remainder of the forecast period. If planned housing units were reported in the surveys, then we account for them being constructed over the next 5-15 years. Finally, for county sub-areas where population growth has been flat or declined, and there is no planned housing construction, we hold population growth mostly stable with little to no change.

### **Supporting Information and Specific Assumptions**

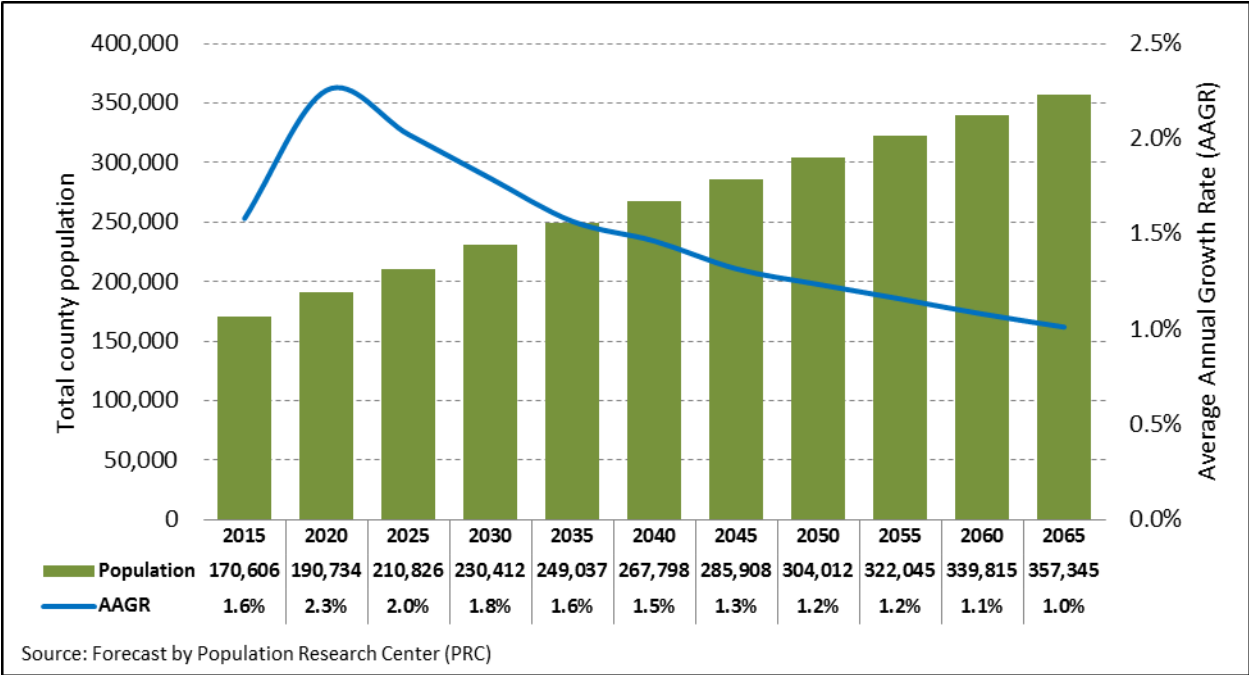
Assumptions used for developing population forecasts are partially derived from surveys and other information provided by local planners and agencies. See [Appendix A](#) for a summary of all submitted surveys and other information that was directly considered in developing the sub-area forecasts. Also, see [Appendix B](#) for specific assumptions used in each sub-area forecast.

# Forecast Trends

Under the most-likely population growth scenario in Deschutes County, countywide and sub-area populations are expected to increase over the forecast period. The countywide population growth rate is forecast to peak in 2020 and then slowly decline throughout the forecast period. Forecasting tapered population growth is largely driven by an aging population, which is expected to 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 is expected to in turn contribute to declining natural increase and eventually a natural decrease (more deaths than births) over the forecast period. Net migration is expected to increase steadily throughout the forecast period, but this growth will not fully offset the decline in natural increase. The combination of these factors will likely result in a slowly declining population growth rate as time progresses through the forecast period.

