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Student Atlas of Oregon: A Classroom Atlas for Elementary and Middle Schools

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Types of Maps

**General Reference Maps** use symbols to show the exact location of things on the earth. For example, where the black line is drawn for the roads is where you can actually find the road in real life. The map of Oregon, below, is an example of a general reference map.

**Thematic Maps** use symbols to show a pattern or “theme.” Usually, the symbols used on these maps are not in an exact location because the maps provide only general information about the theme or pattern. The map of Oregon’s ecoregions, below, is an example of a thematic map.
Types of Thematic Maps

All five thematic maps show where people live in Oregon, but each map uses a different way to show that distribution.

**Color Patch**
- This map draws boundaries around different groups of people (for example, urban residents and rural residents)
- The map does not show how many people are in each group, just where each group is located

**Isopleth**
- This map shows a continuous distribution of population
- Because we do not know how many people live in every single place in Oregon, we take an average of two cities in an area to estimate the number of people in that area

**Dot Density**
- One dot equals a certain number of people
- If dots are close together, lots of people live in one area
- If dots are spread out, not very many people live in one area

**Choropleth**
- Each county is shaded a color to show density or number of people per square mile
- The symbol covers an entire county, but it does not mean that people live everywhere inside the county

**Graduated Circle**
- One circle represents how many people live in that county
- The size of the circle is proportional to the number of people that live in a county - the more people that live in a county, the larger the circle
How Geographers Use Maps

Geographers use maps to show distributions. The maps help us see patterns and relationships of things. What geographers map is related to the Six Essential Elements of Geography:

- The World in Spatial Terms
- Places and Regions
- Physical Systems
- Human Systems
- Environment and Society
- Uses of Geography

The World in Spatial Terms

Geographers use maps to show where things exist in the world so we can understand patterns and relationships of anything existing on earth.

Boring, OR

Exact location on earth:
45° 25' 47" N, 122° 22' 29" W

Physical Systems

Geographers use maps to help understand how the earth is affected by physical systems. This map shows where rain and snow fall in Oregon. We can look at the map to understand not only where precipitation falls but also where vegetation that depends on rain grows.

Places and Regions

Places and regions are defined by the cultural and physical features found there. Geographers use maps to identify places and regions that share common characteristics, such as a “Downtown” region with skyscrapers, a “Pearl District” area with residential housing, and a “Chinatown” region with Chinese sculpture and art.
Geographers study where people are located on the earth as well as the characteristics of people located in an area, such as age, religion, or education level. The map above shows where Oregonians who are 10-14 years old live.

Geographers use maps to show relationships between humans and the environment. One example is where we farm and ranch. The places above that are in green show where we grow crops like fruits and vegetables. These areas are close to rivers so that the crops can be watered. Places where we ranch are large, open areas where ranchers graze cattle, such as in Southeast Oregon.

Geographers use maps to help understand the past and plan for the future. Many people use maps regularly at their jobs to plan for the future. Some examples are:

- City planners
- Hydrologists
- Tour guides
- Weather forecasters
- Pilots
- Delivery people
- Park rangers
- Wetland managers
- Police and firefighters

Satellite image of Hurricane Katrina
Cartographers use different symbols on maps to represent real features from the world. Three common types of symbols are point symbols, line symbols and area symbols.

Cartographers use point symbols to show exactly where one thing (a school or a hospital) is located on the map. The symbol is usually a dot or a picture.

When a feature is long and in the shape of a line, cartographers use line symbols to represent these things. On the map, a blue line is used for a river and a black line is used for a road.

When something on a map is not a specific point, but rather a whole area, a cartographer uses an area symbol. These symbols shade an area to represent places such as forests, urban areas, and oceans.
Latitude and Longitude Lines

**Latitude**
Lines of latitude go across the earth from East to West, but they measure the globe from North to South starting at the Equator. In this picture, the sign marks the 45th parallel, but there is no line on the ground because these lines are imaginary. We draw imaginary lines on the earth to help us find and explain exact locations of places on earth.

**Longitude**
Lines of longitude run across the globe from North to South, but measure East and West starting at the Prime Meridian.

To find a place exactly, we need crossing lines that create an intersection or grid system. One grid system used by cartographers is the Latitude and Longitude Grid. Each location on the globe touches a line of latitude and a line of longitude. The crossing of the latitude and longitude lines is called a coordinate. Latitude and longitude are measured in degrees represented by the symbol “°”. The coordinates for Salem, Oregon are Latitude 45° North and Longitude 123° West.
Making a Globe Become a Map

How do you make something round become flat?

