

Oregon Population Forecast Program

Proposed Coordinated Forecasts for Linn
County, its Urban Growth Boundaries
(UGBs), and the Area Outside UGBs

March 2021

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The primary purpose of today's meeting is to present progress and plans for future revisions related to the population forecasts, as well as gather additional data from comments or in response to today's Q&A.

Presentation Contents:

- Preliminary proposed forecasts of Region 4 counties and their sub-areas.
- Historical data (2000-2019) and forecast results(2020–2070) for the counties, as well as the Urban Growth Boundary (UGB) areas within each county.
- Approximately 30-40 minutes for each county, including 10-15 minutes for Q&A.

Cohort Component Model ("Demographic Balancing Equation"):

$$Population_{t2} = Population_{t1} + Births_{t1\ to\ t2} - Deaths_{t1\ to\ t2} + NM_{t1\ to\ t2}$$

t1: Starting year

t2: Ending year

NM: Net migration (difference between in/out migration)

Housing Unit Method:

$$Population = HU \times Occ \times PPH + GQ$$

HU: housing unit stock

Occ: Occupancy rate

PPH: Persons per household

GQ: Group quarters population

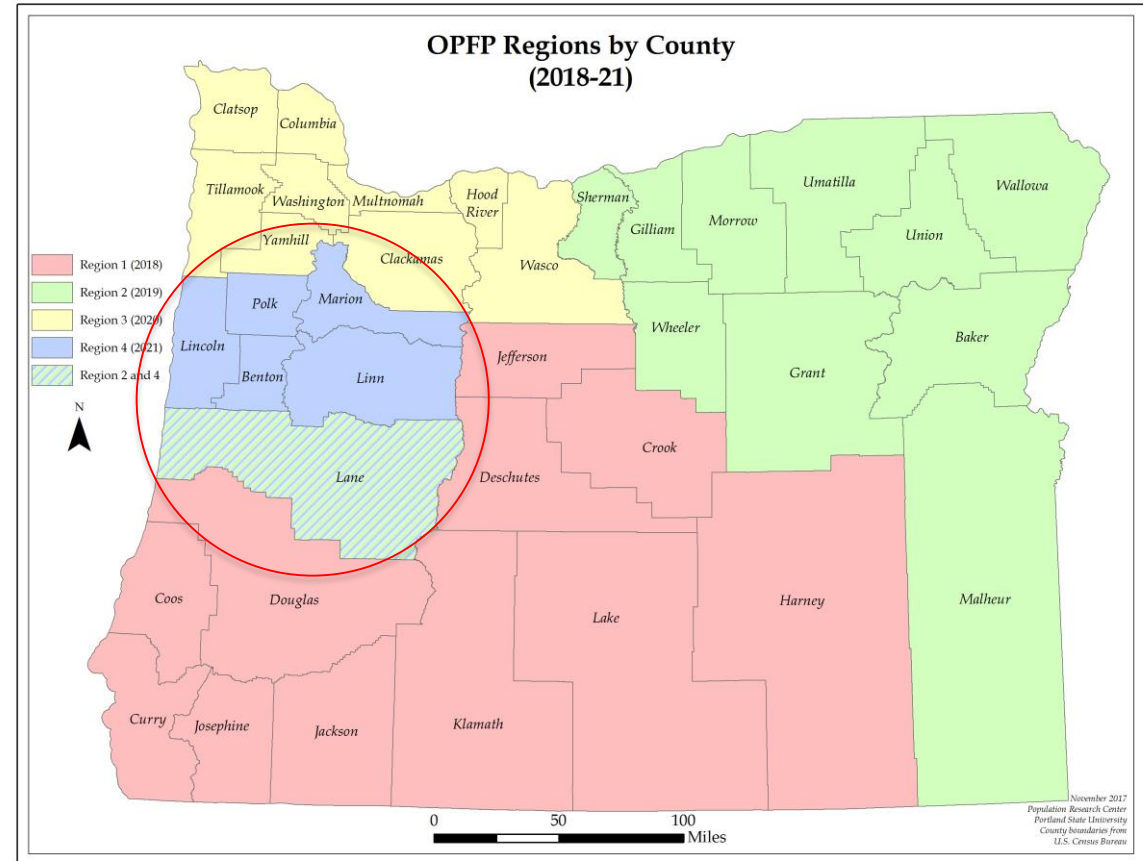
Modified Methodology (50 Year Period)

Forecast Methods (2020-45)

- Cohort-Component and Housing Unit Model

Modified Method (2045-70):

- County: AAGR of the last forecast period (2044-45) is extrapolated out for the remaining 25 years.
- Sub-areas: Trend the sub-area share of the County for the remaining 25 years.



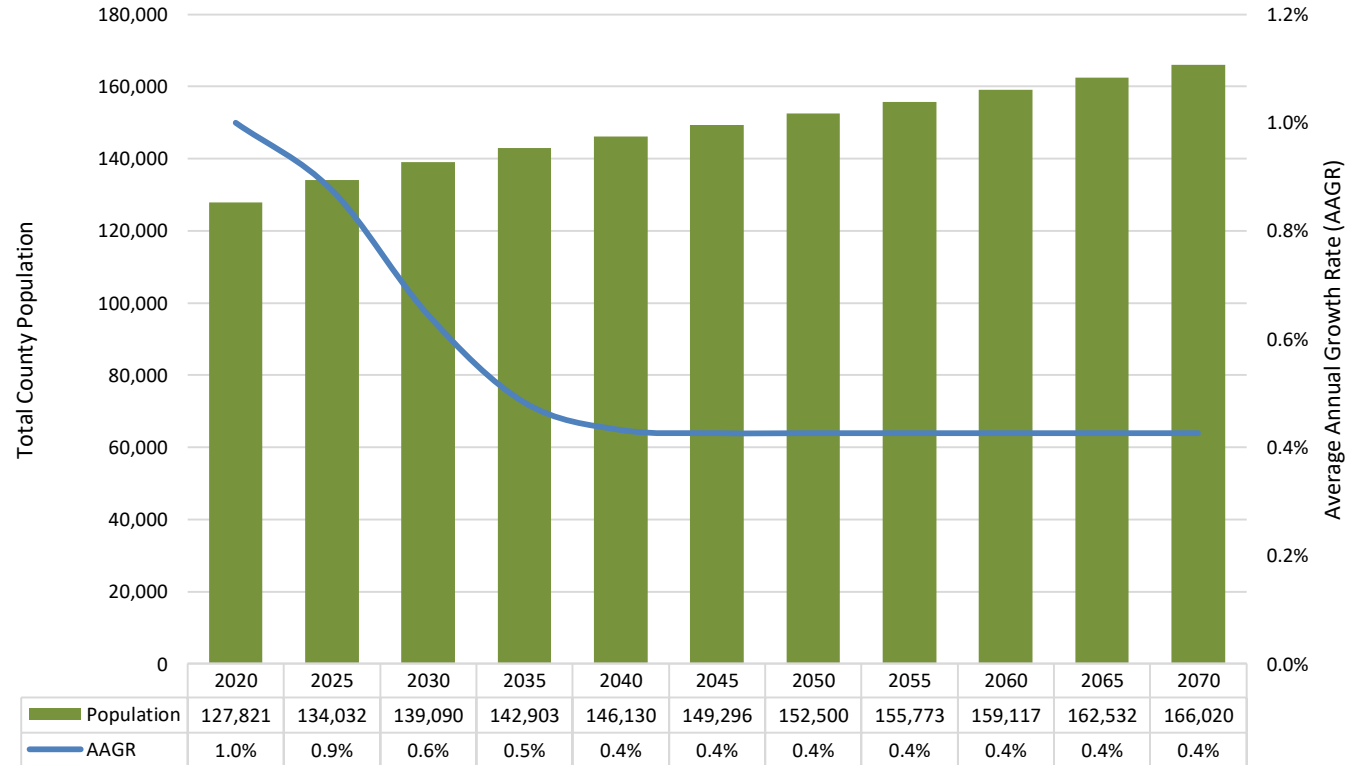
1. We incorporate the following assumptions for fertility and mortality.
 - a) Deaths and survival rates were projected based on historical trends (2000-2019) and based on the methodology published by Clark and Sharrow 2011 ([link](#)). Mortality rates for the 85+ age group were further divided into 5-year age groups up to 100+.
 - b) We applied some constrains to ensure the number of deaths maintain in a reasonable range as the elderly populations grow, accounting for positive factors associated with life expectancy (e.g., advanced medical treatments, life-style changes).
 - c) Fertility rates were projected based on historical trend up to 2030 and remain constant afterwards.
2. Net migration rates were based on the data published by the University of Wisconsin-Madison for 2000-2010, with minor adjustments made based on the following assumptions:
 - a) In/out migration would gradually approach zero for populations over 65, assuming there is minimal moving for people as they approach the age of 85+.
 - b) Considered and mitigated the uncertainties of in/out migration among college students.
3. Populations in sub-areas were forecasted using the housing unit method based on survey responses and historical pattern.

Proposed Forecast Results

Population of Linn County is projected to grow from nearly 128,000 in 2020 to over 166,000 by 2070.

The growth rate is projected to decline from 1.0% to 0.4% between 2020 and 2045, and thereafter remain at 0.4%.