Deschutes County’s total population is forecast to grow by almost 187,000 persons (110 percent) from 2015 to 2065, which translates into a total countywide population of 357,345 in 2065 (Figure 15). The population is forecast to grow at the highest rate—approximately two percent per year—in the near-term (2015-2020). This anticipated population growth in the near-term is based on two core assumptions: 1) Deschutes County’s economy will continue to strengthen in the next five years, and; 2) an increasing number of persons, both young and old, will move into the county for the high quality of life the region has to offer, with its natural beauty and recreational amenities. The single largest component of growth in this initial period is net in-migration. Nearly 16,000 net in-migrants are forecast for the 2015 to 2020 period.

**Figure 15. Deschutes County—Total Forecast Population by Five-year Intervals (2015-2065)**



Deschutes County’s two largest UGBs, Bend and Redmond, are forecast to experience a combined population growth of more than 58,000 from 2015 to 2035 and more than 87,000 from 2035 to 2065.

The Bend UGB is forecast to increase by more than 46,000 persons from 2015 to 2035, growing from a total population of 85,737 in 2015 to 132,209 in 2035. The Redmond UGB is expected to increase by a slightly slower rate, growing from 27,715 persons in 2015 to a population of 39,812 in 2035. Growth is forecast to occur more slowly for both Bend and Redmond during the second part of the forecast period, with total population increasing to 194,793 and 64,785 respectively by 2065. Both Bend and Redmond UGBs are expected to grow as a share of total county population.

Population outside UGBs is expected to grow by more than 16,000 people 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 15,000 people from 2035 to 2065. The population of the area outside UGBs is forecast to decline as a share of total countywide population over the forecast period, composing 31 percent of the countywide population in 2015 and about 24 percent in 2065.

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

	2015	2035	2065	AAGR	AAGR	Share of	Share of	Share of
<i>Deschutes County</i>	170,606	249,037	357,345	1.9%	1.2%	100.0%	100.0%	100.0%
Bend <sup>1</sup>	85,737	132,209	194,793	2.2%	1.3%	50.3%	53.1%	54.5%
Redmond	27,715	39,812	64,785	1.8%	1.6%	16.2%	16.0%	18.1%
Smaller UGBs <sup>2</sup>	4,002	7,389	13,048	3.1%	1.9%	2.3%	3.0%	3.7%
Outside UGBs	53,151	69,627	84,719	1.4%	0.7%	31.2%	28.0%	23.7%

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

<sup>1</sup> For simplicity each UGB is referred to by its primary city's name.

<sup>2</sup> Smaller UGBs are those with populations less than 8,000 in forecast launch year

Deschutes County's two largest UGBs are expected to capture the largest share of total countywide population growth throughout the entire forecast period (Figure 17); however Bend is expected to capture a slightly smaller share of countywide population during the last 30 years relative to the first 20 years of the forecast period. The area outside UGBs is expected to see a decrease in the share of countywide population growth as time progresses through the forecast period.

**Figure 17. Deschutes County and Larger Sub-Areas—Share of Countywide Population Growth**

	2015-2035	2035-2065
<i>Deschutes County</i>	100.0%	100.0%
Bend <sup>1</sup>	59.3%	57.8%
Redmond	15.4%	23.1%
Smaller UGBs <sup>2</sup>	4.3%	5.2%
Outside UGBs	21.0%	13.9%

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

<sup>1</sup> For simplicity each UGB is referred to by its primary city's name.

<sup>2</sup> Smaller UGBs are those with populations less than 8,000 in forecast launch year

The remaining smaller UGBs are expected to grow by a combined number of more than 3,300 persons from 2015 to 2035, with a combined average annual growth rate of more than three percent (Figure 16). This growth rate is driven by expected rapid growth in both Sisters and La Pine (Figure 18). Similar to the larger UGBs and the county as a whole, population growth rates are forecast to decline for the second half of the forecast period (2035 to 2065). The smaller UGBs are expected to collectively add a little more than 5,600 people from 2035 to 2065.

**Figure 18. Deschutes County and Smaller Sub-Areas—Forecast Population and AAGR**

	2015	2035	2065	AAGR (2015-2035)	AAGR (2035-2065)	Share of County 2015	Share of County 2035	Share of County 2065
<i>Deschutes County</i>	170,606	249,037	357,345	1.9%	1.2%	100.0%	100.0%	100.0%
Sisters <sup>1</sup>	2,315	4,375	7,212	3.2%	1.7%	1.4%	1.8%	2.0%
La Pine	1,687	3,014	5,836	2.9%	2.2%	1.0%	1.2%	1.6%
Larger UGBs <sup>2</sup>	113,453	172,021	259,578	2.1%	1.4%	66.5%	69.1%	72.6%
Outside UGBs	53,151	69,627	84,719	1.4%	0.7%	31.2%	28.0%	23.7%

Source: Forecast by Population Research Center (PRC)

<sup>1</sup> For simplicity each UGB is referred to by its primary city's name.