1. A globe is a best model of the earth because it is round like the earth. But it isn’t easy to carry around with us.

2. Cartographers have to find a way make the round earth flat so we can carry it around.

3. Once we flatten the round globe out, it stretches and changes shapes and sizes of the continents as it does when you flatten cookie dough.

What is a Map Projection?

A map projection is how cartographers flatten the earth onto paper. A map projection can be made by shining a flashlight into the middle of the globe and putting a piece of paper on the globe. Then, the flashlight shines onto the paper and you can trace the continents.
Types of Map Projections

Cylindrical

Wrap a piece of paper around the earth to **form a cylinder** that touches the equator all the way around the earth. Shine a light from the center of the earth, trace the image that is projected onto the paper, and then take the paper off for a **cylindrical projection**.

Planar/Azimuthal

Place a piece of paper on a **single point** on the earth. Then shine a light from the center of the earth, trace the image that is projected onto the paper, and take the paper off for a **planar or azimuthal projection**.

Conic

Wrap a piece of paper around the globe to **form a cone**. Shine a light from the center of the earth, trace the image that is projected onto the paper, and then take the paper off for a **conic projection**.

In each case, the projection is most accurate at the point where the paper touched the earth.
Map Distortions

When we flatten a round earth onto a piece of paper, there will be problems with any projection we choose. Just as flattening a ball of cookie dough stretches and pulls the dough into a new surface, the map projection stretches and pulls the parts of the earth into a new surface so it all can lie flat on the paper.

Since we know that all map projections have errors (distortions), we have to know what types of errors a map has so that we can pick the best projection to show the information we want to map. Maps will have distortions of one or more of these properties: Distance, Direction, Area, Shape, or Scale.

**Winkel Tripel Projection: A Compromise**

Some projections, known as compromise projections, have distortions but map makers try to make them as small as possible so that the map projection looks like what we are used to seeing on the globe. The Winkel Tripel Projection, for example, has distortions of area, direction, and distance, but they are small distortions.
Map Scale

Map scale is the ratio, or comparison, of the distance on the map to the real distance on the ground. When you change the scale of your map from small scale to large scale, it is the same as “zooming in.”

Mapmakers can show more detail on a large scale map because one unit on the map represents fewer units on the ground than on a small scale map. So if you want to show details of your town, you would use a large scale map. But if you want to show the whole country, you would use a small scale map.
Using Scale Bars

Ways to Represent Scale

Graphic Scale

| 0 | 2.5 | 5 | Miles |

You can use the scale bar to measure distances on the map.

Verbal Scale

1 centimeter equals 1,000 meters

You can use a ruler to measure distances on the map and then multiply the distance by 1,000 to find out the distance on the ground.

Representative Fraction

1:100,000

This ratio tells you that one unit (inch, centimeter, meter, etc.) on the map is equal to 100,000 of the same units on the ground. So if you found a distance of 5 centimeters on the map, you would know that it is equal to 500,000 centimeters on the ground.

Using the map scale to measure from Portland, OR to Denver, CO:

1. Put a piece of paper on the map to connect Portland and Denver
2. Draw marks on the paper where the dots are
3. Place the paper under the map scale and determine how many miles it is from Portland to Denver

Using Scale Bars

Seattle
Portland
San Francisco
Los Angeles
San Diego
Phoenix
Denver
Minneapolis
Chicago
St. Louis
Memphis
Atlanta
Miami
Dallas
Austin
New York
Washington DC

Using the map scale to measure from Portland, OR to Denver, CO:

1. Put a piece of paper on the map to connect Portland and Denver
2. Draw marks on the paper where the dots are
3. Place the paper under the map scale and determine how many miles it is from Portland to Denver
Physical Regions of the Pacific Northwest
Topography

Elevation Range (feet)

- 0 - 1,000
- 1,000 - 2,000
- 2,000 - 3,000
- 3,000 - 4,000
- 4,000 - 5,000
- 5,000 - 6,000
- 6,000 - 7,000
- 7,000 - 8,000
- 8,000 - 11,235
These cross sections show differences in elevation in Oregon. For example, if you follow the blue line (Northern Oregon) from the west to the east you can see that the elevation is at sea level at the Pacific Coast, but is high at Mt. Hood and the Wallowa Mountains.

