Coordinated Population Forecast



2022

Through

2072

Josephine 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 subareas within each county for each five-year interval of the forecast period (2022-2072).

Population Research Center (PRC) Project Staff

Cindy Chen, Population Forecast Program Manager

Ethan Sharygin, Director

Meisha Whyte, Graduate Research Assistant

Deborah Loftus, Accounting Technician

Charles Rynerson, Oregon State Data Center Coordinator

Huda Alkitkat, Population Estimates Program Manager

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Cover Photo Credit: Gary Halvorson, September 2009.

https://commons.wikimedia.org/wiki/File:Illinois River State Park (Josephine County, Oregon scenic images) (josDA0086).jpg

Coordinated Population Forecast for Josephine 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

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

3

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

Josephine County has a total population of 88,090 according to the 2020 census. Its county seat, Grants Pass city, has 39,189 people reported by the 2020 census. The county's population annual average growth rate (AAGR) was 0.6% between the 2010 and 2020 censuses and the forecast suggests this rate is likely to continue. According to the U.S. Census Bureau's analysis of workers' home and job location², cities such as Merlin and Medford serve as alternative homes for people that are employed in Grants Pass city. Responses from Grants Pass' housing development survey suggested that the city has multiple housing projects in progress and planned. On the other hand, the City of Cave Junction city suggested no major housing development planned at this point and the lack of rental availability may be one of the factors hindering its population growth.

3. Historical Trend and Population Forecast

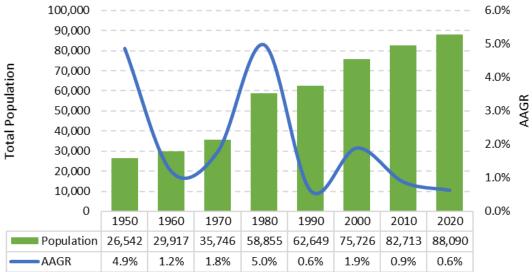
3.1 County Population

As illustrated in the Figure 1, Josephine County's population growth reached a high point of 5.0% AAGR in the 1980 census, meaning the county population experienced the fastest growth in the 1970s. Population growth rate has not reached the same speed since then but experienced a small peak growth in the 1990s. Josephine County's population AAGR has been under 1.0% in the past 20 years and the 2020 census indicated a 0.6% AAGR between 2010 and 2020. County forecast expects the total population to maintain an AAGR similar to the current rate in the next 50 years, ranging between 0.6% to 0.5%. By 2072, the county population is projected to be 114,791, which is a 28.6% increase from its 2022 population.

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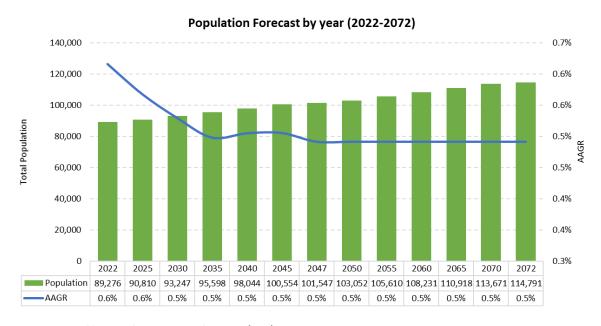
² https://onthemap.ces.census.gov/

Historical Census Population



Sources: US Census Bureau, 1950, 1060, 1970, 1980, 1990, 2000, 2010, and 2020 Decennial Census.

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



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. Compared to Oregon state, which experienced a TFR drop from 1.7 to 1.4 between 2014 and 2020, Josephine County experienced a similar pattern during the

same period where the TFR declined from 2.1 in 2014 to 1.7 in 2020. The overall TFR in this county is slightly higher than the state. According to the preliminary 2021 births data, the county did not appear to be significantly impacted by the lower fertility rate related to COVID-19 as seen in many other places.

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 gradually increase over time, although they remain to be outnumbered by annual deaths. The number of births is expected to reach over 1,000 per year by 2039.

In comparison, annual deaths are projected to grow in a pattern similar to that of births. The sudden increase in deaths shown in the 2021 OHA preliminary data may mainly be associated with excess deaths related to COVID-19. The impacts of COVID-19 was considered to be short-term in our forecast and the county annual deaths are expected to return to continue the pre-pandemic trend. Toward the end of the forecast period, annual deaths appear to show signs of slower growth. 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.

