Demand for Rural Aviation in Oregon

ECONorthwest

ECONOMICS • FINANCE • PLANNING

Final Report

January 2018

Study Background and Scope

- The Oregon Legislature authorized the Rural Oregon Air Relief (ROAR) program in 2015, funded by a tax increase on aviation gas and jet fuel.

- Oregon Department of Aviation (ODA) wants to better understand demand for rural aviation across Oregon to inform their decisions about how to allocate grant funding under the ROAR program.

Study Background and Scope

- Describe potential demand for rural aviation:
  - Identify relevant socioeconomic indicators
  - Describe current patterns and trends statewide
  - Drill down on specific regions to understand demand from specific markets
- Identify areas where socioeconomic conditions may be particularly favorable for investment in rural aviation.

Study Background and Scope

Definitions:

- "Rural Airport" means an airport that principally serves a city or metropolitan statistical area with a population of 500,000 or fewer. (OAR 738-124-0015(23))
- This study focuses on airports within Oregon but outside of the Portland MSA.
- Focuses on airports for which there have been commercial (revenue-generating, scheduled or unscheduled) enplanements in the last 10 years.

Study Background and Scope

- Analysis detailed in four Technical Memoranda
  - 1: Conceptual Framework
  - 2: Demand Analysis
  - 3: Factors that Influence Demand
  - 4: Case Studies
- This report summarizes the findings of the analysis. For more detail, refer to the Technical Memoranda.

Outline of this Report

1. Conceptual Framework
2. Measuring Indicators of Demand
3. Investigating Demand by Market
   - Central Coast
   - Central Oregon
   - Eastern Oregon
4. Policy Implications

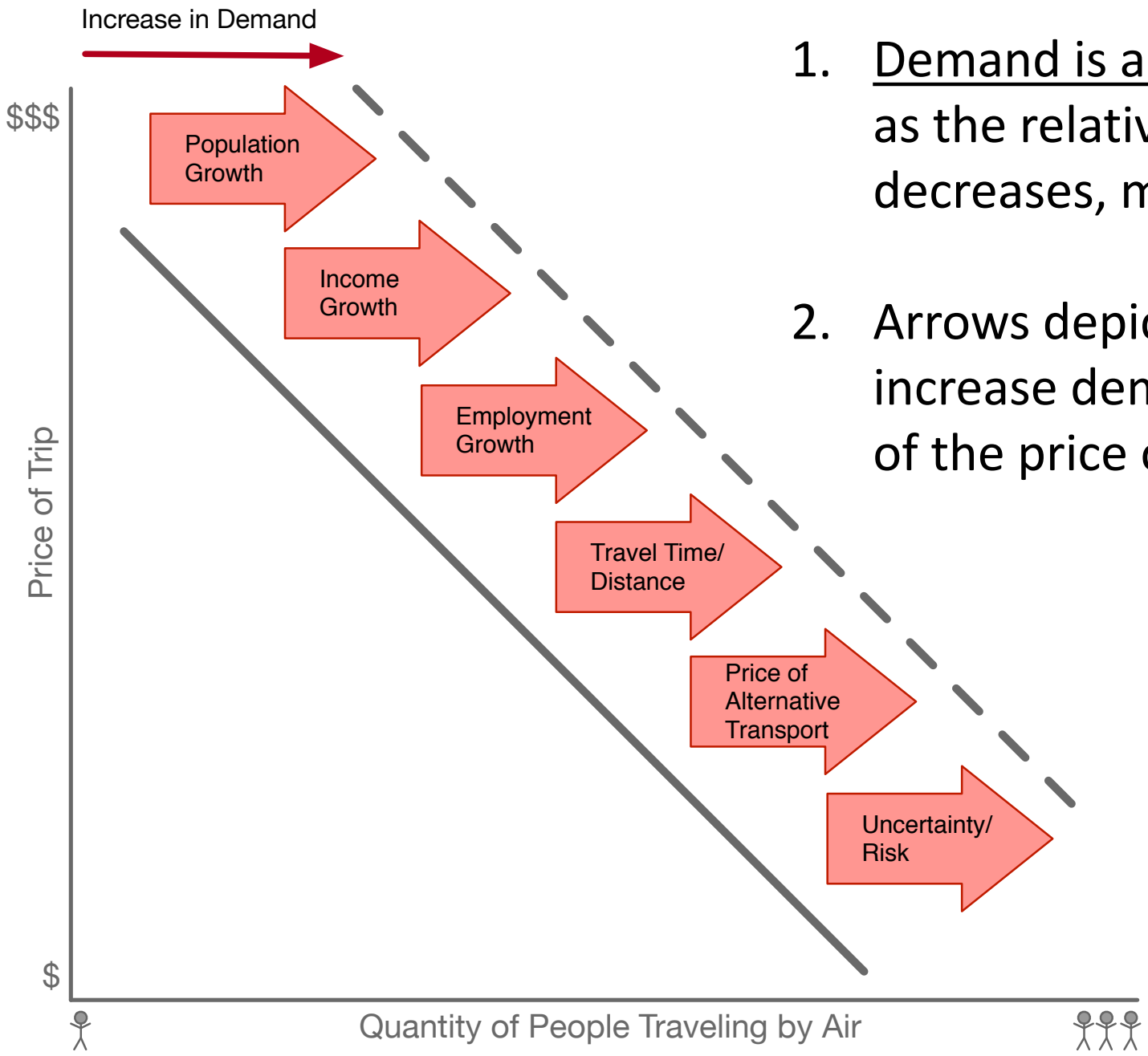
Demand for Rural Air Service

The quantity of people choosing to fly to or from an airport in Oregon outside of the Portland Metro area.

Demand may increase for two reasons:

1. The price of a plane ticket from a rural airport decreases, leading to more people flying.
2. The population characteristics or travel choices in a market area change in key ways that lead to more people choosing to fly.

1. Conceptual Framework



1. <u>Demand is a function of price</u>: as the relative price of a trip decreases, more people will fly.

2. Arrows depict factors that may increase demand independent of the price of a flight.

Factors Other Than Price that Influence Demand

Population Growth

- More people translates to more potential flyers.

Income Growth

- Higher-income individuals typically have a higher ability to pay.
- They also tend to be more sensitive to travel time than travel cost, so may choose to fly over other modes of transportation more often.

Employment Growth

- Increasing the number and diversity of employment opportunities may lead to more potential flyers. Employed individuals are more likely to have income to spend on travel for personal reasons, and may be more sensitive to travel time than travel cost.
- Employment growth, especially in certain sectors, may lead to higher demand for air travel for business purposes.

Factors Other Than Price that Influence Demand

Travel Time/ Distance

- People are more likely to choose to fly for trips of longer distances.

Price of Alternatives

- As the price of alternative modes of transportation change relative to flying, the price of a plane ticket becomes more or less desirable.
- The total cost of a trip door to door is the relevant comparison measure, and includes fuel, car rental, tickets, parking, duration of the trip (cost of time). Perceptions of hassle and how one can use travel time are also relevant here.

Uncertainty/Risk Factor

- People are sensitive to uncertainty, all things equal. Trips with more complexity or unknowns may feel more expensive to people, even if they are cheaper overall.
- Air travel, especially in smaller airplanes, may be perceived to some people as less safe than other modes of transportation, increasing the perceived cost of the trip.

Supply of Rural Air Service

- **Not the focus of this study.**
- HOWEVER, demand is a function of price.
- The cost of providing rural air service factors into the price of a ticket.
- If the cost of providing the service is greater than people are willing to pay for the service, producers won't offer the service.
- **This is the key reason why rural air service is not more available under current conditions.**

Supply of Rural Air Service

- Policy mechanisms that **reduce the cost of providing rural air service** may reduce the price of a trip.
- Reducing the relative price of a trip may **induce more people to choose to fly** instead of traveling by another mode, without increasing overall demand for travel (e.g., through population or income growth).

Methodology

- We identified airports with a history of commercial service (scheduled and unscheduled) over the last 10 years.
- We identified the market area for rural air service as the population within a 60-minute drive of an airport.
- We measured indicators of demand for each service area to highlight markets where investment may yield greater benefits.
- We investigated specific sources of demand in three regions of the state where indicators were favorable.

2. Measuring Indicators of Demand

Photo Credit: Nehalem Bay State Airport, Tillamook County, Oregon. Courtesy of Ian PoelleWikimedia Commons

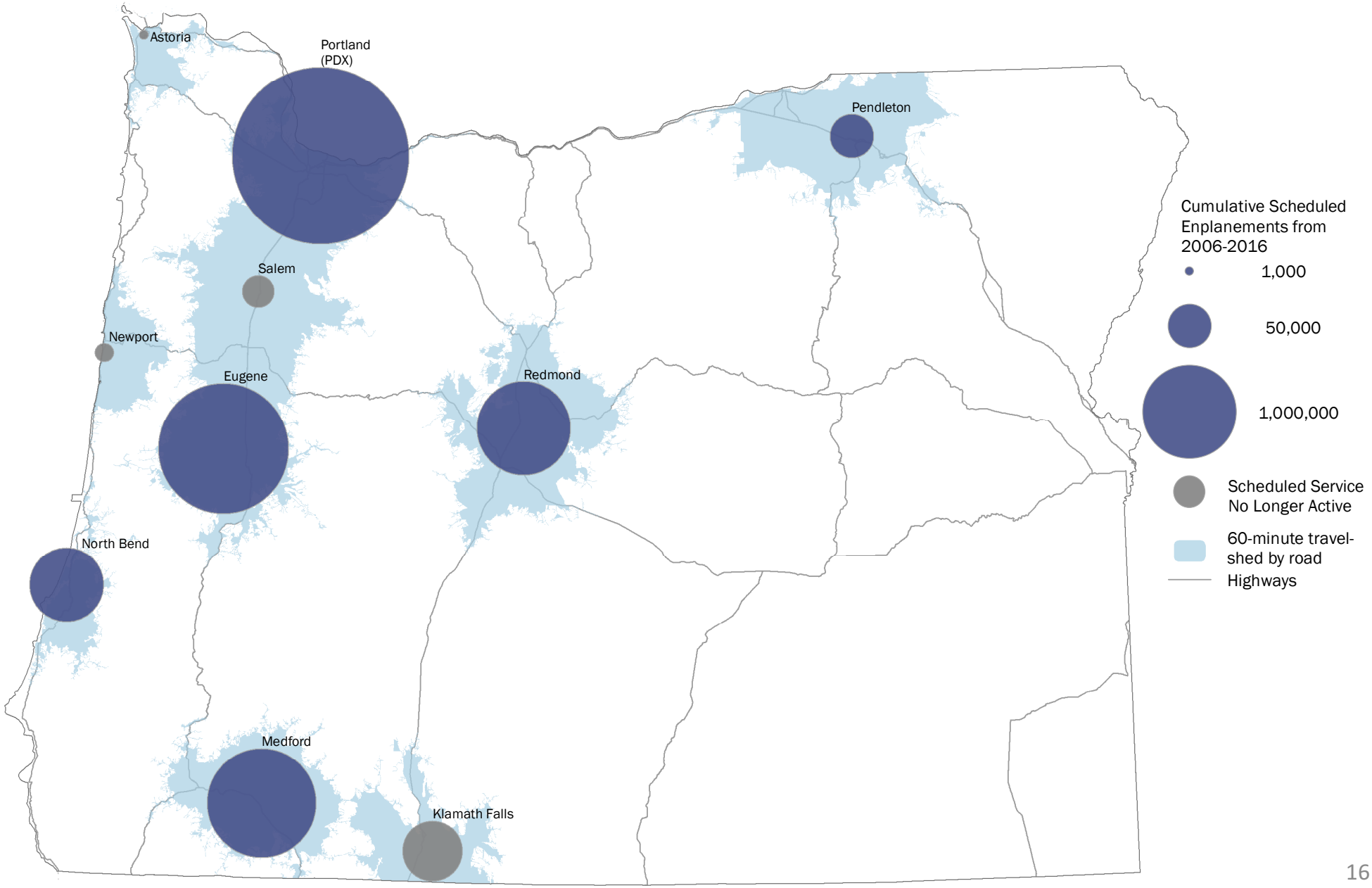
Market Areas for Study

60-Minute travelshed by road for:

- All airports with commercial scheduled service in 2016 and with history of scheduled service since 2007.
- Airports with a record of commercial unscheduled service since 2007, according to the FAA (omitting markets with fewer than 10 enplanements in 10 years).

