

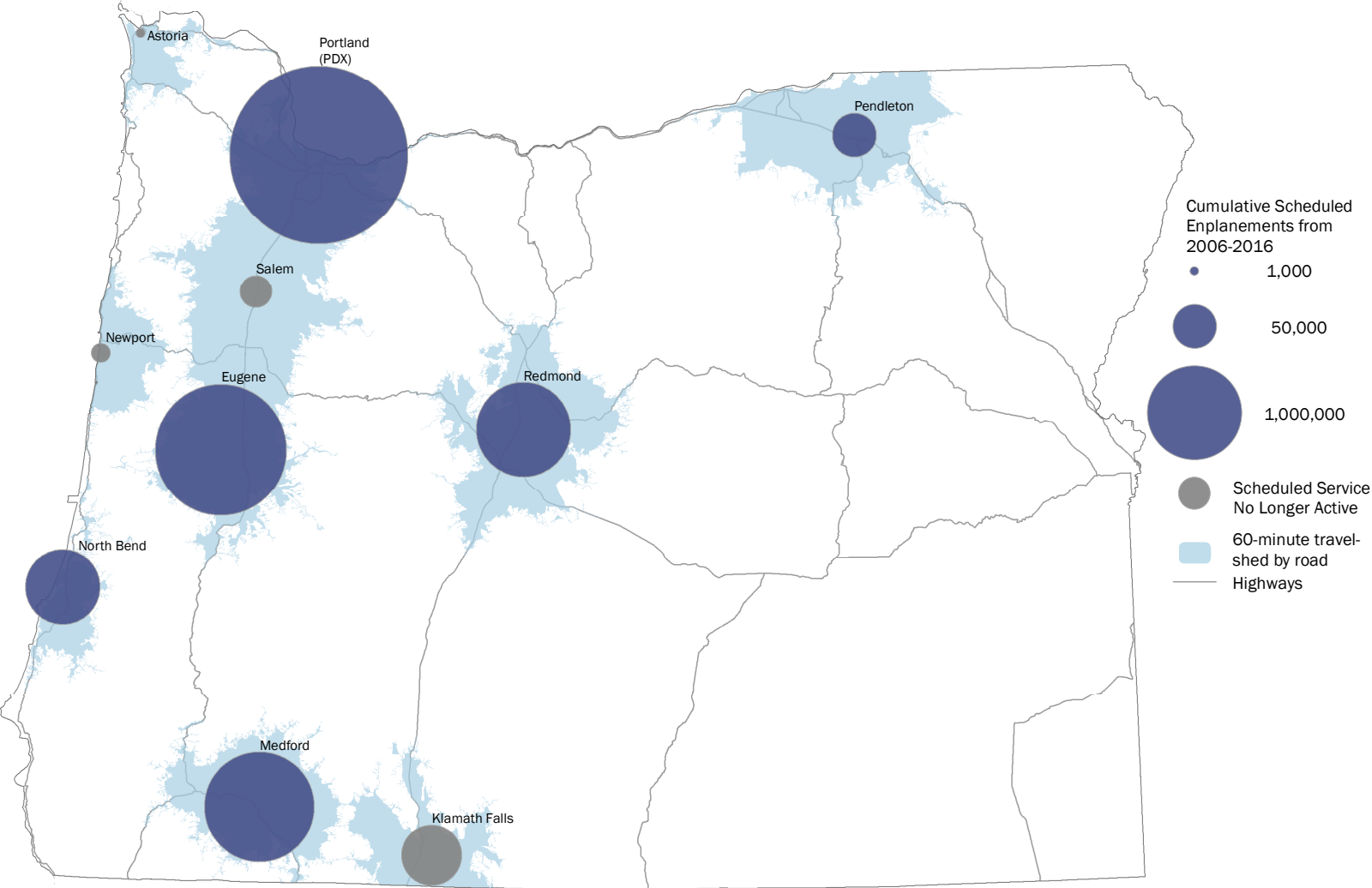
Task 2: Demand Analysis Maps

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Current Supply of Air Service

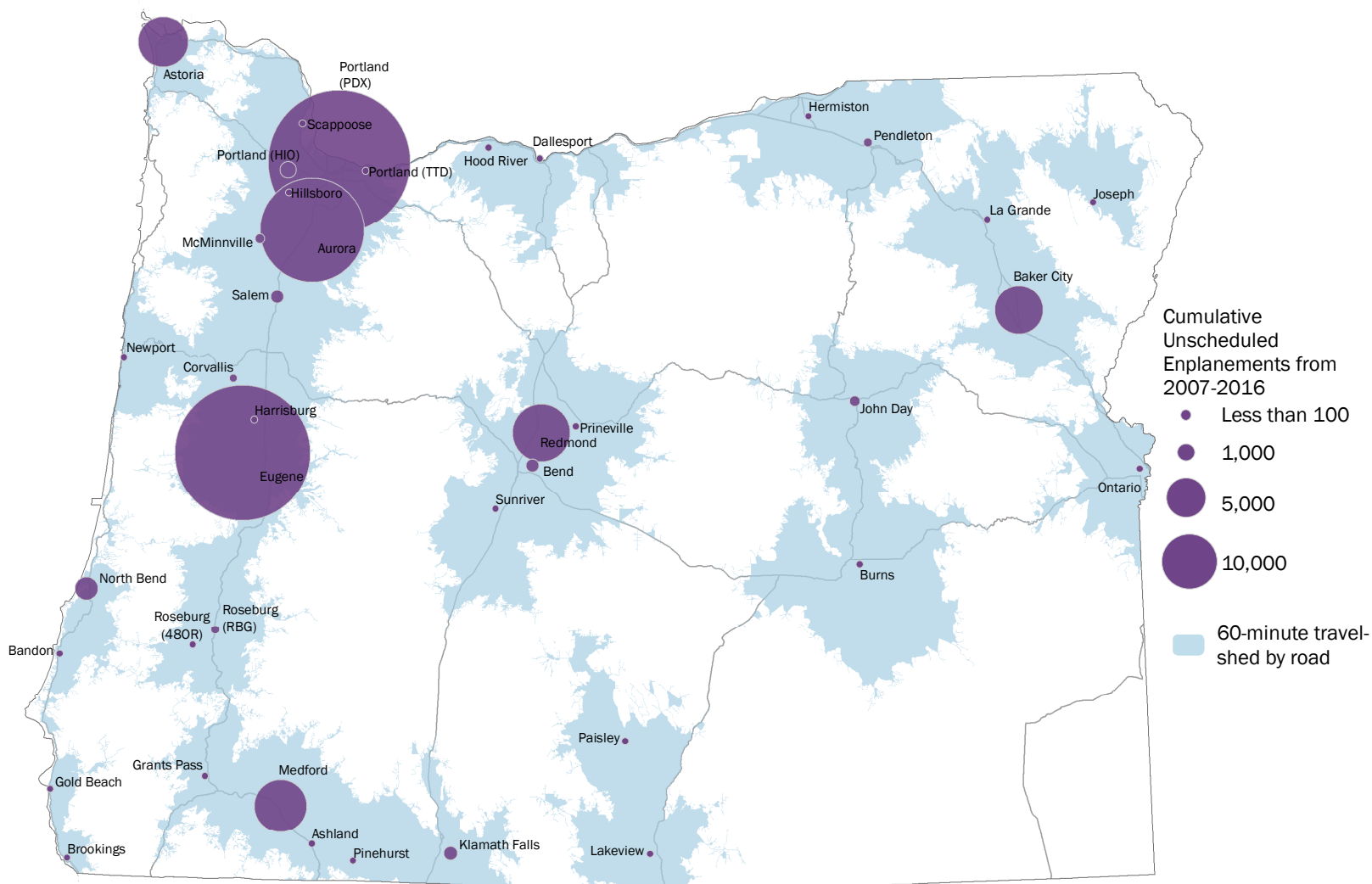
Airports with Commercial Scheduled Service, 2007-2016



This map shows the six airports in Oregon where scheduled service is currently available, and four where it was historical available. Circle show the number of cumulative enplanements at each airport between 2007 and 2016.

Current Supply of Air Service

Airports with Commercial Unscheduled Service¹, 2007-2016



This map shows the airports in Oregon where commercial uncheduled service has occurred between 2007 and 2016.

Unscheduled services includes air taxi and charter flights. 54 airports throughout Oregon have record of uncheduled enplanements. Of these, 40 had more than 10 enplanements during this time. Some uncheduled enplanement data are voluntarily reported to FAA. These data almost certainly underestimate actual uncheduled service. (See note at the bottom of the slide).

Note: ¹ Uncheduled enplanement data comes from Federal Aviation Administration's Air Carrier Activity Information System (ACAIS) database. Data for most uncheduled flights are reported voluntarily by the air carrier, so counts shown on the map most likely underestimate actual enplanements, especially for rural airports. While these are the best data available, readers should use caution in drawing conclusions about current level of demand by airport. This list of airports includes those that had a record of at least 10 enplanements between 2007 and 2016. This emphasizes markets that are more likely to have demand to support more consistent uncheduled or scheduled service.

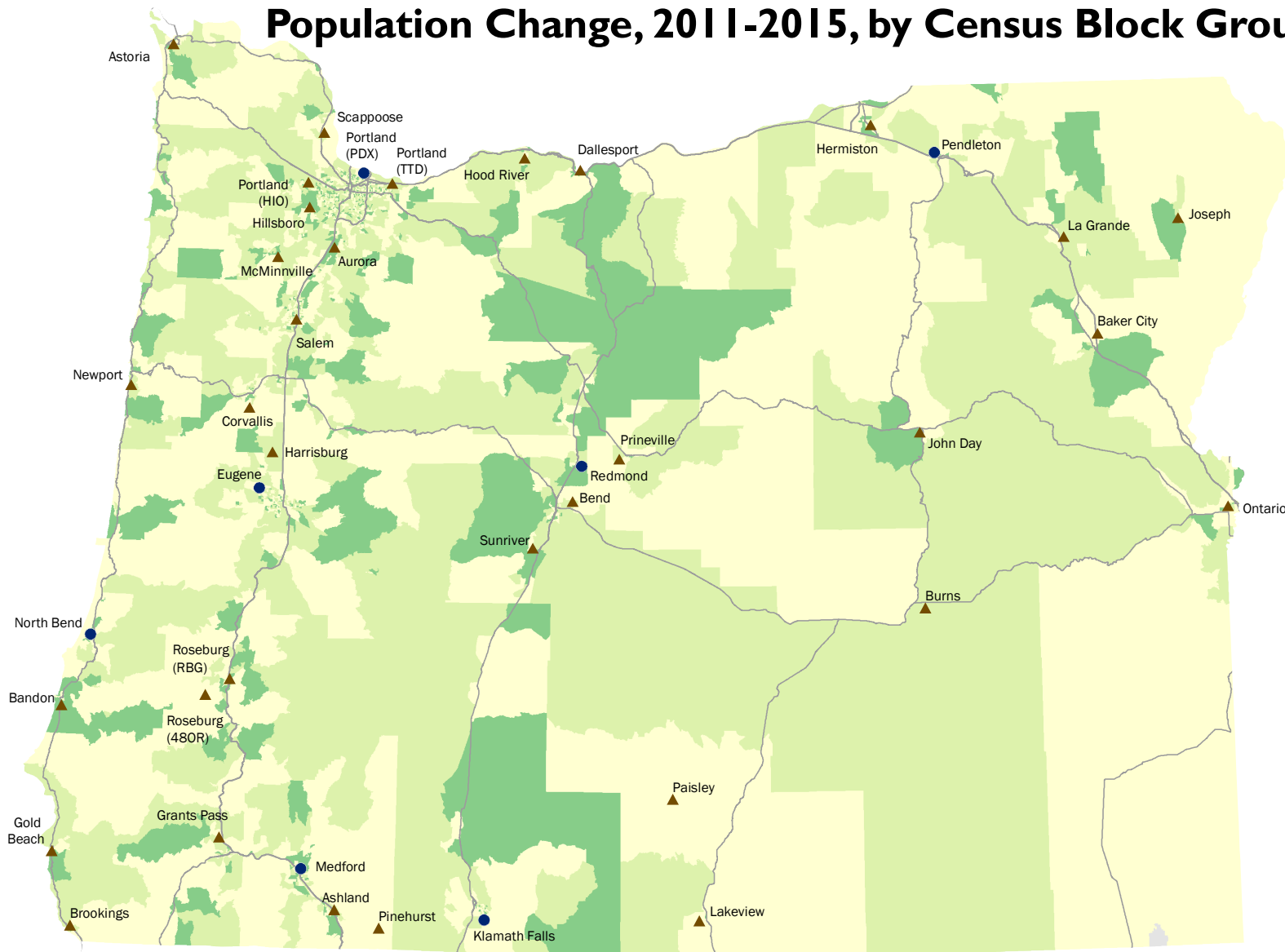
Key Measurable Indicators of Demand

- Population Growth
- Employment
- Income
- Distance to Major Airport

The other factors that influence demand, price of alternate modes of transportation, and uncertainty and risk, are more difficult to measure systematically.