Linn County - Total Population 5-year Point Estimate (2020-2070)

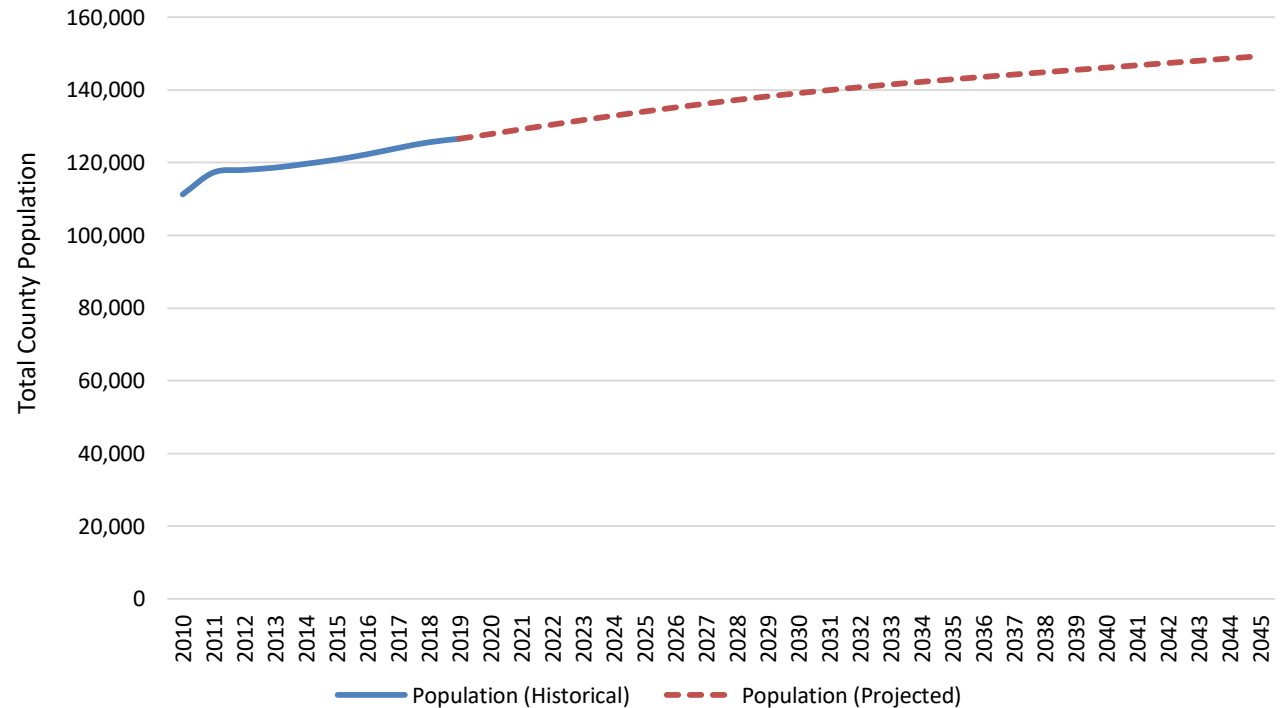


Source: Forecast by Population Research Center (PRC).
[Historical trend](#)

Proposed Forecast Results

Historical trend shows that total population reached 126,550 in 2019 and continues to grow throughout the forecast period, reaching 149,296 by 2045. The total county population shows a 16.5% growth between 2019 and 2045.

Linn County – Total Population Trend (2010-2045)

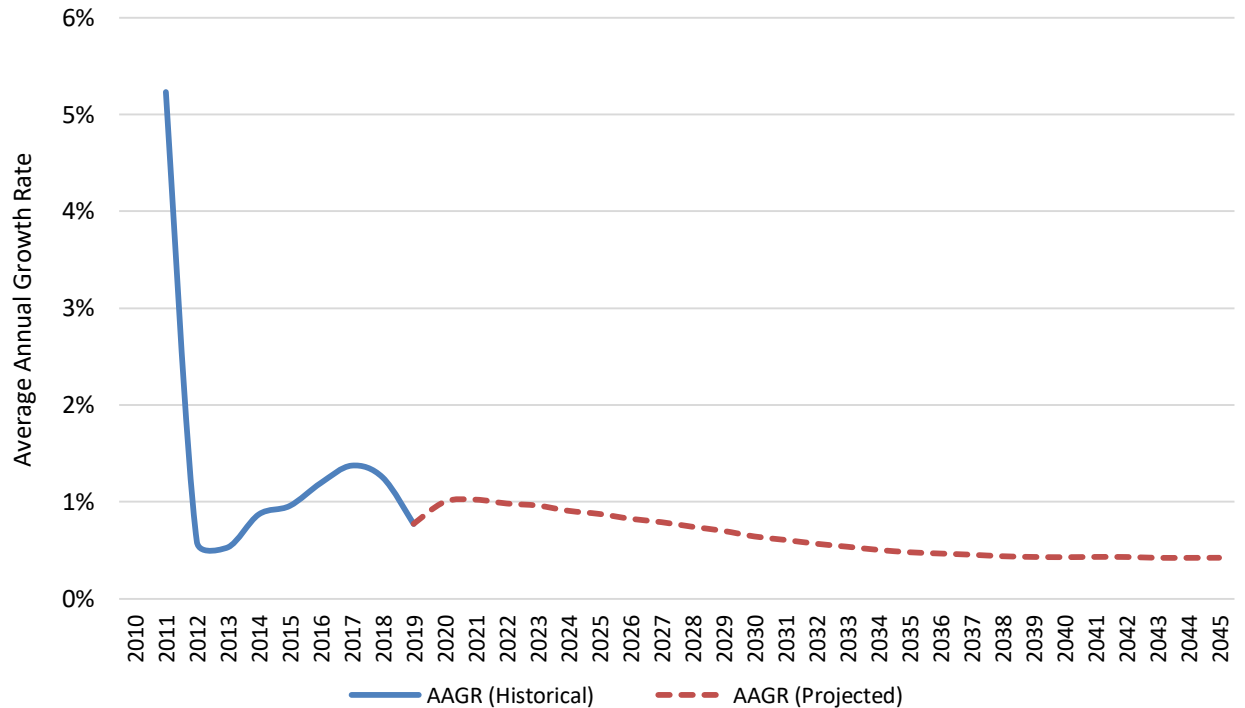


Source: U.S. Census Bureau. PRC Estimates. Forecast by Population Research Center (PRC).

Proposed Forecast Results

The average annual growth rate of the total population has varied throughout the historical time period, reaching as high as over 5% from 2010-2011, and as low as 0.5% in 2012-2013. AAGR continues to show a gradual declining trend over the next 25 years, reaching 0.4% by 2045. In general, the county population growth will remain positive.

Linn County – Average Annual Growth Rate (2010-2045)

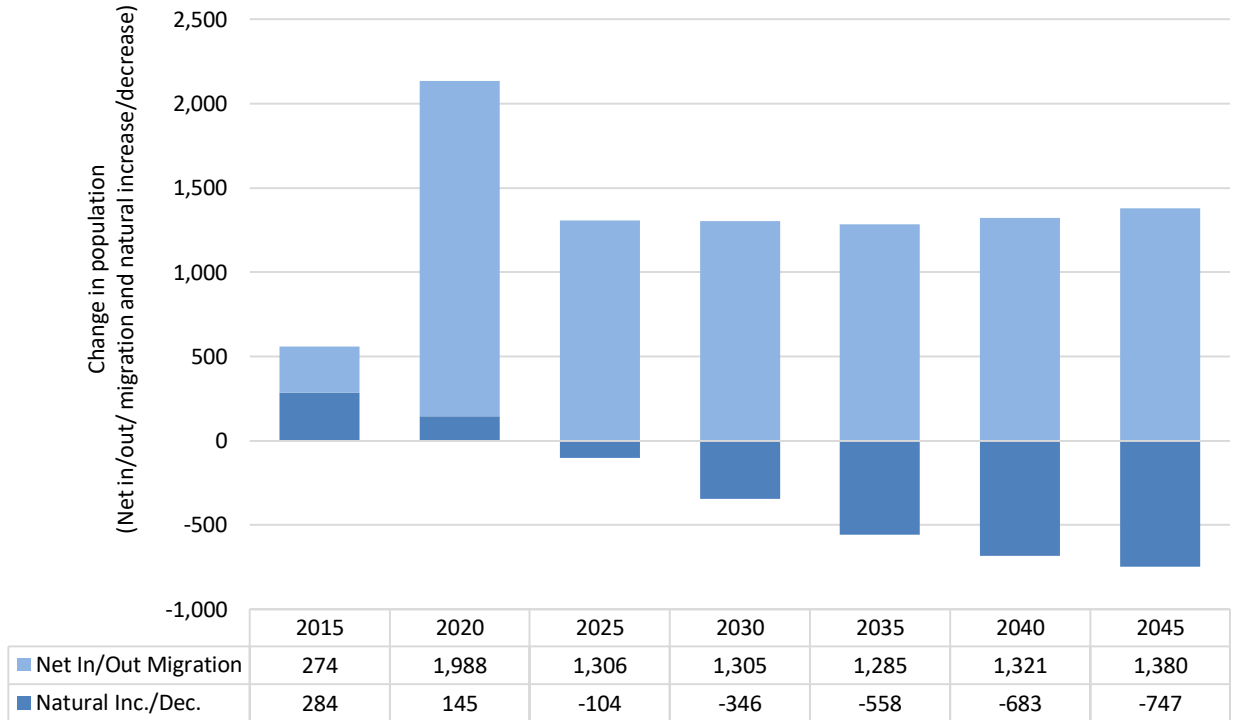


Source: U.S. Census Bureau. PRC Estimates. Forecast by Population Research Center (PRC).

Proposed Forecast Results

There will be more deaths than births each year by 2025. Future growth will come from net migration. On average, Linn County is projected to add over 1,000 persons per year as net natural increase/decrease changes to -747 by 2045. Population increase will rely on in-migration.