Because elevation changes are small compared to the horizontal distances, we have exaggerated the vertical scale (height) to better show the variation in the elevations.
The outer surface of the globe is made up of a group of shifting plates. In some areas, such as the Himalayas, the plates converge (come together); in other areas, such as the mid-Atlantic Ocean, they diverge (pull apart); and in some areas, such as along California, they move side-by-side. Areas where the plates meet are often areas of high volcanic activity. The small maps show how plate movement has caused the continents to move over time and reach their present positions.
Off the coast of Oregon the North American plate meets the Pacific plate and the Juan de Fuca plate. As these plates move against each other they influence the location and development of earthquakes and volcanoes.
Natural Hazards: Earthquakes

Earthquake Magnitude (Strength)
- 4.0 - 4.5
- 4.6 - 5.0
- 5.1 - 5.5
- 5.6 - 6.0
- 6.6 - 7.0

Likelihood you would feel an earthquake
- High
- Low
Natural Hazards: Tsunamis

Astoria

Seaside

Newport

Coos Bay

City Limits  Tsunami Flood Zones

0  1  2 Miles

0  1  2 Miles

0  1  2 Miles

0  1  2 Miles

Tsunami Flood Zones

Astoria

Seaside

Newport

Coos Bay
At the end of the last ice age (20,000 years ago), a glacier formed an ice dam on the North Fork of the Clark River in Montana. When the dam broke, it caused a 500-foot-high wall of water to sweep west over Washington, where the waters scraped off layers of soil, leaving behind a landscape known today as the "Scablands".

The flood continued west and south to Oregon and through the Columbia River gorge. At Portland, the water flooded the Willamette Valley (briefly reversing the flow of the river) and finally headed northwest to the mouth of the Columbia where the flood waters, and the debris they carried, emptied into the Pacific Ocean.
Oregon has many alpine (or mountain) glaciers on the highest peaks. One of the impacts of global climate change is that these glaciers are melting and may disappear by the middle of the century.
Average Annual Precipitation

Average in Inches

Drier
- Up to 25
- 26-50
- 51-75
- 76-100
- 101-200

Wetter

Precipitation = rain and snow
Average January Temperature

Degrees Fahrenheit

Cool

Cold

- 41 - 47
- 36 - 40
- 31 - 35
- 26 - 30
- 16 - 25
Climographs
Continents influence the direction of ocean currents by changing the flow of the water. At the same time, the temperature of ocean currents influences the temperature of coastal areas, such as Oregon's coast.

Warm ocean temperatures are generated near the Equator, and then carried towards the poles where they cool before returning to the Equator. Most of the ocean currents off the coast of Oregon are cold.
Oregon’s climate is influenced by the westerly winds that blow from the Pacific Ocean, bringing cool, moist air toward the land. The directions of the main winds influence the weather on each continent but they also had an impact on the routes of global exploration during the day of sails (such as Christopher Columbus’ trips to the Americas).
An ecoregion is an area of land in which similar climate, flora (plants) and fauna (animals) interact to create an environment distinct from other areas. Oregon has several different ecoregions, from the moist, cool Cascade Range with its tall conifers, to the hot, arid Basin and Range with its junipers and sagebrush.
Ecoregions in Pictures

1. Coast Range
2. Willamette Valley
3. Klamath Mountains
4. Cascade Mountains
5. Eastern Cascades and Foothills
6. Basin and Range
7. Snake River Plain
8. Blue Mountains
9. Columbia Plateau
Vegetation Zones

Vegetation zones are areas with similar groups of plants.

- **Western Hemlock Zone** – Varied groups of plants occur depending on precipitation and elevation.
- **Willamette Forest-Prairie Zone** – Various forest, woodland, open savanna and prairie type groups of plants.
- **Alpine Zone** – These relatively small areas are found only at the highest elevations and consist of small plants and low-lying shrubs.
- **Mixed Conifer and Broadleaf Forest Zone** – This zone's plant groups have a mix of Oregon and Californian species.
- **Cascade Subalpine Forest Zone** – Open meadow and forests form patterns according to elevation and snowpack.
- **Grand Fir and Douglas Fir Zone** – The plant groups in this zone require only a moderate amount of water.
- **Ponderosa Pine Zone** – Drier than the fir zones, these plant groups consist of Ponderosas with woody shrub or grassland.
- **Grasslands Zone** – These areas have grassland plant groups with almost no trees or shrubs.
- **Western Juniper Zone** – These open woodlands have Juniper trees with desert shrubs or sagebrush plant groups.
- **Big Sagebrush Zone** – This large zone is dominated by sagebrush, with some other shrubs and grasses.
Vegetation Zones: Elevation Cross-Section