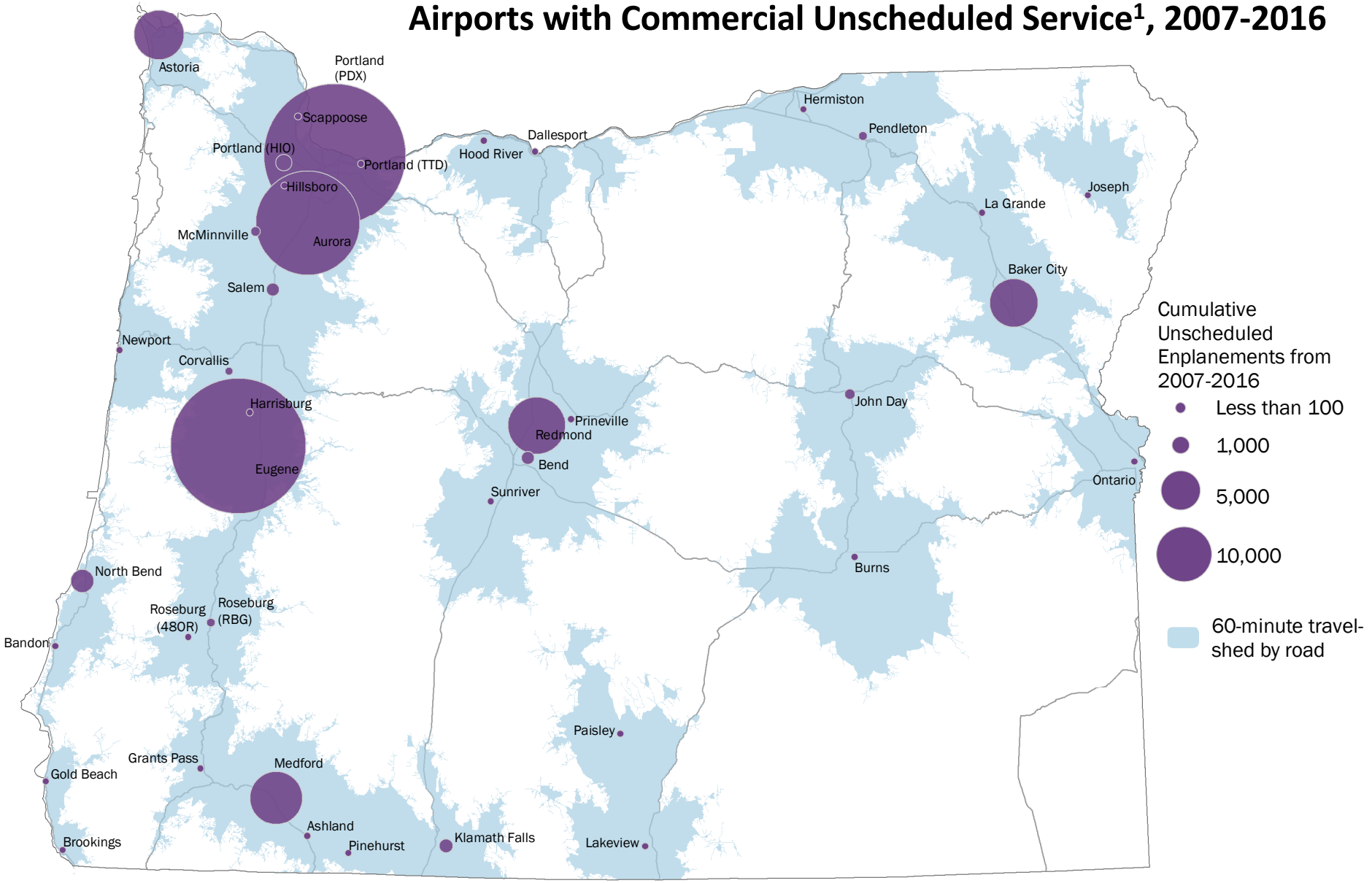
2. Measuring Indicators of Demand

Airports with Commercial Scheduled Service, 2007-2016



2. Measuring Indicators of Demand

Airports with Commercial Unscheduled Service[1], 2007-2016



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.

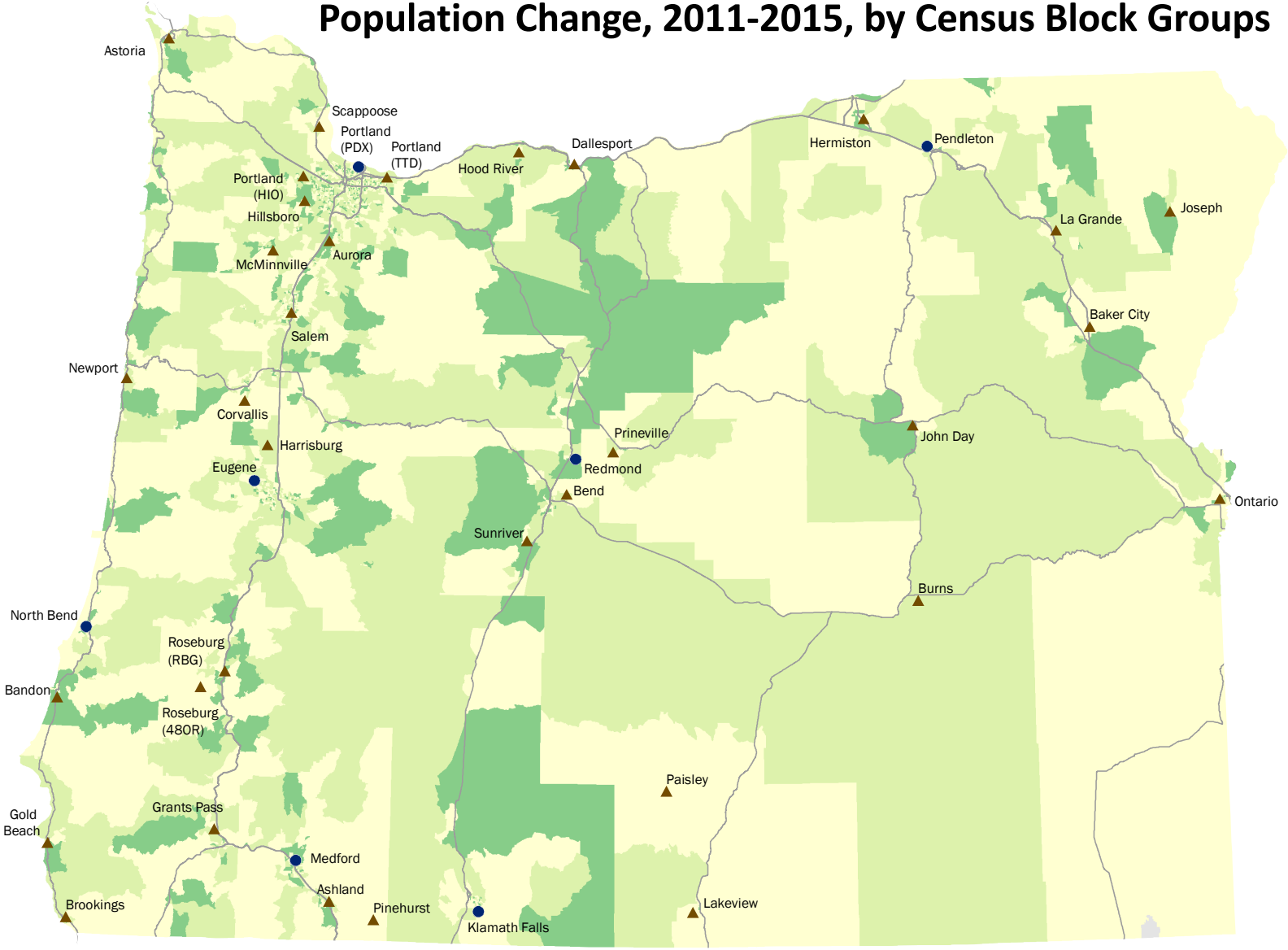
Key Measurable Indicators of Demand

- Population
- 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.

2. Measuring Indicators of Demand

Population Change, 2011-2015, by Census Block Groups

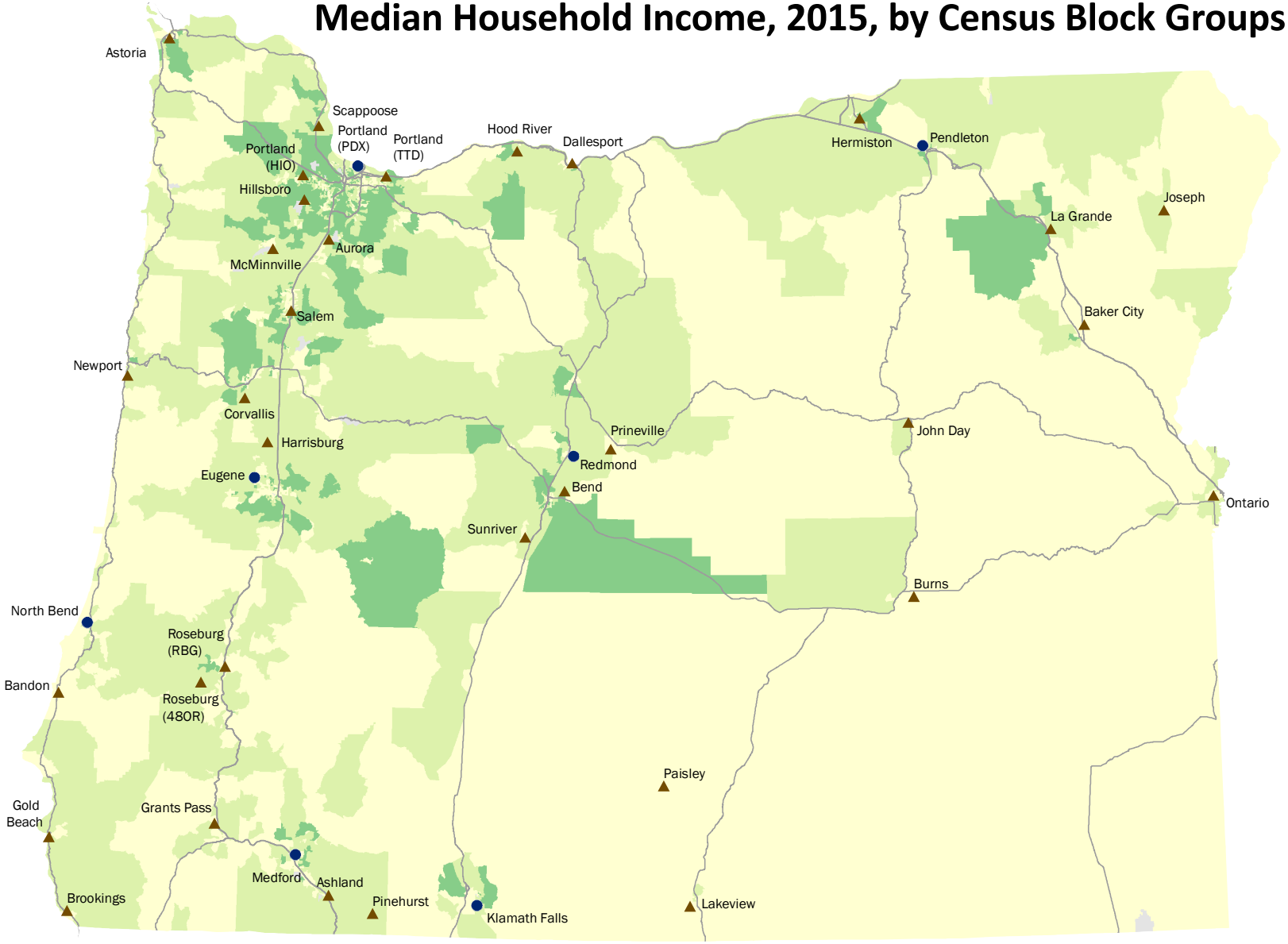


This map shows population change at the census block-group level. The darker green indicates block groups where population increased the most, relative to other areas. Lighter areas indicate groups where population did not grow as much, or declined.

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.

