

Coordinated Population Forecast



2022

Through

2072

**Lake
County**

Urban Growth
Boundaries (UGB)
& Area Outside UGBs

How to Read this Report

This report should be read with reference to the documents listed below, which are downloadable on the Forecast Program website (<https://www.pdx.edu/population-research/population-forecasts>).

- *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 (2022-2072).

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Photo Credit: Gary Halvorson, September 2007.

[https://commons.wikimedia.org/wiki/File:Hart_Lake_\(Lake_County,_Oregon_scenic_images\)_lakDA0132\).jpg](https://commons.wikimedia.org/wiki/File:Hart_Lake_(Lake_County,_Oregon_scenic_images)_lakDA0132).jpg)

**Coordinated Population Forecast for Lake County, its Urban Growth
Boundaries (UGB), and Area Outside UGBs**

2022 – 2072

Prepared by

Population Research Center

College of Urban and Public Affairs

Portland State University

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1. Methodology

Counties were forecast using the cohort component method. Deaths and survival rates were projected based on historical trends (2000-2020) and based on the methodology published by Clark and Sharrow 2011¹. Mortality rates for the 85+ age group were further divided into 5-year age groups up to 100+ (i.e., 85-89, 90-94, 95-99, and 100+) using the proportion of each age group calculated from the single-year age group data in the 2010 decennial census. Age specific fertility rates were projected based on historical trends up to 2035 and held constant afterwards. The 2021 births data was not included in the projection model for two reasons: 1) the 2021 vital statistics were not finalized at the time of this report, and 2) due to uncertainties related to COVID-19 impacts on births and deaths, incorporating the 2021 births data into births and fertility rate projection may lead to errors such as underestimation. Nonetheless, the 2021 births and deaths numbers are included in Figures 3 and 4 to provide a more consistent visualization. Since the 2020 deaths data may be impacted by COVID-19, deaths were adjusted based on CDC's estimated excess deaths when forecasting future mortality rates to ensure these rates were not affected by short-term pandemic-related deaths.

Annual net migrants were calculated based on published data gathered from the IRS and the U.S. Census Bureau's American Community Survey (ACS) Public Use Microdata Sample (PUMS) and Population Estimates Program (PEP). Historical county level in-, out-, and net migration (domestic and foreign) were obtained from IRS and PEP (1991 – 2020). IRS provides domestic in- and out- while PEP provides domestic and foreign net. Age structures of gross migrants by direction (domestic in- and out- and foreign in-migration) were calculated for ACS Public Use Microdata Areas (PUMAs) which were used for migration to or from constituent counties. Future total net migrants were projected by applying an ARIMA model appropriate for each individual county.

The PRC estimate formed the baseline of the forecast for individual UGBs, with the difference in population between incorporated city and UGB boundaries estimated based on assignment of population in individual census blocks in each county into a UGB area and or city area, or balance of county. Populations in individual UGBs or in the balance of county were forecast by projections of individual components of the housing unit method of population estimation. Historical rates of population and housing unit change since 1990 were used to generate a weighted average annual rate of change. Jurisdiction-level vacancy rates and average household size were held constant from the 2020 decennial census. Population forecasts for sub-areas were then controlled by the county-level forecasts, e.g., sub-area populations were allocated using the county total (top-down approach), and the population summation of the sub-areas does not exceed the county population.

Forecast Program surveys were used to make adjustments to the baseline results for counties and UGB areas. Recent development and plans obtained from surveys were generally implemented in the first 5-10 years of the forecast, except where they indicate a change in long-run outlook. For the immediate period (2022-2030), the development rate derived from the surveys or received reports was applied before 2030. If no planned housing units were reported, recent development rate (2010-2020) or the overall county rate was used. For the later period (2030-2047), housing unit growth was based on either

¹ <https://csss.uw.edu/research/working-papers/contemporary-model-life-tables-developed-countries-application-model-based>

a weighted average or an extrapolation of historic trend (1990-2020). Assumptions were made for individual cities based on knowledge obtained from the general surveys, housing surveys, as well as documentations (e.g., housing needs assessment, comprehensive development plans) received from the cities.

Many uncertainties still remain in understanding the climate change impacts on migration. Thus, specific scenarios of climate change, political unrest, or other shocks were not reflected in the current forecast. The forecast program methodology is described in further detail in an accompanying report available on the Population Research Center's website.

