PLANTING PROSPERITY AND HARVESTING HEALTH

Trade-offs and Sustainability in the Oregon-Washington Regional Food System

FINAL

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Institute of Portland Metropolitan Studies
Nohad A. Toulan School of Urban Studies and Planning
College of Urban and Public Affairs
www.pdx.edu/ims

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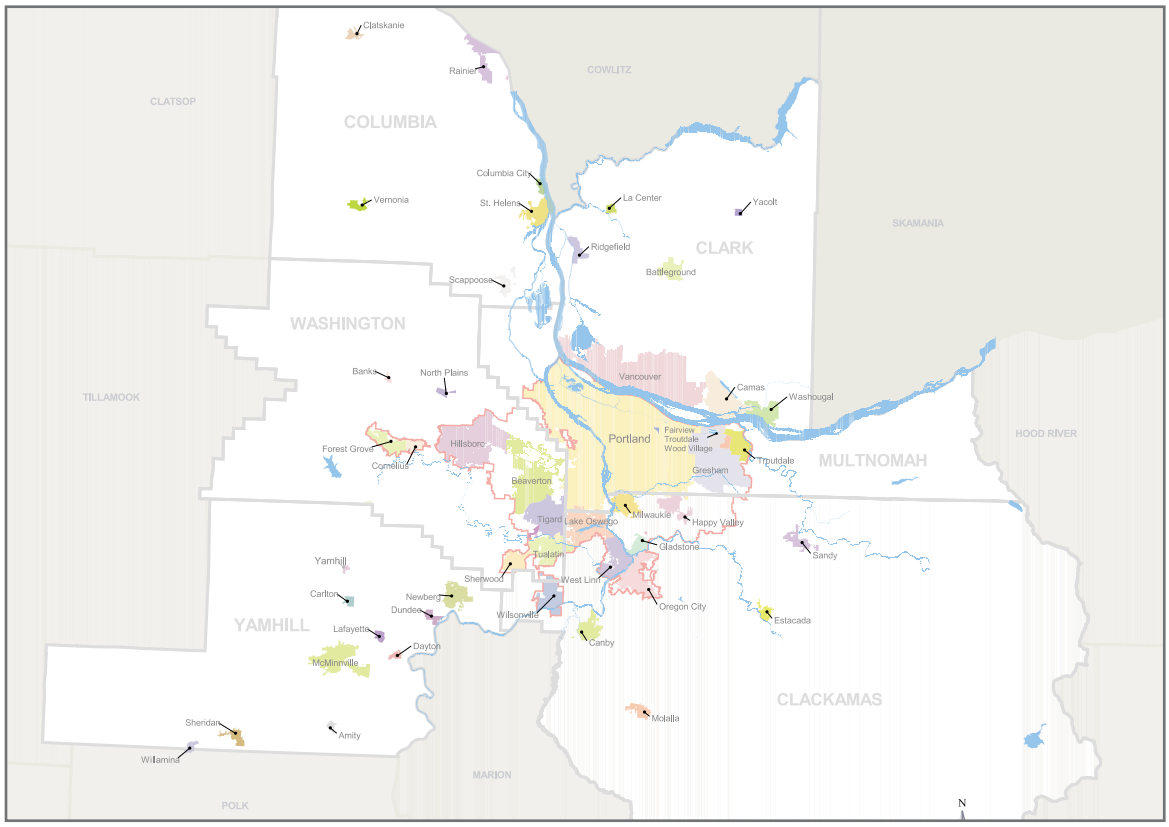

IMS Mission Statement

The Institute of Portland Metropolitan Studies is a service and research center located in the College of Urban and Public Affairs at Portland State University. The mission of the Institute is to serve the communities of the Portland-Vancouver metropolitan area and to further the urban mission of Portland State University by:

■ Identifying the most pressing issues facing this metropolitan area and its communities, and developing the data and other information needed to fully communicate their scope and significance;

■ Building capacity in the region to address critical metropolitan issues by: brokering partnerships among faculty, students, and area communities to foster new understanding of and/or new strategies for addressing those issues; and acting as a catalyst to bring elected officials, civic and business leaders together in a neutral and independent forum to discuss critical metropolitan issues and options for addressing them; and developing new resources to support research and service activities needed to meet those objectives.

By acting effectively on this mission statement, the Institute will enable the:

■ University to help advance the economic, environmental, and social goals held by the communities of the region; and

■ Communities of this region to act collectively to seek and secure a sustainable future for this metropolitan area.

ACKNOWLEDGEMENTS

This report has benefited from the contributions and insight of many. The Institute of Portland Metropolitan Studies appreciates everyone who supported this effort.

Goals for the regional food system and input regarding which indicators were most relevant came from representatives of businesses, non-profits and government agencies who work within the food system. Those who participated through interviews and attending stakeholder workgroups and chose to be acknowledged are listed in Appendix B. Thank you for your time and energy.

Many of the data sheets were reviewed by outside experts who gave us advice on interpretation of the data. Their names are also in Appendix B. Any remaining errors are entirely our responsibility.

The secondary data collection and writing of this report would not have been possible without the financial support of the Kaiser Permanente Community Health Initiative, the Food Innovatiion Center Experiment Station, and the Oregon State University Extension Service.

We would also like to thank Janet Hammer, Barry Messer and Leslie McBride for suggesting the Institute take on this project. Our efforts are based on their earlier work with Community Food Matters.

Emily Renfrow kept us organized and grounded throughout the process.

Authors of this report include:

Sheila Martin
Meg Merrick
Tia Henderson
Elizabeth Mylott
Kelly Haines
Colin Price
Amy Koski
Becky Dann

Editor: Tracy Dillon

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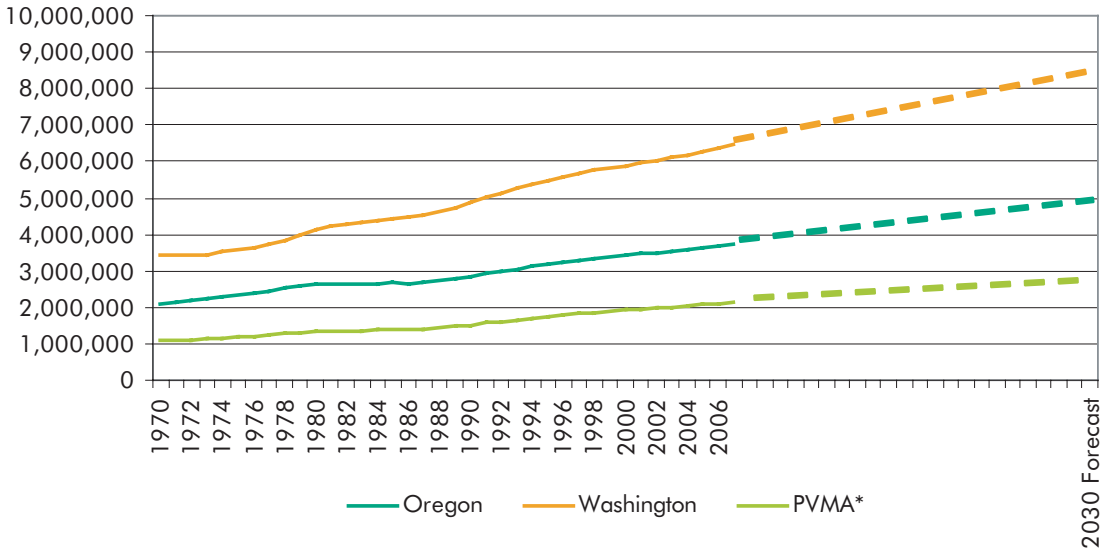
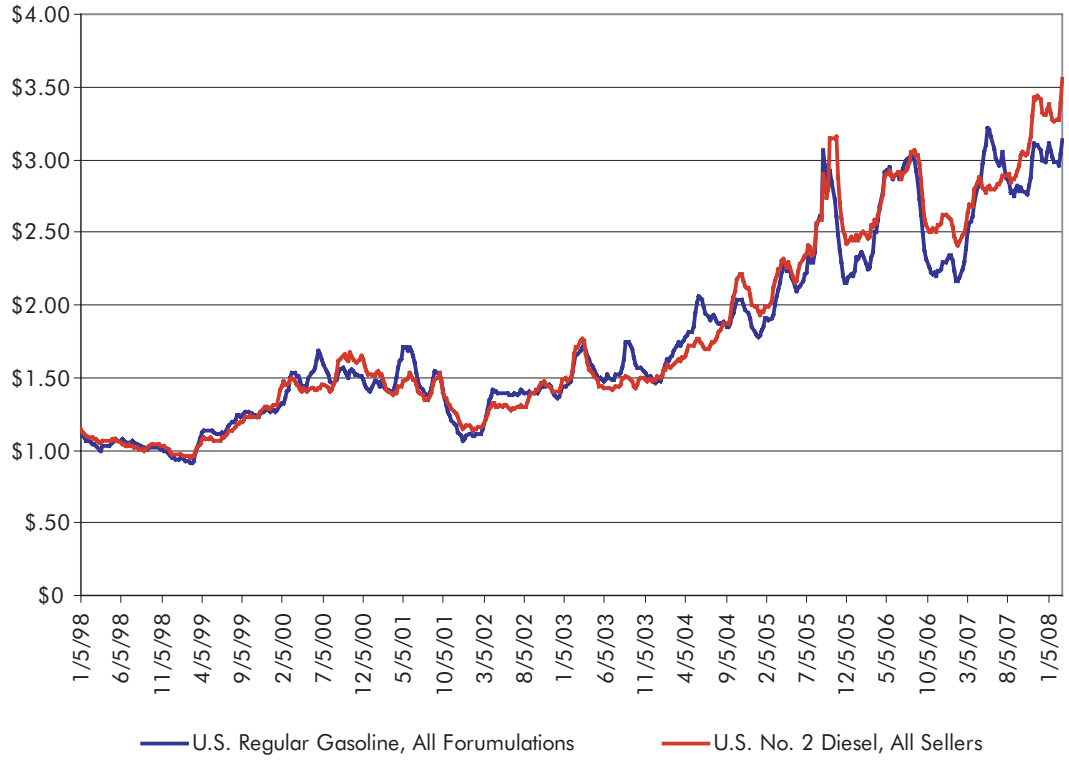


Sources: Washington State Office of Financial Management; Oregon OEA; PSU

**Portland-Vancouver Metro includes Clackamas, Columbia, Multnomah, Washington, and Yamhill counties in Oregon and Clark County in Washington.*

Figure 2: Retail Gasoline and Diesel Prices



Source: EIA

Introduction

Food is our common ground, a universal experience. —James Beard

Our food choices can have far-ranging impacts. As we eat our meals, we might not realize that where and how our food is grown, how it is processed, and where and how it is sold affect the economic, environmental, and human health of our region. Sustainability of our economy, our environment, and our society are all directly tied to the sustainability of the region's food system.

Although we might not be aware of it, everyone in our region is part of a complex and far-reaching food system, and many of us play more than one role. All of us are eaters, and we may also play a role as a grower, producer, distributor, vendor, researcher, or advocate. Together, we face changes in social, environmental, and economic landscapes that can present important challenges to the food system's sustainability. Throughout the region, we are developing programs and policies to address these challenges; however, these efforts occur without the support of a sophisticated understanding of either long-term trends or the interconnections among the many elements of the food system.

This assessment reveals food system sustainability trends in Oregon and Washington, focusing specifically on the producers in both states and the consumers in the Portland-Vancouver region. We began the assessment by asking a group of food system stakeholders from Oregon and Washington to define broadly supported goals for a sustainable food system. They also helped us identify the data necessary to understand trends in the food system. This information can be used in the future to establish benchmarks and to assess future progress toward food system sustainability goals. Framed by stakeholder concerns, this report will assist program and policy decision makers in prioritizing efforts to shape and strengthen the regional food system. This information is also a foundation for building new and unique partnerships among organizations in food system planning.

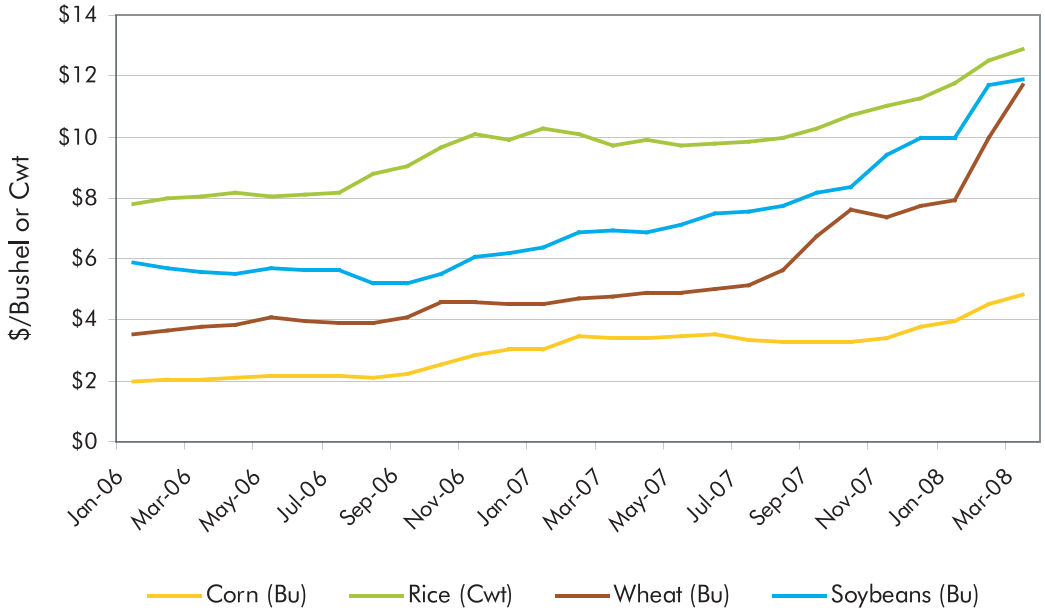
Competition for Food System Resources

Worldwide, a number of important and closely connected trends are affecting how and where food is grown, what food products are offered to consumers, and at what cost. Each of these global trends affects our region and the competition for key food system resources. These global trends include population growth, global climate change, fossil fuel price increases, and rising commodity prices.

Regional population growth creates land demand for homes and industry, diminishing the supply of land for agriculture. Expanding urban areas can threaten farm land as conflicts arise between growers and residential neighborhoods. While population growth drives increasing demand for food, it may also threaten the farmland that can support increased food production. As shown in Figure 1, population growth in Oregon, Washington, and the Portland-Vancouver region has grown a great deal since 1970, and growth will continue at a brisk pace. Population in the Portland-Vancouver region was about 1.1 million in 1970. Today it has almost doubled to 2.1 million; we expect it to grow by about 800,000, or 35 percent, by 2030. How will we continue to feed our population while providing space for homes and industry?

A growing population also impacts the natural environment. Global climate change can affect food production, and scientists have documented climate trends in the Pacific Northwest that reflect global trends. Since 1975, average annual precipitation in Oregon has increased 10 percent, sea levels at the central and northern Oregon coasts have increased, and snow pack has declined by 3 percent from 1950 to 1995 (Resource Innovations, 2005). The agricultural industry will need to adapt to these and future changes.

Figure 3: U.S. Commodity Prices Received by Farmers



Source: NASS

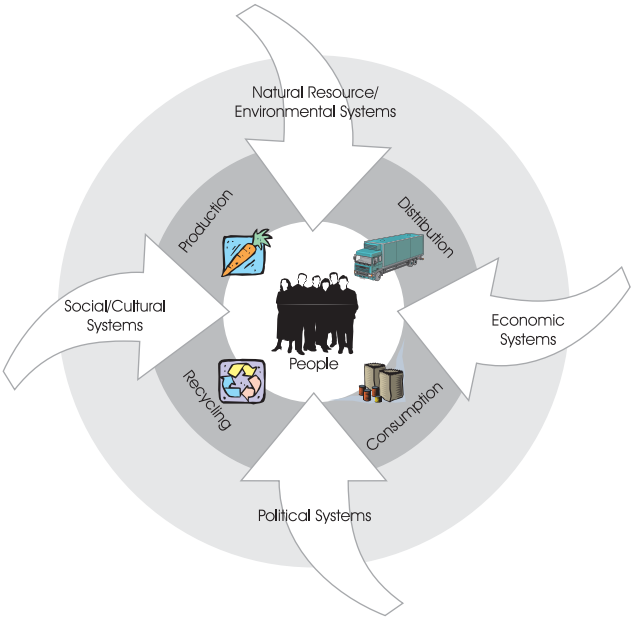


Figure 4: "The Food System Model."
Source: Adapted from San Francisco Food Alliance, *2005 San Francisco Collaborative Food System Assessment*.

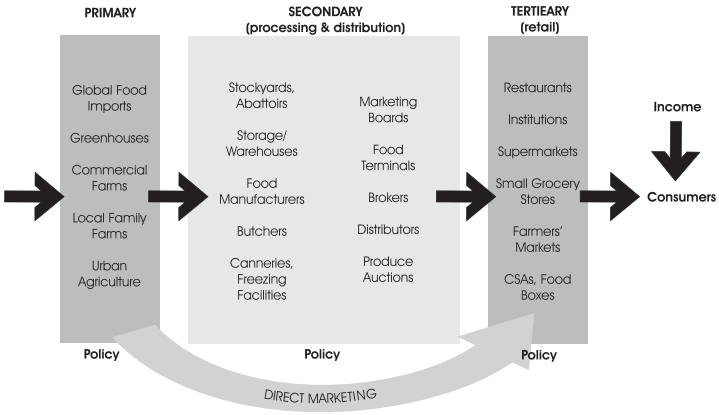


Figure 5: A food system model.
Source: Adapted from Xuereb, M. & Desjardins, E. (2007), *Towards a healthy community food system for Waterloo Region- Interim Report*. Waterloo, Canada: Region of Waterloo Public Health, Health Determinants, Planning and Evaluation Division.

Recent spikes in energy prices (Figure 2) have affected consumers' disposable income as well as costs in many economic sectors. Agriculture has been disproportionately affected by recent energy price increases due to the industry's relatively high use of energy—about $10 billion per year, or six percent of total production expenses. Most of agriculture's energy use is in the form of gasoline and diesel fuel (Brown and Elliott, 2005). Thus, the sharp increases in the price of crude oil, gasoline, and diesel are affecting consumers in two ways: increasing their own fuel costs and driving up the cost of food.

Figure 3 illustrates sharp increases in the prices paid to farmers for several important food commodities. Since January of 2006, the prices of corn and soybeans have more than doubled while the price of wheat has more than tripled. The price of rice has risen 65 percent.

The Regional Food System

Figures 4 and 5 depict the actors and systems of the regional food system, which is a complex web of producers, distributors, consumers, and nutritional subsystems. Sobal et al. (1998) describe the food system as "the set of operations and processes involved in transforming raw materials and transforming nutrients into health outcomes, all of which function as a system with biophysical and sociocultural contexts (p. 853)." The food system includes the biophysical environment and the social environment, as well as the resources that they rely on and the outcomes that they produce.

Everyone has a stake in the regional food system. The actors in the food system influence what is grown, produced, sold, and consumed. In addition to farmers and other first-line producers, food processors and food product manufacturers make decisions about what food will be available to consumers. Distributors move the food from farmers and processors to wholesale and retail businesses and ultimately to consumers. A variety of equipment and services that support the food industry are also part of the food system. Other key players in the food system include policymakers, advocates, funders, researchers, and educators.

The food system reflects the regional economy as well as the social and political context of our region. Public policies, the biophysical environment, the social environment, and supporting infrastructure all exert influence on the food system.

Beyond local actors, our region's food system is shaped by federal funding, programs, and policies. In particular, the federal farm bill influences what farmers grow, how they grow it, where they sell it, and what consumers eat. Local food system stakeholders are working toward exerting more influence over the farm bill, and the most recent bill, the Food Conservation and Energy Act of 2008, contained limited changes that address some food systems sustainability issues.

We can measure the value of the food system to society by its many outcomes, of which food is just one. Other physical outcomes include food byproducts and waste created in the production and processing of food and food products. A food system that is working well should also provide satisfaction, health, meaning, and culture to consumers, both through food and its production. A sustainable food system should offer economic prosperity to consumers and producers, and promote environmental quality and equity.

We've identified nine key resources in the food system: the land where food is grown and processed; water used to irrigate cropland, support fish, produce energy, and process food products; energy used in the production and transportation of food; labor and talent employed in the production, processing, development, and sale of food and food products; capital that funds farms, food businesses, and research; food-related technology and knowledge that inform the development of new production techniques as well as providing information about the food we eat; consumer choice and spending power; the influence of program and policy makers; and social capital. The indicator sheets that appear in Appendix A cover most, but not

Courtesy of Dancing Roots Farm

Box 1: Stakeholder Defined Goals for the Regional Food System

Resource Stewardship: Food production, processing, distribution, and disposal practices contribute to ecological health.

Economic Prosperity and Diversity: All sectors of the food system foster innovation, diversity, new economic opportunities, profitability, and new distribution linkages for the region.

Food Access: All individuals have easy year-round access to a diversity of culturally appropriate, healthy, affordable foods from non-emergency sources.

Food Choices Support Personal and Community Health: Government policies, programs and economic market infrastructure enable people to make food choices that support personal health.

Regional Market Expansion and Infrastructure Support: Public and private investment supports regional food market expansion.

Agriculture Land-Base Maintenance: Access and ability to farm productive land is maintained.

Opportunity and Justice for All Food Workers: A regional workforce continues to produce food. All food system workers (e.g. farmers, fishers, retail) earn a living wage, have safe and humane working conditions, and have opportunities for advancement.

Resiliency: The regional food system is resilient in the face of threats to food supply, food safety, and economic volatility.

Food Choices Restore Cross-System Respect: Infrastructure supports and enhances direct connections and relationships across the chain of production and consumption.

all, of these resources. Information on how technology, influence, and social capital are used in the regional food system is not easy to identify. Thus, this report covers data for the remaining categories of resources that influence the food system.

Process

This assessment is a continuation of the work conducted from 2001 to 2006 by a group called Community Food Matters (CFM). CFM was a local food system coalition whose advisory board included representatives from public, private, non-governmental, and academic sectors. Through its extensive engagement of food system actors, CFM established the need for an assessment. In Fall 2006, The Institute of Portland Metropolitan Studies took up the initiative to create a food system assessment. In January of 2008, Kaiser Permanente's Community Health Initiative signed on as a sponsor.

After researching other food system indicator projects and literature on the use of stakeholders in shaping goals and indicators, IMS designed an extensive stakeholder engagement process to inform the assessment. That process is described in detail in Appendix B.

Following the release of the draft report, we held a food system sustainability forum with nearly 100 stakeholders who reviewed the data, discussed its implications, and proposed strategies for improving food system sustainability. Chapter 8 summarizes those strategies; Appendix C provides detail on the results of the forum.

Definitions

Geographic Scope. For the purposes of this study, our regional food system includes producers in the states of Oregon and Washington and consumers in the Portland –Vancouver region. A smaller geographic area would fail to capture the complexities and interconnectedness of the food system while a look at the national or global food system presents logistical challenges and might fail to highlight local conditions.

Usually, when we refer to the Portland-Vancouver region, we are speaking of the six-county region: Columbia, Clackamas, Multnomah, Washington and Yamhill counties in Oregon and Clark County in Washington. However, some data sources define the region differently. We make a note of these differences on the indicator sheets in Appendix A.

Sustainability. Multiple contested definitions of sustainability in business practices, government, and other organizations have emerged over the years. Sustainability encompasses social, economic, and environmental concepts. It can be viewed as a process, not an endpoint. This report uses the definition developed by the Oregon Legislature: "Sustainability means using, developing, and protecting resources in a manner that enables people to meet certain needs and provides that future generations can also meet future needs, from the joint perspective of environmental, economic and community objectives" (Oregon Statute 184.423 Sustainability Act of 2001).

Working with stakeholders, we established an outcome-driven understanding of a sustainable food system. Put simply, the system becomes more "sustainable" as it moves closer toward meeting established goals. Stakeholders' goals are shown in Box 1 on the facing page.

Identifying Indicators of Food System Sustainability

Sustainability indicator projects have emerged as a way to assess and understand production systems, community well being, and general progress toward social, environmental, and economic goals (Reed et al. 2006; Innes & Booher 2000; Lopez-Ridaura et al., 2002). Indicators include data that summarize certain features of a place or system; the Gross Domestic Product is an aggregated economic measure. They can also "indicate" the status of problems including recycling rates, crime rates, poverty rates, and unemployment rates. Indicators can also help manage complicated, interrelated systems by providing information related to specific actions.

Courtesy of Dancing Roots Farm

Relevant literature suggests that indicator projects work best when decision makers who have the power to create policies and programs are actively involved in creating the vision, researching the data, and collaborating to help one another understand the meaning of trends (Innes and Booher, 2000). The context in which policymakers work enriches our understanding of what is driving these trends and the potential impact of policy.

Indicators do not directly drive policy; they simply provide information and monitor the status of the objects of policy. Collaboration among decision makers and other stakeholders makes the data useful. Indicators only influence programs and policy, or system change, when they inform decision making (Innes and Booher 2000; Reed et al. 2006). The objective of this project is to provide contextually meaningful, rigorous data to decision makers.

Report Applications

Regional stakeholders requested a food system sustainability assessment to support program planning, advocacy, and evaluation; to inform branding and market development; to promote partnerships and networking; to facilitate coordination of similar program efforts; and to promote positive change in the region's food system. This assessment also provides a vehicle for a wider conversation about strategies to reach sustainability goals and the utility and methods for tracking progress toward those goals over time.

We plan to ask system stakeholders to assess the value of the information. If stakeholders support it, we will propose an ongoing food system sustainability assessment program.

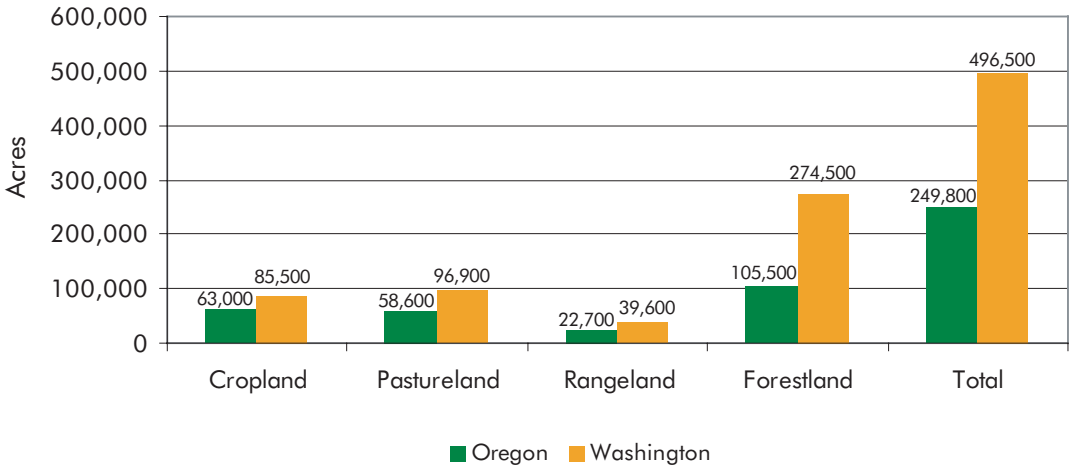
Report Organization

This report is organized according to the key resources used in the food system. Each section discusses trends in supply, demand, use, quality, and sustainability of key resources, including land, water, energy, talent, capital and consumer choice and spending power. The final chapter offers observations about trends and sustainability in our regional food system and summarizes strategies suggested by participants in a food system forum held on April 25, 2008. Appendix A contains 40 indicator sheets including details about the data, their sources, their limitations, and key observations about trends. Appendix B contains details about the process used to develop the assessment. Appendix C contains details about the results of the food system sustainability forum.

Few data are available to describe trends in some of the food system's key resources. These include knowledge, which informs technological progress and improvements in system efficiency and sustainability; influence, which affects food and nutrition policy; and social capital, which can add value to our food system by improving the connections between elements of the system. When data availability improves, a future version of this food system sustainability assessment can include reliable information about these important resources.

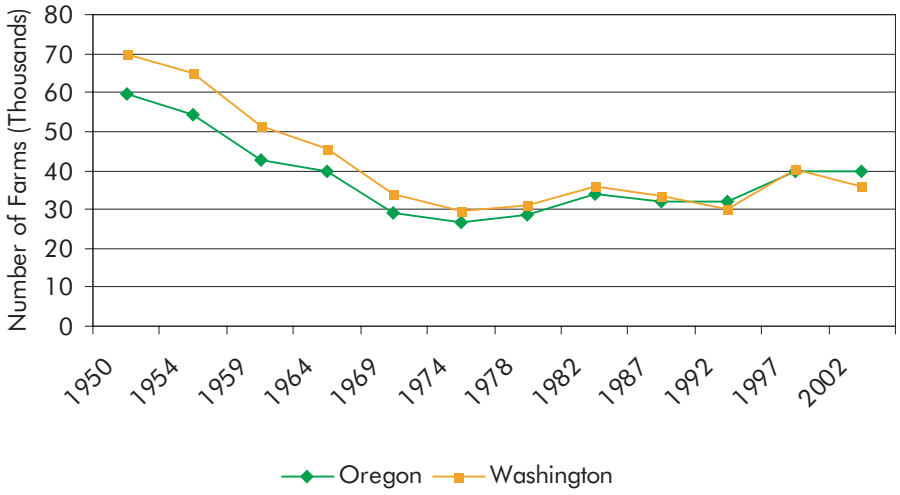
Courtesy of Dancing Roots Farm

Figure 6: 1982 to 1997 Resource Lands Converted to Urban Land



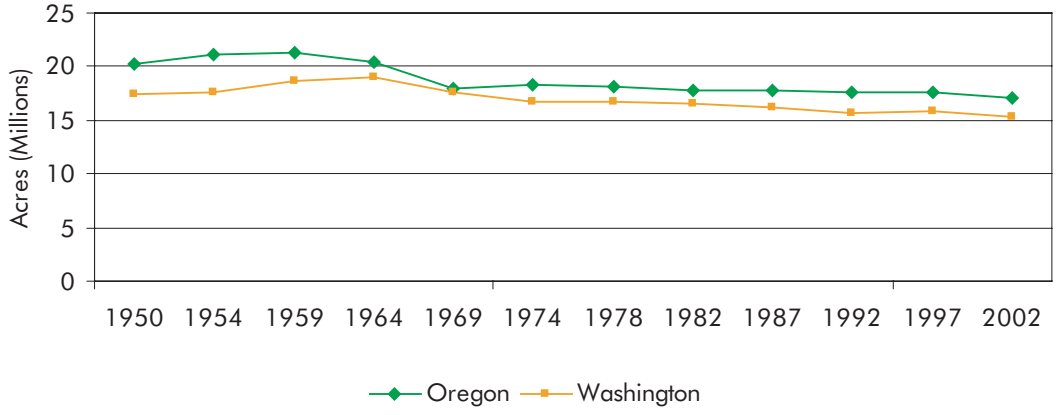
Source: USDA Natural Resources Inventory

Figure 7: Number of Farms in Oregon and Washington



**Values for years 1974-1992 are not adjusted for coverage.*
Source: USDA NASS, 2007

Figure 8: Acreage of Land in Farms in Oregon and Washington



**Values for years 1974-1992 are not adjusted for coverage.*
Source: USDA NASS, 2007

The Foundation: Land and Sustainability in our Regional Food System

Sustainable land use is essential to a sustainable food system. Land is a finite resource that is indispensable for food production. Are we treating the land in a sustainable way? As urban areas grow, are we reserving enough land for the production of food? Is land being treated in a way that supports its continued productivity for agriculture? Are farmers making a sufficient profit to continue to farm the land rather than converting it to other uses?

Land Use and Conversion

A number of uses within and outside of the food system compete for land. As the region's population grows, residential and commercial developments encroach on farmland. Crops in some areas are particularly vulnerable to development. For example, 61 percent of the vegetable production in the United States is located in metropolitan areas; therefore, production of vegetables for local consumption may be affected by urban growth (Heimlich and Anderson 2001).

Urban growth is affecting the use of farmland in both Oregon and Washington. As shown in Figure 6, urban land increased in Oregon from an estimated 585,000 acres in 1982 to 845,300 acres in 1997, an increase of 44 percent in 15 years. Of these 260,100 acres of newly urbanized land, 249,800 came from conversion of natural resource land. Between 1982 and 1997, roughly 496,500 acres of natural resource land in Washington was converted to urban land. More than 50 percent of that was converted from forestland, 20 percent from pasture land and 17 percent from cropland. The remaining 8 percent was converted from rangeland.

Changes in agricultural practices have also affected the number of farms, the size of farms, and the acreage of land in farms. Figures 7 and 8 show long-term trends in the number of farms and the acreage of land in farms in Oregon and Washington. The number of farms in Oregon has decreased by approximately one-third since 1950, while the number of farms in Washington has decreased by half. In Oregon, the acreage of land in farms has decreased by over three million acres (change of -15.9%) between 1950 and 2002. Washington experienced a decrease of over two million acres (change of -11.8%) during the same time period. In Oregon, the average size of a farm was 340 acres in 1950; by 2007 it had risen to 444 acres. Washington farms averaged 249 acres in 1950 and rose to 458 acres in 2007. The average size of a farm in the U.S. in 2007 was very similar to those in Oregon and Washington at 449 acres (USDA NASS 2007).

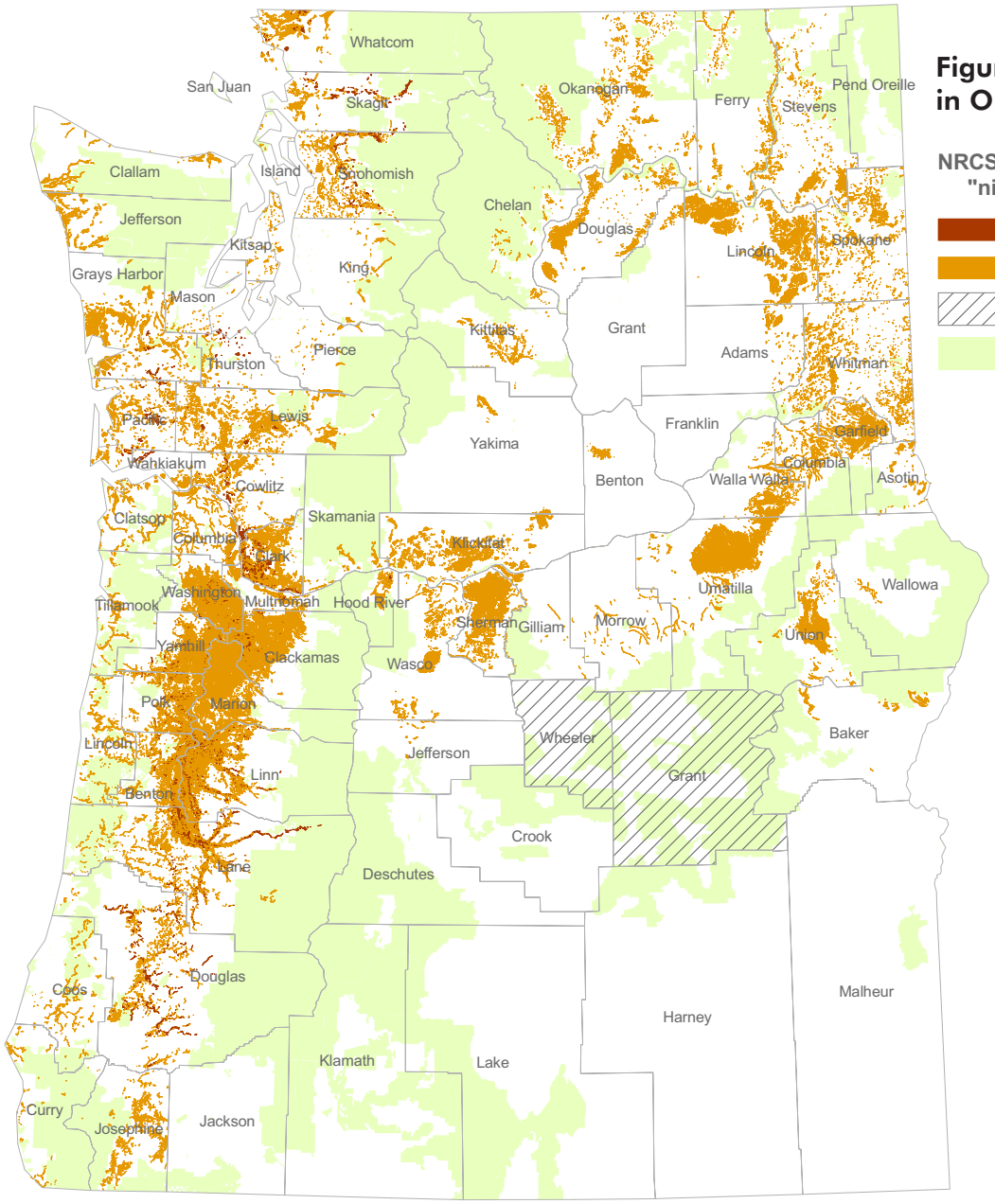
Not all farmland is used to grow food. As explained below, a substantial portion of the revenue to farmers in Oregon and Washington is for non-food crops such as nursery/greenhouse products, grass seed, and Christmas trees. Thus, non-food crops, including crops grown for biofuel, compete with food commodities for land.

Land Quality and Soil Condition

Not all land is equally suited for agriculture. Prime soils, class 1 and 2, are the most easily cultivated, with minimal intervention required for agriculture uses. As shown in Figure 9, the largest concentration of prime soils in our region is in the Willamette Valley, west of the Cascade Range in Oregon. However, a significant number of acres of class 2 soils exist in Sherman and Umatilla counties in Oregon and in Walla Walla, Columbia, Garfield, Klickitat and Lincoln counties, east of the Cascade Range in Washington.

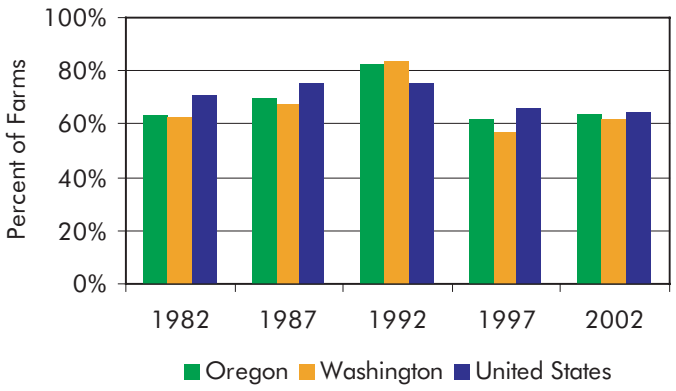
Prime soils have been profoundly affected over time by urbanization and suburbanization in areas that are flat and close to rivers, where prime soils are prevalent. Urbanization and suburbanization have thus made a significant number of acres of prime soils unavailable for agricultural uses.

Figure 9: Prime Agricultural Soils in Oregon and Washington



Source: NRCS SSURGO

Figure 10: Chemicals Used on Farms



Source: USDA NASS

Soil erosion—the breakdown, detachment, transport, and redistribution of soil particles by forces of water, wind, or gravity—can affect the quality and long-term productivity of agricultural land. Soil erosion also has offsite impacts on water quality, air quality, and biological activity (USDA NRCS 2007). Generally, the amount of water erosion on non-federal cultivated cropland has been declining in Oregon and Washington as in the United States as a whole. Between 1982 and 1997, the amount of topsoil lost (tons per acre, per year) due to water erosion on non-federally cultivated cropland decreased by approximately 23 percent in Washington and 33 percent in Oregon. During the same period, the rate of topsoil lost due to wind erosion on non-federal cultivated cropland decreased in Oregon; however, Washington experienced an increase in the rate of wind erosion of approximately 28 percent during this period (USDA NRCS 2000).

Chemicals used on farmland can contaminate nearby land and water while causing health problems for farm workers. Figure 10 shows the percentage of farms using chemicals from 1982 to 2002 in Oregon, Washington, and the U.S. While farms in Oregon and Washington use chemicals at a rate below the national average of 65 percent—64 percent in Oregon and 62 percent in Washington—the numbers are rising. Between 1997 and 2002, the percentage of farms using chemicals increased 4 percentage points in Oregon and 8 percentage points in Washington. This increase contrasted with a national decrease of 2 percentage points during the same period.

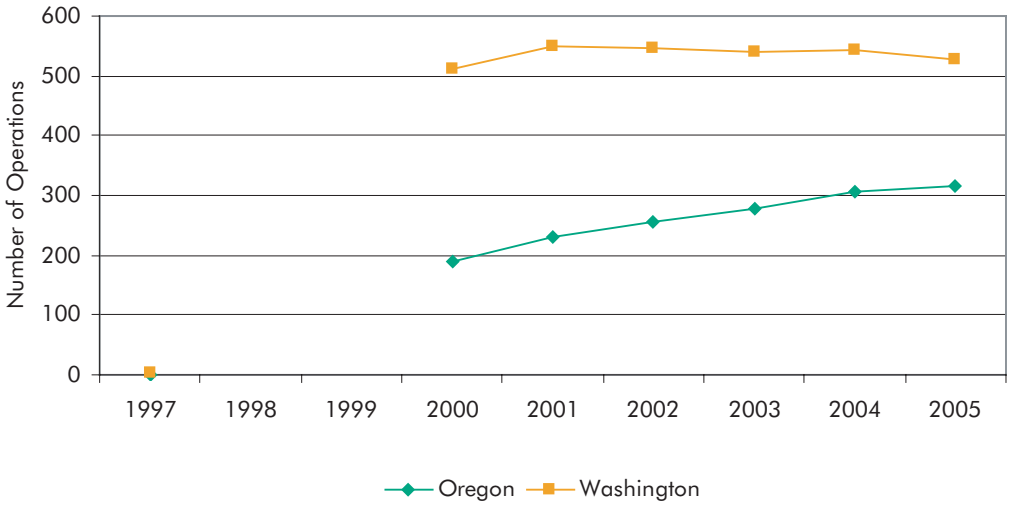
Chemicals used on farms are not the only harmful substances that may be transmitted into the environment from farming practices. Nitrogen, human and animal pathogens, medicines, feed additives, salts, and certain metals can be found in animal waste that is routinely applied to agricultural land (Loehr 1978). Little is known about the quantity of agricultural waste, including crop residues and food processing residues that are produced each year, because only a small portion of the material actually enters the regulated solid waste disposal system. Most agricultural waste is applied to or left in fields, composted, or utilized in some other manner. A relatively small amount ends up in solid waste landfills (Spendelow 2008).

Concerns over the effects of chemical use and other potentially detrimental practices have resulted in the rapid expansion of organic farming. In the United States, farmland managed under organic farming systems expanded rapidly throughout the 1990s and has sustained that momentum, as farmers strive to meet consumer demand in both local and national markets. Further growth in the organic farming sector may result from new uniform standards for production and processing implemented by the U.S. Department of Agriculture (USDA) standards. The USDA's organic standards incorporate an ecological approach to farming; cultural, biological, and mechanical practices that foster cycling of resources; ecological balance; and protection of biodiversity (USDA ERS 2003).

In 2005, organic farming accounted for $52,122,197 in farm gate sales in Oregon and $101,545,406 in Washington (WSU CSNAR 2006). Between 2000 and 2005, the number of organic certified operations increased 67 percent in Oregon, 3 percent in Washington, and 29 percent in the nation as a whole (Figure 11). In 2002, organic farming accounted for roughly 0.2 percent of farmland acreage nationally (USDA ERS 2007).

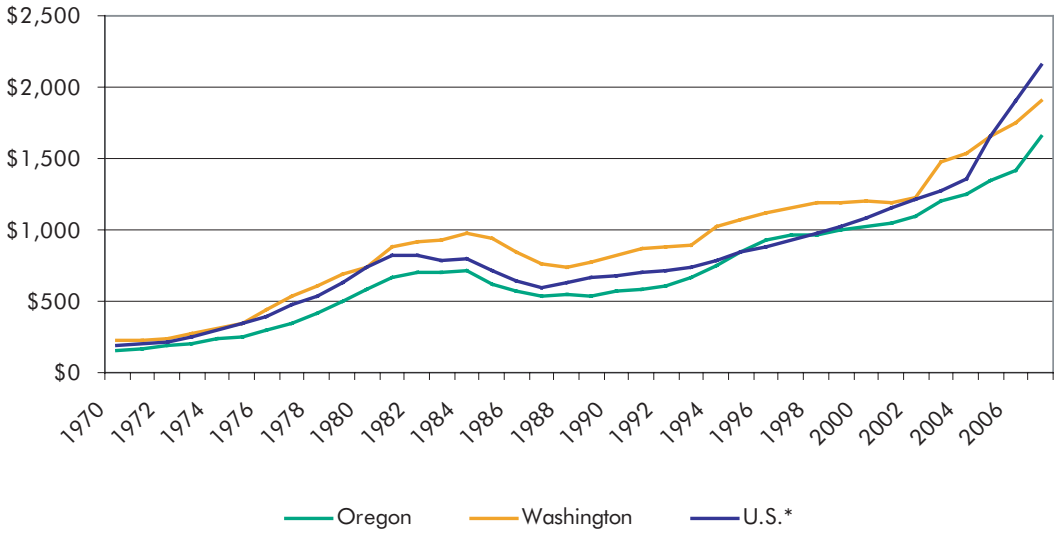
Following the USDA organic guidelines is just one way farmers are working toward more sustainable agricultural practices. Another is to pursue certification through organizations such as Food Alliance, a third-party certification program in North America for sustainably produced food. Food Alliance certification distinguishes foods produced by farmers, ranchers, and food processors that use environmentally and socially responsible practices. Started as a project of Oregon State University, Washington State University, and the Washington State Department of Agriculture in 1993, Food Alliance incorporated as a nonprofit organization in 1997 and launched the certification program in 1998. To earn certification, farms and ranches must meet a number of standards as determined

Figure 11: Number of Certified Organic Operations



Source: USDA Economic Research Service

Figure 12: Farm Real Estate: Average Value per Acre 1970 to 2007*



**Excludes Alaska and Hawaii.*

Source: USDA NASS, 1999, 2003, 2007

by a third-party site inspection. Food processors and manufacturers can also be certified subject to a different but related set of standards (see Box 2).

As of 2007, Food Alliance had certified 128 producers in Oregon and 25 in Washington. These farms comprise a total of about 2.5 million acres in Oregon and 93 thousand acres in Washington.

Land Value and Productivity

Sustainable agriculture requires that farming provide sufficient economic benefits to encourage farmers to continue farming. The land's value for farming compared to its value for other uses can influence whether farmers continue to farm the land or whether they decide to sell it or use it for non-farming activities. Land value for agriculture is determined by soil quality, water availability, slope, commodity prices, the availability of agricultural subsidies, and preferential tax treatment, among other factors. In areas that do not restrict the development of agricultural land, its value can also be influenced by non-agricultural factors—for example, its value as residential, industrial, or commercial development or for recreation (Shi et al 1997). Thus, while rising land values may increase the opportunity cost of farming, they may also indicate a rising return to agricultural activity. This effect is particularly true in protected agricultural zones or in areas that are not influenced by urban development.

Figure 12 shows trends in market values for farmland and buildings from 1970 to 2007. The average per acre value of farm land and buildings in Oregon has risen from $150 per acre in 1970 to $1,650 in 1997—an average annual growth of about 7 percent. The average per acre value of land and buildings in Washington has risen from $224 per acre in 1950 to $1,900 in 2007—an average annual growth of about 6.2 percent. During this period, farm real estate values for the United States have grown at an average rate of about 7 percent but have spiked over the last several years.

Farming is a volatile business subject to many risks. Bad weather or a natural disaster can destroy an entire season of crop revenue; rising input prices can erase the farmer's profit; robust prices for farm products can suddenly tumble.

The value of crop and livestock production in the United States has risen steadily since 1970 and was at record levels in 2007. Several factors have contributed to this trend, including increased demand for corn and soybeans due to the production of biofuels; inadequate rainfall in competitor countries that produce similar commodities; and increased international consumption (Covey et al 2007). As Figures 13 and 14 show, Oregon and Washington have shared in these increases. Oregon's total cash receipts for commodities in 2006 were about $4 billion—a 30 percent increase from 2002—while Washington's were about 6.1 billion—a 21 percent increase from 2002.

Box 2: Food Alliance Certification Requirements Farm & Ranch Certification Program

Provide Safe and Fair Working Conditions

Ensure the Health and Humane Treatment of Animals

Do Not Use Hormone or Antibiotic Supplements

Do Not Raise Genetically Modified Crops or Livestock (GMOs)

Reduce Pesticide Use and Toxicity

Protect Water Resources

Protect and Enhance Soil Resources

Provide Wildlife Habitat

Continually Improve Practices

(Handlers Certification Program)

Provide Safe and Fair Working Conditions

Reduce Resource Consumption through Conservation and Recycling

Reduce Use of Toxins and Hazardous Materials

Protect Product Integrity and Nutritional Value

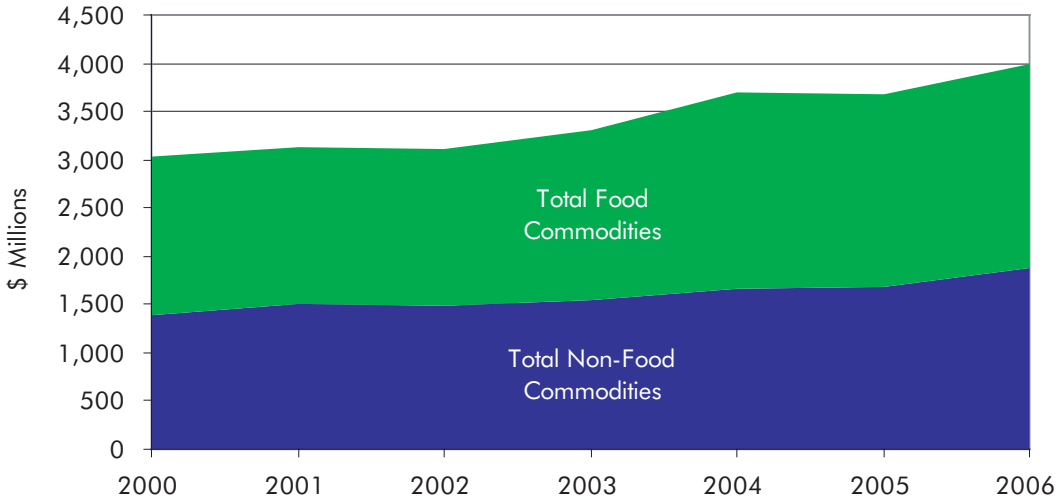
Ensure Quality Control and Food Handling Safety

Meet Legal Responsibilities

Continually Improve Practices

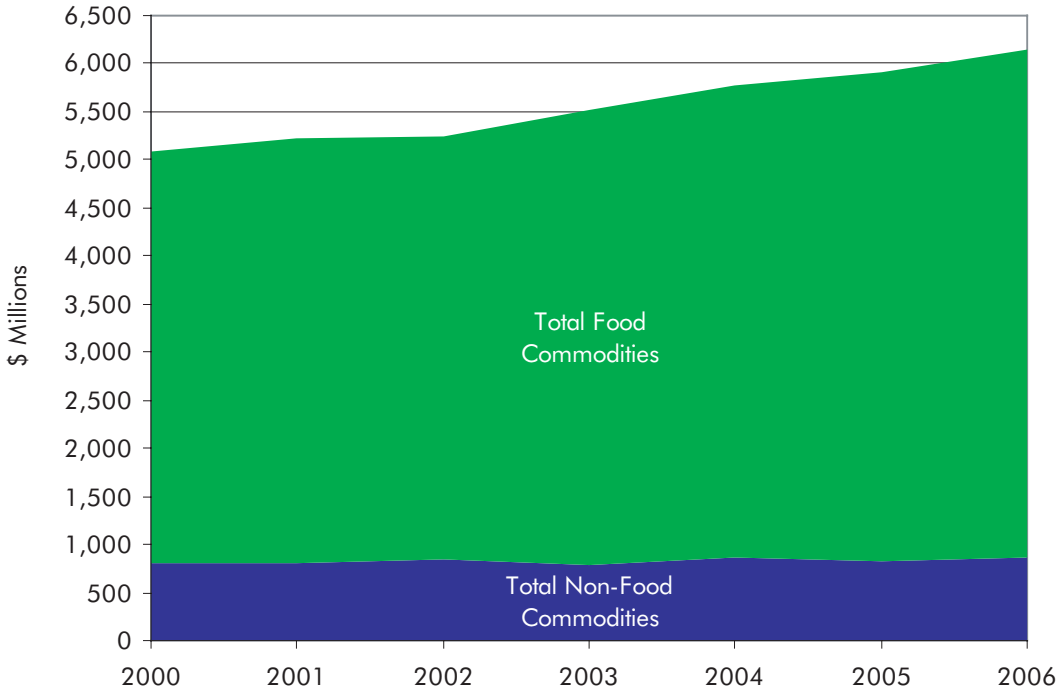
Source:
http://www.foodalliance.org/certification/index.html

Figure 13: Total Cash Receipts: Oregon



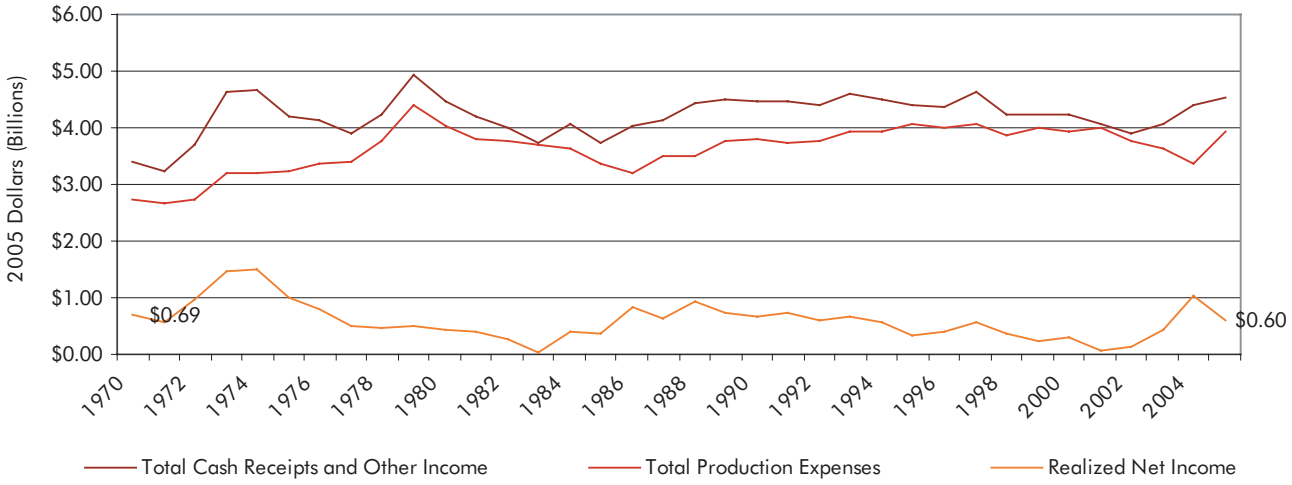
Source: USDA ERS

Figure 14: Total Cash Receipts: Washington



Source: USDA ERS

Figure 15: Inflation Adjusted Farm Income: Oregon

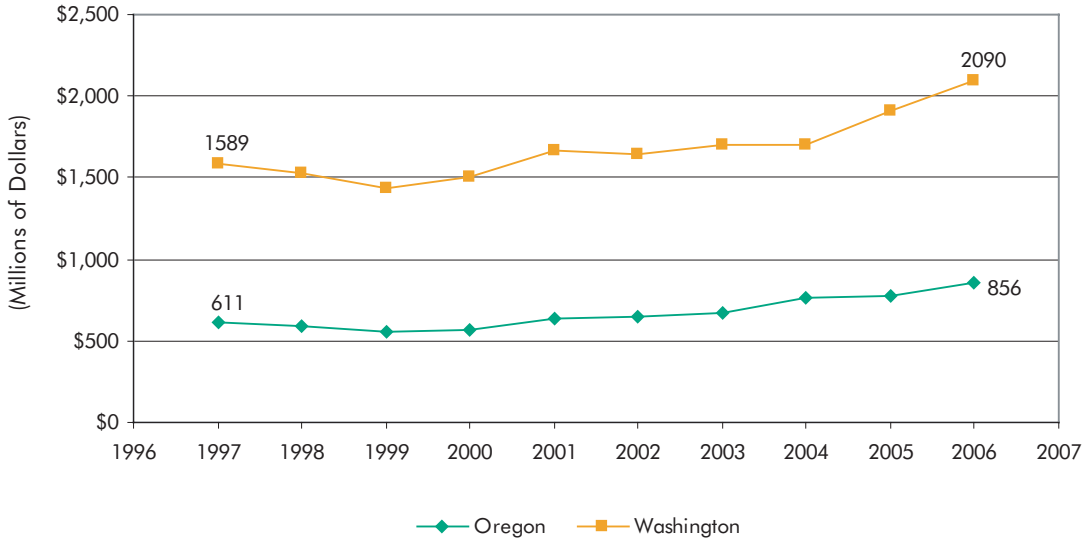


Source: US BEA, BLS

Figure 16: Inflation Adjusted Farm Income: Washington

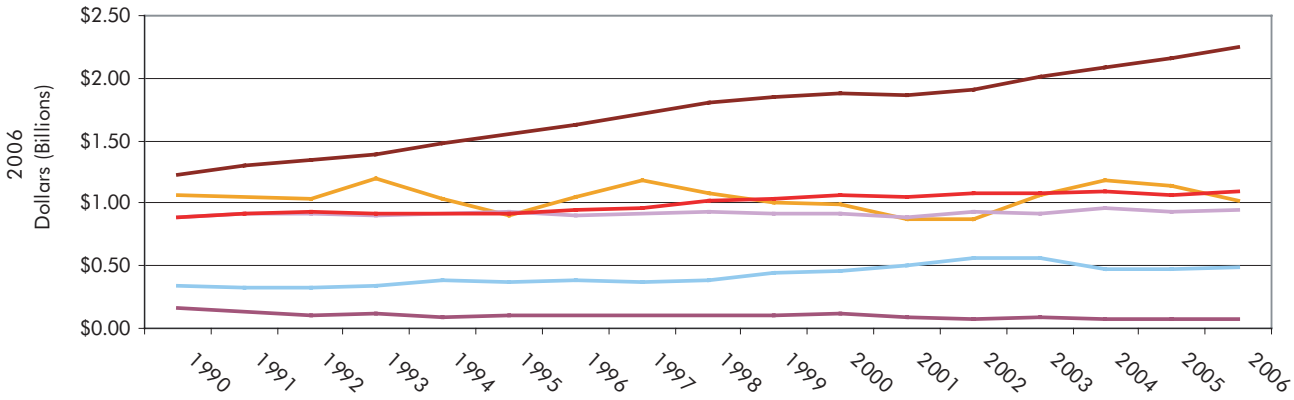
Source: US BEA, BLS

Figure 17: Total Value of State Agricultural Exports (Food Commodities Only)*



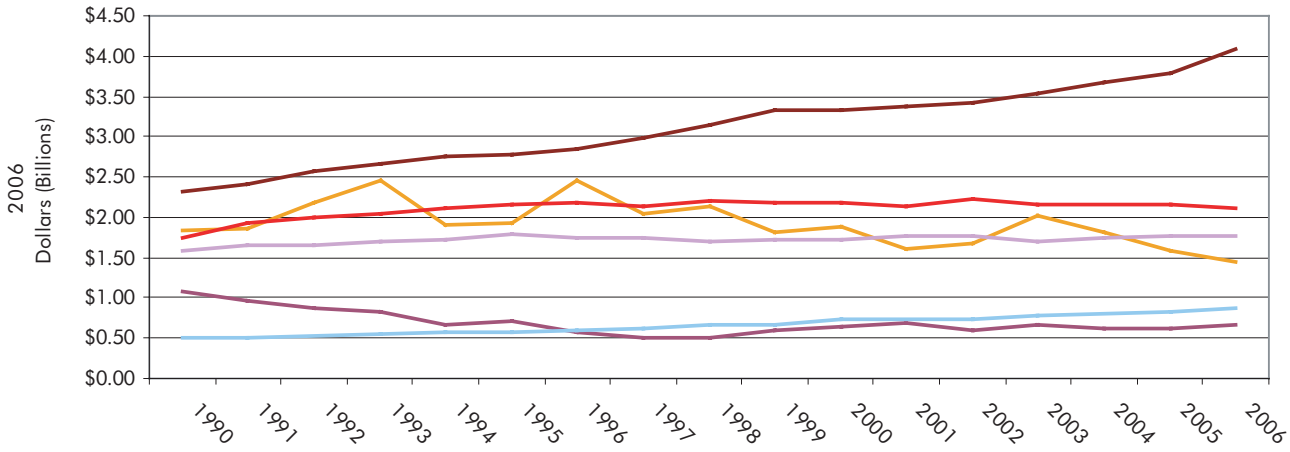
**Non-food commodities (tobacco, cotton, coarse grain, skins and hides, feeds and fodder, and seeds) were removed to calculate total value.*
Source: USDA ERS, 2007

Figure 18: Inflation Adjusted Earnings for Food System Sectors in Oregon



Source: US BEA, BLS

Figure 19: Inflation Adjusted Earnings for Food System Sectors in Washington



Source: US BEA, BLS

Oregon's most important food crops include cattle and calves, milk, wheat, onions, and potatoes. Washington's top agricultural commodities include apples, milk, wheat, cattle and calves, and potatoes.