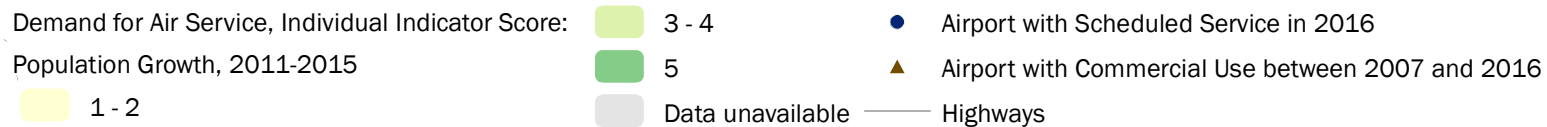
Indicators of Demand

Population Change, 2011-2015, by Census Block Groups



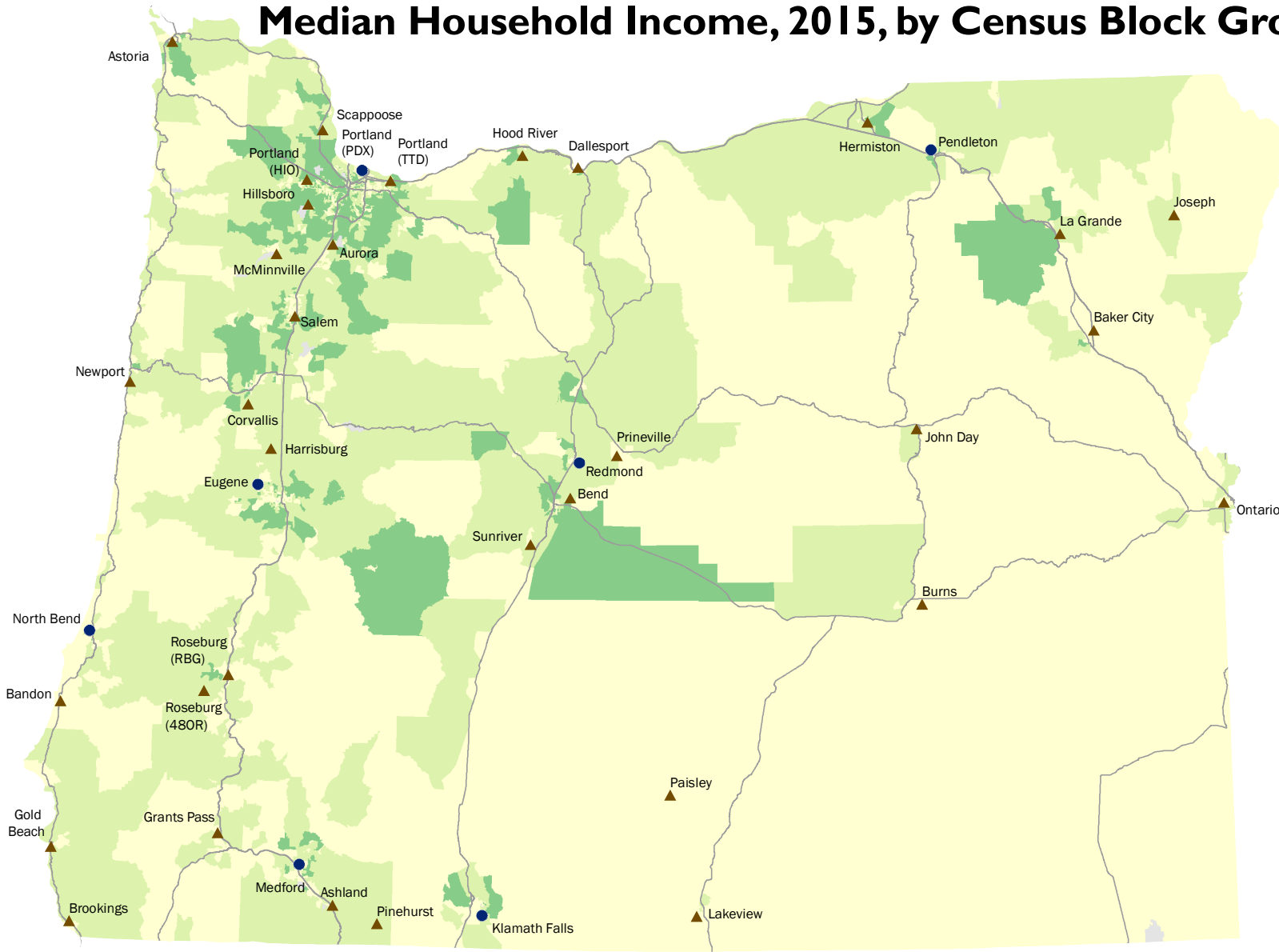
This map shows population change at the census block-group level. The darker green indicates block groups where population increased the most, relative to other areas. Lighter areas indicate groups where population did not grow as much, or declined.

All block groups were ranked by the amount the population changed between 2011 and 2015 and divided into five equal groups. Points were allotted by group: 5 points for those with the highest growth, 1 point for the lowest.



Indicators of Demand

Median Household Income, 2015, by Census Block Groups



This map shows relative income across the state in 2015 at the census block-group level, using median household income (MHI) as the measure of income. The darker green indicates block groups where MHI was greatest, relative to other areas.

All block groups were ranked by MHI between 2011 and 2015 and divided into five equal groups. Points were allotted by group: 5 points for those with the highest MHI, 1 point for the lowest.

Demand for Air Service, Individual Indicator Score:

Median Household Income, 2015

1 - 2

3 - 4

5

Data Unavailable

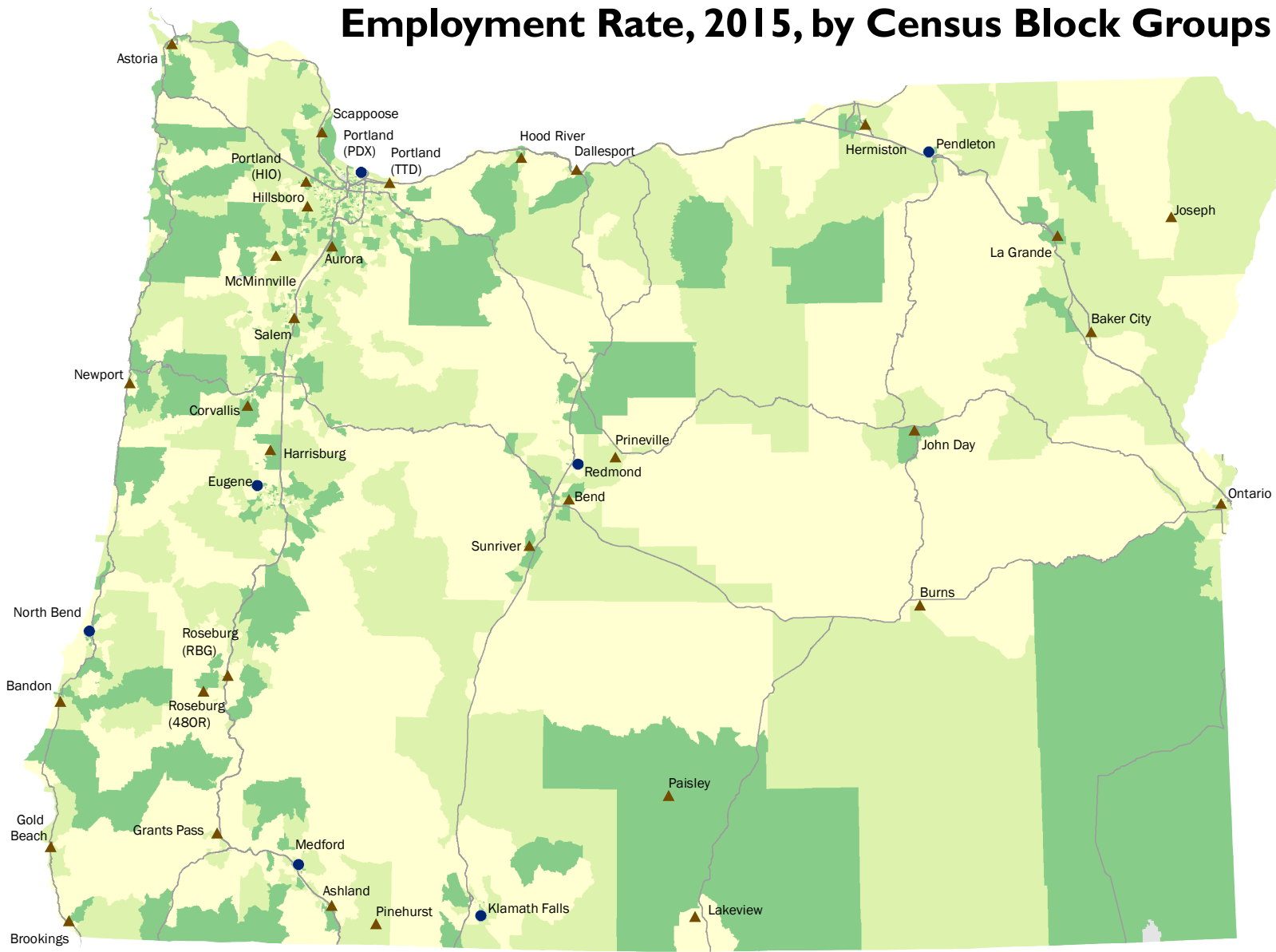
● Airport with Scheduled Service in 2016

▲ Airport with Commercial Use between 2007 and 2016

— Highways

Indicators of Demand

Employment Rate, 2015, by Census Block Groups



This map shows relative employment rate in 2015 at the census block-group level. The darker green indicates block groups where employment was greatest, relative to other areas.

All block groups were ranked by employment rate in 2015 and divided into five equal groups. Points were allotted by group: 5 points for those with the highest employment rate, 1 point for the lowest.

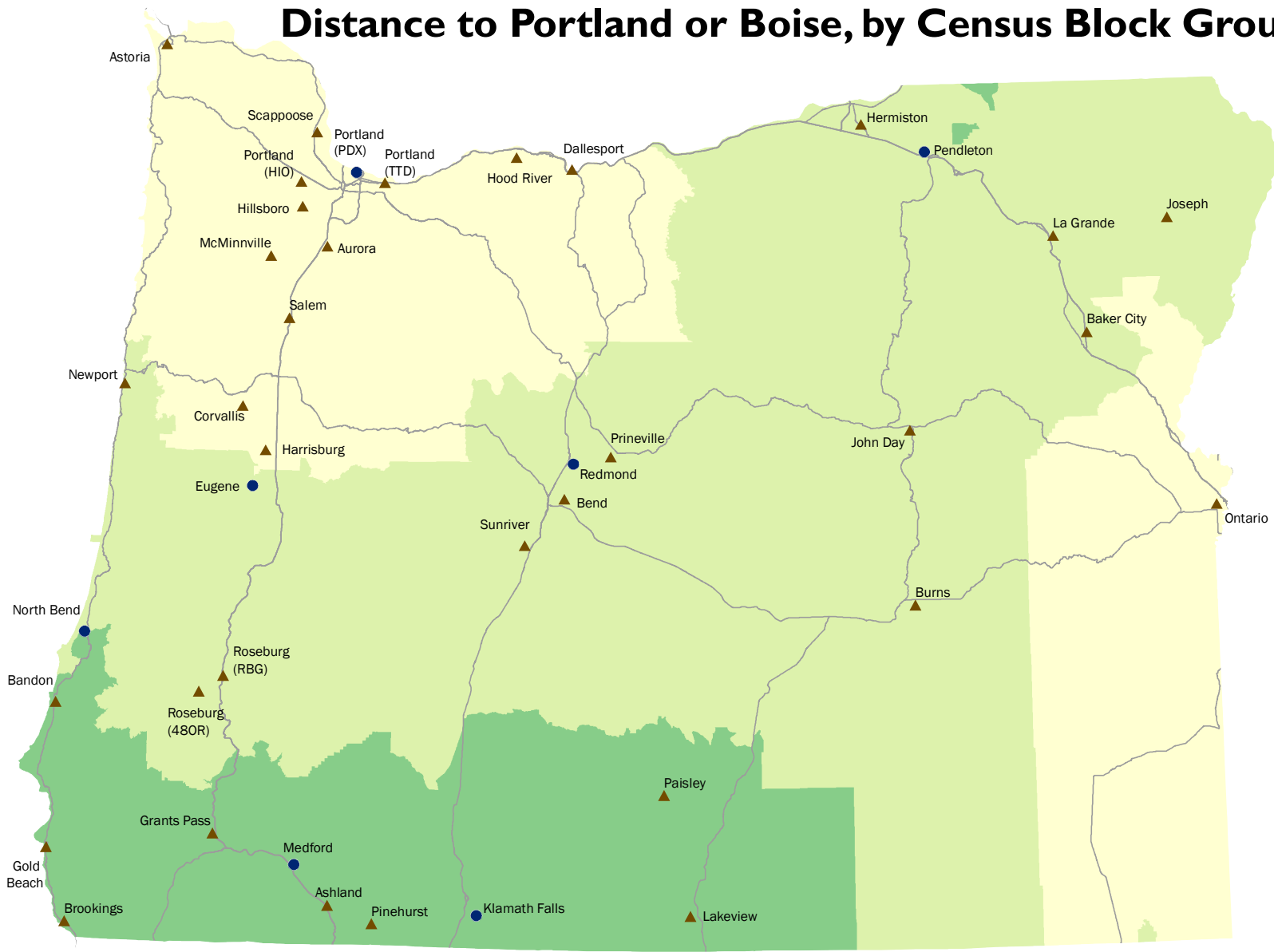
Demand for Air Service, Individual Indicator Score: 3 - 4 Airport with Scheduled Service in 2016

Employment Rate, 2015 5 Airport with Commercial Use between 2007 and 2016

1 - 2 Data unavailable Highways

Indicators of Demand

Distance to Portland or Boise, by Census Block Groups



This map shows the relative distance to a major airport (either Portland or Boise). The darker green indicates block groups furthest away from either airport by road travel time. These airports were given higher scores because people in these areas may be more likely to utilize rural airports than driving to the major airports.

All block groups were ranked by distance and divided into five equal groups. Points were allotted by group: 5 points for those furthest away from and 1 point for the closest to a major airport.