- **Coast Range**: Wetter
- **Portland**: West
- **Mt. Hood**: Central
- **Blue Mountains**: East

**Zone Descriptions**

- **Willamette Forest-Prairie Zone**: Western Hemlock
- **Western Hemlock Zone**: Grand Fir and Douglas Fir
- **Cascade Subalpine Forest Zone**: Ponderosa Pine
- **Alpine Zone**: Grasslands

**Conifer**
- **Common Name**: Coniferous conifer
- **Leafy Tree**: Trt leafious

**Plant Species**
- **Common Name**: Planty Mcplant
- **Grasses**: Grassy Mcgrass

**Sitka S**:
Oregon's forest zones are defined by the main type of tree species found in each zone. Most areas are dominated by one species, but other areas have relatively equal portions of more than one species.
Timber Harvest Over Time

Numbers are in thousands of board-feet harvested per square mile

- **0 - 32**
- **33 - 91**
- **92 - 201**
- **202 - 299**
- **300 - 753**
What exactly are “Board-Feet?”

“Board-feet” is a measurement of timber that people use to describe how much useable lumber can be obtained from a cut tree. One board-foot is equal to a 12-inch by 12-inch by 1-inch piece of wood.

One mature Douglas Fir tree is equal to approximately 187.5 board-feet. This assumes that it is cut after 75 years of growth and that it grew in a healthy stand that had no more than 400 trees in each acre.

One average 2000 square-foot house takes approximately 20,000 board-feet of lumber to build. The cabinets usually add an additional 3,000 board-feet.
Forest Fire Risk

Historic Fires

1848- Nestucca
1849- Siletz
1853- Yaquina
1865- Silverton
1868- Coos Bay
1933, '39, '45, '51- Tillamook
1936- Bandon
2002- Biscuit

Historic Fires

1848- Nestucca
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1868- Coos Bay
1933, '39, '45, '51- Tillamook
1936- Bandon
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Forest Fire Risk

Low Risk
High Risk
Medium Risk
Non - Forest
These maps show the distribution, or range, of some of Oregon's wildlife species. The distribution shows where each animal can be found but the number of animals found in each area depends on the abundance of food, predators, and other habitat conditions.
The Pacific Flyway

Many birds migrate during the year, sometimes traveling thousands of miles to breeding and feeding grounds.

They migrate in "flyways" where there is adequate food and water for them to rest before continuing their journeys. Because of its rivers, lakes and wetlands, Oregon is home to several flyways and breeding grounds. Wildlife refuges have been established to protect the areas where birds breed and rest during their migrations.
Trees that fall into the stream provide shelter from predators.

Boulders and cobbles provide habitat for insects like stoneflies and mayflies.

Turbulent water creates dissolved oxygen for salmon.

Fallen leaves and branches supply the stream with nutrients.

Riparian areas made up of trees and bushes provide shade for the stream which keeps the stream cool for salmonids.
**Fish and Hatcheries**

Total catch: Top five fish and shellfish

**Oregon Fish Hatcheries**
- Salmon
- Trout
- Salmon and Trout

**Coastal Catch By Port**
- Tuna
- Shrimp
- Salmon/Steelhead
- Rockfish
- Crab

Circles are proportional to pounds of fish caught at each port annually.
Rivers and Lakes

- Tualatin R.
- Snake R.
- N. Fork John Day R.
- John Day R.
- Middle Fork Willamette R.
- Williamson R.
- Owyhee R.
- Donner and Blitzen R.
- Silvies R.
- Powder R.
- Crooked R.
- S. Umpqua R.
- Umpqua R.
- Siuslaw R.
- McKenzie R.
- S. Santiam R.
- N. Santiam R.
- Molalla R.
- Nehalem R.
- Willamette R.
- Snake R.
- Columbia R.
- Malheur R.
- Lake Harney R.
- Lake Albert R.
- Goose Lake R.
- Klamath R.
- Lake Klamath R.
- Crater Lake R.
- Summer Lake R.
- Upper Rogue R.
- Rogue R.
- S. Umpqua R.
- N. Umpqua R.
- Molalla R.
- Sandy R.
- Middle Fork Willamette R.
- McKenzie R.
- S. Santiam R.
- N. Santiam R.
- Sandy R.
- Jordan R.
- Sandy R.
- Molalla R.
- Sandy R.
- Middle Fork Willamette R.
- McKenzie R.
- S. Santiam R.
- N. Santiam R.
- Sandy R.
- Jordan R.
- Sandy R.
- Molalla R.
- Sandy R.
- Middle Fork Willamette R.
- McKenzie R.
- S. Santiam R.
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- Molalla R.
- Sandy R.
- Middle Fork Willamette R.
- McKenzie R.
- S. Santiam R.
- N. Santiam R.
- Sandy R.
- Jordan R.
- Sandy R.
- Molalla R.
- Sandy R.
Dams of the Pacific Northwest