2. County Overview

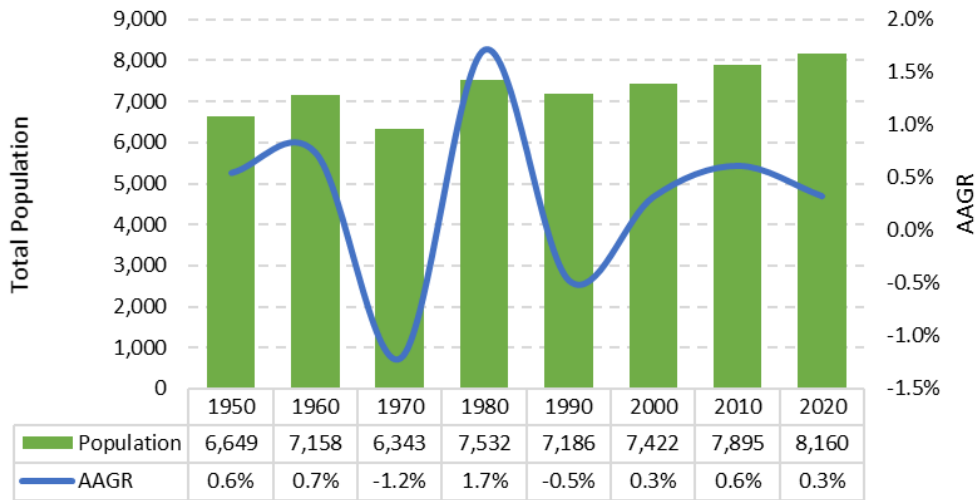
Lake County has a total population of 8,160 according to the 2020 census and its county seat is Lakeview. The county population has been growing at an AAGR of 0.3% since the 2010 census and the forecast shows the county continues to grow in the next 50 years. According to the general surveys received from the county and its cities, the county did not experience significant changes in terms of new housing construction or development but has mid to high level employment housing needs in order to attract people working in higher management positions. Paisley and Lakeview are the only two incorporated cities in the county and Paisley reported little change in population since 2021. The county was not significantly impacted by the 2020 wildfires compared to many other places in southern Oregon.

3. Historical Trend and Population Forecast

3.1 County Population

As illustrated in the Figure 1, Lake County's total population has experienced increases and declines over the past seven decades. The 1970 and 1990 Censuses showed the county experienced population declines compared to the previous decade. The largest decline was recorded in the 1970 Census where the AAGR between 1960 and 1970 was -1.2%. A negative 0.5% AAGR was recorded in the 1990 Census. Nonetheless, the county population has grown to over 8,000 by 2020 from 6,649 in 1950, showing a 23% increase over 70 years. As shown in Figure 2, total county population is projected to grow in the forecast. After the population experiences slight decline at the beginning of the forecast period, it returns to a growth and the AAGR is projected to increase. This may be attributed to the future changes in age structure, for instance, increase in population shares among younger age groups. By 2072, Lake County's population is projected to reach 10,419, a 2,249 increase from 2022.

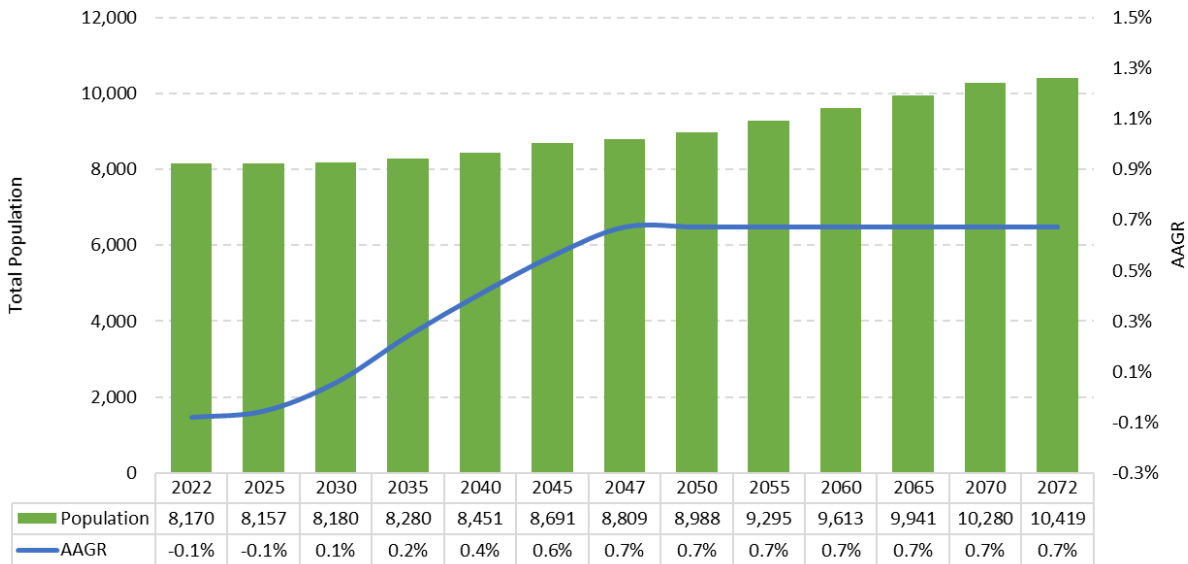
Historical Census Population



Sources: US Census Bureau, 1950, 1960, 1970, 1980, 1990, 2000, 2010, and 2020 Decennial Census.

Figure 1. Historical total county population and AAGR, 1950-2020.

Population Forecast by year (2022-2072)



Sources: Forecasted by Population Research Center (PRC).

Figure 2. Forecasted total county population and AAGR, 2022-2072.