Demand for Air Service, Individual Indicator Score: 3 - 4 5

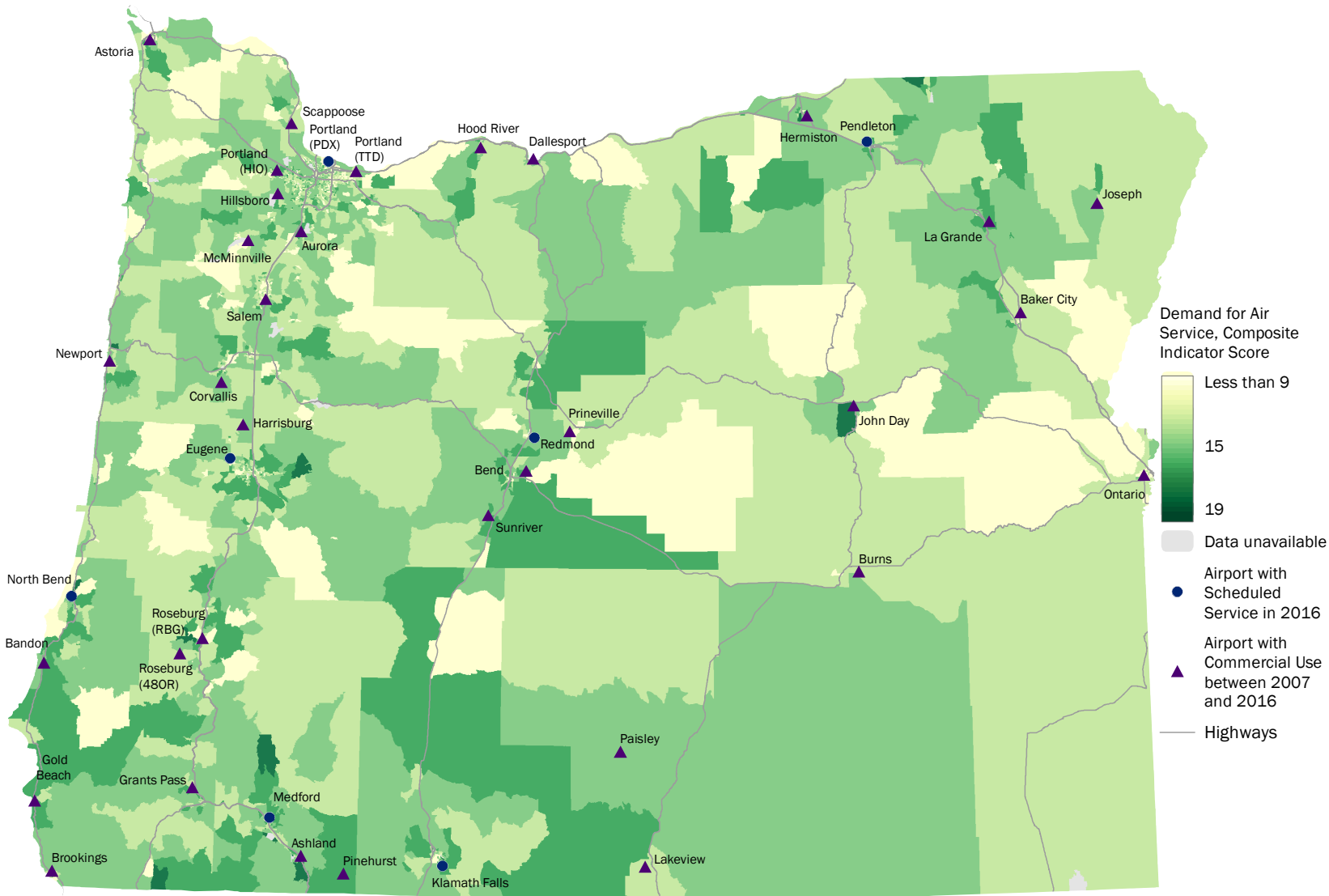
Distance to Major Airport (PDX or BOI) 1 - 2

● Airport with Scheduled Service in 2016 ▲ Airport with Commercial Use between 2007 and 2016

— Highways

Indicators of Demand

Composite Indicator Score, by Census Block Groups

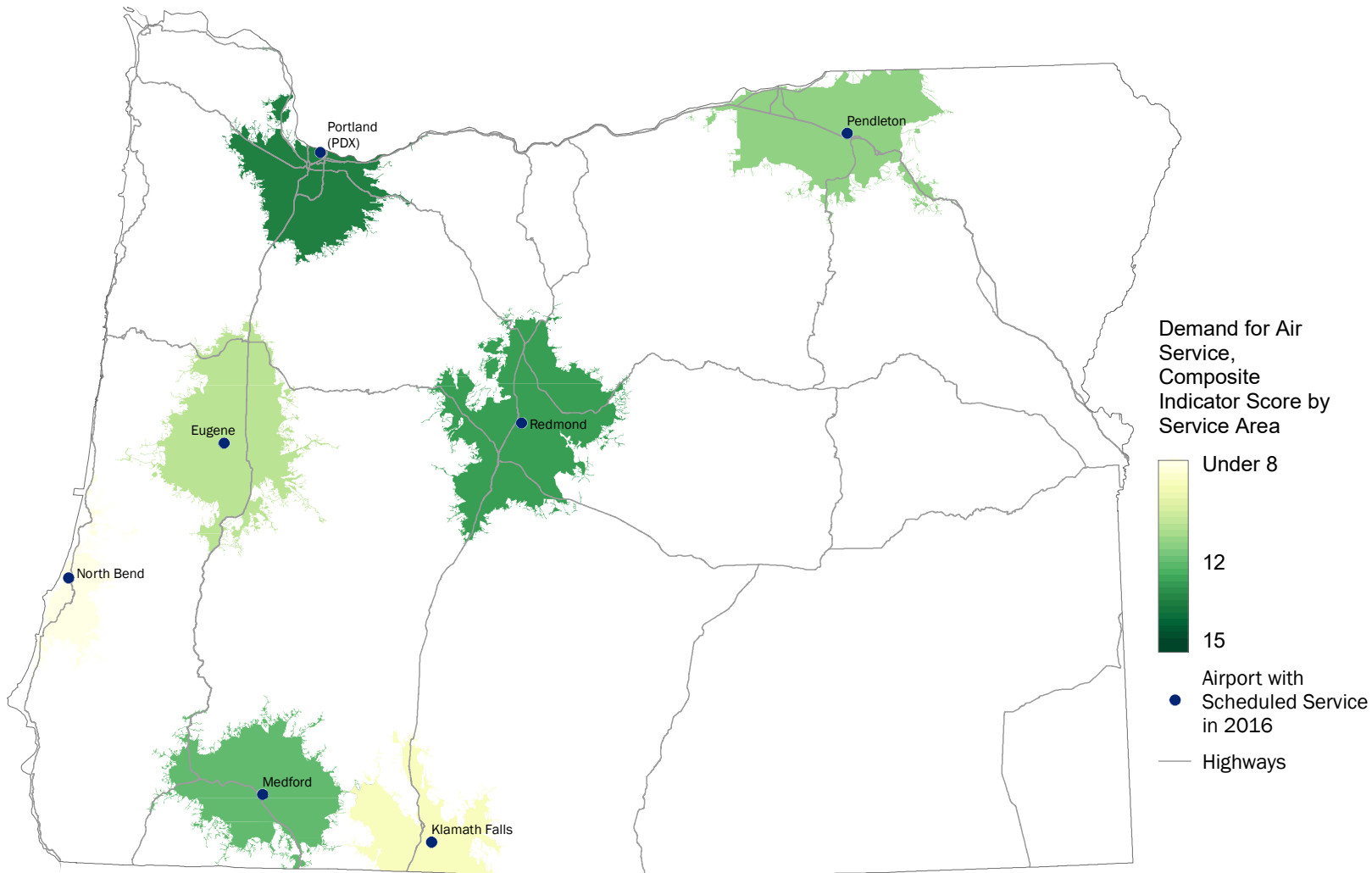


This map shows a composite score that combines the scores for each of the four indicators shown in the earlier maps. Block groups with darkest green received the highest score, relative to lighter shades of green, and indicate areas where investment in rural aviation may yield greater benefits.

The composite indicator score is the sum of the scores for each of the four individual indicators. The highest possible score is 20, but the highest score for an individual block group was 19.

Indicators of Demand

Composite Indicator Score, Market Areas with Scheduled Service

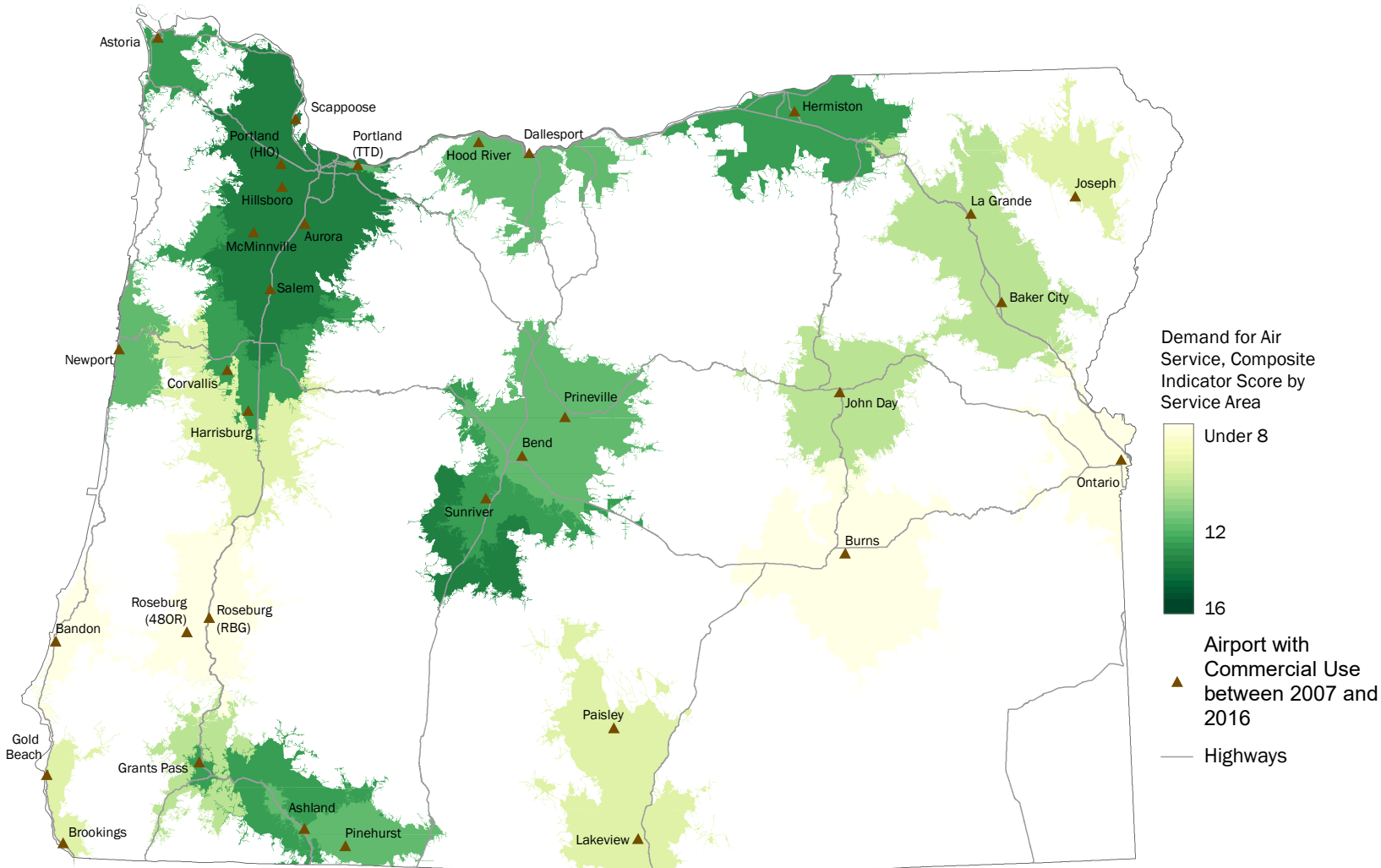


This map shows a composite score by market area, for the markets that currently have scheduled service. The score ranks market areas relative to each other.

The composite indicator score is the sum of the scores for each of the four individual indicators. The score for each market area is aggregated from the combined scores of the census block groups underlying the 60-mile travelshed, weighted by percent coverage. The highest possible score is 20, but the highest score for an individual market area was 15.

Indicators of Demand

Composite Indicator Score, Market Areas with Unscheduled Service



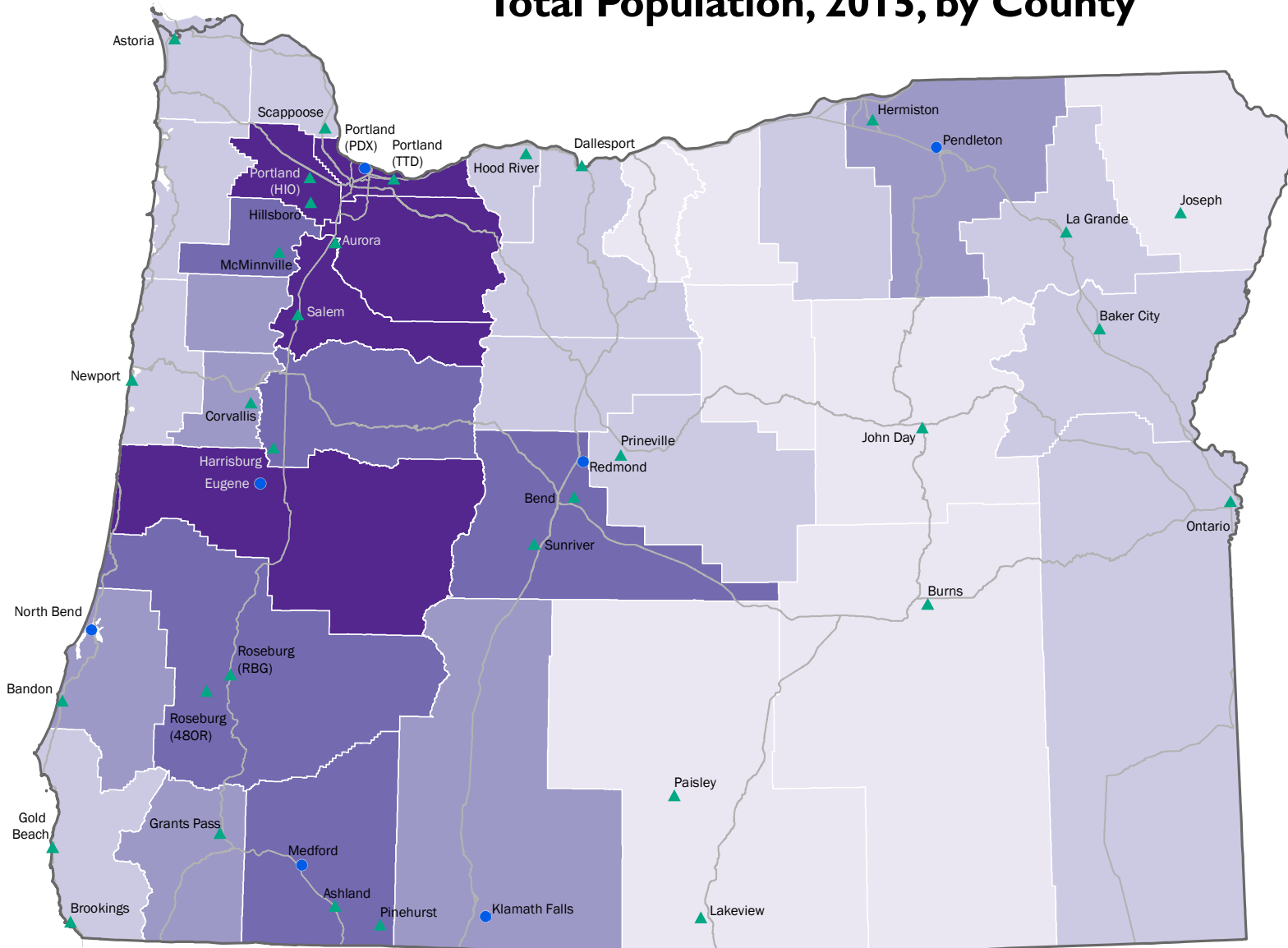
This map shows a composite score by market area, for markets with unscheduled service.¹ The score ranks market areas relative to each other.