Linn County - Components of Population Change by Five-Year Intervals (2015-2045)

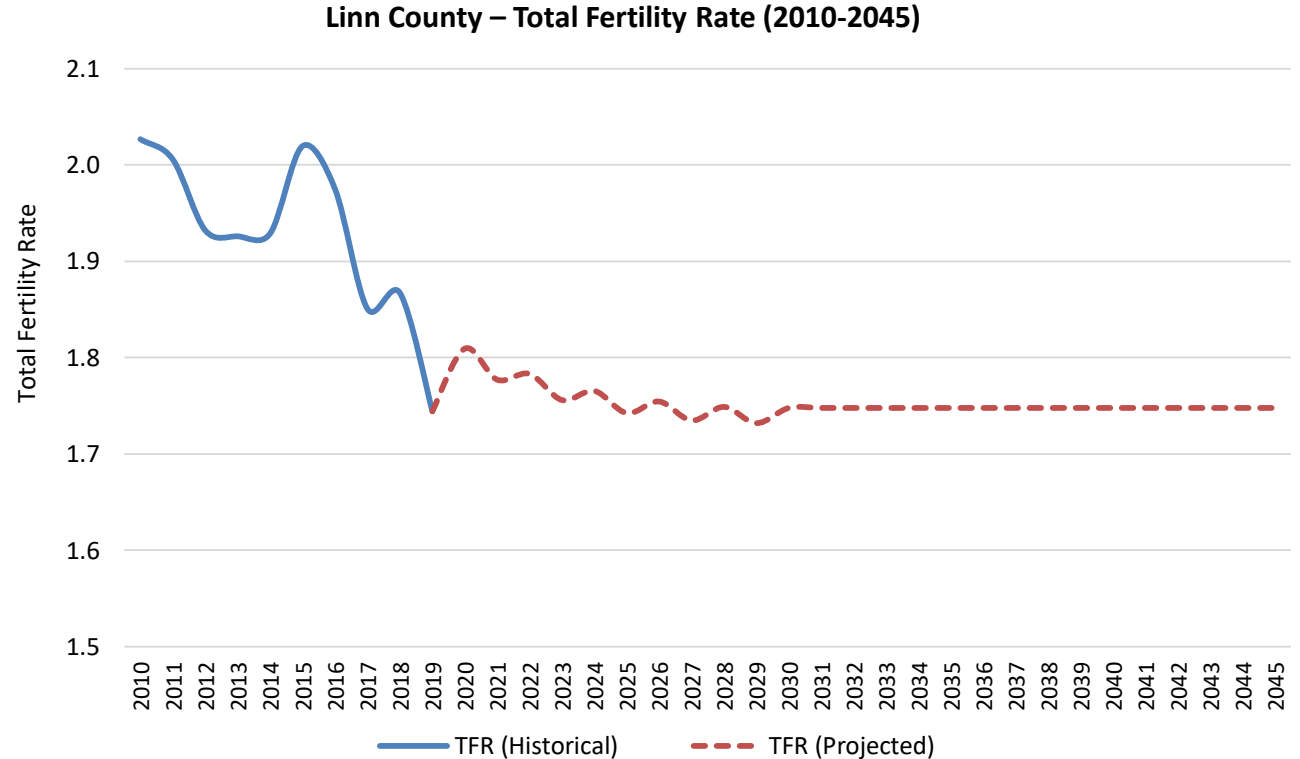


Source: Forecast by Population Research Center (PRC)

[Historical trend](#)

Historical and Forecast Trends

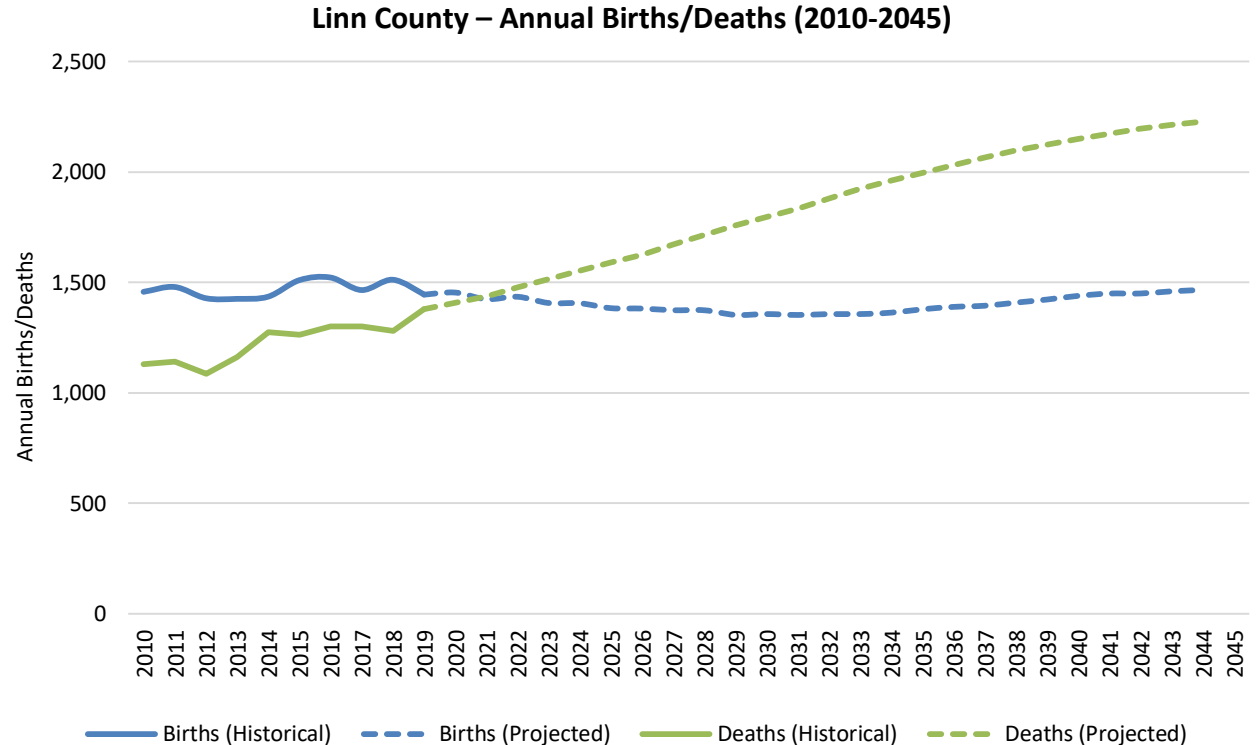
The total fertility rate for women age 15-44 showed a declining trend since 2015 and remains at a relatively lower rate compared with historical trend. The TFR remains under 1.80 for most of the years throughout the forecast period (2020-2045).



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

Historical and Forecast Trends

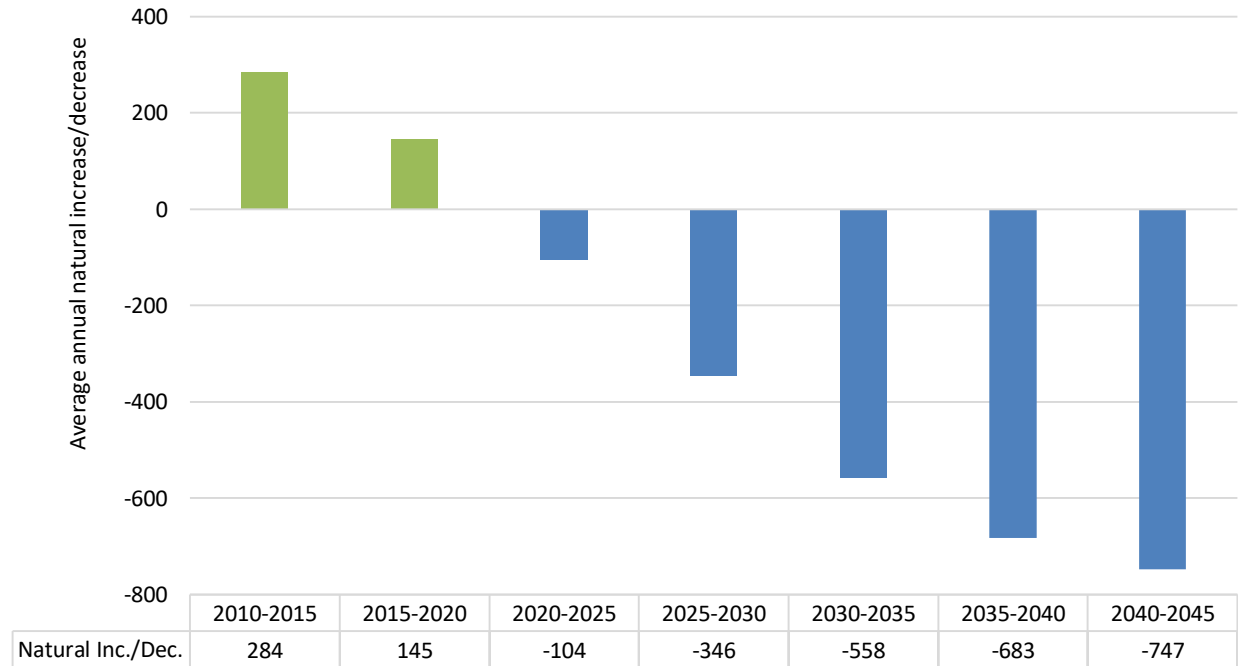
The number of births shows slight decrease over the through 2032 and increases afterwards. Compared to the number of deaths, births do not vary as much as deaths, remaining between 1,300 and 1,500. The increase in older population contributes to the increase in deaths. By 2045, the number of deaths in Linn county reaches 2,229. Data in the 2010s reflected an increasing trend in the number of deaths.