<sup>2</sup> Larger UGBs are those with populations greater than 8,000 in forecast launch year.

Deschutes County’s smaller sub-areas are expected to record an increase in the share of countywide population growth over the 50-year forecast period (Figure 19).

**Figure 19. Deschutes County and Smaller Sub-Areas—Share of Countywide Population Growth**

	2015-2035	2035-2065
<i>Deschutes County</i>	100.0%	100.0%
Sisters <sup>1</sup>	2.6%	2.6%
La Pine	1.7%	2.6%
Larger UGBs <sup>2</sup>	74.7%	80.8%
Outside UGBs	21.0%	13.9%

Source: Forecast by Population Research Center (PRC)

<sup>1</sup> For simplicity each UGB is referred to by its primary city's name.

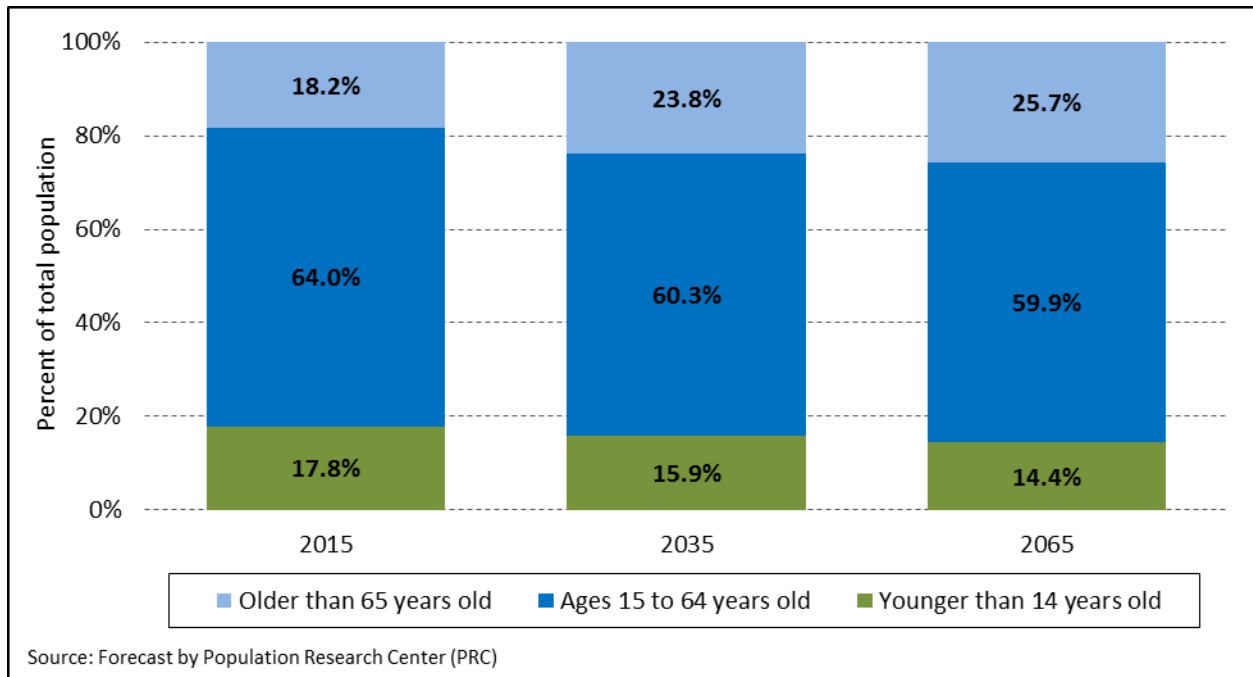
<sup>2</sup> Larger UGBs are those with populations greater than 8,000 in forecast launch year.

## Forecast Trends in Components of Population Change

As previously discussed, a key factor in both declining births and increasing deaths is Deschutes County’s aging population. From 2015 to 2035 the proportion of county population 65 or older is forecast to grow from a little under 18 percent to nearly 23 percent. By 2065 about 25 percent of the total population is expected to be 65 or older (Figure 20). For a more detailed look at the age structure of Deschutes County’s population see the final forecast table published to the forecast program website (<http://www.pdx.edu/prc/opfp>).