The composite indicator score is the sum of the scores for each of the four individual indicators. The score for each market area is aggregated from the combined scores of the census block groups underlying the 60-mile travelshed, weighted by percent coverage. The highest possible score is 20, but the highest score for an individual market area was 16.

Note: ¹ Unscheduled enplanement data comes from Federal Aviation Administration's Air Carrier Activity Information System (ACAIS) database. Data for most unscheduled flights are reported voluntarily by the air carrier, so counts shown on the map most likely underestimate actual enplanements, especially for rural airports. While these are the best data available, readers should use caution in drawing conclusions about current level of demand by airport. This list of airports includes those that had a record of at least 10 enplanements between 2007 and 2016. This emphasizes markets that are more likely to have demand to support more consistent unscheduled or scheduled service.

Indicators of Demand-Population

Total Population, 2015, by County



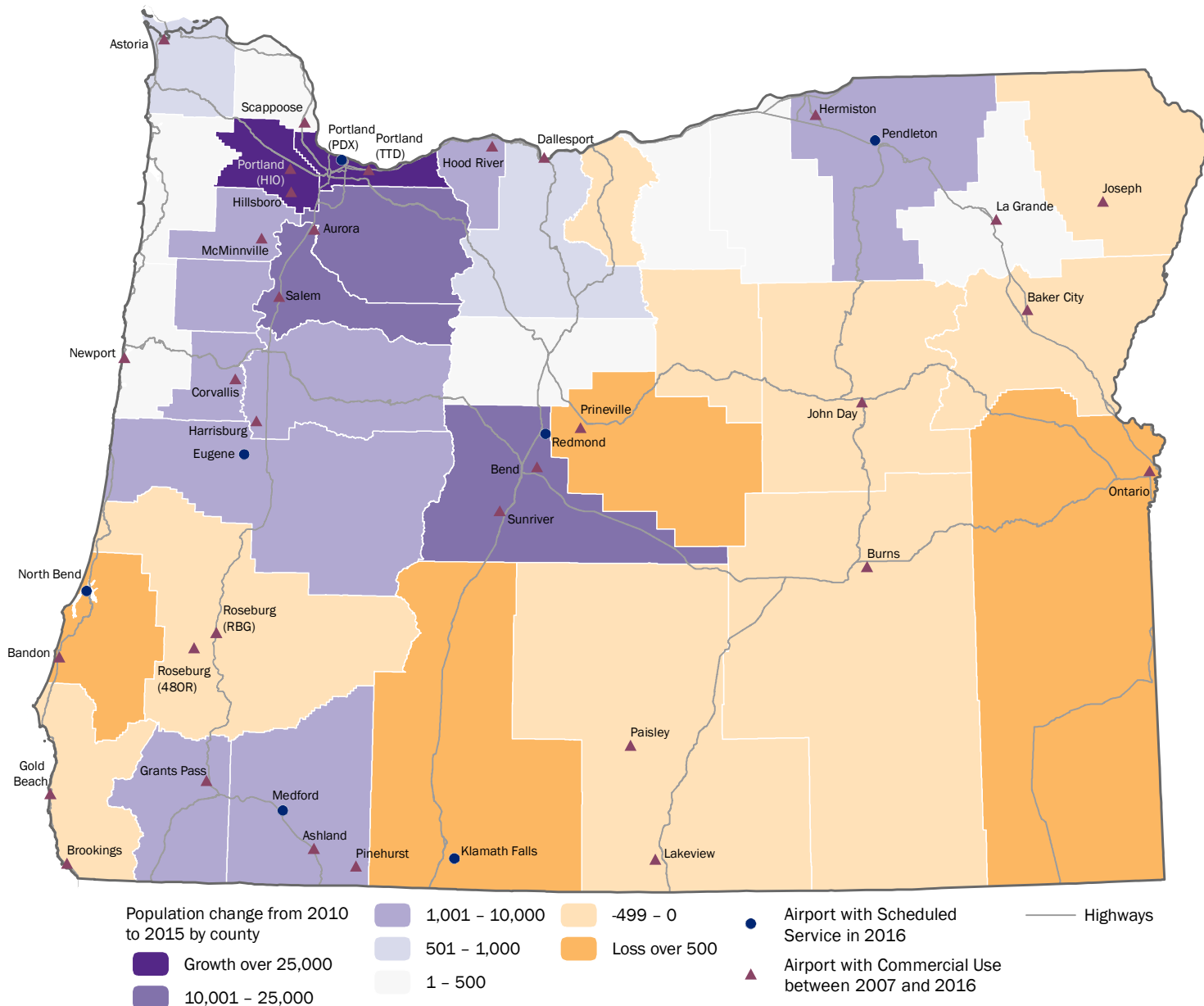
While the population indicator for demand represents population change, to reveal areas of the state where population may be changing in the future, total population is important for measuring overall demand.

This map shows total population by county. The highest population in the state is in the Willamette Valley. The most populous county in central Oregon is Deschutes, and in Eastern Oregon it is Umatilla County.



Indicators of Demand-Population

Net Population Change, 2010-2015, by County

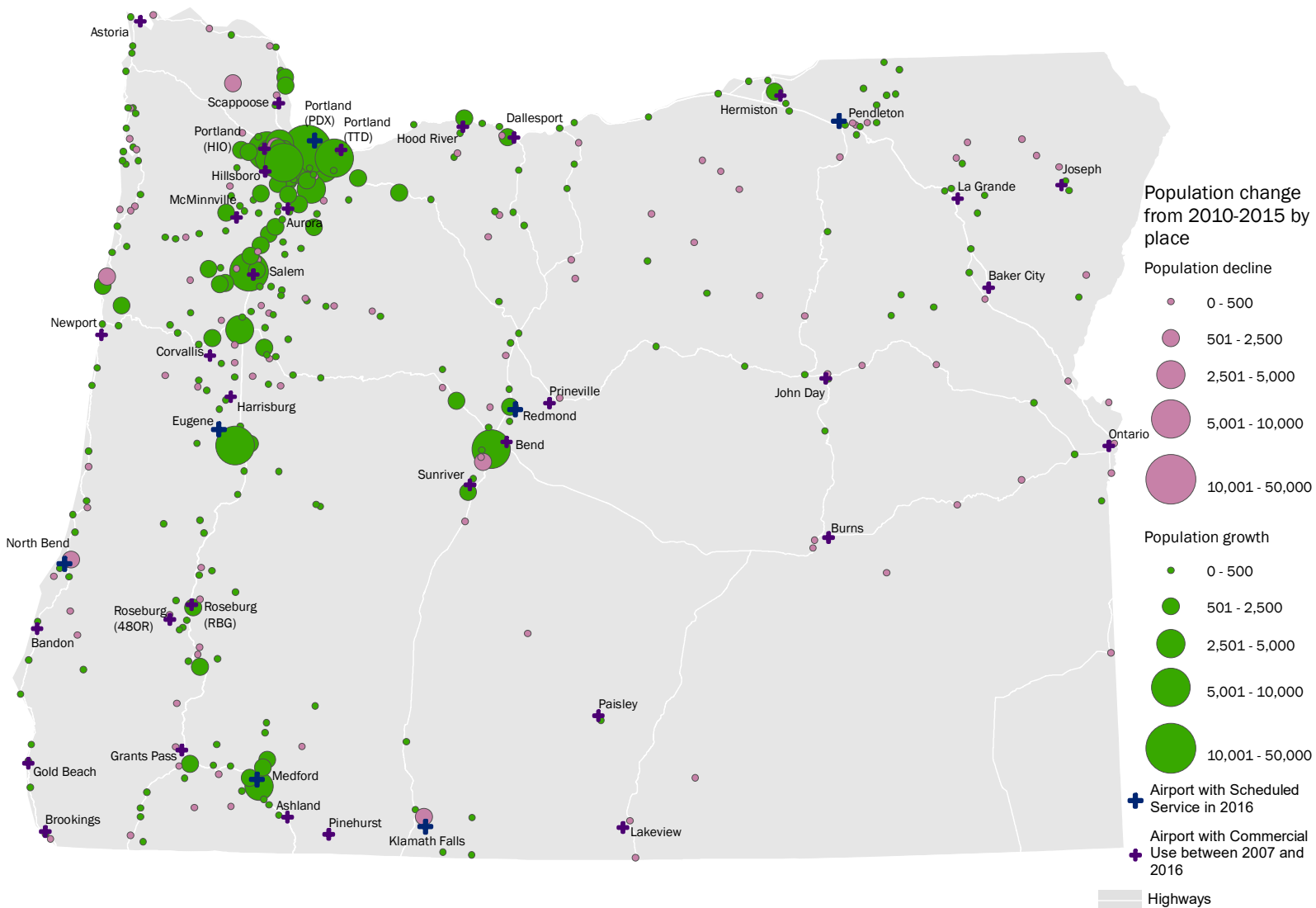


While the population indicator for demand represents population change, to reveal areas of the state where population may be changing in the future, total population is important for measuring overall demand.

This map shows the net population change by county. Areas of highest growth include the Portland Metro region and Deschutes County. In Easter Oregon, Umatilla County stood out as having gained population, compared to the rest of the counties in the region which stayed the same or lost population during the same period.

Indicators of Demand-Population

Population Change from 2010-2015, by Place

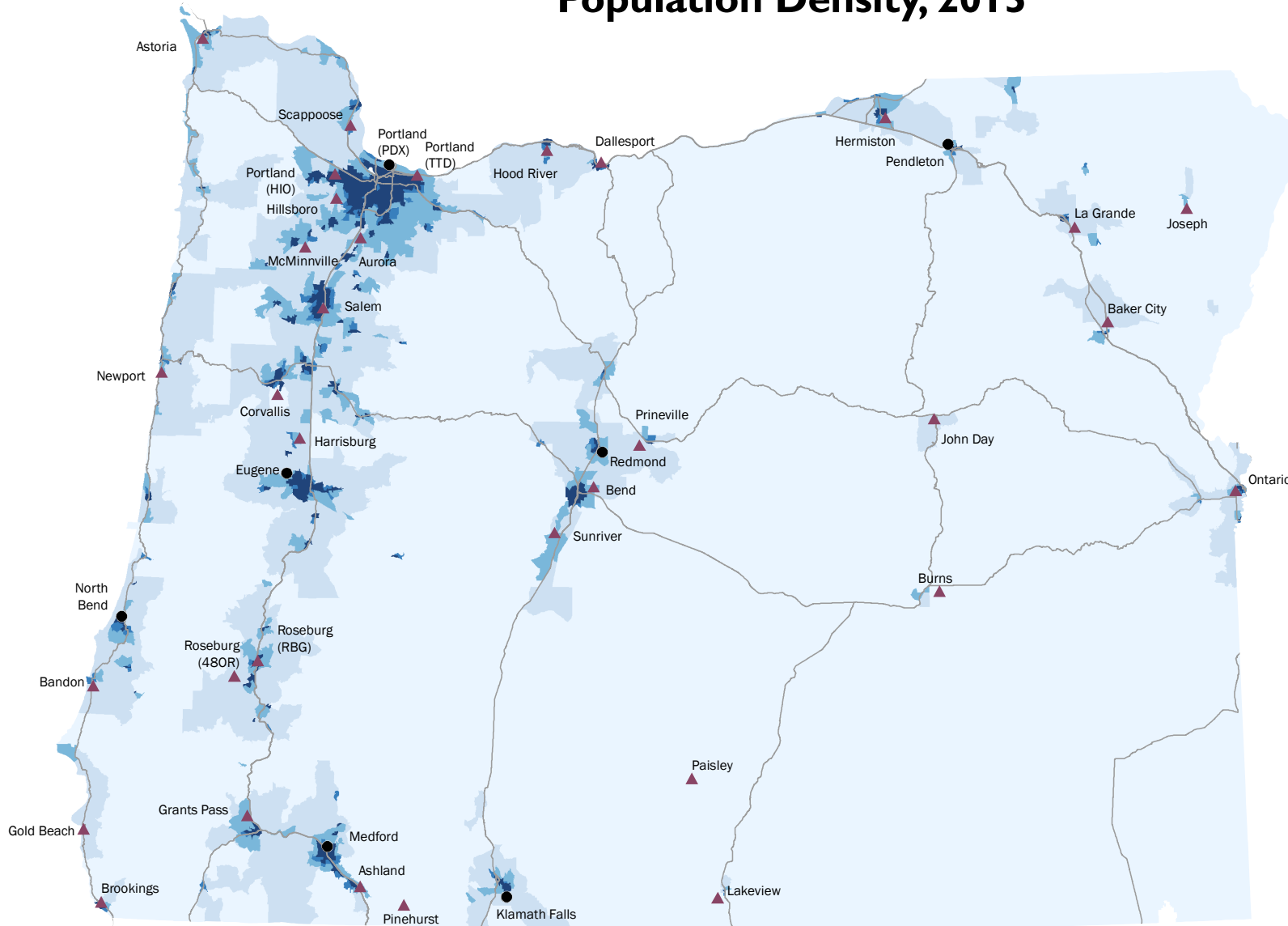


While the population indicator for demand represents population change, to reveal areas of the state where population may be changing in the future, total population is important for measuring overall demand.