Nonfood crops also comprise a significant share of Oregon's agricultural production. Greenhouse and nursery products are Oregon's highest-valued commodities; grass seed and Christmas trees also comprise a significant share of farm cash receipts. In Washington, the most significant non-food agricultural products include hay, nursery and greenhouse products, and forest products (ODA 2007; USDA NASS 2007).

Cash receipts do not tell the whole story about farmers' economic well-being. Realized net farm income, the difference between the revenue a farmer receives for his products and the cost of production, can be very volatile from year to year. This volatility affects farmers' ability to remain in business and to invest in new crops, methods, and equipment.

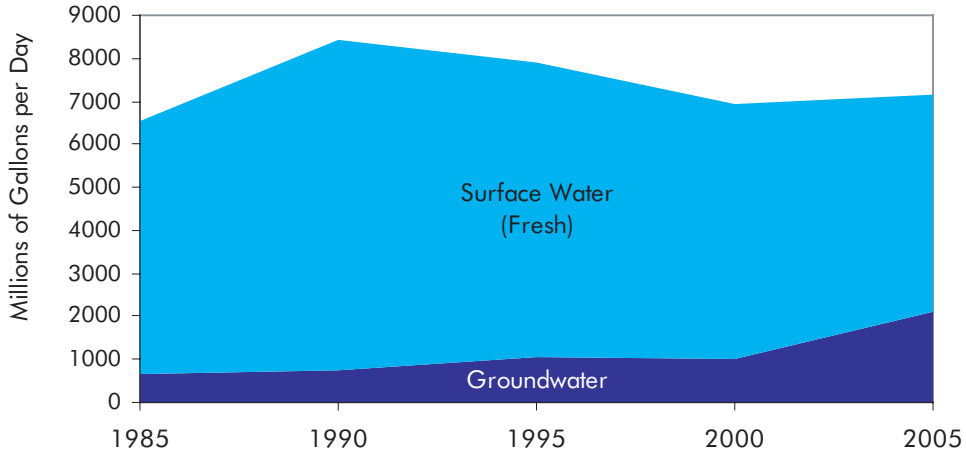
That volatility is demonstrated in Figures 15 and 16. Both Oregon and Washington have experienced an overall decline in realized net farm Income since 1970 when adjusted for inflation. In Oregon, inflation-adjusted realized net farm income was $90 million less in 2005 than it was in 1970—a loss of 13 percent. Washington farmers earned $710 million less (inflation adjusted) in 2005 than in 1970—a loss of 56 percent. For the United States, the loss in realized net farm income, when adjusted for inflation, was about 37 percent from 1970 to 2005.

Agricultural export offers farmers the opportunity to serve a much broader market than can be found domestically. Nationwide, total food commodity exports increased by $8.9 billion, or 22 percent, from 1997 to 2006. In Oregon, exports accounted for about $1 billion in 2006, or about 25 percent of total cash receipts. Washington's exports comprised about 36 percent of total cash receipts in 2006 (USDA ERS 2007). Figure 17 shows trends in exports of food commodities for Oregon in Washington. Food commodities comprise the majority of exports (84 percent for Oregon and 94 percent for Washington). Considering only food commodities, Oregon's exports increased by $256 million from 1997 to 2006, or 40 percent. Washington's food exports increased by 501 million, or approximately 32 percent, during the same time period. Both states outpaced the nation's rate of food commodity exports growth, which was about 22 percent.

Farming provides the basic inputs to a broad array of food-based industries. Food-dependent economic sectors include the farm sector, agricultural support sector, fishing, food manufacturing, food wholesale and distribution, restaurants, and grocery stores. Oregon and Washington are both more dependent on food-related sectors than is the United States as a whole (BEA 2007). Figures 18 and 19 show inflation-adjusted net income for different sectors of the food system in Oregon and Washington. In Oregon, the earnings produced by food-related economic sectors (not including wholesaling and distribution for which these data are not available at the state level) comprise roughly 5 percent of total personal income in the state. In Washington, these sectors make up about 4.5 percent of total personal income, and they make up about 3.5 percent for the United States as a whole.

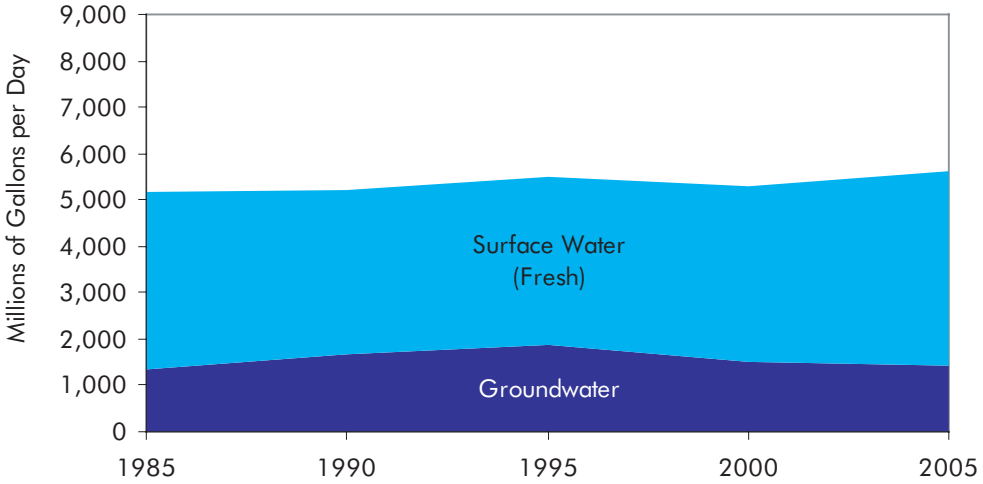
The highest-earning food-related sector in both states is food services and drinking places. Inflation-adjusted earnings in this sector, which includes restaurants, increased more than $1 billion from 1990 to 2006 in Oregon and nearly $2 billion in Washington over the same time period. The income earned at food and beverage stores, which include grocery and other retailers, has also increased. In Oregon, earned inflation-adjusted income in this sector rose $210 million from 1990 to 2006; in Washington, it increased $360 million. Earnings from food manufacturing, when adjusted for inflation, have risen, but more slowly than for food services or food and beverage stores.

Figure 20: Oregon Total Water Withdrawals by Source 1985 to 2005



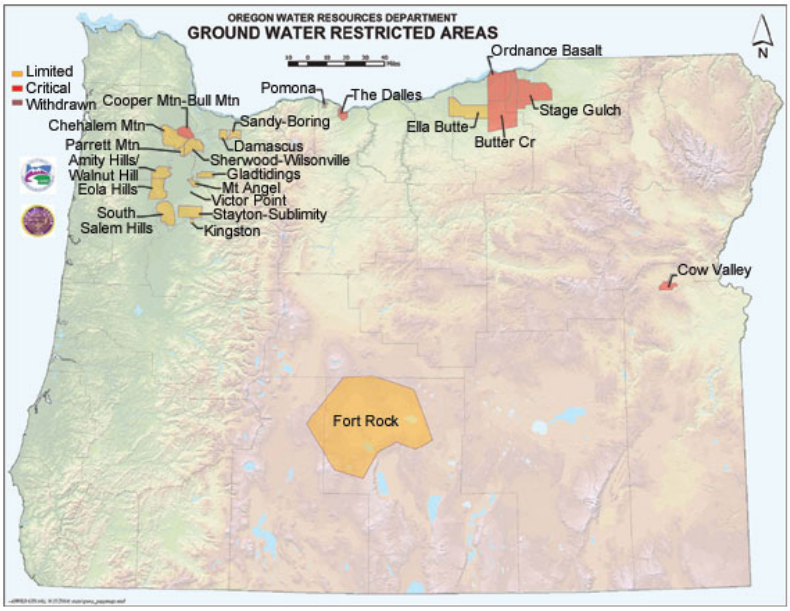
Source: USGS

Figure 21: Washington Total Water Withdrawals by Source 1985 to 2005



Source: USGS

Figure 22: Groundwater Restricted Areas in Oregon



Source: Oregon Water Resources Department

Critical Ingredients: Water, Sustainability, and our Regional Food System

Clean water is essential to human, plant, and animal life, and many of the trends discussed in the introduction to this report affect the supply, demand, and quality of water. Global climate change destabilizes temperatures and decreases snowpack; rapid population growth in both Oregon and Washington increases demand for water in the absence of water conservation; and population and economic growth increase the area of paved surfaces, reducing the amount of water that can be absorbed through the ground. In addition, water and energy demand are linked through the hydroelectric system; soaring fossil fuel prices increase demand for relatively cheap hydropower. Finally, low stream flows put freshwater-dependent fish at risk (Washington State Department of Ecology 2006).

While water availability and quality is of paramount importance to the sustainability of the region's food system, the relationship is not simply one of supply and demand. Food system activities such as farming, processing, packaging, and disposal can affect the quality as well as the quantity of water available for competing uses. Poor water quality can cause problems for municipal drinking water, irrigated agriculture, and fish. Thus, the sustainability of the region's food system depends in part on its own ability to adopt practices that will ensure the quality and availability of water throughout the region.

Water Use and Supply

Chronological data on total fresh water usage are difficult to compare because the usage categories included in the estimates have changed over time. However, the best estimates available, pictured in Figures 20 and 21, show that total water withdrawals in Oregon have grown from 6,544 million gallons per day in 1985 to 7,174 million gallons per day in 2005—a 9.6 percent increase. Over the same period, Washington's withdrawals have increased from 5,177 million gallons per day in 1985 to 5,603 million gallons per day in 2005—an 8.3 percent increase. On a per capita basis, however, Oregon's water consumption fell by 20 percent from 1985 to 2005; in Washington, per capita usage fell by about 25 percent over the same period.

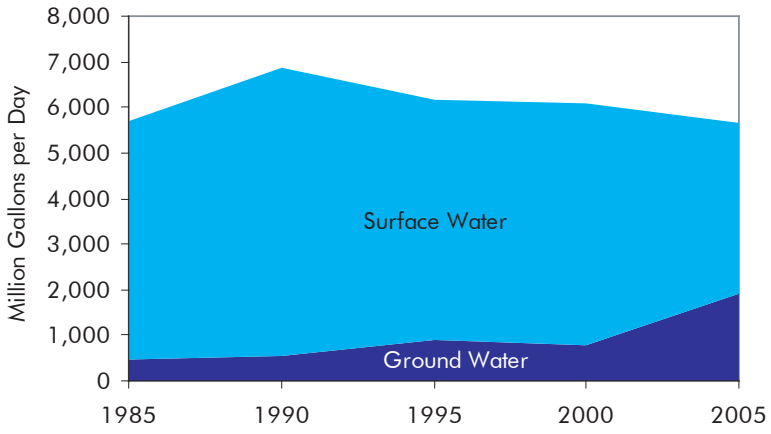
Water is withdrawn from both ground water and surface water sources. Between 1985 and 2005, the proportion of withdrawals coming from ground water has increased in Oregon from about 10 percent to about 30 percent, while Washington's ratio of surface to ground water withdrawals has remained relatively constant.

The State of Oregon Water Resources Department has identified seven critical ground water areas and twelve ground water-limited areas (see Figure 22).

Critical ground water areas are identified as areas where pumping of ground water exceeds the long-term natural replenishment of the underground water reservoir. The Water Resources Commission may restrict both existing and future water use in these areas to prevent excessive declines in ground water levels. In ground water-limited areas, declines in ground water due to heavy pumping require active management of the remaining water resource to protect existing water rights. New water rights in these areas are restricted to a few designated uses (Oregon Department of Environmental Quality 2007).

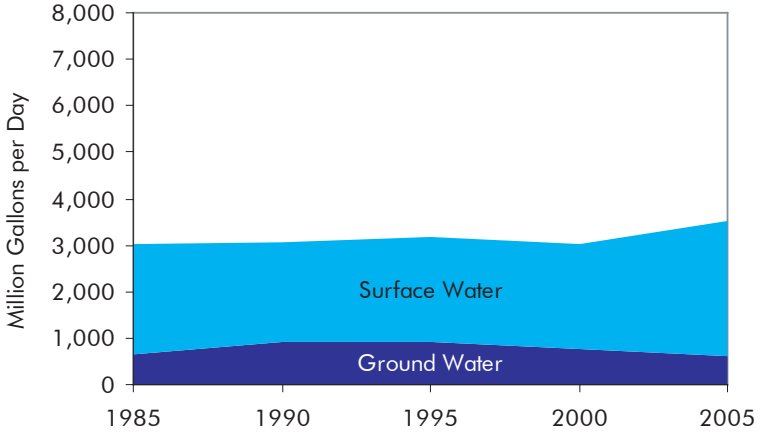
Irrigation represents a significant portion of water usage in both Oregon and Washington; however, as shown by Figures 23 and 24, Oregon uses twice the amount of water for irrigation as does Washington. Between 1985 and 2005, water use for irrigation and the number of irrigated acres remained relatively constant in Oregon; in Washington over the same period, irrigation withdrawals and total irrigated acres increased by 16.3 percent and 17.5 percent, respectively. The

Figure 23: Oregon Irrigation Withdrawals



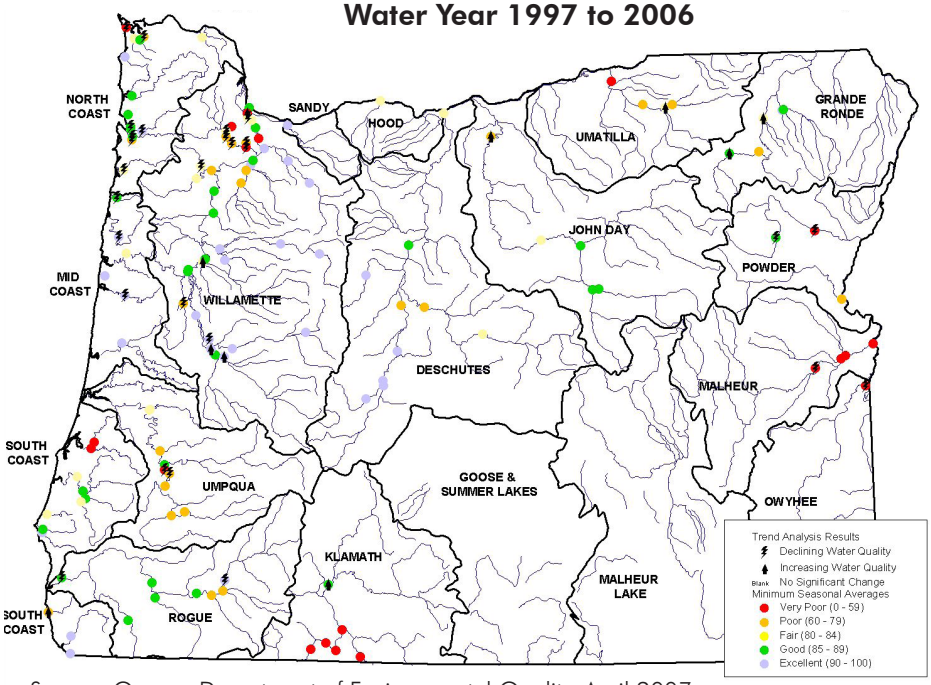
Source: USGS

Figure 24: Washington Irrigation Withdrawals



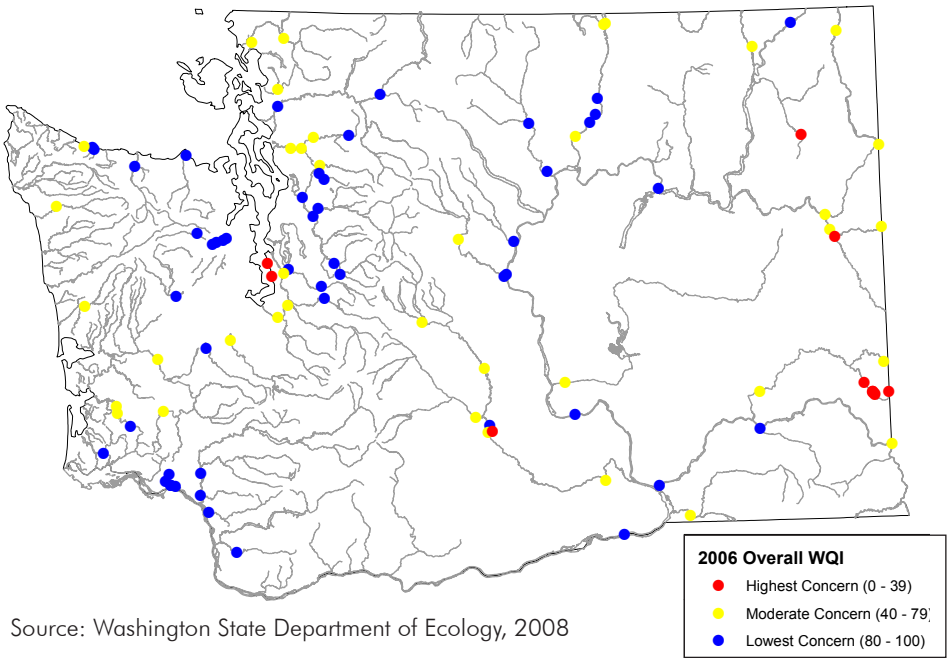
Source: USGS

Figure 25: Oregon Water Quality Index Results Water Year 1997 to 2006



Source: Oregon Department of Environmental Quality, April 2007

Figure 26: Washington Water Quality Index, 2006



Source: Washington State Department of Ecology, 2008

application rate (water used for irrigation per irrigated acre) has not changed appreciably between 1985 and 2005 for either state. The proportion of Oregon's irrigation withdrawals that came from ground water increased from 13 percent in 2000 to 34 percent in 2005. This shift accounts for much of the increase of ground water in total withdrawals. Washington's ground water withdrawals for irrigation have remained fairly constant from 1985 to 2005, but irrigation surface water withdrawals increased 26.4 percent between 2000 and 2005.

Water Quality

A number of factors—including municipal and industrial wastewater, storm water runoff, and agricultural practices—can affect the surface water quality. Oregon and Washington developed water quality indices to monitor and communicate trends in fresh water quality to the general public. Appendix A contains additional detail about the data sources.

Figure 25 shows the trends for water quality at Oregon's monitoring sites; Figure 26 shows the 2006 water quality index results for Washington. Keep in mind that these two indices are constructed using different methodologies.

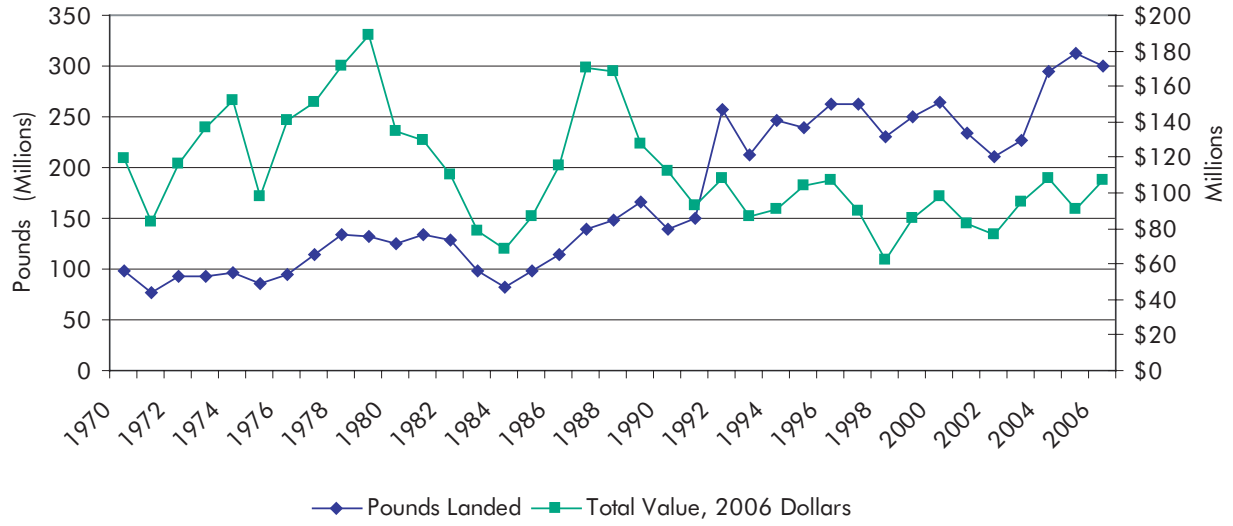
The percentage of monitored sites with good to excellent water quality condition in Oregon rose steadily from 1995 to 2005. There was a slight drop (1 percent) in 2006. The Washington water quality index has generally improved since 1997, although the trend has been volatile. When adjusted for stream flow, 25 percent of Washington's monitoring sites have shown statistically significant improvements in the water quality index from 1995 to 2005. Over the same period, 7 percent of sites show statistically significant declines in the water quality index when adjusted for stream flow.

Commercial Fisheries

Water resources in Oregon and Washington also form the basis of one of our most important food-related industries: commercial fisheries. In 2006, Oregon and Washington commercial fisheries landed over 500 million pounds of fish worth about $300 million (Figures 27 and 28). But when adjusted for inflation, the value of commercial fisheries have grown very little over the past few decades. This is in part due to a shift from high value species such as crab, halibut, and salmon, to low-value species such as whiting and sardines. In 2006, the ex-vessel per-pound prices in Oregon for these species were $0.065 for whiting and $0.049 for sardines, compared to $2.00 per pound for Dungeness crab, pacific halibut and Chinook salmon (Grooms, 2008).

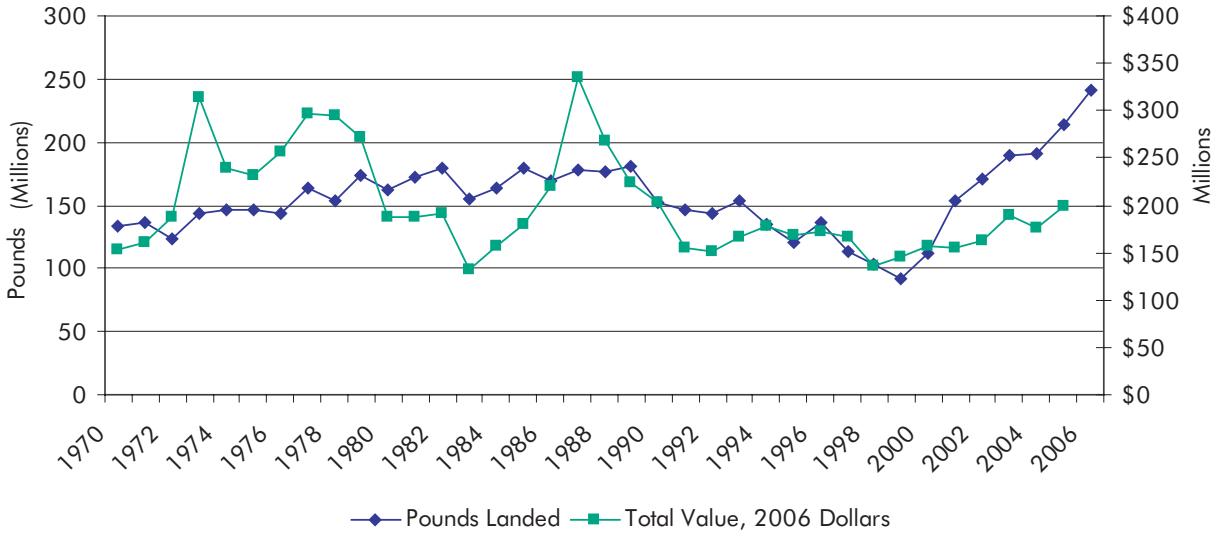
Recent restrictions on the salmon fishing off the West coast have been driven, in part, by the collapse of Sacramento River fall Chinook runs. Figure 29 shows the history of Sacramento river fall Chinook spawners. Biologists have suggested that the dramatic decrease over the past few years has been caused by a combination of ocean temperature changes, and freshwater factors such as "in-stream water withdrawals, habitat alterations, dam operations, construction, pollution, and changes in hatchery operations" (PFMC, 2008).

Figure 27: Oregon Commercial Fisheries Landings



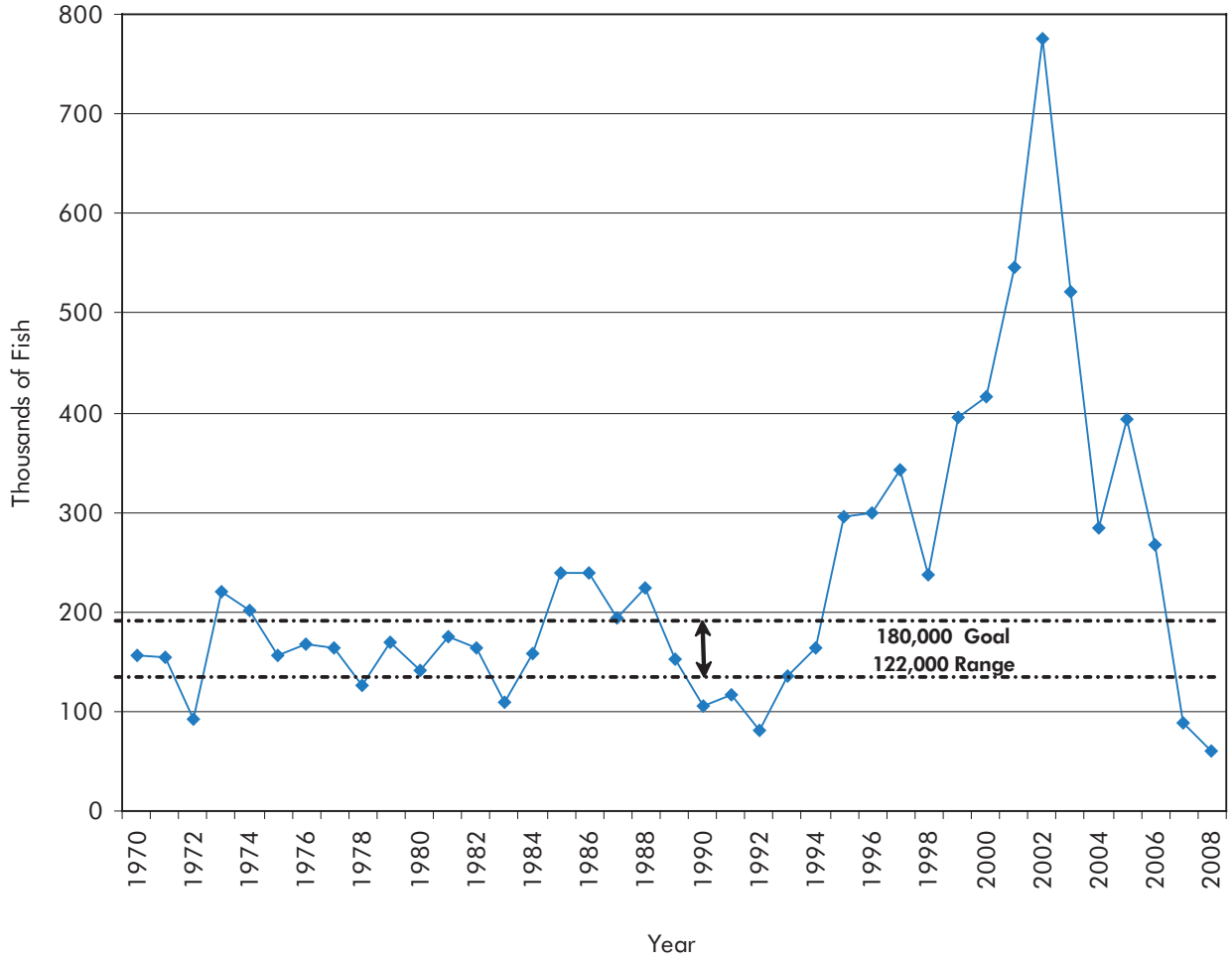
Source: National Marine Fisheries Service

Figure 28: Washington Commercial Fisheries Landings



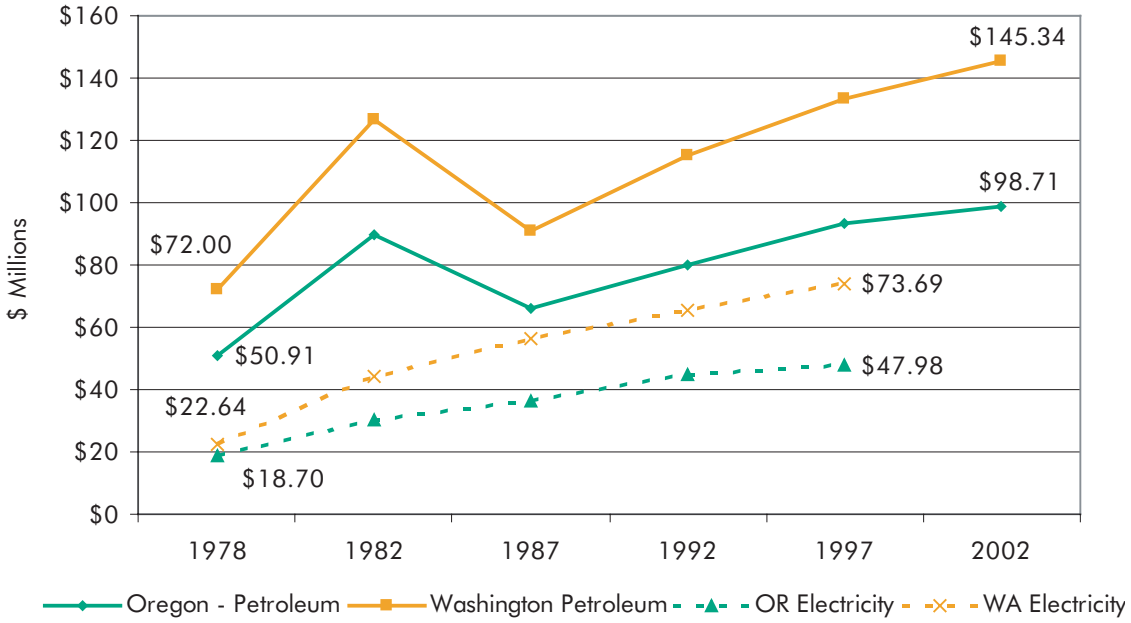
Source: National Marine Fisheries Service

Figure 29: Sacramento River Fall Chinook Spawners



Source: Pacific Fishery Management Council

Figure 30: Value of Energy Purchased by Farms: Electricity and Petroleum Products



Source: USDA NASS

Energy: Fueling our Regional Food System

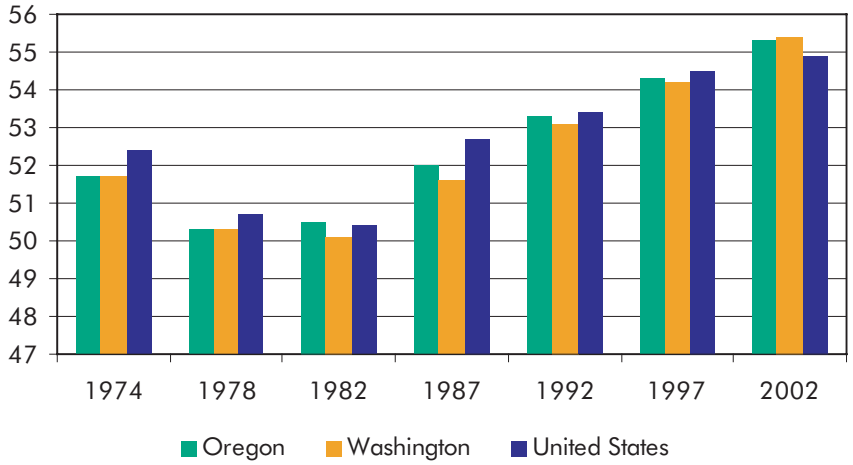
Energy's role in the sustainability of our food system is becoming increasingly complex. The steep rise of energy prices has affected the cost of agricultural products, the profits for farmers, and the disposable income of consumers. At the same time, some farmers are turning to production of crops for biofuels which has led to record prices for corn and higher prices for soybeans. These price increases affect the livestock sector due to corn's importance as an animal feed. The end result is retail food prices that are expected to rise faster than general inflation (Westcott 2007).

Agriculture is more energy intensive than many other industries. Petroleum-based fuels, primarily gasoline and diesel, comprise about 83 percent of total energy use for farms nationwide (Brown and Elliott 2005). Figure 30 shows the cost of petroleum products and electricity purchased by farms in Oregon and Washington from 1978 to 2002. During this period, both Oregon and Washington's farm spending on petroleum products rose. Oregon farms' spending on petroleum products rose 94 percent from $51 million in 1978 to $99 million in 2002. In Washington, farms doubled their spending on petroleum products from $72 million in 1978 to $145 million in 2002. Spending on petroleum products in both states reflect national trends, although Oregon and Washington farms spend less on petroleum products as a share of total spending than do the nation's farms overall.

Agriculture has become more energy efficient during the past two decades by switching to diesel-powered engines and adopting conservation tillage and other conservation practices (Collins 2001). Today, some farmers have begun turning to sustainable energy sources including wind, solar, and biodiesel, but we are a long way from reversing the farm's dependence on fossil fuels. Reducing the cost burden of high fossil fuel prices will require both the application of energy efficiency measures and the further development of alternative energy sources.

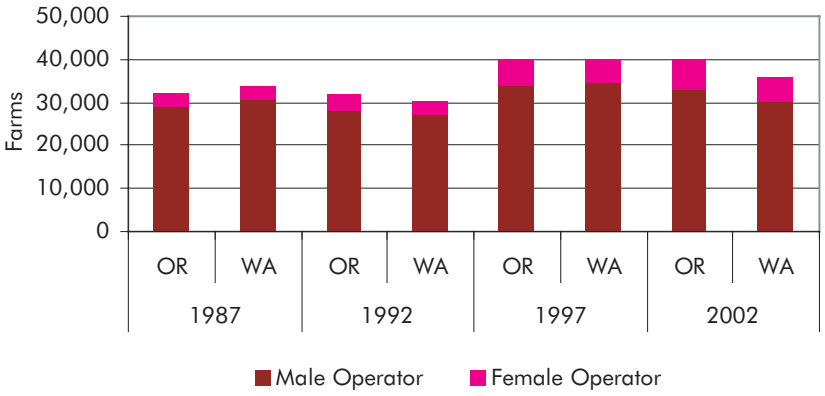
Courtesy of Dancing Roots Farm

Figure 31: Average Age of Principal Farm Operator



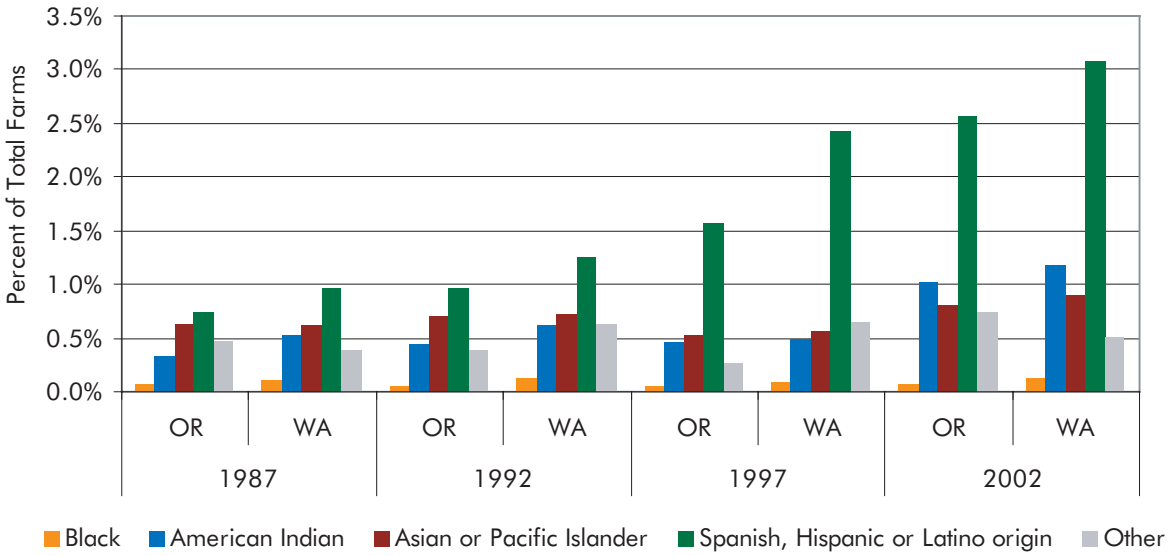
Source: USDA Census of Agriculture

Figure 32: Sex of Principal Farm Operator



Source: USDA Census of Agriculture

Figure 33: Minority Status of Principal Farm Operators



Note: Operators of Spanish, Hispanic, or Latino origin are found in all of the racial groups listed in the census and were tabulated according to the race reported, as well as on table pertaining only to this group (USDA, 2002).

Source: USDA Census of Agriculture

Cultivating our Human Capital: People and Talent in our Regional Food System

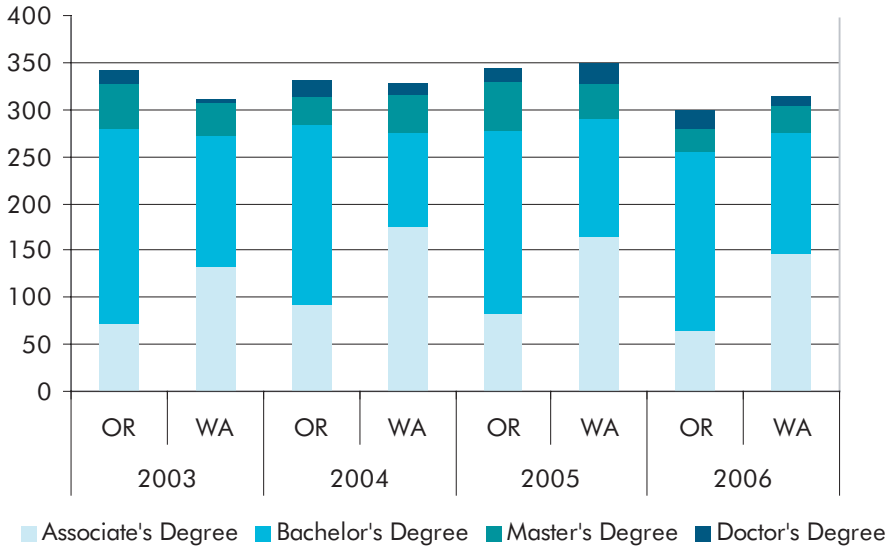
Food system sustainability requires a continuous renewal of talent for managing farms and improving farm practices; for developing new ways to add value to our food; for starting and managing food processing, distribution, and retail businesses; and for meeting the varying labor requirements of farms and food businesses. Are we developing the human resources we need to sustain a healthy regional food system? Are wages, profits, and salaries attracting the necessary talent to food-related professions?

Oregon's 40 thousand farms and Washington's 36 thousand farms are managed by an aging workforce. Figure 31 shows that the average age of farmers in Oregon and Washington, as in the United States, has been steadily increasing. Nationally, it has been above 50 years of age since at least 1974 and has increased each year since 1978. In 1985, only 16 percent of farmers were under the age of 35. This number has been steadily decreasing. By 2002, it had dropped to just 5.8 percent.

Although the population of farm operators is aging, it is also diversifying. The principal farm operators are still overwhelmingly white and male, but since 1987, there has been a 125 percent increase in the number of female farm operators in Oregon and an 89 percent increase in the number of female farm operators in Washington (Figure 32). Figure 33 shows the percentage of minority farmers. The percentage of farms principally operated by farmers of Hispanic and Latino origin has tripled in both Oregon and Washington since 1987, but still only comprise roughly 3 percent of total farms.

The future of farming in America also depends on innovation and continuous improvement in farm practices, particularly given the challenges to food system sustainability. Formal education can improve a farmer's ability to adapt to the changing agricultural marketplace and to adopt new farming techniques. About one quarter of all farmers graduate from college with a four-year degree. Figure 34 shows agriculture-related degrees awarded by Oregon and Washington colleges and universities. Between 2003 and 2006, Oregon awarded a total of 973 agriculture-related degrees, and Washington awarded a total of 1,303. While Washington awarded more than twice the number of agriculture-related associates' degrees than did Oregon in 2003 through 2006, Oregon awarded over two-thirds more bachelor's, master's, and doctoral degrees.

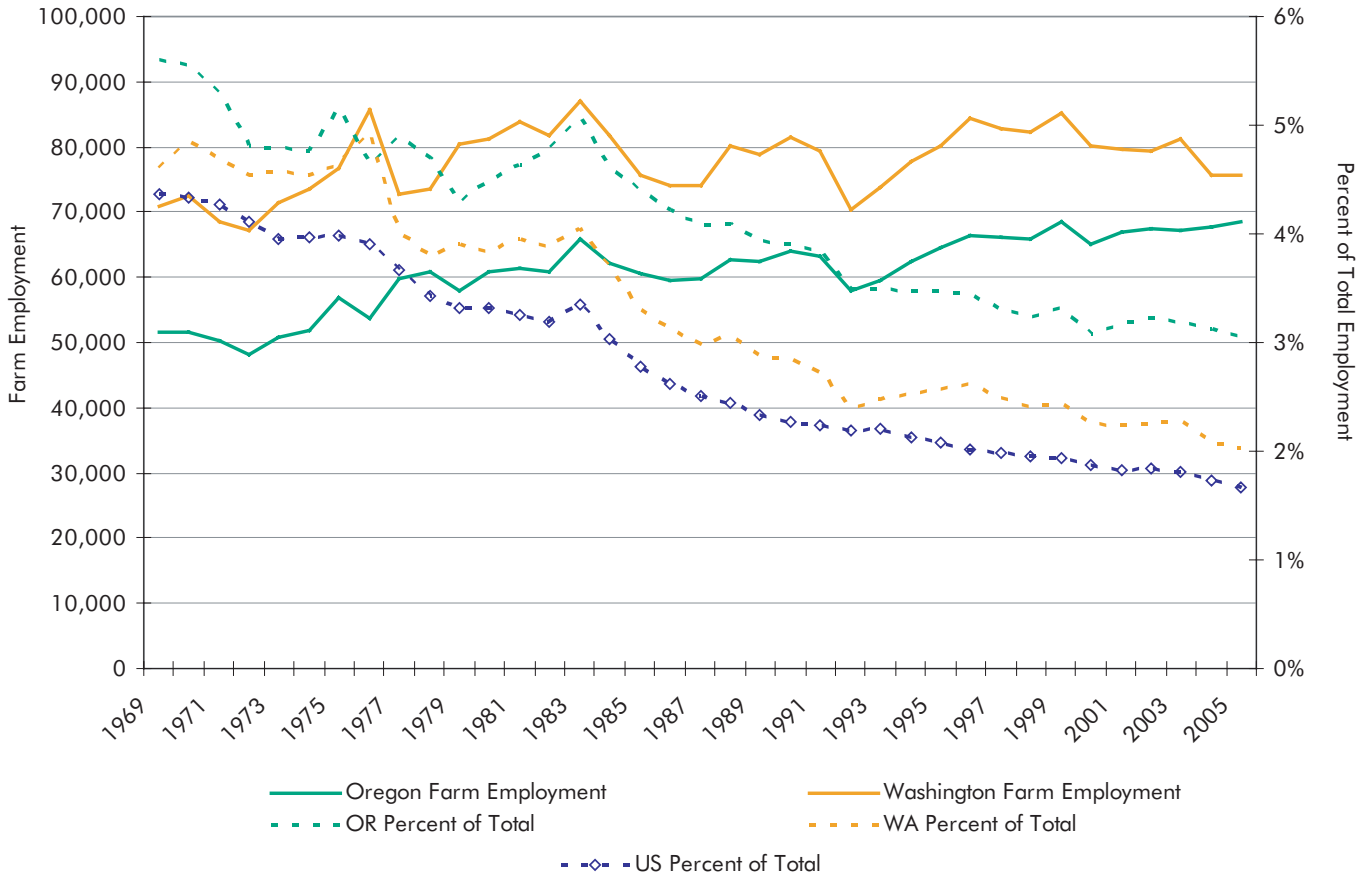
Figure 34: Agricultural Degrees Awarded by Type



Source: National Center for Educational Statistics

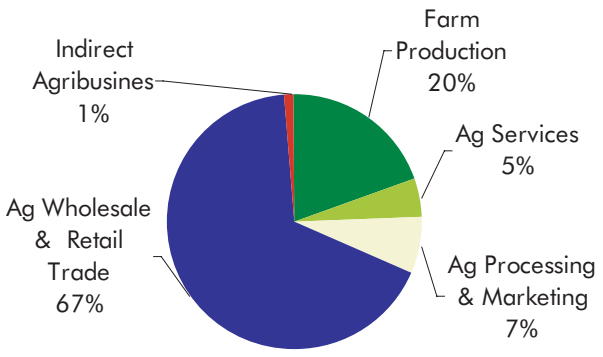
Farm employment is affected by a variety of economic factors, including technological change, industry structure, and international trade. Figure 35 shows long-term farm employment trends for Oregon, Washing-

Figure 35: Farm Employment, 1969 to 2005



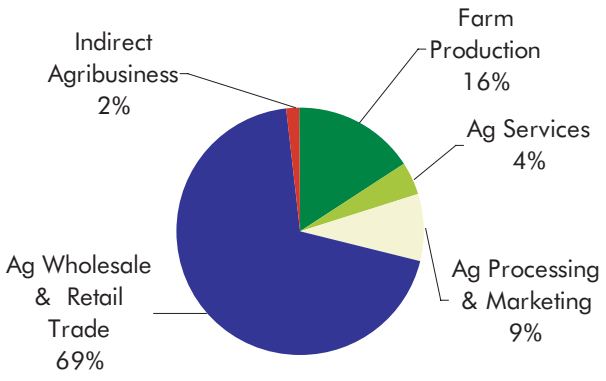
Source: ODA; US BEA

Figure 36: Oregon Agriculture Related Employment, 2002



Source: USDA ERS

Figure 37: Washington Agriculture Related Employment, 2002



Source: USDA ERS

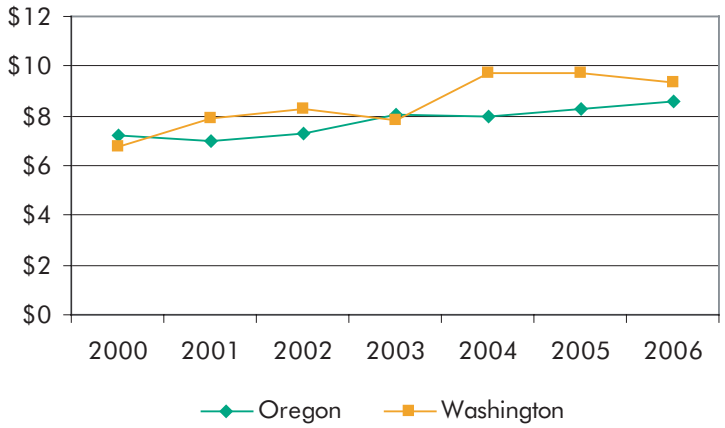
ton, and the U.S. Nationwide, farm employment has experienced a long-term decline. Almost 4 million people were employed in agriculture in the U.S. in 1969, when farm employment represented 4.4 percent of the nation's jobs. By 2005, farm employment had fallen to 2.9 million—only 1.7 percent of total employment.

Farm employment in both Oregon and Washington has risen from 1969 to 2005, but has fallen as a percentage of total employment. In 1969, farm employment represented 5.6 percent of Oregon's total employment; by 2005, it had fallen to 3.1 percent. Similarly, Washington's farm employment fell in percentage terms from 4.6 percent of total employment in 1969 to 2 percent in 2005. Farm employment still comprises a larger share of total employment in both Oregon and Washington than in the nation as a whole.

Farm employment is only one small but indispensable part of employment in the food system. The U.S. Department of Agriculture's Economic Research Service (ERS) defines farm-related industries as those with 50 percent or more of their national workforce employed in providing goods and services necessary to satisfy the final demand for agricultural products. ERS divides farm-related industries into three categories: farm employment (farm proprietors and farm wage and salary employment); farm-related employment (agricultural processing and marketing, agricultural inputs, and agricultural services); and peripherally farm-related employment (agricultural wholesale and retail trade, and indirect agribusiness). Using these definitions, farm-related employment provided about 14.3 percent of total U.S. employment in 2002 (USDA ERS 2005).

As shown by Figures 36 and 37, both Oregon and Washington have higher percentages of employment in farm-related industries than does the U.S. as a whole. In 2002, Oregon's farm-related industries provided 16.6 percent of total employment, and Washington's provided 14.7 percent. Agricultural wholesale and retail trade provide the largest share — about two-thirds—of agriculture-related employment in both Oregon and Washington. While employment in farming and closely related industries has stayed fairly constant since 1981 in both Oregon and Washington, peripherally related employment has grown at a fairly rapid rate.

Figure 38: Hourly Median Wage for Crop, Nursery, and Greenhouse Farmworkers and Laborers



Source: US BLS

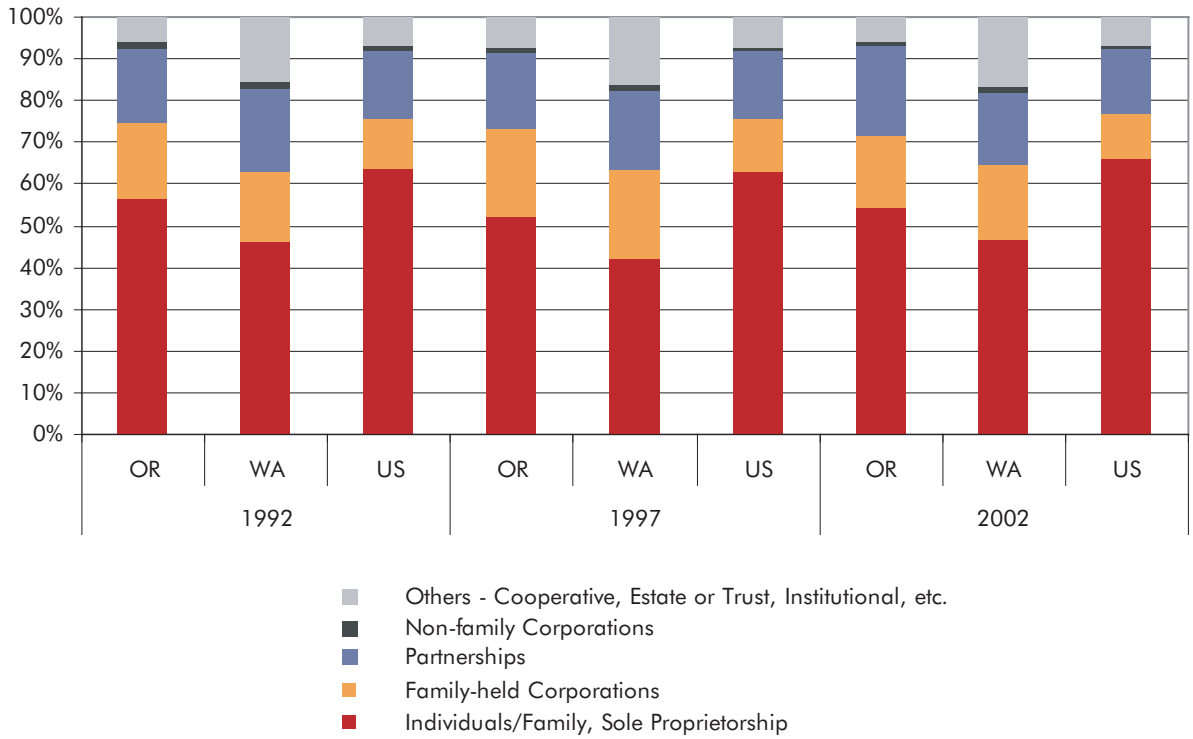
Hired farm workers make a major contribution to agriculture by providing labor during critical production periods. Yet, hired farm workers continue to be an economically disadvantaged group in the United States. Nationwide, the hourly median wage for crop, nursery, and greenhouse farm workers and laborers in 2006 was $7.95. From the farmworker's perspective, this wage compares poorly to jobs with comparable skill requirements. For example, the median wage for a construction laborer in 2006 was $12.66 (U.S. Bureau of Labor Statistics).

In Oregon and Washington, farmworker wages are higher than in the rest of the nation. Figure 38 shows that Oregon's median farmworker wage for 2006 was $8.56, up from $7.21 in 2000. Washington's 2006 median farmworker wage was $9.33, up from $6.73 in 2000. Oregon's wages have been lower than Washington's during most of the past 6 years.

Fishing Industry Employment

Fishing industry employment is also substantial in both Oregon and Washington. While fishing employment is difficult to determine because workers are not covered by unemployment insurance, our best estimate is that in 2006, over 900 people worked in aquaculture, fishing, fish and seafood wholesaling, and fish and seafood markets in Oregon. Seafood processing in Oregon employs another 900 people. In Washington 2006 fishing industry employment was much higher, with about 4000 employees in aquaculture, fishing, seafood wholesale and seafood retailing. Seafood processors employed another

Figure 39: Percent of Total Farm Acreage by Type of Organization



Source: USDA

Capital, Investment, and Sustainable Returns

In our sophisticated and complex food system, capital is needed to acquire land, hire managers and workers, buy equipment, invest in research and technology, and start and grow food-related businesses. The source of capital and how it is invested can affect the sustainability of the food industry by influencing ownership patterns; the average size of farms and other food businesses; industry concentration; vertical integration of the industry; the relative market power of farmers, food processors, retail businesses, and consumers; and the pace and direction of technological change.

Two significant trends of the past century have affected the concentration of farms: increased use of machinery and government price supports. These factors combined to encourage farmers to increase the size of their operations in order to gain efficiencies from larger scale production. As more expensive farm machinery required increased capital, fewer individuals were willing or able to take on the debt necessary to farm. Expensive and specialized equipment also increased farm specialization, and operators began producing larger quantities of a limited number of products. In turn, fewer farms were needed to meet the demand for agricultural products. Consequently, the market value for agricultural production became concentrated in fewer and fewer farms (USDA NASS 2007). Although there has been an increase in the number of small farms (less than 50 acres) and very large farms (1000 acres or more), the number of farms in the middle has declined sharply over time (Key and Roberts, 2007).

As discussed earlier (see Figure 6), these national trends have also affected Oregon and Washington as the number of farms has declined. As the farming industry becomes more concentrated, a larger share of farm products is produced by fewer farms. Our analysis of data from the 2002 Census of Agriculture reveals that in Oregon, just over 4 percent of the farms produced 75 percent of the total agricultural product in 2002. In Washington, almost 6 percent of the farms produced 75 percent of total sales in 2002. This trend resembles the U.S. trend, where 6.7 percent of farms accounted for 75 percent of total agricultural sales in 2002.

Most U.S. farms are family farms rather than large, publicly held corporations. Farms owned by individuals and families accounted for 88 percent of total farms in Oregon and 85 percent of total farms in Washington in 2002. Figure 39 shows that farms owned by individuals and families controlled the majority of farm land, accounting for 54 percent of total farm acreage in Oregon and 46 percent of total farm acreage in Washington in 2002. The percentage of total farm sales was highest for family farms, accounting for 36 percent of total farm sales in Oregon and 41 percent of total farm sales in Washington in 2002. Although family farms still dominate, their percentage of total farm sales and percentage of total acreage in Oregon and Washington are lower than the national figures, where family farms accounted for 66 percent of total farm acreage and 52 percent of total farm sales in 2002.

Government payments can have an influence on the size of farms and on farm survival (Key and Roberts, 2007). According to the USDA's Agricultural Resource Management Survey, 44.3 percent of all U.S. farms received some form of government farm payments in 2006. In that year, Oregon farmers received $118 million in government payments, while Washington farmers received about $196 million (Oregon Department of Agriculture 2007; Washington State Department of Agriculture 2007).

Food Processing, Storage, and Distribution

Food processing, storage, distribution facilities, and wholesalers provide a vital link

Figure 40: Grocery & Farm Product Wholesaler, 1998 to 2005

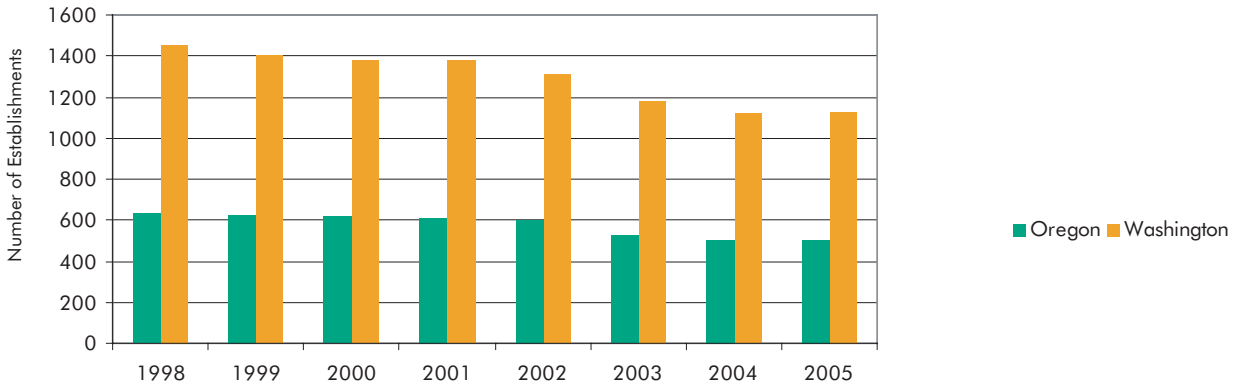


Figure 41: Grocery & Farm Product Wholesale Establishments by Size, 2005

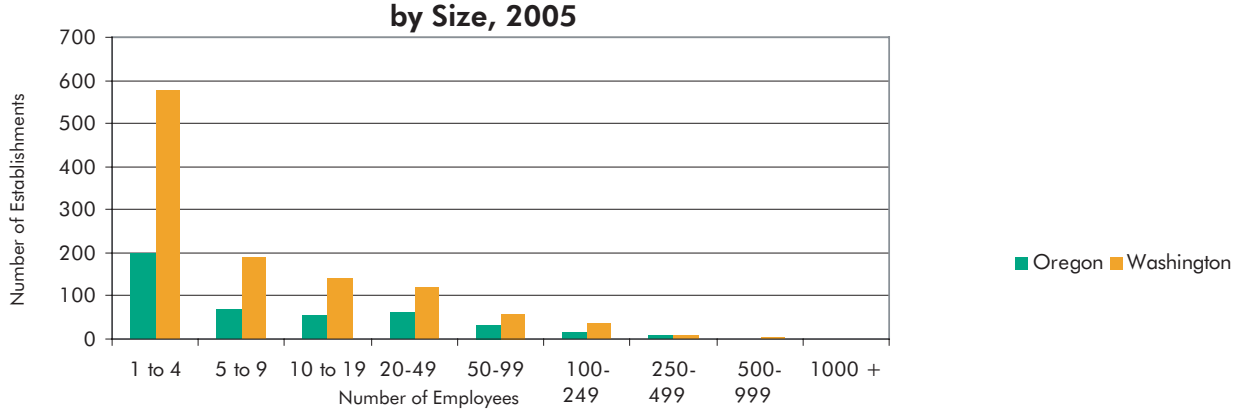


Figure 42: Food Manufacturing Establishments by Size, 2005

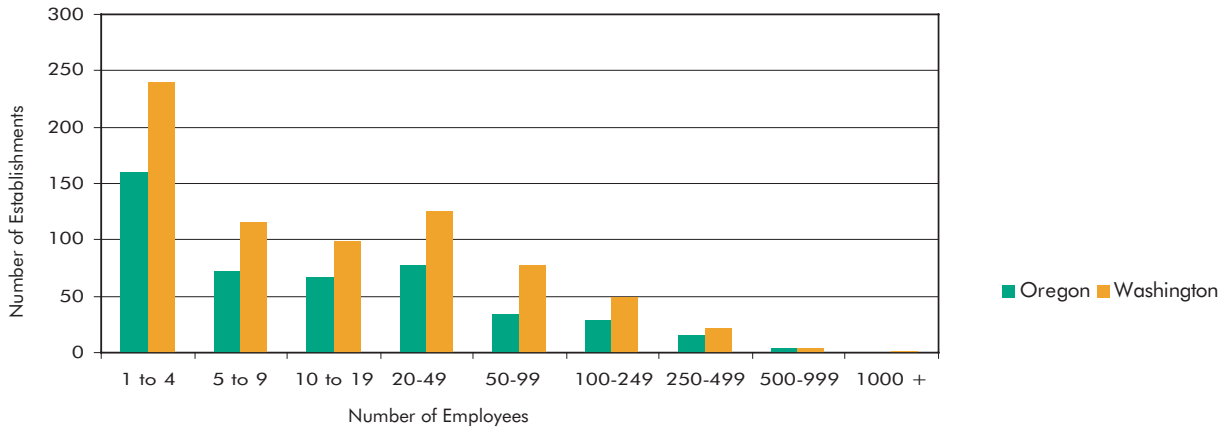
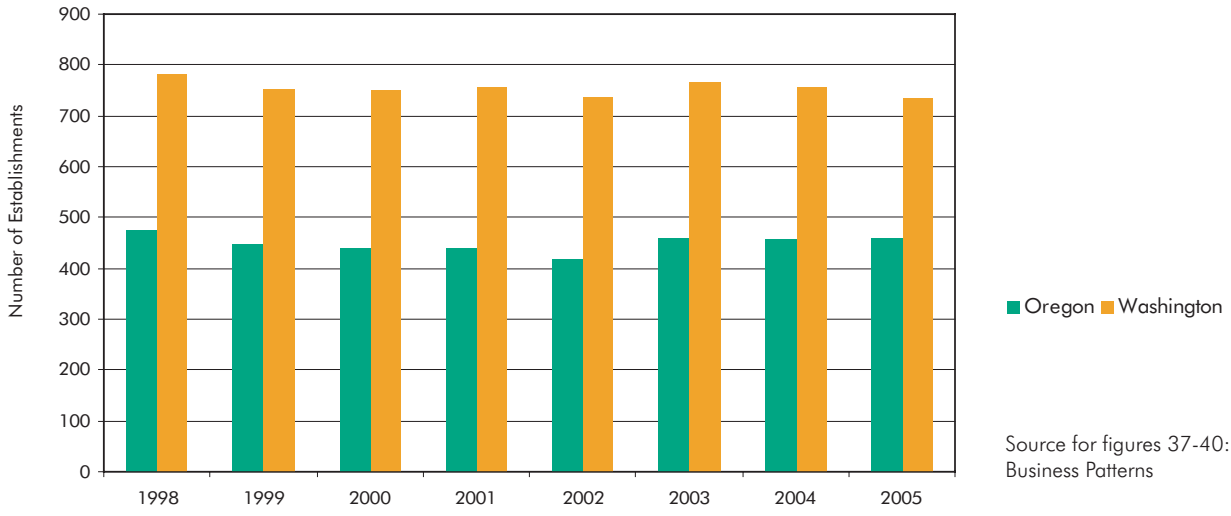


Figure 43: Food Manufacturing Establishments, 1998 to 2005



Source for figures 37-40: County Business Patterns

among farms, food processors, and consumers. Figure 40 shows that Washington had more than twice as many food product wholesalers and storage facilities as did Oregon in 2005. About 45 percent of Oregon's wholesalers and 50 percent of Washington's wholesalers in 2005 were small establishments, with four or fewer employees. The number of wholesalers has fallen in both states. In 1998, Oregon had 634 wholesalers and Washington had 1,453. In 2005, Oregon had 504 and Washington had 1,129 (Figure 41).