**Figure 20. Deschutes County—Age Structure of the Population (2015, 2035, and 2065)**

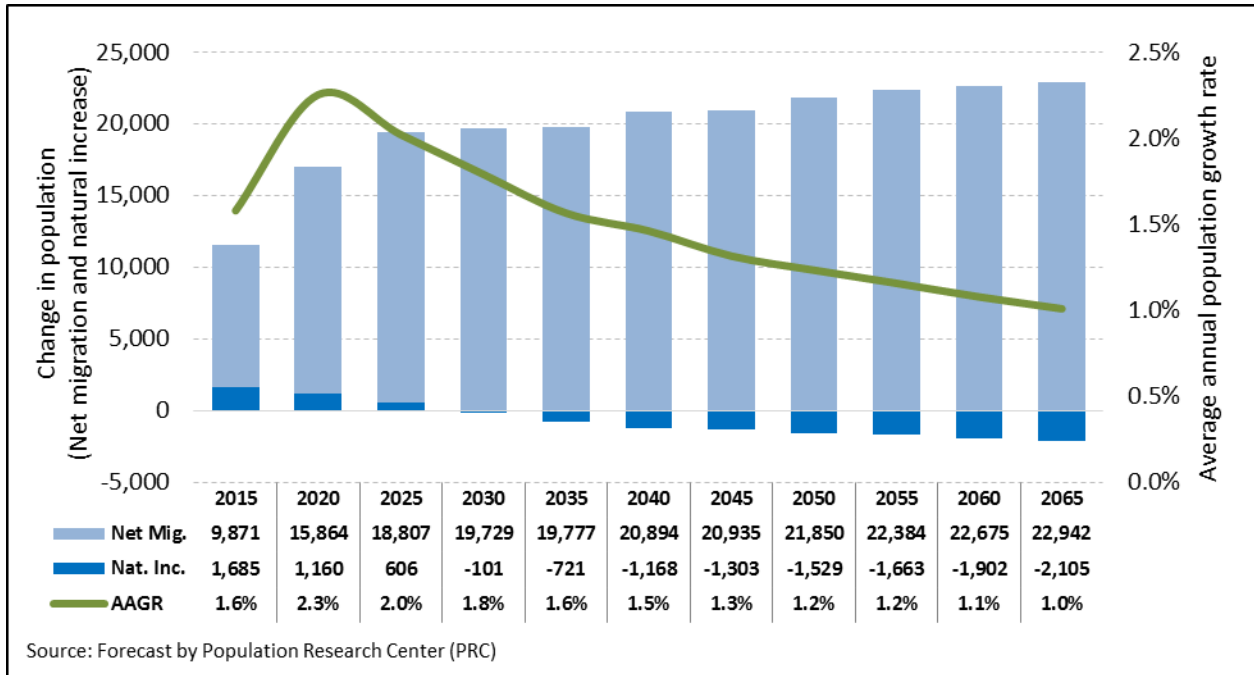


As the countywide population ages—contributing to a slow-growing population of women in their years of peak fertility—and more women choose to have fewer children and have them at an older age, total fertility in Deschutes County is expected to decline over the forecast period. This decline is in line with the forecast trend for the state. Even so average annual births are expected to increase over the forecast period, but deaths will increase at a slightly faster rate, leading to a natural decrease in later years of the forecast period. The total numbers of deaths countywide are expected to increase more rapidly from 2015 through 2040, followed by slower growth during the later years of the forecast period. This pattern of initial growth in the numbers of deaths is explained by the relative size and aging pattern of the Baby Boom generation. For example, in Deschutes County deaths are forecast to increase significantly during the 2015-2040 period as Baby Boomers succumb to the effects of aging.

As the increase in the numbers of deaths outpaces births, population growth in Deschutes 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 2020 and then tapering through the remainder of the forecast period (Figure 21). An aging population is expected to not only lead to an increase in deaths, but a smaller proportion of women in their childbearing years will likely result in a long-term slowing of the growth of births. Net migration is expected to grow steadily throughout the forecast period, but this growth will not fully offset the decline in natural increase.