3.50 2.50 2.50 1.50 1.50 TER Historical (2000-2021) TER Forecast (2022-2047)

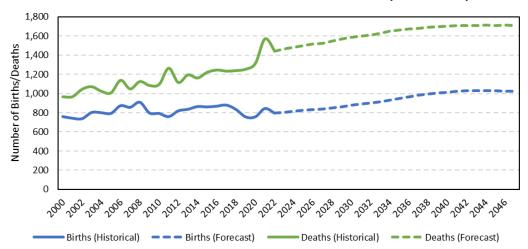
Total Fertility Rate (TFR) for Women Age 15-44

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)



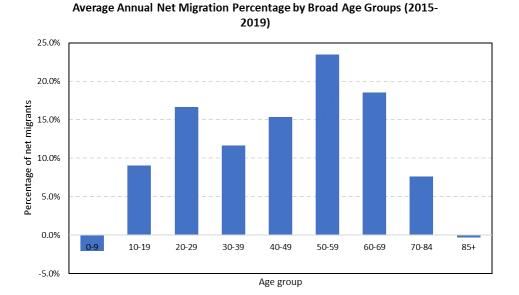
Note: OHA's vital statistics for 2021 are preliminary at the time of this report.

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. Most age groups account for a positive share of net migration in the county, with the exception of the youngest and oldest populations. The age groups with the highest proportions of in-migration are the 50-59 and 60-69 groups, meaning the county has a higher percentage of incomers that are near or at retirement age.

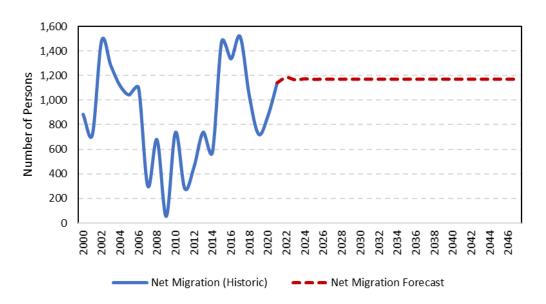


Sources: American Community Survey (ACS); Internal Revenue Services (IRS); US Census Bureau Population Estimated Program (PEP); Calculated by Population Research Center (PRC).

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

As shown in Figure 6, the historic annual net migration in Josephine County varied significantly between 2000 and 2020. County-wide net migration experienced some downturns in the late 2000s and early 2010s, which may be associated with the impacts of the economic recession during that period. The county experienced the highest number of net migrations in 2017, in which the annual net migration reached over 1,500. Annual net migration is projected remain relatively constant in the next 25 years, remaining in the 1,100 to 1,200 range.

Annual Net Migration (2000-2047)



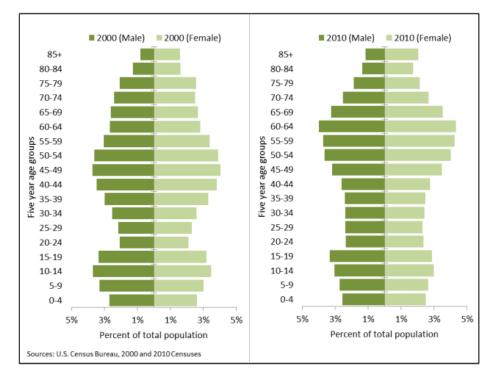
Sources: Internal Revenue Service (IRS) Tax Stats (1990-2020); American Community Survey (ACS); Population Estimates Program (PEP) 1990-2020. Calculations and forecast by Population Research Center (PRC).

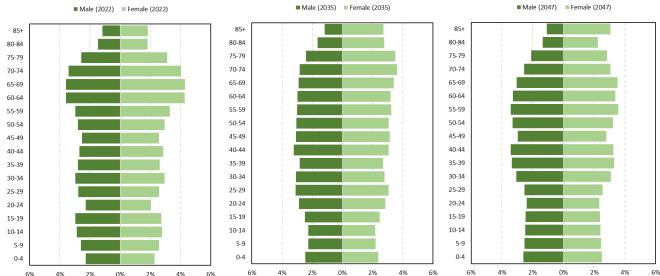
Figure 6. Historical and projected total county net migration, 2000-2047.

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, populations aged 10-19 and 40-54 accounted for the largest share in the county. By 2010, the 40-54 age group from the 2000 census aged forward and the 50-64 age group became the largest population group. It is important to note that, in 2000, the census showed that the 45-49 age group accounts for a larger share of the population than the 50-54 age group. In the 2010 census, instead of the 55-59 age group accounting for the largest population share, the 60-64 age group had a larger population share than the 55-59 age group, which may be associated with more people in the 50-59 age group moving to the county. As for the younger populations, there appeared to be a decline in shares between 2000 and 2010, especially for population under 20 years old.