2. Measuring Indicators of Demand

Median Household Income, 2015, by Census Block Groups

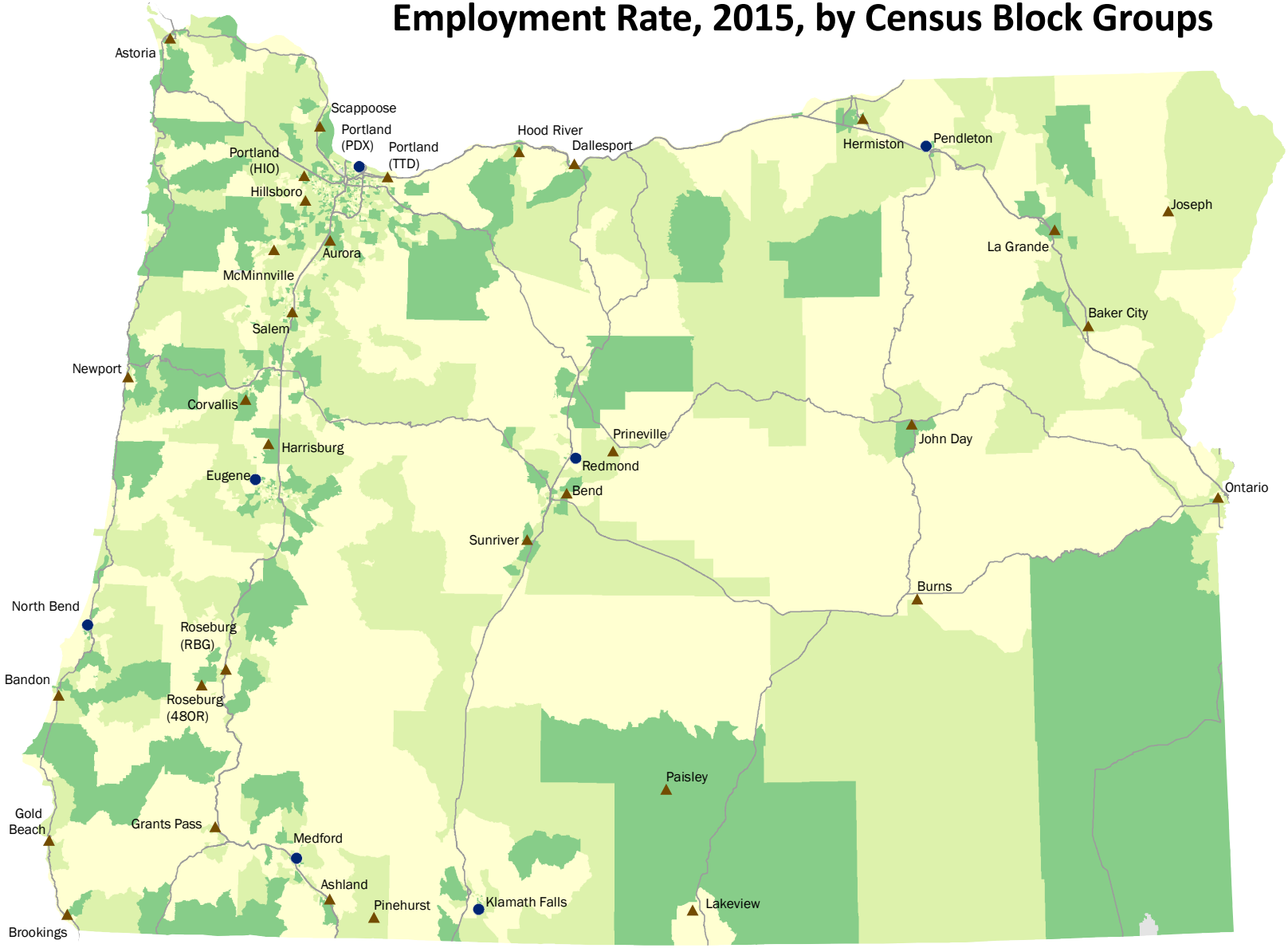


This map shows relative income across the state in 2015 at the census block-group level, using median household income (MHI) as the measure of income. The darker green indicates block groups where MHI was greatest, relative to other areas.

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.

2. Measuring 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:

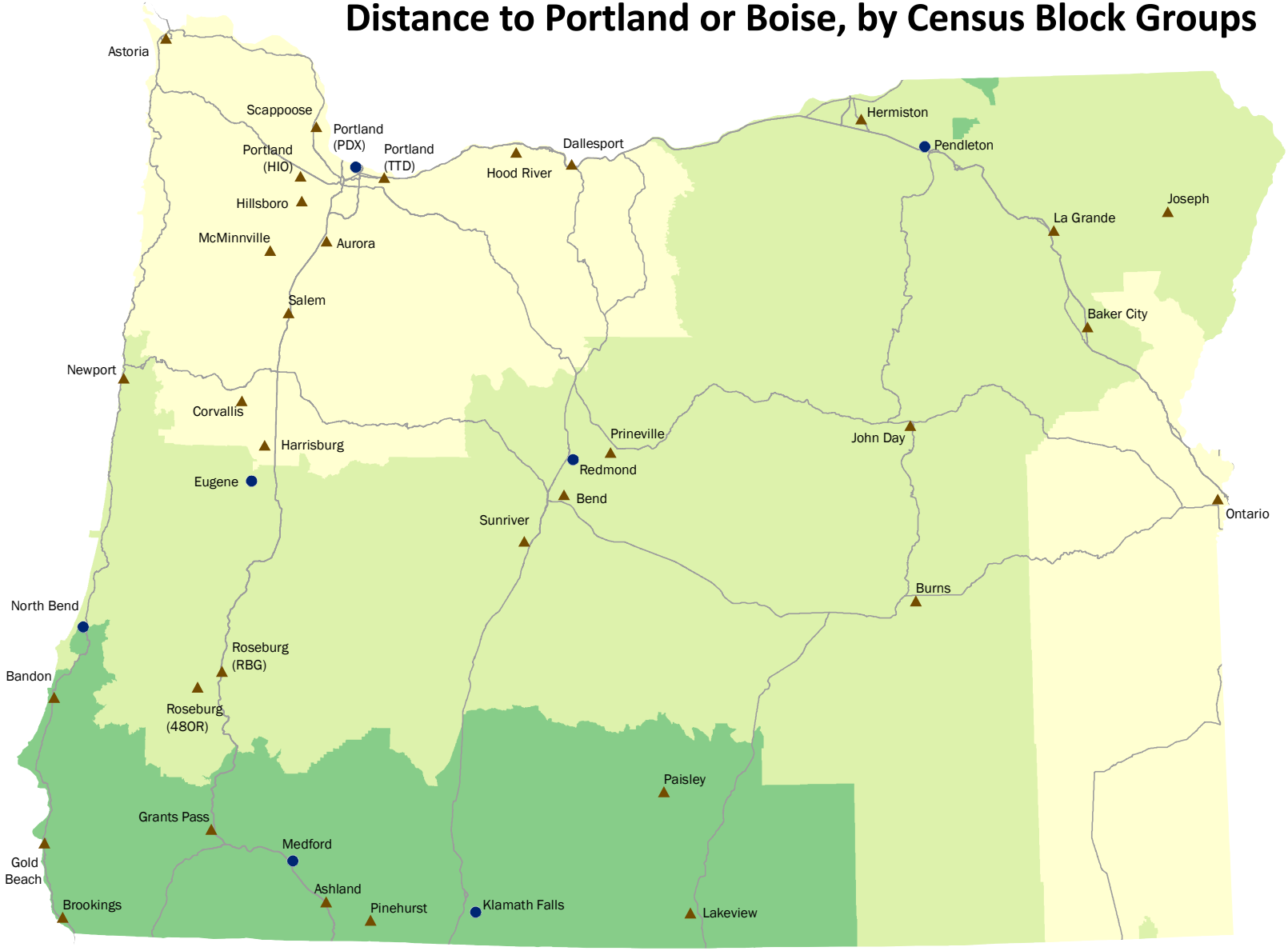
Employment Rate, 2015

- 1 - 2
- 3 - 4
- 5
- Data unavailable

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

2. Measuring Indicators of Demand

Distance to Portland or Boise, by Census Block Groups

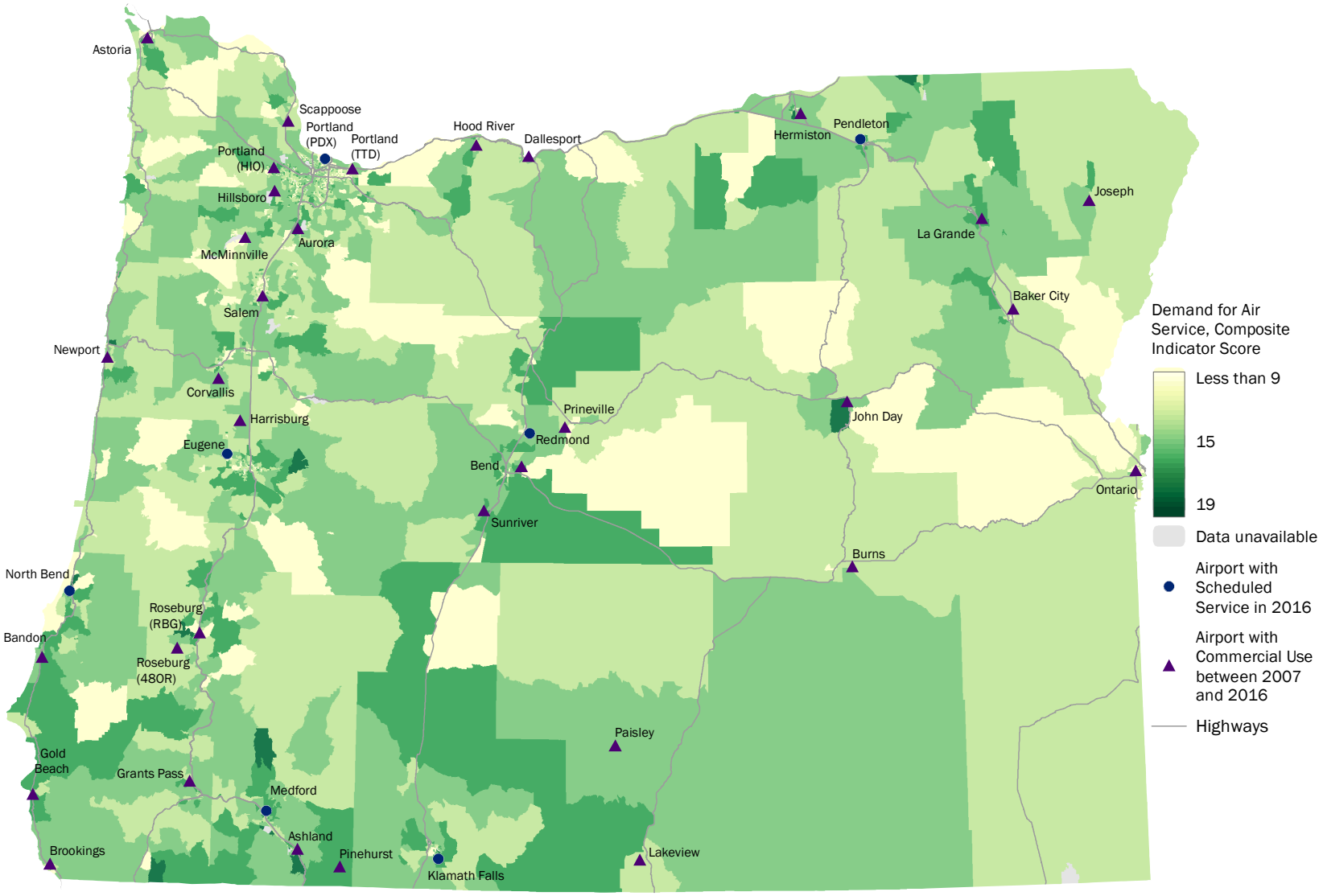


This map shows the relative distance to a major airport (either Portland or Boise). The darker green indicates block groups furthest away from either airport by road travel time. These airports were given higher scores because people in these areas may be more likely to utilize rural airports than driving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