The food processing industry has experienced a great deal of consolidation and structural change over the past few decades. These changes, driven primarily by technology, can have important impacts on communities (Ollinger et al 2005). Local food processing industries not only provide jobs, but also offer a market for locally grown farm products. Thus, the disappearance of a local processing plant can leave many workers without jobs and can also leave farmers without a market for their crops. For example, the closing of the Seneca asparagus processing plant in Dayton, Washington in June of 2005 was a major loss for asparagus growers in the region, which sold at least half of their product to processors (Milkovich, 2005).

Figures 42 and 43 show the distribution of food manufacturing plants by size and the change in the number of establishments over time. About one-third of the food manufacturing plants in Oregon and Washington have four or fewer employees; about one-half have nine or fewer employees. The distribution of food manufacturing plants by size is very similar for Oregon and Washington. The number of food manufacturing plants in Oregon has fallen from 477 in 1998 to 460 in 2005. In Washington, the number has fallen from 781 in 1998 to 734 in 2005.

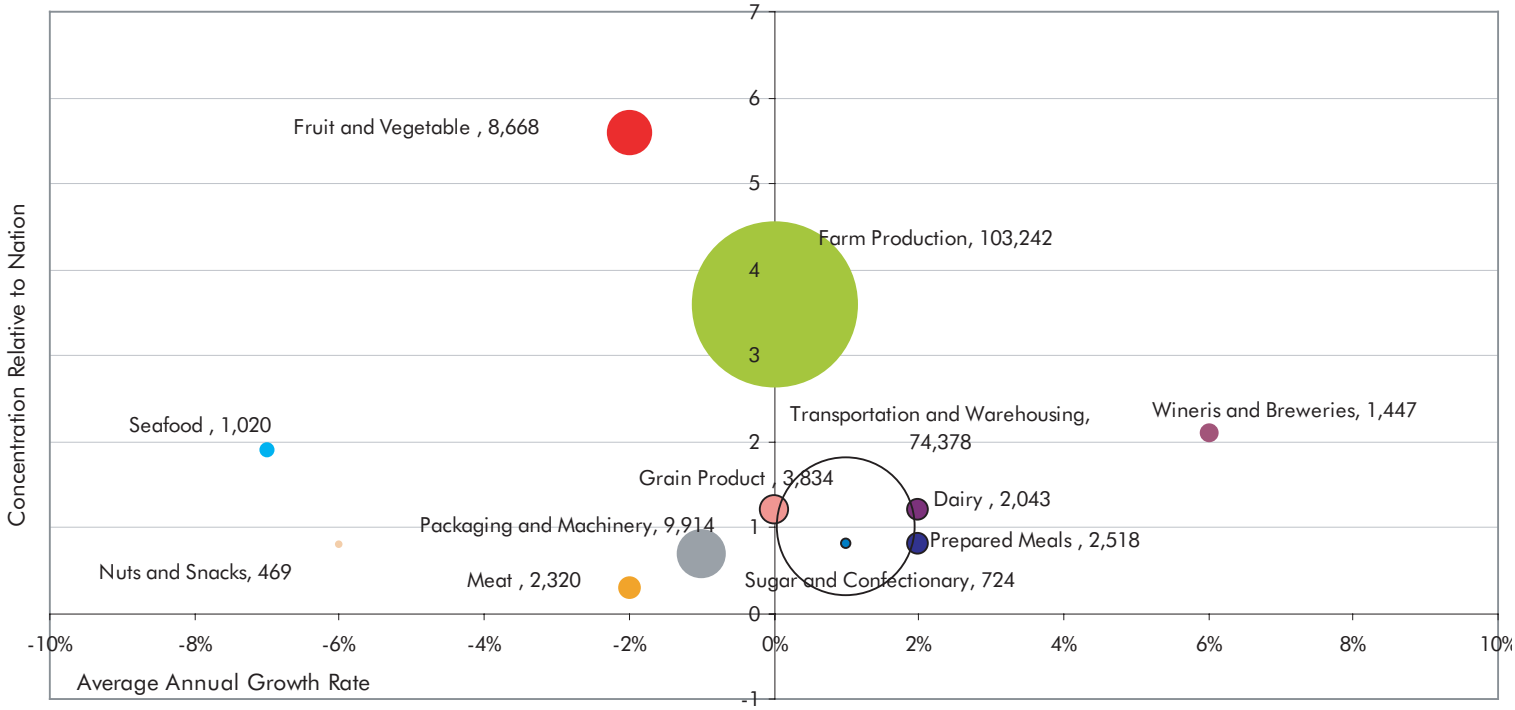
Food production and processing is considered an important traded sector cluster in both Oregon and Washington. In 2006, the Northwest Food Processors Association commissioned a Food Cluster study that measured the size and economic impact of the entire food industry cluster. The cluster charts in Figures 44 and 45 show the relative size, relative concentration, and annual growth rate for each segment of the food cluster. The size of the circles reflects the number of employees in each sector in 2003. The farther to the right the circle is, the greater its annual growth of employment from 1992 to 2003. The closer to the top of the chart the bubble is, the more concentrated, or specialized the industry sector is for the state relative to the nation in 2003.

Figures 44 and 45 show the differences in cluster composition and growth. While wineries and breweries are the fastest growing segment of the industry in Oregon, meat producers are the fastest growing sector in Washington. The seafood industry is seven times more concentrated in Washington than in the nation overall, while the fruit and vegetable segment is almost 6 times more concentrated in Oregon than in the rest of the nation.

Rising productivity in the food industry can reduce the price of food, make food industries more profitable, or both. Historically, productivity in the food manufacturing sector has lagged benind that of other manufacturing sectors (Huang 2003). Productivity can increase as workers become more skilled and as the equipment and technology they employ become more advanced. In many cases, productivity also rises with the size of a manufacturing plant.

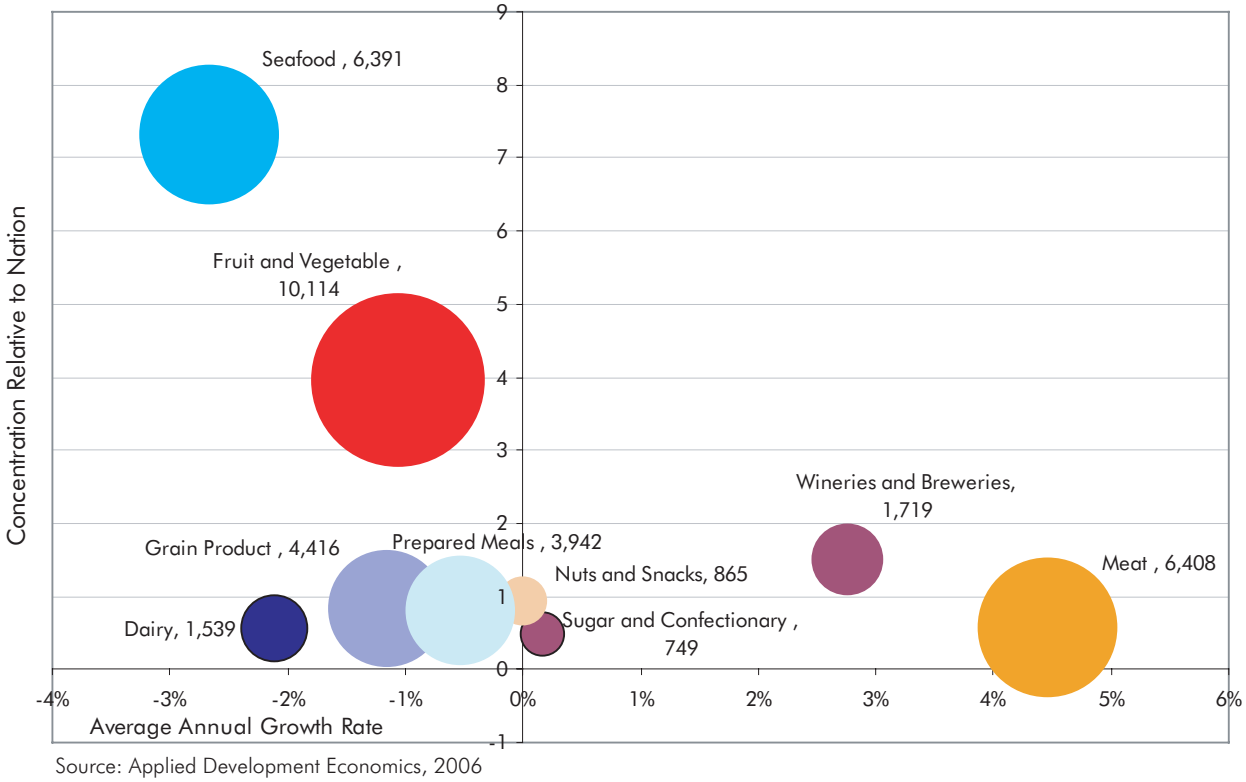
Figure 46 shows rising labor productivity for food manufacturing in Oregon, Washington, and the U.S. Oregon's labor productivity for food manufacturing is higher than either Washington's or the nation's as a whole.

Figure 44: Oregon Food Processing Cluster, 2003



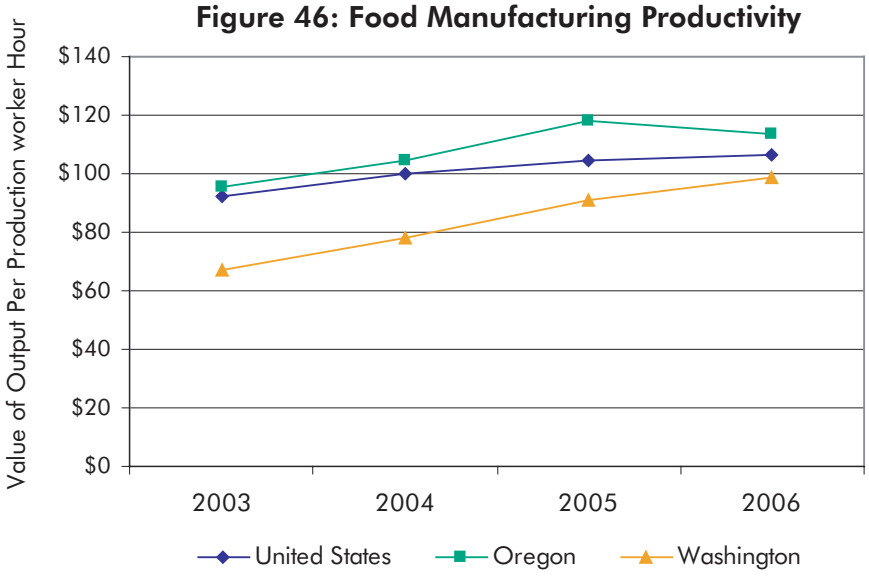
Source: Applied Development Economics, 2006

Figure 45: Washington Food Processing Cluster, 2003



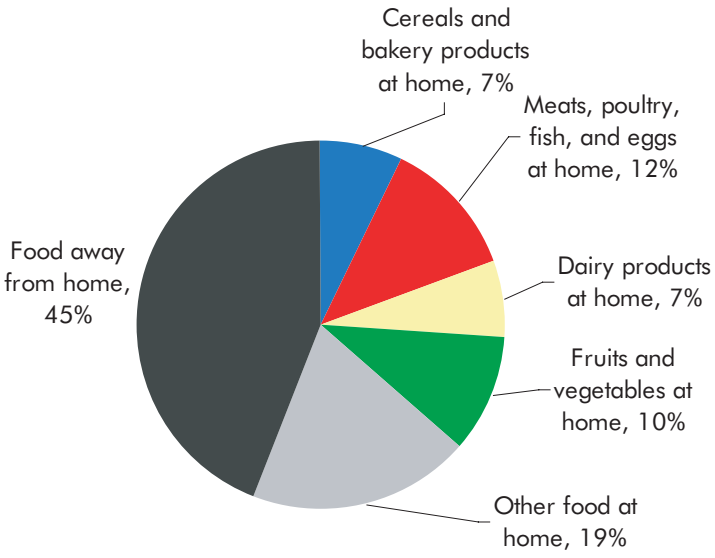
Source: Applied Development Economics, 2006

Figure 46: Food Manufacturing Productivity



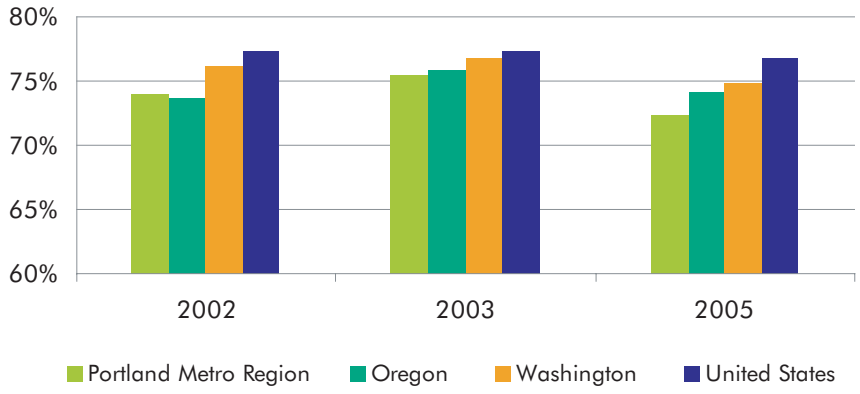
Source: Annual Survey of Manufacturing

Figure 47: Breakdown of Food Expenditures in the Portland-Vancouver Region, 2004 to 2005



Source: Consumer Expenditure Survey

Figure 48: Percent of Population Not Consuming Enough Fruits and Vegetables, 2002 to 2005



Source: CDC BRFSS

Consumer Choices, Sustainability, and Health

What factors do consumers weigh when making food related purchasing decisions? Consumer purchases have important impacts throughout the food system. Do they consider the impact of their purchases on their local food system? Are they considering the food's impact on their own health, the health of the environment, and the viability of local farmers? Do they have the information they need to consider these factors? Do they have access to healthy food at affordable prices?

Consumer Expenditures for Food

Consumer spending decisions are complex and are influenced by the availability and cost of food as well as other economic concerns, including the rising costs of fuel and housing. As the cost of other key household expenditures rise, consumers are left with less disposable income and this may affect their food choices.

Consumer expenditures on food of various types provide a window into eating habits and nutrition at the regional scale. More money spent on fruits and vegetables would generally indicate a healthier diet, while more money spent on "food away from home," which includes fast food, restaurants, take out/delivery, cafeterias, and vending machines, might indicate less healthy eating.

Consumers in the Portland-Vancouver region spent roughly 11 percent of their annual income and 13 percent of annual expenditures on food in 2004-2005. This finding is comparable to the national figures. For the Portland-Vancouver region, these numbers have varied slightly from year to year, but there has not been a consistent upward or downward trend (U.S. BLS 2006).

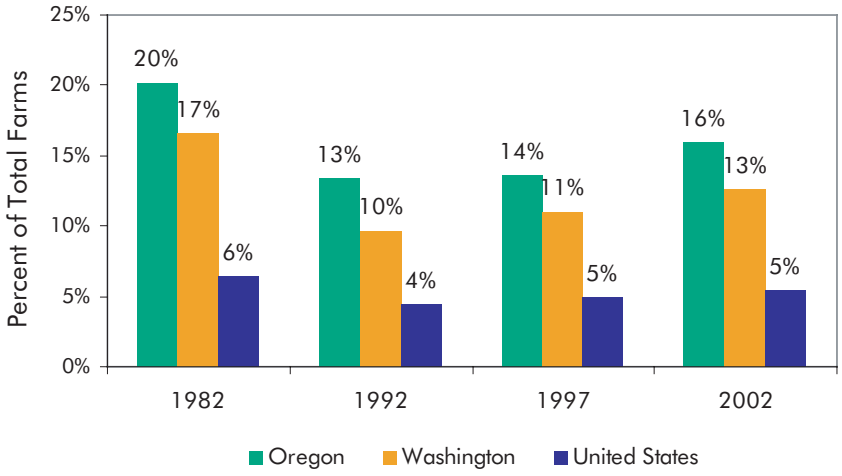
As shown in Figure 47, food away from home accounted for 45 percent of the food budget in the Portland-Vancouver region in 2004-2005, slightly above the national average of 43.3 percent. In the Portland-Vancouver region, food away from home has become a larger part of the food budget over time. Fruits and vegetables represented 10.2 percent of the total food budget in the Portland-Vancouver region in 2004-2005, slightly above the national average for that year (9.5 percent). Spending on fruits and vegetables in the region has remained fairly constant relative to all food expenditures as well as relative to income.

Despite spending over 10 percent of their food budget on fruits and vegetables, many people in the Portland-Vancouver region still do not eat sufficient servings of fruits and vegetables. Figure 48 shows that of the adult population, 72.3 percent in the Portland-Vancouver region, 74.8 percent in Washington, and 74.1 percent in Oregon reported not eating the recommended five or more fruits and vegetables per day in 2005. These rates are similar to the 76.8 percent of total U.S. adults who reported not eating the recommended five or more fruits and vegetables per day in 2005. This consumption behavior has not changed substantially since 1994.

Food Sources

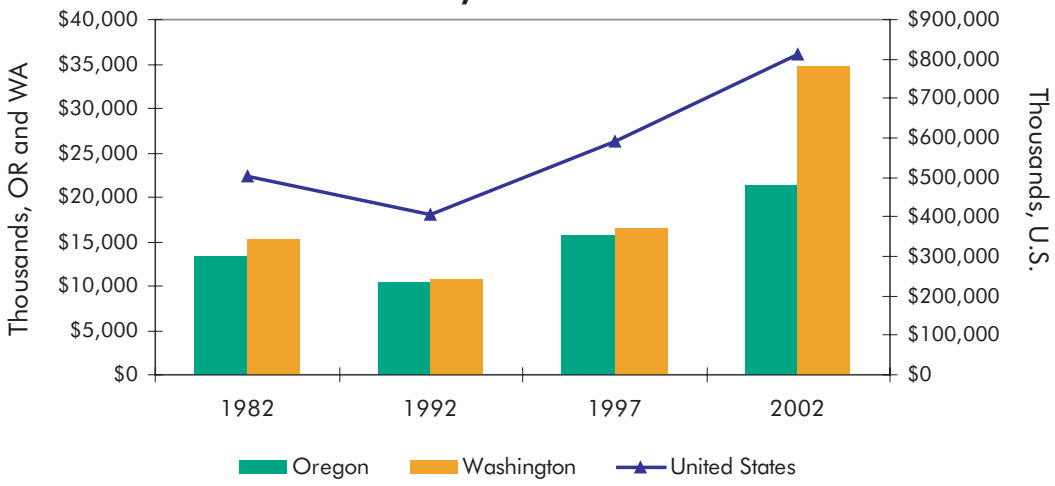
As their share of retail profits decreases, some farmers are turning to direct marketing as a means to capture retail prices for produce grown on the farm. Direct marketing, which can also be an outlet for other value-added products, is an increasingly popular choice among farmers. Currently, farmers capture only about 24 percent of the retail price of fresh vegetables and 27 percent of the retail price of fresh fruits (Stewart 2006). Direct marketing gives farmers an opportunity to increase their share of what consumers pay. Direct marketing can include roadside stands, U-pick, community-supported agriculture (CSA), and Internet and mail order sales.

Figure 49: Percent of Farms Engaged in Direct Marketing



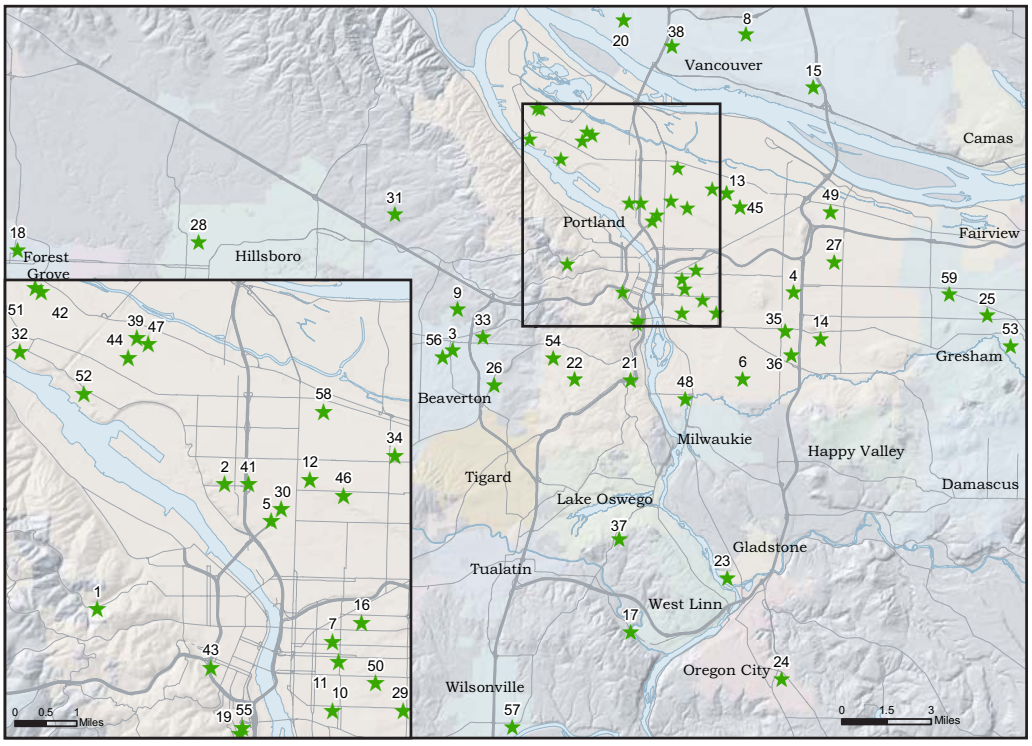
Source: USDA NASS

Figure 50: Value of Agricultural Products Sold Directly to Individuals



Source: USDA NASS

Figure 51: Community Gardens in the Portland Region, July 2008



Source: IMS

According to the USDA, the number of farms marketing directly to consumers rose steadily between 1992 and 2002, with a 50 percent increase in Oregon, 54 percent increase in Washington, and a national increase of 35 percent. As shown in Figure 49, Oregon has a larger percentage of total farms engaged in direct marketing than either Washington or the nation as a whole. However, Washington farmers sell a greater total value of product through direct marketing than do farms in Oregon. Figure 50 shows that the value of agricultural products sold directly to consumers has also increased since 1992. From 1992 to 2002, both Oregon and the U.S. doubled the value of products sold through direct marketing while the value for Washington more than tripled.

Farmers' markets are one type of direct marketing that can serve dual functions as an important community food distribution system and an integral part of the food community linking consumers and producers through business and social relationships. Markets can act as a channel for entrepreneurial and small farmers who strive to establish a loyal customer base by emphasizing personal selling as a marketing strategy.

For most people, grocery shopping means visiting a supermarket. Although farmers markets, CSAs, and other forms of direct marketing can add to the availability of fresh fruits and vegetables, most people get the majority of their groceries from conventional grocery stores. Not everyone in the Portland-Vancouver region has the same access to healthy food. Food stores, including grocery stores, ethnic markets, health food coops and convenience stores vary in terms of both product and price. While some consumers live in areas where a wide choice of healthy food is available others have fewer options. In some areas called food deserts, a combination of concentrated poverty, limited public transportation and few or no retail food stores limit consumers' access to healthy food.

A recent study by the Coalition for a Livable Future showed that food deserts aren't common in the Portland-Vancouver region but some do exist. People who live in neighborhoods with few food stores are often further disadvantaged by lack of automobile ownership. Throughout the Portland-Vancouver region, areas with low access to grocery stores also have lower than average levels of car ownership (Campbell et al. 2007).

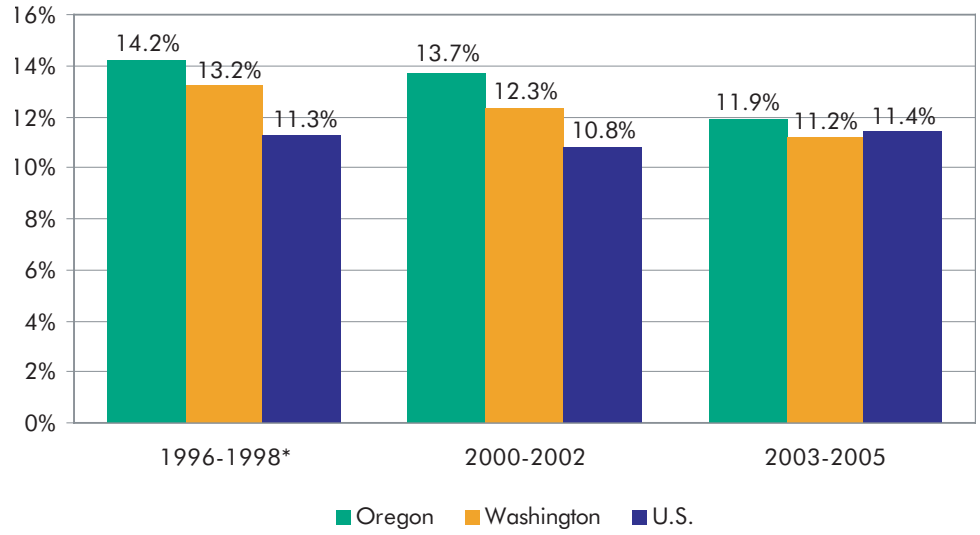
Some consumers also meet food needs by growing their own food. Although it is impossible to estimate how much of the region's food consumption is filled by home gardens, we do know that at least 59 community gardens in our area help to meet the need for garden space. Figure 51 shows the locations of those gardens for which we have gathered information. An interactive version of this map can be found at www.pdx.edu/ims/communitygardens.html. This map will be updated as we receive additional information.

Food Insecurity and Hunger in our Region

Food insecurity, the inability to consistently meet the nutritional needs of every member of a household, has decreased recently in Oregon and Washington but continues to be a problem. In Oregon and Washington, the prevalence rates of food insecurity declined slightly between the 1996-1998 survey period and the 2003-2005 survey period (Figure 52). Oregon's rate fell from 14.2 percent in the 1996-1998 period to 11.9 percent in the 2003-2005 period. Washington's fell from 13.2 percent in the 1996-1998 period to 11.2 percent in the 2003-2005 period.

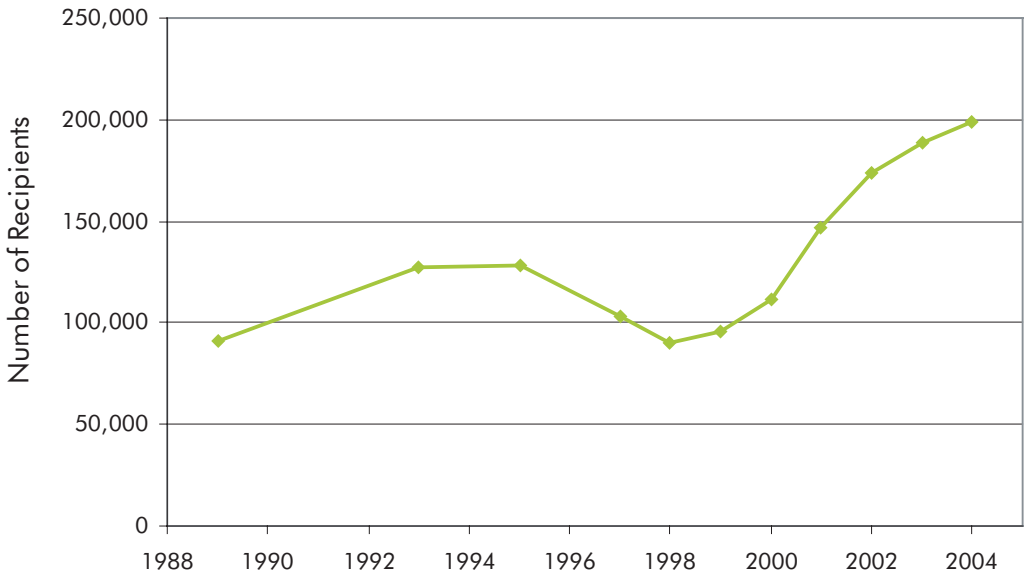
One way that food insecure households meet their needs is through the food stamp program. The number of food stamp program participants in Oregon and Washington grew significantly between 1989 and 2004 (Figure 53). In Oregon, the number of recipients grew by approximately 215,000, or 101 percent, while Washington added 232,000 recipients, a gain of about 87 percent. The number of recipients in the Portland-Vancouver region grew at a greater rate than that of either of the two states. Between 1989 and 2004, recipients in the six-county region grew from about 91,000 to about 199,000—an increase of about 119 percent.

Figure 52: Average Prevalence of Household Level Food Insecurity (Low or Very Low Food Security) in Oregon and Washington



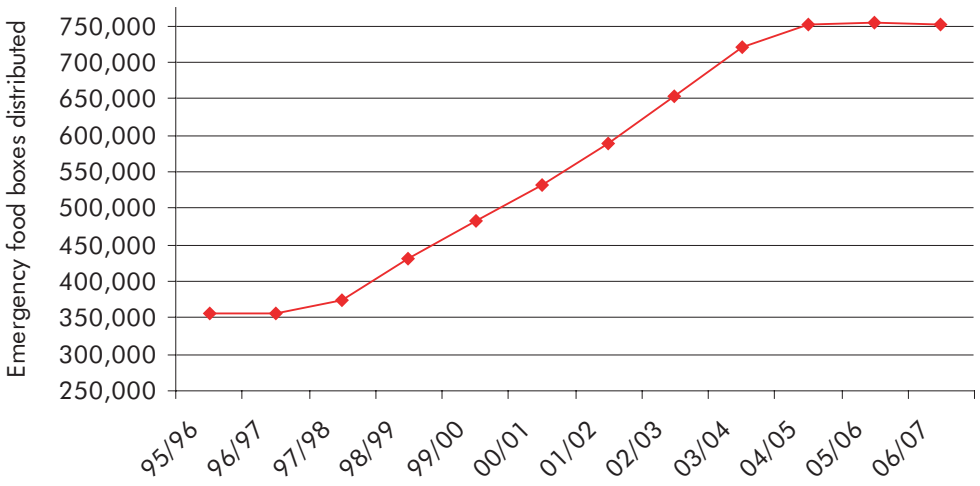
Source: Nord et al, 2005

Figure 53: USDA Food Stamp Program Recipients for the Portland-Vancouver Region



Source: U.S. Census Bureau, 2007

Figure 54: Oregon Food Bank Network Food Box Distribution



Source: Oregon Food Bank

The Oregon Food Bank Network consists of 919 hunger relief agencies that serve households throughout Oregon and Clark County, WA. Oregon Food Bank collects food from farmers, manufacturers, retailers, wholesalers, and government sources and distributes it in the form of emergency food boxes. An emergency food box usually contains about a three- to five-day supply of groceries. Although the number of emergency food boxes distributed does not fully capture the level of need in the area, it can serve as a starting point for measuring hunger. Those most likely to need emergency food boxes are children, the working poor, the elderly, and the disabled. According to a study conducted by the Oregon Food Bank in 2006, nearly a third of the recipients of food pantry services claim they need emergency food boxes because their wages are too low, making it difficult for them to meet their basic needs (Oregon Food Bank 2006).

The Oregon Food Bank Network distributed about 752 thousand food boxes in fiscal year 2006-2007. Figure 54 shows a sharply upward trend; food box distribution has doubled in ten years. More than 45 percent of the food boxes distributed in 2006-2007 were in the six-county Portland-Vancouver region. The regional food bank serving Multnomah, Clackamas, and Clark counties distributes the greatest volume of food in the network, with 18,418,140 lbs. of food distributed in 2006-2007.

Health Outcomes Tied to Nutrition

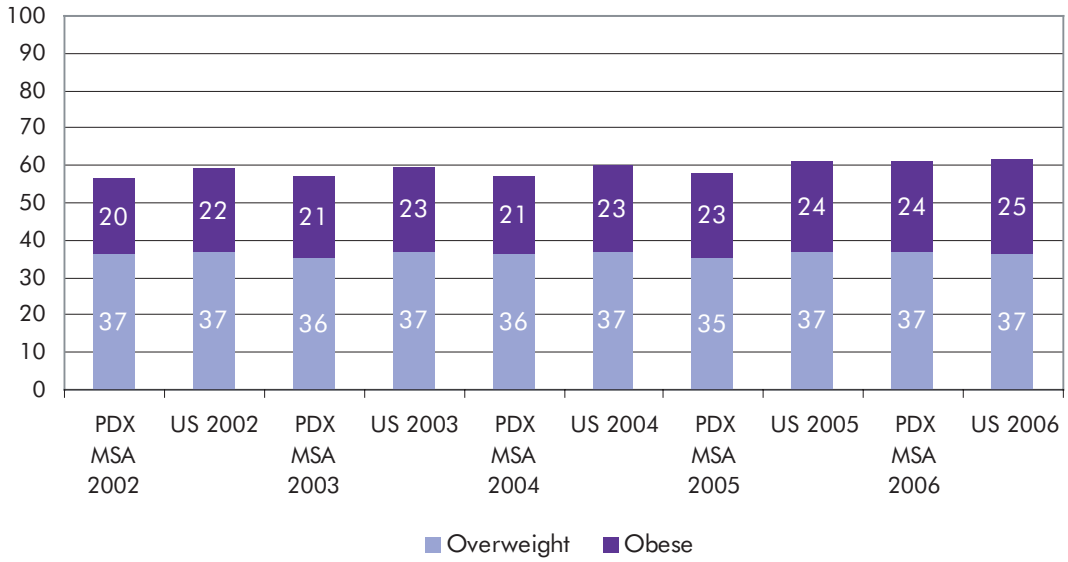
A person's diet can have a dramatic impact on health. Inadequate nutritious food, or too much of the wrong kind of food, can lead to serious complications including obesity, diabetes, cardiovascular disease, and others. Since the mid-1970s, the prevalence of overweight and obesity has increased sharply for both adults and children in the United States. These increasing rates raise concern because being overweight or obese increases the risk of many diseases and health conditions including: hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, and certain types of cancer (CDC 2007). Figure 55 shows that as of 2006, over 62 percent of the adult population in the United States and 61 percent of the adult population in the Portland-Vancouver region were considered overweight or obese based on BMI measurements. In 2006, 25 percent of the adult population in the United States and 24 percent of the adult population in the Portland-Vancouver region were considered obese based on BMI measurements.

Roughly 180 thousand people in Oregon have been diagnosed with diabetes (as of 2005), while another 60 thousand or more may have the disease but have not been diagnosed (Oregon DHS, 2005; Oregon DHS, 2006). Figure 56 shows rising diabetes rates in both Oregon and Washington, although the Portland-Vancouver region has a lower prevalence of the disease than does either state. Economically disadvantaged populations in Oregon are more likely to have diabetes than the general population. Only 24 percent of adults diagnosed with diabetes in Oregon eat five or more servings of fruits and vegetables daily (as of 2005), down from 27 percent in 2001 (Oregon DHS 2005).

Food Safety

The U.S. Food and Drug Administration regulates $417 billion worth of domestic food and $49 billion worth of imported food each year—everything we eat except for meat, poultry, and some egg products, which are regulated by the U.S. Department of Agriculture (FDA, 2007). Figure 57 shows that in 1998, there were 23 outbreaks of foodborne illness in Oregon and 59 in Washington. By 2002, the number of outbreaks in Oregon had risen to 30, while Washington's had fallen to 57. The bacterium causing the largest number of reported and identified cases of foodborne illness in 2005 in Oregon was campylobacter with 647 cases. However, the number campylobacteriosis cases identified fell by 52 percent from 1986 to 2005. Salmonella caused 413 cases of foodborne illnesses in Oregon in 2005; the number of reported and identified cases of salmonelosis has increased by 75 percent from 1986 to 2005. Reported cases of E. coli in Oregon have ranged from a high of 244 in 1993 to a low of 53 in 1990.

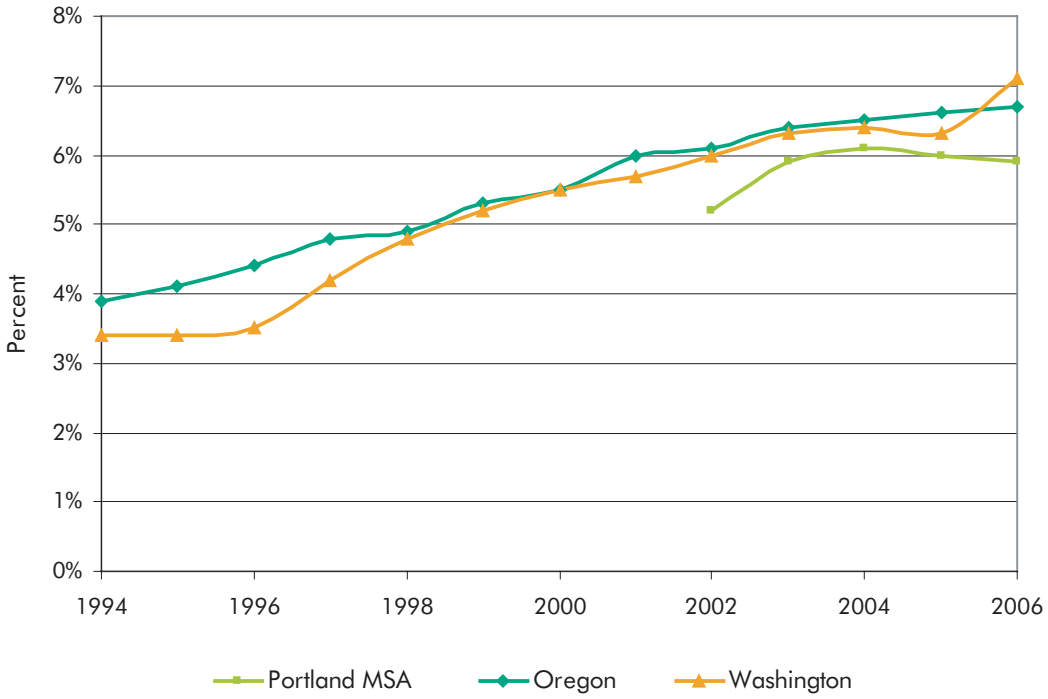
Figure 55: Percent of Adults Overweight or Obese in the Portland-Vancouver Region and the U.S.



Source: CDC, 2002-2006

Notes:
1. BMI Overweight = 25.0-29.9, BMI Obese = 30.0 and greater
2. Portland-Vancouver region includes: Clackamas County, OR; Clark County, WA; Multnomah County, OR; Washington County, OR; Columbia County, OR; Skamania County, WA; Yamhill County, OR.
3. United States values are median percent values.

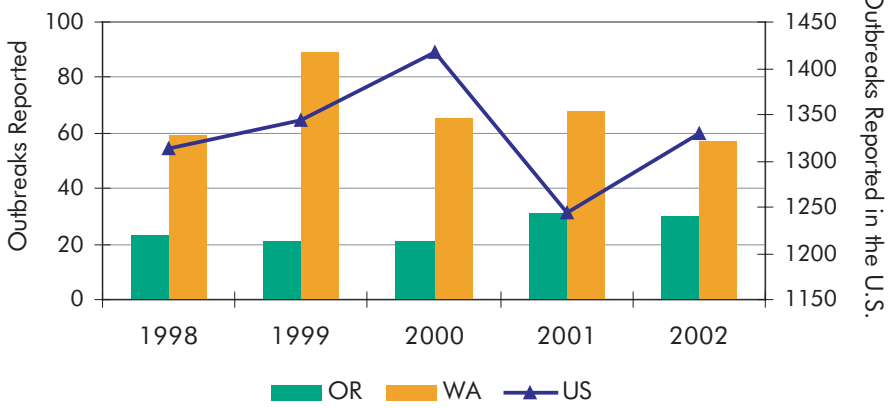
Figure 56: Percent of Adults Diagnosed with Diabetes* Oregon, Washington, and Portland-Vancouver Region**



Source: CDC BRFSS

** Data for states uses 3 year averages (2 years of data where 3 years are not available). Data for the MSA represent a single data for a single year.*
*** Portland MSA includes Clackamas, Columbia, Multnomah, Washington, and Yamhill counties in Oregon and Clark and Skamania counties in Washington.*

Figure 57: Reported Foodborne Disease Outbreaks



Source: Lynch et al., 2006

Courtesy of Dancing Roots Farm

Box 3: NEXT STEPS

1. ***Draft a regional food system action plan.***
2. ***Establish Oregon and Washington Food Policy Councils.***
3. ***Incorporate food system issues into land use, transportation, public health and economic development planning.***

Box 4: Summary of Suggested Strategies for Food System Goals

Resource Stewardship

- Research sustainable farming and ranching practices.
- Expand funding and implementation of government, academic, business, and non-profit programs to support sustainable practices.
- Lenders expand capital attainment opportunities and revise lending protocols to support businesses engaged in sustainable practices.

Economic Prosperity and Diversity

- Expand food business connection programs.
- Develop and implement mandated point of origin labeling.
- Expand direct marketing opportunities.

Food Access

- Conduct community food assessment research focused on nutrition and access.
- Include food access and agriculture issues in urban planning at city, county and state levels.
- Expand farm to school programs.

Food Choices Support Personal and Community Health

- Expand research on nutrition measures and the health impacts of food consumption.
- Include cooking, nutrition and physical education curriculum at all education levels.
- Include language about nutrition in advertising.
- Develop new policies to discourage consumption of unhealthy foods.

Regional Market Expansion and Infrastructure Support

- Develop and implement institutional procurement standards prioritizing regionally sourced, sustainable, products.
- Establish funding and credit programs to support farming and processing infrastructure (e.g. tools, facilities, irrigation, and transportation improvements).

Agriculture Land-Base Maintenance

- Implement government agricultural land incentives and development disincentive policies and programs.
- Develop and implement farmer entry and land transition policies and programs.

Opportunity and Justice for All Food Workers

- Develop and implement farmer education programs.
- Support an improved guest worker program at the national level.

Resiliency

- Support local and regional agriculture expansion through incentive programs.
- Include food systems in emergency action plans.
- Develop waste processing compost infrastructure to support food waste diversion programs.

Food Choices Restore Cross-System Respect

- Establish community education about food system issues.
- Conduct ongoing cross-sector dialogues about food system issues.
- Increase cross-sector, cross-culture partnerships in food related businesses, policy and program development, and lobbying for policy change.

Source: Food System Forum, April 25, 2008

Conclusions, Observations, and Next Steps

The future sustainability of our regional food system depends on how we manage competing uses for land, water, energy, talent, capital, and consumer choice and buying power. This section revisits stakeholder goals for food system sustainability, discusses what the data reveal about the region's position relative to those goals, and identifies important issues that available data are not able to address.

On April 25, 2008, more than 100 stakeholders from different sectors of the food system participated in a forum to review the contents of a draft of this document and discuss the future of the region's food system. The suggestions that emerged in group discussions often echoed responses from stakeholder interviews conducted as part of our assessment over the past year. Their strategies for maintaining a sustainable food system are summarized below. The discussion includes steps the region might take to implement these strategies. It is notable that the actions from these brief discussions, though not yet thoroughly tested for our region, are among those recommended by researchers for improving food systems in other U.S. regions and in Canada (Ruhf et al., 2002; Unger and Wooten, 2006; Hinrichs and Lyson, 2007; Matheson, 2008; Xuereb et al., 2005). (Appendix C contains a complete description of the forum and inventory of actions suggested by stakeholders.)

STATUS OF FOOD SYSTEM GOALS

Resource Stewardship

A number of our indicators address the issue of resource stewardship. We know that from 1982 to 1997, over 148,000 acres of cropland in Oregon and Washington were converted to urban uses, and that this conversion has made a significant number of acres of prime soils unavailable for agriculture. These rates seem to have fallen or leveled off in recent years. Use of chemicals on farms has been slowly rising, but so has the adoption of organic practices, while pursuit of Food Alliance or other certifications has reduced the use of pesticides. Water resources are taxed by population growth, global climate change, and the spread of paved surfaces. Oregon farmers are drawing a larger proportion of ground water for irrigation, but the application rate is fairly constant as farmers adopt water saving practices. Water quality appears to be improving. And while the food system is still very dependent on fossil fuels to power machinery and equipment and to transport products, many farmers are experimenting with alternative fuels, including biofuels, wind, and solar energy.

Stakeholders strongly advocate maintaining the viability of alternative farming and ranching practices and call for additional research and technical assistance in this area. They cite Oregon and Washington's Land Grant Universities (O.S.U and W.S.U.) USDA-funded Cooperative Extension programs that offer growers technical assistance and education. The Agricultural Experiment Stations research the specific needs of these regions. Farmers using or considering sustainable practices would benefit from the expansion of these programs to include information on sustainable practices. This expansion may require the universities to shift their focus in order to explicitly incorporate sustainability concepts into their business practices, agriculture curriculum, and institutional missions. Expansion of USDA small farm programs to reach mid-sized operations would also help businesses transition to alternative practices.

The adoption of alternative practices often requires investment capital. Stakeholders suggest innovative lending and government programs to increase producer and processor's access to capital. These include tax breaks for small-scale regional processing, the creation of low interest loans specifically for innovative sustainable farming or ranching practices, restructured tax codes for co-

operatives and collectives, low cost loans for start-up farmers, the use of "skip payments" where loans are not payable during the off season, cooperative leasing arrangements that permit technical assistance in operations, and micro-lending.

Summary of stakeholder strategies:

- Research sustainable farming and ranching practices.

- Expand funding and implementation of government, academic, business, and non-profit programs to support sustainable practices.

- Expand loan opportunities for farmers, and revise lending protocols to support businesses engaged in sustainable practices.

Economic Prosperity and Diversity

Cash receipts to farmers in Oregon and Washington are at record high levels. Yet, realized net farm income is very volatile and, when adjusted for inflation, farmers are making less money today than they were in 1970. Similarly, the value of commercial fisheries landings has been volatile. Oregon's fishing industry revenue, when adjusted for inflation, is less today than it was in 1970. A number of factors influence income for farmers and fishers, including the prices of inputs such as energy, which is at historic highs.

Oregon and Washington both have highly diversified agriculture, with no single commodity commanding greater than 25% of total cash receipts. This diversity may contribute to our system's resiliency in the face of natural disasters or market changes that affect a single commodity. Non-food products including nursery and greenhouse products, grass seed, and Christmas trees earn a significant share of revenue for farmers in Oregon and Washington.

Revenue from exports is at record levels in both Oregon and Washington, but so is revenue from direct sales of products to consumers. Although direct marketing represents a very small percentage of total cash receipts, it offers some farmers the opportunity to capture a larger share of the retail value of their products. Local food processors also provide an important market for farmers. While the number of food processing plants in the region has fallen from 1,258 in 1998 to 1,194 in 2005, this decline reflects general consolidation in the industry from changes in technology and rising productivity. Nevertheless, employment in two segments of the food processing industry, Wineries and Breweries and Meat Processing, are rising. The bright spot for Oregon and Washington farmers is the number of processors that are marketing their products as produced from local food sources. These processors are responding to consumers who value supporting the economic vitality of local farmers.

Direct marketing can familiarize consumers with local producers and processors, increase producer profits, and provide a market for more product diversity. Stakeholders suggest that city and county governments work with businesses to provide space for new farmers markets. Researchers at Oregon State University Extension Services have assisted farmers markets in developing research tools to increase vendor and market success (Lev, Stephenson and Brewer, 2007). Further efforts are needed to help markets maintain their productivity. Stakeholders suggest buy-local campaigns and public service announcements to help identify direct markets to consumers and to assist urban and suburban areas in establishing new markets.

Food connection programs expand opportunities for farmers by increasing business relationships among small-, medium-, and large-scale food operations. Although a number of programs already operate in Oregon and Washington (see Box 5), stakeholders see value in increasing these efforts. Stakeholders also note the need for greater transparency in the food system to support direct marketing. Transparency requires information about where and how food is produced, processed, and distributed. Point-of-origin labeling includes information about sustainable practices that can enable analysts to track the volume of local food purchases and can educate consumers about how to support local and sustainable farmers. Food labels should use straightforward language

and information. Stakeholders suggest that third-party certifiers increase their outreach to better inform consumers about the certification process.

Summary of stakeholder strategies:

■ Expand direct marketing opportunities.

■ Expand food business connection programs.

■ Develop and implement mandated point-of-origin labeling.

Box 5: Connecting Farmers and Food Buyers

The Chefs Collaborative, created in 1998, helps connect farmers to local restaurant chefs. Ecotrust's Food and Farms programs also help strengthen connections between producers and buyers in Oregon and Washington. The Oregon Center for Environmental Health helps connect hospitals to local producers in its Healthy Food in Healthcare Initiative. Cascade Harvest Coalition's Farm-to-Table workshops provide opportunities for farmers and buyers to make new market connections throughout Washington.

Food Access

The Portland-Vancouver region is blessed with a variety of retail food outlets, including national full-service grocery chains, local chains focused on sourcing food locally, many farmers markets, and farms that sell directly through community supported agriculture. Some people grow food for their own consumption in private gardens or community gardens. Although most people can easily access healthy food, many people cannot afford healthy food. Food insecurity still plagues over 10% of the population in Oregon and Washington. Food stamp usage has surged since the late 1990s, and the Oregon Food Bank network has more than doubled its distribution of food boxes over the past 10 years. As prices of energy and housing rise, low-income people will continue to struggle to eat a healthy diet every day.

Stakeholders endorse continuing community food assessments at the neighborhood, city, and county levels in order to identify reasons for food insecurity, especially in rural areas. These assessments should support program development by examining access to grocery stores, availability and affordability of locally grown food, access to nutrition education, and the household consumption patterns.

Stakeholders also suggest that land use planning and zoning build upon recently-enacted policies and programs to further increase access to affordable, nutritious food. Research has shown that some urban dwellers pay 3% to 37% more for groceries in their local community compared to suburban residents who buy the same goods at large supermarkets (House Select Committee on Hunger, 1990). Other research shows a decline in supermarkets in low-income areas (Campbell et al., 2007), causing residents to buy smaller quantities at higher prices from stores with limited food selection (Curtis and McClellan, 1995). Planning for urban and rural areas with food access in mind could improve food access in areas with higher food insecurity levels. The City of Portland is including food issues in the revision of its comprehensive plan.

Stakeholders are especially concerned that all people have the ability to be self-sufficient in obtaining and cooking food. They encourage cities and other land holders to donate land for urban community gardens and space for farmers markets to increase home gardening and direct market opportunities in low-income urban neighborhoods.

Summary of stakeholder strategies:

■ Conduct community food assessment research focused on nutrition and access.

■ Include food access and agriculture issues in urban planning at city, county, and state levels.

■ Expand farm-to-school programs.

Box 6: Assessing Local Food Systems

A number of community food assessments have been conducted at the neighborhood and county levels in Oregon including Northeast Portland, the Lents Neighborhood, and Benton County among others (Ecumenical Ministries, 2008a, 2008b; PMFPC, 2008).

Box 7: Legislation Supporting Local Food Systems

The 2008 Oregon Legislature unanimously voted to create a pilot Farm-to-School and School Garden Program in the Oregon Department of Education. House Bill 3061 will help bring fresh produce to public schools, supporting nutrition for the young and strengthening an economic market for farmers and producers (PPS, 2008). The recently passed Local Farms-Healthy Kids Bill in Washington includes $50,000 for the purchase of wireless technology to allow farmers markets to accept both food stamps and debit cards, allocates $350,000 to establish three pilots allowing food banks to contract with farmers for a steady supply of fresh, locally-grown food, requires the Department of Health to establish rules for farm stores to participate in the program, and provides an additional $200,000 in coupons to allow low income seniors and participants in the WIC program (Women with Infant Children) to shop at farmers markets.

Food Choices Support Personal and Community Health

The challenge of eating a healthy diet involves more than simply the ability to afford healthy food. It also involves social norms, lifestyles, and our understanding of the linkage among diet, lifestyle, and health. The share of food expenditures on food away from home has risen in the Portland-Vancouver region, as busy lifestyles and the availability and marketing of fast food reduce the relative share of food expenditures for food prepared at home. Relative spending on fruits and vegetables has not changed, and almost three-quarters of the adults in our region report that they do not eat the recommended five servings of fruits and vegetables every day. The percentage of adults in our region that are overweight or obese is about 61%—just under the percentage for the United States. As in the rest of the nation, the diabetes rate is climbing, and is highest among economically disadvantaged groups.

Stakeholders request better information about the nutritional content of food, including research that defines, measures, and conveys nutritional complexity in food items, including frozen and canned goods.
They also suggest discouraging the consumption of "junk foods" as defined by their nutritional level, through a "junk food" tax. Better information about health and consumption behavior could support social marketing campaigns highlighting food's relationship to health as a way to encourage behavior change.

Stakeholders suggest improving standards for healthy foods in public schools, labeling regulations to discourage misleading advertising about food, and workplace nutrition programs like 5-a-Day campaigns in workplaces. Some stakeholders suggest creating vouchers for food stamps based on nutrition levels instead of price. Pilot programs could be tested that link federal food programs to local farm production. For example, farmers markets and community supported agriculture could accept food stamps, and the food stamp program could incorporate incentives for purchasing fruits and vegetables.

Stakeholders highlight the need for curriculum that links agriculture to nutrition and sustainability. Academic institutions need financial support to return cooking, physical education, nutrition, and gardening curriculum to schools. These topics could be connected to state Benchmarks by the Depart-

ment of Education. Teachers could conduct service learning field trips to help students learn about harvesting, farming, and production. These same programs could pave the way for school-to-farm labor training for aspiring young adult farmers.

Summary of stakeholder strategies:

■ Expand research on nutrition measures and the health impacts of food consumption.

■ Include language about nutrition in advertising.

■ Develop new policies to discourage consumption of unhealthy foods.

■ Include cooking, nutrition, and physical education curriculum at all education levels.

Regional Market Expansion and Infrastructure Support

Our region has taken local market expansion very seriously and has enacted a number of programs and policies to expand local markets for farmers. The expansion of farmers markets, the establishment of farm-to-school programs, and the proliferation of restaurants, grocery stores, and food manufacturers focusing on local sourcing of ingredients have helped to expand local markets for farmers.

We do not know what share of the food that is grown in our region is consumed locally. We do know that direct marketing by farmers to consumers has risen in our region, with over $55 million in direct sales to consumers in 2002. But direct sales are still a very small piece of farm revenue. Sales to local food processors and export markets remain key components of our region's farm economy. Strengthening and deepening the local supply chains that add value to locally produced foods might improve the economic viability of all of the components of our food system.

Stakeholders suggest building on existing programs to increase institutional procurement of local, regional, and sustainably produced products by schools and colleges, hospitals, hotels and conference centers, restaurants, correctional facilities, and corporate cafeterias.

Stakeholders note the need for public and private investment in infrastructure including slaughterhouses, independently owned refrigerated trucks, and transportation. They also note a need for mobile processing facilities, especially rendering operations, to help close the processing gap in rural areas. Stakeholders request lending support for cooperative equipment purchasing, subsidies for equipment, and loan structures that support innovative agriculture practices. Currently, agriculturally-zoned lands are taxed at a lower rate than commercial or industrial lands; the additional taxes can be cost prohibitive for farmers wanting to add processing facilities to their farming operations.

Summary of stakeholder strategies:

■ Develop and implement institutional procurement standards prioritizing regionally sourced, sustainable products.

■ Establish funding and credit programs to support farming and processing infrastructure (e.g., tools, facilities, irrigation, and transportation improvements).

Box 8: Value Added Processing for Small Producers

In late 2007, the Cascade Harvest Coalition received grant funding to study the feasibility of developing a multi-purpose processing facility to serve the needs of small- and mid-sized producers in the Puget Sound region. Analysts currently are considering the economics of developing post-harvest handling and co-packing facilities and a pasture-based poultry business in that area.

Box 9: Existing Institutional Purchasing Programs

Multnomah County's Food Policy Council and Sustainability Initiative piloted a project with correctional facilities to purchase local products. In response, the Multnomah County Sheriff's office included sustainability criteria in their 2005 Call for Proposals for food specifications and subsequent five-year contract for food service. The Food Alliance and the Oregon Center for Environmental Health have A Guide to Developing a Sustainable Food Purchasing Policy that can be downloaded at www.sustainablefoodpolicy.org. In August 2008, the Northwest Agriculture Business Center, located in Mount Vernon, Washington, will launch the Puget Sound Food Network. The Network will feature an internet-based collaboration of the region's food producers, processors, distributors and consumers.

Agriculture Land-Base Maintenance

Rapid population growth has put increasing pressure on some agricultural lands in Oregon and Washington. Between 1982 and 1997, our region lost 148 thousand acres of cropland, 156 thousand acres of pastureland, and 67 thousand acres of range land to urban development. Although land use laws have served to protect agricultural land, particularly in Oregon, rising land prices and suburban encroachment might deter some farmers from expanding their farms, especially where farms are near urban areas with rapid population growth. At the same time, the expansion of non-food crops, including crops grown for conversion to bio fuels, compete with food for cropland. Thus, the maintenance of the land base for growing food depends on a thriving food economy that can offer economic benefits to farmers sufficient to encourage them to continue producing food rather than converting their land to other uses.

Stakeholders suggest specific incentive programs to support resource stewardship and to maintain the agricultural land base. They also suggest re-framing the development issues to emphasize preserving rural land instead of "limiting growth." Agricultural land can be protected through land trusts, rural reserves, and green payment systems. In a green payment program model, farmers or ranchers using sustainable practices receive government expenditures based on the ecosystem services their land provides. The Millennium Ecosystem Assessment defines ecosystem services as "benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fiber; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling" (MA Board, 2005). Ecosystem services provided by farmland could be incorporated into public works programs for suburban cities.

Working with lenders, businesses and nonprofits, governments could develop funding mechanisms for the permanent protection of farmland through the transfer of development rights (TDR) and the purchase of development rights (PDR).

Stakeholders suggest identifying barriers to intergenerational transfer of farmland, such as zoning regulations, related farm dwellings, and farm size. Technical assistance programs, like FarmLink offered by the Cascade Harvest Coalition in Washington, can help identify such barriers and match individuals who want to farm with land owners.

Summary of stakeholder strategies:

■ Implement government agricultural land incentives and development disincentive policies and programs.

■ Develop and implement farmer entry and land transition policies and programs.

Box 10: Paying Farmers for Ecosystem Services

Clean Water Services, the water resources utility serving urban Washington County, worked with the county Soil and Water Conservation District to deliver rental payments to farmers to allow restoration of riparian areas. The Columbia Basin Water Transfer Program delivers payments to farmers for moving some or all of their water rights in-stream, a shift that helps restore the flow of water for fish and ecosystem health. Snohomish County in Washington received federal funding to protect farms through a TDR program. In this program, development is discouraged from "sender" sites, such as farms, and encouraged at "receiving" sites for more intense use, such as urban areas (Snohomish County, 2006). Farmers receive a financial incentive to protect their land while urban landowners can build at greater density than would otherwise be allowed.

Governments can strategically examine land use patterns to target the most critical areas for such programs.