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

Natural increase has declined in the past years and is expected to change to natural decrease. In the future, low fertility and population aging are expected to combine to generate natural decrease.

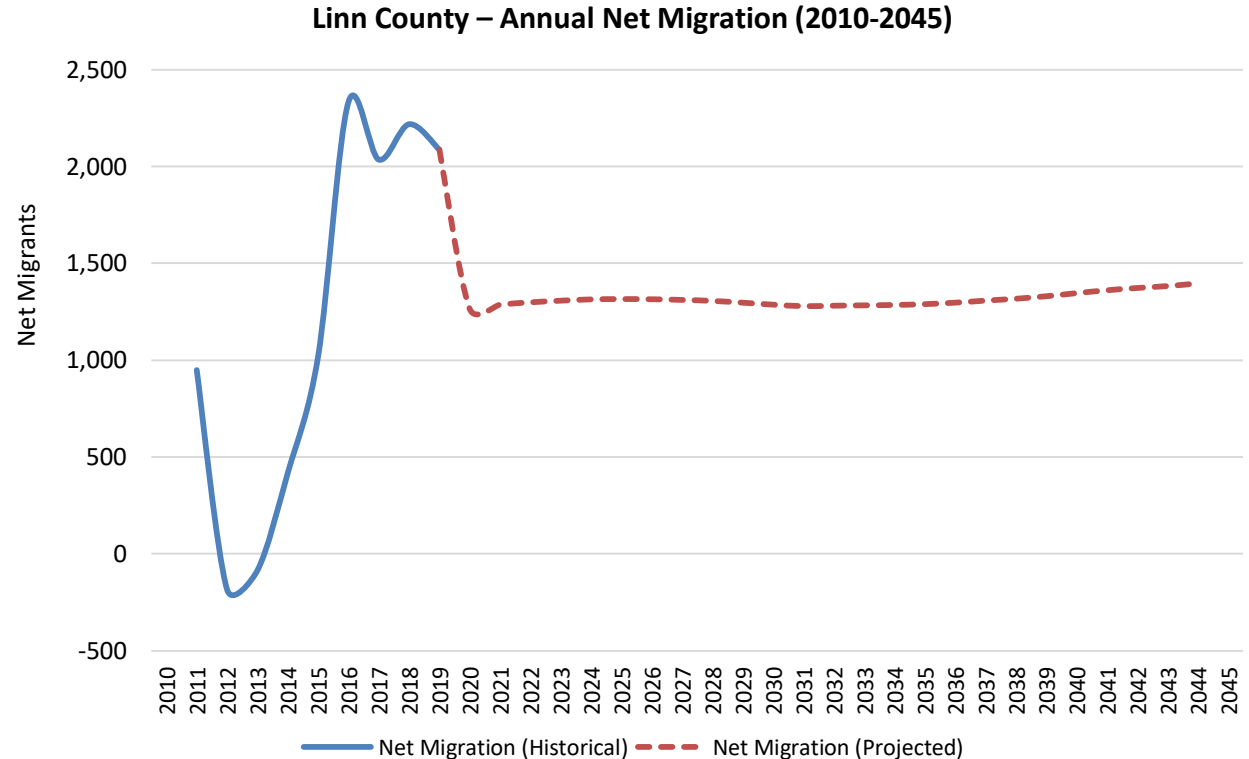
Linn County - Average Annual Natural Increase/Decrease



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

Historical and Forecast Trends

The annual net migration remains relatively constant with no major variations over the next 24 years. The net migration has been increasing most of the years after 2012. The total county net migration remains around 1,300 and increased to nearly 1,400.

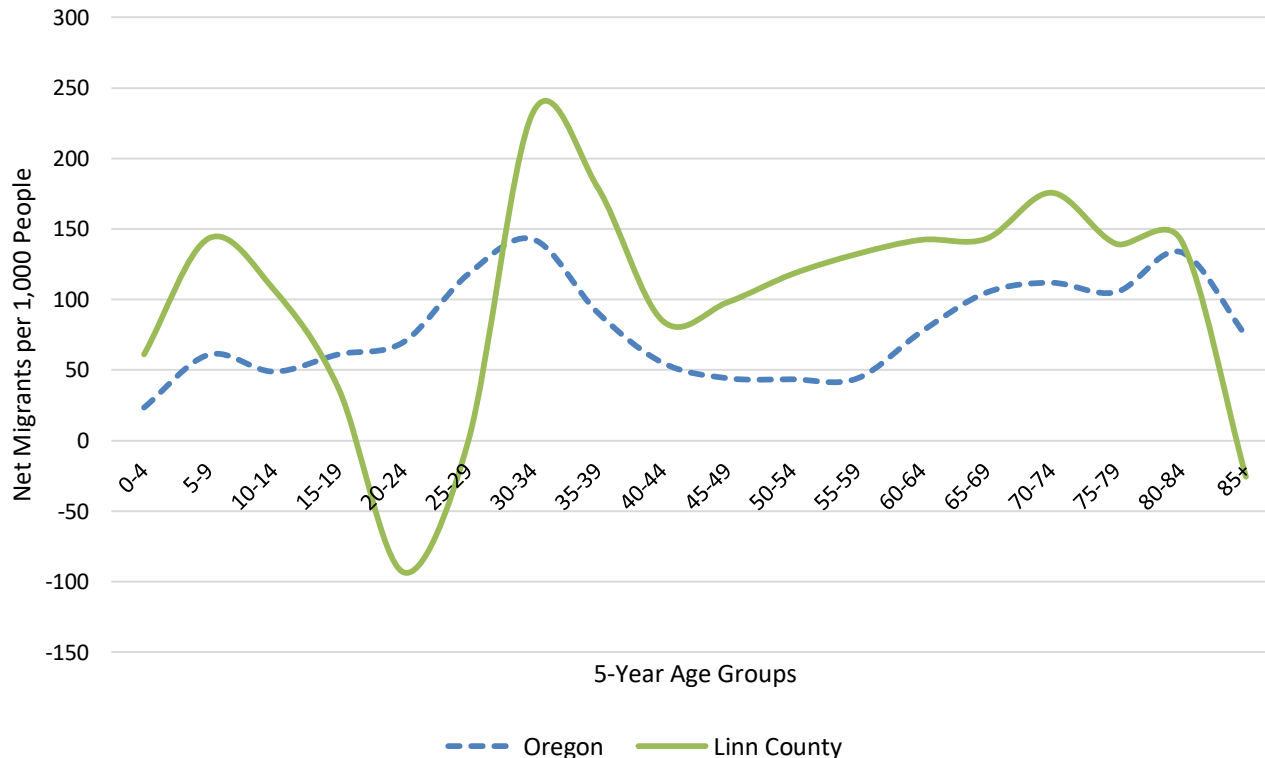


Sources: U.S. Census Bureau. Center for Demography and Ecology, University of Wisconsin-Madison. Calculated by Population Research Center (PRC).

Additional Historical Trends

This figure presents the historical 10-year net migration rates for Oregon and Linn county from 2000 to 2010. Compared to Oregon, Linn county has a higher in-migration rate for the people over 30 years old, but significantly lower in-migration rate for the 15-24 age group.

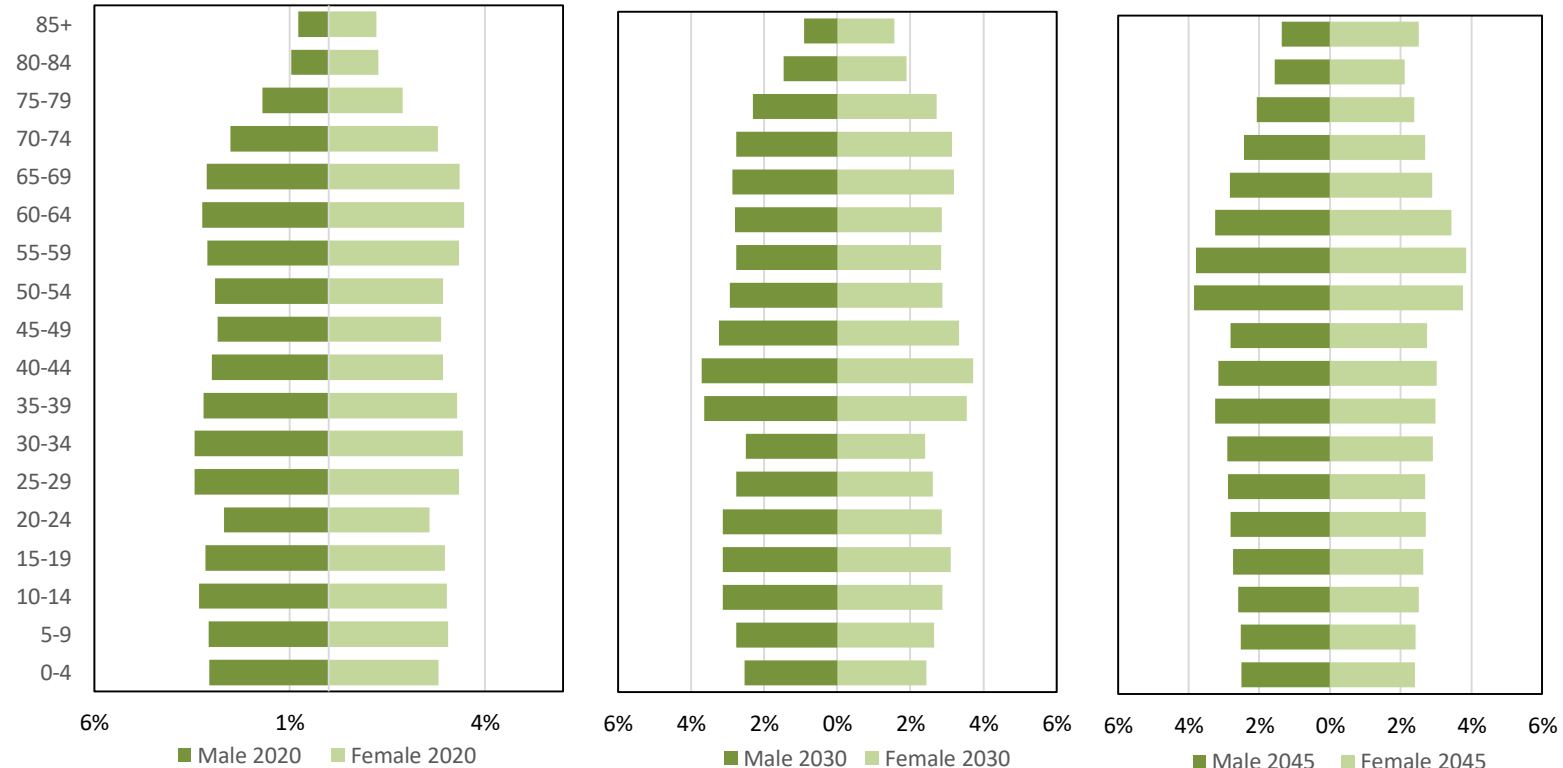
Linn County and Oregon - Ten-year Migration Rates (2000-2010)