2. Measuring Indicators of Demand

Composite Indicator Score, by Census Block Groups

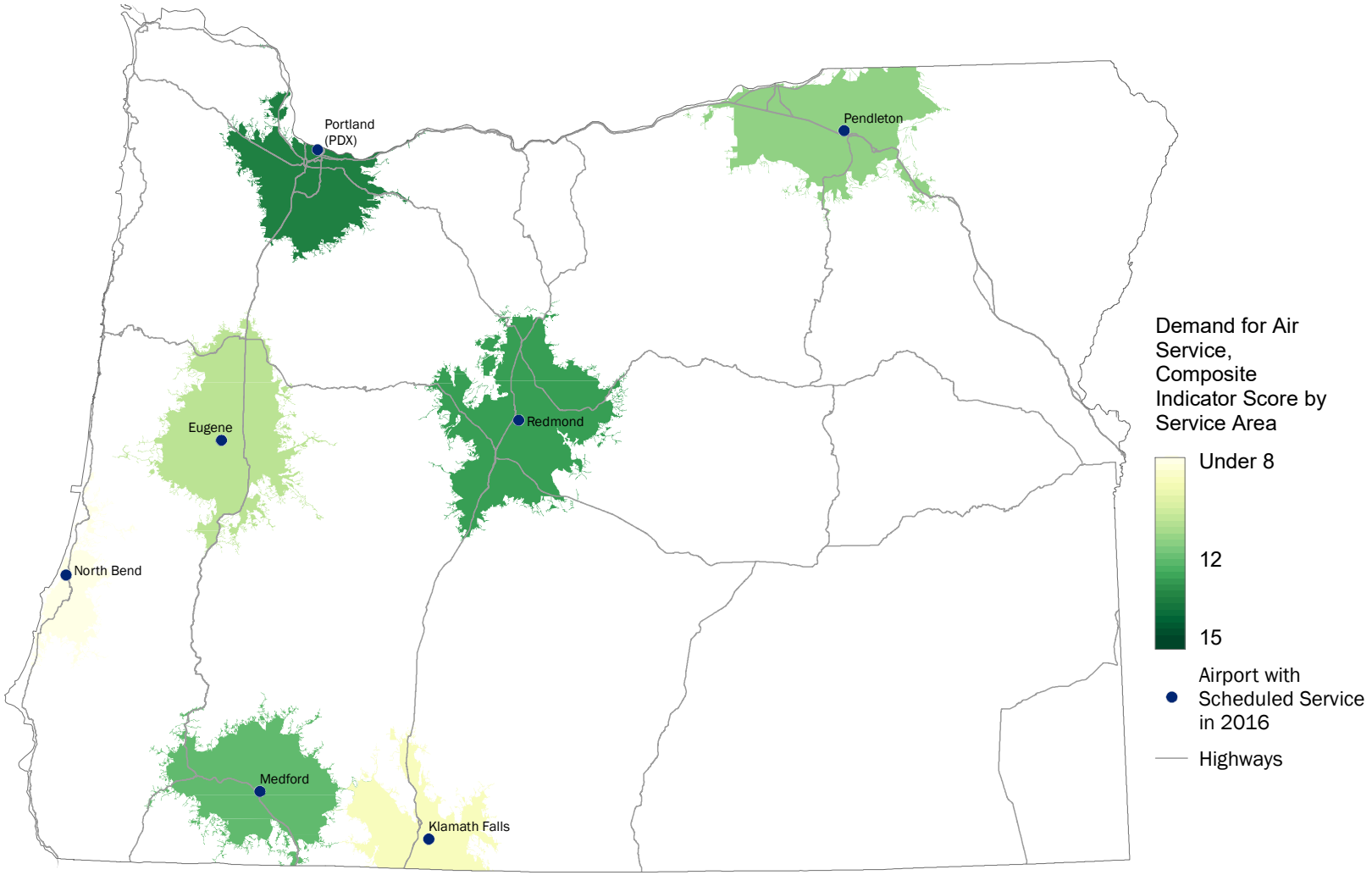


This map shows a composite score that combines the scores for each of the four indicators shown in the earlier maps. Block groups with darkest green received the highest score, relative to lighter shades of green, and indicate areas where investment in rural aviation may yield greater benefits.

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.

2. Measuring Indicators of Demand

Composite Indicator Score, Market Areas with Scheduled Service

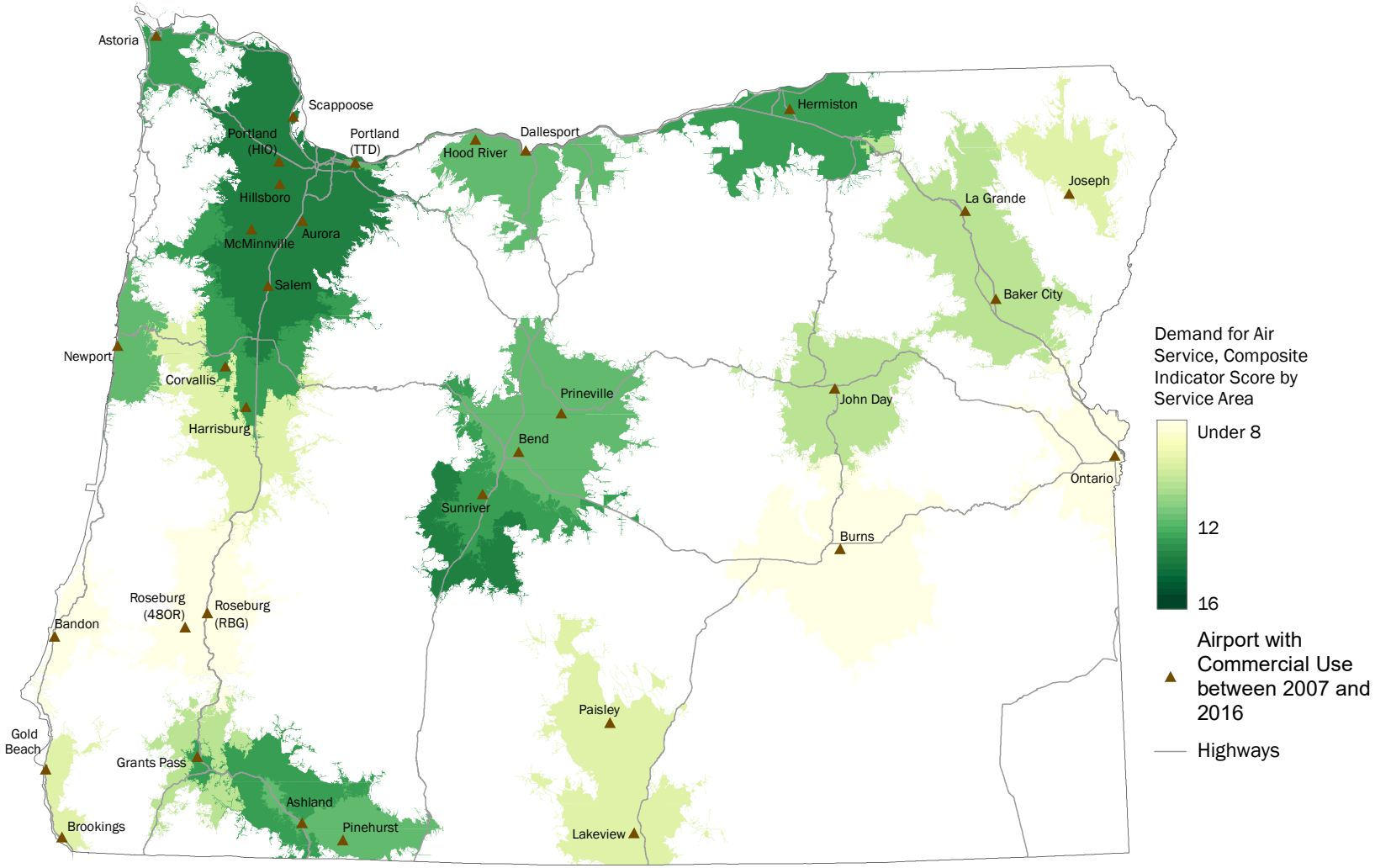


This map shows a composite score by market area, for the markets that currently have scheduled service. The score ranks market areas relative to each other.

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.

2. Measuring 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.

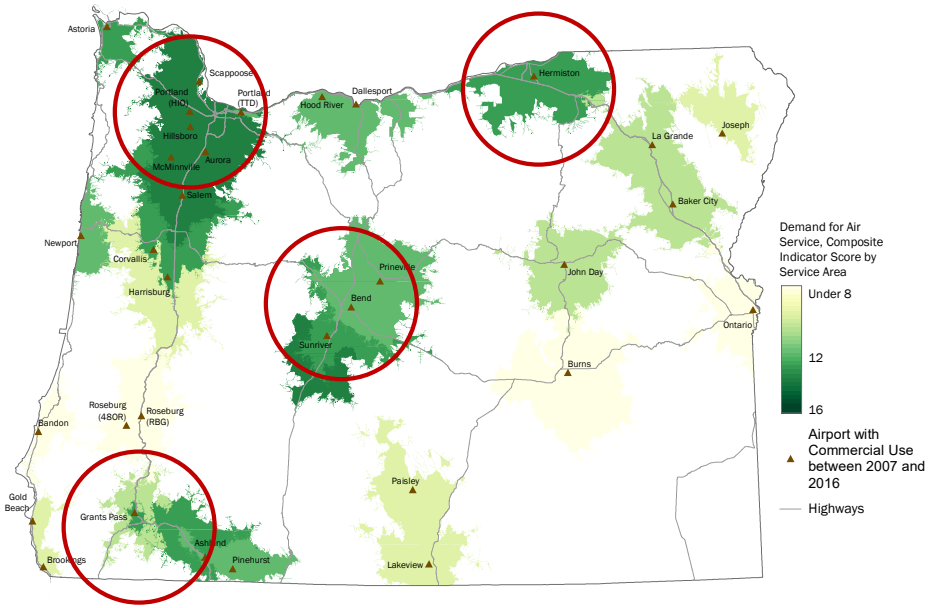
Note: [1] Unscheduled enplanement data comes from Federal Aviation Administration's Air Carrier Activity Information System (ACAIS) database. Data for most unscheduled flights are reported voluntarily by the air carrier, so counts shown on the map most likely underestimate actual enplanements, especially 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.

What do the indicators tell us?

- Identify areas of the state where population characteristics are favorable for generating demand for air travel.
- Darker green areas are likely to score high in three or more of these measures, suggesting demand for rural air service would be higher than other areas.
- Focus on population-level demand.

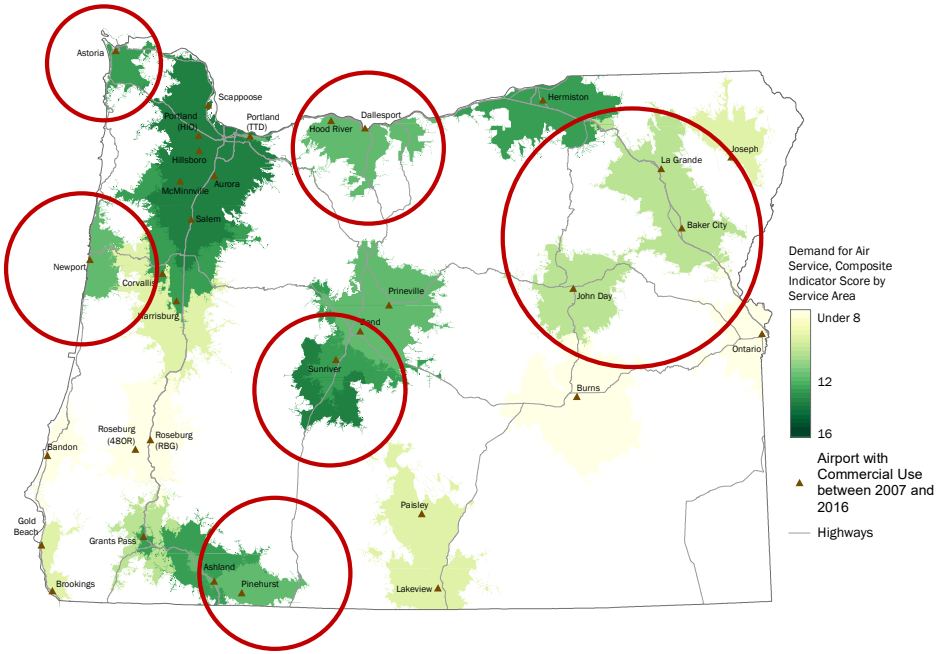
What do the indicators tell us?

- Most areas with high indicator scores are already served by airports with some level of commercial scheduled service.



What do the indicators tell us?

- Markets outside or bordering areas with scheduled service have indicator levels that suggest demand to support additional service:



Demand from Businesses and Tourism

- Demand for business travel from the public and private sectors and the tourism sector positively correlates with indicators.
  - Public and private sector employers tend to locate near population centers.
  - Disclosure and confidentiality issues in rural areas make it difficult to map business characteristics at the same level of detail as population indicators.