Opportunity and Justice for All Food Workers

Despite the increasing prices of food, farm workers are still paid less than are workers in other comparable industries. The average farm worker wage in 2006 was $8.56 in Oregon and $9.33 in Washington. A full-time, year-round farm worker in Oregon would make $17,810—about 20% below the poverty threshold for a family of four with two children. Opportunities to advance and to improve the quality of life for their families are crucial if the industry wishes to retain these farm workers.

While the average age of a farmer has been increasing for decades, more women and minorities have recently chosen farming as their profession. This diversity may encourage more young people to enter the industry. Agriculture-related degrees at Oregon and Washington colleges and universities may bring new human capital into our food system at all levels.

Stakeholders call for programs that would help farmers and farm workers continue their education. Suggestions include "how-to" classes on sustainable practices, education about the economic principles of institutional purchasing, loan deferment programs for farmers and ranchers who want to learn new practices or return to school, and government funding support for rural agriculture education.

Stakeholders stress that an improved guest worker program is needed at the national level to continue supporting agriculture. Stakeholders explain that migrant and seasonal farm workers are important to the sustainability of agriculture. All sectors will need to support major Farm Bill changes in the future to encourage new farm labor and sustainable agriculture practices. They also note that sustainable practices tend to be more labor intensive, which increases the importance of labor reform.

Summary of stakeholder strategies:

■ Develop and implement farmer education programs.

■ Support an improved guest worker program at the national level.

Resiliency

Growing, processing, distributing, selling, and serving food are all risky enterprises. For farmers and fishers, the annual ups and downs of revenue and costs are a way of life. The pursuit of greater economic certainty has driven many sectors of the food industry to consolidate in order to take advantage of technology and government payments that encourage growth through production efficiencies. We do not know for sure how growth and consolidation might affect our ability to respond to threats to the food supply, food safety, or food security. Recent experience with food-borne disease outbreaks

suggests that consolidation does not always make tracing problems with food safety easier and, in fact, may make it harder. Some worry that industry concentration and consolidation also make the system more economically vulnerable to natural and market forces. The diversity of Oregon and Washington agriculture may help reduce this vulnerability.

Meeting this goal requires success with each of the other goals. Resiliency requires a plan for responding to threats to the food system such as market fluctuations that affect profitability, volatile weather patterns, diseases, animal or insect pests, and limits on farm and food inputs such as energy and as raw materials. Food system resiliency requires that food production is sufficiently lucrative to keep fertile farm land in production, rather than lose it to development.

Economic viability relates to having strong markets where farmers, processors, distributors and retailers can continue to earn enough to pay their workers, earn a profit, and use sustainable practices. Stakeholders encourage the promotion and consumption of local products throughout the food system. They echo concerns that industry concentration and consolidation can put local producers at risk. Regional industry diversity can help reduce this risk.

In a political climate of terrorism threats and natural weather disasters, emergency action plans are receiving greater attention. Elements of local and regional food systems are not always included in this planning. Stakeholders recommend including community supported agriculture, local farm inventories, and local processors (including refrigeration facilities) in emergency action assessments.

Stakeholders emphasize that improvements to the region's management of food system waste can also improve resiliency. Improvements include re-considering food "waste" as a potential soil ingredient, such as compost, for local agriculture. Stakeholders recommend government-supported incentives to create appropriate infrastructure to collect food waste, encourage compost facility construction, and process waste into soil amendments.

Summary of stakeholder strategies:

■ Support local and regional agriculture expansion through incentive programs.

■ Include food systems in emergency action plans.

■ Develop waste processing compost infrastructure to support food waste diversion programs.

Box 11: Managing Food Waste

Metro and the Portland Office of Sustainable Development (OSD) are collaborating in the program "Portland Composts!" that encourages food businesses to contract with their waste haulers to have food waste and food-soiled paper collected for composting. Financial incentives are available. See the OSD website for more information (http://www.portlandonline.com/osd).

Food Choices Restore Cross-System Respect

Direct connections between farmers and consumers, encouraged by the growth of direct marketing, may advance our understanding and respect for each component's contributions to the sustainability of our food system. Restoring respect requires that each member of the food system—from farmers to consumers—understands the motivations and challenges that the other members face. Rather than buying food with no understanding of where, how, or by whom it is grown, consumers are beginning to appreciate the importance of a local system that offers food without the compromises imposed by long distance shipping and extensive storage. At the same time, the food system runs on profits, and if food processors and retailers cannot profit from using locally grown foods, they may be forced to obtain products from

elsewhere, as recently happened in the asparagus industry in Washington State.

Stakeholders consistently and repeatedly highlight the need for a "food literate" or informed citizenry. They note that all sectors share the responsibility to inform consumers and decision makers. Nonprofits and academic institutions can educate lenders and executives about the benefits of sustainable and regional markets. Producers can put a "face" on their product by telling their story. Businesses can improve consumer awareness by highlighting their regional and sustainable purchase habits in their advertising. All sectors can fund public service announcements that highlight healthy and sustainable foods. The academic sector can work with government funders and nonprofit program managers to expand community education programs on nutrition and gardening.

Dialogue among a diverse group (e.g. scientists, farmers, processors, distributors, academics, teachers, policy makers) about information such as this assessment can help inform people at all levels of the food system, foster new connections, and maintain momentum for system change. Stakeholders call upon food policy councils, community groups, and non-profits to convene and host such discussions as part of community organizing, planning, and mobilizing efforts.

Summary of stakeholder strategies:

■ Establish community education about food system issues.

■ Conduct ongoing cross-sector dialogues about food system issues.

■ Increase cross-sector, cross-culture partnerships in food related businesses, policy and program development, and lobbying for policy change.

NEXT STEPS

The purpose of this assessment is to understand the region's status regarding food system sustainability. It sets a baseline with historical data, provides a list of goals supported and co-crafted through interviews with stakeholders, and suggests potential strategies for attaining these goals. The ideas and actions suggested by stakeholders require a variety of actors with various interests in the food system to work together. Next steps include convening leaders to develop a regional sustainable food-system plan and establishing state-wide food policy councils to help enact the plan. Other recommendations include testing indicators identified in this assessment and including food system and agriculture concerns in city and county planning departments.

Regional Strategic Food System Action Plan

Advancing the potential strategies suggested in this document requires convening leaders in agriculture, public health, nutrition, labor, environmental protection, research, farming, processing, distributing, planning, solid waste, transportation, government policy, business, and community groups. Such a process will require additional time, funding, and human resources. We suggest two programs that specialize in convening and facilitating diverse participant conversations to host and support this objective.

The Oregon Solutions and Oregon Consensus programs, both housed at Portland State University, are viable options for convening leaders to craft a Regional Strategic Food System Action Plan. Oregon Solutions is funded by the state legislature. Their program's mission is to "develop sustainable solutions to community-based problems that support economic, environmental, and community objectives and are built through the collaborative efforts of businesses, government, and non-profit organizations." A core group of supporters would need to request an assessment of the feasibility of applying the Oregon Solutions model to a Regional Strategic Action Plan.

Oregon Consensus provides "a neutral forum and expert assessment, mediation and facilitation services to help public bodies and stakeholders resolve conflicts, make decisions and develop public policy collaboratively and effectively across Oregon."

State-wide Food Policy Councils

Citizen-based food policy councils with the ability to craft, guide, and support legislation contribute to re-shaping food system issues at the city and county levels. State-wide advisory food policy councils (FPC's) in both Oregon and Washington would help ensure that sub-regions effectively coordinate their efforts. State-level food policy councils could enable Oregon and Washington stakeholders to leverage greater influence over the federal farm bill. Across sectors, food stakeholders tell us that major revisions are needed in the bill to ensure sustainability in the system. Councils can help redefine public goals and policies such as those encompassed by a Regional Action Plan. Further tasks of state-wide councils could include:

■ Exploring how food systems relate to state land use laws.

■ Developing a strategic research agenda in partnership with the land grant university system, nonprofit, business, and government partners.

■ Following up on this assessment by developing a project to refine and test indicators, establish baselines and targets for attaining food system change, and monitor progress toward food system goals.

Efforts to establish a state Food Policy Council in Washington are underway with the assistance of the Drake University Agricultural Law Center, the Washington State Department of Agriculture, and the USDA Risk Management. More information on this initiative can be found at http://www.statefoodpolicy.org/.

In Oregon, sample templates exist for city and county level food policy councils. In 2002, the city of Portland and Multnomah County combined efforts to create the Portland Multnomah Food Policy Council. This citizen-based advisory council brings citizens and professionals together to address issues regarding food access, land use planning issues, local food purchasing plans, and other policy proposals (PMFPC website, 2008). In Washington, the Clark County Food System Council formed in August 2007. The mission of the citizen advisory board is to increase and preserve access to safe, local, and healthy food for all residents of Clark County (Clark County Food System Council Factsheet, 2008). The King County Council is also drafting an ordinance to support an FPC.

These examples, and those in other areas of Oregon and Washington, can be used as templates at the state level. Coalitions of organizations that are cooperating to advance food system changes in both states can also support, or be members of, a state-wide council. Examples include the Ten Rivers Food Web in Benton, Linn and Lincoln counties; the Lane County Food Coalition; the Gorge Grown Food Network serving Hood River, Wasco, Sherman, Klickitat, and Skamania counties; Food Roots in Tillamook County; the Cascade Harvest Coalition serving western Washington; and the Washington Sustainable Food and Farm Network.

Food System Effects on Land Use, Transportation, Public Health, and Economic Development

Long-term change requires strategies, leadership, action and implementation plans, and on-going financial support. Although food policy councils provide some amount of monitoring and program and policy development, they can be limited by their lack of financial and staff resources and the need for on-going leadership (Borron, 2003). Our region might best overcome these limitations by using planning efforts to implement food system strategies. City and county planning departments provide information, offer technical assistance, administer regulations, and implement programs. The American Planning Association supports incorporating food systems advocacy into existing planning tasks (Kaufman et al., 2006).

Devoting planner time to food system issues and creating food system planning positions at the city and county levels would ensure that daily planning activities include food as a priority. Funds for this staff time could come from a combined effort from other existing government partnering programs: County Health, Land Use Planning, Transportation,

Community and Economic Development, and Offices of Sustainability, for example.

Collaboration among planners, food system stakeholders, and food policy councils is happening now. For example, the City of Portland is reviewing its comprehensive plan and including food system issues like access, sustainability, land use, and economic development into its work objectives for the coming two years. The City of Damascus is also looking for ways to strengthen urban agriculture. Planners could collaborate in Food Systems working groups, sharing responsibility among representatives of other relevant organizations and city or county departments. By working with food policy councils, planners would ensure on-going monitoring and implementation of programs and policies.

Nourishing the Seeds of Prosperity

Collaboration, research, market connection programs, and new policies already have planted the seeds of regional prosperity. The strategies suggested by the stakeholders participating in this assessment process

suggest that maintaining our current commitment and establishing new initiatives will help ensure a sustainable food system. They believe that effective change requires improving connections and communication among different sectors. The different sectors want to understand and respect where the others are coming from. When asked about outcomes of this project, one person commented, "Key stakeholders and professionals should know their role in sustainability and what they can do within their own scope to achieve it." We hope that this assessment helps farmers, processors, distributors, fishers, retailers, researchers, and policy makers to better understand how their individual contributions ensure that we all have the opportunity to thrive, to derive pleasure from delicious, healthy food, and to enjoy the economic, environmental, and cultural benefits of a sustainable regional food system.

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Note: Extensive references for each data source are provided in the data sheets in the appendix.

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APPENDIX A

Oregon/Washington
Food System Indicators

Institute of Portland Metropolitan Studies
Nohad A. Toulan School of Urban Studies and Planning
College of Urban and Public Affairs
www.pdx.edu/ims

Portland State
UNIVERSITY

INDICATOR: POPULATION GROWTH

MEASURE: POPULATION OF OREGON, WASHINGTON, AND THE PORTLAND-VANCOUVER REGION

Population of Oregon, Washington, and the six-county metropolitan area. In decennial Census years, these are the Census counts; in inter-censual years, they are the July 1 (April 1 for Washington) estimates. The Portland-Vancouver region includes Clackamas, Columbia, Multnomah, Washington, and Yamhill counties in Oregon and Clark County in Washington. Projections to 2030 are made by each state's forecasting agency.

BACKGROUND: Population growth, average household size, and economic conditions all influence household formation, which drives demand for land for homes and industry. Growth can put pressure on the supply of land available for agriculture. Proximity to urban areas provides challenges as well as opportunities for farming. Conflicts can arise between growers and residential neighbors over noise, traffic, spraying, and odors. Support services for agriculture may become more difficult to find. Farms may face deteriorating crop yields from urban smog, theft, and vandalism. However, proximity to urban centers can also present opportunities for direct marketing, provide a larger pool of seasonal or part time labor, and offer greater off-farm employment opportunities for the farmer and his or her family (Heimlich and Anderson, 2001).

FINDINGS & TRENDS:

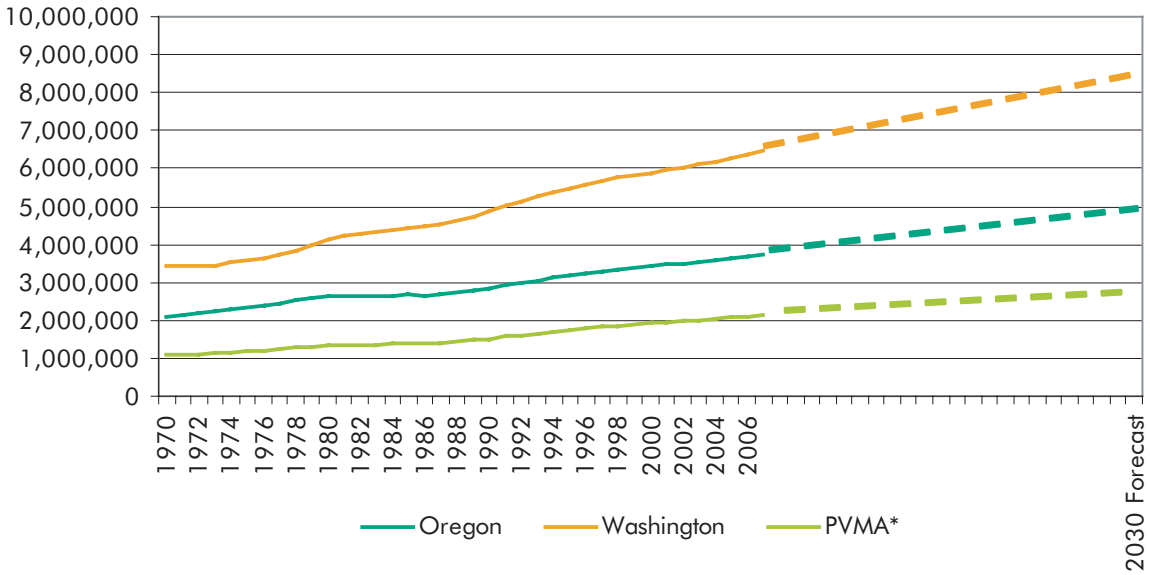
- Oregon's population has grown by about 80 percent since 1970, from about 2 million in 1970 to 3.7 million today.

- Washington State's population has grown by about 90 percent since 1970, from about 3.4 million in 1970 to 6.5 million today.

- Population in the Portland-Vancouver region was about 1.1 million in 1970. Today it has almost doubled to 2.1 million.

- We expect the populations of both Washington and Oregon to grow by about 30 percent between now and 2030; at the same time, the population of the Portland-Vancouver region will grow by about 800 ,000, or 35 percent.

Population 1970 to 2007 and 2030 Forecast



**Portland-Vancouver Metro includes Clackamas, Columbia, Multnomah, Washington, and Yamhill counties in Oregon and Clark County in Washington.*
Sources: Washington State Office of Finanacial Management; Oregon OEA; PSU

Sources:
Washington State Office of Financial Management; Oregon Office of Economic Analysis; Portland State University Population Research Center.

Heimlich, Ralph E., and William D. Anderson. *Development at the Urban Fringe and Beyond: Impacts on Agriculture and Rural Land*. Economic Research Services, U.S. Department of Agriculture. Agricultural Economic Report No. 803.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

- ***In Decennial Census years, the population numbers represent actual counts; in inter-censual years, they are the July 1 (April 1 for Washington) estimates.***
- *Forecasts for Washington represent the medium-level Growth Management Act projections.*

INDICATOR: GLOBAL WARMING/TEMPERATURE DESTABILIZATION

MEASURE: ANNUAL MEAN GLOBAL SURFACE TEMPERATURE ANOMALIES FROM 1880 TO 2001

The zero line represents the long-term mean temperature from 1880-2001; the red and blue bars show annual departures from the mean.

BACKGROUND: The greenhouse effect occurs when certain gases in the atmosphere (called greenhouse gases) absorb and re-radiate heat back to the earth. Aside from water vapor, the most abundant greenhouse gas is carbon dioxide. Scientists have concluded that human activity—primarily the combustion of fossil fuels—is increasing the concentration of carbon dioxide and other greenhouse gases. This increase is contributing to global temperature destabilization and warming.

Scientists have also documented related global climactic changes consistent with a warming climate near the earth's surface. These include increases in global mean sea level, shortened duration of ice cover of rivers and lakes, thinning arctic sea-ice, decreased snow cover, and lengthened growing seasons, among others (IPCC, 2001).

Climate trends in the Pacific Northwest reflect global trends. Scientists have documented regional warming and have shown that since 1975 the warming is best explained by human–caused contributions to the greenhouse gas effect. These changes have led to a 10 percent increase in average annual precipitation, a rising sea level at central and northern Oregon coasts, and a snow pack that has declined by 35 percent from 1950 to 1995 (INR, 2004). These changes, and those projected into the future, will require adaptation by a wide variety of Oregon economic sectors, including drinking water, agriculture, forestry, tourism and recreation, power generation, salmon recovery, and public health (Resource Innovation, 2005).

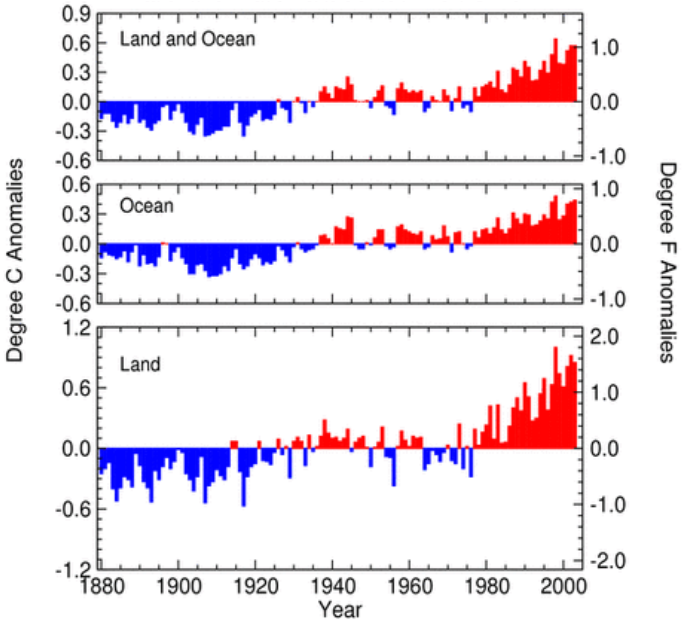
FINDINGS & TRENDS:

- Global temperatures in 1998 and 2001 were highest ever recorded; temperatures have been trending upward since at least the beginning of the 20th century.

- Land temperatures have greater anomalies than do ocean temperatures, a finding that is to be expected since land heats up and cools down faster than water.

- Global surface temperatures have increased about 0.6°C (plus or minus 0.2°C) since the late-19th century, and about 0.4°F (0.2 to 0.3°C) over the past 25 years (the period with the most credible data).

Jan - Dec Global Mean Temperature Anomalies
National Climatic Data Center/NESDIS/NOAA



Source: National Climatic Data Center

Sources:

Institute of Natural Resources (INR). 2004. "Scientific Consensus Statement on the Impacts of Climate Change on the Pacific Northwest." Corvallis: Oregon State University.

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Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *The National Climactic Data Center is in the process of updating information on global climate change based on new information from the Fourth Intergovernmental Panel on Climate Change Assessment and other recent work. These statistics reflect data available in February 2008.*

INDICATOR: LAND USE AND CONVERSION

MEASURE: ACRES AND PERCENT OF LAND BY COVER/USE

Acres and percent of land by cover/use, thousands of acres, 2003; acres of natural resource land converted to urban uses, 1982 to 1997.

BACKGROUND: According to the USDA Economic Research Service, two kinds of growth affect the amount and productivity of agricultural land: growth at edges of urban areas and growth of isolated rural large-lot housing developments (Heimlich and Anderson, 2001). Although urban growth and development is generally not considered a threat to national food and fiber production, some crops in some areas are particularly vulnerable to development. For example, 61 percent of the U.S. vegetable production is located in metropolitan areas; therefore, production of vegetables for local consumption may be affected by urban growth (Heimlich and Anderson 2001). The accumulation of single dwelling development over time can also affect the local supply of land for farming and cause conflicts between residents and farming operations.

FINDINGS & TRENDS:

- 51 percent of total land in Oregon in 2003 was federal land; in Washington, federal land accounted for 27 percent of all land.

- In 2003, cropland constituted only 6 percent of total land area in Oregon and 15 percent in Washington.

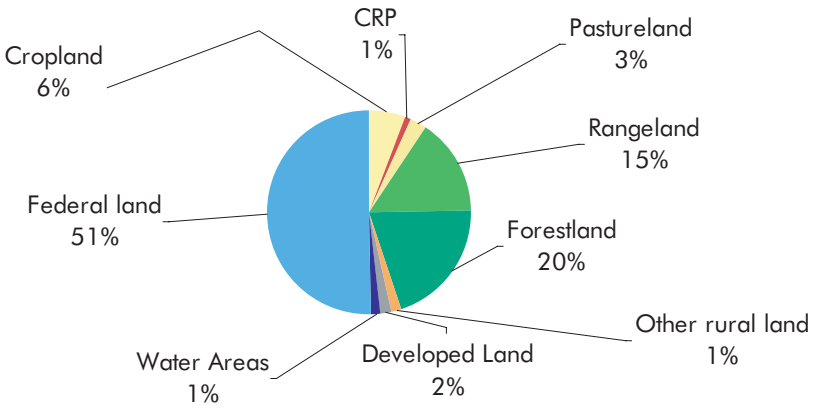
- Urban lands grew in Oregon from an estimated 585,200 acres in 1982 to 845,300 acres in 1997—a 44 percent increase. Of these 260,100 acres, 249,800 came from conversion of natural resource lands.

- From 1982 to 1997, about 496,500 acres of natural resources land in Washington State was converted to urban land. Over 50 percent of that was converted from forestland, while about 20 percent was converted from pasture land and 17 percent was converted from cropland. The remaining 8 percent was converted from rangeland.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

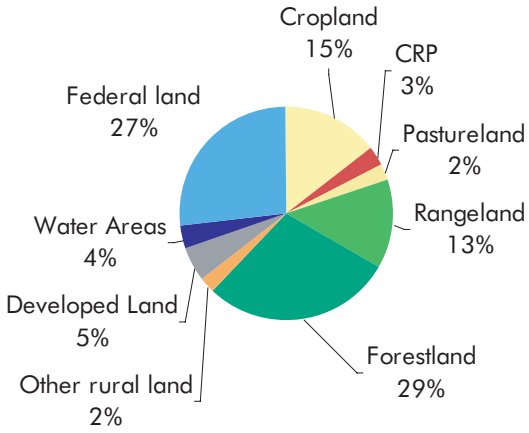
- *NRI Land cover/use designations are based on current land conditions, not on zoning classifications.*
- *2003 NRI data are from a smaller sample than the 1997 release. The 2003 data have larger margins of error and should not be compared directly with the 1997 data, especially for state-level variables.*
- *The margins of error for acres in cropland is about 8 percent of total cropland in Oregon and about 6 percent in Washington. The margins of error for other land uses range from about 1 percent of the estimate for water areas in Washington to about 22 percent for "other rural lands" in Oregon. For details on the margins of error, please refer to the NRI report cited above.*

Total Surface Area by Land Cover/Use, 2003



Oregon

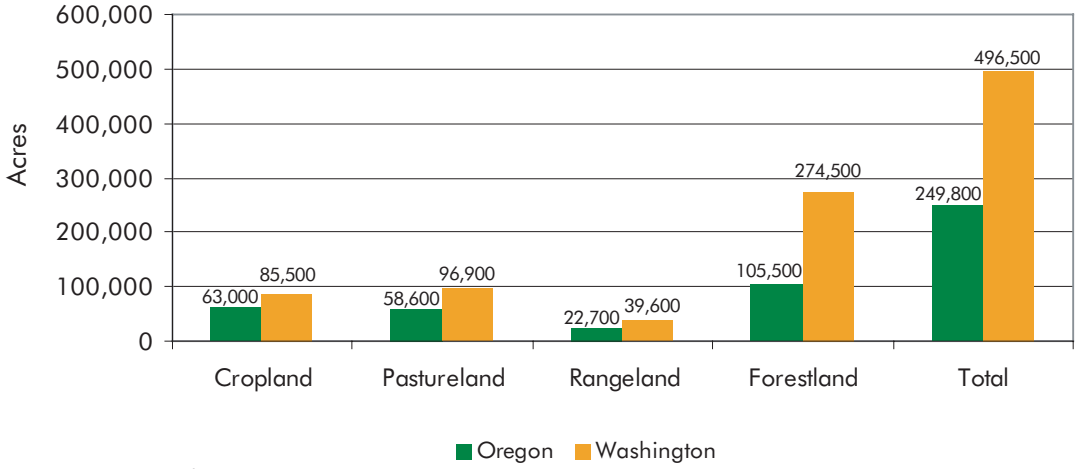
Source: USDA Natural Resources Inventory, 2003



Washington

Source: USDA Natural Resources Inventory, 2003

1982 to 1997 Resource Lands Converted to Urban Land



Source: USDA Natural Resources Inventory

Sources:

U.S. Department of Agriculture. 2007. National Resources Inventory 2003 Annual NRI. Natural Resources Conservation Service, Washington, DC.

U.S. Department of Agriculture. 2000. Summary Report: 1997 National Resources Inventory (revised December 2000), Natural Resources Conservation Service, Washington, DC, and Statistical Laboratory, Iowa State University, Ames, Iowa, 89 pages.

Heimlich, Ralph E., and William D. Anderson. 2001. Development at the Urban Fringe and Beyond: Impacts on Agricultural and Rural Land. Economic Research Service, US Department of Agriculture, Agricultural Economic Report No. 803.

INDICATOR: NUMBER OF FARMS AND ACREAGE OF LAND IN FARMS

MEASURE: NUMBER OF FARMS AND ACREAGE OF LAND IN FARMS

The number of farms and the acreage of land in farms for Oregon and Washington as included in the United States Department of Agriculture (USDA) Census of Agriculture.

BACKGROUND: Two significant trends occurring in the agricultural sector during the past century involved the increased use of machines and government price supports. These factors combined to encourage operators to increase the size of their farms to gain efficiencies. This required more capital, and fewer individuals were willing or able to take on the debt necessary to farm. Large cash outlays for farm equipment increased specialization, and operators began producing larger quantities of a limited number of products. In turn, fewer farms were needed to meet the demand for agricultural products. Consequently, a pronounced structural change in the agricultural sector took place. The market value of agricultural production became concentrated on fewer and fewer farms (USDA NASS, 2007).

Total farm and ranch acreage increased steadily during the first half of the 20th century, due in large part to development in the Great Plains and Far West, where land policy encouraged continued conversion of large tracts of arid government lands to agricultural uses. Acreage declined later in the century, when increased production was achieved through efficiency rather than through additional acreage (USDA NASS, 2007).

FINDINGS & TRENDS:

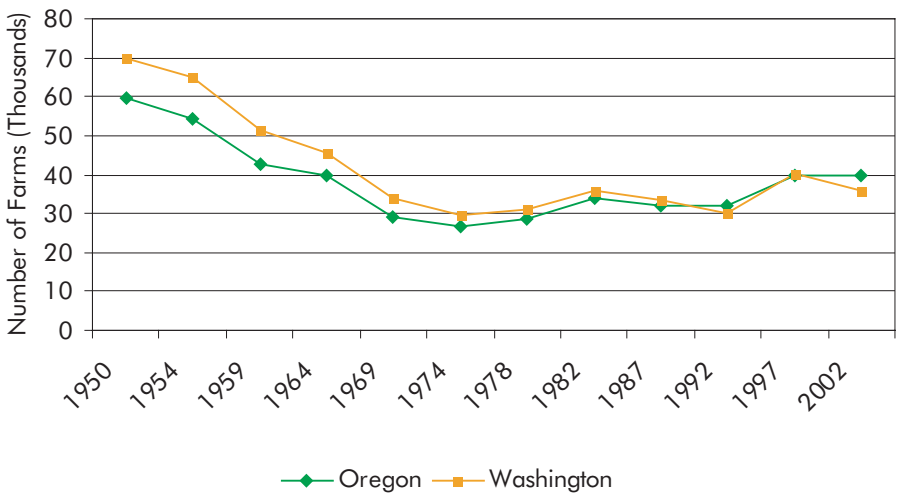
- Between 1950 and 2002, the number of farms in Oregon has decreased by approximately one-third while the number of farms in Washington has decreased by approximately half.

- Nationwide, the number of farms has decreased by approximately 60 percent.

- In Oregon, the acreage of land in farms has decreased by over three million acres (change of -15.9%) between 1950 and 2002. Washington experienced a decrease of over two million acres (change of -11.8%) during the same time period.

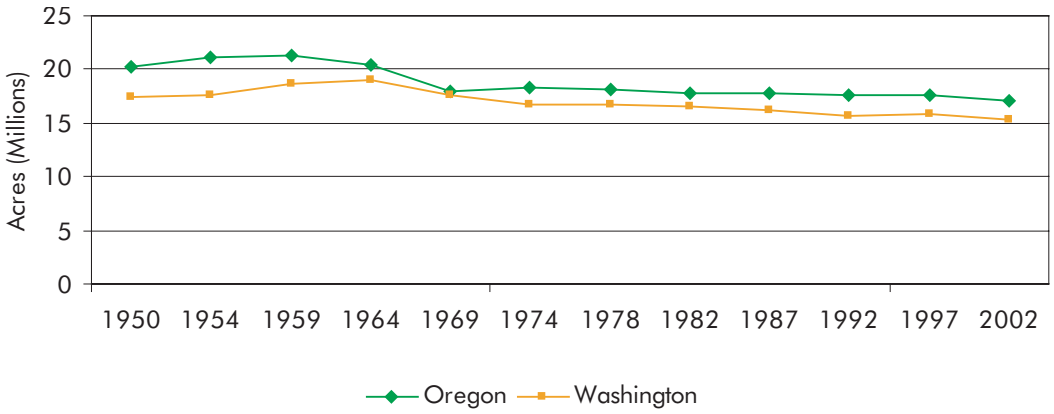
- The United States experienced a decrease of approximately 223 million acres of land in farms between 1950 and 2002.

Number of Farms in Oregon and Washington



**Values for years 1974-1992 are not adjusted for coverage.*
Source: USDA NASS, 2007

Acreage of Land in Farms in Oregon and Washington



**Values for years 1974-1992 are not adjusted for coverage.*
Source: USDA NASS, 2007

Sources:

United States Department of Agriculture, National Agricultural Statistics Service. *Trends in U.S. Agriculture, Farm Numbers and Land in Farms.* (Retrieved August 20, 2007).

United States Department of Agriculture, National Agricultural Statistics Service. *Quick Stats, Agricultural Statistics Data Base, U.S. and State Data.* (Retrieved July, 2007).

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *Data collection and analysis methods for the Census of Agriculture changed in 1997. NASS does not recommend comparing data from 2002 and 1997 to earlier years due to this change. For details see http://www.nass.usda.gov/census/census02/censusfaqs2.htm#1*

INDICATOR: LAND VALUE

MEASURE: ESTIMATED MARKET VALUE OF LAND AND BUILDINGS

Estimated Market Value of Land and Buildings: Average Per Acre, 1970 to 2007.

BACKGROUND: The expected returns to agricultural activity determine the value of land for farming. This value is influenced by soil quality, water availability, slope, commodity prices, the availability of agricultural subsidies, and preferential tax treatment, among other factors. In areas that do not restrict the development of agricultural land, its value can also be influenced by non-agricultural factors—for example, its value as residential, industrial, or commercial development or for recreation (Shi et al 1997). Thus, while rising land values may increase the opportunity cost of farming, they may also indicate a rising return to agricultural activity. This effect is particularly true in protected agricultural zones or in areas that are not influenced by urban development.

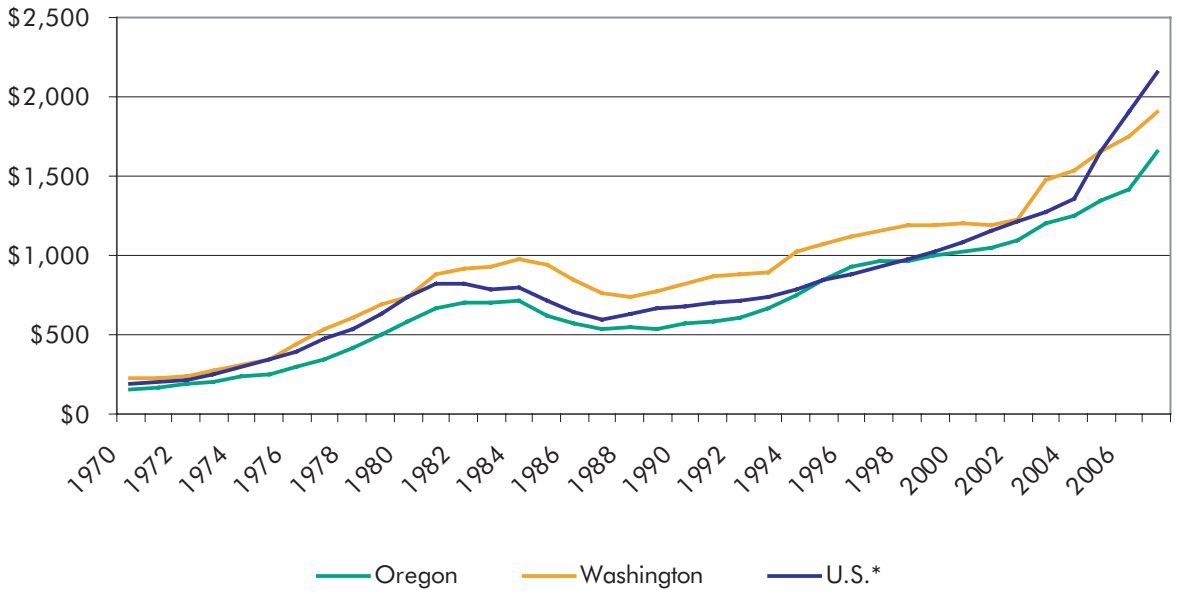
FINDINGS & TRENDS:

- The average per acre value of farm land and buildings in Oregon has risen from $150 per acre in 1970 to $1,650 in 1997—an average annual growth of about 7 percent.

- The average per acre value of farm land and buildings in Washington has risen from $224 per acre in 1950 to $1,900 in 2007—an average annual growth of about 6.2 percent.

- During this period, farm real estate values for the United States have grown at an average rate of about 7 percent, but have spiked over the last several years.

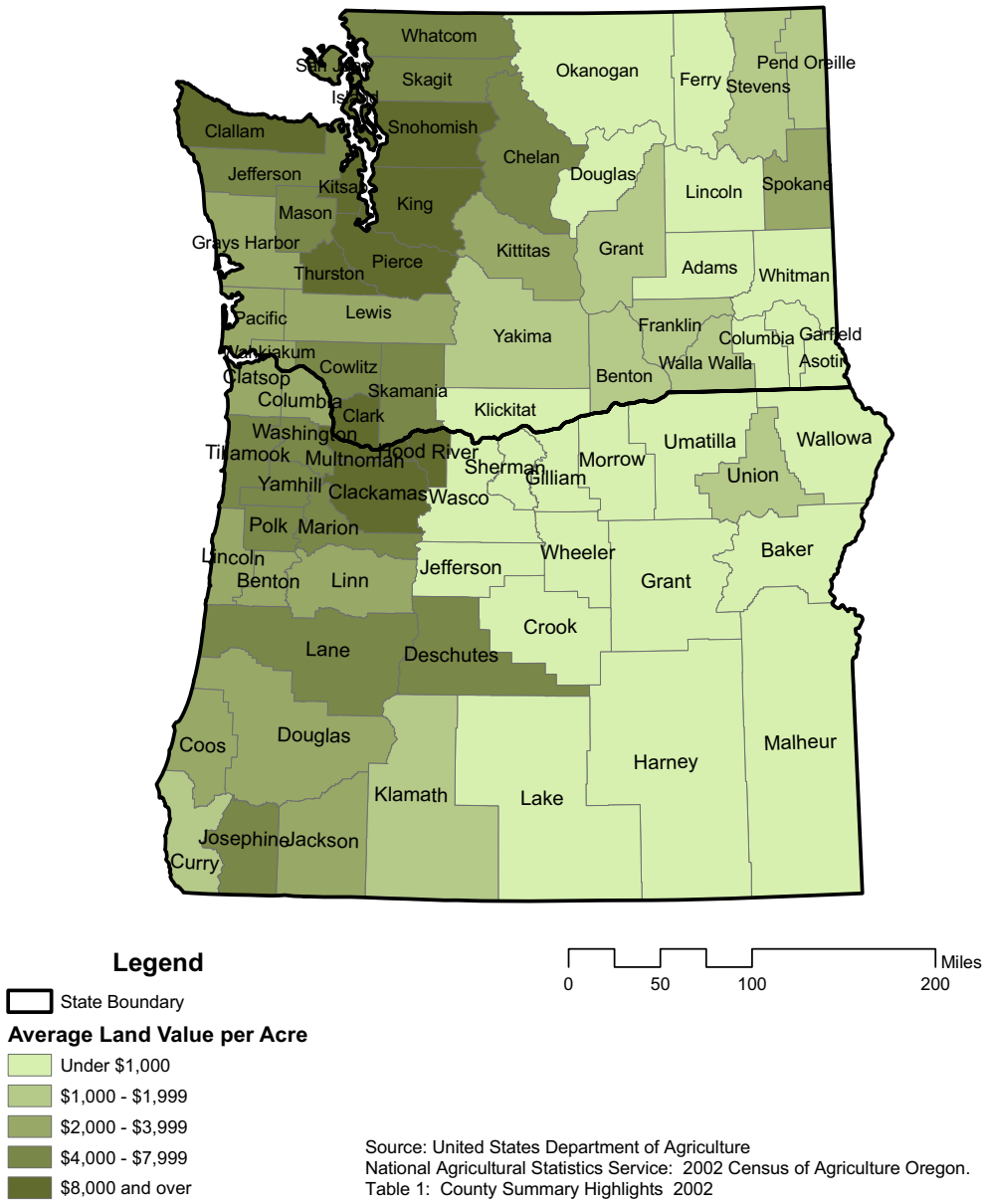
Farm Real Estate: Average Value per Acre, 1970 to 2007*



**Excludes Alaska and Hawaii.*

Source: USDA NASS, 1999, 2003, 2007

Estimated Market Value of Land and Buildings for Agricultural Land per Acre
2002 County Averages, Oregon and Washington



Source: United States Department of Agriculture
National Agricultural Statistics Service: 2002 Census of Agriculture Oregon.
Table 1: County Summary Highlights 2002

Sources:

United States Department of Agriculture National Agricultural Statistics Service: *Land Values and Cash Rents*. 2007 Summary, 2003 Summary, 1999 Summary.

United States Department of Agriculture National Agricultural Statistics Service: *2002 Census of Agriculture Oregon*. "Table 1: County Summary Highlights 2002."

United States Department of Agriculture, Economics Research Service. *Farm Real Estate Values* (Updated 4/96) Stock #86010.

Shi, Yue Jin, Timothy T. Phipps, and Dale Colyer. 1997. "Agricultural Land Values under Urbanizing Influences." *Land Economics* 73(1): 90-100.

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INDICATOR: REALIZED FARM NET INCOME

MEASURE: REALIZED FARM NET INCOME, CONSTANT 2005 DOLLARS

Realized Farm Net Income for Oregon and Washington as defined by the Bureau of Economic Analysis from 1970 to 2005. This is the difference between Cash Receipts and Other Income and Production Expenses. These figures are adjusted for inflation using the CPI-U series of the Bureau of Labor Statistics. All figures are expressed in 2005 dollars.

BACKGROUND: "Income forecasts and estimates provide perspective regarding not only the sector's financial status but also its contribution as a key sector of the national economy" (USDA ERS Farm Income and Costs: Overview 2006).

Realized Net Farm Income can be very volatile from year to year. For example, the Realized Farm Net Income in Oregon plummeted by nearly 90% from 1982-1983 but then experienced a 15-fold increase the following year. Moreover, a 93% increase for Washington's Net Farm Income in 2002 was followed by two consecutive years of decline: 11% in 2003 and over 53% in 2004. This volatility affects farmers' ability to remain in business and to invest in new crops and new equipment.

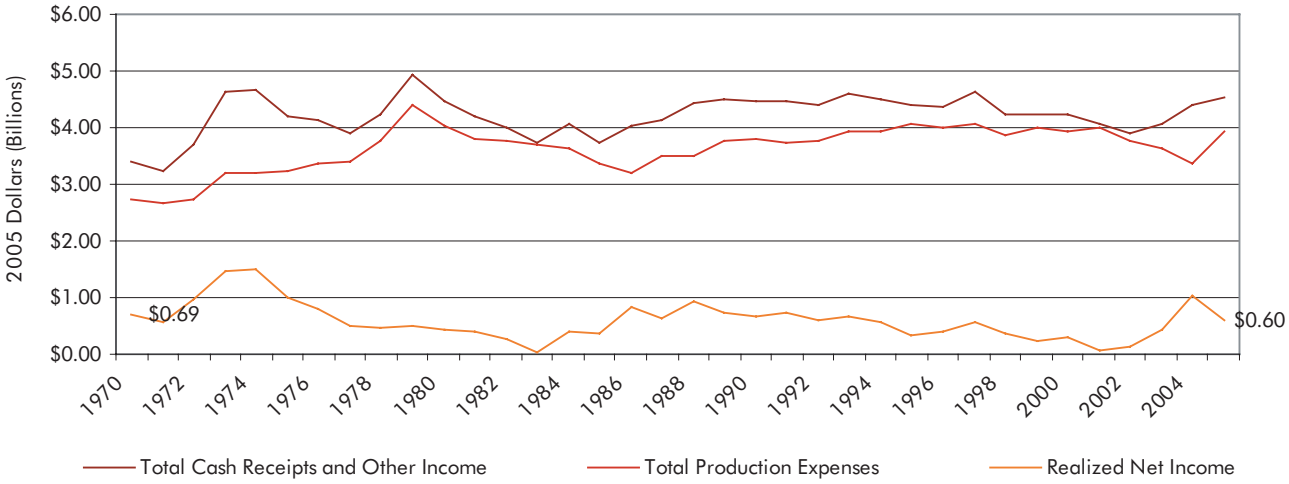
FINDINGS & TRENDS:

- Both Oregon and Washington have experienced an overall decline in Realized Net Farm Income since 1970 when adjusted for inflation.

- In Oregon, realized net farm income, when adjusted for inflation, was $90 million less in 2005 than it was in 1970—a loss of 13 percent. Washington realized $710 million less in 2005 than in 1970—a loss of 56 percent.

- The total U.S. loss in realized net farm income, when adjusted for inflation, was about 37 percent from 1970 to 2005.

Inflation Adjusted Farm Income: Oregon



Source: US BEA, BLS

Inflation Adjusted Farm Income: Washington

Source: US BEA, BLS

Sources:

Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce (Updated December 20, 2007). *Table: CA45 Farm income and expenses 1969-2005*. Retrieved January 4, 2008 from http://www.bea.gov/regional/reis/default.cfm?catable=CA45

USDA Economic Research Service (Updated May 5, 2006). *Farm Income and Costs: Overview*. Retrieved February 26, 2008 from http://www.ers.usda.gov/Briefing/FarmIncome/overview.htm

U.S. Department of Labor Bureau of Labor Statistics. Consumer Price Index. All Urban Consumers (CPI-U) U.S. city average All Items 1982-1984 = 100 ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

- *Realized Net Income is taken from line item 43 from Table CA45 from the Bureau of Economic Analysis, which includes income from Corporate Farms.*
- *Income numbers are adjusted for inflation using the CPI-U series from the Bureau of Labor Statistics. All numbers are shown in 2005 dollars.*

INDICATOR: INCOME FOR FOOD SYSTEM SECTORS

MEASURE: PRIVATE EARNINGS FOR EACH SECTOR OF THE FOOD SYSTEM
Private Earnings for each sector of the food system in Oregon and Washington from 1990 to 2006, as defined by the Bureau of Economic Analysis.

BACKGROUND: Food-related economic sectors include the farm sector, agricultural support sector, fishing, food manufacturing, food wholesale and distribution, restaurants, and grocery stores. The Bureau of Economic Analysis does not release income data by state for the food wholesale industry.

Personal Income is the income that is received by all persons from all sources. For Oregon, the food-related economic sectors (except wholesaling and distribution) comprise roughly 5 percent of total personal income in the state. For Washington, these sectors make up about 4.5 percent of total personal income, and they make up about 3.5 percent for the United States as a whole.

FINDINGS & TRENDS:

■ The highest-earning food-related sector in both states is food services and drinking places. The income earned in this sector, which includes restaurants, has more than doubled, even after adjusting for inflation. In Oregon, this industry increased more than $1 billion and in Washington, it increased nearly $2 billion from 1990-2006.

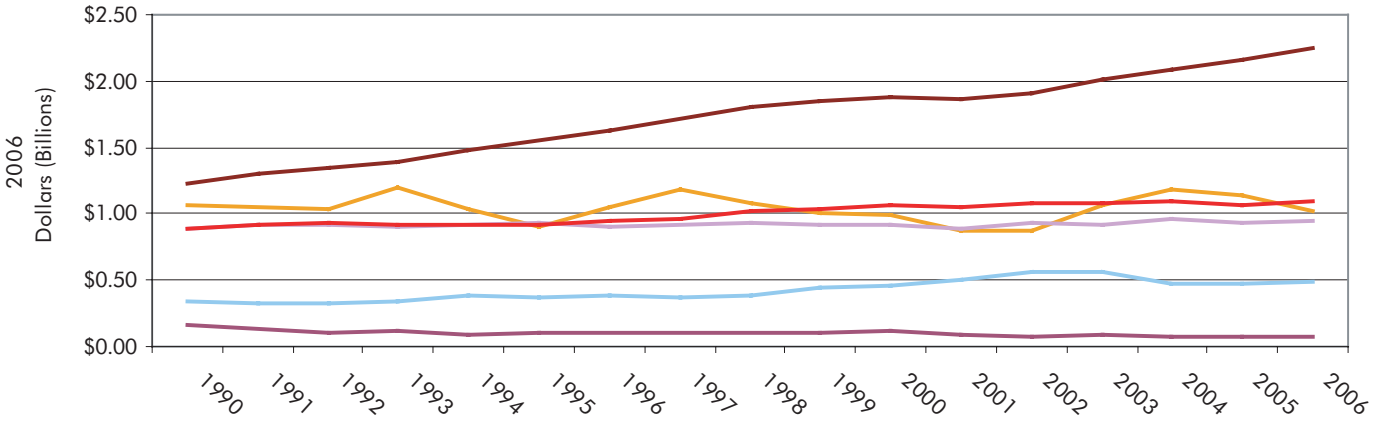
■ The income earned at food and beverage stores, which include grocery and other retailers, has also increased. In Oregon, earned income in this sector rose $210 million and in Washington, it increased $360 million from 1990-2006.

■ Earnings from food manufacturing, when adjusted for inflation, have risen, but more slowly than for food services or food and beverage stores.

■ When adjusted for inflation, farm earnings in Oregon and Washington decreased from 1990 to 2006. Income from Fishing, Hunting, and Trapping also fell in both states.

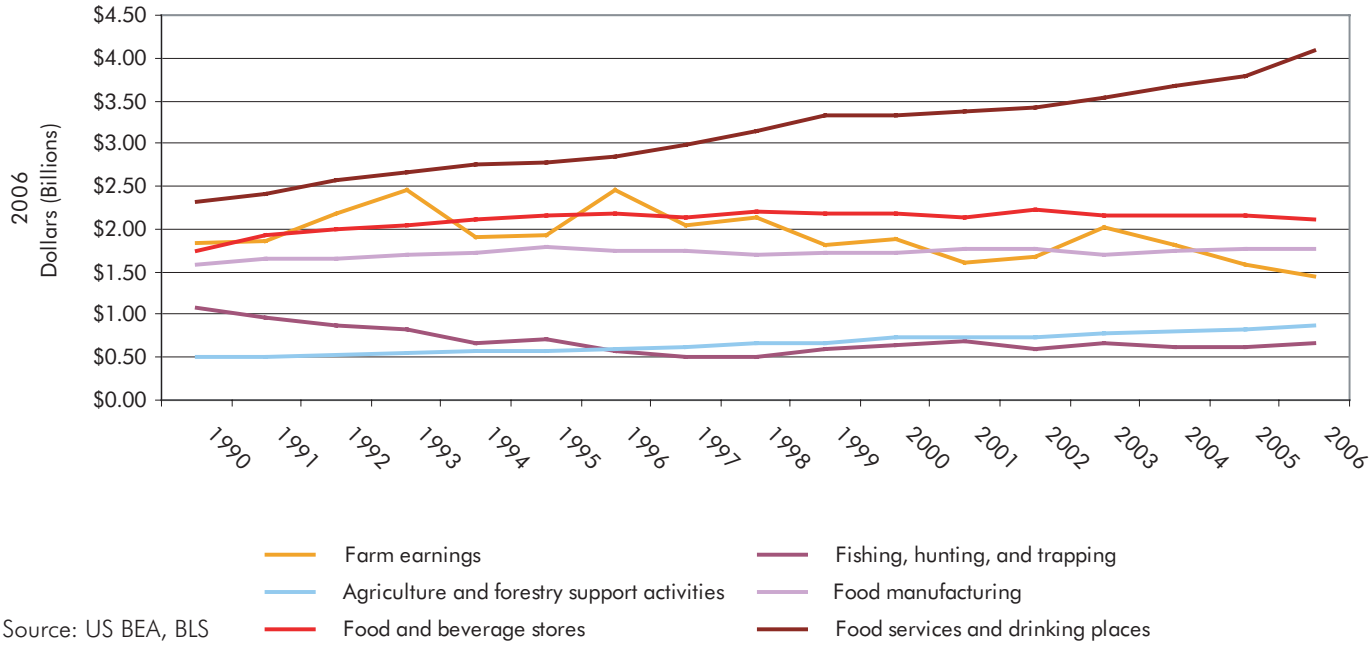
■ Income from agriculture and forestry support activities is a small percentage of total income, but it has risen in both states since 1990.

Inflation Adjusted Earnings for Food System Sectors in Oregon



Source: US BEA, BLS

Inflation Adjusted Earnings for Food System Sectors in Washington



Source: US BEA, BLS

Note: Farm proprietors' income is the income received by the sole proprietorships and partnerships that operate farms. The national and state estimates of this income are based largely on the national and state estimates of the net income of all farms as prepared by the Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA). The BEA estimates of the income of all farms differ somewhat from those used by USDA. In addition, BEA estimates corporate farm income. This estimate is subtracted from the income of all farms in order to derive farm proprietors' income (BEA)

Sources:

Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce (Updated September 20, 2007). Table: SA05 *Personal income and detailed earnings by industry: 1990-2006*. Retrieved February 22, 2008 from http://www.bea.gov/regional/spi/default.cfm?satable=SA05

U.S. Census Bureau. (Updated March 23, 2004). *2002 NAICS Codes and Titles*.

U.S. Department of Labor Bureau of Labor Statistics. Consumer Price Index. All Urban Consumers (CPI-U) U.S. City Average All Items 1982-1984 = 100 ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

INDICATOR: TOP COMMODITIES BY SALES

MEASURE: TOP COMMODITY SALES AS A PERCENTAGE OF TOTAL SALES

Top commodities sales as a percentage of total sales in Oregon and Washington for 1985, 1990, 1995, 2000, and 2006.

BACKGROUND: "The geography of Washington is very diverse, ranging from rain forests in the extreme western part of the state to semi-arid regions in the interior. Farms in the west tend to be small, and dairy products, poultry, and berries are the primary commodities produced. The eastern side of the Cascade Range has larger farms, and small grains such as wheat and barley, potatoes, fruit, and vegetables are the primary commodities produced. In recent years, apples have overtaken wheat and dairy products as the state's leading commodity. Over half of the nation's apple crop is produced in Washington. Milk, wheat, potatoes, and cattle and calves round out the top five commodities. Washington ranks among the top 10 states for 33 separate commodities, and leads the nation in production of hops, spearmint and peppermint oil, lentils, wrinkled seed peas, apples, Concord grapes, Niagara grapes, pears, sweet cherries, red raspberries, plums and prunes" (USDA NASS).

"Oregon's agriculture is as diverse as its geography. Historically, Oregon has been the number one provider of blackberries, hazelnuts, loganberries, black raspberries, boysenberries and youngberries, Dungeness crab, potted florist azaleas, grass seed, and Christmas trees in the Nation. Oregon's varied geography, with its unique locales, enables a variety of crops and livestock to thrive" (USDA NASS).

FINDINGS & TRENDS:

- Greenhouse and nursery farming remains Oregon's top agricultural commodity, accounting for 23.8% of total agricultural sales, or $966 million.

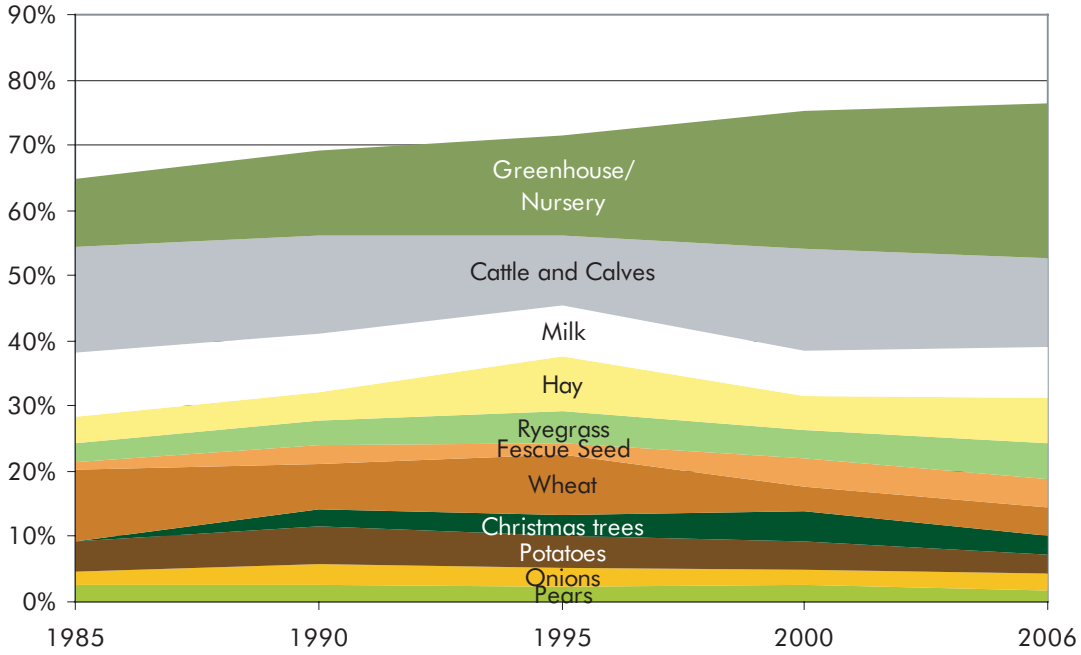
- Washington's top commodity in 2006 was apples, accounting for 22.45% of total agricultural sales, or $1.3 billion.

- Nationally, Oregon ranks first as the producer of many agricultural commodities, including blackberries, hazelnuts, fescue seed, and Christmas trees (ODA 2007).

- Washington is the number one producer of apples for the United States, accounting for 65.6% of national apple production.

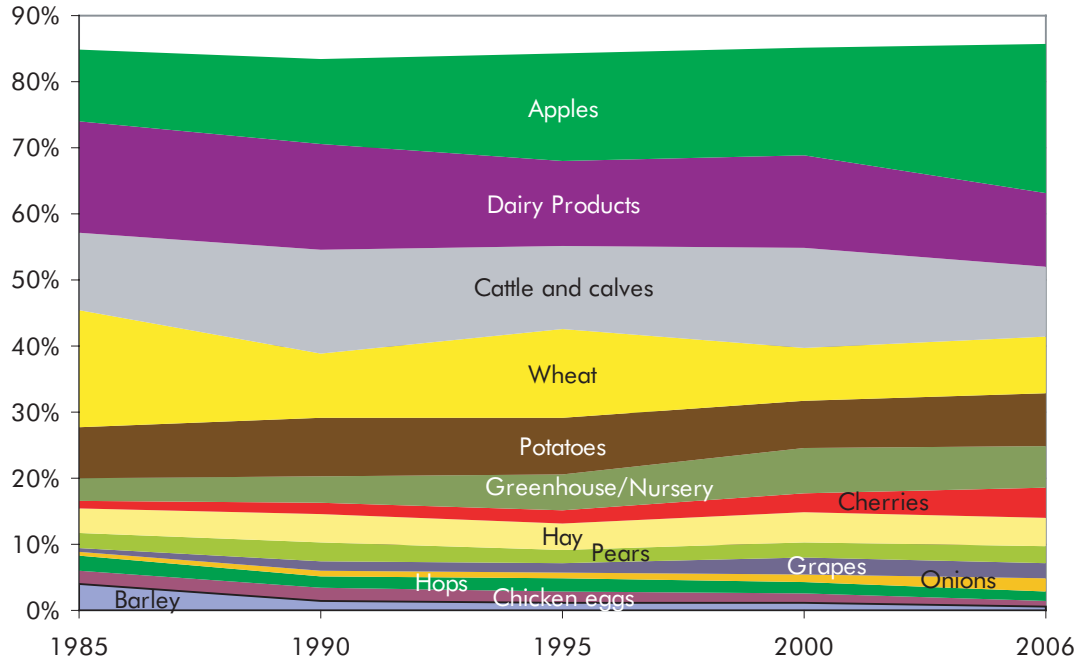
- Although hops production is minimal as a percentage of Washington's total commodity sales, 74.5% of hops nationally come from Washington.

Top Commodities as a Percentage of Total Sales in Oregon



Source: ODA, 2007

Top Commodities as a Percentage of Total Sales in Washington



Source: USDA NASS

Sources:

Oregon Department of Agriculture (June 2007). *Oregon Agriculture: Facts and Figures*. Retrieved February 12, 2008 from http://oregon.gov/ODA/docs/pdf/pubs/ff.pdf.

USDA Economic Research Service (updated January 18, 2008). Table 5—"Cash receipts, by commodity groups and selected commodities, United States and States." Retrieved February 12, 2008 from http://www.ers.usda.gov/data/farmincome/FinfidmuXls.htm#receipts.

USDA Economic Research Service (updated August 30, 2007). *Washington: Leading commodities for cash receipts, 2006*. Retrieved March 2, 2008 from http://www.ers.usda.gov/data/farmincome/firkdmuXls.htm#prod.

USDA National Agricultural Statistics Service (n.d.) *Oregon Agriculture*. Retrieved March 10, 2008 from http://www.nass.usda.gov/Statistics_by_State/Oregon/About_Us/index.asp.

USDA National Agricultural Statistics Service (n.d) *Washington's Agriculture*. Retrieved March 10, 2008 from http://www.nass.usda.gov/Statistics_by_State/Washington/About_Us/index.asp.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

INDICATOR: VALUE OF AGRICULTURAL COMMODITY EXPORTS

MEASURE: VALUE OF EXPORTS OF FOOD AGRICULTURAL COMMODITIES

Annual estimates of national and state exports based on each state's share of U.S. agricultural production, from the United States Department of Agriculture (USDA) Economic Research Service (ERS). Total export values are calculated based on a subset of the agricultural commodities to include only values for food products.

BACKGROUND: The ERS estimates state agricultural exports using the Customs District-level export data compiled by the U.S. Census Bureau and the state-level agricultural production data supplied by the National Agricultural Statistics Service (NASS). These approximations suggest that a state that is the largest producer of an agricultural commodity will also account for the largest share of U.S. exports of that commodity. Countries of destination for each state's exports cannot be determined (USDA ERS, 2007).

U.S. agricultural commodity exports often are produced in inland states. From the farm, a commodity is sold to a local elevator, which in turn may sell it to a larger elevator located at a major transportation hub, which then moves the commodity to a port. As the commodity passes through several states before being exported, the state-of-origin often is lost or the product commingled with similar product from other states. Frequently, the exporter reports the state from which the commodity began its export journey rather than the state that produced the commodity. To more accurately reflect the situation for inland agricultural producing states, ERS calculates U.S. State agricultural exports based on a state's share of production of the exported commodity (USDA ERS, 2007).

Although U.S. port of entry data are available for agricultural imports, state-of-destination data are not available. Consequently, agricultural imports cannot be tracked to their final destinations by state (USDA ERS, 2007).