3.2 Births and Deaths

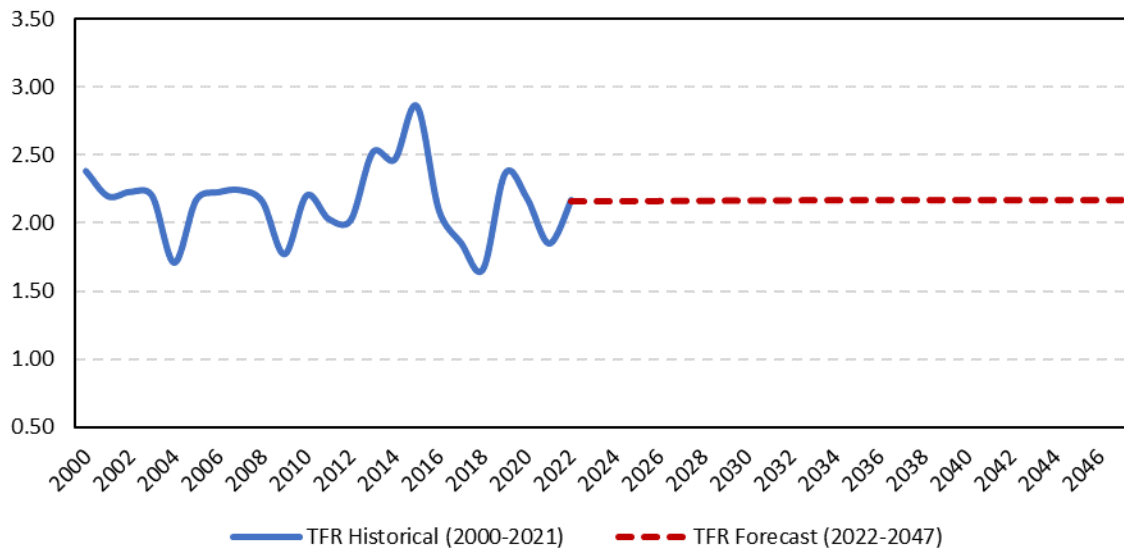
The total fertility rate (TFR) is shown in Figure 3. Fertility rate has varied in the past 20 years with a high point of 2.9 in 2015 and a low point of 1.7 in 2018. The county’s TFR has remained above 2.0 most of the

years since 2000. The forecasted TFR of 2.2 remains within the mid-range of the historic TFR. Compared to Oregon state, which experienced a TFR drop from 1.7 to 1.4 between 2014 and 2020, Lake County’s TFR remains higher than the state as well as many other Oregon counties. The county’s TFR is also higher than the 2020 national average TFR of 1.64.

The actual number of births can follow a different trend than TFR if there are unusually high or low numbers of women of childbearing age in a given year. Figure 4 includes historical and projected births (and deaths) in the county. Annual births are projected to increase during the forecast period, reaching 107 by 2047, compared to 75 in 2022. This may be associated with changes in age structure in which the share of younger population increases. Changes in age structure, alongside the relatively high county TFR, is one of the key factors of annual births increase.

The number of deaths has been higher than births for the past two decades. This trend is likely to continue throughout the forecast period. The county-wide annual number of deaths in 2021 was estimated to be 143, which was higher than any other year since 2000. This might be an indication of excess death related to COVID-19. Toward the end of the forecast period, annual deaths appear to show signs of decline. These dynamics are due to aging in the population, with the aging of the large baby boom cohort accounting for most of the increases in death counts during 2020-2040.

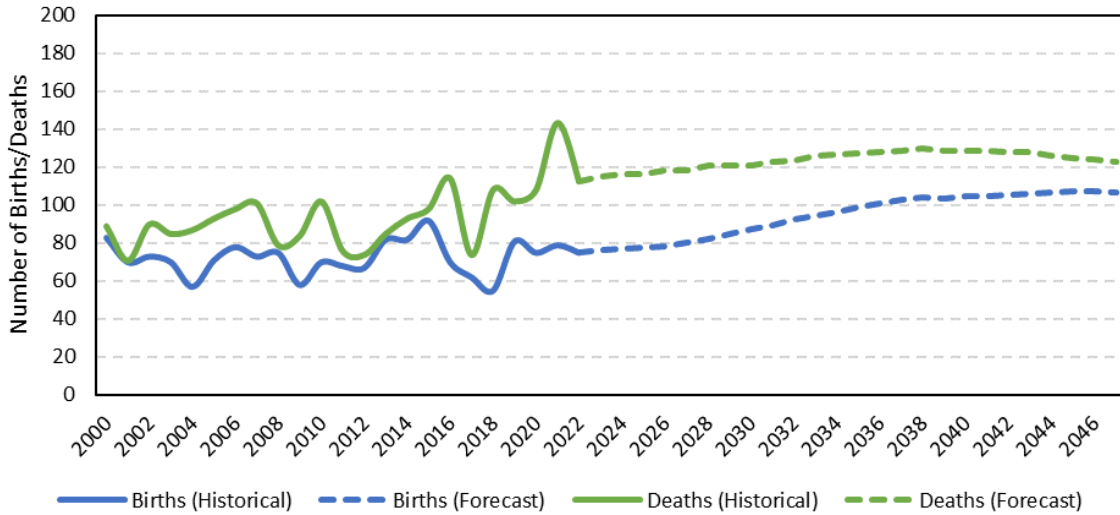
Total Fertility Rate (TFR) for Women Age 15-44



*Note: OHA’s vital statistics for 2021 are preliminary at the time of this report.
Sources: Oregon Health Authority (OHA), Center for Health Statistics. Calculations and forecast by Population Research Center (PRC).*

Figure 3. Historical and projected total fertility rate (TFR), 2000-2047.