Major Purpose

- Hydroelectric Dam
- Irrigation Dam
- Flood Control Dam

Map showing dams and rivers in the Pacific Northwest region.
Oregon Dams

- McNary
- John Day
- The Dalles
- Bonneville
- Owyhee
- Hell's Canyon
- Round Butte
- Bowman
- Detroit
- Green Peter
- Cougar
- Lookout Point
- Hills Creek
- Wickiup
- Lost Creek
- Link River
- Brownlee
- Warm Springs

Dams with the largest reservoirs (Holding more than 155,000 acre-feet)

One acre-foot = 325,851 gallons
Diatomite is a soft chalk-like rock that is crushed and used in insecticides, cat litter, and dynamite.

Zeolite is formed when volcanic rocks and ash react with water. It is crushed and dried to use in concrete.

Perlite is a light volcanic glass that has a high water content and expands when heated. It is used in construction, plaster, insulation, and horticulture.

Gemstones are precious and semi-precious minerals used to make jewelry.

Talc is green, grey, or white, and is an important industrial mineral used for counter tops and in making paints, ceramics, and paper.

Pumice is a light, porous volcanic rock that looks like a sponge. It is used in pencil erasers, cosmetics, and to produce stone-washed jeans.
Mineral Deposits (not actively mined)

Copper is a reddish metal used in electrical wiring and pipes.

Mercury is a toxic silvery metal (also known as quicksilver) and is liquid at room temperature. It is used in thermometers, barometers, and neon lights.

Chromium is a steel-gray, shiny, hard metal used in stainless steel and in dyes and paints.

Gold can be mined from hard rock and from river gravels and beach sands and is used in jewelry, electrical conductors, and dentistry.

Nickel is a silvery white metal used in stainless steel, cast iron, magnets, and coins.

Uranium is a dense element that is silvery in color and radioactive. It is used for nuclear energy and military weapons.
Energy Production

Major Power Plants (100 MegaWatts)

100 MegaWatts is enough energy for 35,000 homes.
**Renewable Energy Potential**

**Solar energy** is measured in kilowatts (kw) per square meter (m²) per day (kw/m²/day)

**Geothermal energy** is measured by the amount of heat energy produced by the earth in an area (average thermal conductivity watts/meter-Kelvin)

**Wind potential** is generally found in areas that have moderately strong and consistent winds

---

**Wind Potential**

**Geothermal Potential**
In 1780, before the expedition of Lewis and Clark, there were many Native American tribes across Oregon, including the Chinook, Kalapooia, and Molalla. They lived mainly along the coast and in the Willamette River and lower Columbia River. In the mid-1800s, the 49th parallel was set as the International Border, gold was discovered in California, and the Oregon Trail was opened up. Settlers from eastern states began to pour in to the west. Fighting and European diseases such as smallpox killed many Native Americans. Some tribes were wiped out of existence. The remaining tribes were placed on reservations. Oregon has three main reservations—Warm Springs, Umatilla, and Grand Ronde—and a few smaller ones like Cow Creek and Siletz. Today, however, many Native Americans live off the reservations in cities and rural areas throughout the state.
Native American Tribes and Language Groups

<table>
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<tr>
<th>Tribes</th>
<th>Language</th>
</tr>
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<tr>
<td>Clatskanie</td>
<td>Penutian</td>
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<tr>
<td>Chinook</td>
<td>Athabascan</td>
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<td>Sahaptin</td>
<td>Takelma-Kalapuyan</td>
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<td>Salish</td>
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<td>Uto-Aztecan</td>
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<td>Kalapuya</td>
<td>Cayuse</td>
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<tr>
<td>Alsea</td>
<td>Molkan</td>
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<tr>
<td>Molalla</td>
<td>Alsea &amp; Sluslaw</td>
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</tbody>
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This area inhabited by speakers of: Yukichetunne, Tutuni, Mikonotunne, Chemetunne, Chetleshin, Kwaishhtunnetunne

The color represents language groups. The names represent the dialects spoken in that group.
The Lewis and Clark Expedition, 1804-1806
The Oregon Trail

Wagon wheel ruts on the Oregon Trail in Eastern Oregon
United States in 1846: States and Territories

Before becoming a state in 1845, Texas was independent and not part of the U.S.
United States in 1859: Oregon Statehood
Population

People
one dot = 500 people

- 1,000 people
- 5,000 people
- 10,000 people
- 50,000 people
- 100,000 people

Map of Oregon state showing population distribution with dots representing different population densities.
Where Do We Come From?