The 2022 forecast indicates the county population continues to age forward and the 60-74 age group accounts for the largest population share. As the county losses some of its older populations through out-migration and mortality, the age structure shifts and we are likely to see a higher proportion of population between the ages of 30 and 59, as shown in the 2035 and 2047 age pyramids. Nonetheless, the oldest age groups are still projected to experience some growth as people currently in their 60s and 70s continue to age forward.





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 the 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 "Some Other Race alone" has the most relative gain compared to other race/ethnicity groups, followed by population of two or more races. Among non-Hispanic and non-White alone populations, the only race/ethnicity group that lost population in the 2020 census was people identified as American Indian and Alaska Native alone. Hispanic or Latino remains as the largest non-white population in the county.

Table 1. County population by race/ethnicity.

Hispanic or Latino and Race	20	010	20	20	Absolute Change	Relative Change
Total Population	82,713		88,090		5,377	6.5%
Hispanic or Latino (of any race)	5,251	6.3%	7,037	8.0%	1,786	34.0%
Not Hispanic or Latino	77,462	93.7%	81,053	92.0%	3,591	4.6%
White alone	73,289	88.6%	72,730	82.6%	-559	-0.8%
Black or African American alone	295	0.4%	368	0.4%	73	24.7%
American Indian and Alaska Native alone	966	1.2%	883	1.0%	-83	-8.6%
Asian alone	667	0.8%	870	1.0%	203	30.4%
Native Hawaiian and Other Pacific Islander alone	117	0.1%	123	0.1%	6	5.1%
Some Other Race alone	77	0.1%	493	0.6%	416	540.3%
Two or More Races	2,051	2.5%	5,586	6.3%	3,535	172.4%

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 Josephine 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. Average annual net migration is projected to be in the lower 1,000s throughout the forecast period, and since it continues to outnumber natural decrease, the county population is projected to grow. Average natural decrease is projected to increase compared to current number, but remains relatively stable in the upper 600s during most of the years in the forecast.

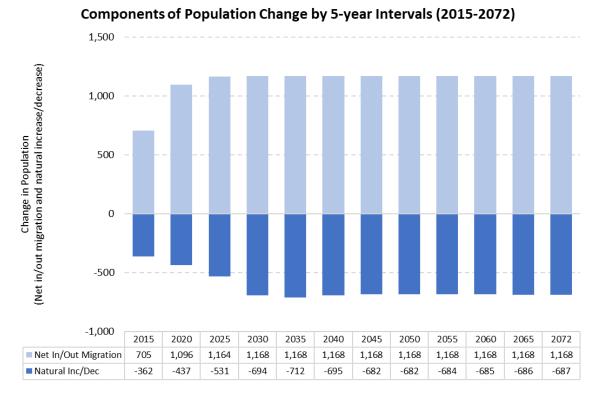


Figure 8. Historical and forecast components of population change, 2015-2072.

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. As shown in Table 2, there are two UGBs in Josephine County, Grants Pass, the more populated of the two, and Cave Junction. Grants Pass is projected to grow at an AAGR similar to the 2010-2020 AAGR. The Cave Junction UGB is projected to grow at a slower rate than Grants Pass. As the population inside UGBs grows over time, population outside of UGBs is projected to decline. The Grants Pass UGB is expected to have a 76% population increase between 2022 and 2072.

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

	Historical			Forecast					
			AAGR				AAGR	AAGR	
	2010	2020	(2010-2020)	2022	2047	2072	(2022-2047)	(2047-2072)	
Josephine County	82,713	88,090	0.6%	89,276	101,547	114,791	0.5%	0.5%	
Larger Sub-Areas									
Grants Pass	38,297	42,233	1.0%	43,073	58,253	75,776	1.2%	1.1%	
Smaller Sub-Areas									
Cave Junction	2,199	2,440	1.0%	2,533	2,912	3,600	0.6%	0.8%	
Outside UGBs	42,217	43,417	0.3%	43,670	40,382	35,415	-0.3%	-0.5%	

Note: UGBs are indicated by their city names. Lager sub-areas are those with populations of at least 8,000 in 2020. Sources: U.S. Census Bureau; Forecast by Population Research Center (PRC)

3.7.1 Larger UGBs

UGBs with more than 8,000 residents in the 2020 census are considered larger UGBs. As shown in Table 3, Grants Pass' population share continues to growth, reaching 66% by 2072, which is a 17.8 percent point increase from 2022. While the population outside of UGBs accounts for most of the county population in 2022, the Grants Pass UGB is projected to gain more shares and eventually have the largest share of population among all sub-areas within the county.