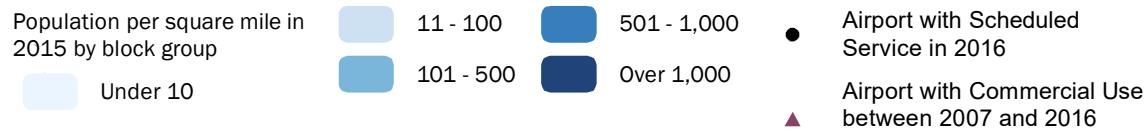
This map shows the total population gain or decline by community, throughout Oregon. By the relative size of the circles, it reveals where within counties populations were growing or shrinking. For example, growth in Umatilla County was largely driven by growth in Hermiston.

Indicators of Demand-Population

Population Density, 2015

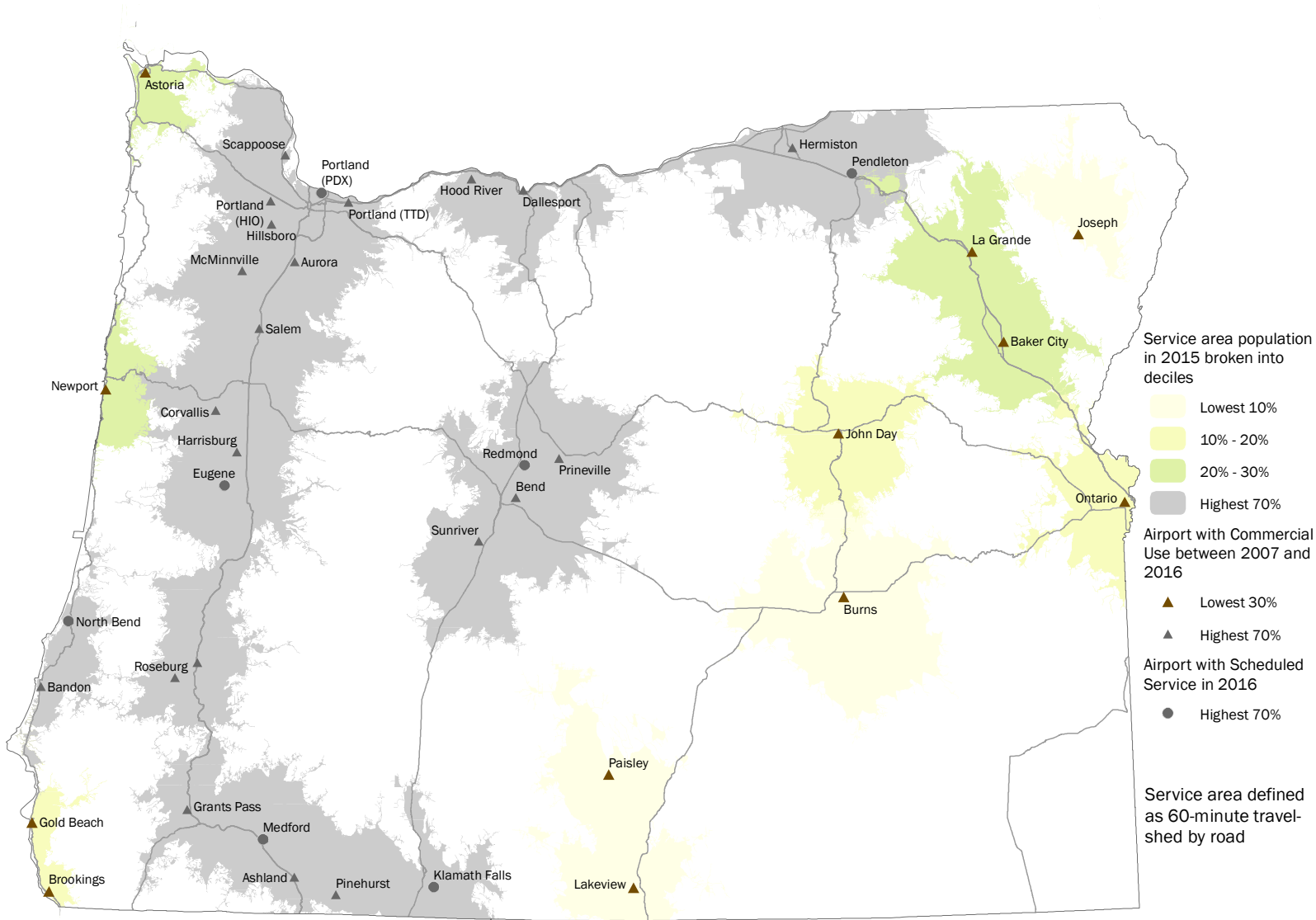


This map shows population density in proximity to airports with scheduled and unscheduled service. This illustrates how people are distributed around potential air service markets.



Indicators of Demand-Population

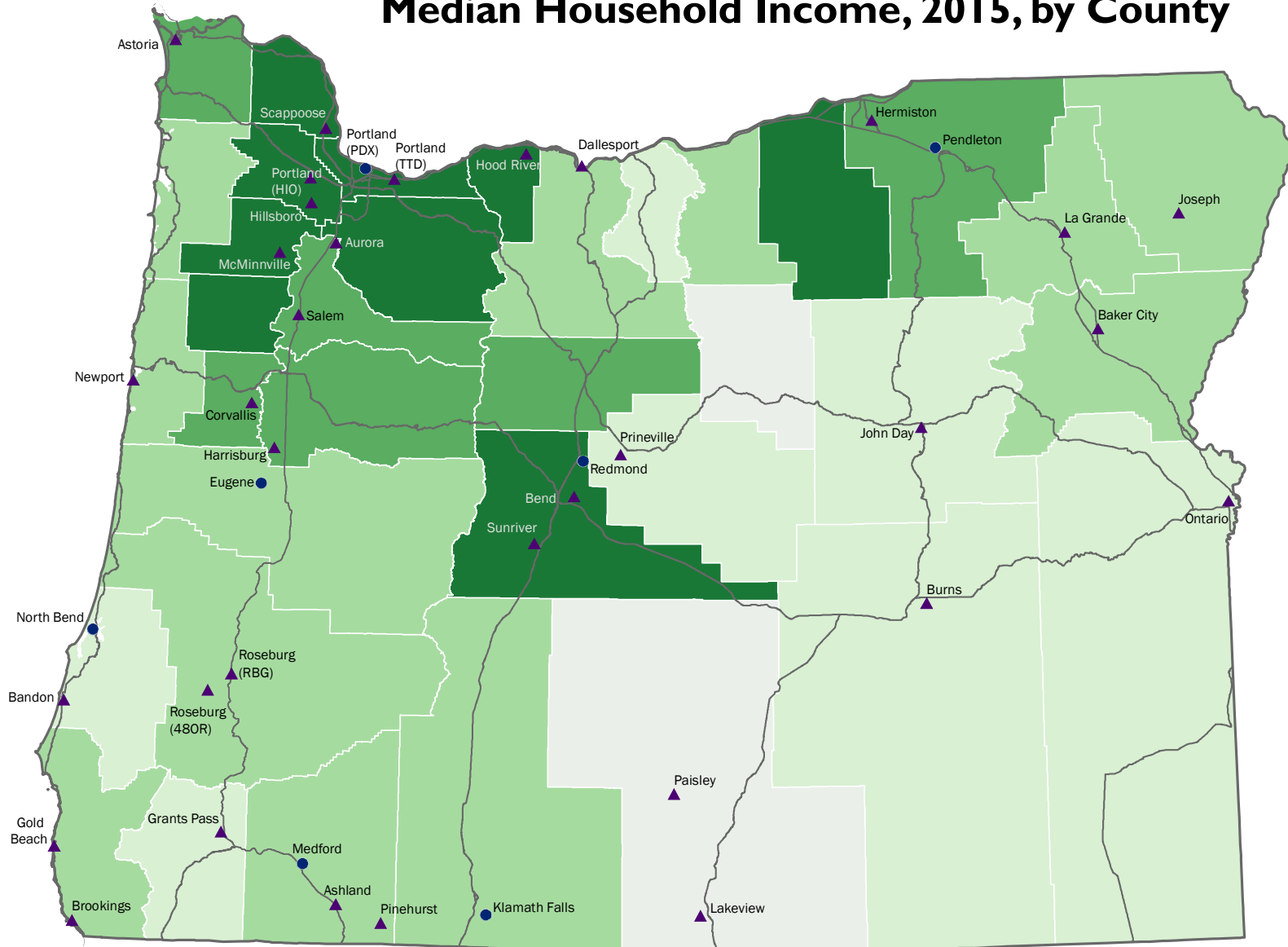
Markets with Unscheduled Service, Grouped by Population Size in 2015



This map highlights the markets with unscheduled service that have the lowest population relative to each other. The market areas were ranked based on total population within the 60-minute travel-shed. Those in the lowest 10 percent are shown in beige, while those in the highest 70 percent of all market areas are shown in gray.

Indicators of Demand-Income

Median Household Income, 2015, by County



This map shows the median household income by county. The highest incomes are concentrated in the Portland Metro Area and Deschutes County, with high incomes relative to the rest of the state located in Morrow and Umatilla Counties.

Median Household Income in 2015 by County

Under \$35,000

\$35,001 - \$40,000

\$40,001 - \$45,000

\$45,001 - \$50,000

Over \$50,000

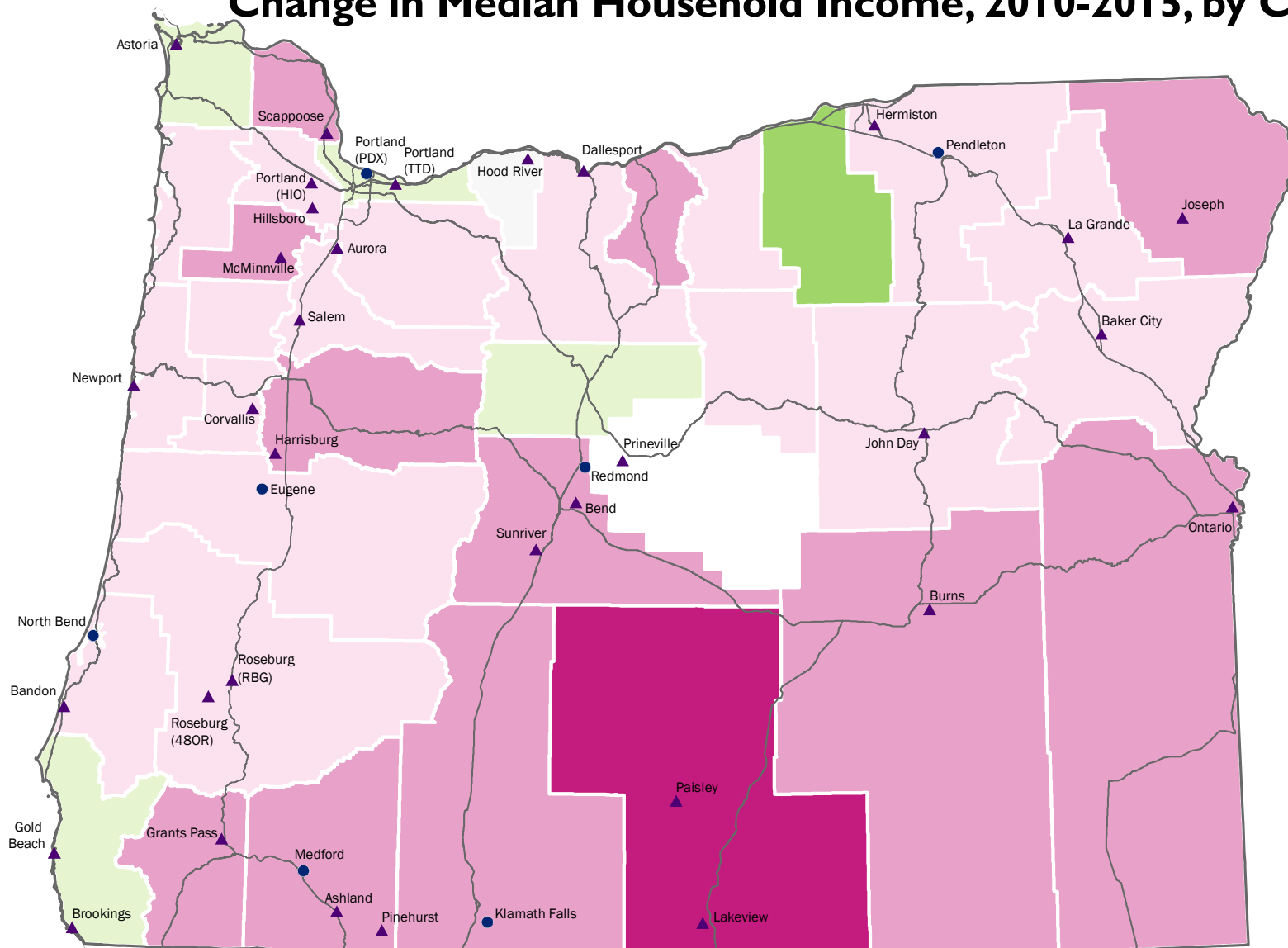
● Airport with Scheduled Service in 2016

▲ Airport with Commercial Use between 2007 and 2016

— Highways

Indicators of Demand-Income

Change in Median Household Income, 2010-2015, by County



This map shows the change in median household income by county. Adjusted for inflation, median household income has declined throughout much of the state. Highest growth has occurred in Morrow County. Slight growth has occurred in a few other parts of the state.