Ethnicity refers to the cultural characteristics that a group has in common. These may include language, religion, country of origin, or other shared characteristics.

Migration to Oregon within United States

The width of the arrow is proportional to the number of people moving to Oregon from other regions of the United States.
Ancestry and Race in Oregon

Ancestry

Ancestry refers to your parents, your grandparents, and other relatives from whom you are descended. An important element of ancestry is the country (or countries) that you or your ancestors came from before arriving in the United States.

Race

As used in the U.S. Census, race refers to social and cultural characteristics as well as ancestry. Because each of us has our own understanding of our family’s culture and ancestry, the U.S. Census allows us to identify our own race, culture and ethnicity.
The Age of Oregon’s Population

What is a Population Pyramid?

A population pyramid divides a population by gender (male or female) and by age (from youngest at the base to oldest at the peaks). Each bar of the pyramid represents a percentage of the population.

This pyramid shows Oregon’s 2002 population, and each bar represents five years of the population.

Another way to show a state’s population is with a choropleth map. The two maps at the right show where the 10-14 year olds and the 55-59 year olds live in Oregon.
Population Pyramids of Three Counties

- **Multnomah County**
- **Curry County**
- **Malheur County**

The pyramids represent the age distribution of males and females in each county. The bars indicate the percentage of the population in each age group.
Growth of Pendleton and Bend

The maps on these two pages show how Bend, Pendleton, Ashland and Medford have grown since 1900. When did most of the growth occur? Are the cities similar or different in the ways they have grown?
Growth of Ashland and Medford

1900

1940

1980

2005

River
City Limits
Major Road
Railroad

Miles

Medford
Phoenix
Talent
Ashland
Jacksonville
Pendleton
Bend
Medford/Ashland

0 2.5 5
Land Ownership

Division of Oregon Land Ownership

- Federal Land: 52.5%
- State Land: 2.1%
- Private Land: 45.4%

State Land

Private Land

Federal Land
Federal Land Ownership

**Division of Federal Land Ownership**

- Forest Service: 46.6%
- Bureau of Land Management: 49.0%
- National Park Service: .5%
- Other federal agency: 3.9%

**Maps**

- Division of Federal Land Ownership
- Bureau of Land Management
- National Park Service
- Forest Service

- Oregon Caves National Monument
- Crater Lake National Park
- John Day Fossil Beds National Monument
- Lewis and Clark National Historical Park
- Oregon Caves National Monument
Farm and Ranch Lands

- Farms
- Ranches
Major Crops

Wheat

One dot = 10,000 bushels
One dot = 10 billion kernels
One dot = 600,000 pounds

Wheat is Oregon’s largest crop by weight.

Greenhouses and nurseries

One dot = five nurseries

Greenhouses and nurseries are Oregon’s largest crop by total dollar value.
Farm Products

Onions

Potatoes

Milk Cows

Beef Cows

One dot = 20,000 lbs. of onions

One dot = 20,000 lbs. of potatoes

One dot = 100 cows

One dot = 500 cows
Fruit Crops

**Grapes**
- One dot = 100,000 lbs. of grapes

**Apples**
- One dot = 100,000 lbs. of apples

**Cherries**
- One dot = 100,000 lbs. of cherries

**Pears**
- One dot = 200,000 lbs. of pears
Defining a Region: The Willamette Valley

We can define a “region” in many ways. For example, the Willamette Valley can be defined as a political region (counties), an ecological region (vegetation) or as a land-use region (agricultural).
Willamette Valley Crops