**Figure 21. Deschutes County—Components of Population Change, 2015-2065**



## 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 city 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 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. This is commonly estimated to be 2.1 children per woman.

## Appendix A: Supporting Information

Supporting information is based on planning documents and reports, and from submittals 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. Redmond did not submit a survey response.

<b>Bend—Deschutes County</b>						
<b>Observations about Population Composition (e.g. about children, the elderly, racial ethnic groups)</b>	<b>Observations about Housing (including vacancy rates)</b>	<b>Planned Housing Development/ Est. Year Completion</b>	<b>Future Group Quarters Facilities</b>	<b>Future Employers</b>	<b>Infrastructure</b>	<b>Promotions (Promos) and Hindrances (Hinders) to Population and Housing Growth; Other notes</b>
Bend's population has continued to grow older. ACS reported more householders between ages of 45 and 54 between 2007 and 2013. Also reported that the proportion of Bend's population aged 65 years or more	Census reported occupancy rate of 88% and vacancy rate of 12% in 2010. Vacancy rate for rental housing has been very low; 1 percent or less.  The enclosed building permit data shows most new	A number of large housing developments are expected, most of which will be developing single family detached housing.  Several new subdivisions with lots listed below:  -Tuscany Pines	Oregon State University-Cascades Campus will be developing a 300 unit residence hall on their new site on Chandler Avenue 2015-2016.  COCC in process of developing a new residence	OSU Cascades growing into a full 4-year university.  St. Charles Hospital has been expanding their campus in Bend.  Fred Meyer is trying to open a second store in Bend.  Market of	City adopted an updated water public facility plan in 2013.  Transportation system plan was acknowledged by DLCDC in 2013.  The Bend Metropolitan Planning Organization	<b>Promos:</b> Continued strong growth in population in households since 2010.  Population of those 65 years and older has continued to grow along with a growing Hispanic and Latino population.  Employment growth has continued for several quarters; current unemployment rate for Deschutes County was 6.6% in September 2014; down from 7.9% in September 2013.  Bend is the process of completing a significant update to its comprehensive plan that will include a combination of up-zoning to accommodate more housing and jobs in the current UGB and some expansion of the UGB. One of the goals of this project is to

## Bend—Deschutes County

<p>increasing. This data supported by draft work on housing needs analysis (attached)</p> <p>Latino population also growing in Bend and in central Oregon. (See attached memorandum on Bend's demographic trends).</p>	<p>housing units constructed were single family detached dwellings.</p>	<p>Phase 2 (35 lots)</p> <p>Shevlin Estates (30 lots)</p> <p>-River's Edge Village Phase 16 (30 lots)</p> <p>-Oakview Estates 12 lots</p> <p>See also those listed in the housing survey</p>	<p>hall with another 350 beds.</p>	<p>Choice preparing to submit permits for a new Bend Store on Colorado Avenue</p> <p>One new middle school and one new elementary school both set to open for fall of 2015</p>	<p>(MPO) adopted a new metropolitan transportation plan in 2014.</p> <p>Expect City Council adoption of new sewer collection and storm water master plans by December of 2014.</p>	<p>ensure 20 years supplies of land for housing and employment. Expected date for local adoption of the plan amendments by both the City and Deschutes County is April 2016.</p> <p>In addition to work on the UGB, Bend is also engaged in two area or special planned areas in Bend. One, the Central Area Mixed Use Multi-Modal Area (MMA) has been completed. A new effort on Bend's westside has been funded by a Transportation/Growth Mangement (TGM) grant and will develop a land use and transportation plan for West Bend, including the new OSU Cascades Campus.</p> <p>Bend has or will soon be completed several infrastructure plans for development of the land in the current UGB.</p> <ul style="list-style-type: none"> <li>• Water Public Facility Plan was adopted in 2013</li> <li>• Sewer Collection System Public Facility Plan to be adopted by end of 2014</li> <li>• Transportation System Plan acknowledged by DLCD in 2013</li> <li>• The Bend Metropolitan Planning Organization (MPO) adopted a new metropolitan transportation plan in</li> </ul>
--	---	--	------------------------------------	--	--	---

**Bend—Deschutes County**

September 2014.

**Hinders:** While Bend is working to complete the planning for the UGB, development of the existing land supply in the current UGB is still occurring. (See enclosed new housing units permitted by type from 20005-2014). Growth may slow as developers become more selective about the land they develop; some land will not be available until sewer and/or transportation infrastructure improvements are completed.