Historical and Forecast Trends

Linn County—Age Structure of the Population

These figures show the age and sex distribution of Linn County. The oldest ages are at the top of the age pyramid and increase as a share of the population over time. The share of older populations increases as we move toward 2045.



Source: Forecast by Population Research Center (PRC)
[Historical trend](#)

These numbers represent *Proposed* Forecast Results

1. All sub-area forecasts use a housing unit method rather than a cohort-component model for consistency.
2. If planned housing units were reported in the surveys, we expect that they will be built within roughly 5 years, followed by a return to long range historic patterns.
3. If the reported housing development plans does not lead to significant differences to the observed pattern over most recent decade (2010-2019), the 2010-2019 housing development pattern was used.
4. If no planned housing units were reported, we assume future housing construction will follow historic patterns.
5. Where population has historically declined or stayed flat and there is no planned housing construction, we do not expect major losses of housing stock. Household turnover will create opportunities for new households, preventing significant decline in population.
6. We expect persons per household (PPH) to stay relatively constant over time with no major changes. Although the median age tend to increase slightly for many areas, aggressive increases in median age are not expected in the short term to post significant impact in the forecast.

Historical and Forecast Trends

Linn County – Historical and Forecast Population for Linn County and its Sub-Areas

	Historical			Forecast				
	2000	2010	AAGR (2000-2010)	2020	2045	2070	AAGR (2020-2045)	AAGR (2045-2070)
Linn County	103,069	111,357	0.8%	127,821	149,296	166,020	0.8%	0.4%
Linn County-outside	32,786	30,381	-0.8%	33,793	33,242	30,164	-0.1%	-0.4%
Larger Sub-Areas								
Albany (part)*	36,644	42,306	1.4%	47,591	58,466	67,050	1.0%	0.5%
Lebanon	15,913	17,462	0.9%	19,580	21,618	22,537	0.5%	0.2%
Sweet Home	7,949	8,485	0.7%	10,009	11,643	12,507	0.8%	0.3%
Smaller Sub-Areas								
Brownsville	1,483	1,627	0.9%	2,011	2,610	3,050	1.3%	0.6%
Gates (part)*	42	39	-0.9%	43	44	42	0.2%	-0.2%
Halsey	731	874	1.8%	1,084	1,414	1,678	1.3%	0.7%
Harrisburg	2,870	3,525	2.1%	4,203	5,842	7,861	1.6%	1.2%
Idanha (part)*	86	55	-4.5%	102	218	385	3.8%	2.3%
Lyons	912	1,172	2.5%	1,391	1,693	1,901	1.0%	0.5%
Mill City (part)*	1,389	1,619	1.5%	1,991	2,292	2,497	0.7%	0.3%
Millersburg	657	1,279	6.7%	2,926	5,436	8,974	3.1%	2.0%
Scio	722	847	1.6%	1,140	1,552	1,852	1.5%	0.7%
Sodaville	291	297	0.2%	356	505	672	1.7%	1.1%
Tangent	336	1,169	12.5%	1,366	2,465	4,585	3.0%	2.5%
Waterloo	256	221	-1.5%	236	255	266	0.4%	0.2%

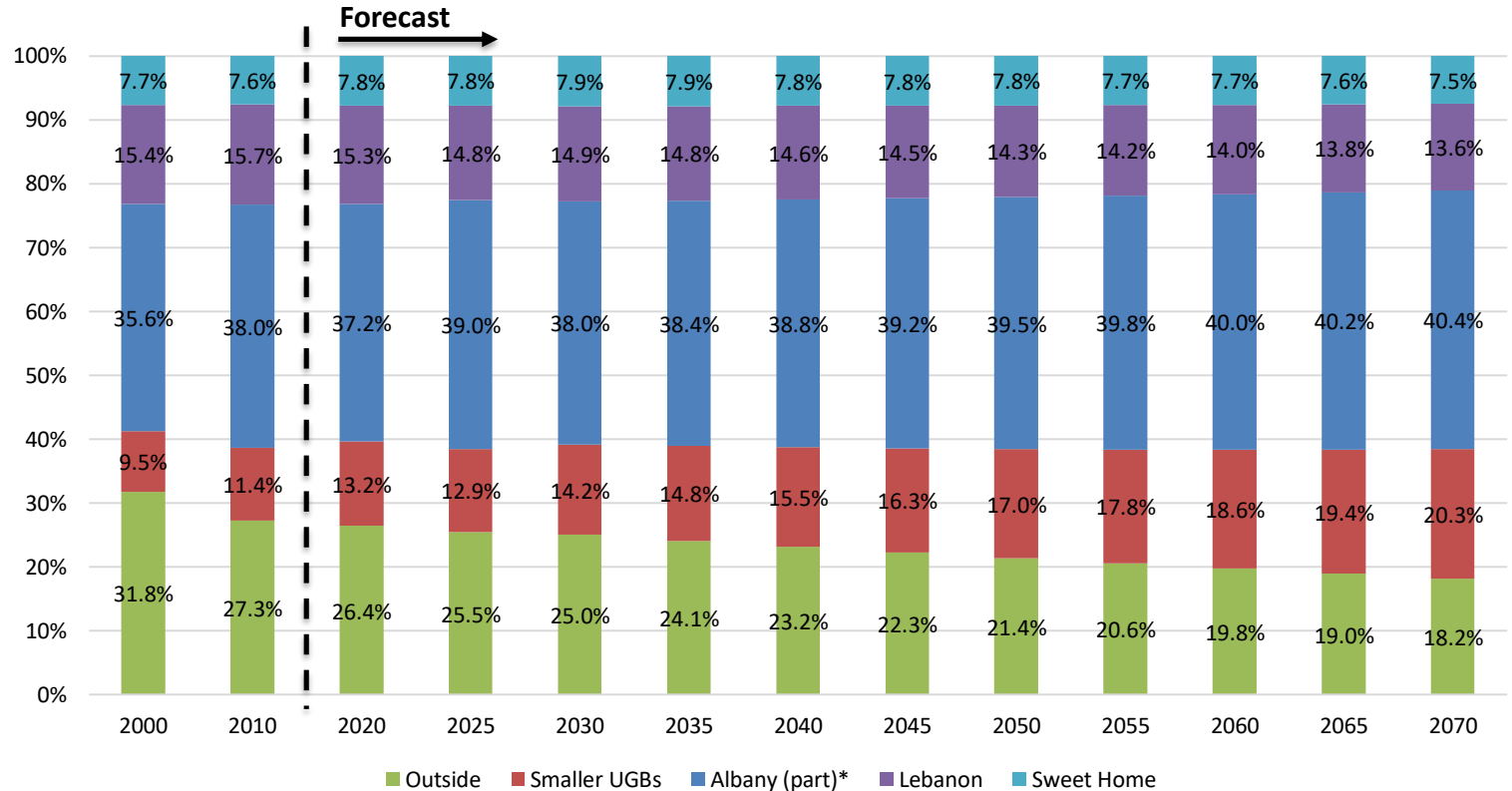
Sources: U.S. Census Bureau; Forecast by Population Research Center (PRC)

[Historical trend](#)