**Grapes**
- One dot = 100,000 lbs. of grapes

**Nurseries**
- One dot = 5 nurseries

**Marionberries**
- One dot = 100,000 lbs. of marionberries

**Hazelnuts**
- One dot = 10,000 lbs. of hazelnuts

**Christmas Trees**
- One dot = 10,000 trees

**Black Raspberries**
- One dot = 10,000 lbs. of black raspberries
Ports

Columbia/Snake River System Ports

Port of Portland

Containers

Top 10 Ports on the West Coast
Ranked by Cargo Volume (2006)
Oregon Exports

Individual countries cannot produce all the products their citizens need or want. When countries trade, they import (bring in products) and export (ship out products). Oregon exported more than six billion dollars of goods to foreign countries in 2005, about 1.5% of all goods shipped from the USA that year. More than 50% of those goods were shipped to just five countries. It is difficult to measure the amount of goods imported for use in Oregon because when ships arrive in Oregon’s ports only some of the goods they deliver stay in Oregon. The rest is sent to other states.
Employment: By Sector

- Natural Resources: 1,306,000 Jobs
- Health and Education: 180,000 Jobs
- Government: 155,000 Jobs
- Transportation and Trade: 44,000 Jobs
- Manufacturing and Construction: 180,000 Jobs
- Business, Information, and Finance: 44,000 Jobs
- Leisure and Hospitality: 44,000 Jobs
Using Data: A Cartographer’s Dilemma

An example using employment in Oregon

Cartographers have to make decisions about how to map data. One decision is the area that is used to map the data. For example, the cartographer can use counties as an area which can then be grouped into 15 regions or into 4 regions. The result is maps which change the way you see the information.

Counties grouped into 15 different areas

These maps show two important types of employment in Oregon – natural resources and government – and the locations of those jobs seem to change depending on how the cartographer groups the counties.

Counties grouped into 4 different areas

- Natural Resources
  - .1% - .5%
  - .6 - 1.5%
  - 1.6% - 3.0%
  - 3.1% - 15.0%

- Government
  - 12% - 16%
  - 17% - 20%
  - 21% - 25%
  - 26% - 35%
Counties and County Seats
This image is taken at night from a satellite. The brightest parts of the image are where the largest numbers of people live. The areas are white because they are the lights from streetlamps and buildings. Cities, where many people live, are the brightest areas.

This image is a map made from the Population Map in this atlas, designed to look like Oregon at night.

This image shows Oregon from the satellite.
The National Wild and Scenic Rivers Act of 1968 identified rivers in the United States that are to be preserved for their remarkable scenic, recreation, wildlife, geologic, historic, or cultural values. Rivers, or sections of rivers, designated as wild and scenic are preserved in their free-flowing condition and are not dammed or modified by humans.
Dry Fields has the lowest average annual precipitation in Oregon at 7.16 inches.

December 97 - February 98 there were 79 consecutive days of precipitation recorded in Otis.

The ghost town of Valsetz holds the Oregon record for the highest average annual precipitation of 130.57 inches.

Port Orford holds the maximum 24-hour precipitation record of 11.65 inches.

Laurel Mountain, near Dallas, holds the maximum annual precipitation record of 204.04 inches.

Warm Springs Reservation holds the record for the minimum annual precipitation with 3.33 inches in 1939.

The coldest temperature was recorded on February 10, 1933 in Seneca at -54 degrees F (the next day was 45 degrees F).

The hottest temperature was recorded in Pendleton on August 10, 1987 at 119 degrees F.

In a mountainous, uninhabited, timbered area 30 miles north of Enterprise, about 1,800 acres of prime timber was destroyed, and another 1,200 acres were badly damaged. The tornado lasted less than 5 minutes and came with hail the size of golf balls. It hit about 4 pm, and had a ground path about 8-10 miles long.

From June-September 1967, 74 consecutive days of 90+ degree F temperatures were recorded in Ontario.

Columbus Day Storm, October 1962
116 mph wind gusts in Portland
96 mph wind gusts in Astoria
138 mph wind gusts in Newport
127 mph wind gusts in Corvallis
106 mph wind gusts in Troutdale

Cities lost power for 2 to 3 weeks and over 50,000 dwellings were damaged. 38 people were killed and 300 injured.

Entire orchards were destroyed and many livestock were hurt or killed from falling trees and collapsing barns.

15 times as many trees were blown down during this windstorm than in the 1980 eruption of Mt. St. Helens.

Tornado – April 5, 1972
Starting out as strong winds near Tigard, the F3 tornado touched down north of Portland on the banks of the Columbia River before moving north into Vancouver where 6 people died and 300 people were injured.

Very Wet!
Laurel Mountain, near Dallas, holds the minimum annual precipitation record of 130.57 inches.