Historical and Forecast Annual Births and Deaths (2000-2047)



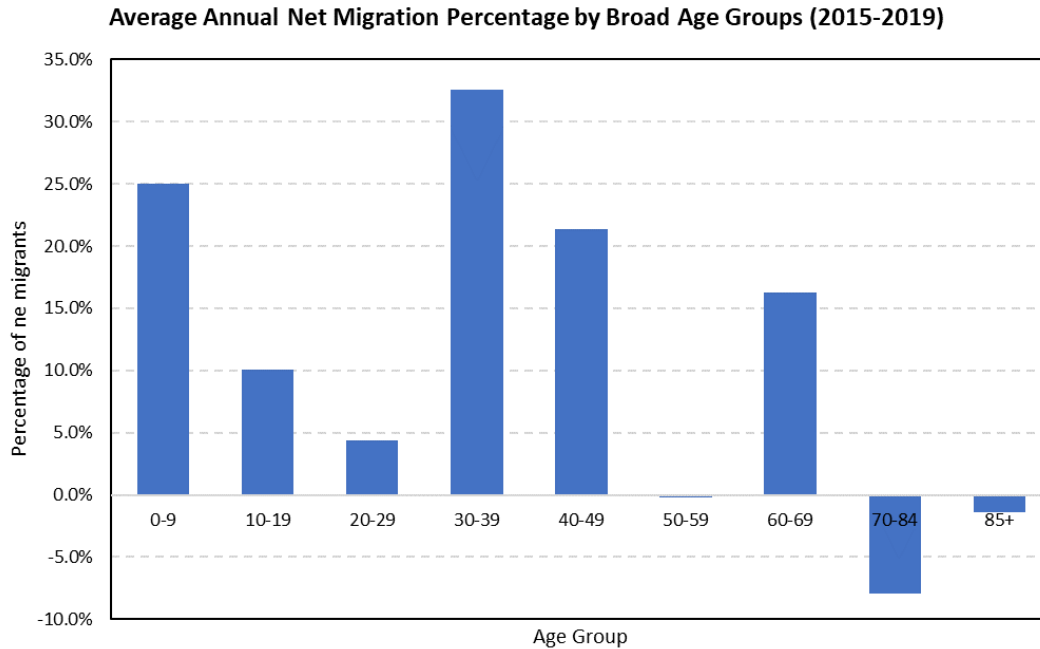
Note: OHA's vital statistics for 2021 are preliminary at the time of this report.

Sources: Oregon Health Authority (OHA), Center for Health Statistics. Calculations and forecast by Population Research Center (PRC).

Figure 4. Historical and projected annual births/deaths trend, 2000-2047.

3.3 Migration

Age-specific migration was estimated based on the 2006-2010, 2011-2015, and 2015-2019 5-year ACS. The age patterns were used from the ACS but controlled to the number of total migrants by direction (in or out) and domestic (inter-state or between counties in Oregon) or foreign. The overall net migrants for each county were adjusted for consistency with annual PRC population estimates. Figure 5 illustrates the percentage each 10-year age group accounts for among total county net migration calculated based on the 2015-2019 ACS migration flow. In Lake County, the 0-9 and 30-39 age groups accounted for the highest proportion of net migration, followed by the 40-49 age group. When people in the 30-49 age groups move into the county, they tend to bring the children in their households, usually in the 0-9 age group, with them. There is also a relatively higher share of newly retired population in the 60-69 age group moving into the county.

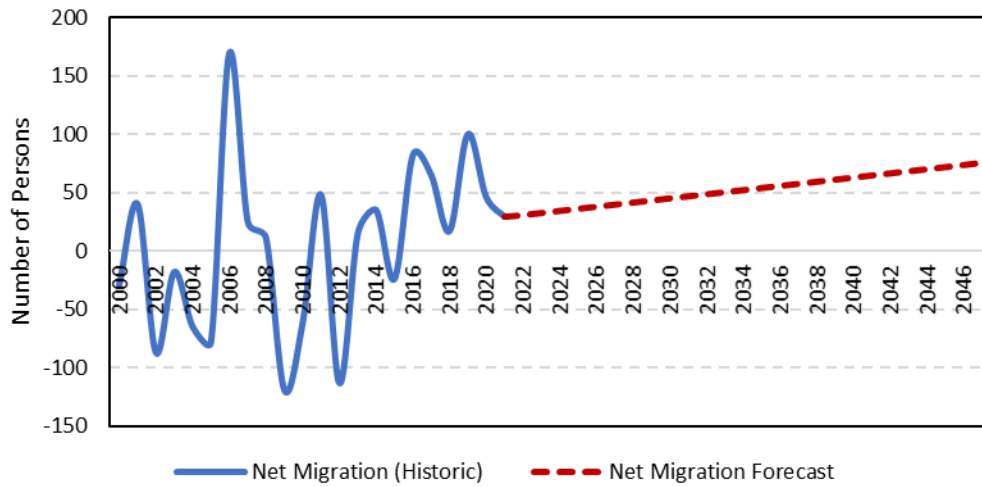


Sources: American Community Survey (ACS); Internal Revenue Services (IRS); US Census Bureau Population Estimated Program (PEP); Calculated by Population Research Center (PRC).