Proposed Forecast Results

Linn County – Population Shares of Sub-Areas and Outside UGBs

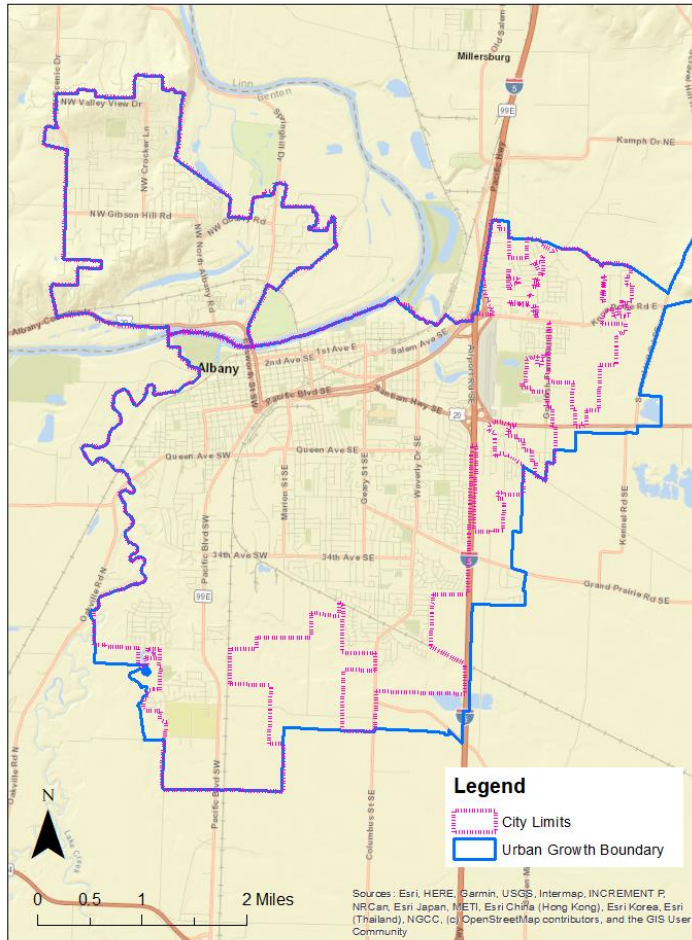
This figure shows the percentage of the county population that is in each large UGB, or smaller UGBs, or in the rest of the county. Over time, the share of the population living inside UGBs increases, while the population share outside of the UGBs decreases.



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

Note: Sub-areas with populations under 8,000 by 2010 were considered smaller UGBs

Proposed Forecast Results



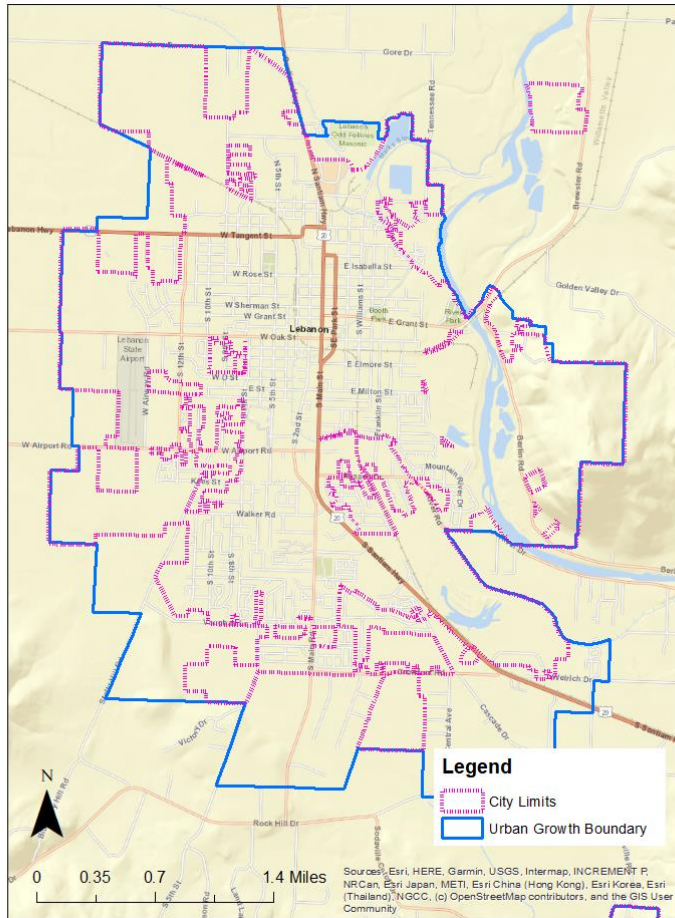
Albany (Part) – Population Forecast

Year	Population	Share of County
2020	47,591	37.2%
2045	58,466	39.2%
2070	67,050	40.4%

Sources: Forecast by Population Research Center (PRC)

Note: Larger sub-areas refer to areas with populations over 8,000 by 2010.

Proposed Forecast Results



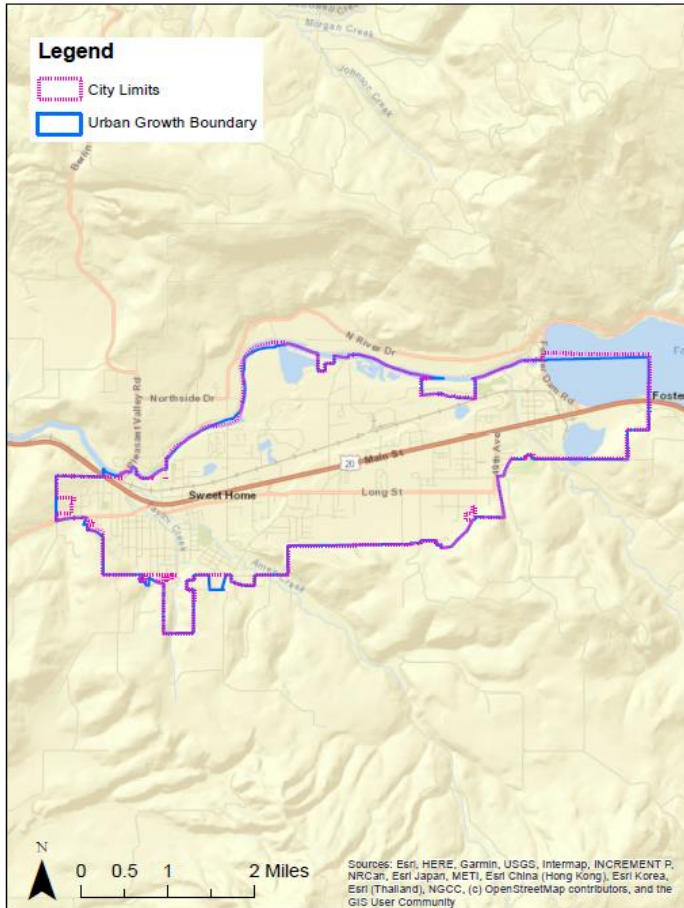
Lebanon – Population Forecast

Year	Population	Share of County
2020	19,580	15.3%
2045	21,618	14.5%
2070	22,537	13.6%

Sources: Forecast by Population Research Center (PRC)

Note: Larger sub-areas refer to areas with populations over 8,000 by 2010.

Proposed Forecast Results



Sweet Home – Population Forecast

Year	Population	Share of County
2020	10,009	7.8%
2045	11,643	7.8%
2070	12,507	7.5%

Sources: Forecast by Population Research Center (PRC)

Note: Larger sub-areas refer to areas with populations over 8,000 by 2010.

Proposed Forecast Results

Linn County – Population Distribution in Smaller Sub-Areas

	Population			Share of County Population		
	2020	2045	2070	2020	2045	2070
Linn County	127,821	149,296	166,020	100.0%	100.0%	100.0%
Outside UGBs	33,793	33,242	30,164	26.4%	22.3%	18.2%
Brownsville	2,011	2,610	3,050	1.6%	1.7%	1.8%
Gates (part)*	43	44	42	0.0%	0.0%	0.0%
Halsey	1,084	1,414	1,678	0.8%	0.9%	1.0%
Harrisburg	4,203	5,842	7,861	3.3%	3.9%	4.7%
Idanha (part)*	102	218	385	0.1%	0.1%	0.2%
Lyons	1,391	1,693	1,901	1.1%	1.1%	1.1%
Mill City (part)*	1,991	2,292	2,497	1.6%	1.5%	1.5%
Millersburg	2,926	5,436	8,974	2.3%	3.6%	5.4%
Scio	1,140	1,552	1,852	0.9%	1.0%	1.1%
Sodaville	356	505	672	0.3%	0.3%	0.4%
Tangent	1,366	2,465	4,585	1.1%	1.7%	2.8%
Waterloo	236	255	266	0.2%	0.2%	0.2%

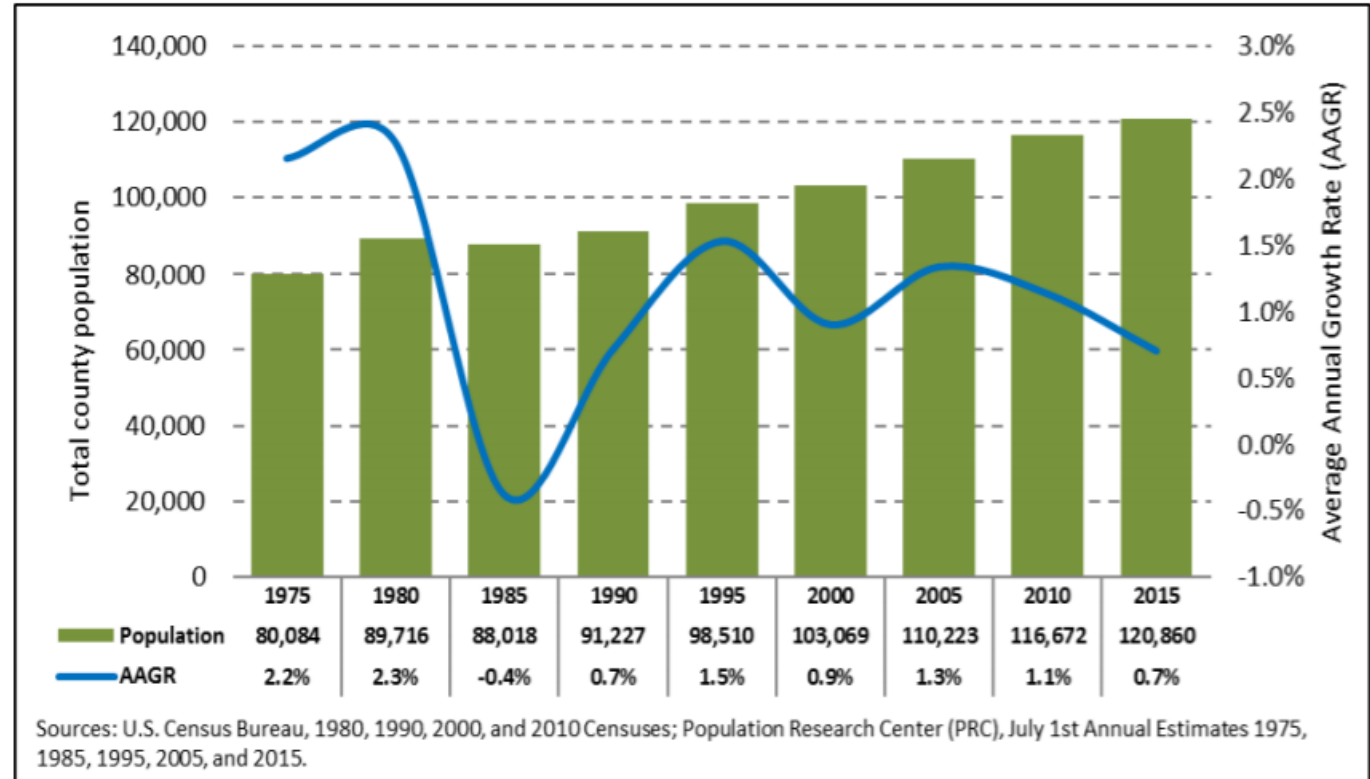
Sources: Forecast by Population Research Center (PRC)