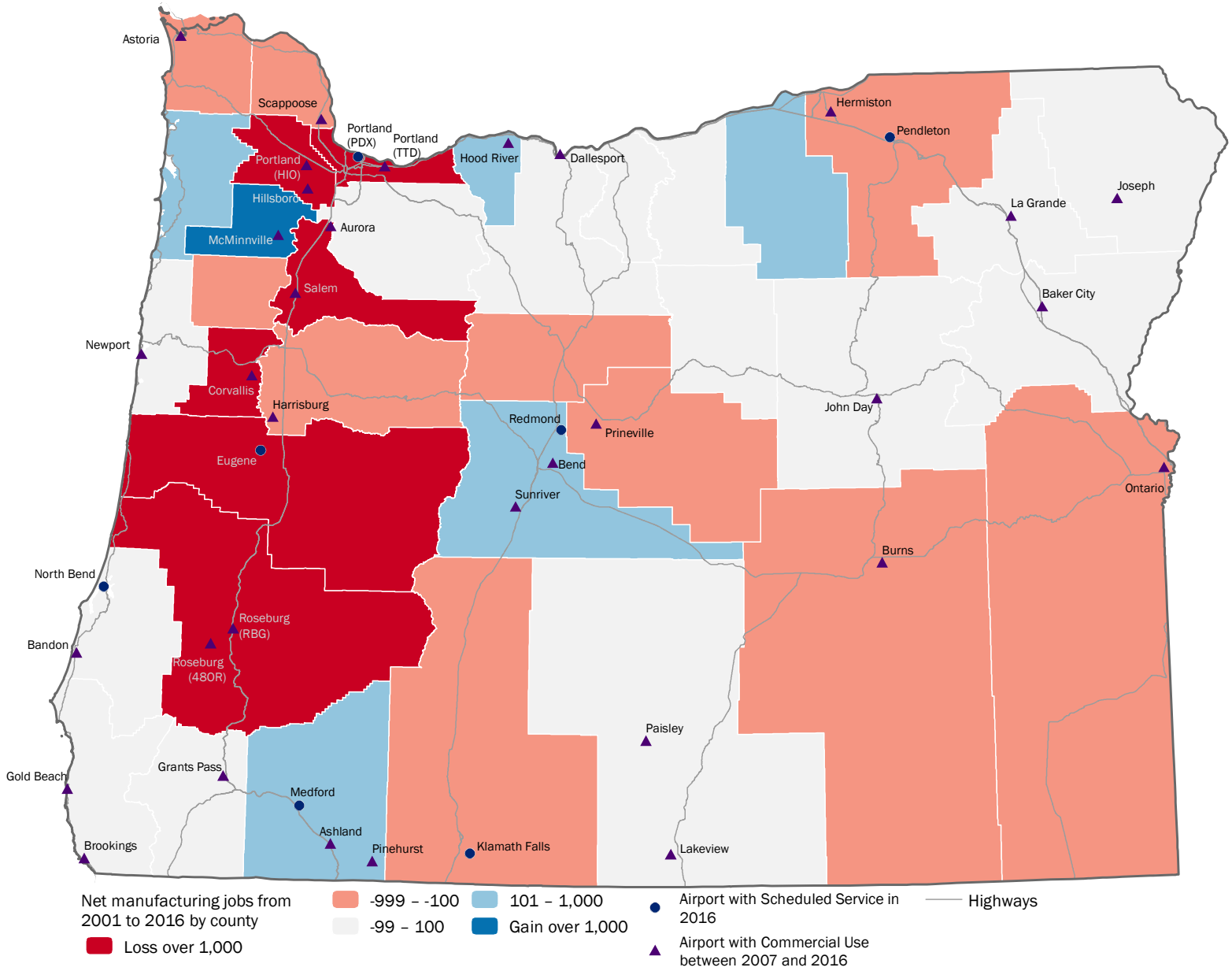
Demand from Businesses and Tourism

- Manufacturing jobs, in particular, are correlated to demand for air travel.
- One study found that for similar communities, every $250,000 additional in manufacturing sector earnings translated to 4.8 more jet departures per week.*
- The following maps show the change in manufacturing jobs and earnings by county, between 2001 and 2016.

Source: * Transportation Research Board of the National Academies. 2009. "Airport Cooperative Research Program, Report 18: Passenger Air Service Development Techniques." Sponsored by the Federal Aviation Administration.

2. Measuring Indicators of Demand

Change in Manufacturing Jobs between 2001 and 2016, by County

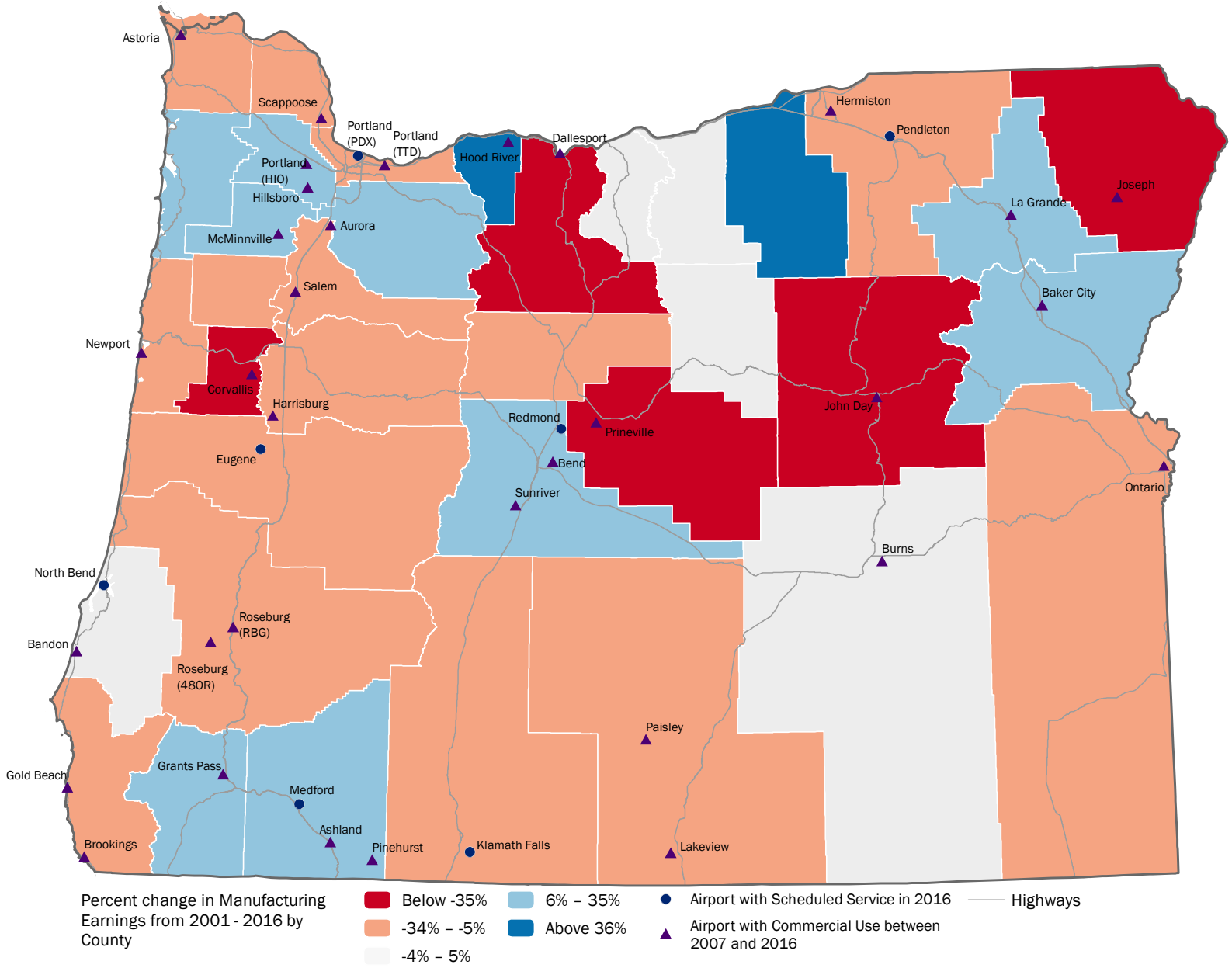


This map shows the change in county-level employment in the manufacturing sector. This sector is positively correlated with demand for air service.

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

2. Measuring Indicators of Demand

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.

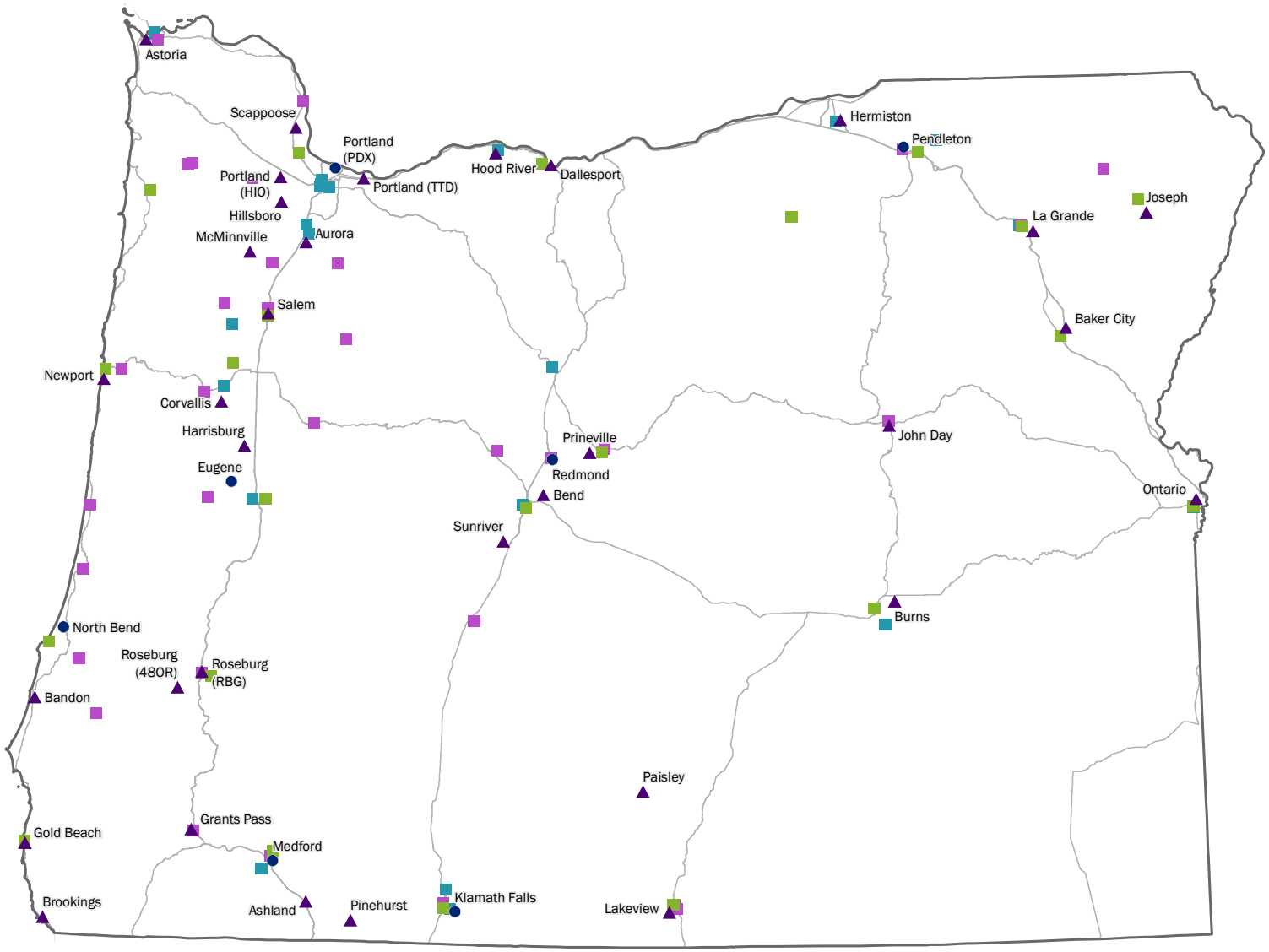
This map shows that declines in inflation-adjusted earnings are widespread, with gains concentrated in a few regions of the state that roughly correspond to gains in employment (see previous map).

Demand from Public Sector

- Services and offices concentrated in the Willamette Valley, with satellite facilities and field offices throughout the state.
- Location of state facilities tends to line up with the market areas in this study.
- Employment at state facilities in rural areas tends to be small. Data were not available to estimate travel frequency or volume between locations.