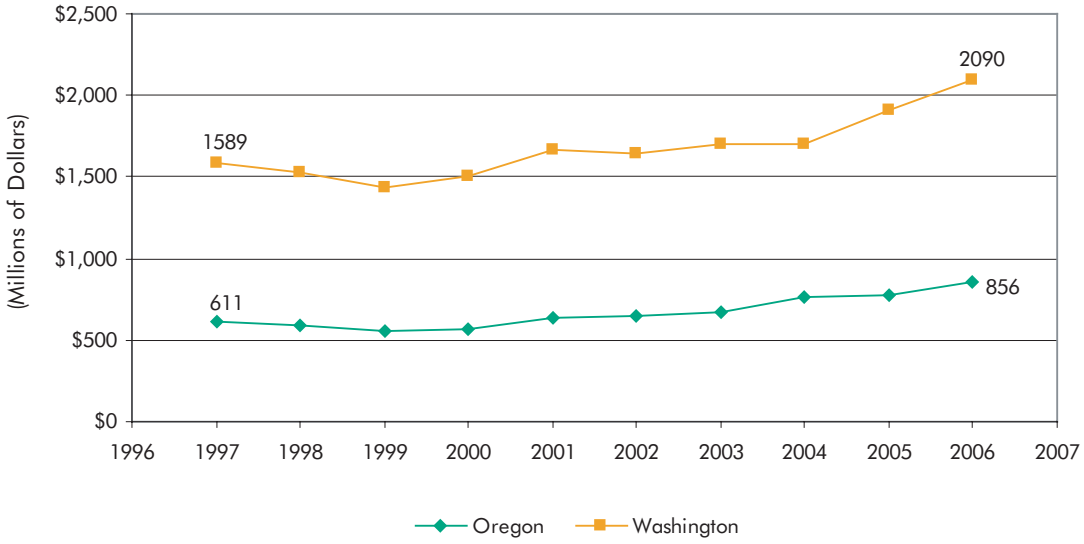
FINDINGS & TRENDS:

- The United States experienced an increase of approximately $8.9 billion, or 22 percent in total value of food agricultural commodity exports between 1997 and 2006.

- Oregon experienced an increase of approximately $246 million, or 40 percent in food agricultural exports between 1997 and 2006.

- Washington experienced an increase of approximately 32 percent in food agricultural exports between 1997 and 2006.

Total Value of State Agricultural Exports (Food Commodities Only)* for Oregon and Washington



**Non-food commodities (tobacco, cotton, coarse grain, skins and hides, feeds and fodder, and seeds) were removed to calculate total value.*
Source: USDA ERS, 2007

Sources:

United States Department of Agriculture, Economic Research Service. *U.S. Exports by State, by Commodity, 1997-2002* (retrieved May, 2007).

United States Department of Agriculture, Economic Research Service. *State Export Data*. (Updated June 1, 2007). http://www.ers.usda.gov/Data/StateExports/

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■*Margins of error are not represented in these trend charts, and data points should be considered approximate.*

■*Food agricultural commodities include: wheat, rice, soybeans, sunflower seed, peanuts, cottonseed, fruit, tree nuts, vegetables, live animals and meat, poultry, fats and oils, dairy, and other. The "other" category includes: sugar and tropical products, minor oilseeds, essential oils, beverages other than juice, nursery and greenhouse, wine, and miscellaneous vegetable products. Due to the unavailability of comparable data between Oregon and Washington, we were not able to separate nursery and greenhouse products from the "other" category.*

INDICATOR: VALUE OF FARM PRODUCTION

MEASURE: TOTAL CASH RECEIPTS

Total cash receipts for farms in Oregon and Washington, separated into food and non-food products. The Economic Research Service (ERS) develops these numbers based on National Agricultural Statistical Services (NASS) estimates. ERS makes adjustments to the NASS estimates. These estimates differ slightly from those developed by the Oregon Department of Agriculture. We used the ERS estimates rather than the ODA estimates to ensure comparability between Washington and Oregon. We included the following items in the nonfood category: wool, pelts, feed crops, grass seed, and greenhouse/nursery products.

BACKGROUND: The value of crop and livestock production in the United States has risen steadily upward since 1970 and is forecast to reach record levels in 2007. Several factors are contributing to this trend, including increased demand for corn and soybeans due to the production of biofuels, inadequate rainfall in competitor countries that produce similar commodities, and increased international consumption (Covey et al., 2007).

Nonfood crops comprise a significant share of Oregon's agricultural production. Greenhouse and nursery products are Oregon's highest-valued commodity; grass seed and Christmas trees also comprise a significant share of farm cash receipts. In Washington, the most significant non-food agricultural products include hay, nursery and greenhouse products, and forest products.

FINDINGS & TRENDS:

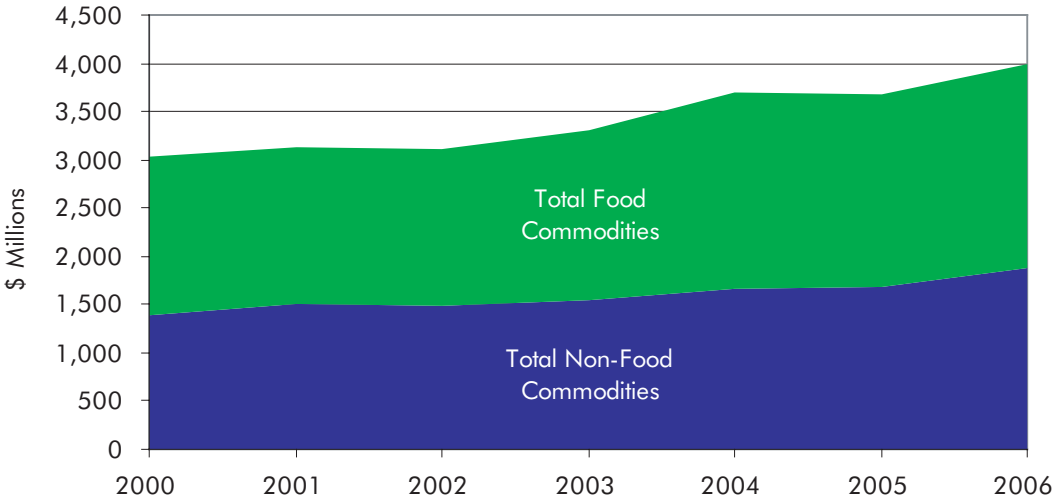
- Oregon's total cash receipts for commodities in 2006 were about $4 billion. Cash receipts from non-food products totaled $1.9 billion in 2006—almost half of the total receipts.

- Washington's total cash receipts for commodities in 2006 were about $6.1 billion. Receipts for non-food commodities totaled $861 million, or about 14 percent of total receipts.

- While the total cash receipts for agricultural commodities in Oregon grew by about 30 percent from 2002 to 2006, the proportion of cash payments for non-food products over the same period remained steady at about 47 percent of total cash receipts.

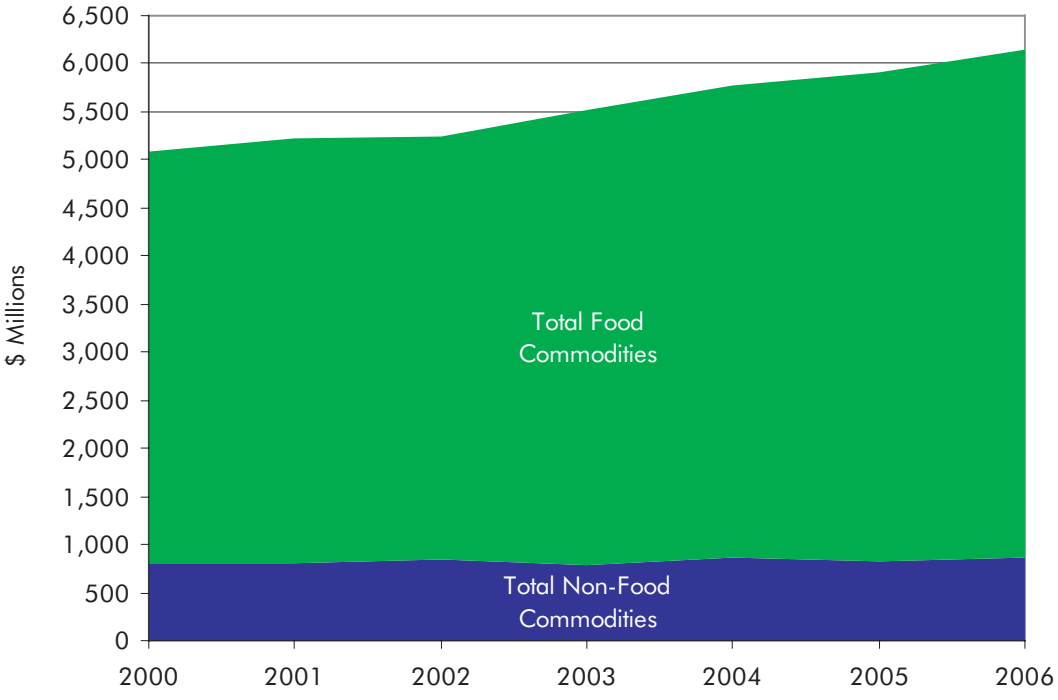
- While the total cash receipts for agricultural commodities in Washington grew by about 21 percent from 2002 to 2006, the percentage attributable to non-food commodities fell slightly from 16 percent to 14 percent over the same period.

Total Cash Receipts: Oregon



Source: USDA ERS

Total Cash Receipts: Washington



Source: USDA ERS

Sources:

U. S. Department of Agriculture, Economic Research Service. U.S. and State Farm Income Data, 2000-2006. http://www.ers.usda.gov/data/farmincome/finfidmu.htm Accessed 4/9/08.

Covey, Ted, Mary Ahearn, Jim Johnson, Mitch Morehart, Roger Strickland, Steve Vogel, Larry Traub, Dennis Brown, Chris McGath, Bob Williams, Peter Stenberg, Robert Green, Ken Erickson, and Mike Harris. December 2007. *Agricultural Income and Finance Outlook*. U.S. Department of Agriculture, AIS-85.

Oregon Department of Agriculture. 2007. *Oregon 2007 Agripedia*. Salem, OR: Oregon Department of Agriculture.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

INDICATOR: PRIME AGRICULTURAL SOILS

MEASURE: ACRES AND DISTRIBUTION OF CLASS 1 AND CLASS 2 SOILS

Acres of the National Resource Conservation Service SSURGO (Soil Survey) Class 1 and Class 2 soils in Oregon and Washington. Class 1 soils are defined as having only slight inconsequential limitations that restrict their use and are considered the most productive soils. Class 2 soils are defined as having moderate limitations that reduce the choice of plants or require moderate conservation practices (USDA Agricultural Handbook 210, Part 622: Ecological and Interpretive Groups, http://soils.usda.gov/technical/handbook/contents/part622p2.html).

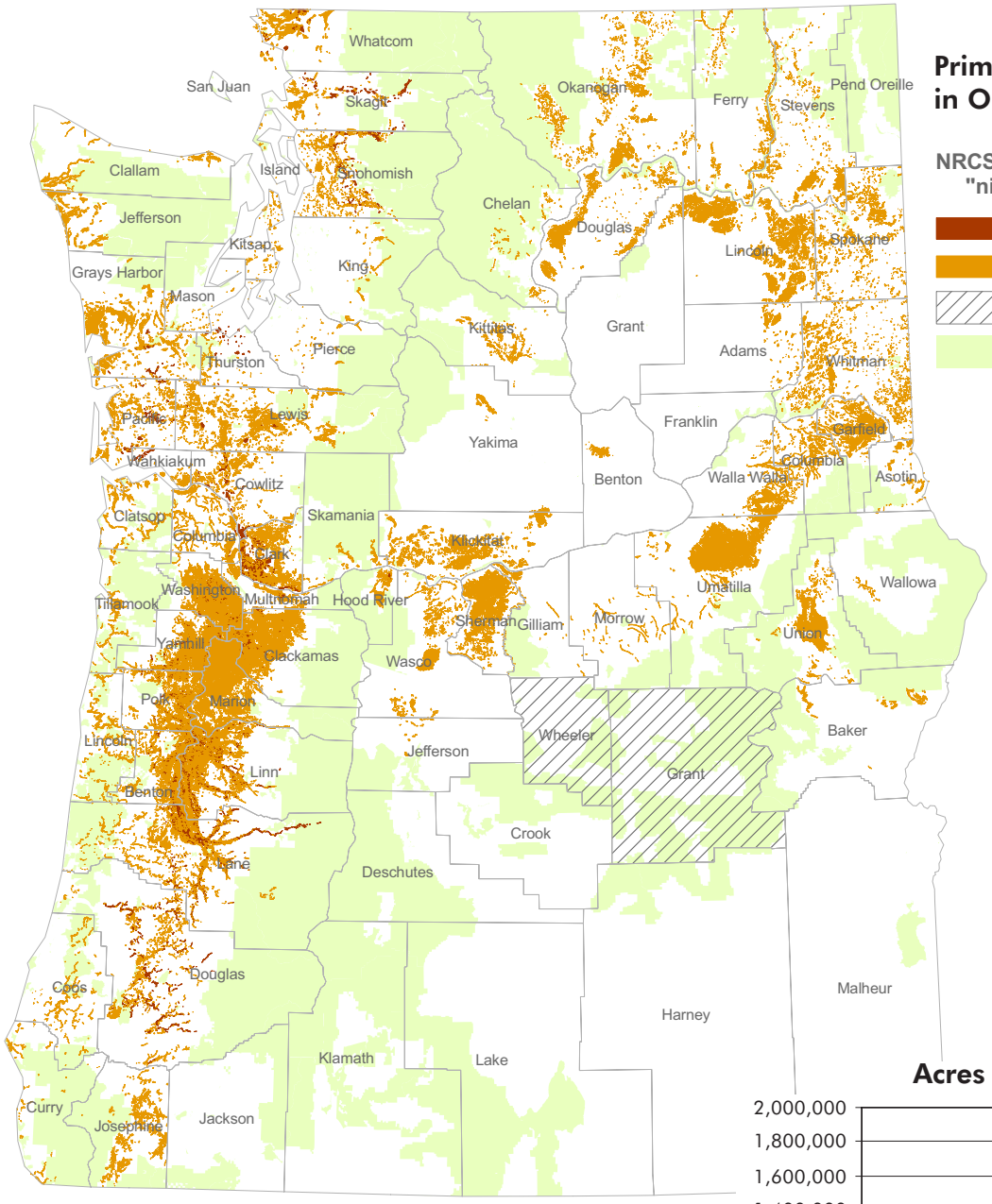
BACKGROUND: Prime soils are those most easily cultivated, with minimal intervention, for agricultural uses. The large presence of such soils in the Willamette Valley was a key factor in its early settlement by native and non-native peoples. In 1838, Samuel Parker wrote, "For richness of soil and other local advantages, I should not know where to find a spot in the Valley of the Mississippi superior to this [Willamette Valley]" (Dicken and Dicken, 1979, p. 1). However, prime soils are not evenly distributed across Oregon and Washington. The geologic history of the Pacific Northwest has disadvantaged some areas, limiting the presence of prime soils. And so, in 1843, Thomas J. Farnham was able to observe that the "Oregon Territory [Oregon and Washington] as a whole is, in its soil, the most cheerless and barren portion of the national domain" (Dicken and Dicken, 1979, p. 1).

Tracking the various impacts on prime soils is difficult, labor intensive, and costly. A major Federal initiative, begun in 1994 via Executive Order #12906, provides targeted funds for updating, digitizing, and disseminating thousands of printed soil surveys compiled since the inception of the USDA's Division of Soils in 1894. This is the Soil Survey Geographic Database (SSURGO). Soil surveys provide a scientific inventory of soil resources that include maps showing the locations and extent of soils, data about the physical and chemical properties of those soils, and information derived from that data about potentialities and problems of use on each kind of soil in sufficient detail to meet the needs of farmers, agricultural technicians, community planners, engineers, and scientists (http://soils.usda.gov/).

FINDINGS & TRENDS:

- Prime soils have been profoundly affected over time by urbanization and suburbanization in areas of flat topography (easy to build on) and close to rivers (efficient transportation) where prime soils are prevalent. Urbanization and suburbanization thus have made a significant number of acres of prime soils unavailable for agricultural uses. The SSURGO data do not include public land and is incomplete for some areas. Thus, quantifying the loss of prime soils using this data set is difficult.

- Prime soils are unevenly distributed throughout Oregon and Washington. The largest concentration is located in the Willamette Valley, west of the Cascade Range, in Oregon. However, a significant number of acres of Class 2 soils exist in Sherman and Umatilla counties in Oregon and in Walla Walla, Columbia, Garfield, Klickitat, and Lincoln counties, east of the Cascade Range in Washington.



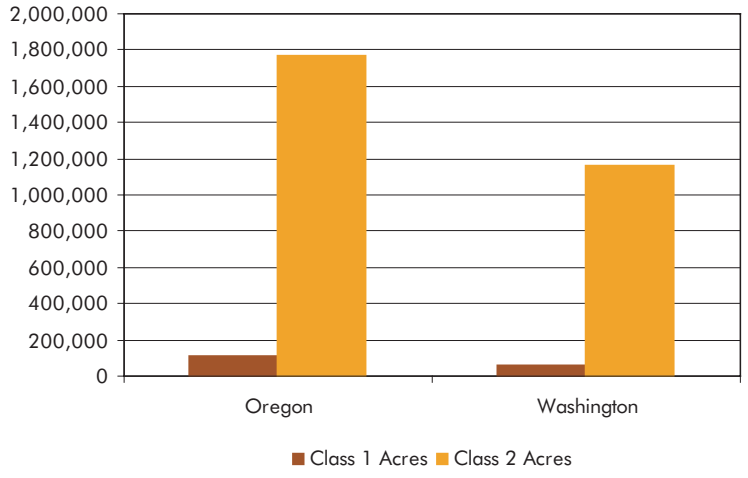
Prime Agricultural Soils in Oregon and Washington

NRCS SOIL SURVEY "niccdcd" data

- Class 1 Soils
- Class 2 Soils
- No Data
- Federal & State Parks

Source: NRCS SSURGO

Acres of Class 1 and Class 2 Soils



Source: NRCS SSURGO

Sources:

Dicken, Samuel N. and Emily F. Dicken. 1979. *The Making of Oregon*. Portland: Oregon Historical Society.

NRCS SSURGO GIS Database. Range of dates (data are updated as needed*). http://soildatamart.nrcs.usda.gov/

Note: SSURGO data downloaded from the NRCS Soil Data Mart represent the most current soils data available and generally date from 1999 onward (see the individual survey metadata for exact dates). There is no set schedule for the updating of these SSURGO files. Updates are determined on an as needed basis.

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INDICATOR: TOPSOIL LOSS ON CROPLAND

MEASURE: AMOUNT OF TOPSOIL LOST ON CROPLAND DUE TO EROSION

The amount of topsoil lost on cropland due to water and wind erosion on non-Federal land for Oregon and Washington, from the United States Department of Agriculture (USDA) Natural Resources Conservation Service, National Resources Inventory (NRI).

BACKGROUND: The NRI is a statistical survey of natural resource conditions and trends on non-Federal land in the United States. Non-Federal land includes privately owned lands, tribal and trust lands, and lands controlled by state and local governments.

Soil erosion involves the breakdown, detachment, transport, and redistribution of soil particles by forces of water, wind, or gravity. Soil erosion on cropland is of particular interest because of its on-site impacts on soil quality and crop productivity, and its off-site impacts on water quantity and quality, air quality, and biological activity. This analysis considers both cultivated and non-cultivated cropland.

The combination of these effects has implications for natural resource conditions generally and for long-term cropland sustainability (USDA NRCS, 2007).

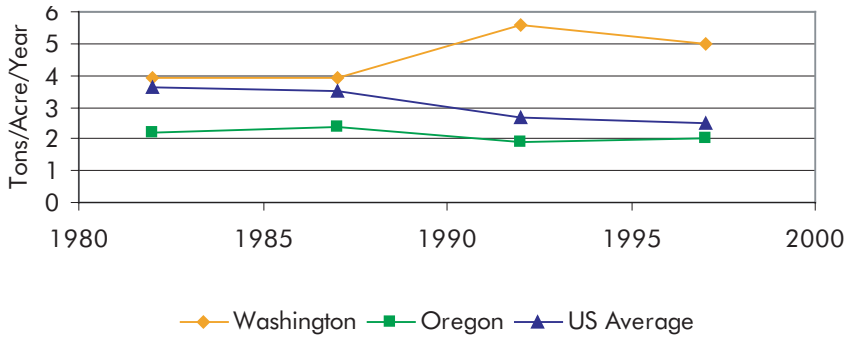
FINDINGS & TRENDS:

- Generally, the amount of water erosion on non-federal cultivated cropland has been declining in Oregon and Washington, and in the United States.

- Between 1982 and 1997, the amount of topsoil lost (tons/acre/year) due to water erosion on non-Federal cultivated cropland decreased by approximately 23 percent in Washington and 33 percent in Oregon. The average amount of topsoil lost in the United States also decreased by approximately 30 percent.

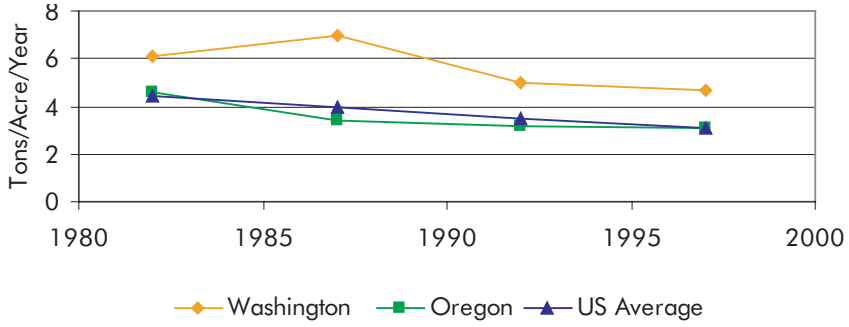
- During this same time period, the amount of topsoil lost due to wind erosion on non-Federal cultivated cropland decreased in Oregon and for the United States on average. However, Washington experienced an increase of approximately 28 percent during this time period.

Estimated Average of Annual Wind Erosion (Rill and Sheet) on Non-Federal Cultivated Cropland



Source: USDA NRCS, 2007

Estimated Average of Annual Water Erosion (Rill and Sheet) on Non-Federal Cultivated Cropland



Source: USDA NRCS, 2007

Sources

United States Department of Agriculture, National Resources Conservation Service. *Technical Resources, Natural Resources Inventory, Soil Erosion*. (Retrieved August 27, 2007).

U.S. Department of Agriculture. 2000. Summary Report: 1997 National Resources Inventory (revised December 2000), Natural Resources Conservation Service, Washington, DC, and Statistical Laboratory, Iowa State University, Ames, Iowa, 89 pages.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■*Margins of error are not represented in these trend charts and data points should be considered approximate.*

■*Although data from the 2003 NRI are available, based on information provided by the USDA NRCS, comparison of this erosion data with that from previous years is not statistically valid due to differences in statistical estimation techniques.*

INDICATOR: ORGANIC FARMING

MEASURE: NUMBER OF OPERATIONS AND ACREAGE IDENTIFIED AS ORGANIC

Number of operations and acreage identified as "organic" by the United States Department of Agriculture in the Census of Agriculture for Washington and Oregon.

BACKGROUND: U.S. farmland managed under organic farming systems expanded rapidly throughout the 1990s and has sustained that momentum, as farmers strive to meet consumer demand in both local and national markets. The U.S. Department of Agriculture (USDA) implemented national organic standards on organic production and processing in October 2002, following more than a decade of development. The new uniform standards are expected to facilitate further growth in the organic farm sector. USDA's organic standards incorporate an ecological approach to farming—cultural, biological, and mechanical practices that foster cycling of resources, ecological balance, and protection of biodiversity. An increasing number of U.S. farmers are adopting these systems in order to lower input costs, conserve nonrenewable resources, capture high-value markets, and boost farm income (USDA Economic Research Service 2003).

FINDINGS & TRENDS:

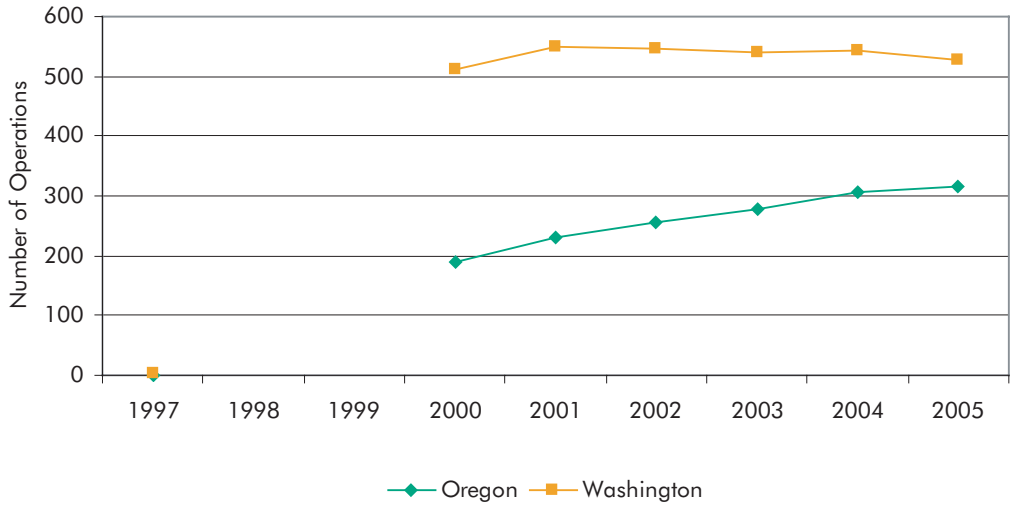
- In 2005, organic farming accounted for $52,122,197 in farm gate sales in Oregon and $101,545,406 in Washington (WSU CSNAR 2006).

- From 2000-2005 the number of organic certified operations increased 67 percent in Oregon, 3 percent in Washington, and 29 percent in the U.S. (USDA ERS 2007).

- Organic acreage increased 35 percent in Oregon during 2005 (USDA ERS 2007).

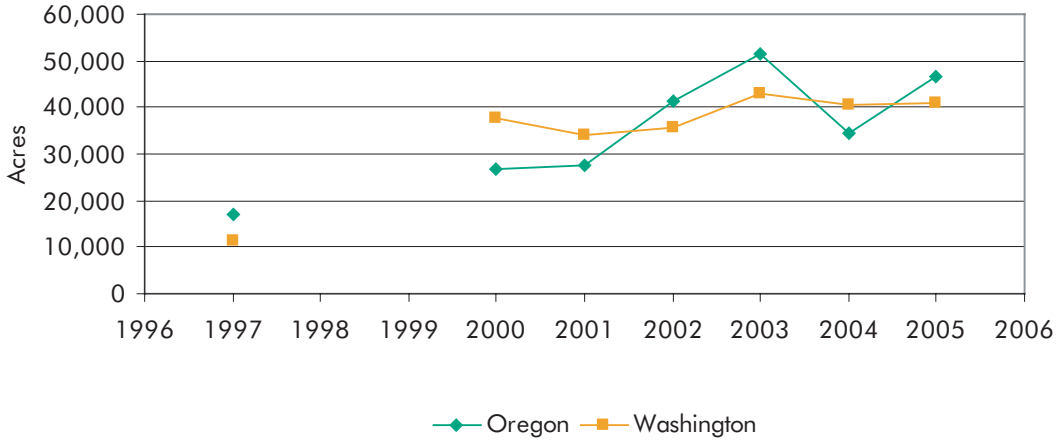
- Organic farming accounted for roughly 0.2 percent of farmland acreage in Oregon, Washington and the U.S. as a whole in 2002 (USDA ERS 2007).

Number of Certified Organic Operations



Source: USDA Economic Research Service

Total Organic Acreage (Cropland and Pasture/Range Lands)



Source: USDA Economic Research Service

Sources:

USDA Economic Research Service (updated July 3, 2007). *State Fact Sheets.* http://www.ers.usda.gov/statefacts/

USDA Economic Research Service (updated July 5, 2007). *Organic Production: Table 4: Certified Organic Pasture and Cropland.* http://www.ers.usda.gov/Data/organic/index.htm#tables

USDA Economic Research Service (updated April 1, 2003). *US Organic Farming in 2000-2001: Adoption of Certified Systems: Summary.* http://www.ers.usda.gov/publications/aib780/aib780a.pdf

Washington State University: Center for Sustaining Agriculture and Natural Resources (updated January 11, 2006). *Statistics on Organic Agriculture*. http://csanr.wsu.edu/Organic/OrganicStats.htm

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

INDICATOR: CHEMICAL USE ON FARMS

MEASURE: PERCENT OF FARMS ON WHICH CHEMICALS ARE USED

The Census of Agriculture is provided by the United States Department of Agriculture's National Agricultural Statistics Service (NASS). Data on agricultural chemicals used, including fertilizer, is reported every five years for 1982, 1987, and 1992. In addition, fertilizers and chemicals are reported for 1997 and 2002. While the data for the different years are reported slightly differently (see disclaimer below), they are based on a sample of farms for Oregon, Washington, and the United States. The measure is the percentage of farms in Oregon, Washington, and the United States that apply chemicals as part of their normal operations.

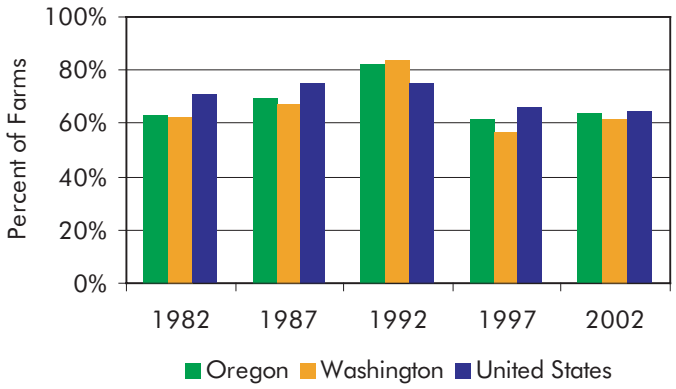
BACKGROUND: According to the U.S. EPA, national trends in conventional pesticide usage for agriculture can vary depending on several factors. Usage of conventional pesticides on farms increased from about 400 mil. lbs. in the mid-1960s to a peak of nearly 850 mil. lbs. around 1980, primarily due to the widespread adoption of herbicides in crop production. Since that time, usage has been somewhat lower and has varied from a low of 658 mil. lbs. in 1987 to a high of 786 mil. lbs. in 1994 (active ingredient basis). Pesticide usage in agriculture can vary considerably from year to year depending on weather, pest outbreaks, crop acreage, and economic factors such as crop prices (EPA, 1997).

FINDINGS & TRENDS:

- In 2002, about 65 percent of farms nationwide were using chemicals, compared to 64 percent for Oregon and 62 percent for Washington.

- The percentage of farms using chemicals in Oregon increased 4 percentage points from 1997 to 2002 as compared to 8 percentage points in Washington. The percentage of farms using chemicals in the United States decreased 2 percentage points during the same period.

Chemicals Used on Farms



Source: USDA NASS

Sources:

United States Environmental Protection Agency. *Pesticides Industry Sales and Usage. 1994 and 1995 Market Estimates*. August 1997, p. 7 (retrieved January 2008). http://www.epa.gov/oppbead1/pestsales/

United States Department of Agriculture, National Agricultural Statistics Service.
http://www.nass.usda.gov/census/census92/volume1/vol1pubs.htm
http://www.nass.usda.gov/census/census02/volume1/or/st41_1_045_046.pdf
http://www.nass.usda.gov/census/census02/volume1/us/st99_1_045_046.pdf
http://www.nass.usda.gov/census/census92/volume1/us-51/c2-tbl10.pdf

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- *Data are based on a sample of farms.*
- *Data for 1987 and 1982 include farms on which lime was applied alone or together with fertilizer and/or chemicals.*
- *Data for 1997 exclude lime and manure.*
- *Data collection and analysis methods for the Census of Agriculture changed in 1997. NASS does not recommend comparing data from 2002 and 1997 to earlier years due to this change. For details see:http://www.nass.usda.gov/census/census02/censusfaqs2.htm#1*

INDICATOR: WASTE PRODUCED BY CATTLE

MEASURE: TONS OF MANURE PRODUCED PER HEAD BY DAIRY COWS, BEEF LOT BEEF, AND OTHER CATTLE

The Combined Animal and Manure Nutrient Data System provides state and national data about confined animal numbers (feedlot beef, dairy cows, swine, poultry, and other cattle) and associated manure nutrients. These data are based on analysis of the data collected for the 1982, 1987, 1992, and 1997 Censuses of Agriculture done by the Economic Research Service and Natural Resources Conservation Service in conjunction with the National Agricultural Statistics Service. The measure is the tons of dry manure per number of animals including dairy cows, feedlot beef, and other cattle for Oregon, Washington, and the United States.

BACKGROUND: Large quantities of food processing, crop, forestry, and animal solid wastes are generated in the United States each year. The major components of these wastes are biodegradable. However, they also contain components such as nitrogen, human and animal pathogens, medicinals, feed additives, salts, and certain metals, that under uncontrolled conditions can be detrimental to aquatic, plant, animal, or human life. The most common method of disposal of these wastes is application to the land. Thus, the major pathways for transmission of hazards are from and through the soil. Use of these wastes as animal feed also can be a pathway (Loehr, 1978).

Little is known about the total quantity of agricultural waste, which includes not only manure, but also crop and food processing residues. Only a small portion of that material actually enters the regulated solid waste disposal system. Most agricultural waste ends up being applied to or left in fields, composted, or utilized in some other manner, and a relatively small amount of that ends up in solid waste landfills, which are monitored by the Department of Environmental Quality (DEQ). What does end up in landfills is not generally reported to DEQ as being agricultural waste.

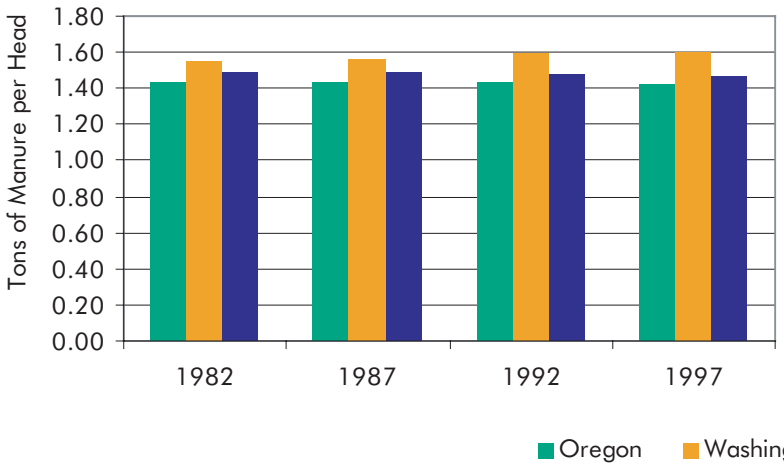
FINDINGS & TRENDS:

- The amount of manure produced between 1982 and 1997 is fairly consistent even though the number of cattle has fluctuated to some degree.

- While Washington has fewer cattle, on average, the state produces 1.4 tons more manure than does Oregon.

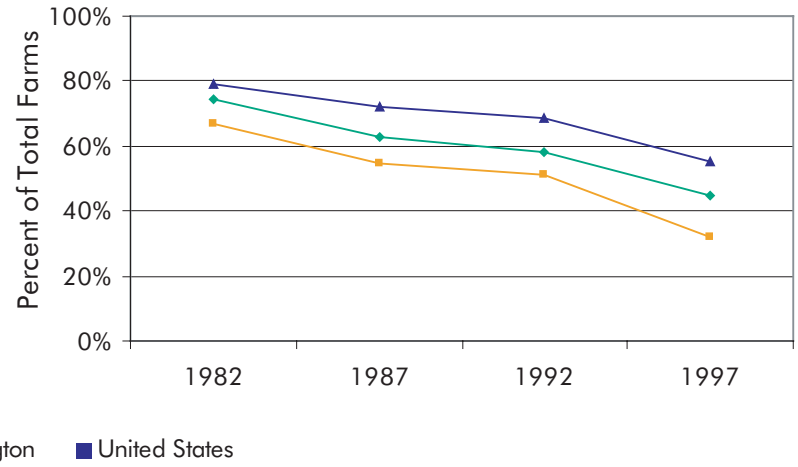
- Although the percentage of cattle farms in Oregon has decreased by 40 percent between 1982 and 1997, the number of cattle has increased or stayed the same, indicating a rise in the average size of cattle farms.

Waste Produced by Cattle



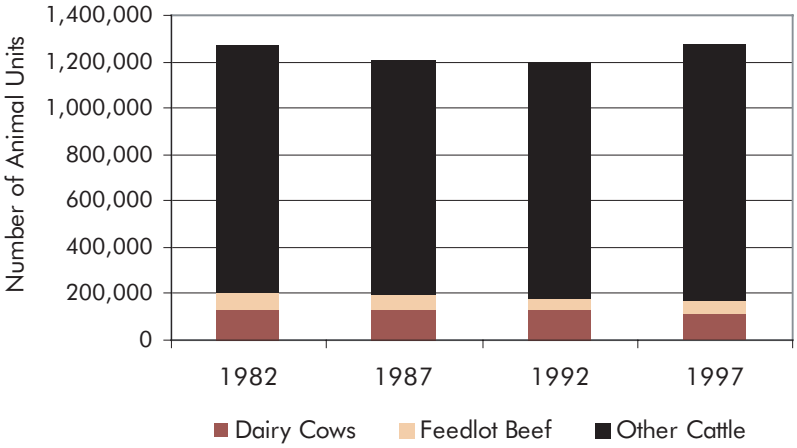
Source: USDA ERS

Cattle Farms



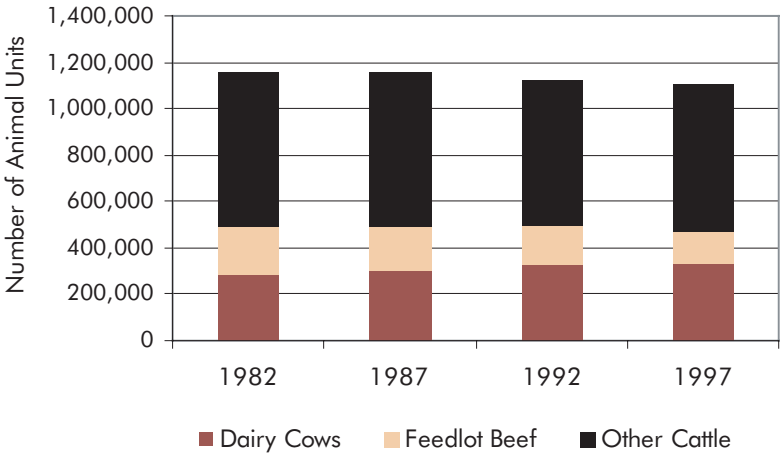
Source: USDA ERS; NASS

Oregon Cattle by Type



Source: USDA ERS

Washington Cattle by Type



Source: USDA ERS

Sources:

Bittman, Mark. (2008). "Rethinking the Meat Guzzler." *New York Times*. January 27: 1-2. (Retrieved March 2008) http://www.nytimes.com/2008/01/27/weekinreview/27bittman.html?_r=1&oref=slogin

Spendelow, Peter. Telephone Interview. Oregon Department of Environmental Quality. February 29, 2008.

United States Department of Agriculture, Economic Research Service. (Retrieved February 2008) http://www.ers.usda.gov/data/manure/

United States Department of Agriculture, National Agricultural Statistics Service. Trends in U.S. Agriculture, Farm Numbers and Land in Farms. (Retrieved August 20, 2007).

Loehr, R.C. (1978). "Hazardous Solid Waste from Agriculture." *Environmental Health Perspectives*. December 27: 261–273.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *Data collection and analysis methods for the Census of Agriculture changed in 1997. NASS does not recommend comparing data from 2002 and 1997 to earlier years due to this change. For details see http://www.nass.usda.gov/census/census02/censusfaqs2.htm#1*

INDICATOR: WATER USE

MEASURE: WATER USE BY USE CATEGORY AND SOURCE

Estimated withdrawals from groundwater and surface water sources for a variety of uses, including irrigation, public supply, and industry. Data for Oregon and Washington, 1985-2005.

BACKGROUND: The U.S. Geological Survey (USGS) has estimated water use across the United States every five years since 1950. For 2005, this program generated estimates of water withdrawals for the categories of public supply, self-supplied domestic, industrial, irrigation, and thermoelectric power at the county level for each State using the same guidelines (Huston, 2007). In past years, the categories included in the estimates have varied.

FINDINGS & TRENDS:

- Total water withdrawals in Oregon have grown from 6,544 million gallons per day in 1985 to 7,174 million gallons per day in 2005—a 9.6 percent increase.

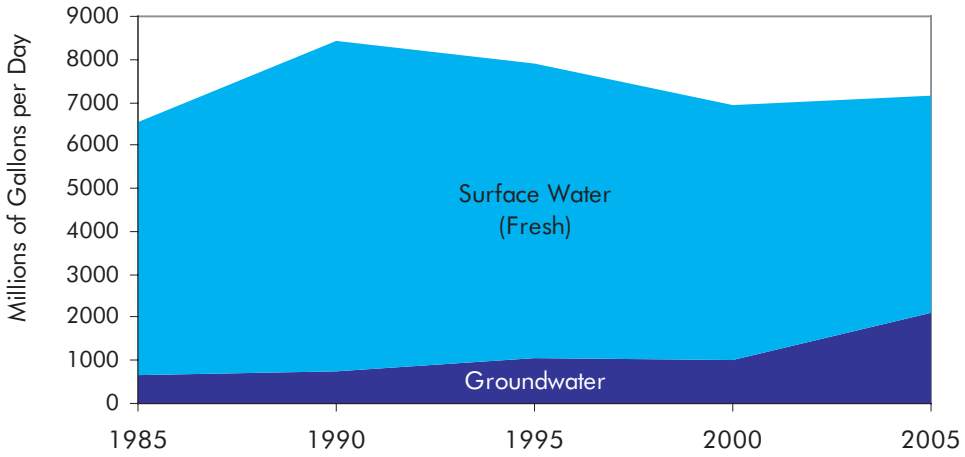
- Over the same period, Washington's withdrawals have increased from 5,177 million gallons per day in 1985 to 5,603 million gallons per day in 2005—an 8.3 percent increase.

- The proportion of withdrawals coming from groundwater has increased in Oregon from about 10 percent to about 30 percent. Washington's ratio of surface to groundwater withdrawals has remained relatively constant.

- Oregon's per capita water consumption decreased 19% between 1985 and 2005; Washington's declined by 25% over the same period.

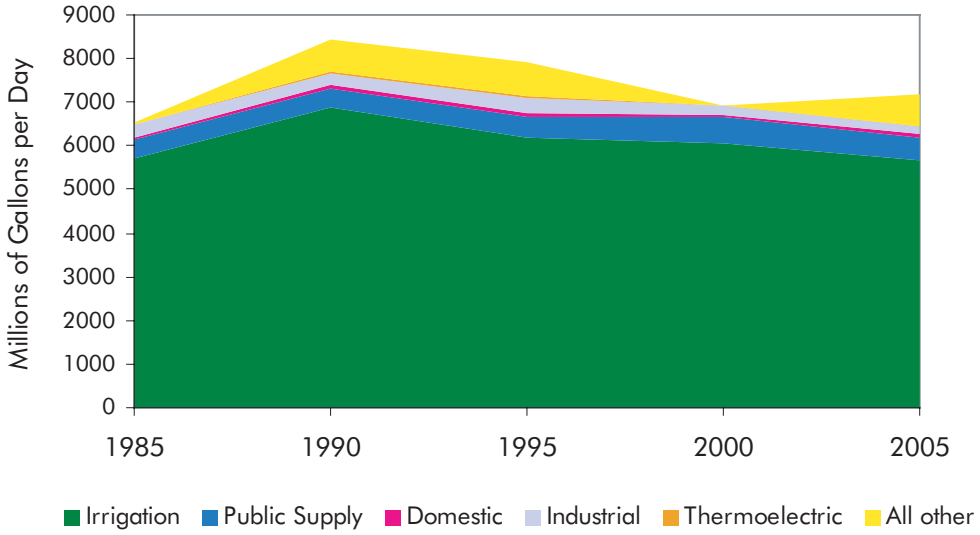
- Irrigation represents a significant portion of total water withdrawals in both states.

Oregon Total Water Withdrawals by Source
1985 to 2005



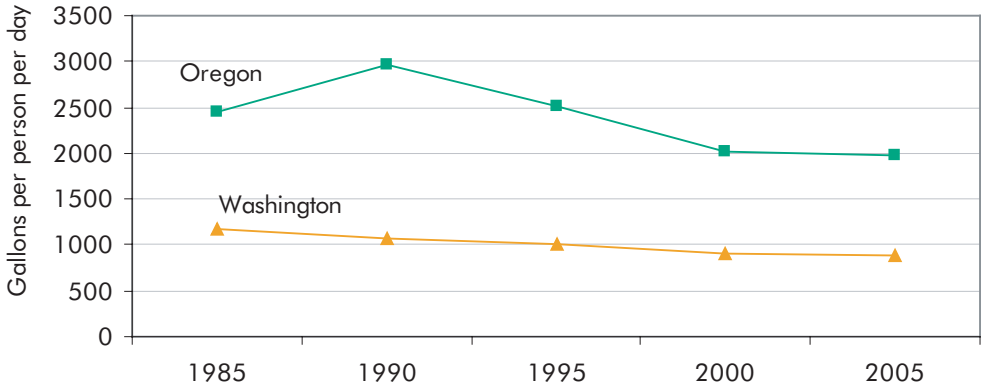
Source: USGS

Oregon Fresh Water Consumption by Use Category
1985 to 2005



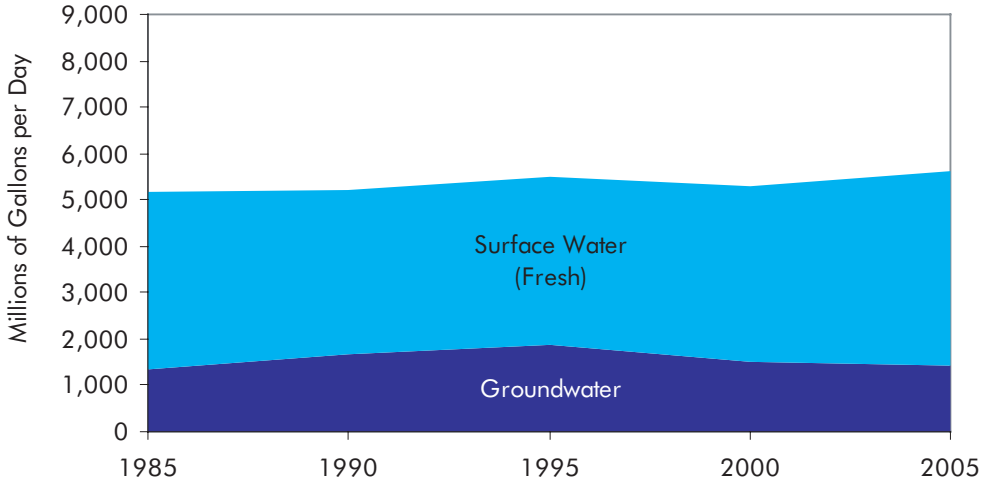
Source: USGS

Total Water Consumption Per Capita
1985 to 2005



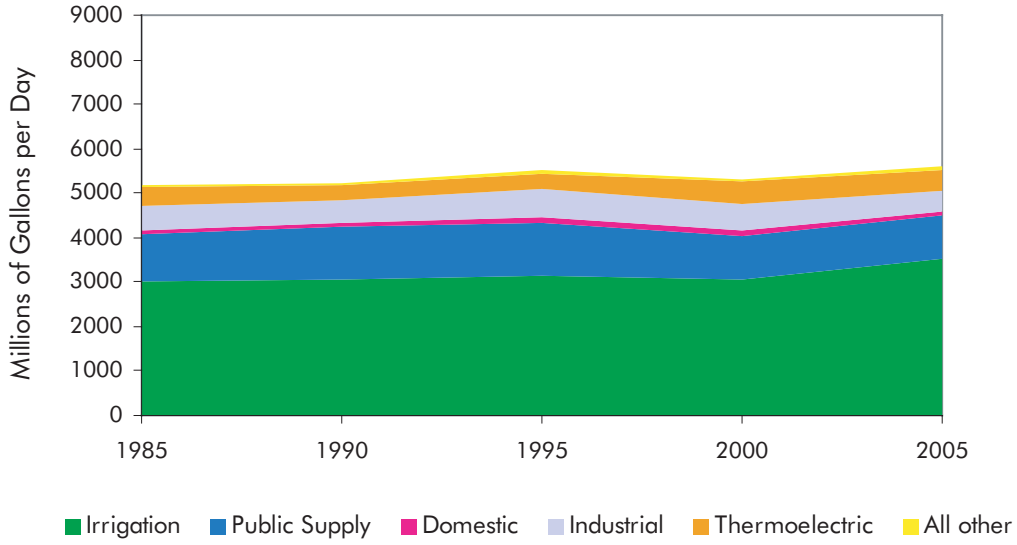
Source: USGS

Washington Total Water Withdrawals by Source
1985 to 2005



Source: USGS

Washington Fresh Water Consumption by Use Category
1985 to 2005



Source: USGS

Sources:
USGS Oregon Water Science Center, Water-Use Program: http://or.water.usgs.gov/projs_dir/or007/or007.html

USGS Washington Water Science Center: http://wa.water.usgs.gov/data/wuse/
Huston, Susan. 2007. "USGS Guidelines for preparation of State water-use estimates for 2005," February: http://pubs.usgs.gov/tm/2007/tm4e1/

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *Water use categories used by the USGS to compile the data have changed over time. Thus, comparisons of total withdrawals may not be strictly comparable over time.*

INDICATOR: WATER USE FOR IRRIGATION

MEASURE: ESTIMATED WITHDRAWALS FROM GROUNDWATER AND SURFACE WATER SOURCES FOR IRRIGATION

Definition of irrigation water use: "Irrigation water use is water that is applied by an irrigation system, to sustain plant growth in all agricultural and horticultural vegetation. It also includes water that is applied for pre-irrigation, frost protection, chemical application, weed control, field preparation, crop cooling, harvesting, dust suppression, and for the leaching of salts from the root zone. Non-crop activities such as irrigation of public and private golf courses, parks, nurseries, turf farms, cemeteries and other landscape-irrigation uses may all be included in the Golf-Course Irrigation subcategory" (USGS Washington Water Science Center website). Washington has a separate subcategory for golf course irrigation. Oregon does not estimate this use separately. Data for Oregon and Washington, 1985-2005.

BACKGROUND: The U.S. Geological Survey (USGS) has estimated water use across the United States every five years since 1950 for each State using the same guidelines (Huston, 2007). Irrigation data are estimated based on "published crop statistics by county, USGS and OWRD reports and previous studies, climate data, irrigation practices, Bureau of Reclamation Hydromet data and water right information provided by OWRD" (USGS Oregon Water Science Center website).

FINDINGS & TRENDS:

- Oregon uses roughly double the amount of water for irrigation than Washington does.

- Water use for irrigation and the number of irrigated acres both remained relatively constant in Oregon between 1985 and 2005.

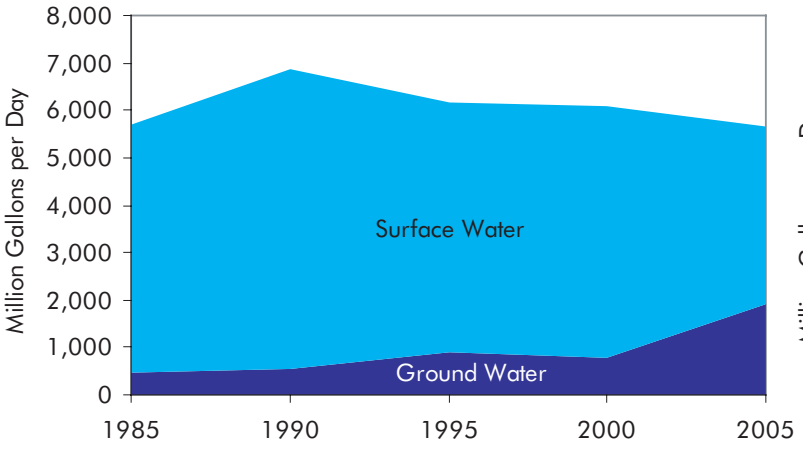
- Irrigation withdrawals and total irrigated acres in Washington increased 16.3 percent and 17.5 percent, respectively, between 1985 and 2005.

- The application rate (water used for irrigation per irrigated acre) has not changed appreciably between 1985 and 2005 for either state.

- The proportion of Oregon's irrigation withdrawals that came from groundwater increased from 13 percent in 2000 to 34 percent in 2005. This shift accounts for much of the shift towards groundwater in total withdrawals.

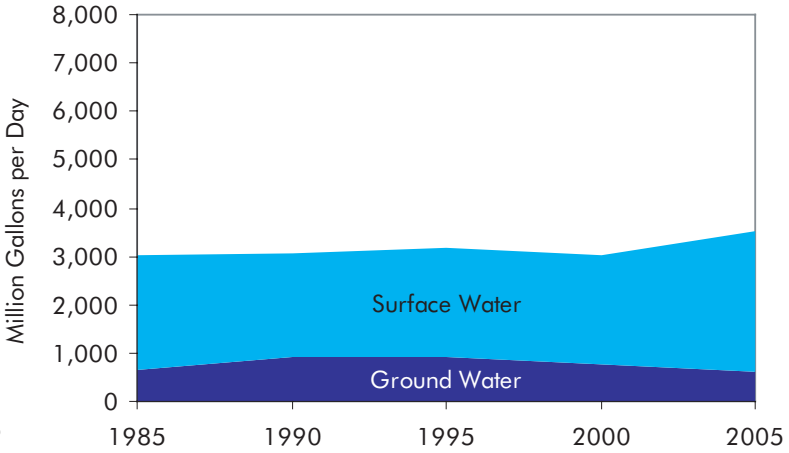
- Washington's groundwater withdrawals for irrigation have remained fairly constant from 1985-2005, but irrigation surface water withdrawals increased 26.4 percent between 2000 and 2005.

Oregon Irrigation Withdrawals



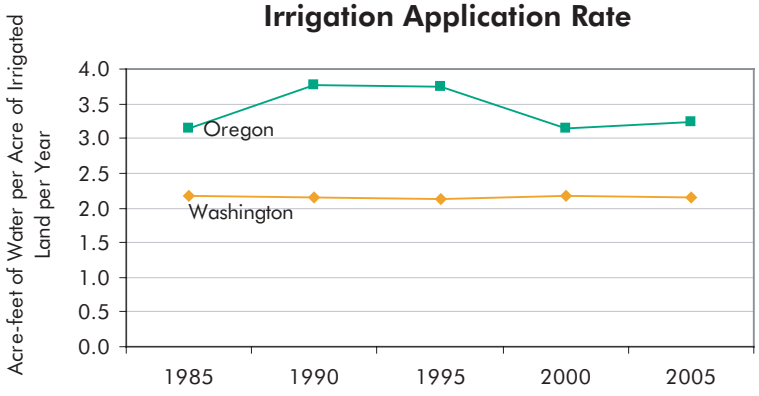
Source: USGS

Washington Irrigation Withdrawals



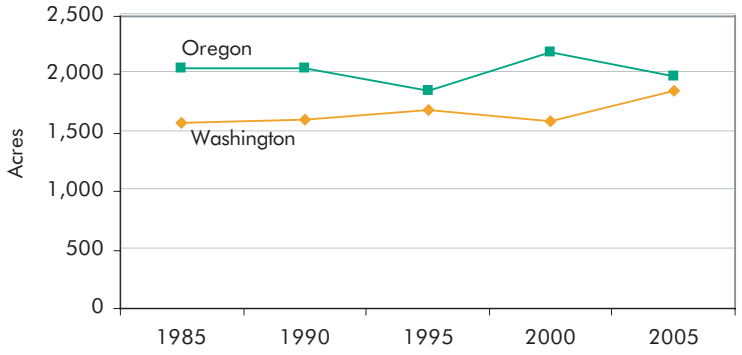
Source: USGS

Irrigation Application Rate



Source: USGS

Total Irrigated Acres



Source: USGS

Sources:
USGS Oregon Water Science Center, Water-Use Program:
http://or.water.usgs.gov/projs_dir/or007/or007.html

USGS Washington Water Science Center: http://wa.water.usgs.gov/data/wuse/
Huston, Susan. 2007. "USGS Guidelines for preparation of State water-use estimates for 2005," February:
http://pubs.usgs.gov/tm/2007/tm4e1/

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INDICATOR: STREAM WATER QUALITY

MEASURE: WATER QUALITY INDEX FOR OREGON AND WASHINGTON

Water Quality Index ranging from 10 to 100 (Oregon) or 1 to 100 (Washington). A higher number indicates better water quality relative to expectations. The index is based on 10 (for Oregon) or eight (for Washington) different water quality variables measured at 62 (For Washington) or 144 (Oregon) long-term monitoring sites in each state. Values for the index can be compared within each state and over time but not between states.

BACKGROUND: A number of factors, including municipal and industrial wastewater, storm water runoff, and agricultural practices can affect surface water quality. Oregon and Washington developed water quality indices in an attempt to monitor and communicate trends in fresh water quality to the general public. The indices aggregate 8 water quality variables into a single number that expresses overall water quality. Oregon's index ranges from 10 to 100; Washington's ranges from 1 to 100. For Oregon, the 8 variables used to construct the index are temperature, dissolved oxygen (percent saturation and concentration), biochemical oxygen demand, pH, total solids, ammonia and nitrate nitrogens, total phosphorus, and bacteria E. coli). Washington's index includes temperature, oxygen, pH, Phosphorous, suspended solids, total nitrogen, turbidity, and fecal coliform.

The Oregon index can be used to compare changes in water quality between rivers, between different points in the same river, and over time. The Washington index scores water quality relative to expectations. Comparing scores for different stations does not indicate which station has better absolute water quality unless expectations for both stations were the same. Washington also calculates a flow-adjusted average.

FINDINGS & TRENDS:

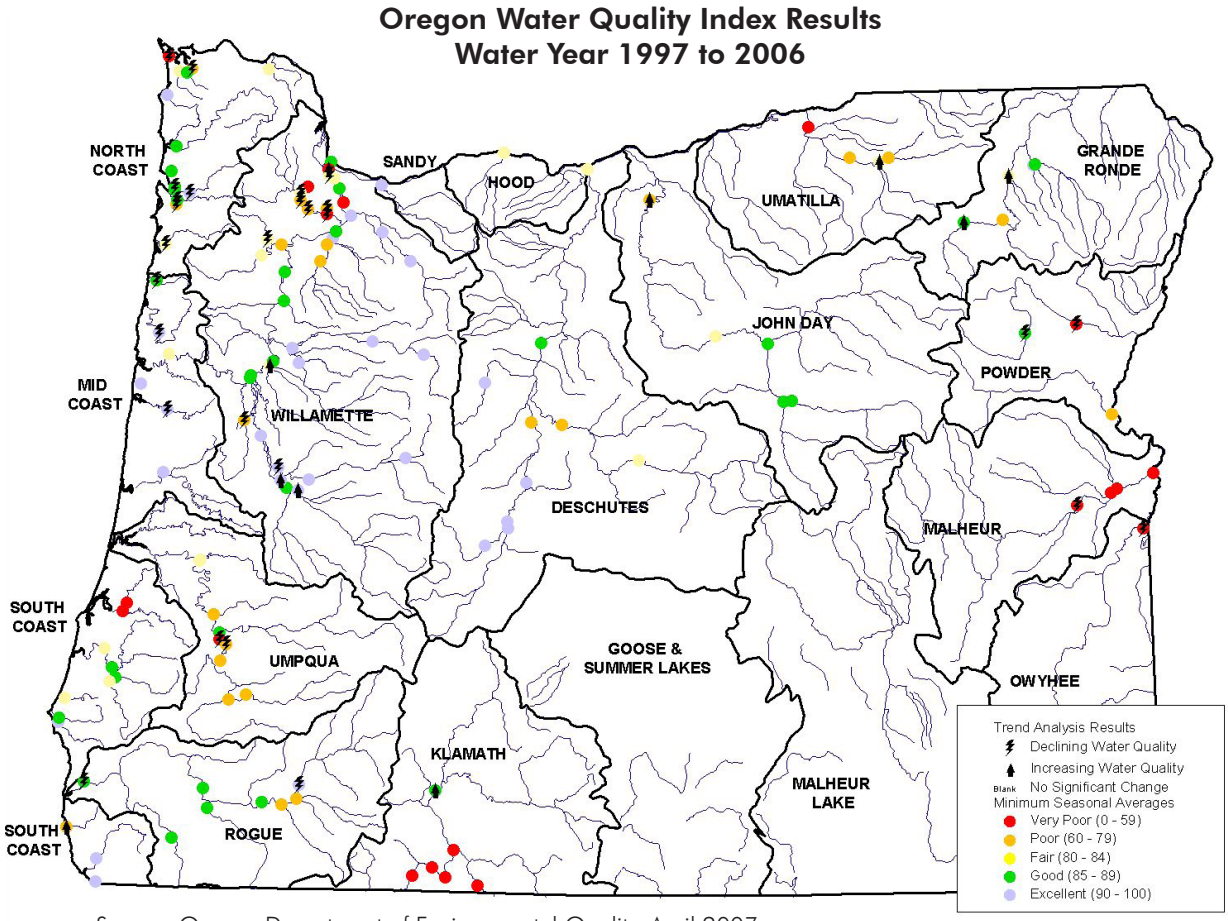
- The percentage of monitored sites with good to excellent water quality condition in Oregon rose steadily from 28 percent in 1995 to 51 percent in 2005. There was a slight drop (1 percent) in 2006.