Note: Smaller sub-areas refer to areas with populations under 8,000 by 2010.

1. We expect Linn County to experience a relatively high population growth rate (~1.0%) in the upcoming 5 years, follow by a gradual decline in growth rate, reaching ~0.4% at the end of the forecast (2045).
2. Net migrations remained relatively stable over the forecast period.
3. Deaths surpasses births due to an aging population and lower fertility rate, contributing to the natural decrease in population. The share of older population increase over time.
4. All sub-areas will continue to experience population growth, while areas outside of the UGBs will decline. Larger sub-areas with populations over 8,000 will account for over half of the county population share by 2045.
5. Although larger sub-areas still account for most of the population within UGBs, smaller sub-areas are likely to increase their population share within the UGBs, to ~16% by 2045.
6. Covid-19 and wildfires implications.

Additional Historical Trends

This figure shows total population growth for Linn County during 1975-2015. The annual growth rate since 2000 has averaged at around 1.0%.



Additional Historical Trends

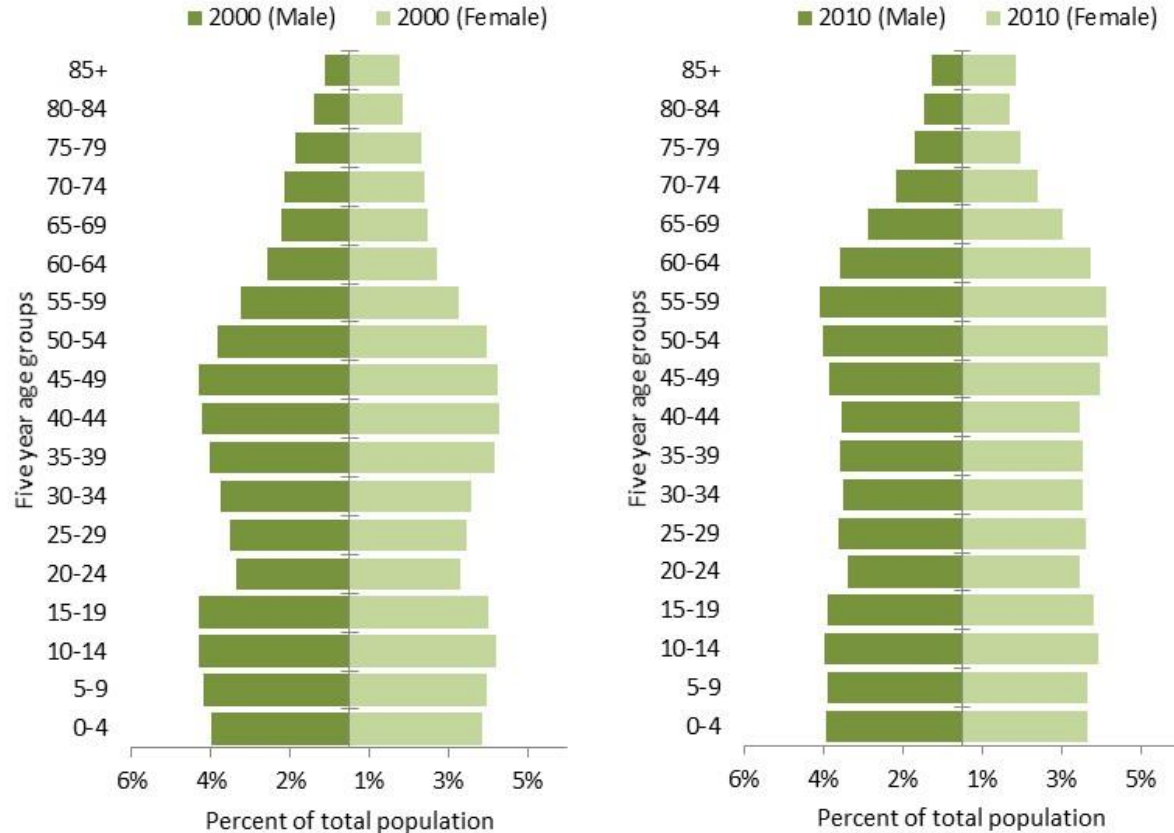
This table shows the growth rate of Linn County and its urban areas during 2000-2010. Some smaller sub areas, including Halsey, Harrisburg, Mill City, Millersburg, and Scio showed annual population growth rates of over 2%. Albany was the fastest growing area among the three larger sub-areas.

	2000	2010	AAGR (2000-2010)	Share of County 2000	Share of County 2010
<i>Linn County</i>	103,069	116,672	1.2%	100.0%	100.0%
Albany UGB (Linn)	36,967	44,690	1.9%	35.9%	38.3%
Brownsville UGB	1,471	1,682	1.3%	1.4%	1.4%
Gates UGB (Linn)	42	40	-0.5%	0.0%	0.0%
Halsey UGB	724	906	2.3%	0.7%	0.8%
Harrisburg UGB	2,842	3,665	2.6%	2.8%	3.1%
Idanha UGB (Linn)	85	57	-3.9%	0.1%	0.0%
Lebanon UGB	15,981	18,308	1.4%	15.5%	15.7%
Lyons UGB (Linn)	1,065	1,215	1.3%	1.0%	1.0%
Mill City UGB (Linn)	1,376	1,680	2.0%	1.3%	1.4%
Millersburg UGB	670	1,329	7.1%	0.7%	1.1%
Scio UGB	719	884	2.1%	0.7%	0.8%
Sodaville UGB	288	308	0.7%	0.3%	0.3%
Sweet Home UGB	8,068	8,978	1.1%	7.8%	7.7%
Tangent UGB	1,066	1,233	1.5%	1.0%	1.1%
Waterloo UGB	238	229	-0.4%	0.2%	0.2%
Outside UGBs	31,467	31,468	0.0%	30.5%	27.0%

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

Additional Historical Trends

These two age pyramids show the population at the time of the 2000 and 2010 census. The 2010 age pyramid showed the population aging forward from the 2000 census.



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

Additional Historical Trends

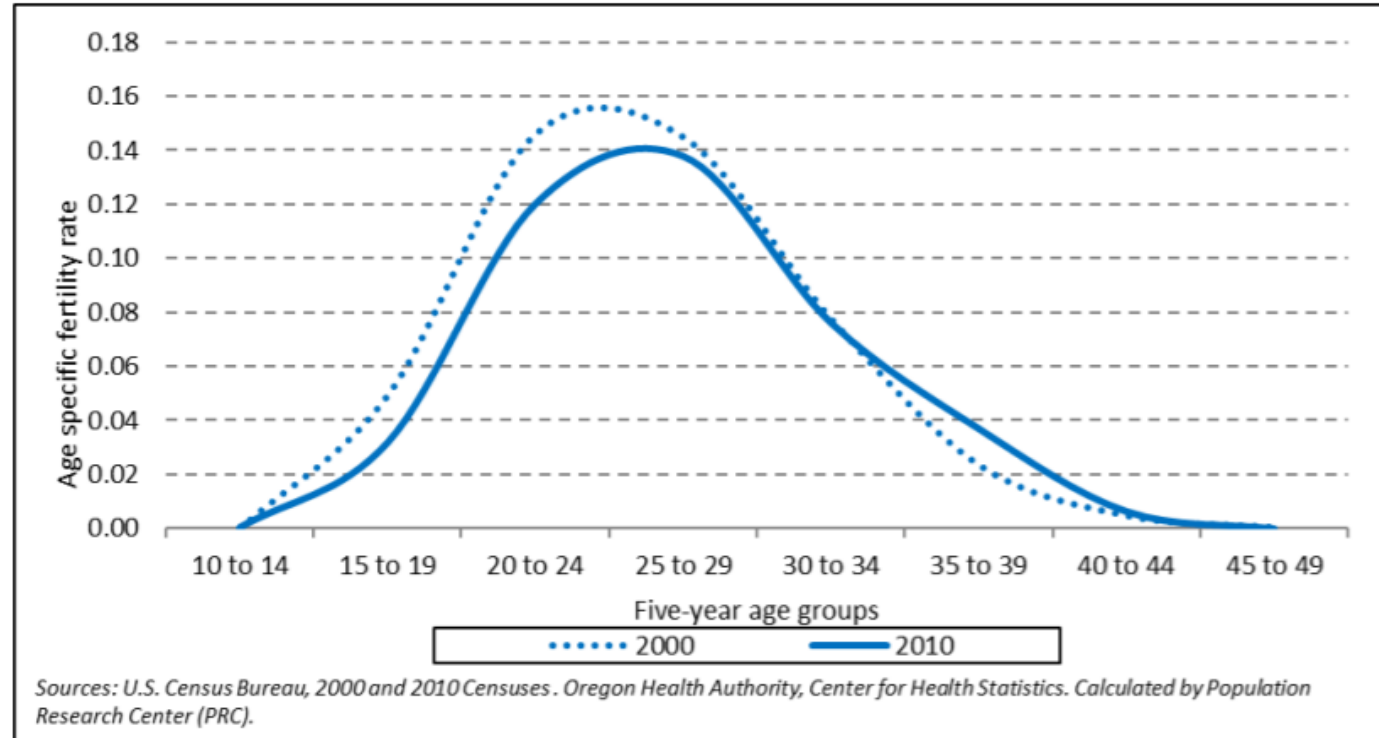
This table shows the race and ethnicity breakdown for Linn County in 2000 and 2010. The share of Hispanic population is the fastest growing group, followed by Black, mixed race, unknown, and Asian populations.