Warm Springs holds the record for the most consecutive days without any measurable precipitation at 141 days during 1951.

Cold Records at Crater Lake: Most consecutive cold days, at 32 degrees F or less, is 209 days.

Crater Lake also holds the record for the lowest average annual temperature at 38.1 degrees F.

Snow and Cold
Snow Records at Crater Lake: Highest average annual snowfall of 529.9 inches.

Cold Records at Crater Lake: Most consecutive cold days, at 32 degrees F or less, is 209 days.

Crater Lake also holds the record for the lowest average annual temperature at 38.1 degrees F.

Hot, Hot, Hot
Illahe has the highest average annual temperature in Oregon, averaging 55 degrees F.

Hot Fields has the lowest average annual precipitation in Oregon at 7.16 inches.

Hot Horn
From June-September 1967, 74 consecutive days of 90+ degree F temperatures were recorded in Ontario.

Snow and Cold
Snow Records at Crater Lake: Highest average annual snowfall of 529.9 inches.

Cold Records at Crater Lake: Most consecutive cold days, at 32 degrees F or less, is 209 days.

Crater Lake also holds the record for the lowest average annual temperature at 38.1 degrees F.
Places with Native American Names

Tillamook is the name of a Salish tribe
Multnomah is the Chinook name for the Willamette River
Wallowa Mountains refers to a Nez Perce word for a type of fish trap
Siskiyou Mountains is a Cree word for “spotted horse” which a fur trader lost in a snowstorm in the mountains
Siletz River refers to a local Native American word for black bear
Umpqua River is a Native American word for the area around that river
Coos Bay was named after the Cook-koo-oose tribe

Places Named After Natural Features

Cape Foulweather is the place (and weather) of Captain Cook’s first landfall in Oregon
Cascade Range was named after the rapids in the Columbia River
The Dalles means “flagstones” in French, and refers to a narrow river bordered by flat ledges
Sandy River is short “Quicksand River”, named by named by Lewis and Clark
Strawberry Mountains are named for the wild strawberries found in the area
Deschutes River means “falls” in French and refers to Celilo Falls on the Columbia River
Warm Springs is named for the local natural

Place Name Origins

Cape Foulweather
Cape Foulweather is the place (and weather) of Captain Cook’s first landfall in Oregon.

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Deschutes River
Deschutes River means “falls” in French and refers to Celilo Falls on the Columbia River.

Warm Springs
Warm Springs is named for the local natural.

Places Named for Explorers and Immigrant Settlers

Beaverton
Beaverton is named for the abundance of beavers that originally inhabited the wetlands of this agricultural region.

Burns
Burns is named for the Scottish poet Robert Burns.

Hood River and Mt. Hood
Hood River and Mt. Hood are named for Samuel Hood, a member of Captain Vancouver’s expedition.

Corvallis
Corvallis is Latin for “heart of the valley”.

Steens Mountain
Steens Mountain is named for the army major who fought the Paiutes in the region in 1860.

Summer Lake
Summer Lake was named by Captain Fremont to contrast with nearby Winter Ridge.

Enterprise
Enterprise was named by the town’s first, and optimistic, residents.

Rogue River
Rogue River was first called Woodville, but was changed to better advertise the town.

Harney Lake
Harney Lake is named after a Brigadier General William Harney.

Owyhee River
Owyhee River is named for Hawaiian fur trappers killed nearby.

Malheur River
Malheur River Means “misfortune” in French and refers to thefts of furs that hunters experienced in the area.

Astoria
Astoria is named for John Jacob Astor whose fur company had a trading post there.
## Sources

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### Data:

- **Page 04**: US Census Bureau 2010
- **Page 05**: Prism Climate Group, Oregon State University, 30-year normals, 1971-2000
- **Page 06**: U.S. Census Bureau, 2009-2013 American Community Survey
- **Page 23,24,25**: Prism Climate Group, Oregon State University, 30-year normals, 1971-2000
- **Page 26**: Oregon Climate Service
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- **Page 40**: Oregon Department of Fish and Wildlife 2014 Commercial food fish landings by port
- **Page 45,46**: Oregon Department of Geology and Mineral Industries (DOGAMI)
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- **Page 72**: 2012 American Association of Port Authorities
- **Page 73**: US Census Foreign Trade 2014
- **Page 74,75**: State of Oregon Employment Department 2014 Summary
- **Page 78**: Public Mapping Project
- **Page 79**: US Census Bureau 2010
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