2. Measuring Indicators of Demand

State Facilities and Field Offices



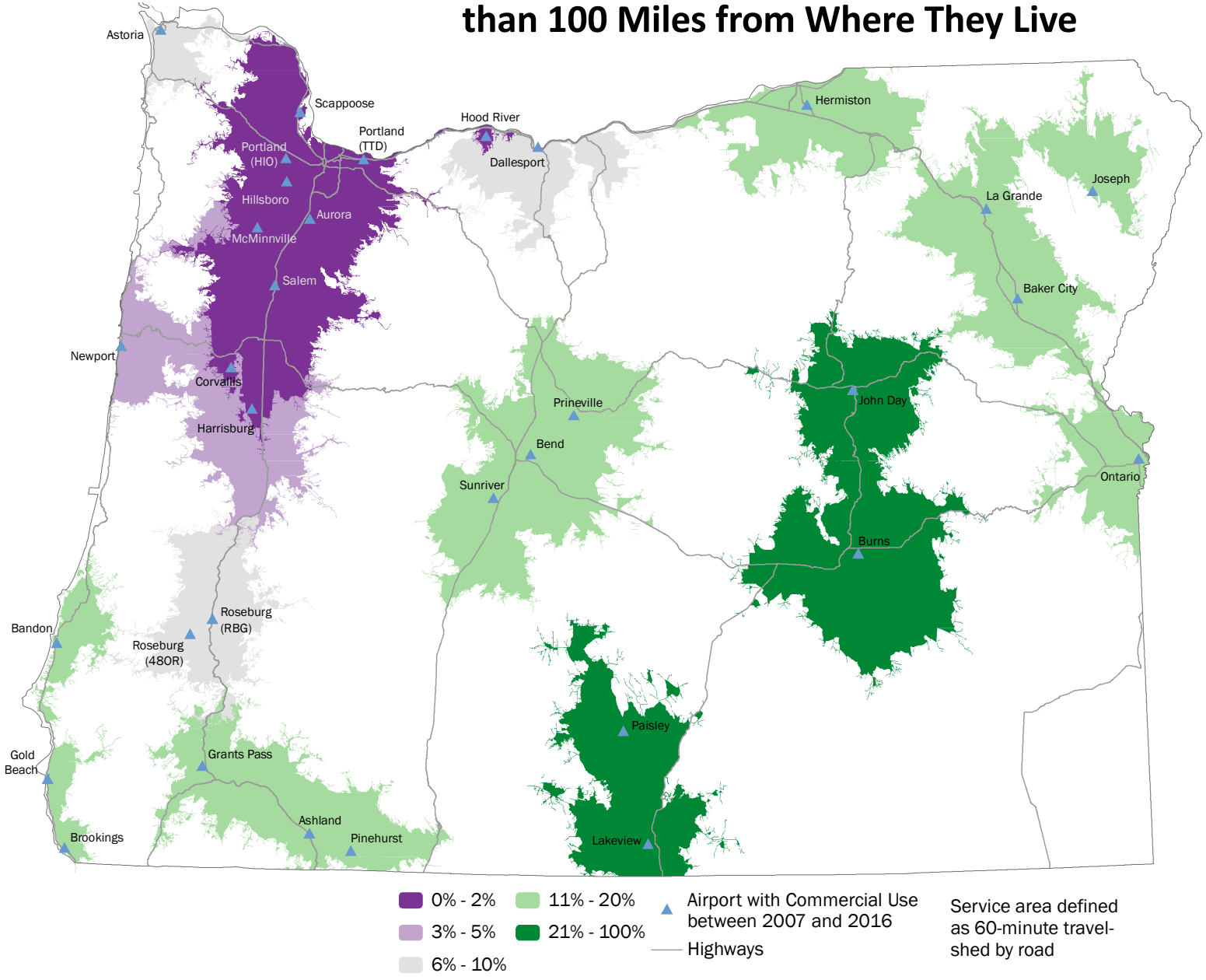
This map shows the location of state facilities and field offices. These facilities are staffed by employees who may travel to main offices, and are visited by employees, researchers, and others.

Demand from Businesses and Tourism

- Places with high-quality amenities tend to attract people to live, who may work elsewhere.
  - Telecommuting may increase demand for rural air services, because long-distance workers may travel more frequently for business.
- These same places are more likely to attract tourists, some of whom may want to fly directly to their destination.

2. Measuring Indicators of Demand

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.

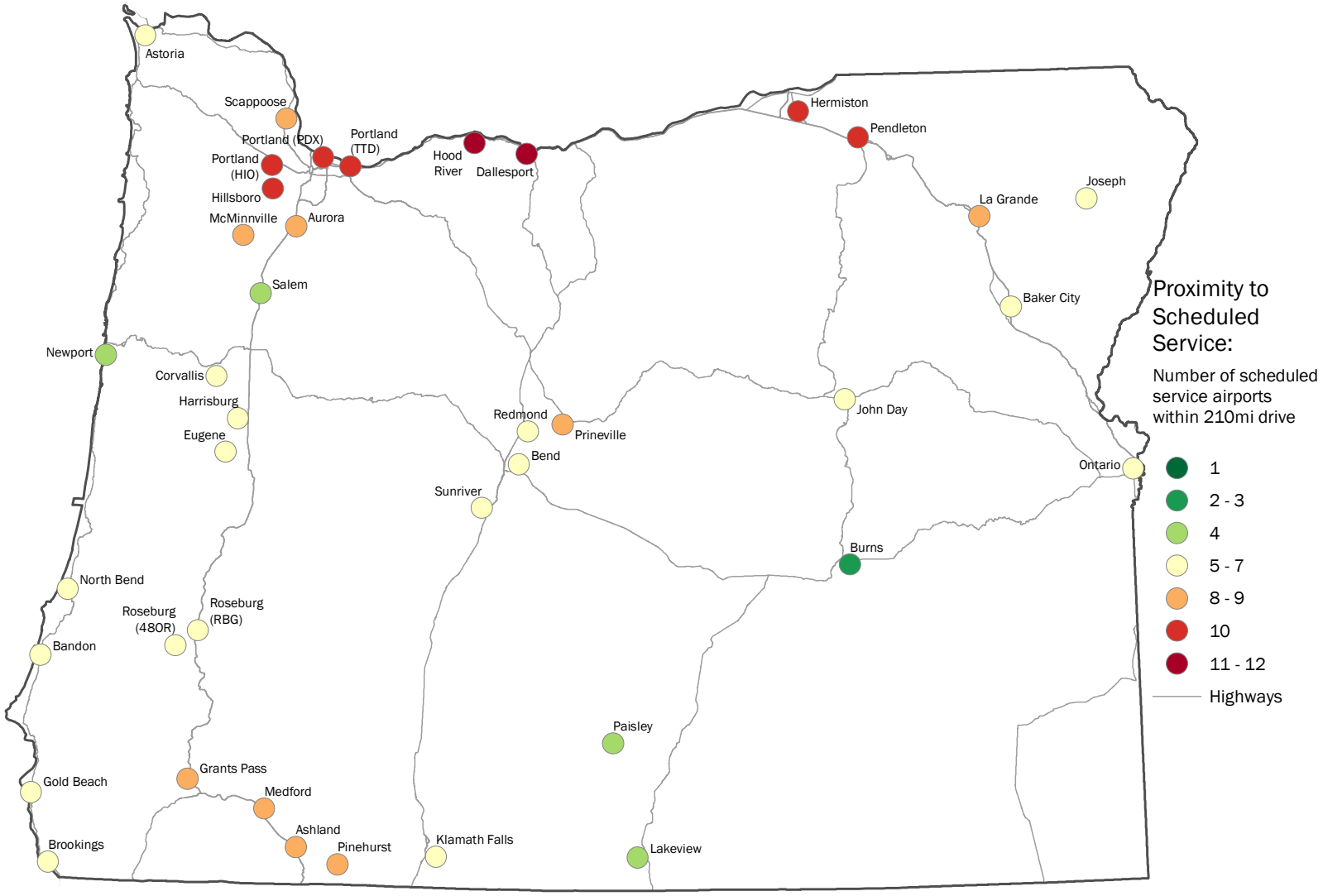
Workers who live far away from their employer, on average, likely have a higher demand for air travel for business purposes.

What don't the indicators tell us?

- How people actually make decisions about where and how to travel.
  - People usually have choices:
    - Mode (car, bus, train, plane, combination)
    - Departure airport, differentiated by:
      - Distance
      - Flight Schedules
      - Destination and route options
      - Amenities

2. Measuring Indicators of Demand

Access to Airports with Scheduled Service, 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.

What don't the indicators tell us?

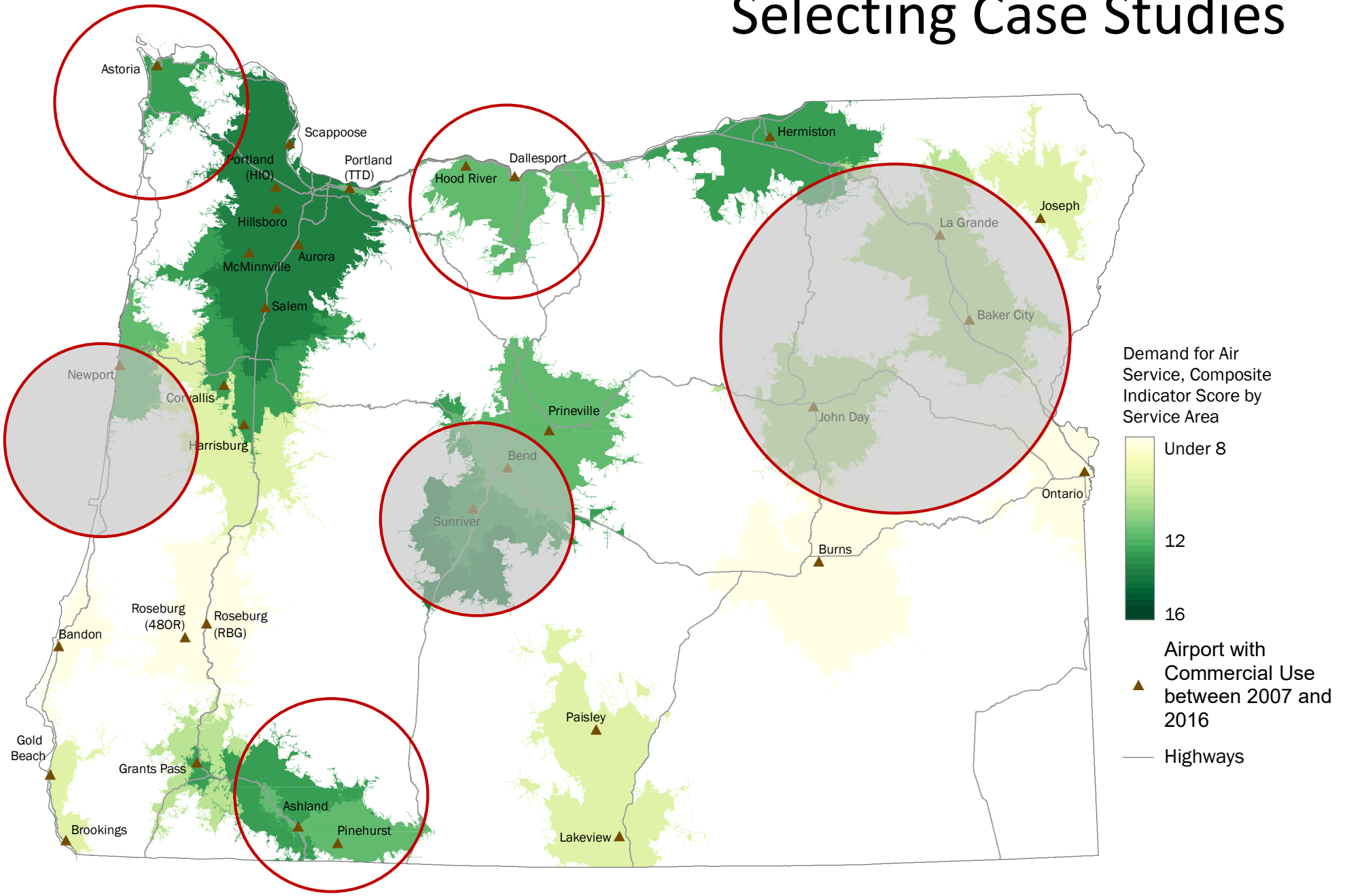
- How people actually make decisions about where and how to travel.
  - People usually have choices.
  - Many factors influence those choices:
    - Total cost of trip
    - Convenience, hassle, unknowns
    - Multiple trip objectives (e.g., visiting relatives while flying out of PDX)
- Even if closer air service is available, people may choose not to use it.

3. Investigating Demand by Market

Photo Credit: KRDM (Redmond OR) airport, passenger terminal and ramp, with central Cascade Range in the distance, Courtesy of Fancy-cats-are-happy-cats and Wikimedia Commons