Figure 5. Percentage of net migrations by broad age groups in Lake County, 2015-2019.

As shown in Figure 6, the historic annual net migration in Lake County varied significantly between 2000 and 2020, with a low point of -120 in 2009 and a high point of 170 in 2006. Some of the lowest net migration occurred around the 2008-2012 period, which may also be associated with the economic recession during the time. County wide net migration has remained positive since 2016 and is projected to gradually increase throughout the forecast period. By 2047, annual net migration is projected to reach 76, compared to 29 in 2021. Although net migration does not reach as high as some of the years in the previous decade, it is expected to grow along with county population.

Annual Net Migration (2000-2047)

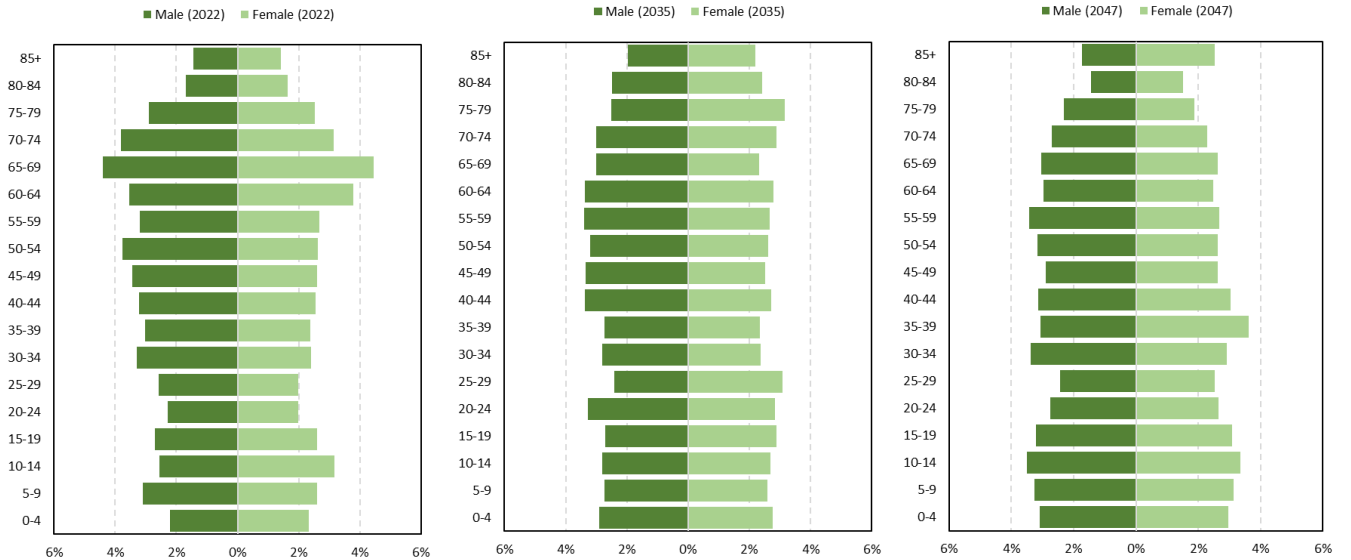
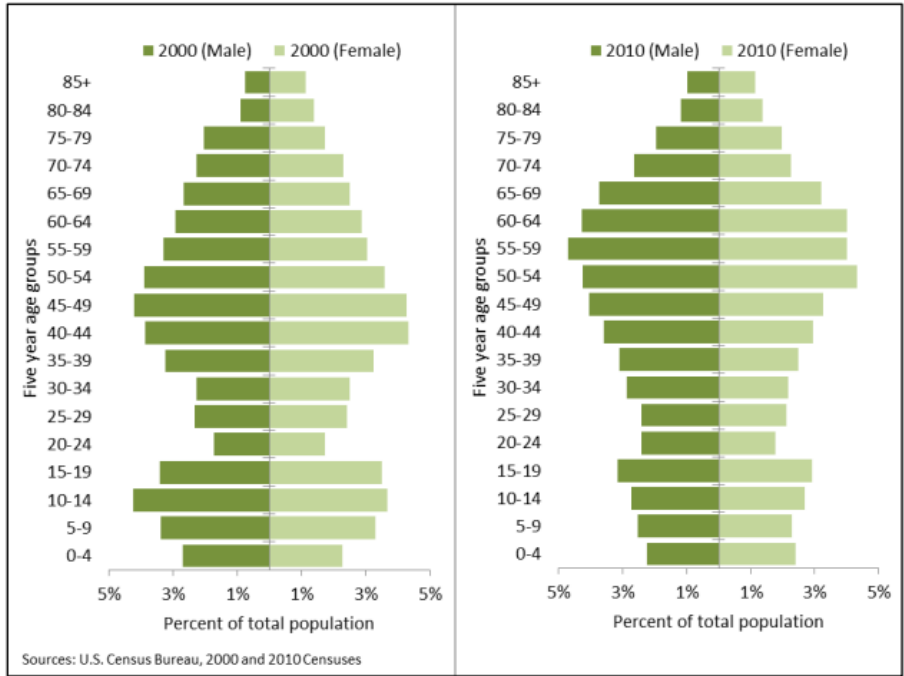