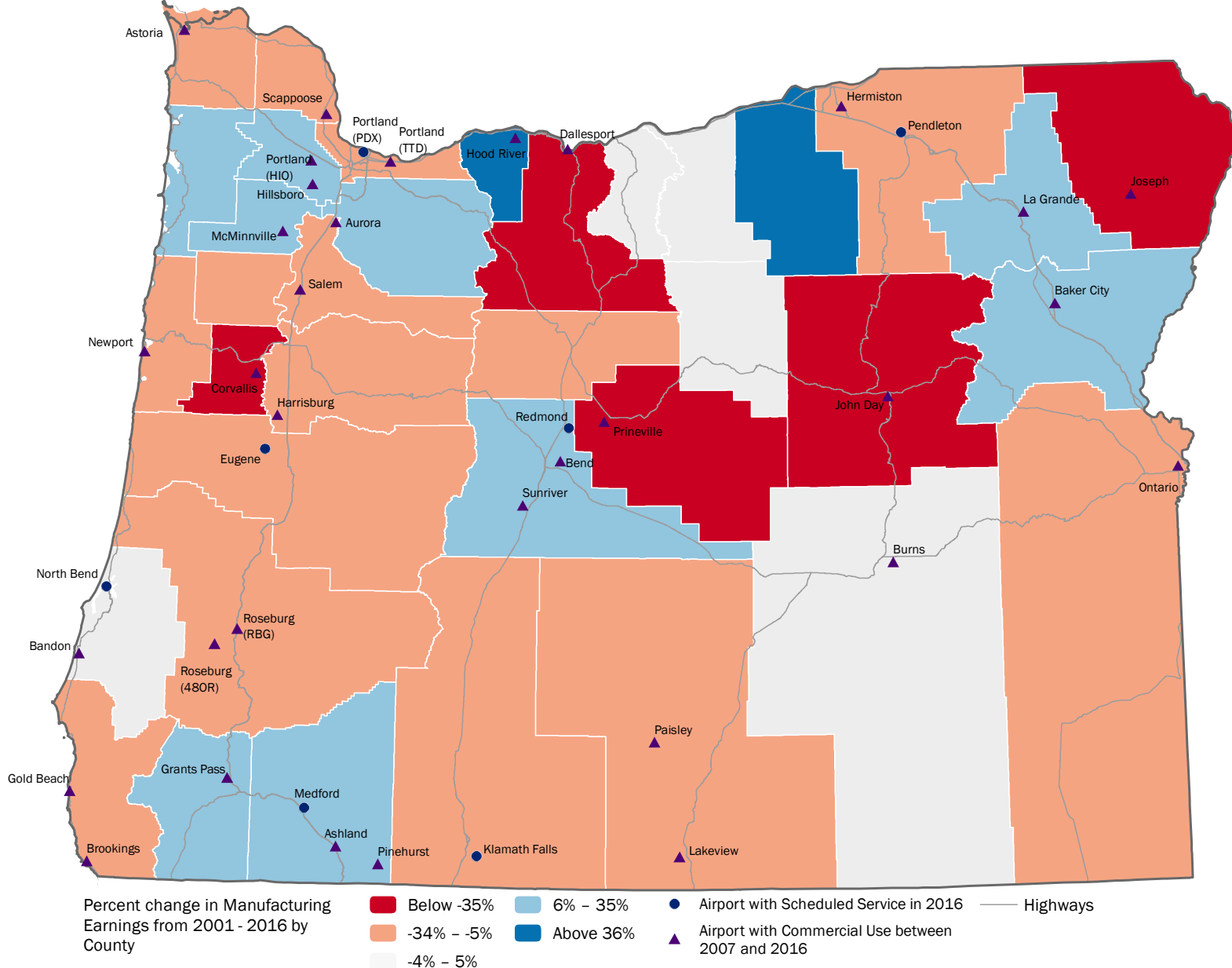
Change in Inflation Adjusted Median Household Income from 2010 to 2015 by County

- \$9,999 - -\$3,000
- \$2,999 - -\$100
- \$99 - \$100
- \$101 - \$3,000
- Increase over \$3,000

- Airport with Scheduled Service in 2016
- Airport with Commercial Use between 2007 and 2016
- Highways

Indicators of Demand-Income

Change in Manufacturing Sector Earnings between 2001 and 2016, by County

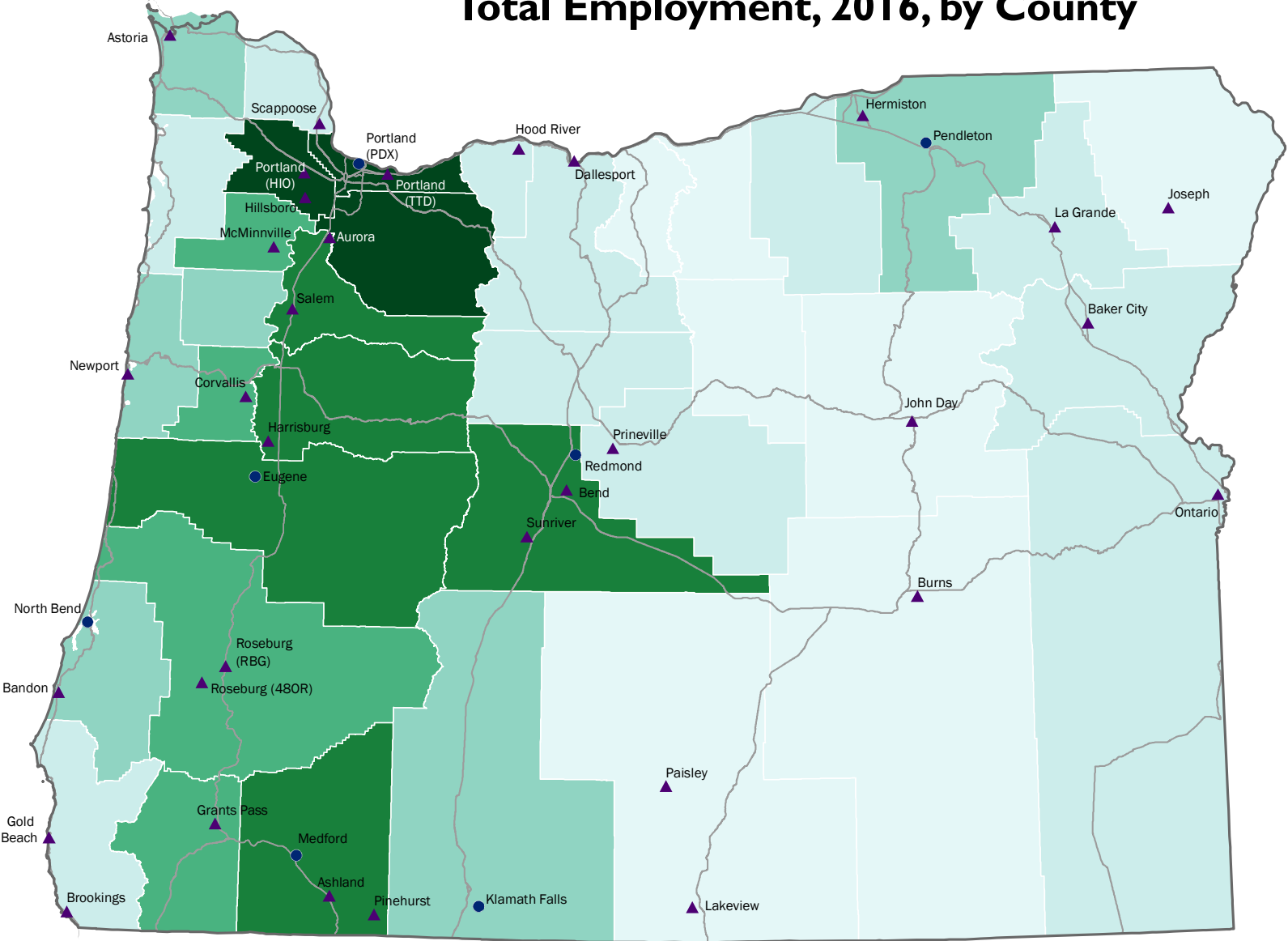


This map shows the change in county-level earnings in the manufacturing sector. This sector is positively correlated with demand for air service.

This map shows that declines in inflation-adjusted earnings are widespread, with gains concentrated in a few regions of the state that roughly correspond to gains in employment (see previous map).

Indicators of Demand-Employment

Total Employment, 2016, by County



Total Non-farm, Private Employment in 2016 by county

5,001 - 15,000
 15,001 - 30,000
 30,001 - 50,000
 50,001 - 200,000
 Over 200,000

● Airport with Scheduled Service in 2016
 ▲ Airport with Commercial Use between 2007 and 2016

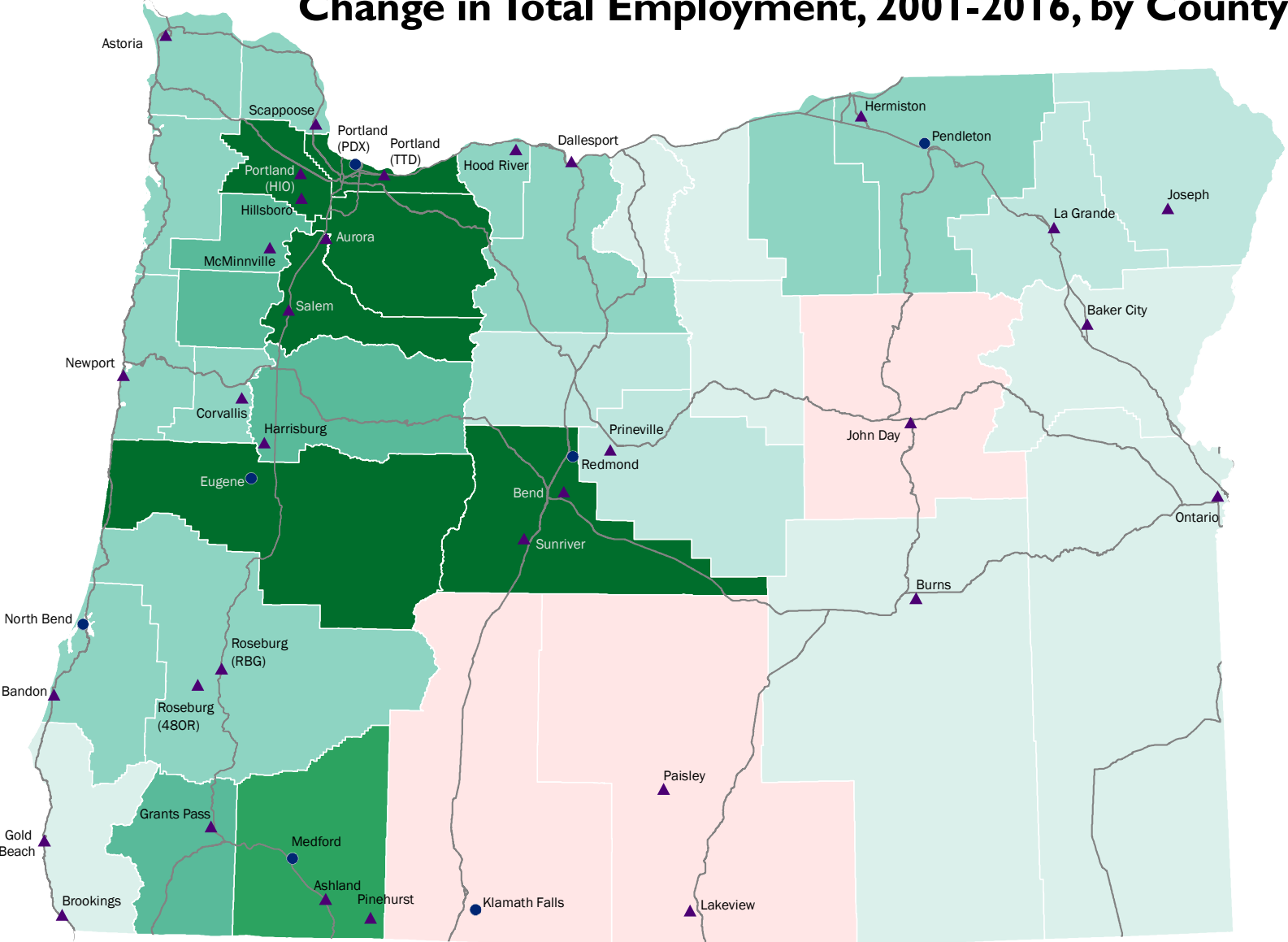
— Highways

While the demand indicator we use for employment is the employment rate, which measures the percent of the working population that has a job, total employment is important to overall demand. It broadly correlates with population

Like population, total employment is highest in the Willamette Valley, and Deschutes County.

Indicators of Demand-Employment

Change in Total Employment, 2001-2016, by County

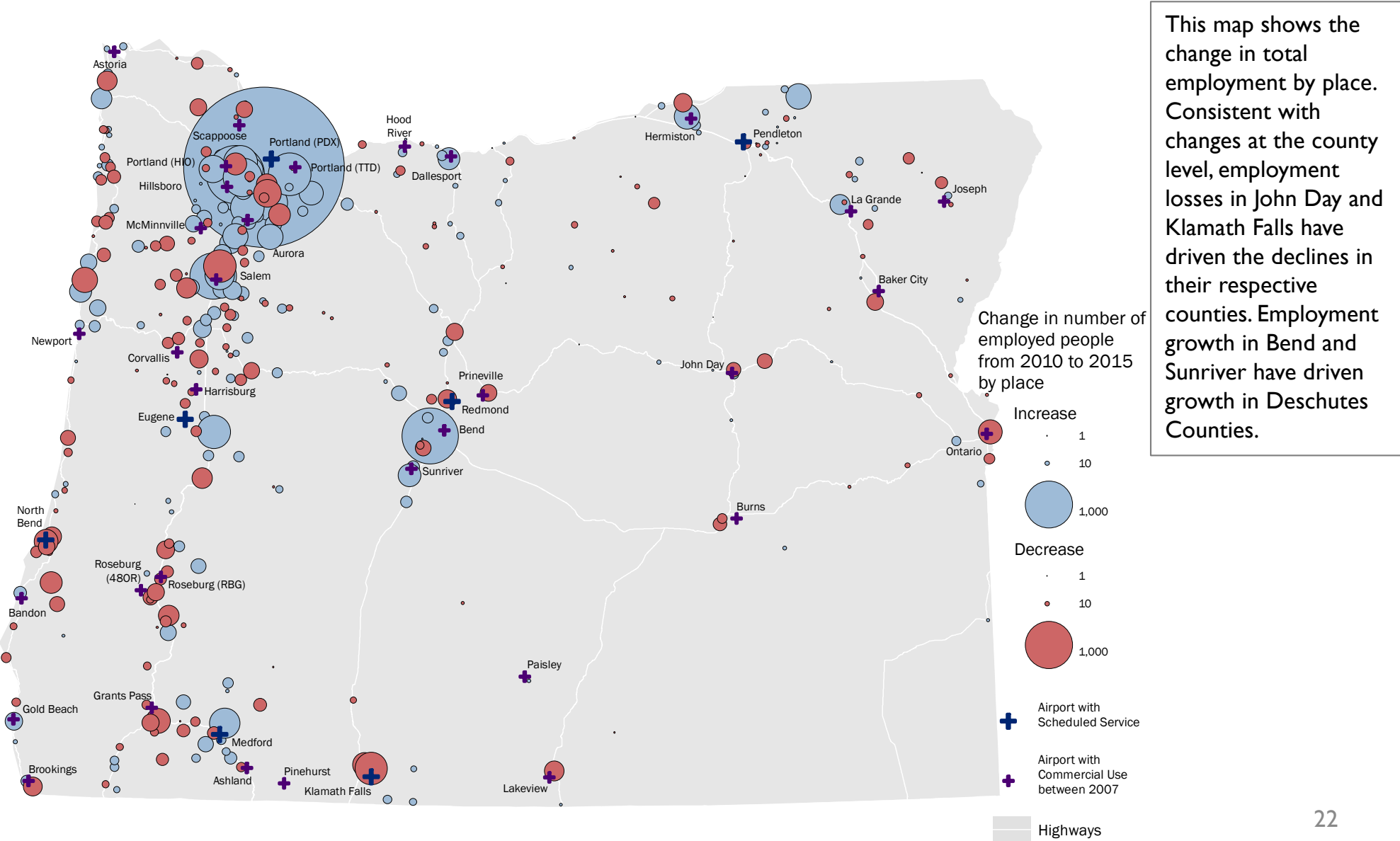


Change in Private, Non-Farm Employment by County, 2001-2016	 1 - 500	 5,001 - 10,000	● Airport with Scheduled Service in 2016	— Highways
	 501 - 1,000	 10,001 - 20,000		
	 1,001 - 5,000	 Over 20,000		
 -500 - 0			▲ Airport with Commercial Use between 2007 and 2016	

This map shows the change in total employment. Since 2001, most of the state's counties have seen increases in total employment. Counties in Eastern Oregon have lost employment or stagnated, while job growth has concentrated in the Portland metro region, Lane County, and Deschutes County.