Hispanic or Latino and Race	2000		2010		Absolute Change	Relative Change
<i>Total population</i>	103,069	100.0%	116,672	100.0%	13,603	13.2%
Hispanic or Latino	4,514	4.4%	9,127	7.8%	4,613	102.2%
Not Hispanic or Latino	98,555	95.6%	107,545	92.2%	8,990	9.1%
White alone	94,012	91.2%	101,579	87.1%	7,567	8.0%
Black or African American alone	285	0.3%	456	0.4%	171	60.0%
American Indian and Alaska Native alone	1,192	1.2%	1,268	1.1%	76	6.4%
Asian alone	789	0.8%	1,078	0.9%	289	36.6%
Native Hawaiian and Other Pacific Islander alone	125	0.1%	150	0.1%	25	20.0%
Some Other Race alone	92	0.1%	126	0.1%	34	37.0%
Two or More Races	2,060	2.0%	2,888	2.5%	828	40.2%

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

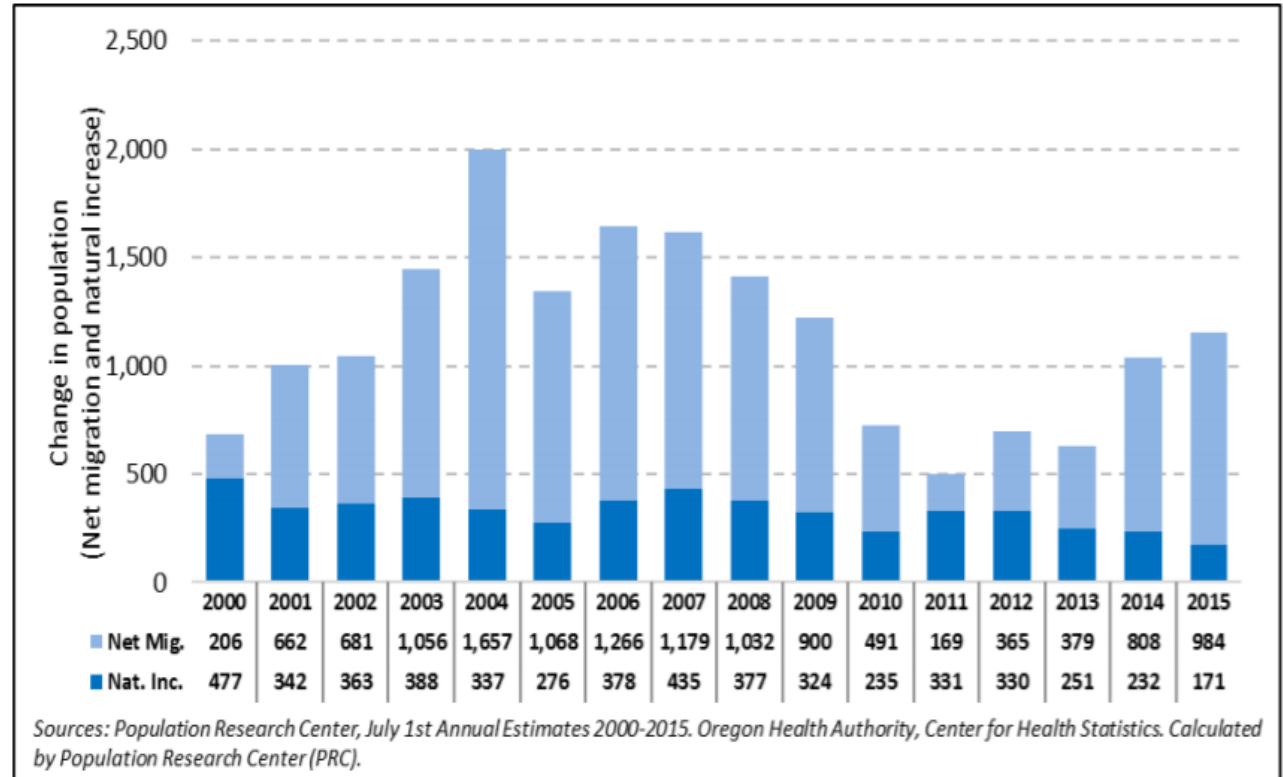
Additional Historical Trends

This figure shows age specific fertility rates for Linn County in 2000 and 2010. The fertility rates for women under 30 years old decreased in 2010 while the fertility rate for the 35-39 age group increased.



Additional Historical Trends

These figures showed the components of change (births, deaths, and net migrants) for Linn County during 2000-2015. Net migration was at the highest number in 2004 and since then dropped to lower numbers. The net migration has been higher than the natural increase for most of the years from 2000 to 2015. The only exceptions were 2000 and 2011.



Additional Historical Trends

This table shows the total housing units for Linn County and each UGB during 2000 and 2010. Housing growth was fastest in many smaller UGBs compared to the larger ones.

	2000	2010	AAGR (2000-2010)	Share of County 2000	Share of County 2010
<i>Linn County</i>	42,521	48,821	1.4%	100.0%	100.0%
Albany (Linn)	15,953	18,834	1.7%	37.5%	38.6%
Brownsville	588	689	1.6%	1.4%	1.4%
Gates (Linn)	24	23	-0.4%	0.1%	0.0%
Idanha (Linn)	50	39	-2.5%	0.1%	0.1%
Halsey	267	335	2.3%	0.6%	0.7%
Harrisburg	1,060	1,366	2.6%	2.5%	2.8%
Lebanon	6,672	8,021	1.9%	15.7%	16.4%
Lyons (Linn)	413	493	1.8%	1.0%	1.0%
Mill City (Linn)	555	675	2.0%	1.3%	1.4%
Millersburg	325	538	5.2%	0.8%	1.1%
Scio	289	340	1.6%	0.7%	0.7%
Sodaville	114	121	0.6%	0.3%	0.2%
Sweet Home	3,370	3,789	1.2%	7.9%	7.8%
Tangent	414	456	1.0%	1.0%	0.9%
Waterloo	90	87	-0.3%	0.2%	0.2%
Outside UGBs	12,337	13,015	0.5%	29.0%	26.7%

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

Note: For simplicity each UGB is referred to by its primary city's name.

Additional Historical Trends

This table shows average household size and occupancy rate in 2000 and 2010. Household size either decreased or remain unchanged between 2000 and 2010 for most UGBs.

	Persons Per Household (PPH)			Occupancy Rate		
	2000	2010	Change 2000-2010	2000	2010	Change 2000-2010
<i>Linn County</i>	2.6	2.6	0.0	93.0%	92.6%	-0.4%
Albany (Linn)	2.5	2.5	0.0	92.3%	93.7%	1.4%
Brownsville	2.7	2.6	-0.1	92.5%	93.3%	0.8%
Gates (Linn)	2.1	2.1	0.0	83.3%	82.6%	-0.7%
Idanha (Linn)	2.9	1.9	-1.0	58.0%	76.9%	18.9%
Halsey	2.9	3.0	0.1	94.4%	91.3%	-3.0%
Harrisburg	2.8	2.9	0.0	95.1%	93.8%	-1.3%
Lebanon	2.5	2.5	0.0	93.3%	90.1%	-3.2%
Lyons (Linn)	2.7	2.6	-0.1	94.4%	93.7%	-0.7%
Mill City (Linn)	2.7	2.7	0.0	93.2%	92.7%	-0.4%
Millersburg	2.4	2.6	0.2	85.8%	93.7%	7.8%
Scio	2.6	2.7	0.1	95.2%	94.7%	-0.4%
Sodaville	2.8	2.7	-0.1	91.2%	95.9%	4.6%
Sweet Home	2.6	2.6	0.0	91.5%	91.3%	-0.2%
Tangent	2.7	2.9	0.1	93.7%	94.5%	0.8%
Waterloo	2.9	2.9	0.0	91.1%	90.8%	-0.3%
Outside UGBs	2.7	2.6	-0.1	94.2%	92.5%	-1.6%

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

Note: For simplicity each UGB is referred to by its primary city's name.