Sources: Internal Revenue Service (IRS) Tax Stats (1990-2020); American Community Survey (ACS); Population Estimates Program (PEP) 1990-2020. Calculations and forecast by Population Research Center (PRC).

Figure 6. Historical and projected total county net migration, 2000-2047.

3.4 Age Structure

As shown in Figure 7, the 2000 and 2010 Censuses showed the population aging forward in the 10-year period. In 2000, While the 40-54 and 5-19 age groups accounted for the highest population shares in the 2000 Census, age structure changed significantly in the 2010 Census. The 40-54 age group aged forward and the 50-64 age group became the largest population in the county. In addition, the share of younger population dropped in the 2010 Census, implying that population in the 20-year old age group is more likely to move out of the county than moving in. The declined share in the youngest age group also reflected a decrease in births. The 2022 age pyramid shows the population from the 2010 Census continues to age forward. However, by 2035, the age structure is projected to shift. As the county loses older populations and younger populations increase through migration, the population shares of each age group tend to become more evenly distributed. As shown previously in Figure 4, the number of births is projected to increase, and by 2047, the age pyramid indicates an increase in the share of the youngest age groups.



Sources: Calculations and forecast by Population Research Center (PRC).

Figure 7. Population structure by age and sex, historical (2000 and 2010) and forecast (2022, 2035, and 2047).

3.5 Race/Ethnicity

Table 1 shows the race/ethnicity characteristics in Lake County from the 2010 and 2020 censuses. Race/ethnicity was not included as a component in the current forecast model but is provided in this report for reference. Population identified as White alone accounted for 79.8% of the total county population, a 7.3 percentage point decrease from the 2010 Census. Meanwhile, populations identified as two or more races or some other races alone showed the largest relative change between 2010 and 2020. In non-White alone populations, the only race/ethnicity group that indicated a decline is the American Indian and Alaska Native alone population. Hispanic or Latino continues to be the largest non-White race/ethnicity group in the county.

Table 1. County population by race/ethnicity.

Hispanic or Latino and Race	2010		2020		Absolute Change	Relative Change
	Population	%	Population	%		
Total Population	7,895		8,160		265	3.4%
Hispanic or Latino (of any race)	545	6.9%	802	9.8%	257	47.2%
Not Hispanic or Latino	7,350	93.1%	7,358	90.2%	8	0.1%
White alone	6,875	87.1%	6,508	79.8%	-367	-5.3%
Black or African American alone	37	0.5%	49	0.6%	12	32.4%
American Indian and Alaska Native alone	149	1.9%	114	1.4%	-35	-23.5%
Asian alone	44	0.6%	52	0.6%	8	18.2%
Native Hawaiian and Other Pacific Islander alone	5	0.1%	10	0.1%	5	100.0%
Some Other Race alone	7	0.1%	42	0.5%	35	500.0%
Two or More Races	233	3.0%	583	7.1%	350	150.2%

Sources: US Census Bureau, 2010 and 2020 Decennial Census. Calculated by PRC.

3.6 Component of Change

The component of population changes up to 2072 is shown in Figure 8. The darker blue shade indicates the natural increase/decrease (births less than deaths, which is negative in the county because there are more deaths than births), while the lighter blue shade indicates the net migration. At the county level, net migration remains positive throughout the forecast period while natural decrease continues. Although natural decrease is projected to continue, it potentially becomes less severe as the number of births increases in the forecast. Annual net migration is projected to gradually increase over time, reaching 75 by 2072.

Components of Population Change by 5-year Intervals (2015-2072)