**Highlights or summary of influences on or anticipation of population and housing growth from planning documents and studies**

Continued growth in households, especially households of people 65 years and older and strong growth in Hisapanic and Latino households

Lower unemployment than a year ago. Job growth has been consistent,

Updated infrastructure plans for water, sewer, and transportation

Planning for future growth in UGB; will include likely combination of rezoning of land in the UGB and adding land through expansion to accommodate future housing and employment growth.

Two large employers, OSU-Cascades and Central Oregon Community College, planning to expand

## Bend—Deschutes County

<b>Other information (e.g. planning documents, email correspondence, housing development survey)</b>	Bend listed 12 housing development projects which are currently being reviewed or are in process of being constructed. If all projects are built out as planned they will add approximately 771 single family dwellings and roughly 234 multi-family units. All projects are expected to be complete by no later than 2020 with most being finished within the next few years.
--	--

**Sisters—Deschutes County**

Observations about Population Composition (e.g. about children, the elderly, racial ethnic groups)	Observations about Housing (including vacancy rates)	Planned Housing Development/Est. Year Completion	Future Group Quarters Facilities	Future Employers	Infrastructure	Promotions (Promos) and Hindrances (Hinders) to Population and Housing Growth; Other notes
						<p>Promos:</p> <p>Hinders:</p>
<p>Highlights or summary of influences on or anticipation of population and housing growth from planning documents and studies</p>						



## Sisters—Deschutes County

**Other information  
(e.g. planning  
documents, email  
correspondence,  
housing  
development  
survey)**

Sisters provided an inventory of the city's current residential zoned single family dwellings, townhomes, and condominiums. As of October 29, 2014 there were 1,025 housing units.

**Non-UGB Unincorporated Area—Deschutes County**

Observations about Population Composition (e.g. about children, the elderly, racial ethnic groups)	Observations about Housing (including vacancy rates)	Planned Housing Development/Est. Year Completion	Future Group Quarters Facilities	Future Employers	Infrastructure	Promotions (Promos) and Hindrances (Hinders) to Population and Housing Growth; Other notes
		N/A	N/A	Hotel developments a Pronghorn and Tetherow Resorts will provide limited service industry jobs.	City of Bend Wastewater facility is being expanded.	<p><b>Promos:</b> Climate, recreational opportunities, and lifestyle make the area desirable for relocation; Development of Destination Resorts</p> <p><b>Hinders:</b> Slow recovery from recession</p>
<p><b>Highlights or summary of influences on or anticipation of population and housing growth from planning documents and studies</b></p>						

**Non-UGB Unincorporated Area—Deschutes County**

<p><b>Other information (e.g. planning documents, email correspondence, housing development survey)</b></p>	
---	--

## **Appendix B: Specific Assumptions**

### ***Bend***

The total fertility rate (TFR) is assumed to remain at the rate observed in 2010. Survival rates for 2060 are assumed to be a little closer to those forecast for the county as a whole. Bend has historically had slightly lower survival rates than observed countywide; this corresponds with a slightly shorter life expectancy. Age-specific net migration rates are assumed to generally follow county historical patterns, but at slightly higher rates over forecast period.

### ***La Pine***

The annual housing unit growth rate is assumed to remain relatively stable, although lower than a mid-term historical average, over the 50-year forecast period. The occupancy rate is assumed to remain stable around 75 percent over the forecast period. Average household size is assumed to remain at 2.3 persons per household (average household size observed in 2010) through the 50-year forecast period. Group quarters population is assumed to remain around 47 persons during the initial years of the forecast period and then gradually increase to about 100 by the end of the forecast period.

### ***Redmond***

The total fertility rate (TFR) is assumed to decline over the forecast period—although more slowly than it has historically. Survival rates for 2060 are assumed to be a little closer to those forecast for the county as a whole. Redmond has historically had slightly lower survival rates than observed countywide; this corresponds with a slightly shorter life expectancy. Age-specific net migration rates are assumed to generally follow county historical patterns, but at slightly higher rates over the forecast period.

### ***Sisters***

The annual housing unit growth rate is assumed to gradually increase to just under five percent by 2020 and remain at this level for the duration of the forecast period. The occupancy rate is assumed to stay at the rate observed in 2010 for the entire forecast period. Average household size is assumed to be relatively stable at about 2.4 persons per household. Group quarters population is assumed to increase slightly over the forecast period, growing from 15 to about 26 by the end of the forecast.