3. Investigating Demand by Market

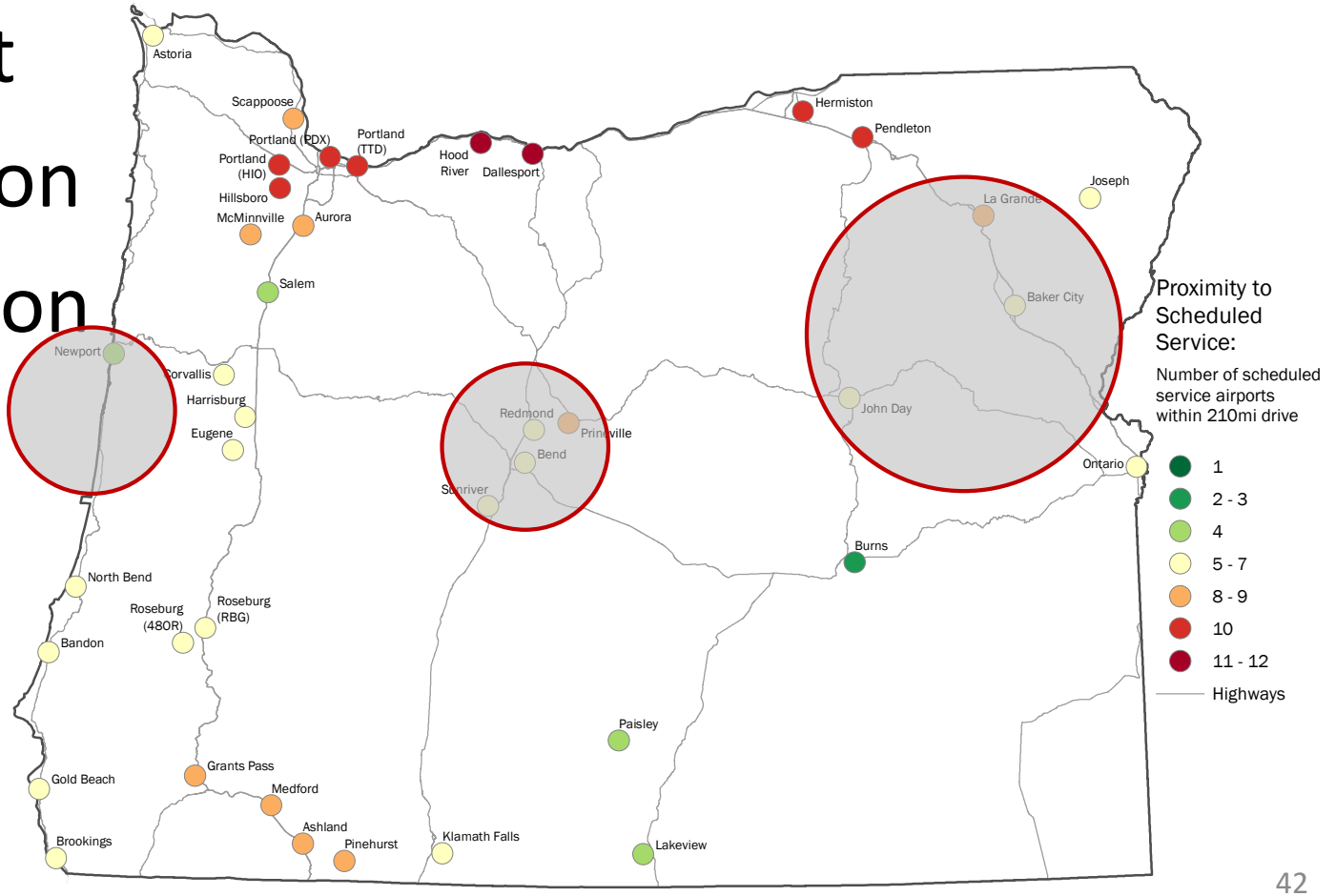
Selecting Case Studies



3. Investigating Demand by Market

We selected three Case Studies based on positive indicator scores and markets where access to scheduled service is currently more limited:

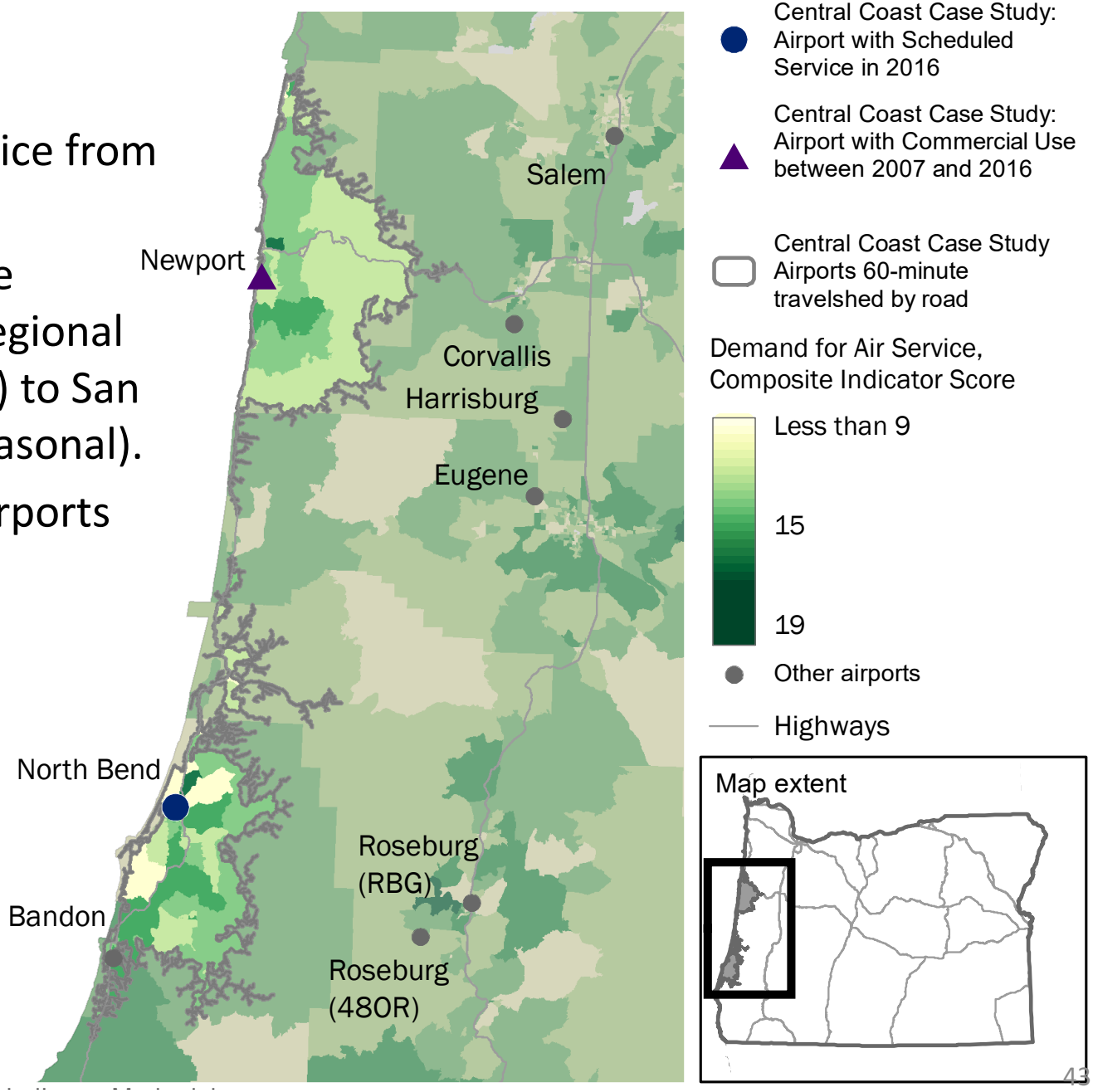
1. Central Coast
2. Central Oregon
3. Eastern Oregon



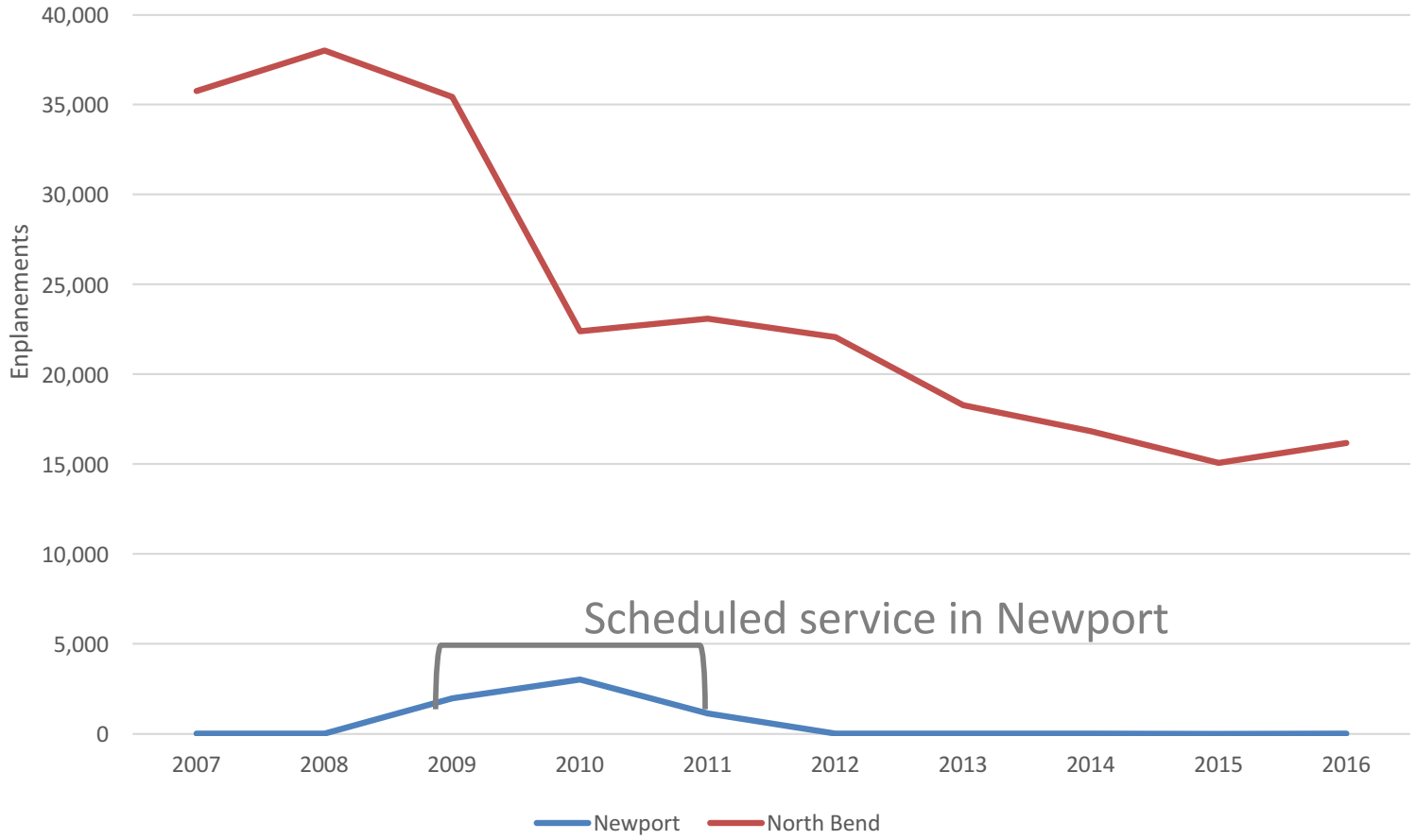
3. Investigating Demand by Market

Central Coast

- History of scheduled service from Newport.
- Current scheduled service from Southern Oregon Regional Airport (SORA-North Bed) to San Francisco and Denver (seasonal).
- Limited access to large airports with scheduled service.
- Seasonal demand from tourism.
- Private and public sector demand growing.



Central Coast: History of Enplanements



Central Coast: Sources of Demand

Business

- Most large employers utilize corporate jets.
- Attorneys, property mangers, medical professionals, etc.
- Marine research/NOAA Pacific Fleet staff and researchers
- Port and industry in Coos Bay/North Bend
- Commercial fishing vessel owners and crews

Tourism

- Bandon Dunes Golf Resort
- Fishing and crabbing

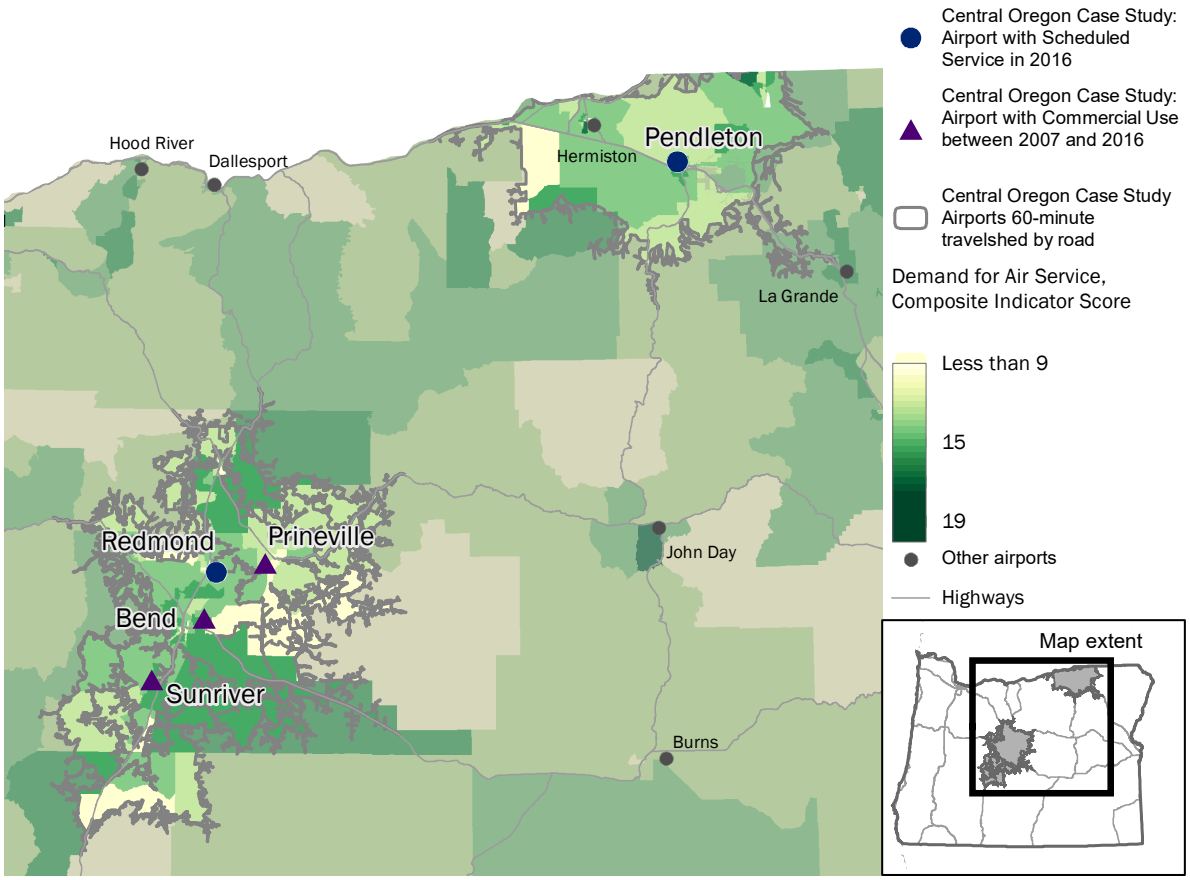
Central Coast: Opportunities

- Demand for same-day round-trip service to Portland during the week.
- Currently no scheduled service to Portland, but past service was utilized from both Newport and Southern Oregon Regional Airport.
- Over half of visitors to Bandon Dunes Golf Resort are from outside the Pacific Northwest or California. These customers provide consistent demand, and potentially higher willingness to pay than other sources of demand.
- Seasonal peaks in demand from some business customers and tourists could augment year-round business demand and support additional service during the summer.