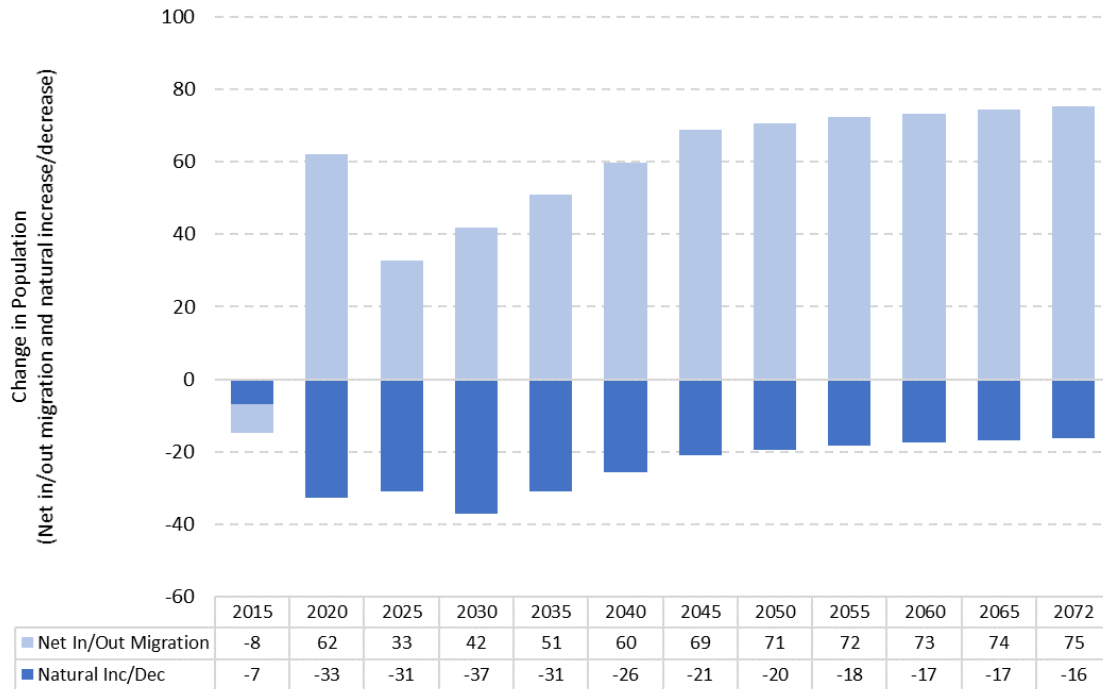


Figure 8. Historical and forecast components of population change, 2015-2072.

3.7 Sub-Area Population

Sub-area populations within and outside the urban growth boundaries (UGBs) are forecasted using the housing unit method, and then adjusted to be consistent with the county level forecast. The two UGBs in Lake County, Lakeview and Paisley, are both projected to have population increases (Table 2). Lakeview continues to be the more populated city, with an AAGR of 0.5% between 2022 and 2047. Although the population outside of the UGBs is also projected to increase, the two cities are expected to grow at a slightly faster pace.

Table 2. Historical and forecasted population and AAGR in Lake County and its sub-areas.

	Historical			Forecast				
	2010	2020	AAGR (2010-2020)	2022	2047	2072	AAGR (2022-2047)	AAGR (2047-2072)
Lake County	7,895	8,160	0.3%	8,170	8,809	10,419	0.3%	0.7%
Lakeview	3,263	3,352	0.3%	3,322	3,723	4,436	0.5%	0.7%
Paisley	243	250	0.3%	242	283	340	0.6%	0.7%
Outside UGBs	4,389	4,558	0.4%	4,607	4,802	5,644	0.2%	0.6%

Sources: U.S. Census Bureau; Forecast by Population Research Center (PRC)

3.7.1 UGB Shares

While both Lakeview and Paisley are projected to increase their population shares in the next 50 years, area outside of the UGBs is projected to loss some shares. The county population and the sub-area

population are all forecasted to grow, but the two UGBs tend to grow as a faster pace, therefore, taking up more population shares than non-UGB sub-areas.

Table 3. Population forecast for sub-areas and their shares of county population.

	Population			Share of County Population		
	2022	2047	2072	2022	2047	2072
Lake County	8,170	8,809	10,419			
Lakeview	3,322	3,723	4,436	40.7%	42.3%	42.6%
Paisley	242	283	340	3.0%	3.2%	3.3%
Outside UGBs	4,607	4,802	5,644	56.4%	54.5%	54.2%

Sources: Forecast by Population Research Center (PRC)

4. Glossary of Key Terms

Average Annual Growth Rate (AAGR): The average rate of growth over a specific period of time. The AAGR is calculated using natural logarithm of the end-year value and the starting-year value, divided by the number of years.

Cohort-Component Method: A method used to forecast future populations based on a baseline or starting population, and cumulative changes in births, deaths, and migration.

Coordinated population forecast: A population forecast prepared for the county and sub-county jurisdictions including urban growth boundary (UGB) areas and all non-UGB area in the balance of county.

Group quarters: The US Census Bureau defines group quarters as places where “people live or stay in a group living arrangement that is owned or managed by an organization providing housing and/or services for the residents”. Examples of a group quarter may include college dorms, skilled nursing facilities, groups homes, prison, etc.

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 estimate current populations or forecast future populations based on changes in housing units, vacancy rates, the average numbers of persons per household (PPH), and group quarters population counts.

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

Total Fertility Rate (TFR): The number of children a woman would have by the end of a defined childbearing age. In this report, child-bearing age is from 15 to 44.

5. Appendix A: General Survey for Oregon Forecast Program

Each year, the jurisdictions in the region that is to be forecast is surveyed. The following are transcripts of what was received from jurisdictions who responded to the OPFP survey.