Indicators of Demand-Employment

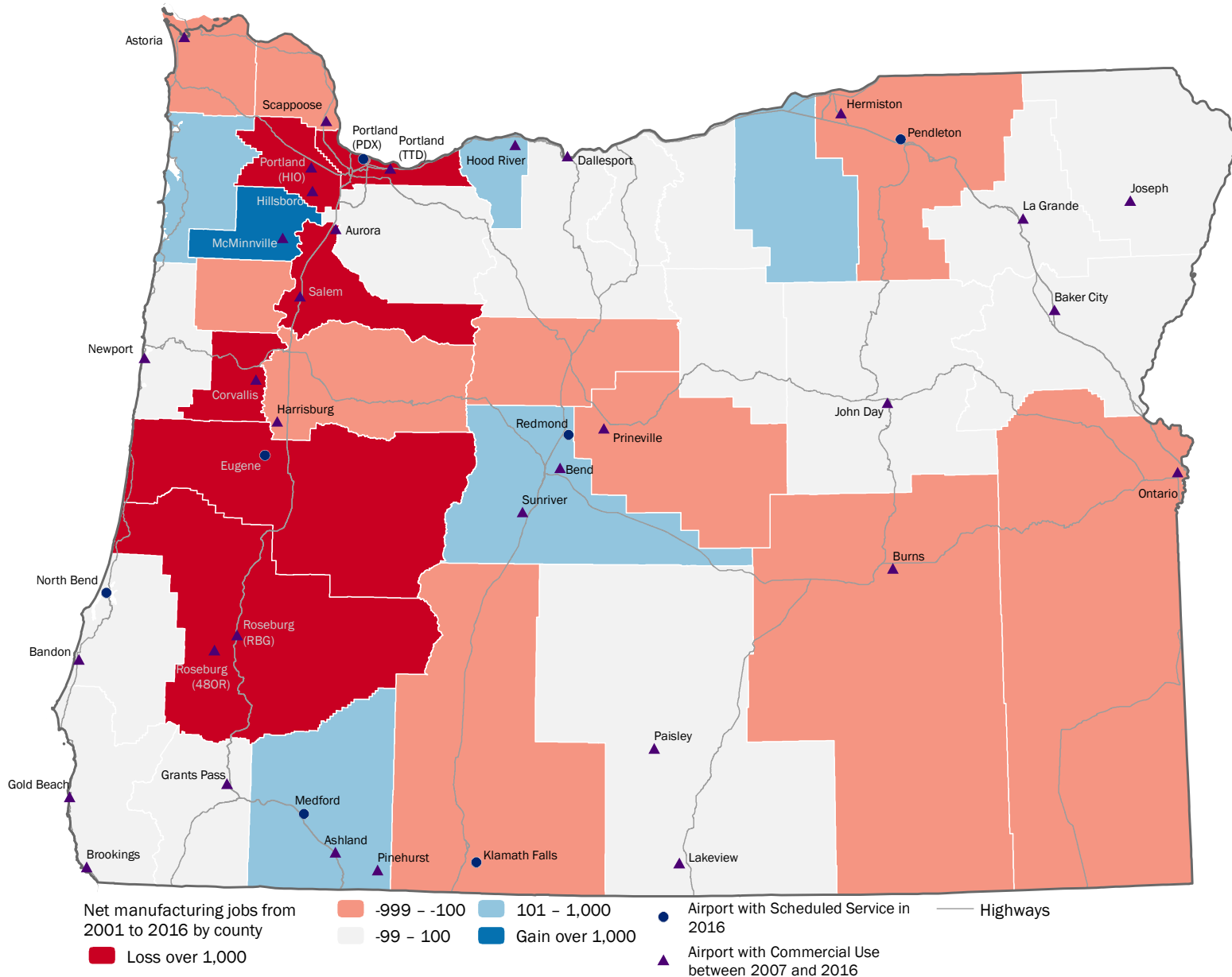
Change in Total Employment, 2010-2016, by Place



This map shows the change in total employment by place. Consistent with changes at the county level, employment losses in John Day and Klamath Falls have driven the declines in their respective counties. Employment growth in Bend and Sunriver have driven growth in Deschutes Counties.

Indicators of Demand-Employment

Change in Manufacturing Jobs between 2001 and 2016, by County

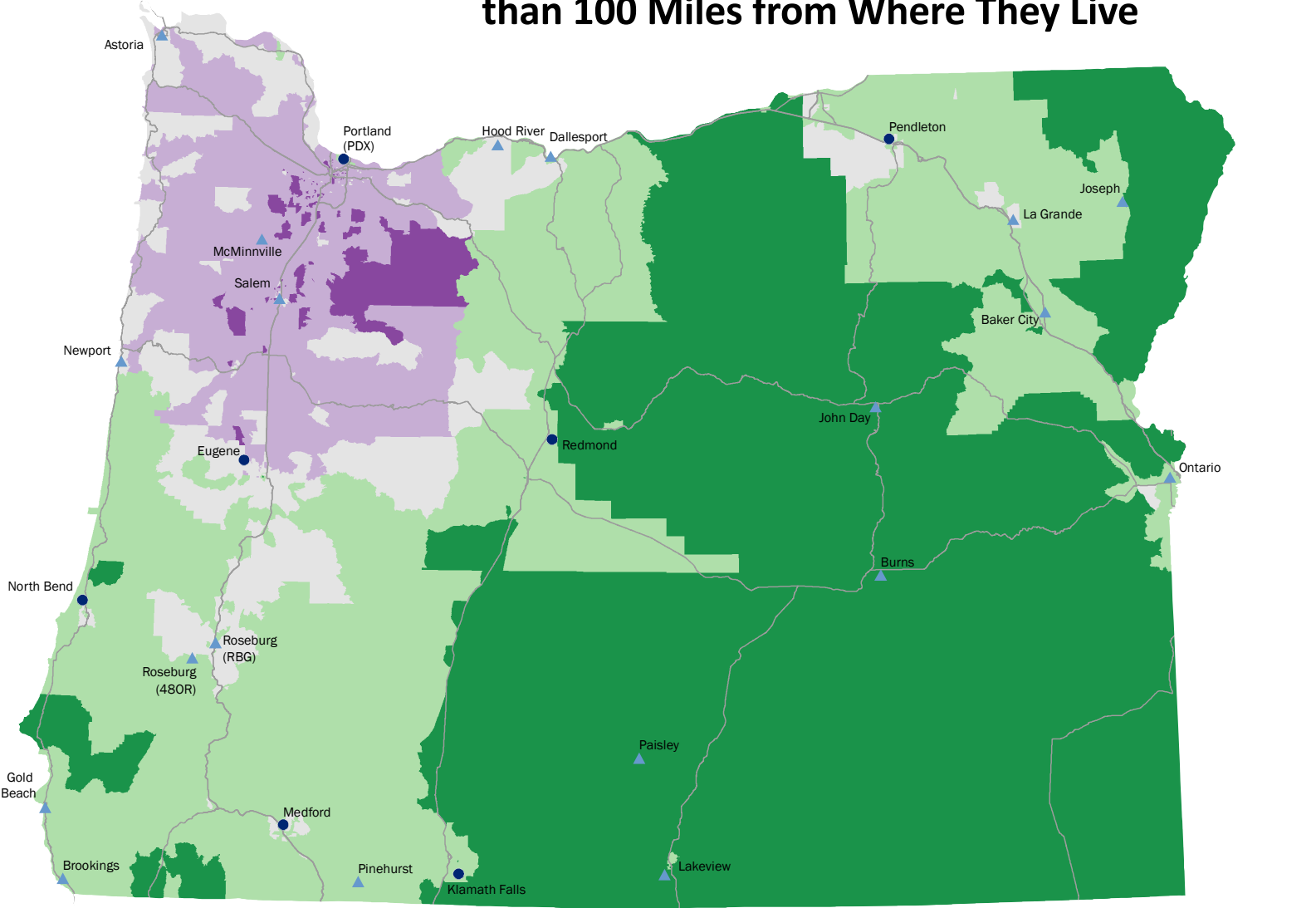


This map shows the change in county-level employment in the manufacturing sector. This sector is positively correlated with demand for air service.

This map shows manufacturing jobs are declining throughout much of Oregon, with gains concentrated in a few areas.

Indicators of Demand-Employment

Percent of the Employed Population Who Are Employed More than 100 Miles from Where They Live



This map shows the percent of the population by census block group who's employer is located more than 100 miles from where they live. The darkest green areas indicate that more than 20 percent of workers live more than 100 miles away from their employers. This could mean they commute long distances each day, or that they telecommute.

Workers who live far away from their employer, on average, likely have a higher demand for air travel for business purposes.

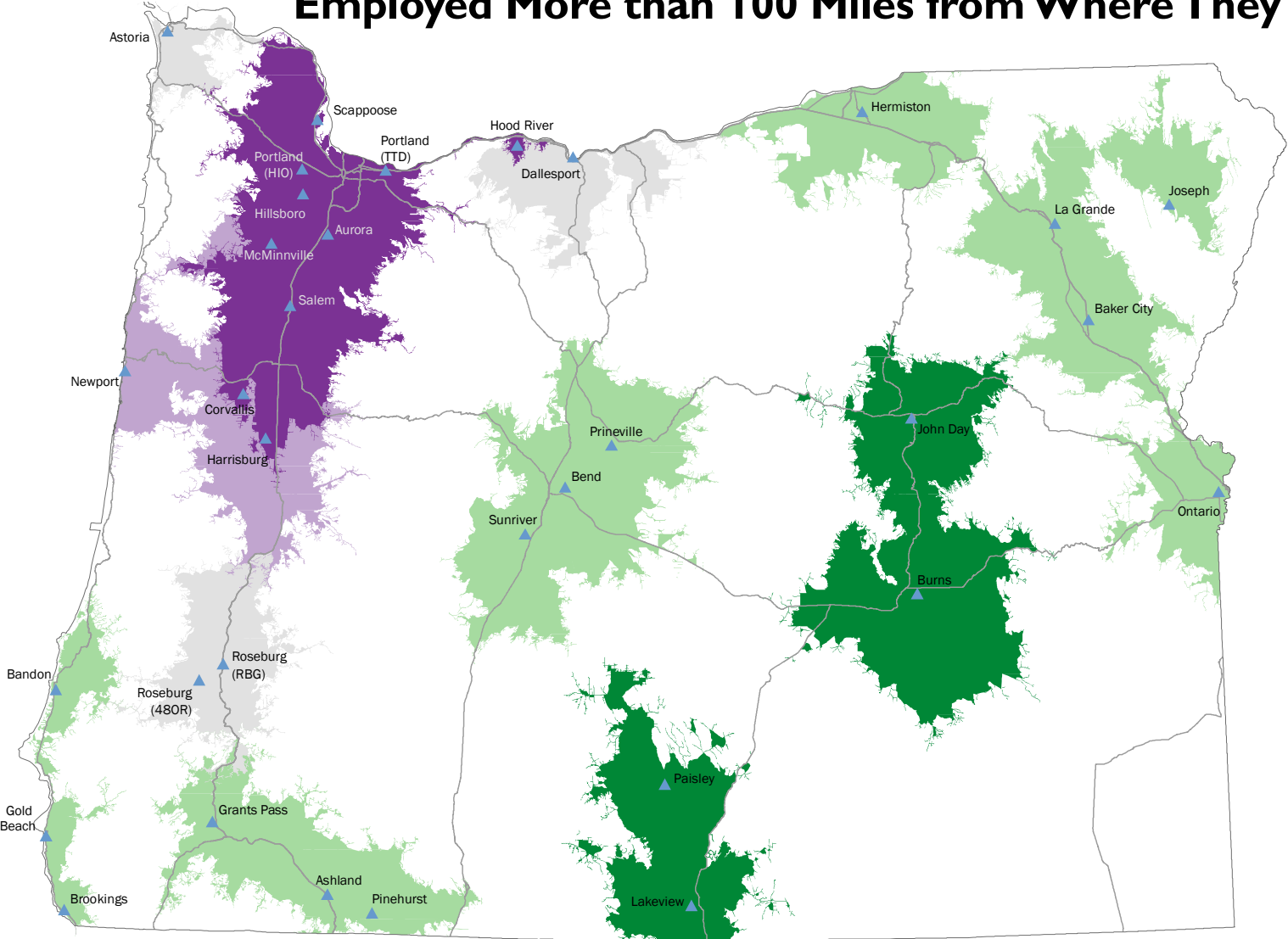
Percent of people employed who work more than 100mi from home, by block group