- Over this same period, the percentage of monitored sites in Oregon with significantly increasing quality ranged from a high of 70 percent in 1998 and 2000 to a low of 8 percent in 2006.

- The percentage of monitored stream sites with significantly decreasing trends in water quality in Oregon ranged from zero in 1997 to 21 percent in 2006.

- The Washington water quality index has generally improved since 1997, although the trend has been volatile.

- Forty percent of Washington's monitoring sites have shown statistically significant improvements in the water quality index from 1995 to 2005. When adjusted for stream flow, this drops to 25 percent of sites. Over the same period, 7 percent of sites show statistically significant declines in the water quality index, when adjusted for stream flow.



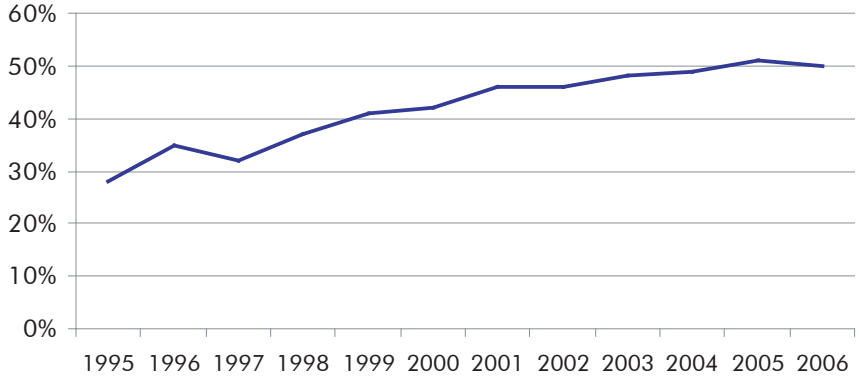
Source: Oregon Department of Environmental Quality, April 2007

Quality Indicator Trends, 1995-2006

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Percentage of monitored stream sites with significantly increasing trends in water quality	21%	32%	52%	70%	64%	70%	51%	37%	32%	24%	14%	8%
Percentage of monitored stream sites with significantly decreasing	8%	2%	0%	1%	1%	1%	5%	4%	6%	10%	14%	21%
Percentage of monitored sites with good to excellent water quality condition	28%	35%	32%	37%	41%	42%	46%	46%	48%	49%	51%	50%

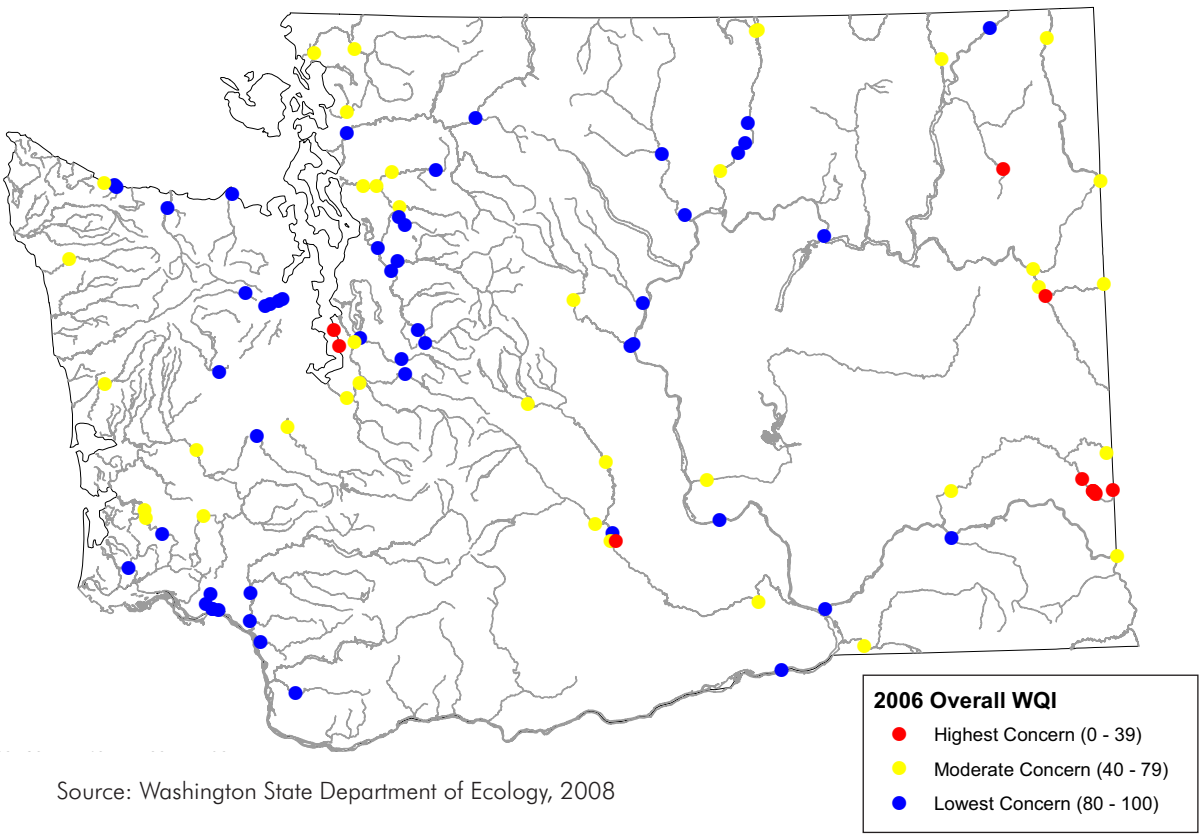
Source: Mrazik, 2007

Percent of Monitored Sites in Oregon with Good to Excellent Water Quality Condition, 1995 to 2006



Source: Mrazik, 2007

Washington Water Quality Index, 2006



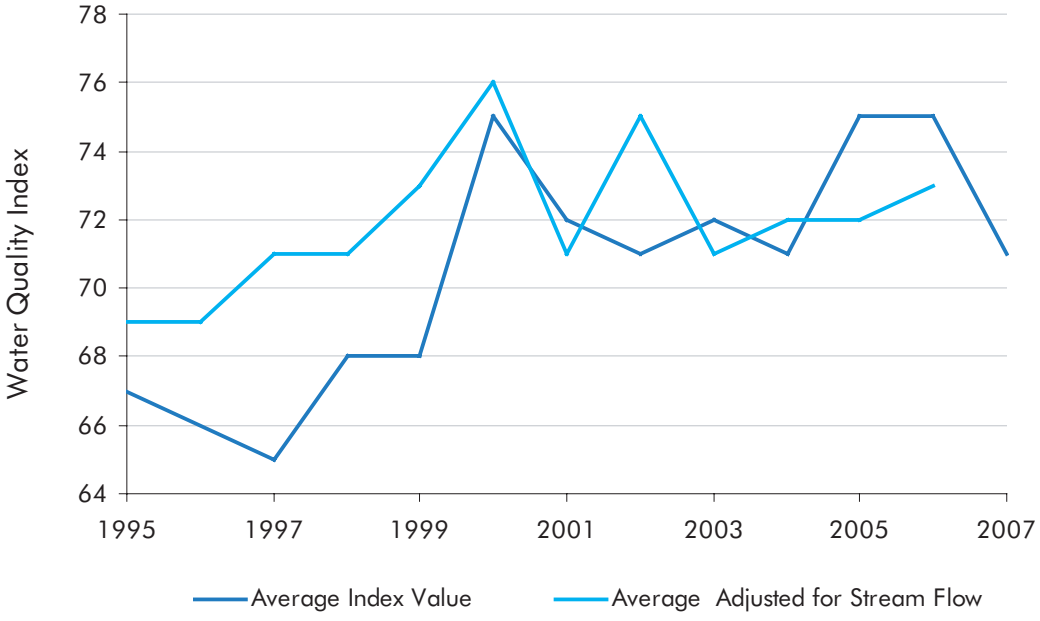
Source: Washington State Department of Ecology, 2008

Percentage of Monitoring Sites in Washington with Statistically Significant Changes in the Water Quality Index, October 1995 to September 2005

	Increasing	Decreasing
Not Flow Adjusted	40%	0
Flow Adjusted	25%	7%

Source: Washington State Department of Ecology, 2008

Trends in Washington Water Quality, 1995 to 2007



Source: Washington State Department of Ecology, 2008

Oregon Sources:

Mrazik, Steve. May 2007. "Oregon Water Quality Index Summary Report: Water Years 1997-2006." State of Oregon Department of Environmental Quality., http://www.deq.state.or.us/lab/wqm/wqimain.htm (main site); http://www.deq.state.or.us/lab/wqm/docs/OWQISummary06.pdf (2006 report)

Mulvey, Mike. March 2008. Personal communication.

Washington Sources:

Washington State Department of Ecology, Freshwater Monitoring Unit.

Hallock, Dave. November 2006. "Washington State Water Quality Conditions in 2005 based on data from the Freshwater Monitoring Unit," Washington State Department of Ecology, Freshwater Monitoring Unit. http://www.ecy.wa.gov/programs/eap/fw_riv/rv_main.html (main site); http://www.ecy.wa.gov/biblio/0603030.html (2005 report)

Hallock, Dave. March 2008. Personal communication.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ ***Specific disclaimers: http://www.ecy.wa.gov/programs/eap/fw_riv/docs/WQIOverview.html)***
How to communicate the OWQI: http://www.deq.state.or.us/lab/wqm/wqindex.htm

■ *The Oregon Water Quality Index measures water quality for general recreational uses; this measure may not be consistent with measures of quality for other uses.*

■ *The bacterial indicator for the OWQI changed from fecal coliform to E. coli in 2002 .*

■ *Oregon and Washington use different methodologies to construct their indexes. They should not be compared to each other.*

■ *A good quality index score does not mean that the water quality is not impaired by constituents that are not included in the index.*

■ *Rather than absolute water quality, WQI scores indicate water quality relative to expectations. Comparing scores for different stations does not indicate which station has better absolute water quality unless expectations for both stations were the same.*

INDICATOR: TOTAL COMMERCIAL FISH LANDINGS

MEASURE: Number Of Pounds and Total Revenue for Landings in Oregon and Washington from 1970-2006

Data are from The Fisheries Statistics Division of the National Marine Fisheries Service (NMFS). This data source may differ slightly from state reports due to reporting mollusks in meat weights. Because many fish are gutted at sea, NMFS uses conversion methods to calculate the whole weight of the fish. Landings do not include aquaculture products except for clams, mussels, and oysters.

BACKGROUND: Although the fishing harvest can vary greatly from year to year, the trend over time has been a shift toward high-volume, low-value fishery returns. This is especially evident with a decrease in salmon and an increase in Pacific whiting and sardine landings. In 2006, the prices paid per pound to fishers for these species were $0.065 and $0.049, respectively, as compared to at least $2.00 per pound for Dungeness crab, Pacific halibut, and Chinook salmon in Oregon (The Research Group, 2007).

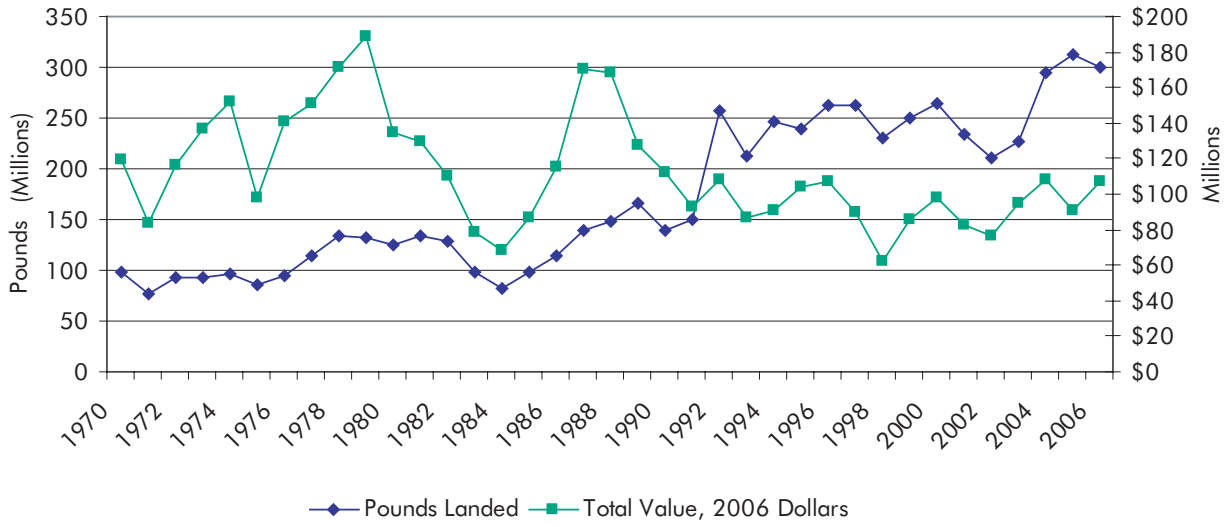
FINDINGS & TRENDS:

- The pounds landed in Oregon in 2006 were over two-thirds more than the pounds landed in 1970. Washington's increase over the same period almost doubled.

- Although the landings volume has been steadily rising, the inflation adjusted revenue has been volatile and generally has decreased since 1970.

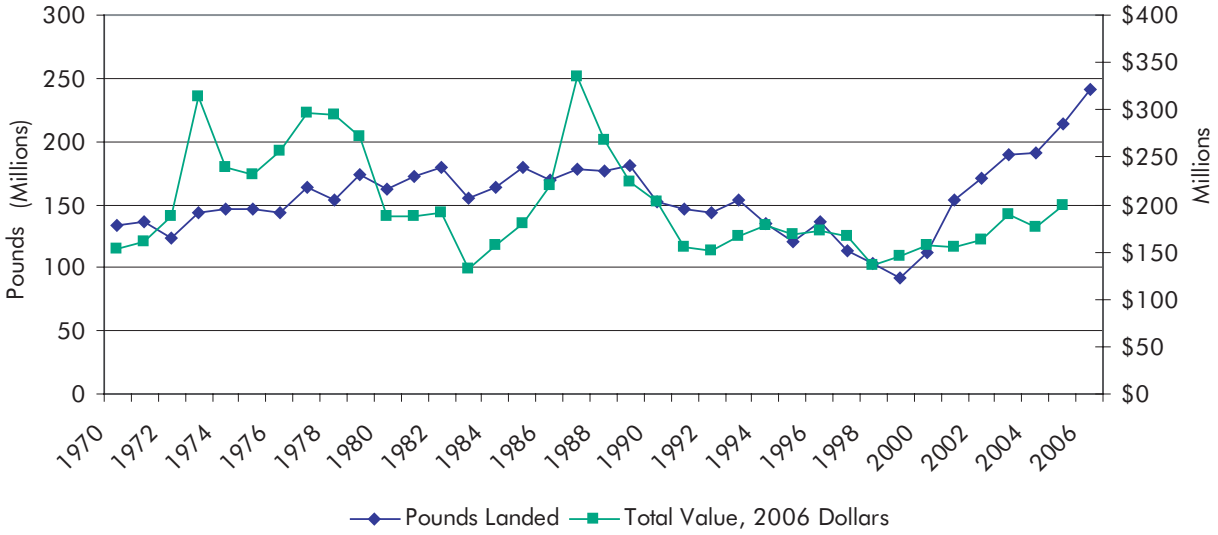
- The commercial fishing landings revenue was over $100 million dollars for Oregon and over $200 million for Washington in 2006.

Oregon Commercial Fisheries Landings



Source: National Marine Fisheries Service

Washington Commercial Fisheries Landings



Source: National Marine Fisheries Service

Sources:

National Marine Fisheries Service: The Fisheries Statistics Division. *Annual Commercial Landing Statistics*. Retrieved June 17, 2008 from http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html

The Research Group. *Oregon's Commercial Fishing Industry: Year 2005 and 2006 Review and Year 2007 Outlook*. June 2007. Retrieved June 28, 2008 from http://www.dfw.state.or.us/fish/commercial/commercial_fishing_report.pdf

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *Landing summaries are based on data extracted from the Pacific States Marine Fisheries Commissions PacFIN database and from eight NMFS data bases that overlap in time and geographic coverage. Although numerous checks have been made to verify the completeness and accuracy of total landings by state and year, it is impossible to verify data accuracy at all summary levels.*

INDICATOR: SACRAMENTO RIVER ANNUAL SALMON SPAWNERS

MEASURE: Annual Salmon Spawners for Sacramento River, 1970-2008
Data are from the Pacific Fishery Management Council. Each year, the number of spawners should be at least 122,000 with a goal of at least 180,000 (see dotted lines on chart).

BACKGROUND: The Magnuson-Stevens Fishery Conservation and Management Act is the primary law that governs marine fisheries in the United States. Part of the law includes the role of the National Marine Fisheries Service (NMFS) as stewards of marine resources. Through input from regional councils, including the Pacific Fishery Management Council (PFMC), the NMFS develops and implements fishery management plans that apply the Act through conservation efforts. The 1996 Sustainable Fisheries Act revised the Magnuson Act to require that these management plans take into account objective and measurable scientific information and definitions of "overfishing" and "overfished" (PFMC, 2007).

In April 2008, PFMC adopted the "most restrictive salmon fisheries in the history for the West Coast, in response to the unprecedented collapse of Sacramento River fall Chinook and the exceptionally poor status of Coho salmon from Oregon and Washington" (Bailey, 2008).
The reason for the collapse is still unclear, but biologists are suggesting ocean temperature changes, due in part to both human-caused and natural factors, including marine conditions and freshwater factors such as "in-stream water withdrawals, habitat alterations, dam operations, construction, pollution, and changes in hatchery operations" (PFMC, 2008).

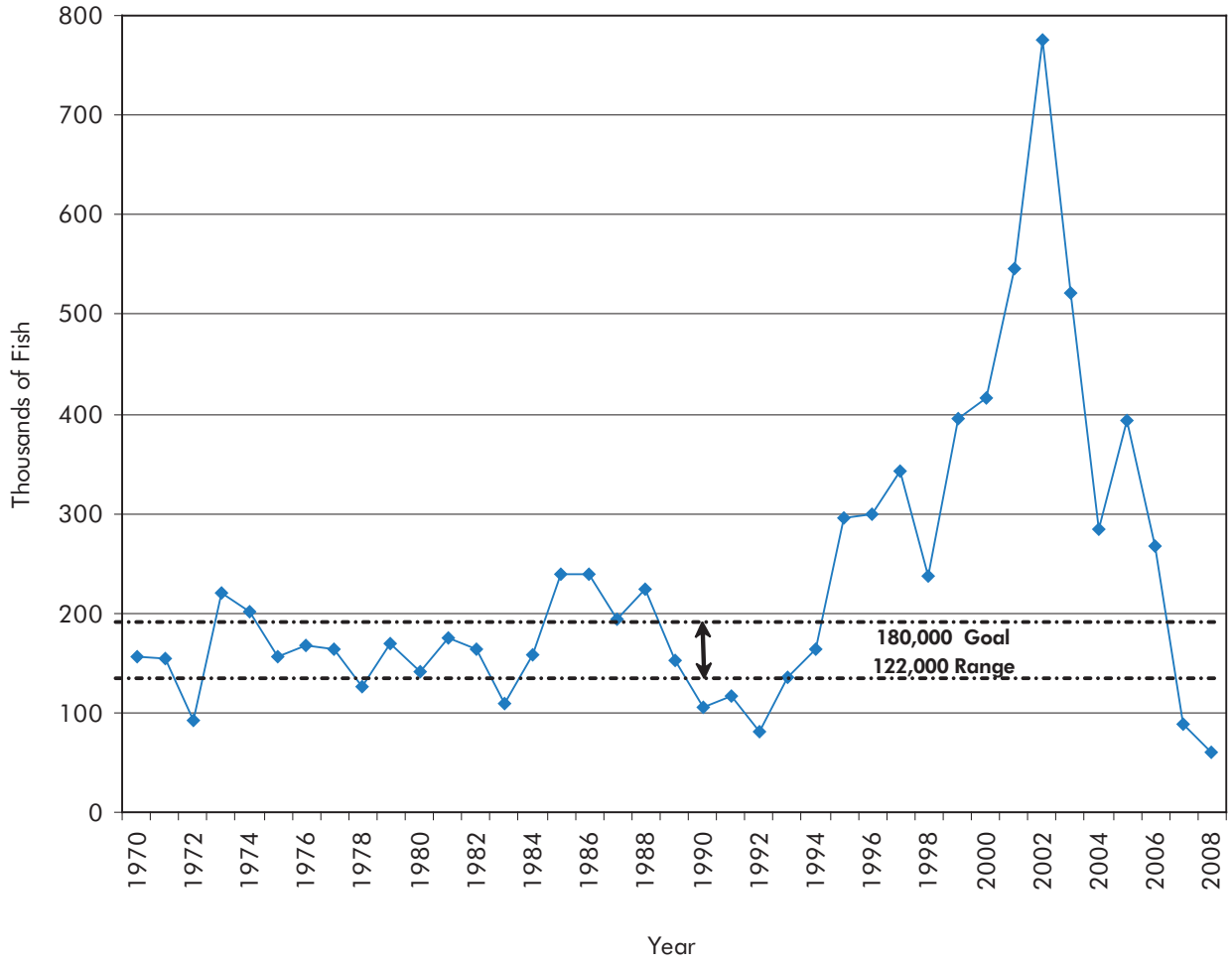
FINDINGS & TRENDS:

- Only about 90,000 returning adult salmon were counted in the Central Valley in 2007, the second lowest number on record and nearly one-tenth the all-time high of more than 800,000 five years ago.

- The Pacific Fishery Management Council looks for at least 122,000 fish each year in order to repopulate the run; the number of fish expected in 2008 is less than half that.

- Returning two-year-old salmon counts, which are used as an indicator for future adult salmon populations, are particularly low. In 2004, 76,000 were counted; in 2007, only 2,000 were counted (Bailey, 2008).

Sacramento River Fall Chinook Spawners



Source: Pacific Fishery Management Council

Sources:

Bailey, E. (April 11, 2008). "U.S. orders salmon season stopped." *The Los Angeles Times*, section B-1.

Pacific Fishery Management Council. Fact Sheet: The Magnuson-Stevens Act. (Updated February 14, 2007). Retrieved August 1, 2008. From http://www.pcouncil.org/facts/msact.pdf

Pacific Fishery Management Council. (April 10, 2008). Record Low Salmon Fisheries Adopted. (Press Release.)

Tracy, Chuck. Pacific Fishery Management Council. Sacramento River Fall Spawners Data. Email Correspondence August 2008.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

INDICATOR: TOTAL FISHING INDUSTRY EMPLOYMENT

MEASURE: Employment of Seafood Processing and Fishing Related Industries in Oregon and Washington

Fishing Employment categories are defined as follows: Aquaculture = NAICS code, 1125; Fishing = NAICS code, 1141; Fish and Seafood Markets = NAICS code, 44522; Fish and Seafood Wholesalers = NAICS code, 42446.

BACKGROUND: The fishing industry contributes greatly to the economies of rural towns along the coasts of Oregon and Washington. The employment in this industry includes more than just fishers; it also includes those that process, ship, and sell fish. The fishing industry generated an estimated $421 million dollars in personal income in 2006 for Oregon. This number includes distant water fisheries and is the best in the history of the Oregon fishery (The Research Group, 2007).

FINDINGS & TRENDS:

- Employment in the fishing industry is substantially greater in Washington than in Oregon for all occupations, including fishing, seafood processing, and aquaculture.

- Employment for both Oregon and Washington in fishing-related occupations has remained fairly steady and has increased for aquaculture.

Sources:

The Research Group. *Oregon's Commercial Fishing Industry: Year 2005 and 2006 Review and Year 2007 Outlook. June 2007*. Retrieved June 28, 2008 from http://www.dfw.state.or.us/fish/commercial/commercial_fishing_report.pdf

U.S. Bureau of Labor Statistics. *Quarterly Census of Employment and Wages*. Retrieved July 8, 2008 from http://data.bls.gov/cgi-bin/dsrv?en

U.S. Census Bureau. *County Business Patterns: 3117 Seafood Product Preparation and Packaging 1998-2006*. Retrieved July 15, 2008 from http://censtats.census.gov/cbpnaic/cbpnaic.shtml

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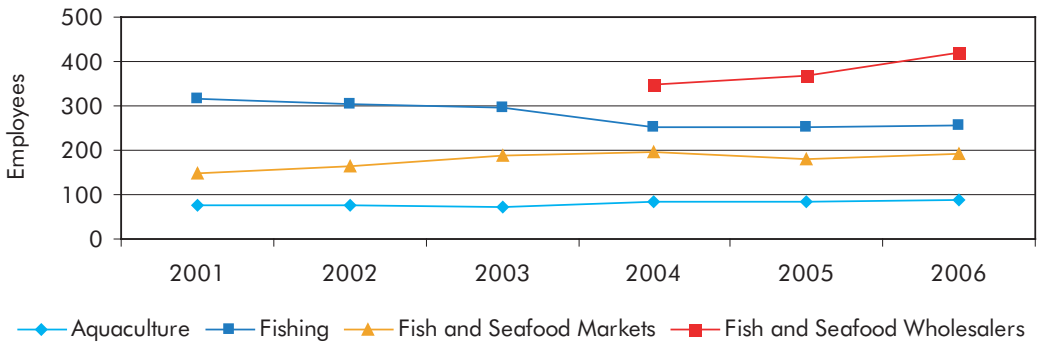
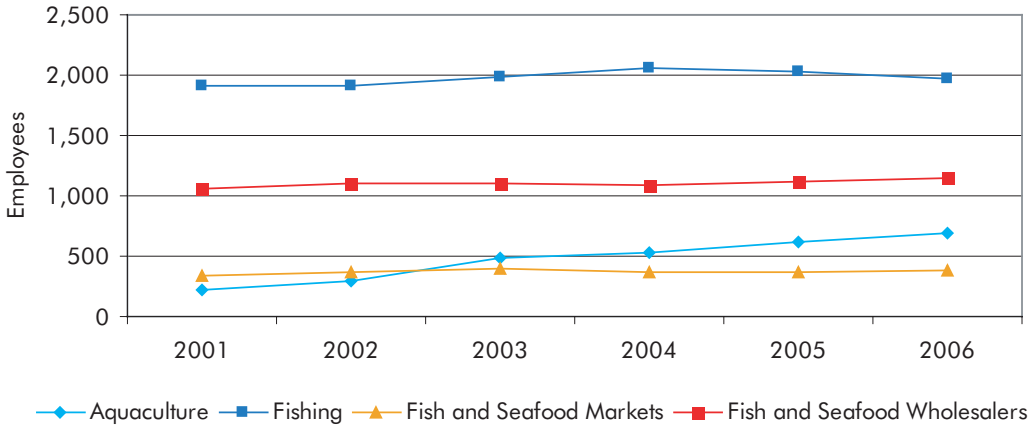
- ***Fishing Employment Data are from various sources that utilize different data collection methods. Seafood Processing Employment is derived from the U.S. Census County Business Patterns, and Fishing Related Industries Employment is from the Bureau of Labor Statistics Quarterly Census of Employment and Wages. This data source uses unemployment insurance to estimate the number of employees and establishments. Legislation in 1999 allowed most fishermen to be exempt from unemployment insurance coverage, making accurate employment data difficult to obtain for this occupation.***

Oregon Fishing Industry Employment



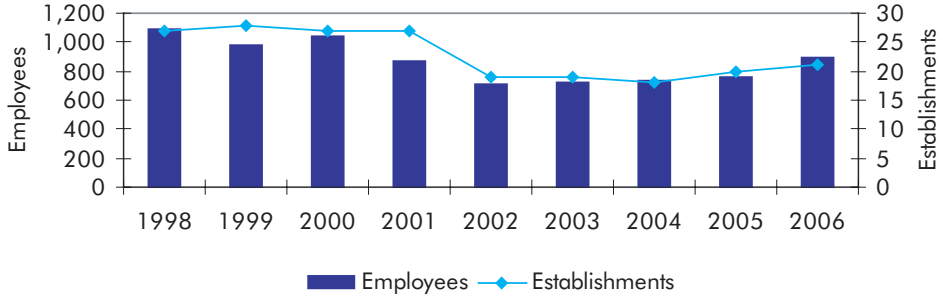
Source: Bureau of Labor Statistics

Washington Fishing Industry Employment



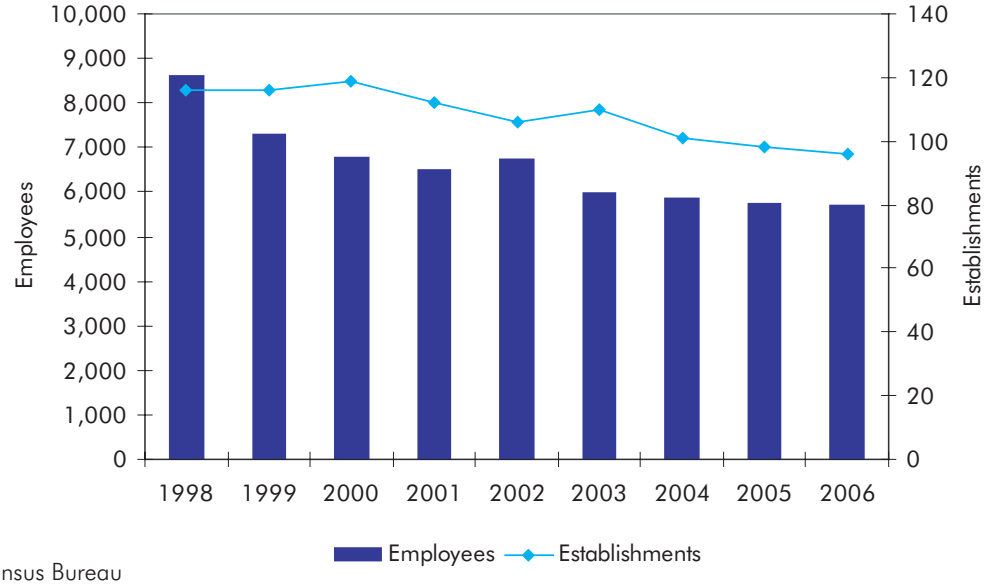
Source: Bureau of Labor Statistics

Oregon Seafood Processing Employment



Source: US Census Bureau

Washington Seafood Processing Employment



Source: US Census Bureau

INDICATOR: ENERGY PRICES

MEASURE: PRICES FOR CRUDE OIL, GASOLINE, AND DIESEL

Crude Oil Prices, all countries spot price FOB* weighted by estimated export volume, January 1998 to March 2008. Retail price for U.S. Regular Gasoline, all formulations; U.S. No. 2 Diesel, All Sellers, January 1998 to March 2008.

BACKGROUND: Recent spikes in the cost of energy have affected consumers' disposable income as well as costs in many industrial sectors. The agricultural sector uses about $9 billion worth of energy every year. Energy ranks sixth out of total production expenses for the agricultural sector at 6 percent of total expenses. Agriculture has been disproportionately affected by the recent energy price increases due to the relatively high share of energy costs. Petroleum-based fuels—primarily gasoline and diesel—comprise about 83 percent of total energy usage for farms nationwide. Running motors accounts for the most energy intensive single use of fuel in agriculture (Brown and Elliott, 2005).

FINDINGS & TRENDS:

- Although crude oil prices are volatile, prices have trended sharply upward over the past 10 years. The price of crude oil has risen from about $15 per barrel at the beginning of January, 1998, to about $98 per barrel at the beginning of March, 2008.

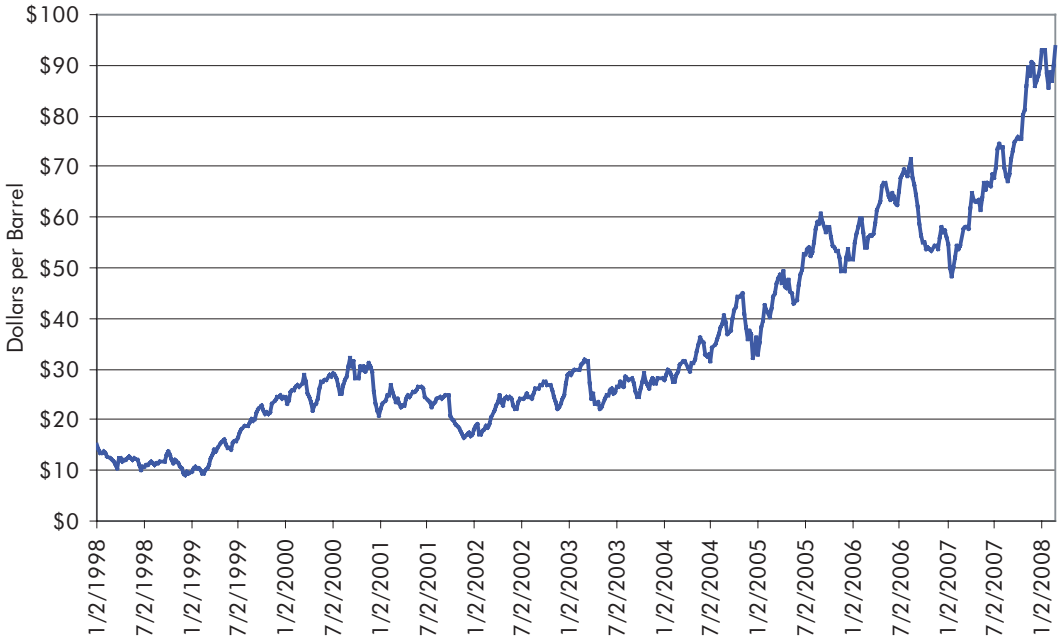
- The price of regular grade gasoline has risen from about $1.10 per gallon at the beginning of January, 1998, to about $3.23 per gallon at the beginning of March, 2008.

- The price of No. 2 Diesel fuel has risen from about $1.15 per gallon at the beginning of January, 1998, to about $3.82 at the beginning of March, 2008.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

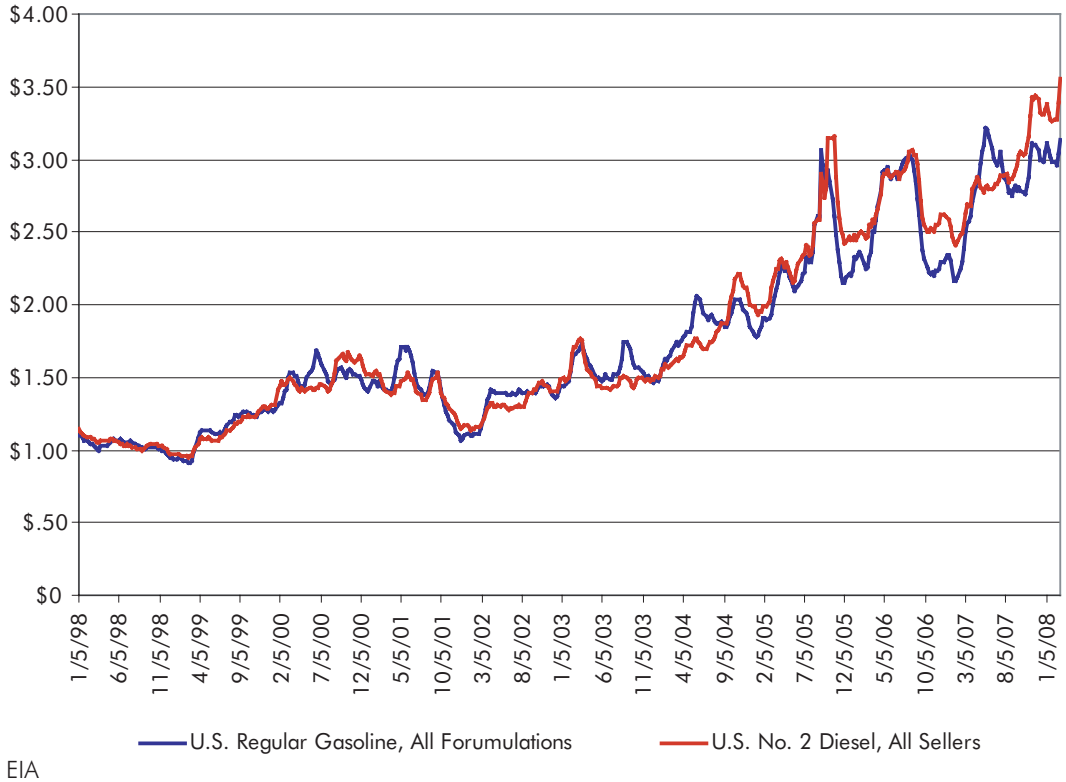
■ *FOB (Free on Board) pertains to a transaction whereby the seller makes the product available within an agreed upon period at a given port at a given price; it is the responsibility of the buyer to arrange for the transportation and insurance (2008).*

Crude Oil Prices, All Countries Spot Price FOB Weighted by Estimated Export Volume



Source: EIA

Retail Gasoline and Diesel Prices



Source: EIA

Sources:

Brown, Elizabeth, and R. Neal Elliott. 2005. On-Farm Energy Use Characterizations. American Council for an Energy–Efficient Economy, HYPERLINK "http://aceee.org" http://aceee.org

U.S. Energy Information Administration (EIA), U.S. Gasoline and Diesel Retail Prices. HYPERLINK "http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm" http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm

U.S. Energy Information Administration, World Crude Oil Prices. HYPERLINK "http://tonto.eia.doe.gov/dnav/pet/pet_pri_wco_k_w.htm" http://tonto.eia.doe.gov/dnav/pet/pet_pri_wco_k_w.htm

INDICATOR: ENERGY USE ON FARMS

MEASURE: VALUE OF PETROLEUM PRODUCTS AND ELECTRICITY PURCHASED BY FARMS

Value of petroleum products and electricity purchased by farms, 1982 to 2002; expenditures on petroleum products as a percentage of total expenditures, 1987 to 2002.

BACKGROUND: Agriculture in the United States consumes more than 2 quadrillion Btu of energy each year. Farm energy use can be direct use, such as fuel or electricity, or indirect use embedded in farming inputs, such as fertilizer, pesticides, and implements (USDA NRCS, 2006).

Agriculture is more energy intensive than many other industries. While agriculture consumes, directly and indirectly, about 2 percent of total energy consumed in the United States, agriculture accounts for less than 1 percent of US GDP (Collins, 2001).

Petroleum-based fuels—primarily gasoline and diesel—comprise about 83 percent of total direct energy usage for farms nationwide. Running motors accounts for the most energy intensive single direct use of fuel in agriculture (Brown and Elliott, 2005).

Agriculture has become much more energy efficient during the past two decades. Energy use grew during the 1960s and 1970s, peaking in 1978. High energy prices from the early 1970s through 1982 led farmers to switch to diesel-powered engines and adopt conservation tillage and other conservation practices (Collins, 2001).

FINDINGS & TRENDS:

- Oregon's farm spending on petroleum products has risen by about 94 percent, from $51 million in 1978 to $99 million in 2002.

- During the same period, Washington farms doubled their spending on petroleum products from $72 million in 1978 to $145 million in 2002.

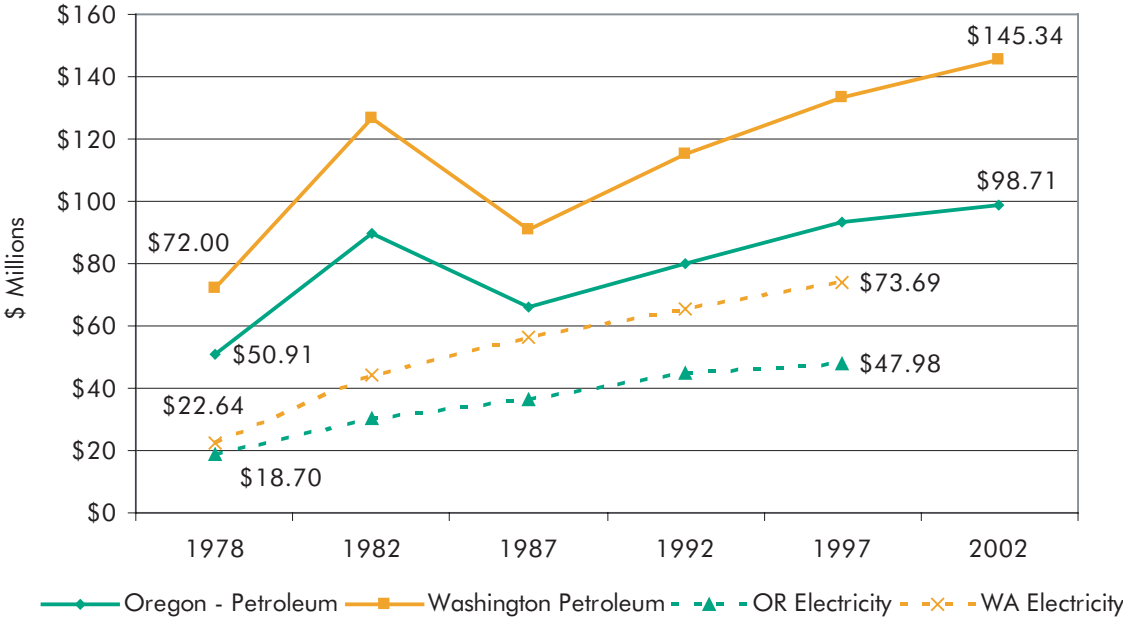
- Spending on petroleum products in both states followed that of the nation by spiking between 1978 and 1982 due to rising fuel prices, then falling in 1987. Since then, spending has risen as fuel prices continue to rise.

- Oregon farms more than doubled their spending on electricity from 1978 to 1997. Washington farms more than tripled their spending on electricity during the same period.

- Oregon and Washington farms spend less on petroleum products as a share of total spending than do the nation's farms overall.

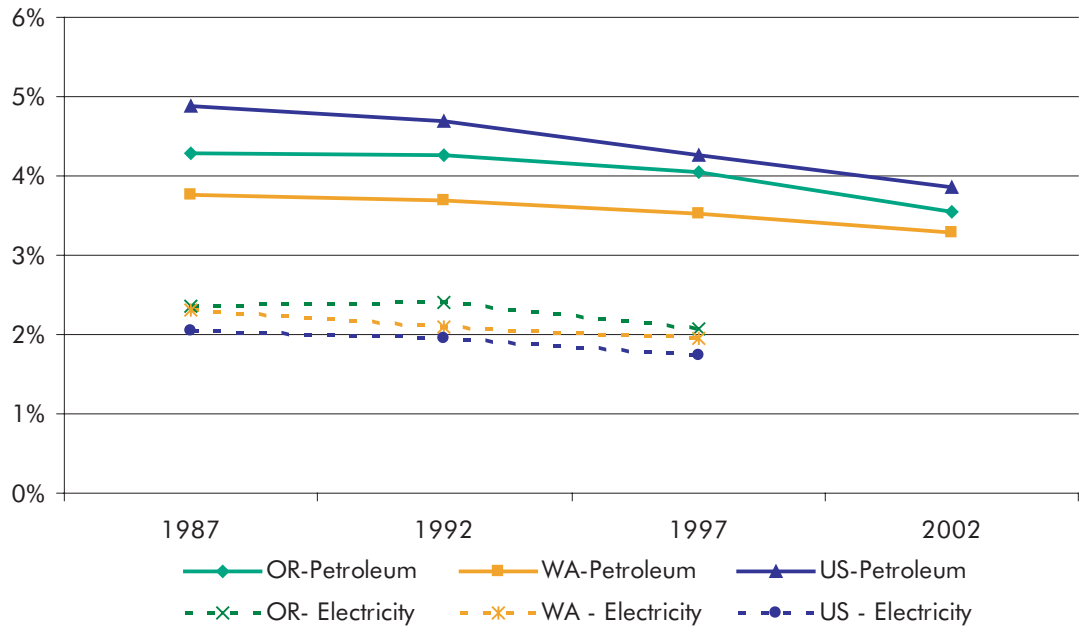
- Oregon and Washington farms spend slightly more on electricity as a share of total spending than do the nation's farms overall.

Value of Energy Purchased by Farms: Electricity and Petroleum Products



Source: USDA NASS

Energy Products as a Percentage of Total Farm Production Expenditures



Source: USDA NASS

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

- *Data for energy use are based on a sample of farms.*
- *Data for 1992 and earlier are not adjusted for coverage of farms.*
- *Electricity use was not separated out from total utilities in 2002; thus, we cannot present electricity data for that year.*
- *Total Farm Production Expenditures were not collected until 1987.*
- *Gasolines, fuels, and oils purchased include the cost of all gasoline, diesel, natural gas, LP gas, motor oil, and grease products for the farm. Excluded are fuel for personal use of automobiles by the family and others, fuel used for cooking and heating the farm house, and any other use outside of farm work on the operation.*
- *Data collection and analysis methods for the Census of Agriculture changed in 1997. NASS does not recommend comparing data from 2002 and 1997 to earlier years due to this change. For details see http://www.nass.usda.gov/census/census02/censusfaqs2.htm#1*

Sources:

Brown, Elizabeth, and R. Neal Elliott. 2005. On-Farm Energy Use Characterizations. American Council for an Energy–Efficient Economy, http://aceee.org.

Collins, Keith. 2001. Testimony before the House Committee on Agriculture, Subcommittee on Conservation, Credit, Rural Development, and Research. May 2, 2001.

United States Department of Agriculture, Natural Resources Conservation Service. February 2006. Energy Management. Conservation Resource Brief number 0608.

United States Department of Agriculture. National Agricultural Statistics Service. 2002 Census of Agriculture http://www.nass.usda.gov/census/census02/volume1/us/index2.htm.

United States Department of Agriculture, National Agricultural Statistics Service. 1992 Census of Agriculture; 1997 Census of Agriculture; 1987 Census of Agriculture (on CD Rom).

United States Department of Agriculture. National Agricultural Statistics Service. 1990. 1987 Census of Agriculture on CD Rom.

INDICATOR: DEMOGRAPHIC CHARACTERISTICS OF PRINCIPAL FARM OPERATOR

MEASURE: SEX, RACE, AND AVERAGE AGE

Sex, race, and average age of the principal farm operator for farms in Oregon and Washington for selected years.

BACKGROUND: As much as half of Oregon farmland will change hands in the next 10-15 years and it is unclear whether there will be sufficient talent for operating farms. Many factors will influence the transition, including inheritance tax laws, environmental pressures, land prices, commodity prices, education and training programs throughout the education system, financing availability, and public attitudes about farming. Policy makers will need to consider whether they can, or should, provide any incentives, programs, or structures that encourage farming as a profession (Oregon Department of Agriculture, 2007).

FINDINGS & TRENDS:

■ The principle operators of farms are still overwhelmingly male, but there has been a 125 percent increase of female operators since 1987 for Oregon and an 89 percent increase for Washington. The number of male principal operators has increased only 14 percent for Oregon and has slightly decreased for Washington since 1987.

■ The average age of a farmer continues to climb for Oregon, Washington, and the United States. Nationally, it has been above 50 years of age since at least 1974 and has increased each year since 1978, according to the Census of Agriculture. Additionally, the number of farmers under the age of 35 has been declining since 1985, when it was 16 percent. In 2002, it was 5.8 percent (Oregon Department of Agriculture, 2007).

■ The percentage of farms principally operated by farmers of Hispanic or Latino origin has nearly tripled in both Oregon and Washington since 1987, but still only makes up roughly 3 percent of total farms for those states.

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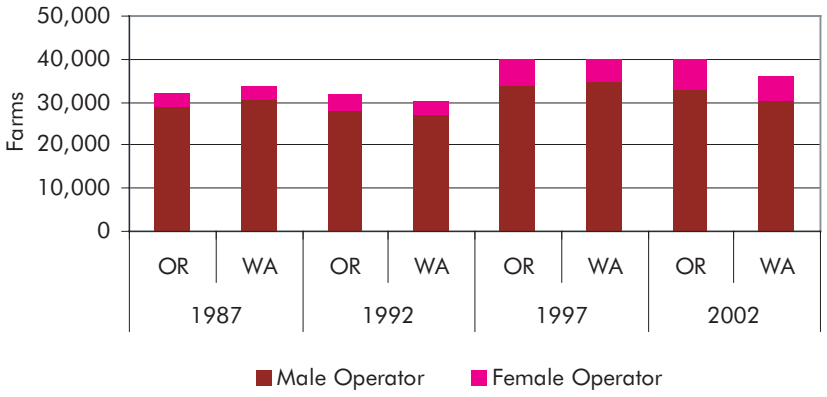
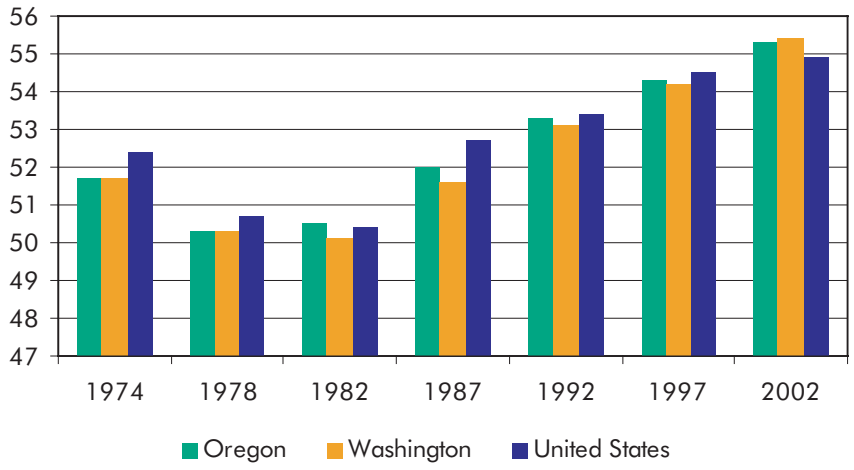
■*Data collection and analysis methods for the Census of Agriculture changed in 1997. NASS does not recommend comparing data from 2002 and 1997 to earlier years due to this change. For details see:http://www.nass.usda.gov/census/census02/censusfaqs2.htm#1*

Sex of Principal Farm Operator



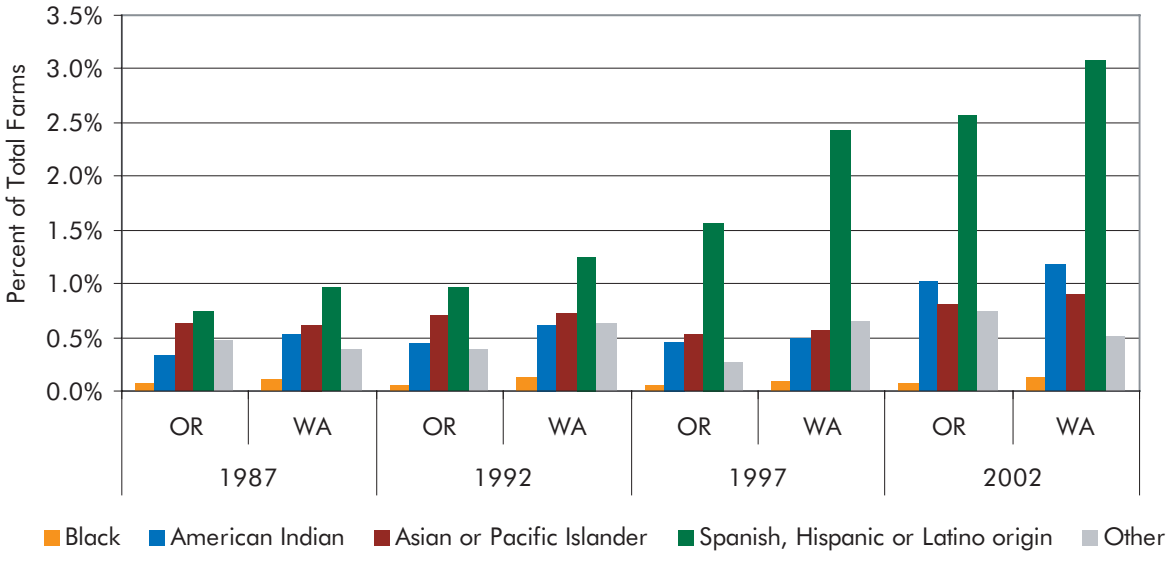
Source: USDA Census of Agriculture

Average Age of Principal Farm Operator



Source: USDA Census of Agriculture

Minority Status of Principal Farm Operators



Note: Operators of Spanish, Hispanic, or Latino origin are found in all of the racial groups listed in the census and were tabulated according to the race reported, as well as on table pertaining only to this group (USDA, 2002).

Source: USDA Census of Agriculture

Sources:

Allen, Rich, and Ginger Harris (February 25, 2005). *USDA National Agricultural Statistics Service: What we know about the Demographics of US Farm Operators.* Retrieved March 8, 2008 from http://www.nass.usda.gov/census/census02/otheranalysis/demographicpaper022505.htm

Oregon Department of Agriculture (updated May 14, 2007). SOA: *Aging Farm Population.* Retrieved March 12, 2008 from http://www.oregon.gov/ODA/bd_rpt_age.shtml

USDA Census of Agriculture (updated August 1, 2007). *Table 1: Historical Highlights: 2002 and Earlier Census Years.* Retrieved March 5, 2008 from http://www.agcensus.usda.gov/Publications/2002/index.asp

USDA Census of Agriculture (updated August 1, 2007). *Table 17: Selected Characteristics of Farms by Specified Racial Groups, Sex of Operators, and Persons of Spanish Origin: 1992 and 1987.* Retrieved March 5, 2008 from http://www.agcensus.usda.gov/Publications/2002/index.asp

USDA Census of Agriculture (updated August 1, 2007). *Table 47: Selected Farm Characteristics by Race of Principal Operator: 2002.* Retrieved March 5, 2008 from http://www.agcensus.usda.gov/Publications/2002/index.asp

USDA Census of Agriculture (updated August 1, 2007). *Table 48: Women Principal Operators: Selected Farm Characteristics: 2002 and 1997.* Retrieved March 5, 2008 from http://www.agcensus.usda.gov/Publications/2002/index.asp

USDA Census of Agriculture (updated August 1, 2007). *Table 49: Spanish, Hispanic, or Latino Origin Principal Operators: Selected Farm Characteristics: 2002 and 1997.* Retrieved March 5, 2008 from http://www.agcensus.usda.gov/Publications/2002/index.asp

USDA Census of Agriculture (updated August 1, 2007). *Appendix A: General Explanation.* Retrieved March 5, 2008 from http://www.agcensus.usda.gov/Publications/2002/index.asp

INDICATOR: FARM EMPLOYMENT

MEASURE: FARM EMPLOYMENT, OREGON AND WASHINGTON

Farm employment in Oregon and Washington, 1969 to 2005. Farm employment is the number of workers engaged in the direct production of agricultural commodities, either livestock or crops, whether as a sole proprietor, partner, or hired laborer, as reported by the Bureau of Economic Analysis.

BACKGROUND: Farm employment is affected by a variety of economic factors, including technological change, industry structure, and international trade. Nationwide, farm employment has experienced a long-term decline. Almost 4 million people were employed in agriculture in the U.S. in 1969; by 2005, farm employment had fallen to 2.9 million. A recent report by the Oregon Department of Agriculture estimates that at least two-thirds of crop production increases worldwide are due to improved farm practices. These practices include, most recently, the adoption of GIS/GPS-adapted equipment, biotechnology, mechanization of planting and harvesting, computer-controlled machinery, and other applications of technology to agriculture (Oregon DOA, 2007, p. 23).

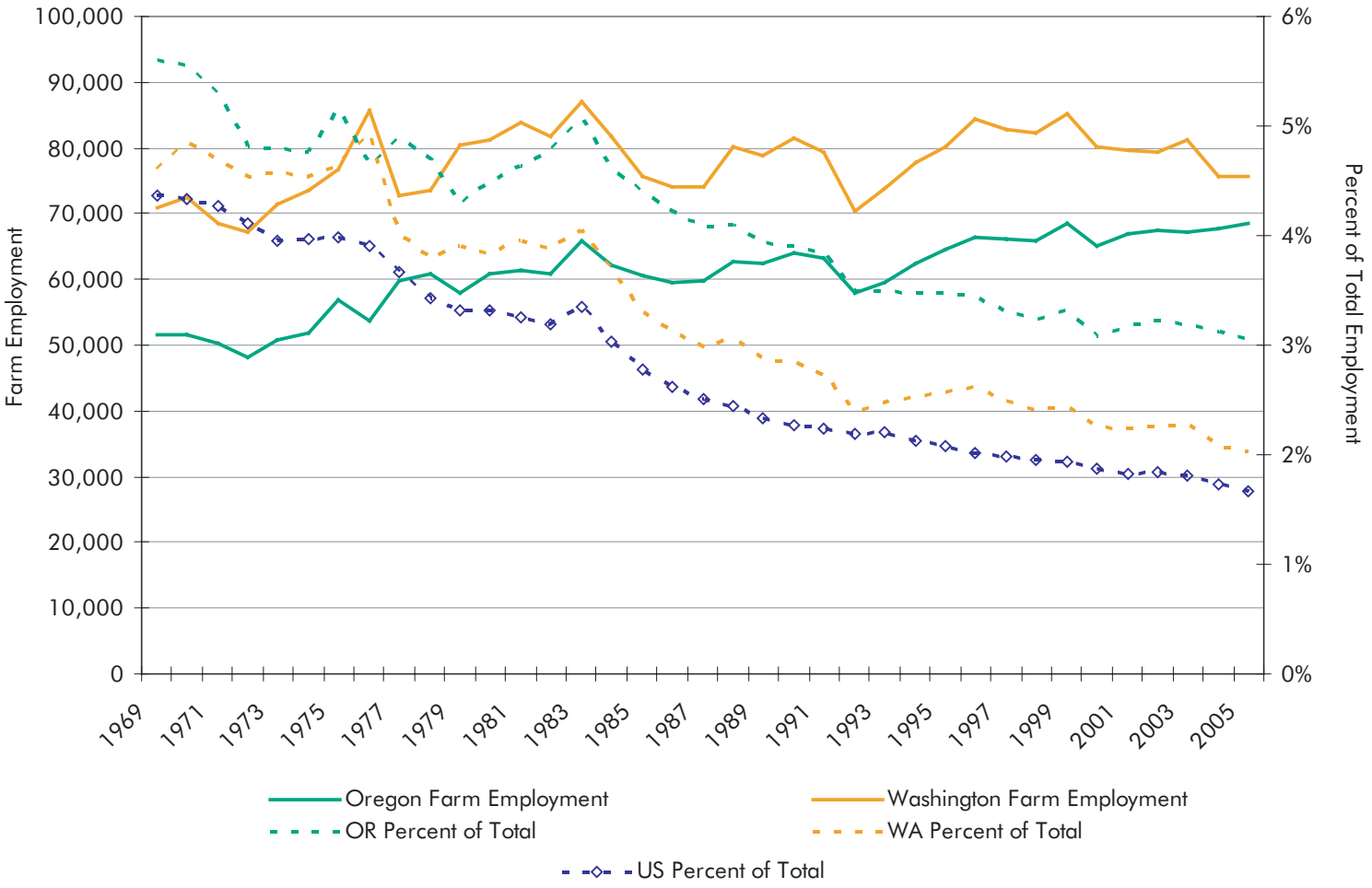
FINDINGS & TRENDS:

- Oregon's farm employment has risen from 51,521 in 1969 to 68,467 in 2005; however, during the same period, farm employment as a share of total employment fell from 5.6 percent to 3.1 percent.

- Washington State's farm employment has risen from 70,892 in 1969 to 75,697 in 2005; however, during the same period, farm employment as a share of total employment fell from 4.6 percent to 2 percent in 2005.

- Nationwide, farm employment as a percentage of total employment fell from 4.4 percent in 1969 to 1.7 percent in 2005. Farm employment comprises a larger share of total employment in both Oregon and Washington State than in the nation as a whole.

Farm Employment, 1969 to 2005



Source: ODA; US BEA

Sources:

Oregon Department of Agriculture, 2007. *The State of Oregon Agriculture*. January.

U.S. Bureau of Economic Analysis. Regional Economic Accounts, Table CA25. http://www.bea.gov/regional/reis/

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *The estimates of employment for 1969–74 are based on 1967 Standard Industrial Classification (SIC). The estimates for 1975–87 are based on the 1972 SIC. The estimates for 1988–2000 are based on the 1987 SIC. However, the change from NAICS to SIC system had no impact on estimates of farm employment.*

INDICATOR: FARM AND FARM-RELATED EMPLOYMENT

MEASURE: EMPLOYMENT IN FARM AND FARM-RELATED INDUSTRIES

Employment in farm and farm related industries, in Oregon and Washington, 1981 to 2002. Estimates of farm and farm-related employment are derived by the USDA's Economic Research Service by combining farm employment data from the Bureau of Economic Analysis with an enhanced file of the Census Bureau's County Business Patterns.