County	Lake
Date Time	12.02.21
Jurisdiction	City of Paisley
Name and Title	Melissa Walton, Recorder
Observations about Population (e.g. birth rates, aging, immigration, racial and ethnic change)	We have had a few houses change hands; changing the population very little. One of the seasonal occupancy facilities we had was just sold to a family. One home was demolished and is being rebuilt. We have another waiting on completion also.
Observations about Housing (Vacancy rates, seasonal occupancy, demolitions, renovations)	Nothing planned. Group quarters - lost one, now family home. Seasonal population for that will be housed out of town in future.
Planned Housing Developments or Group Quarters Facilities (including number of units, occupancy, and estimated year of completion)	One new baby, change in ownership of housing has raised number of children by one more, adults remain the same. Our dorm for the school is back in operation so we have eleven foreign exchange students.
Economic Development (e.g. new employers or facilities, including number of jobs and est. year of completion)	None
Infrastructure Projects (e.g. transportation and utilities)	None planned at the moment
Other Factors Promoting Population or Housing Growth	Not that I can think of.
Other Factors Hindering Population or Housing Growth	We don't have the housing available.
8a. Summary of current or proposed policies affection growth in your jurisdiction.	

8b. Findings related to growth or population change from studies conducted in you jurisdiction.	
8c. The effects of wildfires or other disasters in your jurisdiction on housing, employment/economics, and infrastructure.	Not much change.
8d. The effects of the COVID-19 pandemic and policy measure on employment and current and planned developments.	None other than making it more difficult to acquire some needed material. Our school has a couple less staff members.
9. For representatives from counties only: we invite you to provide tax lot data if available. These may be sent via email to askprc@pdx.edu	
Comments?	

County	Lake
Date Time	11.01.21
Jurisdiction	Lake County
Name and Title	Darwin Johnson - Planning Director
Observations about Population (e.g. birth rates, aging, immigration, racial and ethnic change)	There is a need for more mid to high level employment housing. Listed homes don't last long on the market here, and we have a huge problem filling mid - high level management and employment positions in Lake County because we don't have nicer houses for people to move into either on their own or with a family which hurts all other aspects of the community.
Observations about Housing (Vacancy rates, seasonal occupancy, demolitions, renovations)	Nothing new in years.
Planned Housing Developments or Group Quarters Facilities (including number of units, occupancy, and estimated year of completion)	Unchanged since last forecast.
Economic Development (e.g. new employers or facilities, including number of jobs and est. year of completion)	Red Rock has delays in construction, but hopefully will finish construction next year. No changes otherwise.
Infrastructure Projects (e.g. transportation and utilities)	Major water treatment facility for Lakeview in the works, hopefully construction will begin next spring.
Other Factors Promoting Population or Housing Growth	None to mention.
Other Factors Hindering Population or Housing Growth	No contractors available to build new homes.
8a. Summary of current or proposed policies affection growth in your jurisdiction.	We are favorable to develop and our precedence of approving new homes in our communities and the vacancy of existing lots shows we have favorable practices and policies regarding new home construction.
8b. Findings related to growth or population change from studies conducted in you jurisdiction.	See HNA for Lakeview and Paisley, including some County, although we never adopted the findings, Lakeview and possibly Paisley did.

<p>8c. The effects of wildfires or other disasters in your jurisdiction on housing, employment/economics, and infrastructure.</p>	<p>Extremely minor effects to housing, but huge losses to the timber industry and loss of cattle and grazing areas. Likely loss of some powerlines but unknown at this time by myself.</p>
<p>8d. The effects of the COVID-19 pandemic and policy measure on employment and current and planned developments.</p>	
<p>9. For representatives from counties only: we invite you to provide tax lot data if available. These may be sent via email to askprc@pdx.edu</p>	
<p>Comments?</p>	

6. Appendix B: Detail Population Forecast Results

Age	2021	2022	2025	2030	2035	2040	2045	2047
0-4	371	370	382	413	472	515	531	534
5-9	480	464	406	405	442	506	555	564
10-14	448	468	504	448	457	503	577	605
15-19	434	434	464	516	463	476	524	555
20-24	338	349	393	457	507	452	462	475
25-29	394	372	338	392	456	505	450	438
30-34	444	466	456	369	429	499	555	554
35-39	447	442	455	496	419	490	569	590
40-44	500	473	448	463	505	430	502	544
45-49	481	495	508	467	487	534	465	485
50-54	501	521	526	518	481	505	555	508
55-59	522	479	443	511	503	466	488	535
60-64	609	598	556	442	510	506	475	479
65-69	741	723	624	542	440	509	510	497
70-74	584	567	632	562	487	394	455	440
75-79	395	443	486	530	470	403	323	368
80-84	267	272	289	370	406	359	306	260
85+	220	234	247	280	346	398	388	377

Source: PRC Estimates, 2021; Forecast by Population Research Center (PRC).

7. Appendix C: Comparison of Current and Previous Forecast

To provide a better understanding of the changes since the last round of forecast for the Region 1 counties, this section compares the current 2022 total county population forecast to the population forecast published by the Population Research Center in 2018.