3. Investigating Demand by Market

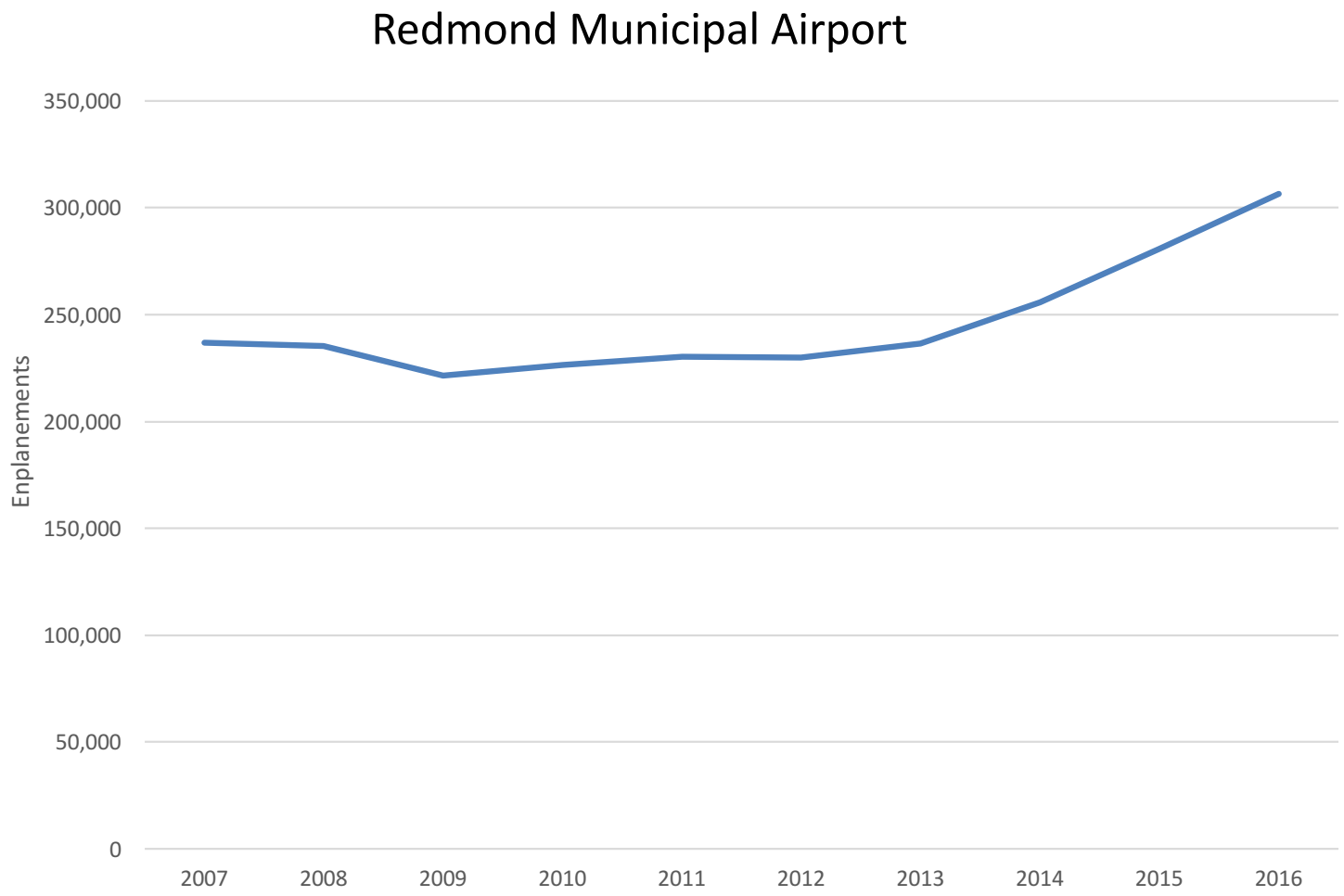
Central Oregon

- Scheduled service in Redmond.
- Fastest growth in scheduled service among Oregon's largest airports.
- Other airports used primarily for charter or private aircraft.
- Robust indicators of demand, driven by quality-of-life business growth.
- Limited access to Portland and Boise.
- Year-round demand from tourism: outdoor recreation.



Indicator Methodology
For each indicator of demand, block groups were divided into five groups ("quintiles") based on the data. The lowest quintile for each indicator (i.e., the 20 percent of block groups with the lowest net population change) received 1 point, the second lowest received 2 points, etc. The composite indicator score for each block group was calculated by summing the points.

Central Oregon: History of Enplanements



Central Oregon: Sources of Demand

Business

- Employment growth in many sectors, including manufacturing. Many employers operate in national and international markets, increasing demand for travel.

Tourism

- Mt. Bachelor Ski Area draws visitors from outside of Oregon during the winter.
- Multiple outdoor recreation opportunities draws visitors from outside of Oregon during the summer.
- Most visitors stay overnight.
- Smaller airports see demand coming from tourists with private aircraft.

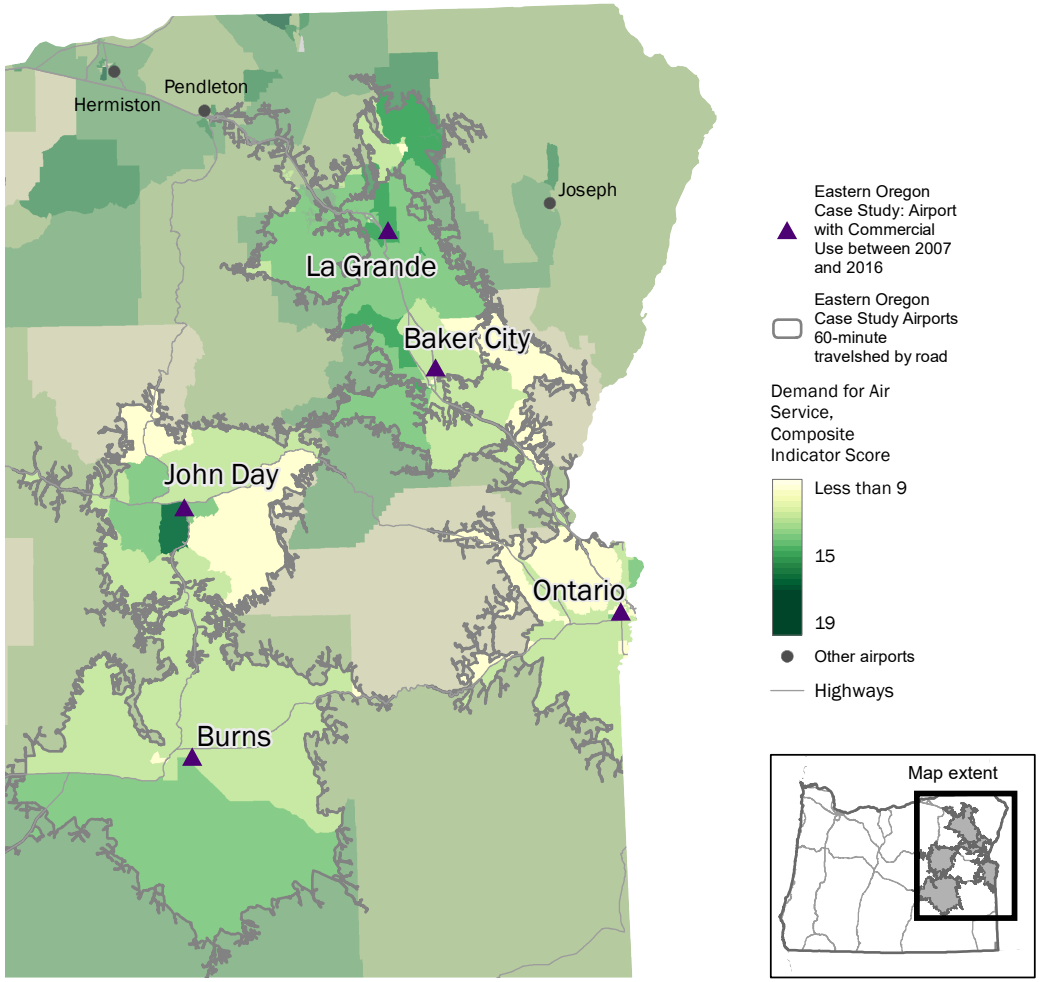
Central Oregon: Opportunities

- Demand for more interconnection between Bend and mid-sized communities in the interior west.
- Expand service and amenities for charter and private traffic at smaller airports in the region, to cater to tourism demand.
- Demand from business travelers who live in the region and work elsewhere, and from new employers moving to the region for quality of life reasons, with economic connections to markets outside of Oregon.

3. Investigating Demand by Market

Eastern Oregon

- No scheduled service and limited unscheduled enplanements over the past 10 years.
- Enplanements concentrated in Baker City.
- Less populated, more isolated communities with lower demand indicator scores, on average, than other communities.



Eastern Oregon: History of Enplanements[1]

Year	Baker City	Ontario	Burns	John Day	Joseph	La Grande
2006	373	1	72		19	456
2007	603	18	36	251	38	20
2008	756		9	1		
2009	621		3	102		
2010	4	2				
2011	2503	2				
2012		14	5			
2013	1803	23	2			
2014	1432	20			2	
2015						
2016		9				
Total	8095	89	127	354	59	476

- Includes enplanements using charter and air taxi service.
- Data are erratic from year to year, and almost certainly underestimate actual utilization of the airports.

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.

Eastern Oregon: Sources of Demand

Business

- Few employers. Some corporations with operations in the area, e.g., timber companies, utilize corporate jets.
- Attorneys, property mangers, medical professionals, etc.
- Many people who fly for business own or have arrangements to use private planes. Some of these people might utilize air taxi or scheduled service if they were more widely available and cost effective.

Tourism

- Limited source of demand for rural aviation in this part of the state.

Eastern Oregon: Opportunities

- People in this part of the state are more likely, on average, to have an employer located more than 100 miles from their home. This may increase demand for long-distance travel.
- Aggregating demand from local professionals and regular visitors may support limited scheduled air taxi service, but coordinating and sustaining it would require considerable effort.
- The most significant challenges facing these rural airports is low population, and access to the Boise airport (and to a lesser degree the Pendleton airport) for scheduled service.
- Baker City has been exploring the possibility of expanding and establishing an air taxi service for over 10 years. Identified limitations include:
  - Limited facilities at the airport, with limited funds to improve
  - Lack of community interest in committing to purchasing seats on scheduled service.

4. Policy Implications

Photo Credit: Runway at Ashland Municipal Airport, Courtesy of CookieMonster755 and Wikimedia Commons

4. Policy Implications

- Market areas with higher demand indicator scores suggest regions where investments may have greater likelihood of producing benefits.
- Higher scores do not definitively indicate that demand will actually materialize, sufficient to support a specific level of service.
- Instead, identifies areas where further study and community engagement is recommended.
- Policy solutions must be tailored to address the unique situation of each community.

4. Policy Implications

- Multiple policy options are available to affect demand for rural air service.
  - People respond to changes in the total cost of a trip. Price of a ticket is just one factor.
  - Economic development acts on underlying indicators of demand (population growth, income, employment).
  - Marketing and information may reduce preference biases and uncertainty.
- Cost of providing service at a price people are willing to pay is the most significant barrier to expanding service to rural areas.

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