### ***Outside UGBs***

Due to variability in historical total fertility rates (TFR), TFR is assumed to remain at the rate observed in 2010 over the forecast period. Survival rates for 2060 are assumed to be a little above those forecast for the county as a whole. The area outside UGBs in Deschutes County has historically had slightly higher survival rates than observed countywide; this corresponds with a slightly longer life expectancy. Age-specific net migration rates are assumed to generally follow historical patterns for the area outside UGBs, but at slightly higher rates over the forecast period.

## Appendix C: Detailed Population Forecast Results

Figure 22. Deschutes County—Population by Five-Year Age Group

Age Group	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065
00-04	8,924	9,688	10,652	11,189	12,288	13,300	14,003	14,398	14,725	15,157	15,696
05-09	10,702	10,603	11,623	12,193	12,631	13,750	14,778	15,482	15,885	16,211	16,639
10-14	10,800	13,476	13,825	14,242	14,690	15,080	16,304	17,439	18,233	18,670	19,003
15-19	11,152	12,098	14,280	15,336	15,870	16,287	16,613	17,875	19,079	19,905	20,325
20-24	8,646	10,451	11,346	13,426	14,355	14,742	15,014	15,233	16,353	17,412	18,107
25-29	8,900	9,361	11,206	12,168	14,347	15,228	15,535	15,747	15,946	17,085	18,144
30-34	11,205	10,613	11,139	13,353	14,447	16,928	17,857	18,135	18,350	18,548	19,825
35-39	11,115	12,967	12,239	12,861	15,360	16,512	19,225	20,187	20,465	20,668	20,839
40-44	11,266	12,550	14,625	13,831	14,482	17,187	18,361	21,283	22,310	22,577	22,747
45-49	11,149	12,187	13,555	15,828	14,914	15,517	18,298	19,460	22,520	23,567	23,792
50-54	11,393	11,800	12,859	14,332	16,677	15,616	16,146	18,960	20,136	23,267	24,295
55-59	11,983	12,030	12,416	13,558	15,065	17,427	16,222	16,708	19,599	20,791	23,980
60-64	12,319	13,037	13,029	13,475	14,670	16,215	18,657	17,308	17,817	20,885	22,123
65-69	11,093	13,357	14,122	14,158	14,611	15,827	17,413	19,979	18,533	19,076	22,343
70-74	8,370	11,057	13,217	14,011	14,018	14,401	15,525	17,039	19,557	18,146	18,670
75-79	5,341	7,676	10,075	12,090	12,316	12,834	12,843	14,149	15,551	17,868	16,585
80-84	3,469	4,555	6,524	8,604	10,337	10,597	11,005	11,005	12,152	13,400	15,427
85+	2,777	3,226	4,094	5,755	7,957	10,347	12,109	13,626	14,833	16,584	18,805
<i>Total</i>	<i>170,606</i>	<i>190,734</i>	<i>210,826</i>	<i>230,412</i>	<i>249,037</i>	<i>267,798</i>	<i>285,908</i>	<i>304,012</i>	<i>322,045</i>	<i>339,815</i>	<i>357,345</i>

**Figure 23. Deschutes County's Sub-Areas—Total Population**

	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>	<b>2055</b>	<b>2060</b>	<b>2065</b>
Bend UGB	85,737	97,699	109,546	121,091	132,209	143,596	154,719	165,618	176,003	185,690	194,793
La Pine UGB	1,687	1,924	2,263	2,625	3,014	3,432	3,872	4,334	4,816	5,318	5,836
Redmond UGB	27,715	30,334	33,282	36,486	39,812	43,399	47,167	51,148	55,373	59,910	64,785
Sisters UGB	2,315	2,960	3,431	3,903	4,375	4,847	5,320	5,793	6,266	6,739	7,212
Outside UGBs	53,151	57,816	62,305	66,307	69,627	72,523	74,830	77,119	79,587	82,159	84,719

Photo Credit: Sparks Lake and the South Sister in the Cascade Mountains. (Photo No. desDB3262) Gary Halvorson, Oregon State Archives

<http://arcweb.sos.state.or.us/pages/records/local/county/scenic/deschutes/130.html>