- 0% - 2%
- 3% - 5%
- 6% - 10%
- 11% - 20%
- 21% - 100%

● Airport with Scheduled Service in 2016
▲ Airport with Commercial Use between 2007 and 2016
 — Highways

Indicators of Demand-Employment

Percent of the Employed Population Who Are Employed More than 100 Miles from Where They Live



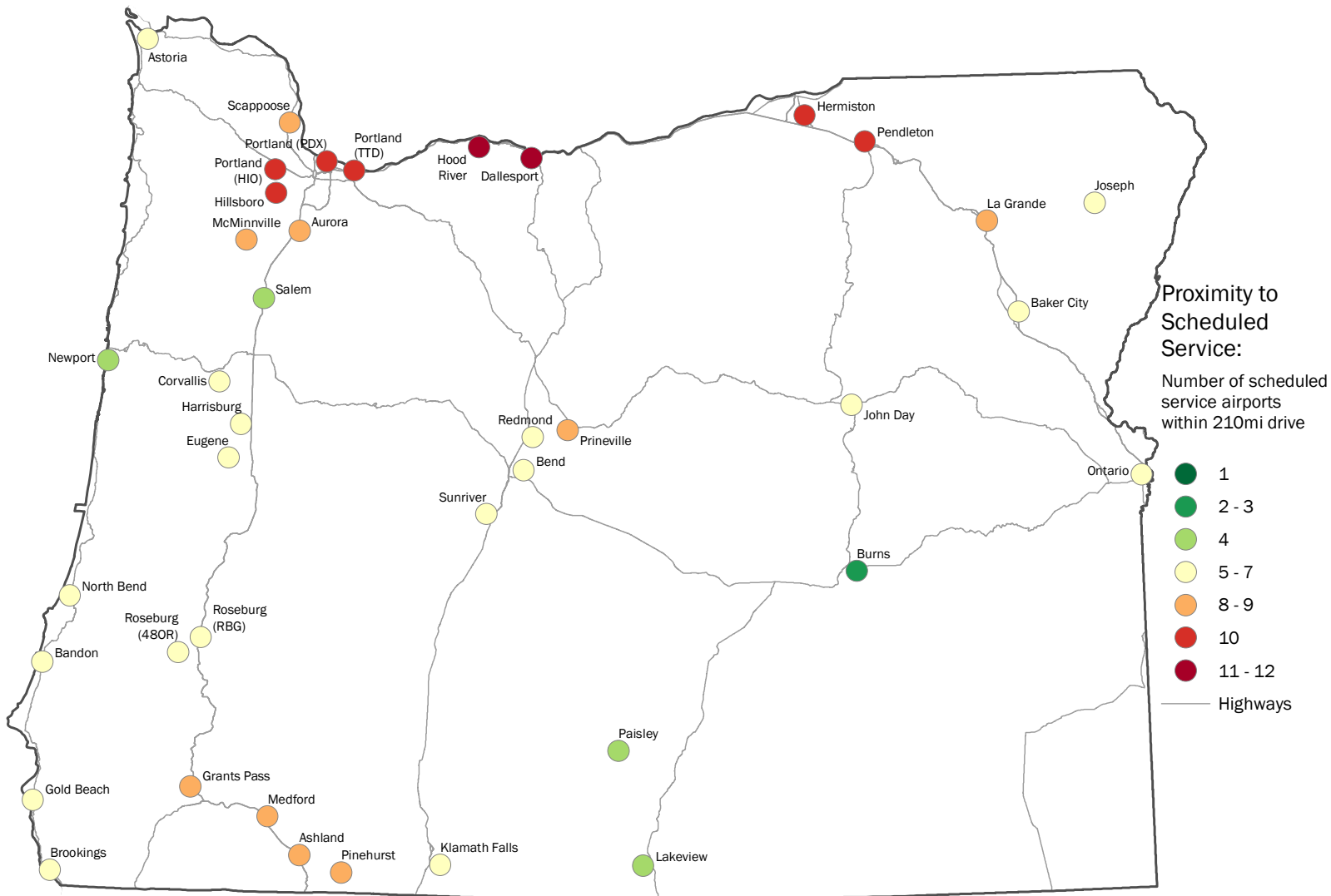
This map shows the percent of the population by market area who's employer is located more than 100 miles from where they live. The darkest green areas indicate that more than 20 percent of workers live more than 100 miles away from their employers. This could mean they commute long distances each day, or that they telecommute.

Workers who live far away from their employer, on average, likely have a higher demand for air travel for business purposes.

- 0% - 2%
 11% - 20%
 21% - 30%
 6% - 10%
- Airport with Commercial Use between 2007 and 2016
- Highways
- Service area defined as 60-minute travelshed by road

Indicators of Demand-Access to Other Markets

Access to Airports with Scheduled Service Within 210 Miles, by Market Area

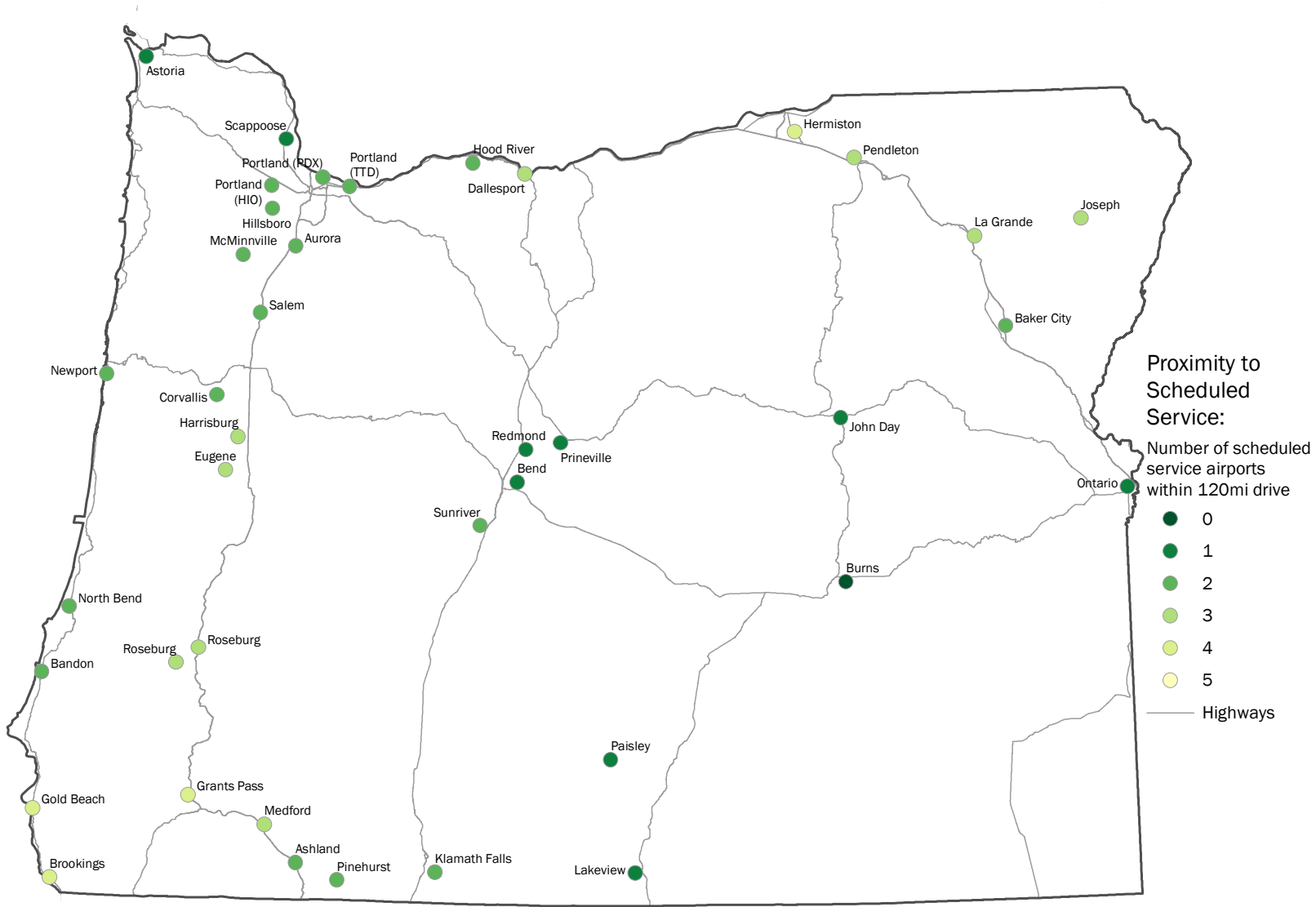


This map shows for each market we studied the number of airports with schedule service within 210 miles. This illustrates the number of choices potential travelers have when making a decision about how they will travel.

Markets in red would face more potential competition from other airports for capturing travelers. The potential travelers in the markets in green would have fewer reasonable choices of airports, and may be more likely to use local air service.

Indicators of Demand-Access to Other Markets

Access to Airports with Scheduled Service Within 120 Miles, by Market Area

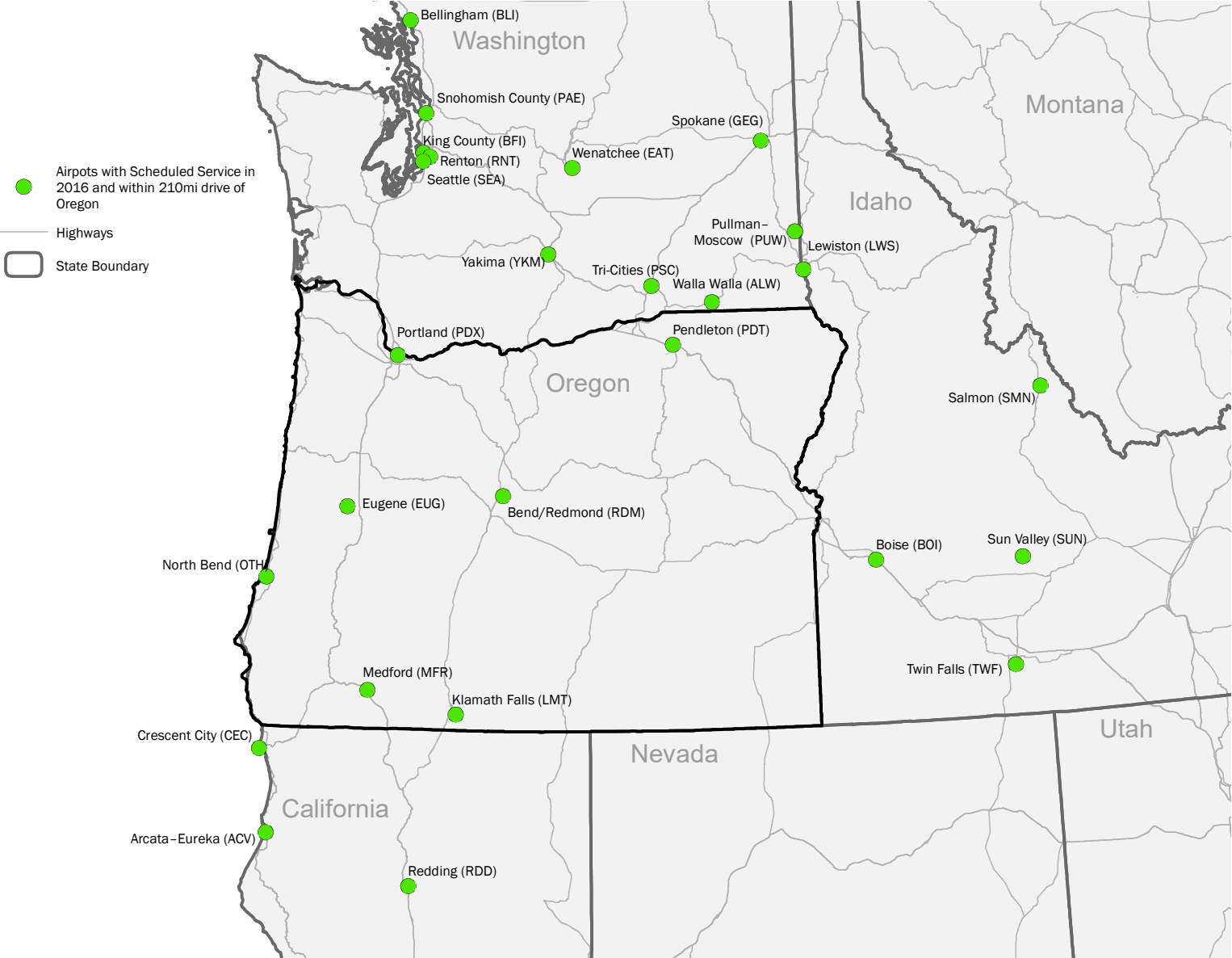


This map shows for each market we studied the number of airports with schedule service within 120 miles. This illustrates the number of choices potential travelers have when making a decision about how they will travel.

Markets in red would face more potential competition from other airports for capturing travelers. The potential travelers in the markets in green would have fewer reasonable choices of airports, and may be more likely to use local air service.

Indicators of Demand-Access to Other Markets

Airports with Scheduled Service Within 210 Miles of the State Boundaries



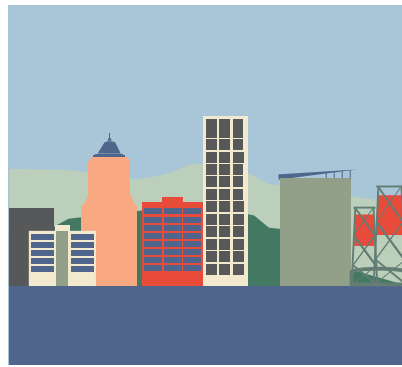
This map shows all airports with scheduled service in 2016 within 210 miles of the state border.

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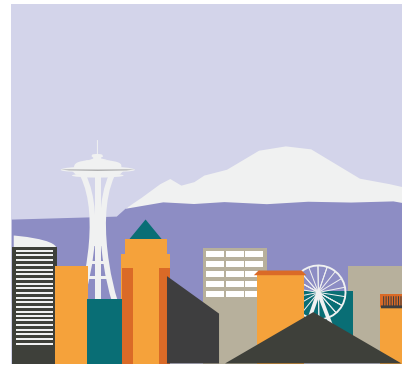
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