BACKGROUND: The Economic Research Service defines farm-related industries as those with 50 percent or more of their national workforce employed in providing goods and services necessary to satisfy the final demand for agricultural products. ERS classifies employment as farm employment (farm proprietors and farm wage and salary employment); farm related employment (agricultural processing and marketing); agricultural inputs; and agricultural services; and peripherally farm-related employment (agricultural wholesale and retail trade, and indirect agribusiness). Note that the USDA includes industries related to non-food agricultural products, such as leather products, textiles, and tobacco. Nationwide, farming and its related industries provided about 14.3 percent of total U.S. employment in 2002, while Oregon's agricultural industries provided 16.6 percent of total employment and Washington's provided 14.7 percent of total employment in 2002.

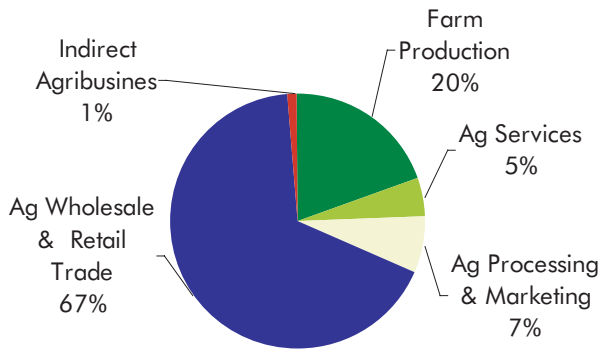
FINDINGS & TRENDS:

- Agricultural wholesale and retail trade provide the largest share —about 2/3— of agriculture related employment in both Oregon and Washington.

- Farm production comprises a greater percentage of total agriculture related employment in Oregon than it does in Washington. While Oregon's farm production employment is 20 percent of the total agriculture related employment, Washington farm production employment comprises only 16 percent of total agriculture related employment.

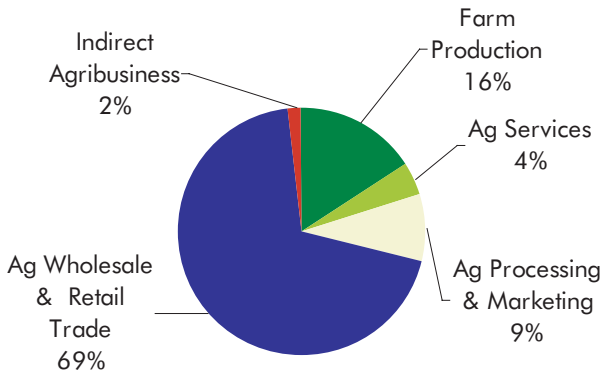
- While employment in farming and closely-related industries has stayed fairly constant since 1981 in both Oregon and Washington, peripherally-related employment has grown at a fairly rapid rate.

Oregon Agriculture Related Employment, 2002



Source: USDA ERS

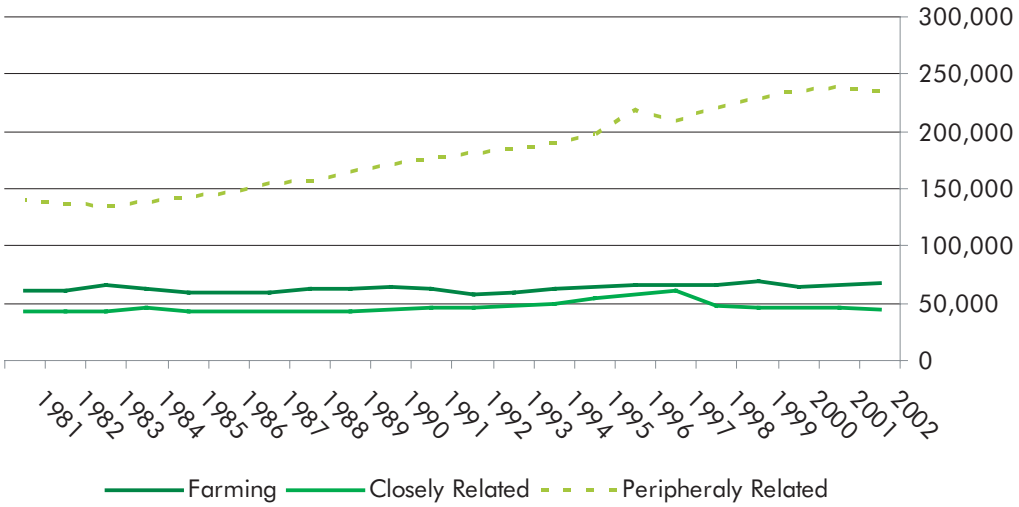
Washington Agriculture Related Employment, 2002



Source: USDA ERS

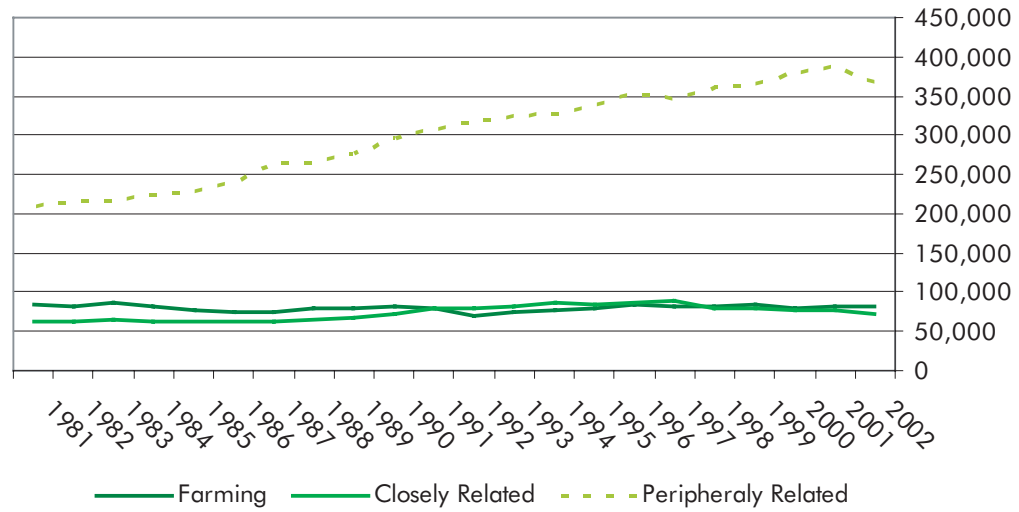
Sources:
U.S. Department of Agriculture, Economic Research Service. *Farm and Farm-Related Employment.* http://www.ers.usda.gov/Data/FarmandRelatedEmployment/ (Retrieved March 24, 2008)

Oregon Farm and Farm Related Employment



Source: USDA ERS

Washington Farm and Farm Related Employment



Source: USDA ERS

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *For the years 1998-2002, farm and farm-related employment data are aggregated by industry as defined by the North American Industry Classification System (NAICS). The NAICS replaces the Standard Industrial Classification (SIC), which was used to estimate farm and farm-related employment during 1981-97. In an attempt to maintain consistency in farm-related employment estimates between data sets, NAICS industries were matched with SIC industries used previously. Also, jobs classified by NAICS were placed in their comparable SIC industry groups.*

■ *The NAICS provides more detailed industry data than do previous SIC models, but in doing so has slightly changed the estimates of farm-related employment. Some NAICS industries contain more components, and thus more jobs, than were included in past SIC-based estimates, while others contain only a portion of the SIC industry previously used. These changes in industrial composition caused some farm-related employment estimates to vary by more than their annual change between 1997 and 1998. Therefore, a direct comparison of current NAICS-based and previous SIC-based employment estimates is not possible.*

■ *A list of industry groups and components based on the Standard Industrial Classification System (1981-97) and on the North American Industry Classification System (1998-2002) are available on the ERS website.*

INDICATOR: FARM WORKER WAGES

MEASURE: HOURLY MEDIAN WAGES FOR FARMWORKERS

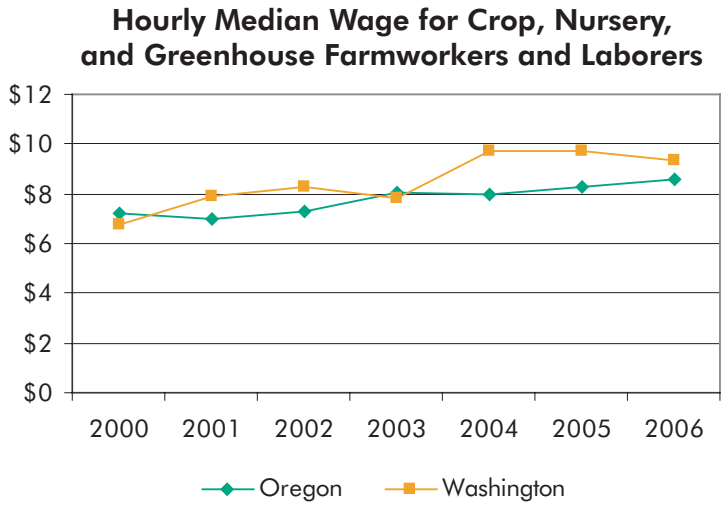
Using data from the United States Department of Labor, Bureau of Labor Statistics, occupational employment statistics are available for Oregon and Washington from 2000 through 2006. The Occupational Employment Statistics program produces employment and wage estimates for over 800 occupations. These data include estimates of the number of people employed in certain occupations, and estimates of the wages paid to them. Self-employed persons are not included in the estimates (BLS, 2008).

BACKGROUND: Hired farmworkers make up less than 1 percent of all U.S. wage and salary workers, but they make a major contribution to agriculture by providing labor during critical production periods. Yet, hired farmworkers continue to be one of the most economically disadvantaged groups in the United States. Hired farm workers are employed in both metro and nonmetro areas (USDA, 2008).

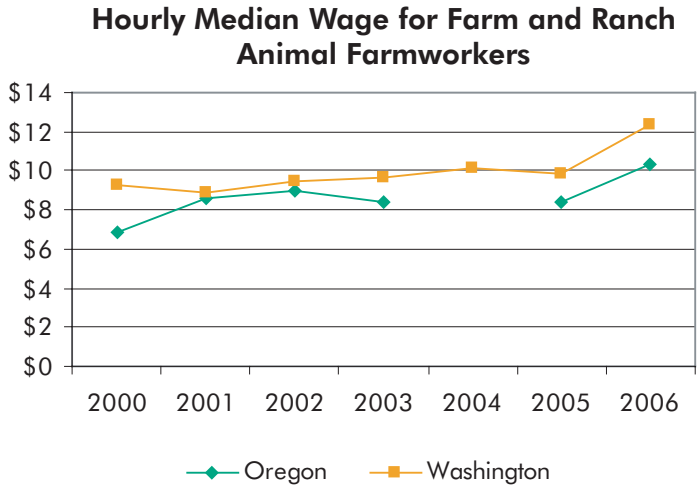
FINDINGS & TRENDS:

- The low hourly median wage for crop, nursery, and greenhouse farmworkers and laborers for Oregon was $7.02 in 2001 with a high of $8.56 in 2006. Washington had a low of $6.73 in 2000 and a high of $9.75 in 2005.

- The low hourly median wage for farm and ranch animal farmworkers for Oregon was $6.83 in 2000, and the high median wage was $10.30 in 2006. Washington had a low of $8.91 in 2001 and a high of $12.34 in 2006.



Source: US BLS



Note: Farm and Ranch Animal Farmworker data for 2004 are not available.
Source: US BLS

Sources:

United States Department of Agriculture, Economic Research Service (retrieved March 2008). http://www.ers.usda.gov/Briefing/LaborAndEducation/farmlabor.htm

United States Department of Labor, Bureau of Labor Statistics. Occupational Employment Statistics (retrieved March 2008). http://www.bls.gov/oes/home.htm

United States Department of Labor, Bureau of Labor Statistics. Occupational Employment and Wage Estimates (retrieved March 2008). http://www.bls.gov/oes/oes_dl.htm

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INDICATOR: AGRICULTURE-RELATED DEGREES

MEASURE: NUMBER OF AGRICULTURE-RELATED DEGREES AWARDED

Integrated Postsecondary Education Data System (IPEDS) is the core postsecondary education data collection program for National Center for Education Statistics (NCES). Data are collected from all primary providers of postsecondary education in the country in areas including enrollments, program completions, graduation rates, faculty, staff, finances, institutional prices, and student financial aid. The IPEDS website makes these data available to students, researchers, and others.

The 2000 CIP code classification includes agriculture, agriculture operations, and related sciences awards/degrees conferred by program based on first majors for associate, bachelor, master, and doctoral degrees. The most recent data for Oregon and Washington are for the 2002-2003 through 2005-2006 academic years.

BACKGROUND: According to the USDA, the average age of farm operators has been greater than 50 since at least the 1974 Census of Agriculture. While the share of farmers younger than 35 declined from 15 percent in 1954 to 8 percent in 1997, the future of farming in America depends on continued entry by new farm operators. Approximately one-quarter of farmers and U.S. householders graduate from college with a 4-year degree or more. However, formal educational attainment contributes to a farmer's ability to adapt to the changing agricultural marketplace and to adopt new farm techniques (USDA ERS, 2008).

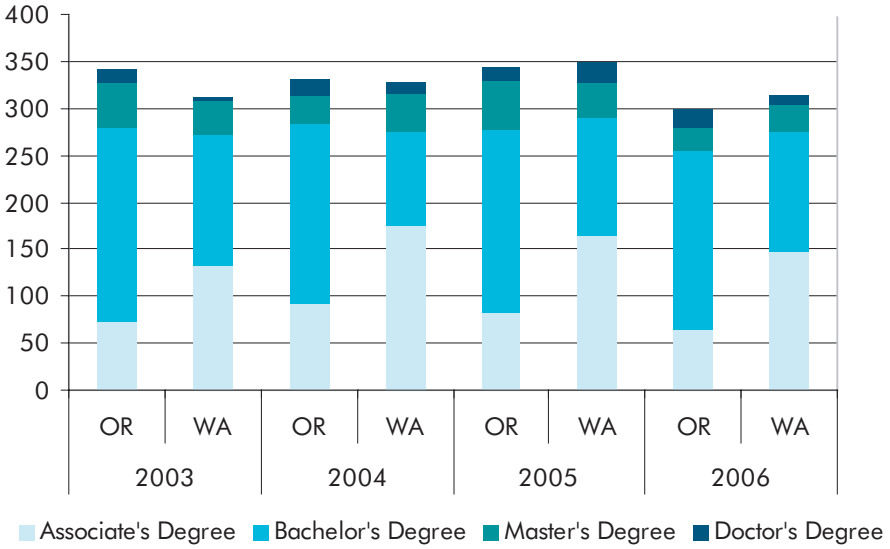
FINDINGS & TRENDS:

- Between 2003 and 2006, Oregon awarded a total of 973 agriculture-related degrees, and Washington awarded a total of 1,303.

- Washington awarded almost twice as many associate's degrees in agriculture than Oregon in 2003 through 2006. Oregon awarded over two-thirds more bachelor's, master's and doctoral degrees.

- Between 2003 to 2006, Oregon State University, Linn-Benton Community College, and Clackamas Community College awarded the most agriculture-related degrees in Oregon. In Washington, Washington State University, Walla Walla Community College, and Spokane Community College awarded the most agriculture-related degrees over the same four-year period.

Agricultural Degrees Awarded by Type



Source: National Center for Educational Statistics

Sources:

National Center for Education Statistics, Integrated Postsecondary Education Data System (retrieved March 2008). http://nces.ed.gov/ipeds/

United States Department of Agriculture, Economic Research Service. "Farm Household Economics and Well-Being: Demographics and Labor Allocations" (retrieved March 2008). http://www.ers.usda.gov/Briefing/WellBeing/demographics.htm

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INDICATOR: FARMS BY ORGANIZATION TYPE

MEASURE: PERCENT OF TOTAL FARM ACREAGE AND SALES BY TYPE OF ORGANIZATION

Percent of Total Farm Acreage and Sales by Type of Organization for Oregon, Washington, and the United States for 1992, 1997, and 2002.

BACKGROUND: "Most U.S. farms—including million-dollar farms—are family farms. The share of farm output from large, publicly held corporations remains minimal. Generally, large and very large family farms are viable economic businesses, with favorable financial ratios. Small farm businesses are less viable as businesses, but the households operating them receive substantial off-farm income. Different farm policies affect different sets of farmers. Payments from commodity programs tend to flow to medium-sales and large-scale farms, and conservation payments tend to flow to smaller family farms. A majority of farms, however, receive no government payments, but they may be indirectly affected by the effects of government payments on farmland and commodity markets" (USDA ERS, 2007).

FINDINGS & TRENDS:

■ Farms owned by individuals or families accounted for 88 percent of total farms in Oregon, 85 percent of total farms in Washington, and 90 percent of total farms in the U.S. in 2002.

■ Farms owned by individuals or families controlled the majority of farm land, accounting for 54 percent of total farm acreage in Oregon and 46 percent of total farm acreage in Washington in 2002.

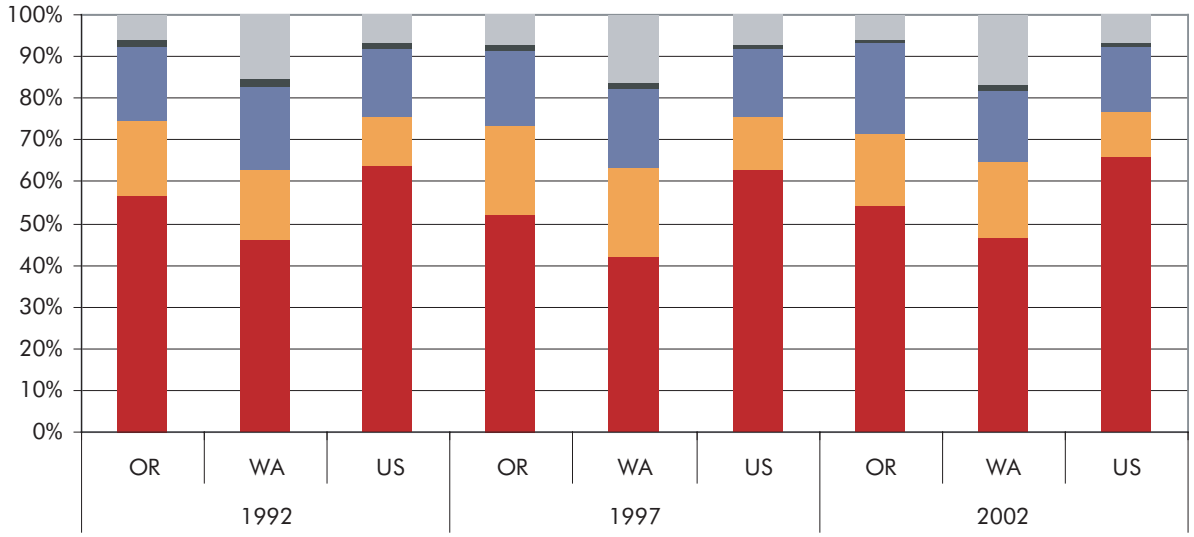
■ Farms owned by individuals or families accounted for 36 percent of total farm sales in Oregon and 41 percent of total farm sales in Washington in 2002.

■ Farms owned by individuals or families are the most common type. However, their percent of total farm sales and total acreage in Oregon and Washington are lower than the national figures, where family farms accounted for 66 percent of total farm acreage and 52 percent of total farm sales in 2002.

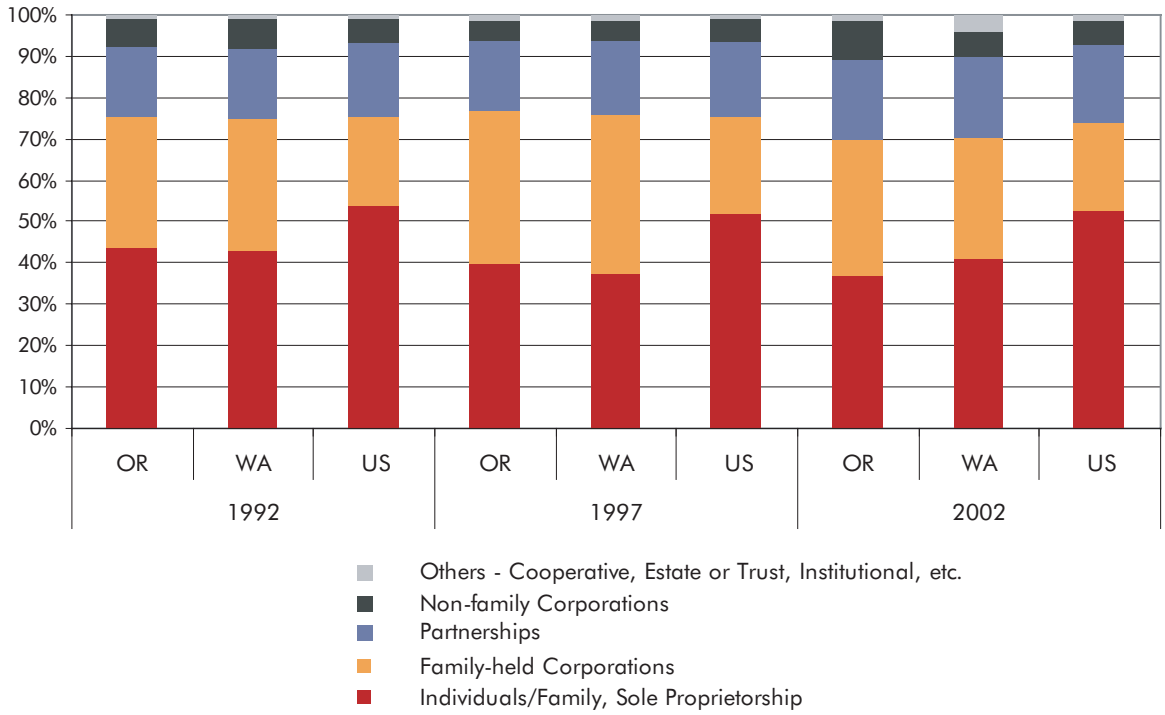
Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■*Data collection and analysis methods for the Census of Agriculture changed in 1997. NASS does not recommend comparing data from 2002 and 1997 to earlier years due to this change. For details see:http://www.nass.usda.gov/census/census02/censusfaqs2.htm#1*

Percent of Total Farm Acreage by Type of Organization



Percent of Total Farm Sales by Type of Organization



Source: USDA

Sources:

USDA Census of Agriculture: 1992, 1997. Table 47: Summary by Type of Organization. http://www.nass.usda.gov/census/index1997.htm

USDA Census of Agriculture: 2002. Table 58: Summary by Type of Organization. http://www.nass.usda.gov/census/census02/volume1/

USDA Economic Research Service (2007). Structure and Finances of U.S. Farms: Family Farm Report, 2007 Edition: Conclusions. http://www.ers.usda.gov/publications/eib24/eib24i.pdf

INDICATOR: INDUSTRY CONCENTRATION IN FARMING

MEASURE: FEWEST NUMBER OF FARMS AS PERCENTAGE OF TOTAL FARMS FOR SAID PERCENTAGE OF SALES

The fewest number of farms as a percentage of total farms accounting for said percentage of sales (10 percent, 25 percent, 50 percent, 75 percent, 100 percent) of agricultural products for Oregon, Washington, and the United States as defined by the 2002 USDA Census of Agriculture.

BACKGROUND: Economists use several different kinds of measurements to indicate the market concentration of an industry. Market concentration and other market structure factors are important because they determine the competitiveness of an industry and thus the relative market power of industry suppliers. Market concentration is affected by the number of producers in an industry and their size distribution. Market power depends not only on market concentration, but also on product differentiation, vertical coordination, and the countervailing market power that can be exercised by consumers in some kinds of markets.

A growing concentration of farm product markets implies that the food system is more dependent on fewer farms. This concentration could reduce the food production system's ability to respond to supply interruptions. Growth in the size of farms over time has generally been attributed to increases in the economies of scale in farming driven by technological change.

The graphs below show concentration using a Lorenz curve, which compares the current concentration of the market to a 45 degree angle, which represents a market with evenly distributed sales.

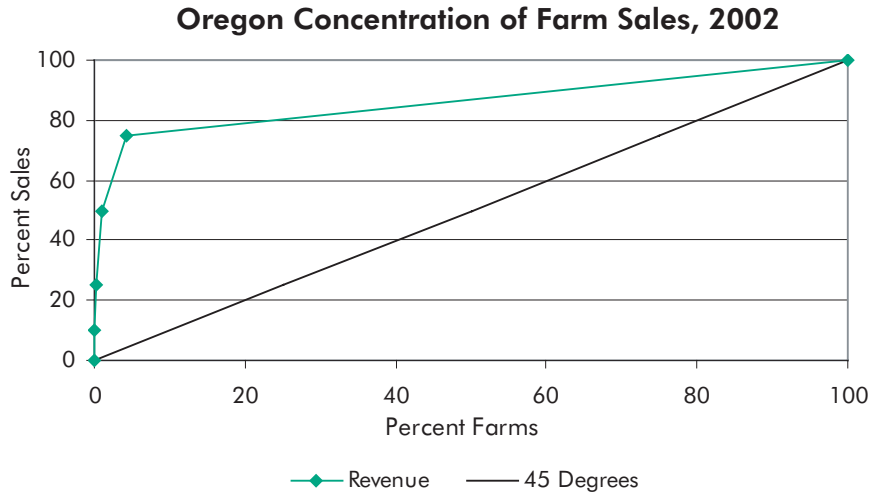
FINDINGS & TRENDS:

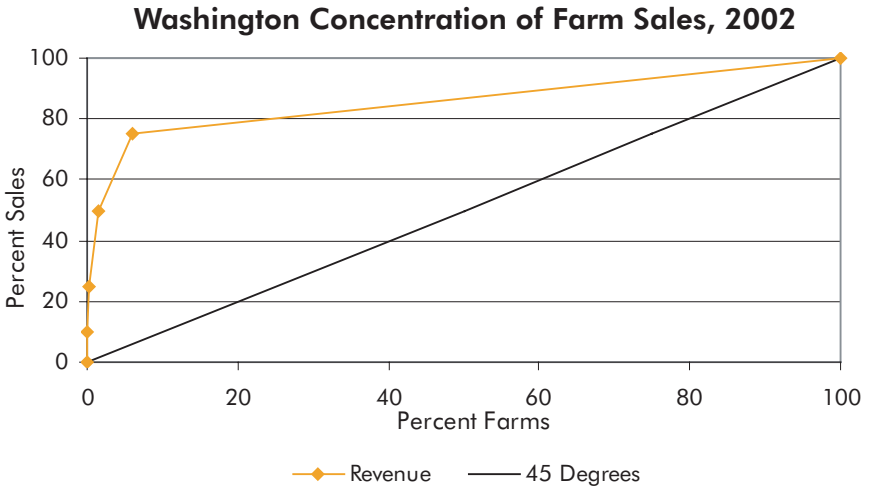
■ 4.35 percent of the farms in Oregon and 5.92 percent of the farms in Washington accounted for 75 percent of the total agricultural sales in those states in 2002.

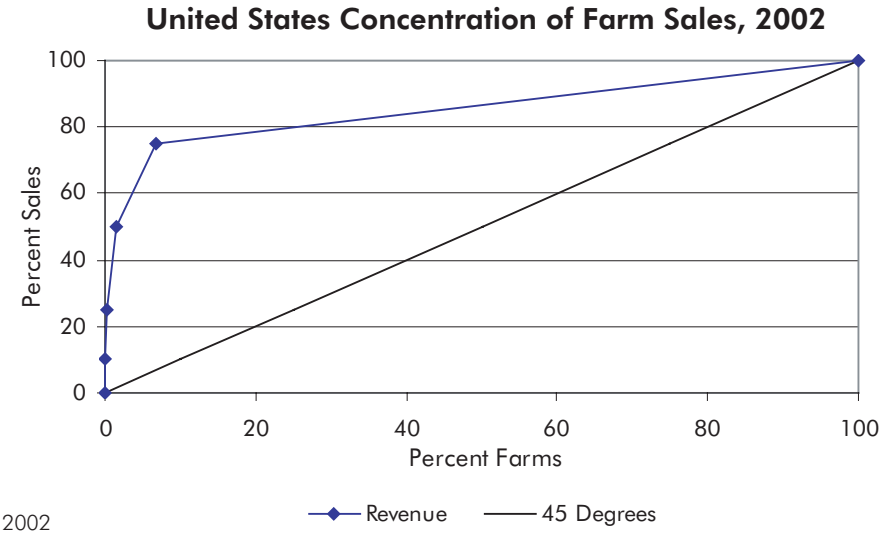
■ These concentrations resemble those of the U.S., where 6.74 percent of farms accounted for 75 percent of total agricultural sales in 2002.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■*Data collection and analysis methods for the Census of Agriculture changed in 1997. NASS does not recommend comparing data from 2002 and 1997 to earlier years due to this change. For details see:http://www.nass.usda.gov/census/census02/censusfaqs2.htm#1*







Source: USDA NASS, 2002

Sources:

United States Department of Agriculture National Agricultural Statistics Service: 2002 Census of Agriculture. Table 41: Farms by Concentration of Market Value of Agricultural Products Sold: Oregon, Washington, United States. (Retrieved August 2007).

http://www.nass.usda.gov/census/census02/volume1/

INDICATOR: NUMBER OF FOOD DISTRIBUTORS

MEASURE: NUMBER OF ESTABLISHMENTS IN FOOD WHOLESALING, WAREHOUSING, AND STORAGE

Number of establishments classified as grocery and related products merchant wholesalers (NAICS 4244); farm product and raw material wholesalers (NAICS 4245); refrigerated warehousing and storage (NAICS 49312); and farm product warehousing and storage (49313).

Data are from the County Business Patterns, an annual series from the U.S. Census Bureau that provides subnational economic data by industry. County Business Patterns exclude data on self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees. The County Business Patterns program has based its tabulations on the North American Industry Classification System (NAICS) since 1998. Data for 1997 and earlier years are based on the Standard Industrial Classification (SIC) System.

BACKGROUND: Storage facilities and wholesalers provide a vital link between farms, food processors, and consumers. Grocery and Related Products Merchant Wholesalers (NAICS 4244) include wholesalers of general line groceries, packaged frozen foods, dairy products, poultry products, confectionery products, fish and seafood, meat products, fruit and vegetables, and other grocery products. Farm Product and Raw Material Wholesalers include wholesalers of grain and field beans , livestock, and other farm product raw materials. Refrigerated Warehousing and Storage industry (49312) comprises establishments primarily engaged in operating refrigerated warehousing and storage facilities. Establishments primarily engaged in the storage or trade of furs are included in this industry. The services provided by these establishments include blast freezing, tempering, and modified atmosphere storage services. Farm Product Warehousing and Storage (493130) includes establishments primarily engaged in operating bulk farm product warehousing and storage facilities (except refrigerated). Grain elevators primarily engaged in storage are included in this industry. An establishment is defined as an individual location. A single company may own and operate many establishments.

FINDINGS & TRENDS:

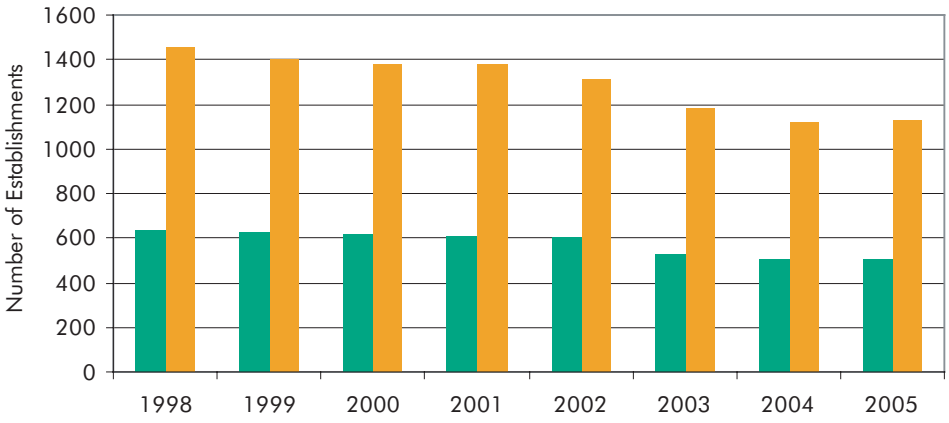
- Washington had more than twice as many food product wholesalers and storage facilities as did Oregon in 2005.

- About 45 percent of Oregon's wholesalers and 50 percent of Washington's wholesalers had four or fewer employees in 2005.

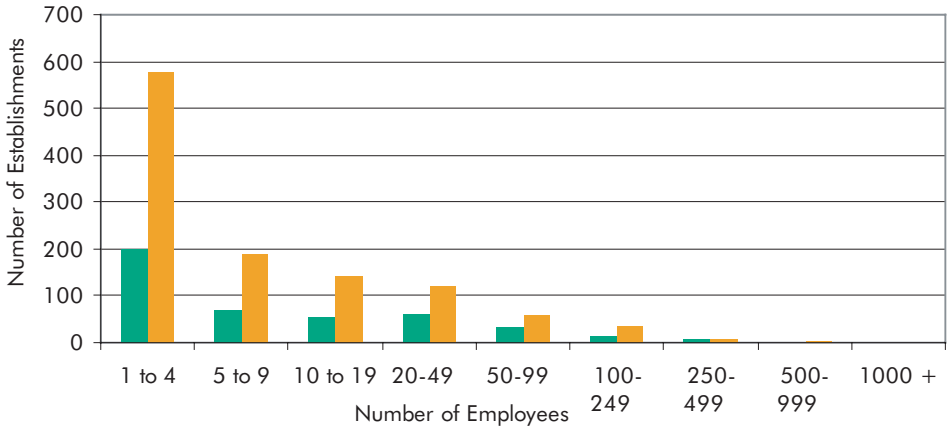
- The number of wholesalers has fallen in both states. In 1998, Oregon had 634 wholesalers and Washington had 1,453. In 2005, Oregon had 504 and Washington had 1,129.

- The number of storage establishments remained fairly steady from 1998 to 2005.

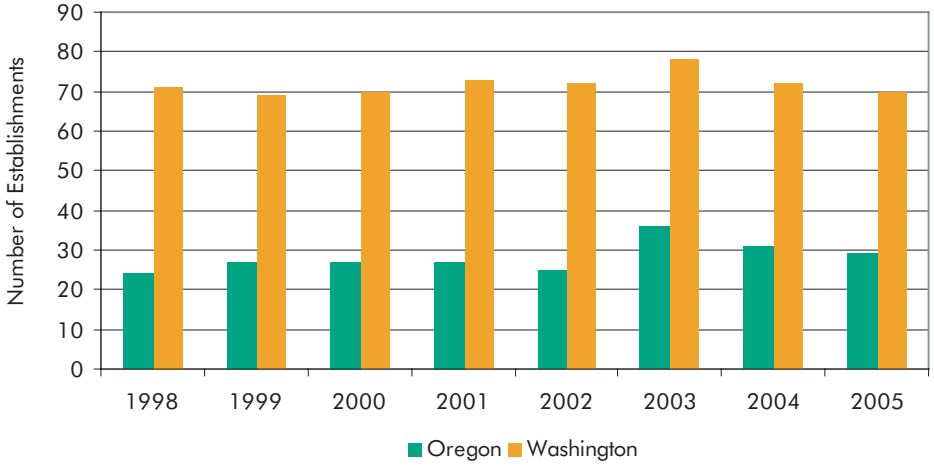
Grocery & Farm Product Wholesalers, 1998 to 2005



Grocery & Farm Product Wholesale Establishments by Size 2005



Refrigerated Warehousing & Farm Product Storage Establishments 1998 to 2005



Source: County Business Patterns

Sources:

United States Census Bureau. 2002 NAICS Definitions. (Retrieved March 27, 2008). http://www.census.gov/epcd/naics02/def/

United State Census Bureau. County Business Patterns. (Retrieved March 26, 2008).

http://www.census.gov/epcd/cbp/view/cbpview.html

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

- *County Business Patterns data does not include data on self-employed individuals.*
- *The NAICS classification for Grocery and Related Products Merchant Wholesalers changed from the 1997 classification (4224) to the 2002 classification (4244). However, this change had very little impact on the data as the classification of sub-industries was consistent between the two years.*
- *The NAICS classification for Farm Product and Raw Material Wholesalers changed from 4224 in 1997 to 4245 in 2002. Again, this change had very little impact on the data because the subclassifications contained in them remained consistent. For more information on the conversion, see:http://www.census.gov/epcd/naics02/N02N9742.HTM*

INDICATOR: NUMBER OF FOOD PROCESSORS

MEASURE: NUMBER OF FOOD PROCESSORS

Number of food manufacturing establishments by size, 2005; number of food manufacturing establishments, 1998 to 2005.

Data are from the County Business Patterns, an annual series from the U.S. Census Bureau that provides subnational economic data by industry. County Business Patterns exclude data on self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees. The County Business Patterns program has based tabulations on the North American Industry Classification System (NAICS) since 1998. Data for 1997 and earlier years are based on the Standard Industrial Classification (SIC) System.

BACKGROUND: The Census Bureau defines the food manufacturing industry as those industries that "transform livestock and agricultural products into products for intermediate or final consumption" (U.S. Census Bureau, 2007). An establishment is defined as an individual processing plant. Nationwide, there were 25,785 food manufacturing plants in 2005. In that year, food processing and beverage processing accounted for 13 percent of the value of shipments from all U.S. manufacturing plants and accounted for about 1 percent of all U.S. employment (ERS, 2007).

The food industry has experienced a great deal of consolidation and structural change over the past few decades. These changes can have important impacts on communities. Local food processing industries not only provide jobs, but also offer a market for locally grown farm products. Thus, the disappearance of a local processing plant can leave many workers without jobs and can also leave farmers without a marketable crop. For example, the closing of the Seneca asparagus processing plant in Dayton, Washington in June of 2005 was a major market loss for asparagus growers in the region, which marketed at least half of their product for the processed market (Milkovich, 2005).

Major structural changes in the U.S. Food Manufacturing industries have been driven largely by technological change (Ollinger et al., 2005).

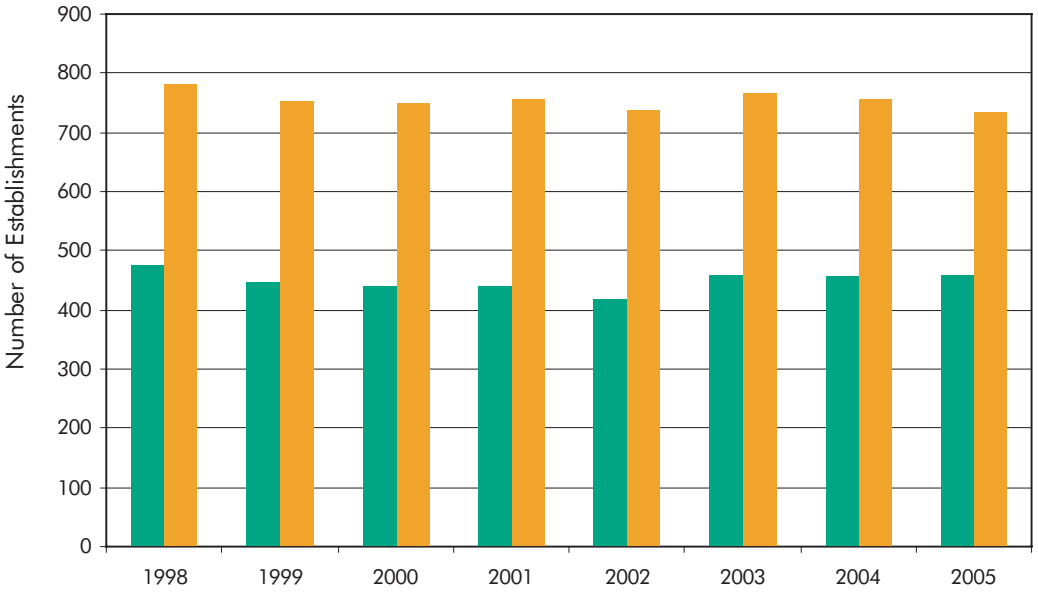
FINDINGS & TRENDS:

- About one-third of the food manufacturing plants in Oregon and Washington have four or fewer employees; about one-half have nine or fewer employees.

- The distribution of food manufacturing plants by size is very similar for Oregon and Washington.

- The number of food manufacturing plants in Oregon has fallen from 477 in 1998 to 460 in 2005. In Washington, the number has fallen from 781 in 1998 to 734 in 2005.

Food Manufacturing Establishments, 1998 to 2005



Source: County Business Patterns

Food Manufacturing Establishments by Size, 2005

Source: County Business Patterns

Sources:

United States Census Bureau. 2002 NAICS Definitions. 311: Food Manufacturing (Retrieved March 27, 2008). http://www.census.gov/epcd/naics02/def/NDEF311.HTM (Retrieved March 27, 2007).

United State Census Bureau. County Business Patterns. (Retrieved March 26, 2008). http://www.census.gov/epcd/cbp/view/cbpview.html

United States Department of Agriculture, Economic Reserch Service (ERS). Food Marketing System in the U.S. (Retrieved March 27, 2008). http://www.ers.usda.gov/Briefing/FoodMarketingSystem/processing.htm.

Ollinger, Michael, Sang V. Nguyen, Donald Blayney, Bill Chambers, and Ken Nelson. May 2005. Structural Change in the Mean, Poultry, Dairy, and Grain Processing Industries. USDA Economic Research Report 3.

Milkovich, Matt. May 2005. Asparagus Growers Prepare for Processing Plant Loss. The Vegetable Growers News. (Retrieved March 27, 2008). http://www.vegetablegrowersnews.com/pages/arts.php?ns=113

United States Department of Agriculture. National Agricultural Statistics Service. 1990. 1987 Census of Agriculture on CD Rom.

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■ *County Business Patterns data do not include data on self-employed individuals.*

INDICATOR: FOOD PROCESSING CLUSTER EMPLOYMENT

MEASURE: Employment, Annual Growth Rate, and Concentration of Food Processors in Oregon and Washington in 2003

Data are from a report prepared for the Northwest Food Processors Association by Applied Development Economics.

BACKGROUND: The following charts display three different types of information for the food processing industry sectors in Oregon and Washington. The size of the bubbles reflects the number of employees in each sector, while the placement of the bubbles shows the growth rate and the concentration for each sector. The farther to the right the bubble is, the greater the average annual growth of employment for the industry sector from 1992 to 2003. The closer to the top of the chart the bubble is, the more concentrated, or specialized, the industry sector is for the state, relative to the nation.

FINDINGS & TRENDS:

- Wineries and Breweries are a fast growing industry in Oregon, with an average annual employment growth rate of nearly 6%.

- Oregon's employment concentration of Fruit and Vegetable processing is over five times that of the nation.

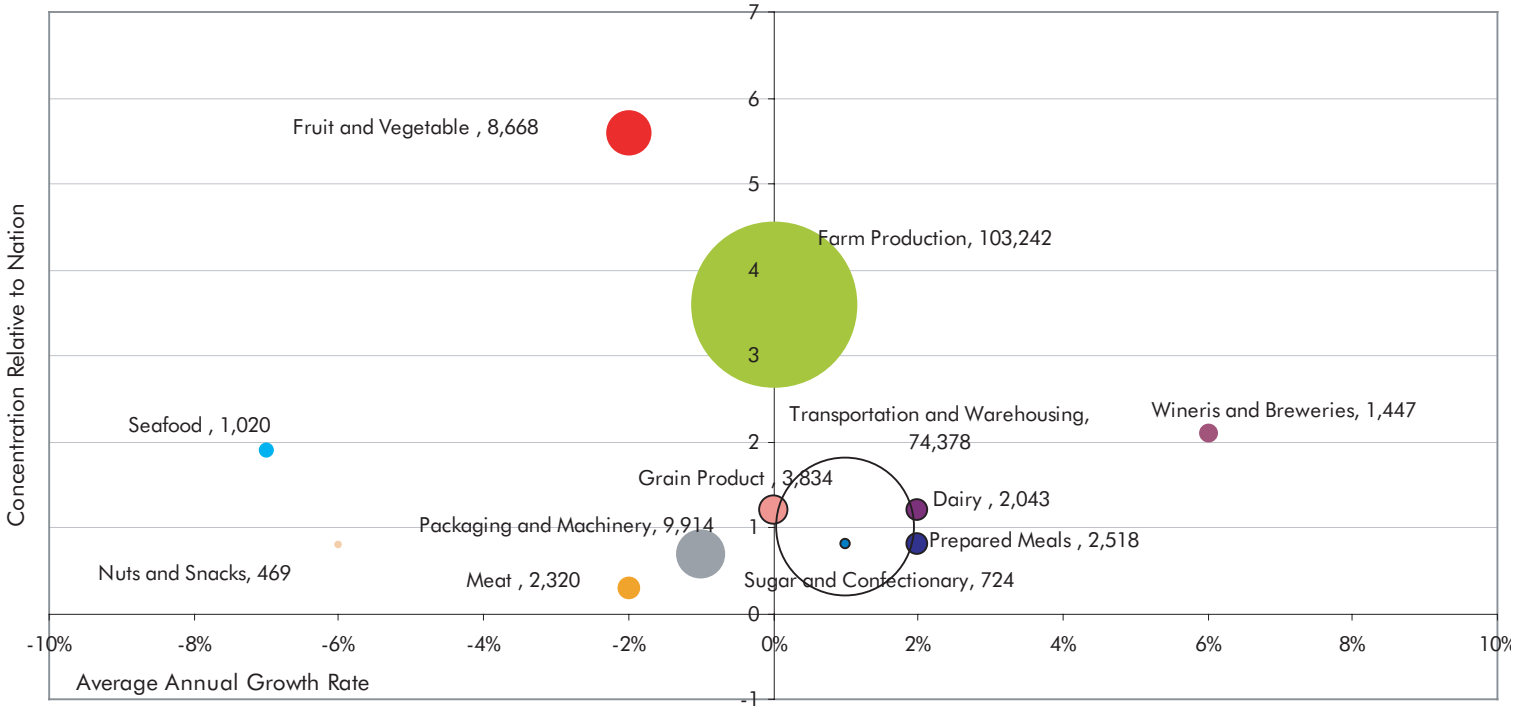
- Washington's Meat processing and Wineries and Breweries industries are growing, with average annual employment growth rates of 4.46% and 2.76%, respectively.

- Although the relative concentration of Washington's employment in Seafood Processing is over seven times that of the nation, the average annual growth rate is -2.66%, implying that this industry is declining.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

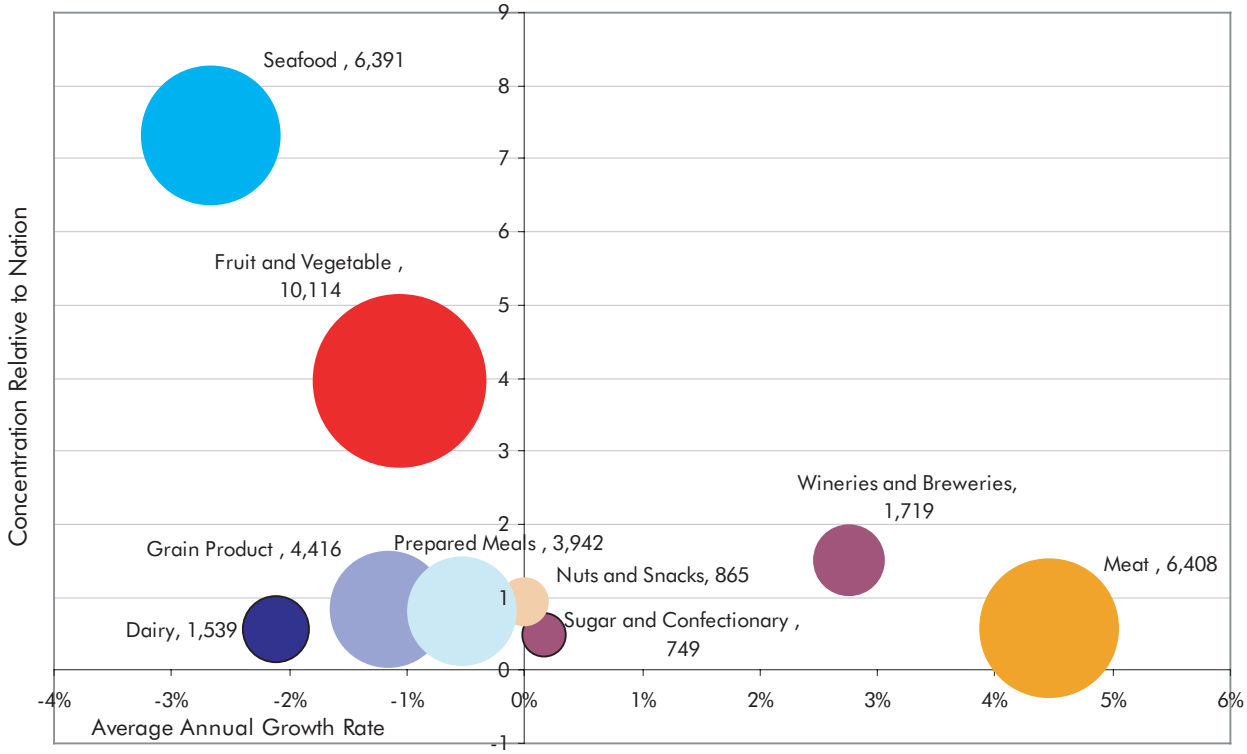
- *IMS created these charts using data from Table 1 of the Applied Development Economics reports.*

Oregon Food Processing Cluster, 2003



Source: Applied Development Economics, 2006

Washington Food Processing Cluster, 2003



Source: Applied Development Economics, 2006

Sources:

Applied Development Economics. *Oregon Food Processing Cluster Study*. June 15, 2006. Prepared for Northwest Food Processors Association.

Applied Development Economics. *Washington Food Processing Cluster Study*. May 31, 2006. Prepared for Northwest Food Processors Association.

INDICATOR: FOOD MANUFACTURING PRODUCTIVITY

MEASURE: VALUE ADDED OF PRODUCTION PER PRODUCTION WORKER HOUR

Value added is the difference between the value of goods and services and the costs of materials and supplies that are used in producing them. It measures an industry's contribution to the economy. The Annual Survey of Manufactures (ASM) reports value added for manufacturing industries as well as total production worker hours. The statistics presented here are for NAICS code 311 (food manufacturing).

The ASM provides sample estimates of statistics for all manufacturing establishments with one or more paid employee. The U.S. Census Bureau conducts the ASM in each of the 4 years between the economic census that is collected for years ending in 2 and 7. The economic census of manufacturing is the sample frame from which the ASM is chosen and presents more detailed data than the ASM. This survey includes statistics on employment, payroll, production worker hours, value added by manufacture, cost of materials consumed, value of shipments, detailed capital expenditures, supplemental labor costs, fuels and electric energy used, and inventories by stage of fabrication (ASM, 2008).

BACKGROUND: Value added per production worker hour is one measure of labor productivity. The value of output per production worker hour can increase as workers become more skilled or as the equipment and technology they employ become more advanced. Productivity can also be affected by the scale of an industry.

According to the ASM, the U.S. food manufacturing sector accounted for 10.3 percent of the total value of shipments and 9 percent of employment from all U.S. manufacturing sectors in 2000 (Huang, 2003).

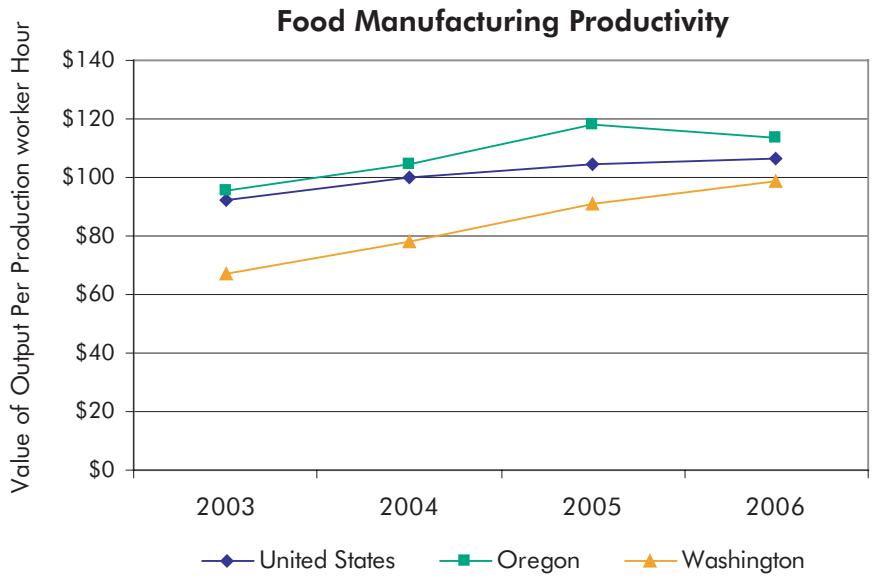
Rising productivity in the food industry can reduce the price of food, make food industries more profitable, or both. Productivity in the food manufacturing sector has historically lagged that of other manufacturing sectors. The gross-output multifactor productivity index for U.S. food manufacturing grew 0.19 percent per year between 1975 and 1997. This productivity growth is low when compared with an estimate of 1.25 percent per year for the whole manufacturing sector. Low investment in research and development (R&D) could be one reason. Although productivity has been relatively low, food manufacturing output has grown significantly at 1.88 percent over the last two decades (Huang, 2003).

FINDINGS & TRENDS:

■ In general, food manufacturing productivity in Oregon, Washington, and the U.S. increased from 2003 to 2006. In 2003, the value of output per production worker hour in the U.S. was $92.44; by 2006 it had risen by 15 percent to $106.32.

■ In 2003, Washington food manufacturing productivity was much lower ($67.05) than Oregon or U.S. food manufacturing. However, by 2006 it had risen by 47 percent to $98.66.

■ Oregon's food manufacturing productivity is higher than either Washington's or the nation's as a whole. In 2003 it was $95.40; by 2006 it had risen about 19 percent to $113.38.



Source: Annual Survey of Manufacturing

Sources:

Huang, Kuo S. (2003). "Food Manufacturing Productivity and Its Economic Implications." Technical Bulletin No. (TB1905). November: p 56. (Retrieved January 2008). http://www.ers.usda.gov/Publications/TB1905/

U.S. Census Bureau, American FactFinder. (2008). (Retrieved January 2008). http://factfinder.census.gov/servlet/DatasetMainPageServlet?_lang=en&_ts=220206739627&_ds_name=AM0531AS102&_program=

U.S. Census Bureau, Annual Survey of Manufacturing. (Retrieved January 2008). http://www.census.gov/econ/census02/

U.S. Census Bureau, Manufacturing, Mining and Construction Statistics. Annual Survey of Manufacturers. (2008). (Retrieved March 2008). http://www.census.gov/mcd/asmhome.html

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INDICATOR: CONSUMER EXPENDITURES ON FOOD

MEASURE: EXPENDITURES ON FOOD AS A PERCENTAGE OF INCOME AND EXPENDITURES

Expenditures on food as a percent of income and total expenditures; expenditures on food by type.

BACKGROUND: Consumer expenditures on food of various types provide a window into eating habits and nutrition at the regional level. More money spent on fruits and vegetables would generally indicate a healthier diet, while more money spent on "food away from home," which includes fast food, restaurants, take out/delivery, cafeterias, and vending machines, might indicate less healthful eating. Comparing overall expenditures on food to spending on housing, transportation, and health care, for example, can indicate whether increasing costs of non-food items may be squeezing the budget for food, or whether the cost of food may be rising relative to other goods.

The source of this data is the Consumer Expenditure Survey (CE), which is collected by the U.S. Census Bureau for the Bureau of Labor Statistics. The CE is based on two independent surveys, a quarterly Interview Survey of out-of-pocket expenditures including housing, apparel, transportation, health care, insurance, and entertainment, and a Diary Survey of weekly expenditures of items purchased frequently, such as food and beverages, tobacco, personal care products, and nonprescription drugs. Each survey is given to roughly 7,000 households, and collects additional information on household income and socioeconomic characteristics. Data are collected for Metropolitan Statistical Areas for major cities in the four regions of the country (Northeast, Midwest, South, and West). In order to have samples large enough for publication, data are released as annual averages for rolling two year periods.

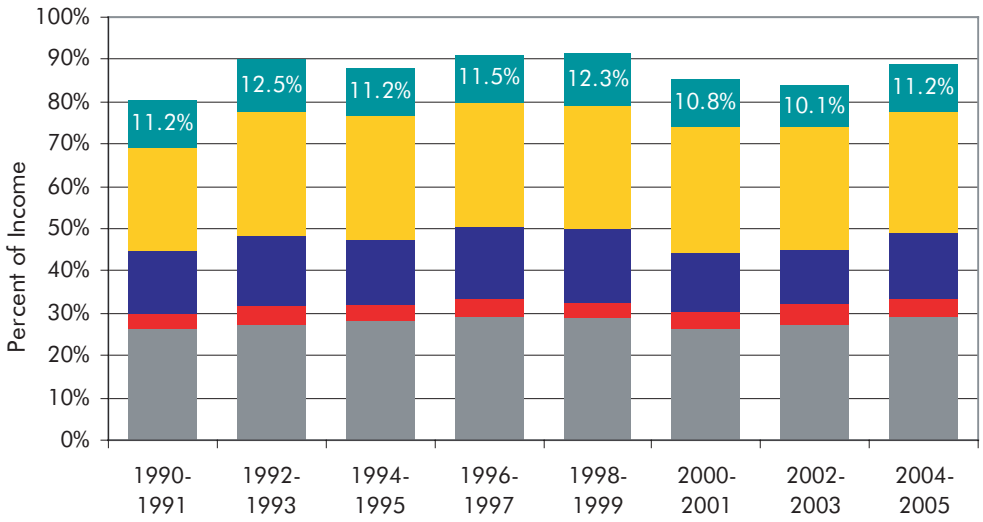
FINDINGS & TRENDS:

■ Food accounts for roughly 13 percent of annual expenditures, and 11 percent of annual income in the Portland MSA as of 2004-2005. This is comparable to the national figure – 13 percent of annual expenditures, and 10 percent of annual income. For the Portland region, these numbers have varied slightly from year to year, but there has not been a consistent upward or downward trend.

■ Fruits and vegetables represent 10.2 percent of the total food budget in the Portland region in the most recent year available, slightly above the national average for that year (9.5 percent). Spending on fruits and vegetables in the region has remained fairly constant relative to all food expenditures as well as relative to income.

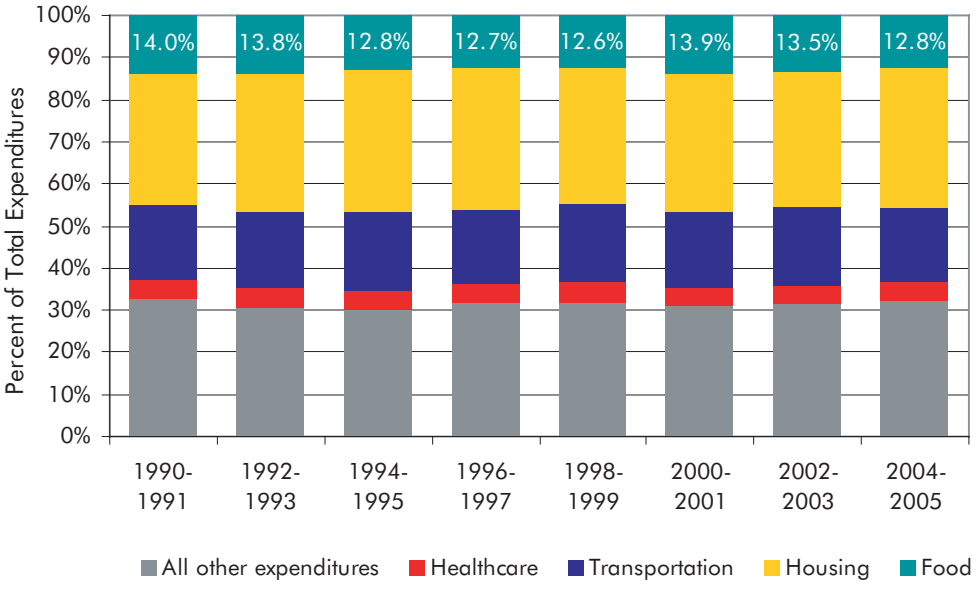
■ Food away from home accounts for 44.2 percent of food budget in the Portland region in the most recent year, slightly above the national average of 43.3 percent for 2004-2005. In the Portland region, food away from home has become a larger part of the food budget over time.