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

		Population			Share of County Population			
	2022 2047 2072			2022	2047	2072		
Josephine County	89,276	101,547	114,791					
Larger Sub-Areas								
Grants Pass	43,073	58,253	75,776	48.2%	57.4%	66.0%		
Outside UGBs	43,670	40,382	35,415	48.9%	39.8%	30.9%		

Note: Larger sub-areas refer to those with populations of at least 8,000 in 2020. Sources: Forecast by Population Research Center (PRC)

3.7.2 Smaller UGBs

As shown in Table 4, although the Cave Junction UGB accounts for the smallest population share among all sub-areas, it is projected to gain some additional shares in the next 50 years, reaching 3.1% by 2072 compared to 2.8% in 2022. Current forecast puts the population in the Cave Junction UGB at 3,600 in 2072, a 42% increase from the 2022 population.

Table 4. Population forecast for smaller sub-areas and their shares of county population.

		Population			Share of County Population			
	2022	2047	2072	2022	2047	2072		
Josephine County	89,276	101,547	114,791					
Smaller Sub-Areas								
Cave Junction	2,533	2,912	3,600	2.8%	2.9%	3.1%		
Outside UGBs	43,670	40,382	35,415	48.9%	39.8%	30.9%		

Note: Smaller sub-areas refer to those with populations under 8,000 in 2020. 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	Josephine
Date Time	11.22.21
Jurisdiction	City of Cave Junction
Name and Title	Lisa Richardson Planning Clerk
Observations about Population (e.g. birth rates, aging, immigration, racial and ethnic change)	No rentals available, very high rates
Observations about Housing (Vacancy rates, seasonal occupancy, demolitions, renovations)	none at this time
Planned Housing Developments or Group Quarters Facilities (including number of units, occupancy, and estimated year of completion)	More out of state and country people moving to the area, all ages really
Economic Development (e.g. new employers or facilities, including number of jobs and est. year of completion)	none at this time
Infrastructure Projects (e.g. transportation and utilities)	Charter Communications is currently installing lines in the City
Other Factors Promoting Population or Housing Growth	there are several new housing being built , however with higher costs they are not affordable housing options
Other Factors Hindering Population or Housing Growth	jobs, housing
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	none

housing, employment/economics, and infrastructure.	
8d. The effects of the COVID-19 pandemic and policy measure on employment and current and planned developments.	none
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?	

6. Appendix B: Detail Population Forecast Results

Age	2021	2022	2025	2030	2035	2040	2045	2047
0-4	4,155	4,061	4,076	4,307	4,630	5,013	5,187	5,184
5-9	4,686	4,629	4,180	4,033	4,264	4,586	4,967	5,067
10-14	5,036	5,041	4,997	4,394	4,248	4,478	4,800	4,960
15-19	4,869	5,104	5,314	5,337	4,736	4,590	4,820	4,940
20-24	3,841	3,850	4,661	5,431	5,453	4,853	4,708	4,786
25-29	4,809	4,782	4,477	5,134	5,902	5,925	5,326	5,166
30-34	5,114	5,280	5,349	4,944	5,599	6,364	6,387	6,236
35-39	4,848	4,845	5,249	5,702	5,299	5,952	6,714	6,779
40-44	4,829	4,944	5,099	5,561	6,011	5,611	6,259	6,809
45-49	4,527	4,560	5,114	5,490	5,948	6,391	5,995	5,849
50-54	5,010	5,126	4,937	5,478	5,845	6,295	6,728	6,632
55-59	5,850	5,577	5,459	5,436	5,964	6,319	6,758	7,116
60-64	7,003	7,042	6,457	5,911	5,885	6,393	6,729	6,779
65-69	7,124	7,063	7,034	6,543	6,038	6,007	6,485	6,672
70-74	6,796	6,651	6,717	6,624	6,178	5,732	5,695	5,704
75-79	4,669	5,104	5,629	5,741	5,671	5,289	4,927	5,023
80-84	2,909	2,931	3,330	4,107	4,206	4,161	3,866	3,646
85+	2,654	2,685	2,733	3,073	3,721	4,085	4,203	4,201

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.

Population Forecast Comparison