Selected Expenditures as a Percentage of Income in the Portland-Vancouver Region



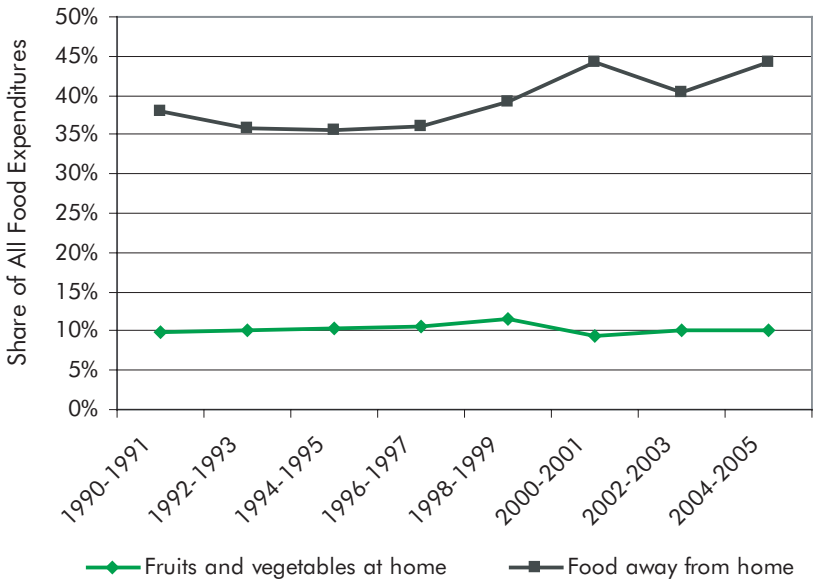
Source: Consumer Expenditure Survey

Selected Expenditures as a Percentage of Total Expenditures In the Portland-Vancouver Region



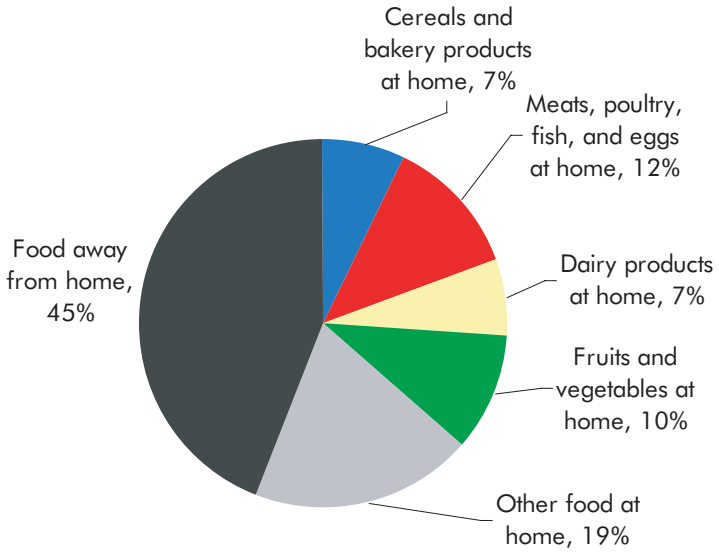
Source: Consumer Expenditure Survey

Selected Food Expenditures as a Percentage of All Food Expenditures in the Portland-Vancouver Region



Source: Consumer Expenditure Survey

Breakdown of Food Expenditures in the Portland-Vancouver Region, 2004 to 2005



Source: Consumer Expenditure Survey

Sources:

U.S. Department of Labor, Bureau of Labor Statistics (BLS). *Consumer Expenditure Survey.* http://www.bls.gov/cex/. (Retrieved March 2006).

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *The number of MSAs included in the sample has changed over time: 26 MSAs were surveyed from 1986 to 1995, 28 from 1996 to 2004, 24 in 2005, and just 18 MSAs in 2006. Portland is included in most years' releases, but data are missing for 1991-1992, 1995-1996 (when no MSA data are available), and 2005-2006. For the sake of simplicity, data in this sheet reflect only every other biennial report (for example, 1998-1999 and 2000-2001 but not 1999-2000). This procedure also avoids issues of missing data, as the missing years are among those skipped.*

■ *The definition of the Metropolitan Statistical Area is updated by the Office of Management and Budget based on the Census. The definition for the Portland MSA in 1990 included Multnomah, Washington, Clackamas, and Yamhill counties; in 1993, Columbia and Clark counties were added; in 2003 Skamania county was added; no changes have been made since 2003.*

■ *Income data prior to 2003 were reported only for those who provided complete data (although even so there is no guarantee that all income sources are complete). Since then, income data have been collected using income ranges in addition to discrete amounts, increasing the number of responses to that question. In addition, since 2004 missing income data have been estimated based on characteristics of the respondent.*

INDICATOR: DAILY SERVINGS OF FRUITS AND VEGETABLES

MEASURE: NUMBER OF ADULTS WHO REPORT INADEQUATE CONSUMPTION OF FRUITS AND VEGETABLES

Adults who report not eating at least five fruits and vegetables daily in the Portland-Vancouver Region (includes seven counties as defined by the U.S. Census Bureau: Clackamas, Clark, Multnomah, Washington, Columbia, Skamania, Yamhill), Oregon, Washington, and the U.S.

These data are from the Behavioral Risk Factor Surveillance System (BRFSS), a telephone health survey tracking health conditions and risk behaviors in the United States every year since 1984. The survey results report the percentage of respondents (18 years and older) who report not consuming five or more fruits and vegetables per day.

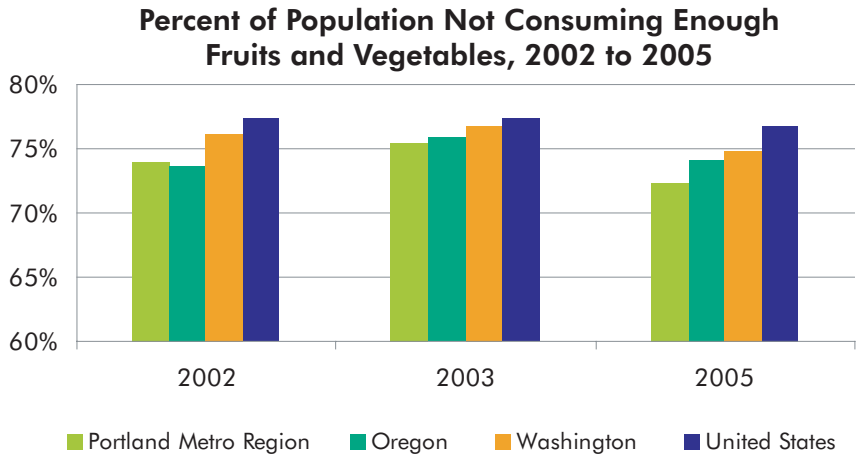
BACKGROUND: According to the Centers for Disease Control and Prevention, most people in the United States can benefit from increasing their consumption of fruits and vegetables. Compared to people who consume a diet with only small amounts of fruits and vegetables, people who eat a healthy diet high in fruits and vegetables are likely to have reduced risk of chronic diseases, including stroke and possibly other cardiovascular diseases, and certain cancers (CDC Fruit and Vegetable Benefits).

FINDINGS & TRENDS:

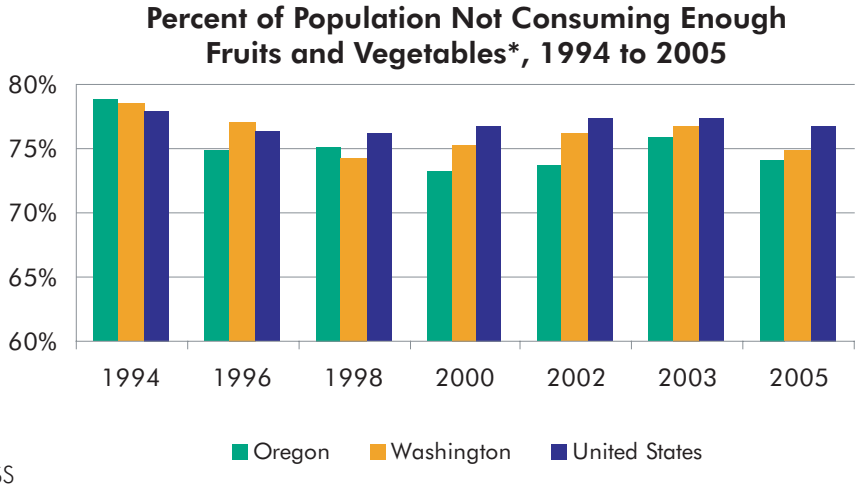
- 72.3 percent of adults in the Portland Metro Region, 74.8 percent of adults in Washington, and 74.1 percent of adults in Oregon reported not eating the recommended five or more fruits and vegetables per day in 2005.

- These rates are similar to those of total U.S. adults, where 76.8 percent reported not eating the recommended five or more fruits and vegetables per day in 2005.

- There has been no substantial change in this consumption behavior since 1994.



Source: CDC BRFSS



Source: CDC BRFSS

**All Respondents 18 and older who report not consuming five or more servings of fruits and vegetables a day. Denominator includes all survey respondents except those with missing, don't know, and refused answers.*

Sources:

Center for Disease Control and Prevention (CDC): Behavioral Risk Factor Surveillance System (2007). *Trends Data*. http://apps.nccd.cdc.gov/brfss/Trends/trendchart.asp?state=US&qkey=10150&bkey=&grp=0&SUBMIT4=Go

Center for Disease Control and Prevention (CDC): *Fruits and Vegetables Matter*. Fruit and Vegetable Benefits. http://www.fruitsandveggiesmatter.gov/benefits/index.html

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ ***Skamania County was added to the Portland Metropolitan Statistical Area by the Office of Management and Budget in 2003. The 2002 data on this sheet include Skamania County.***

INDICATOR: DIRECT MARKETING TRENDS

MEASURE: NUMBER AND PERCENTAGE OF FARMS ENGAGED IN DIRECT MARKETING AND VALUE OF PRODUCTS SOLD

Percentage of farms engaged in direct marketing; value of products sold directly to consumers. This trend is estimated by the United States Department of Agriculture's National Agricultural Statistics Service. The measure includes farms engaged in direct marketing and the value of agricultural products sold directly to individuals for human consumption.

BACKGROUND: Farmers have been receiving a decreasing share of what consumers pay for food at retail stores. On-farm direct marketing provides a means to capture retail prices for produce grown on the farm and can be an outlet for other value-added products. Currently, farmers capture only about 24 percent of the retail price of fresh vegetables and 27 percent of the retail price of fresh fruits (Stewart, 2006). Typically, on-site facilities are developed into a "roadside" stand operation that is open to the public and keeps regular business hours throughout the year or during the growing season. Other forms of direct-market enterprises may be as simple as an unattended self-serve stand, off-farm roadside stands, participation in local farmers markets, staking out a busy street location for temporary "tailgate" sales, a pick-your-own (PYO or u-pick) operation, a CSA (community supported agriculture) venture, and Internet and mail order sales (Virginia Cooperative Extension, 2008).

Farmers markets have a rich history in the development of agriculture in the United States. They represented an important community food distribution system long before the rise of the retail agribusiness system, and began to re-emerge (after years of decline) after the passage of the Farmer-to-Consumer Direct Marketing Act of 1976. Some argue that they are now an integral part of the food community linking consumers and producers through business and social relationships, while others view markets as an appropriate marketing channel for entrepreneurial and small farmers who strive to establish a loyal customer base through personal selling and quality differentiates (vs. low margin commodity) marketing strategies" (Thillmany et al., 2004).

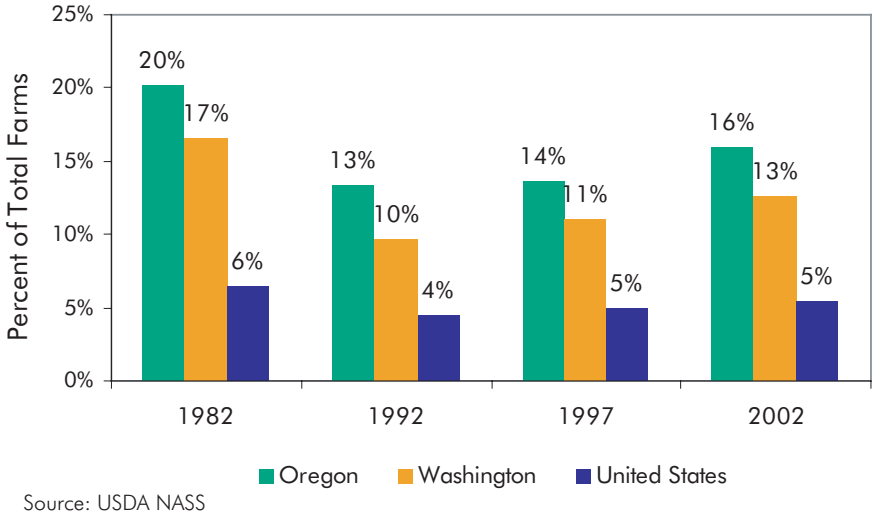
FINDINGS & TRENDS:

- The number of farms marketing directly to consumers has risen steadily since 1992, with a 50 percent increase in Oregon, 54 percent increase in Washington, and 35 percent increase in the U.S. from 1992 to 2002.

- The value of agricultural products sold directly to individuals has steadily increased since 1992. From 1992 to 2002, both Oregon and the U.S. doubled the value of products sold through direct marketing while the value for Washington more than tripled.

- Although Washington has a smaller percentage of farms engaged in direct marketing than does Oregon, the value of agricultural products sold directly to consumer is greater.

Percent of Farms Engaged in Direct Marketing



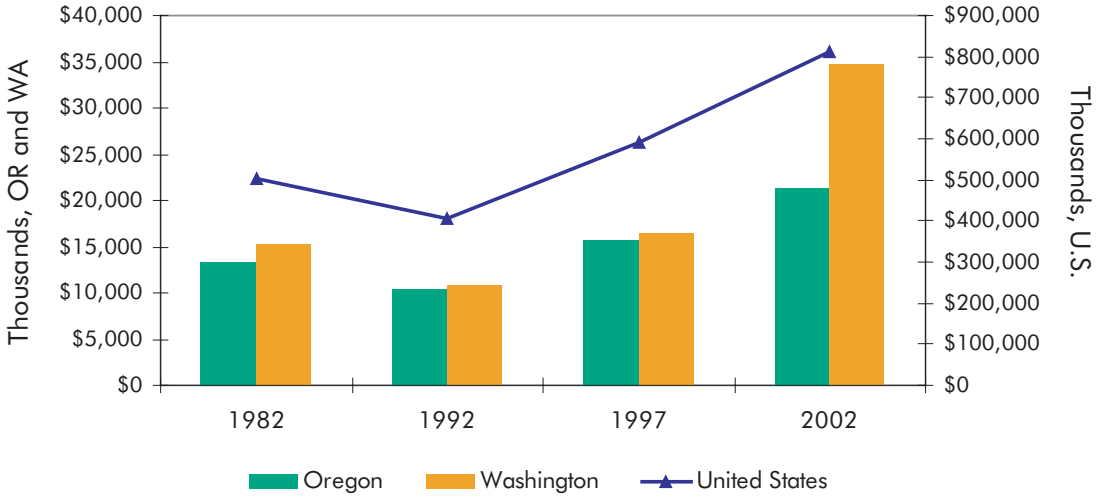
Source: USDA NASS

Number of Farms Engaged in Direct Marketing

	1982	1992	1997	2002
Oregon	6,864	4,263	5,461	6,383
Washington	5,975	2,933	4,428	4,527
United States	143,492	86,432	110,639	116,733

Source: USDA NASS

Value of Agricultural Products Sold Directly to Individuals



Source: USDA NASS

Sources:

Stewart, Hayden. August 2006. "How Low Has the Farm Share of Retail Food Prices Really Fallen?" Economic Research Report Number 24. Washington, DC: U.S. Department of Agriculture, Economic Research Service.

Thilmany, Dawn, and Phil Watson. 2004. "The Increasing Role of Direct Marketing and Farmers Markets for Western U.S. Producers." Western Economic Forum 3(2):19-25

Virginia Cooperative Extension. Virginia Polytechnic Institute and State University. "Selected Topics for On-Farm Direct Marketing." (Retrieved April 2008). http://www.ext.vt.edu/pubs/homebus/438-109/438-109.html#L1

U.S. Department of Agriculture, National Agricultural Statistics Service. Quick Stats, Agricultural Statistics Data Base, U.S. and State Data. (Retrieved July 2007). http://www.nass.usda.gov/Data_and_Statistics/Quick_Stats/index.asp#top

U.S. Department of Agriculture, National Agricultural Statistics Service. Market Value of Agricultural Products Sold and Direct Sales. 1992 Census of Agriculture, U.S. and State Data. (Retrieved January 2008). http://www.nass.usda.gov/census/census92/volume1/or-37/or1_02.pdf, http://www.nass.usda.gov/census/census92/volume1/wa-47/wa1_01.pdf, http://www.nass.usda.gov/census/census92/volume1/us-51/v1-tbl02.pdf

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■*Data collection and analysis methods for the Census of Agriculture changed in 1997. NASS does not recommend comparing data from 2002 and 1997 to earlier years due to this change. For details see http://www.nass.usda.gov/census/census02/censusfaqs2.htm#1*

INDICATOR: COMMUNITY GARDENS

MEASURE: NUMBER AND LOCATION OF PUBLIC COMMUNITY GARDENS

The number and location of public community gardens in the Portland metropolitan region.

BACKGROUND: Community gardens offer land to people who do not have space for growing a garden, including residents in multifamily housing and in single family dwellings with small yards or poor growing conditions. A recent survey of community gardens participants cited the need for high quality food and the lack of gardening space as the most frequent reasons for participation. People also mentioned relaxation, enjoyment of gardening, environmental stewardship, connecting with neighbors, and the opportunity to save money on food as reasons to grow food (Urban Agriculture Asset Mapping Capstone, 2005, Portland State University).

Community garden is defined here as a garden in which people can either reserve their own plot to cultivate or participate in a shared garden from which they can take home produce. This definition includes gardens with and without user restrictions.

FINDINGS & TRENDS:

■ As of July 2008, the City of Portland owns 31 community gardens; additionally, within the city there are at least eight more owned and operated privately or by other public agencies. The identified gardens in Portland are clustered primarily in North, Northeast, and Southeast Portland.

■ Suburban communities have fewer gardens, in part, because fewer people have the need for garden space. Still, there are at least six within the City of Beaverton—two owned by the municipality, three run by Tualatin Hills Parks and Recreation Department, and at least one privately owned garden–sd well as three in Gresham, four in Vancouver, and one or more in several other communities.

■ Roughly three-quarters of the gardens identified to date in the region are publicly owned and managed by a Parks and Recreation Department. This figure may be somewhat skewed by the fact that information on privately-owned gardens is more difficult to find.

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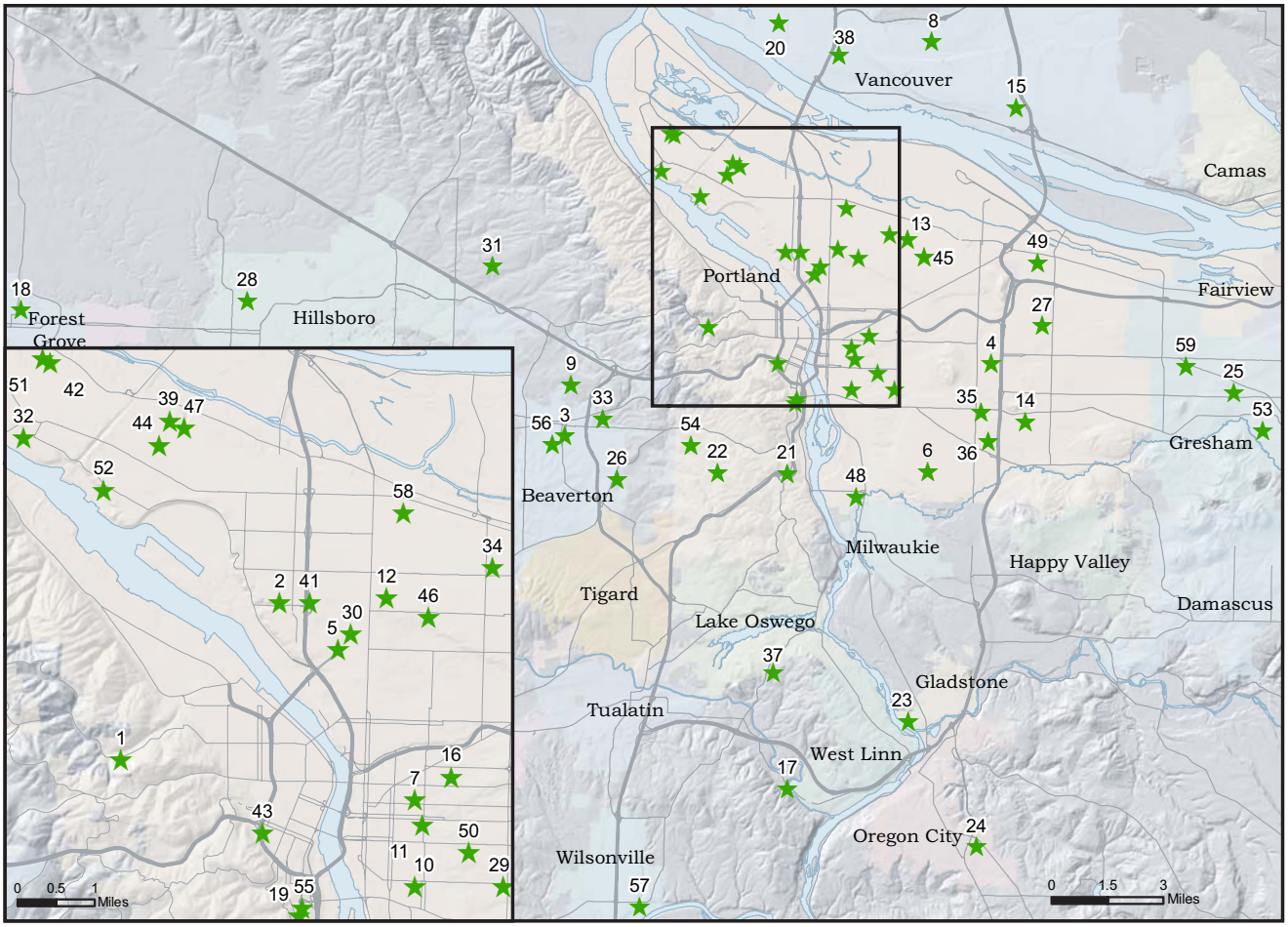
■ *The table and map of community gardens include only those that could be identified as of July 2008.*

Community Gardens in the Portland Region, July 2008



Sources: Institute of Portland Metropolitan Studies.

Number	Name
1	Adams Community Garden
2	Beach Community Garden
3	Beaverton Community Center Gardens
4	Berrydale Community Garden
5	Boise-Eliot Community Garden
6	Brentwood Community Garden
7	Buckman Community Garden
8	Campus Garden
9	Cedar Hills Park Community Garden
10	Clinton Community Garden
11	Colonel Summers Community Garden
12	Common Bond Garden
13	Cully Community Garden
14	Earl Boyles Community Garden
15	Ellsworth Community Garden
16	Everett Community Garden
17	Fields Bridge Park Community Gardens
18	Forest Grove/Pacific University Community Garden
19	Front & Curry Community Garden
20	Fruit Valley Community Garden

Number	Name
21	Fulton Community Garden
22	Gabriel Community Garden
23	Gladstone Gardens
24	Greenfingers Community Garden
25	Gresham City Hall Community Garden
26	Harman Swim Center Community Garden
27	Hazelwood Community Garden
28	Hillsboro Community Gardens
29	Ivon Community Garden
30	Jesuit Volunteer Community Garden
31	John Marty Park Community Organic Garden
32	Johns Community Garden
33	Kennedy Community Garden
34	Kennedy Community Gardens
35	Kirkland Union Manor Senior Garden
36	Lents Community Garden
37	Luscher Farm Community Gardens
38	Marshall Center Community Garden
39	McCoy Community Garden
40	McMinnvile Community Garden

Number	Name
41	Patton Community Garden
42	Pier Park Community Garden
43	Portland State University Community Garden
44	Portsmouth Community Garden
45	Rigler Community Garden
46	Sabin Community Garden
47	Seeds of Harmony Garden
48	Sellwood Community Garden
49	Senns Community Garden
50	Sewallcrest Community Garden
51	St. Johns Wood Community Garden
52	Student Led Unity Garden (SLUG Project)
53	Thom Park Community Garden
54	Vermont Hills Community Garden
55	Water & Gibbs Community Garden
56	Welch Centennial Community Garden
57	Wilsonville Community Garden
58	Woodlawn Community Garden
59	Yamhill Park Community Garden

INDICATOR: FOOD INSECURITY

MEASURE: PERCENTAGE OF POPULATION THAT IS FOOD INSECURE

The average prevalence of household level food insecurity for Oregon and Washington, from the United States Department of Agriculture (USDA) Economic Research Service.

BACKGROUND: The USDA defines food insecure as: "At times during the year, these households were uncertain of having, or unable to acquire, enough food to meet the needs of all their members because they had insufficient money or other resources for food. Food-insecure households include those with low food security and very low food security" (USDA ERS, 2005).

Low food security—These food-insecure households obtained enough food to avoid substantially disrupting their eating patterns or reducing food intake, by using a variety of coping strategies, such as eating less varied diets, participating in Federal food assistance programs, or getting emergency food from community food pantries (USDA ERS, 2005).

Very low food security—In these food-insecure households, normal eating patterns of one or more household members were disrupted and food intake was reduced at times during the year because they had insufficient money or other resources for food (USDA ERS, 2005).

FINDINGS & TRENDS:

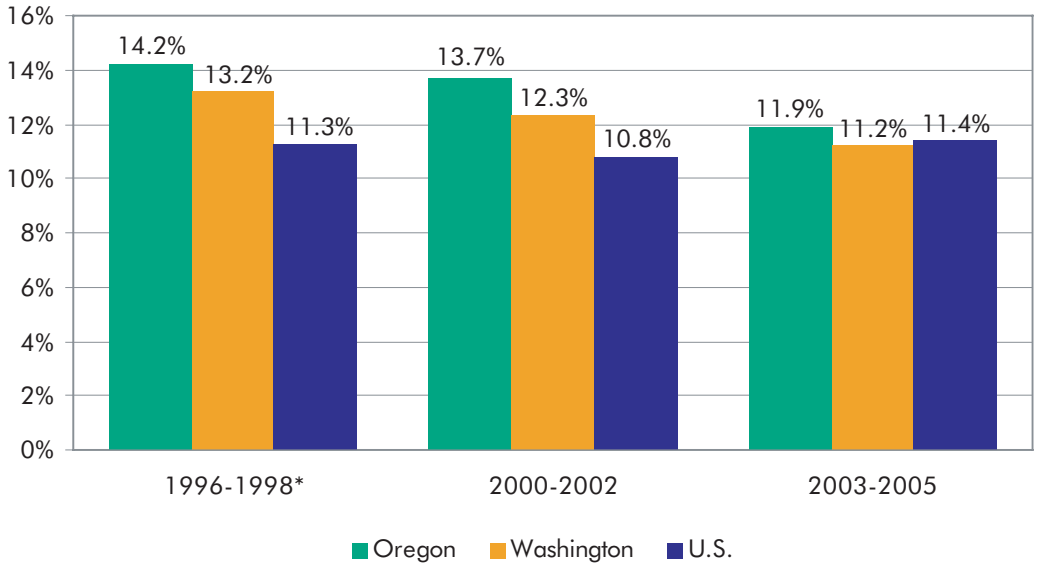
■ The prevalence of food insecurity in the United States varied considerably among household types. Some groups with rates of food insecurity much higher than the national average (11.0 percent) are (USDA ERS, 2007):

- ❑Households with incomes below the official poverty line—$19,806 for a family of four in 2005 (36.0 percent).
- ❑Households with children, headed by a single woman (30.8 percent).
- ❑Black households (22.4 percent).
- ❑Hispanic households (17.9 percent).

■ In Oregon and Washington, the prevalence rates of food insecurity declined slightly between the 1996-1998 survey period and the 2003-2005 survey period.

■ Oregon's rate fell from 14.2 percent in the 1996-1998 period to 11.9 percent in the 2003-2005 period. Washington's fell from 13.2 percent in the 1996-1998 period to 11.2 percent in the 2003-2005 period.

Average Prevalence of Household Level Food Insecurity (Low or Very Low Food Security) in Oregon and Washington



Source: Nord et al, 2005

Sources:

United States Department of Agriculture, Economic Research Service. *Briefing Rooms: Food Security in the United States* (updated June 1, 2007). http://www.ers.usda.gov/Briefing/FoodSecurity/

Nord, Mark, Margaret Andrews, and Steven Carlson. (2005). *Household Food Security in the United States, ERR-29, Appendix D: Prevalence Rates of Food Insecurity by State*. U.S. Department of Agriculture, Economic Research Service (retrieved July, 2007). http://www.ers.usda.gov/publications/err29/

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■ *Statistics for the 1996 to 1998 period were revised to account for changes in survey screening procedures introduced in 1998.*

INDICATOR: USE OF FOOD STAMPS

MEASURE: PARTICIPATION IN THE FOOD STAMP PROGRAM

Estimates of number of recipients for the Food Stamp Program on the county level from the United States Census Bureau Small Area Estimate Branch. Estimates for the Portland area were calculated based on values for the six metropolitan counties including: Clackamas, Columbia, Multnomah, Washington, Yamhill, and Clark County, Washington.

BACKGROUND: The Food Stamp Program helps low-income people and families buy the food they need for good health. You apply for benefits by completing a state application form. Benefits are provided on an electronic card that is used like an ATM card and accepted at most grocery stores (USDA FNS, 2007).

The Food Stamp Program is the one low-income assistance program that is uniform in its eligibility requirements and benefit levels across states (except for Alaska and Hawaii). While the definitions of income, household composition, and the resource income cutoffs are different from those used in the official measure of poverty, a household's eligibility for the program is determined by a standard that is tied to the poverty level (U.S. Census Bureau, 2007).

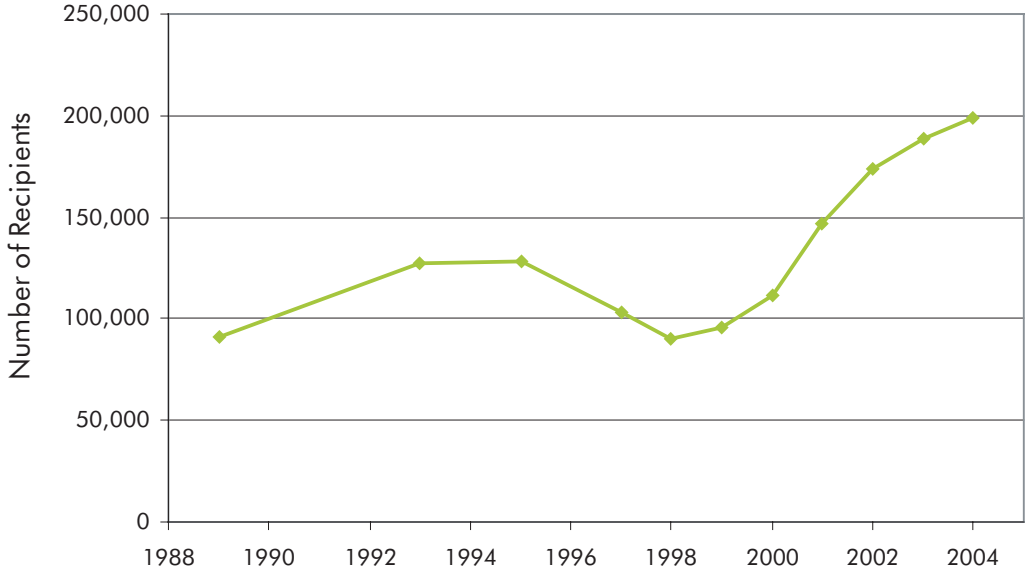
The U.S. Census Bureau obtains counts of the number of people participating in the food stamp program from the United States Department of Agriculture, Food and Nutrition Service (USDA/FNS). In most states, they use counts of participants for the month of July in the estimation process. In a few cases, however, the states were able to provide data only for other reference periods (U.S. Census Bureau, 2007).

FINDINGS & TRENDS:

■ The number of food stamp program participants in Oregon and Washington grew significantly between 1989 and 2004. In Oregon, the number of recipients grew by approximately 215,000, or 101 percent, while Washington added 232,000 recipients, a gain of about 87 percent.

■ The number of recipients in the Portland metropolitan area grew at a greater rate than that of either of the two states. Between 1989 and 2004, recipients in the six-county region grew from about 91,000 to about 199,000—an increase of about 119 percent.

USDA Food Stamp Program Recipients for the Portland-Vancouver Region



Source: U.S. Census Bureau, 2007

Note: This chart includes recipients from the following counties: Clackamas County, OR; Clark County, WA; Multnomah County, OR; Washington County, OR; Columbia County, OR; Yamhill County, OR.

Sources:

United States Census Bureau, Small Area Estimates Branch. *State and County Estimates, Food Stamps* (retrieved May, 2007). http://www.census.gov/hhes/www/saipe/county.html

U.S. Department of Agriculture, Food and Nutrition Service. *Food Stamp Program* (updated July 12, 2007). http://www.fns.usda.gov/fsp/

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■ ***Margins of error are not represented in these trend charts, and data points should be considered approximate.***

INDICATOR: USE OF FOOD BANKS

MEASURE: NUMBER OF EMERGENCY FOOD BOXES DISTRIBUTED

Number of emergency food boxes distributed by the Oregon Food Bank Network (OFB) from 1995-2006 in Oregon and Clark County.

BACKGROUND: The Oregon Food Bank Network consists of 919 hunger relief agencies that serve households statewide as well as in Clark County (OFB 2007).

Oregon Food Bank collects food from farmers, manufacturers, retailers, wholesalers, and government sources. An emergency food box usually contains about a three-to-five-day supply of groceries. Although the number of emergency food boxes distributed does not fully capture the level of need in the area, it can serve as a starting point when attempting to measure hunger among the population. Those most likely to need emergency food boxes are children, the working poor, the elderly, and the disabled (OFB 2007).

According to a study conducted by the Oregon Food Bank in 2006, nearly a third of the recipients of food pantry services claim they need emergency food boxes because their wages are too low, making it difficult for them to meet their basic needs (OFB 2006).

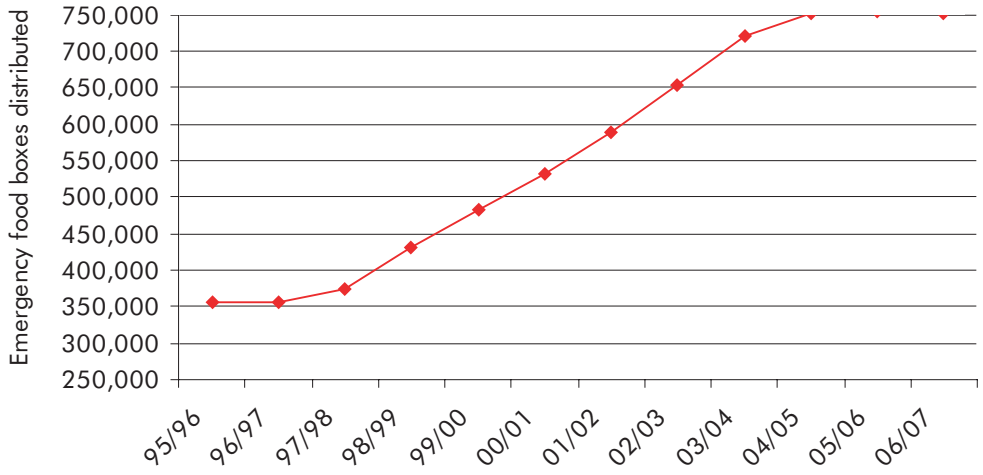
FINDINGS & TRENDS:

- 752,000 food boxes were distributed by the Oregon Food Bank Network in 2006-2007. This was more than double the amount served in 1996-1997.

- Over 45% of the food boxes distributed in 2006-2007 were in the six-county Portland Metro Area.

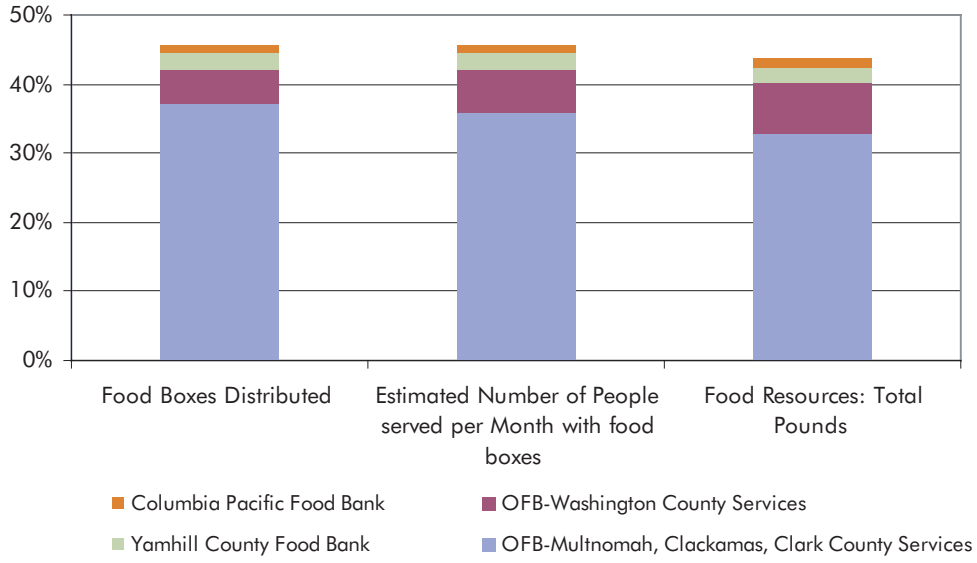
- The regional food bank serving Multnomah, Clackamas, and Clark counties have the highest amount of food bank services, with 18,418,140 lbs. of food distributed in 2006-2007.

Oregon Food Bank Network Food Box Distribution



Source: Oregon Food Bank

Use of Food Bank Services in the Six County Region* as the Percentage of Total Oregon Food Bank Services, 2006/2007



Source: Oregon Food Bank, 2006

**According to 2006 US Census Population Estimates, the population of the six-county Portland Metro area is roughly 50 pecent of the total Oregon population.*

Sources:

Oregon Food Bank (2007). *About Oregon Food Bank*. Retrieved March 25, 2008 from http://www.oregonfoodbank.org/about_ofb/

Oregon Food Bank (2006). *Profiles of Poverty and Hunger in Oregon*. Retrieved March 25, 2008 from http://www.oregonfoodbank.org/research_and_action/

Oregon Food Bank (2007). *Regional Food Banks at a Glance*. Retrieved March 25, 2008 from http://www.oregonfoodbank.org/research_and_action/network_statistics_rfb.html

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INDICATOR: OVERWEIGHT AND OBESITY RATES AMONG ADULTS

MEASURE: PERCENTAGE OF ADULTS IN THE PORTLAND-VANCOUVER REGION DESIGNATED OVERWEIGHT OR OBESE

Percentage of adults in the Portland-Vancouver region designated as being overweight or obese by the United States Department of Health and Human Services Centers for Disease Control and Prevention.

For adults, overweight and obesity ranges are determined by using weight and height to calculate a number called the "body mass index" (BMI). BMI is used because, for most people, it correlates with their amount of body fat.

- An adult who has a BMI between 25 and 29.9 is considered overweight.
- An adult who has a BMI of 30 or higher is considered obese.

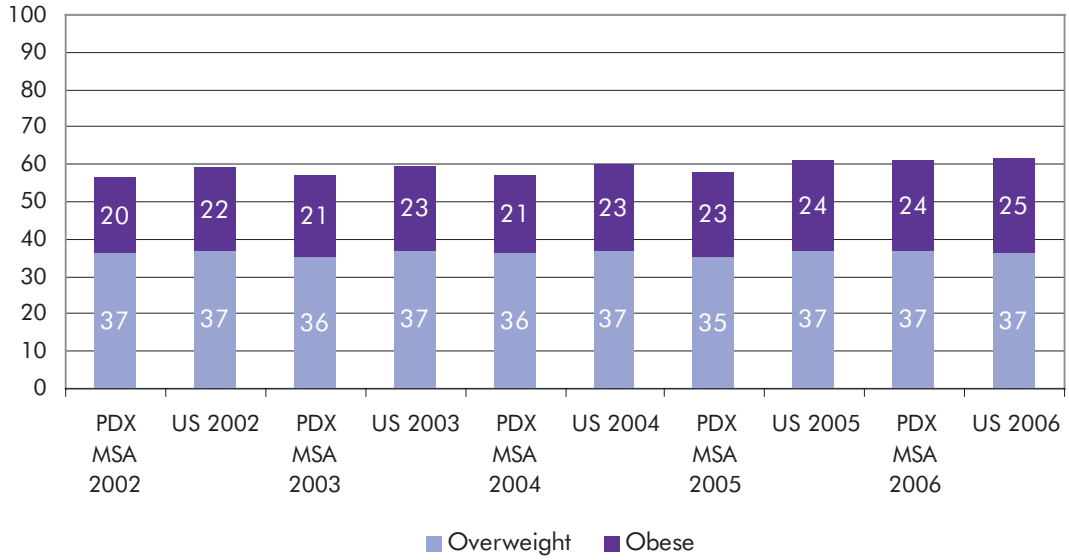
BACKGROUND: Since the mid-1970s, the prevalence of overweight and obesity has increased sharply for both adults and children in the United States. These increasing rates raise concern because of their implications for Americans' health. Being overweight or obese increases the risk of many diseases and health conditions, including hypertension, dyslipidemia (for example, high total cholesterol or high levels of triglycerides), type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, and some cancers (endometrial, breast, and colon) (CDC, 2007).

FINDINGS & TRENDS:

- In 2006, over 60 percent of the U.S. adult population was estimated overweight or obese based on BMI measurements.

- In 2006, approximately one-quarter of the U.S. adult population was considered obese based on BMI measurements.

Percent of Adults Overweight or Obese in the Portland-Vancouver Region and the U.S.



Source: CDC, 2002-2006

Notes:
1. *BMI Overweight = 25.0-29.9, BMI Obese = 30.0 and greater*
2. *Portland-Vancouver region includes: Clackamas County, OR; Clark County, WA; Multnomah County, OR; Washington County, OR; Columbia County, OR; Skamania County, WA; Yamhill County, OR.*
3. *United States values are median percent values.*

Sources:

United States Department of Health and Human Services, Center for Disease Control and Prevention. *Overweight and Obesity* (updated May 22 2007). http://www.cdc.gov/nccdphp/dnpa/obesity/index.htm

Centers for Disease Control and Prevention (CDC). (2002-2006) *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

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■ ***Confidence intervals are not represented in these trend charts, and data points should be considered approximations of mid-point values in a range.***

INDICATOR: DIABETES RATES

MEASURE: PERCENT OF ADULTS WHO REPORT HAVING BEEN TOLD BY A DOCTOR THAT THEY HAVE DIABETES

BACKGROUND: Diabetes is a disease in which the body loses the ability to produce or use insulin, which converts food to energy. This condition causes elevated blood sugar levels, which, over time, can damage many parts of the body, including the heart, blood vessels, eyes, and kidneys. There are two primary kinds of diabetes. Type I, which usually affects children and young adults, is not presently curable, nor is it attributable to diet and exercise (although careful eating is a critical part of living with Type I diabetes). Type I accounts for 5-10 percent of all diagnosed cases of diabetes. Type II diabetes generally affects adults, although it is increasingly being diagnosed in children and adolescents, and is associated with obesity and physical inactivity among other factors. African Americans, Latinos, American Indians, and some Asian Americans and Pacific Islanders are at increased risk for Type II diabetes. Studies have shown that lifestyle changes, including a healthy diet and exercise, can delay or prevent development of Type II diabetes among high risk adults (CDC: National Diabetes Fact Sheet).

Data presented below comes from the Behavioral Risk Factor Surveillance System (BRFSS), which is an on-going telephone health survey conducted by state health departments, coordinated by the Centers for Disease Control and Prevention (CDC). The survey has collected data on health conditions and risk behaviors in the United States annually since 1984. One adult (at least 18 years old) from each sample household is asked to respond to the questions. Diabetes data report answers to the question, "Have you ever been told by a doctor that you have diabetes?" Data are collected at the state level and for selected Metropolitan Statistical Areas (MSA data are only available starting in 2002) (CDC: About the BRFSS). Because the data include only adults diagnosed with diabetes, and people often do not realize they have diabetes, the data under-represent overall diabetes prevalence.

FINDINGS & TRENDS:

■ Roughly 180,000 people in Oregon have been diagnosed with diabetes (as of 2005), while another 60,000 or more may have the disease but have not been diagnosed (Oregon DHS, 2007; ODC, 2006).

■ Diabetes rates are rising in both Oregon and Washington, although in the Portland region, diabetes prevalence is lower than for either state as a whole, and decreased slightly from 2004 to 2006.

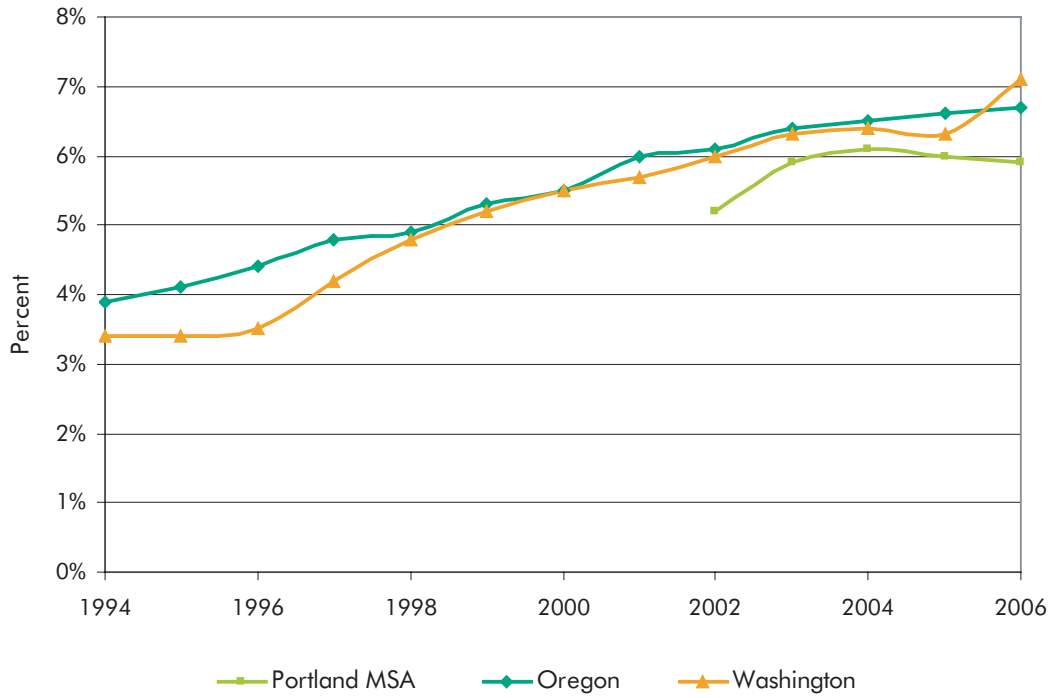
■ Diabetes is most prevalent among adults over age 65, especially those ages 65 to 74 (Oregon DHS, 2006).

■ In Oregon, diabetes rates are significantly higher among African-Americans (13 percent), American-Indians and Alaska Natives (12 percent), and Latinos (10 percent) than among non-Latino whites (6 percent) (ODC, 2006).

■ Diabetes is also significantly more prevalent among Oregonians who are economically disadvantaged (those whose household income falls below the Federal poverty line or who did not finish high school) and who are Medicaid recipients – 11 percent and 13 percent, respectively – than the general population (ODC, 2006).

■ Only 24 percent of adults diagnosed with diabetes in Oregon eat five or more servings of fruits and vegetables daily (as of 2005), down from 27 percent in 2001 (ODC, 2006).

Percent of Adults Diagnosed with Diabetes*
Oregon, Washington, and Portland-Vancouver Region**



Source: CDC BRFSS

** Data for states uses 3 year averages (2 years of data where 3 years are not available). Data for the MSA represent a single data for a single year.*
*** Portland MSA includes Clackamas, Columbia, Multnomah, Washington, and Yamhill counties in Oregon and Clark and Skamania counties in Washington.*

Diabetes Rates by County

County	Multnomah (OR)	Washington (OR)	Clackamas (OR)	Clark (WA)
Diabetes Rate (2006 BRFSS)	5.5 percent	6.1 percent	3.6 percent	6.6 percent

Source: ODC, 2006

Sources:

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Adult and Community Health, data from the Behavioral Risk Factor Surveillance System. Data computed by the Division of Diabetes Translation. http://apps.nccd.cdc.gov/ddtstrs/StateSurvData.aspx.

National Center for Chronic Disease Prevention and Health Promotion, Selected Metropolitan/Micropolitan Area Risk Trends (SMART) project, using data from the Behavioral Risk Factor Surveillance System. http://apps.nccd.cdc.gov/brfss-smart/index.asp.

Centers for Disease Control and Prevention, "About the BRFSS". http://www.cdc.gov/brfss/about.htm.

Centers for Disease Control and Prevention. *National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2005*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2005. http://apps.nccd.cdc.gov/DDTSTRS/FactSheet.aspx .

Oregon Diabetes Coalition (ODC). May 2006. *Oregon Progress Report on Diabetes*. Department of Human Services, Health Services, Oregon Diabetes Prevention & Control Program, Portland, Oregon, 2006. http://www.oregon.gov/DHS/ph/diabetes/.

Oregon Department of Human Services (DHS), Public Health Division, Health Promotion and Chronic Disease Prevention Program. July 2007. *Keeping Oregonians Healthy: Preventing Chronic Diseases by Reducing Tobacco Use, Improving Diet, and Promoting Physical Activity and Preventive Screenings*. http://www.oregon.gov/DHS/ph/hpcdp/docs/healthor.pdf.

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ ***The BRFSS underestimates true diabetes prevalence because some people do not know they have diabetes, and because a telephone survey will miss people who do not have a telephone.***

INDICATOR: FOOD SAFETY

MEASURE: NUMBER OF REPORTED FOODBORNE DISEASE OUTBREAKS

Number of reported foodborne disease outbreaks by type and vehicle of transmission, number of notifiable foodborne disease cases.

The U.S. Centers for Disease Control and Prevention (CDC) collects data on reported foodborne disease outbreaks obtained through the Electronic Foodborne Outbreak Investigation and Reporting System (EFORS). This data is reported by each state and then published by the CDC annually in the Bacterial Foodborne and Diarrheal Disease National Case Surveillance Reports.

Additionally, the CDC oversees the Foodborne Diseases Active Surveillance Network (FoodNet), which is the principal foodborne disease component of CDC's Emerging Infections Program (EIP). FoodNet is a collaborative project of the CDC, ten EIP sites (including Oregon), the U.S. Department of Agriculture (USDA), and the Food and Drug Administration (FDA).

The first measure includes the number of reported foodborne disease outbreaks for Oregon, Washington and the United States from 1998 to 2002. The number of cases of foodborne diseases by type including campylobacteriosis, e. coli, listeria, salmonellosis, shigellosis and vibrio parahaemolyticus, is available for Oregon from 1986 to 2005.

BACKGROUND: The FDA regulates $417 billion worth of domestic food and $49 billion worth of imported food each year—everything we eat except for meat, poultry, and some egg products, which are regulated by the U.S. Department of Agriculture (FDA, 2007).

A report released by the CDC in collaboration with the FDA and USDA showed important declines in foodborne infections due to common bacterial pathogens in 2004. For the first time, cases of *E. coli* O157 infections, one of the most severe foodborne diseases, are below the national Healthy People 2010 health goal. From 1996-2004, the incidence of *E. coli* O157 infections decreased 42 percent. *Campylobacter* infections decreased 31 percent, *Cryptosporidium* dropped 40 percent, and *Yersinia* decreased 45 percent. Overall, *Salmonella* infections dropped 8 percent, but only one of the five most common strains declined significantly.

Several factors have contributed to the national decline in foodborne illnesses. The USDA's Food Safety and Inspection Service implemented a series of new recommendations beginning in 2002 to combat *E. coli* O157 in ground beef and *Listeria* in ready-to-eat products. In response, most establishments have significantly enhanced their food safety systems. Many have applied new technologies to reduce or eliminate pathogens and have increased their testing to ensure the effectiveness of control measures. Furthermore, these improvements likely reflect industry efforts to reduce *E. coli* O157 in live cattle and during slaughter.

The nationwide reduction in *Campylobacter* infections may be due to greater consumer awareness of safe poultry handling and cooking methods. Food safety education efforts targeted

to specific foodborne hazards as well as general consumer tips, such as the public-private Fight BAC!® campaign, have helped consumers become more aware and knowledgeable of food safety hazards and how to prevent them.

The incidence of *Shigella*, which is found in a wide variety of foods, did not change significantly from 1996 through 2004. *Vibrio* infections increased 47 percent. *Vibrio* infections, which are primarily associated with consumption of certain types of raw shellfish, can be prevented by thoroughly cooking seafood, especially oysters.

In 1996, the FoodNet surveillance system began collecting valuable information to quantify, monitor, and track the incidence of laboratory confirmed cases of foodborne illnesses caused by *Campylobacter*, *Cryptosporidium*, *Cyclospora*, *E. coli* O157, *Listeria*, *Shigella*, *Yersinia,* and *Vibrio*. Since its inception, FoodNet has grown to include ten states and 44 million people, about 15 percent of the American population. (USDA, 2008).

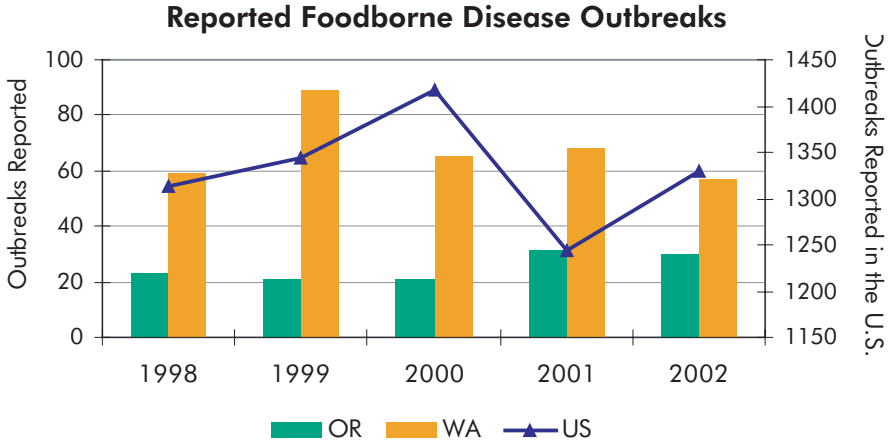
FINDINGS & TRENDS:

■ From 1998 to 2002, the number of reported foodborne disease outbreaks in Oregon rose from 23 to 30. In Washington, outbreaks decreased from 59 to 57. 1999 was a particularly bad year in Washington with 89 reported outbreaks.

■ On average, Oregonians reported fewer than half the number of outbreaks reported in Washington.

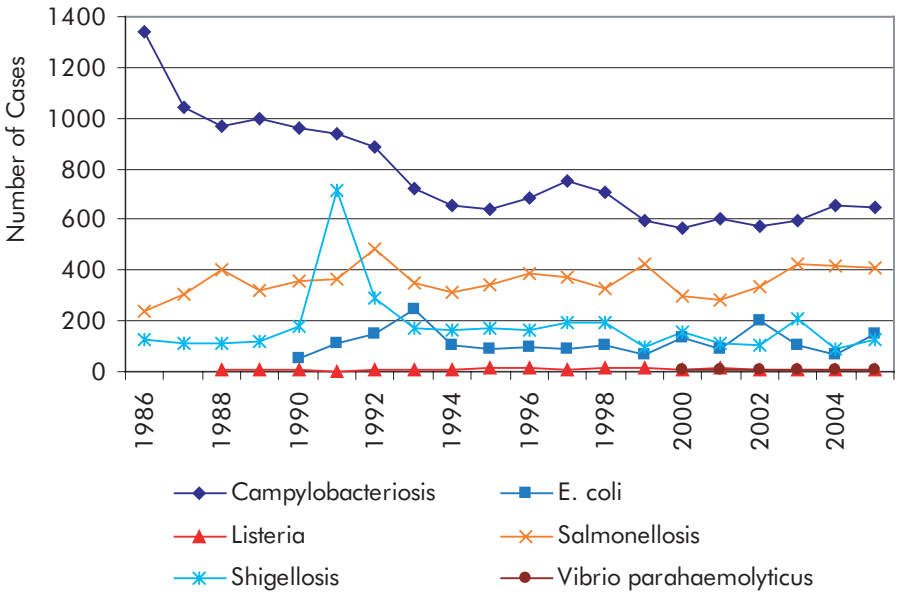
■ Although the number of cases for the six main types of foodborne diseases in Oregon has fluctuated over the years, the number of reported cases from these sources has trended downward since 1999.

■ *Campylobacter* is the most common single identified cause of foodborne illness in Oregon. In 1986, there were 1,344 cases of campylobacteriosis, but the number of cases fell to 647 by 2005. The number of cases for e. *coli*, *listeria*, and *salmonellosis* all increased from 1986 to 2005.



Source: Lynch et al., 2006

Notifiable Foodborne Diseases by Onset Year in Oregon



Source: ODHS, 2005

Sources:

Lynch, Michael, MD, John Painter, DVM, Rachel Woodruff, MPH, and Christopher Braden, MD. 2006. "Surveillance for Foodborne-Disease Outbreaks – United States 1998-2002." MMWR. Centers for Disease Control and Prevention. 55 (SS10): 1-34 (retrieved April 2008). http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5510a1.htm?s_cid=ss5510a1_e#fig2

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U.S. Department of Agriculture. "Foodborne Illnesses Continue Downward Trend: 2010 Health Goals for E. coli O157 Reached." Food Safety and Inspection Services (retrieved April 2008). http://www.fsis.usda.gov/News_&_Events/NR_041405_02/index.asp

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U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. FoodNet – Foodborne Diseases Active Surveillance Network (retrieved April 2008). http://www.cdc.gov/foodnet/

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Bacterial Foodborne and Diarrheal Disease National Case Surveillance Reports. Outbreak Surveillance Data (retrieved January 2008). http://www.cdc.gov/foodborneoutbreaks/outbreak_data.htm

Disclaimer: This indicator is based on information from credible sources. However, changes in collection methods and statistical procedures that have occurred over time may affect the data presented. Limitations that are acknowledged by the sources are noted below. Nevertheless, caution should be taken when interpreting all available data.

■ *An outbreak of foodborne illness occurs when a group of people consume the same contaminated food and two or more of them come down with the same illness. The vast majority of reported cases of foodborne illness is not part of recognized outbreaks, but occurs as individual or "sporadic" cases. It may be that many of these cases are actually part of unrecognized widespread or diffuse outbreaks (CDC, 2008).*

■ *Foodborne illnesses may be under-reported. Tens of thousands of cases of "notifiable conditions" are reported every year; however, most foodborne infections go undiagnosed and unreported, either because the ill person does not see a doctor, or the doctor does not make a specific diagnosis. Also, infections with some microbes are not reportable in the first place (CDC, 2008). Alternatively, trends can reflect an increase in the diagnosis of a particular illness, rather than an increase in the number of cases.*

APPENDIX B

Process and Methodology

Institute of Portland Metropolitan Studies
Nohad A. Toulan School of Urban Studies and Planning
College of Urban and Public Affairs
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Process and Methodology

This appendix describes the adaptive learning research process and research methodologies used in the Regional Food System Sustainability Assessment.

Introduction

Community Food Matters (CFM), a local food system coalition, was formed in 2001 with an advisory board that included representatives from public, private, non-governmental, and academic sectors. CFM's engagement with food system stakeholders established the need for a collaborative, systemic approach to regional food issues and the need for a regional food system assessment. Although business, government, and non-profit organizations have developed programs and policies targeted at sustainable food systems, there were no collective goals to guide their work. Furthermore, although a great deal of information about different aspects of the food system existed, there was no comprehensive set of data to measure systemic changes and to inform policy. The Institute of Portland Metropolitan Studies took up the assessment initiative where CFM left off.

This Regional Food System Sustainability Assessment was guided by an adaptive learning process that integrates community-based (bottom-up) and expert-driven (top-down) approaches for developing food system goals and data indicators (Reed, Fraser and Dougill, 2006). One objective of the process was to develop indicators that are relevant to food system actors, e.g. businesses, non-profits and agencies by involving these stakeholders in goal setting and data selection. The other objective was to collect reliable, accurate, and credible data by involving technical specialists in the data review process. This assessment provides an array of data guided by previous measures other communities have looked at, and data specifically requested by local stakeholders.
As this is the first assessment done for the Portland-Vancouver region, its purpose is to establish baseline descriptive information that many different users find relevant. It also provides a vehicle for a wider conversation about strategies to reach sustainability goals. One of those strategies may be to extend this process by testing and modifying the indicators, establishing baselines, and selecting an appropriate on-going set of data to assess system changes over time.

Methodology

In developing this assessment, we used an adaptive learning process, which is an integration of community knowledge and technical expertise (Reed, Fraser and Dougill, 2006). This process, described in Figure B.1, contains a number of steps for using indicators to guide the development of sustainability programs and policies. This food system sustainability assessment and the accompanying stakeholder involvement process drive us through step 5 in Figure B-1.

Three factors influenced the data chosen for this report: First, we examined existing city, county, state and community-level food assessments conducted around the nation (Roots of Change Council, 2005; Feenstra et al., 2002; Hammer and Margheim, 2006; Hinrichs, 2002; Ruhf et al., 2002; Pothukuchi et al., 2002). We used these documents as a starting point for data identification. Second, we talked with stakeholders to determine what kinds of data would be most useful to them in terms of assessing whether the system was improving. Finally, we conducted extensive searches and talked with data experts to find reliable sources of information. The resulting set of indicators will be reviewed and discussed in detail by stakeholders at a food system forum on April 25, 2008. Feedback from this event will be incorporated into the final draft of the report.
In developing our methodology, we consulted with a number of people who had conducted similar assessments in the past. Significant input was adopted from the following individuals: Molly Anderson, Professor,

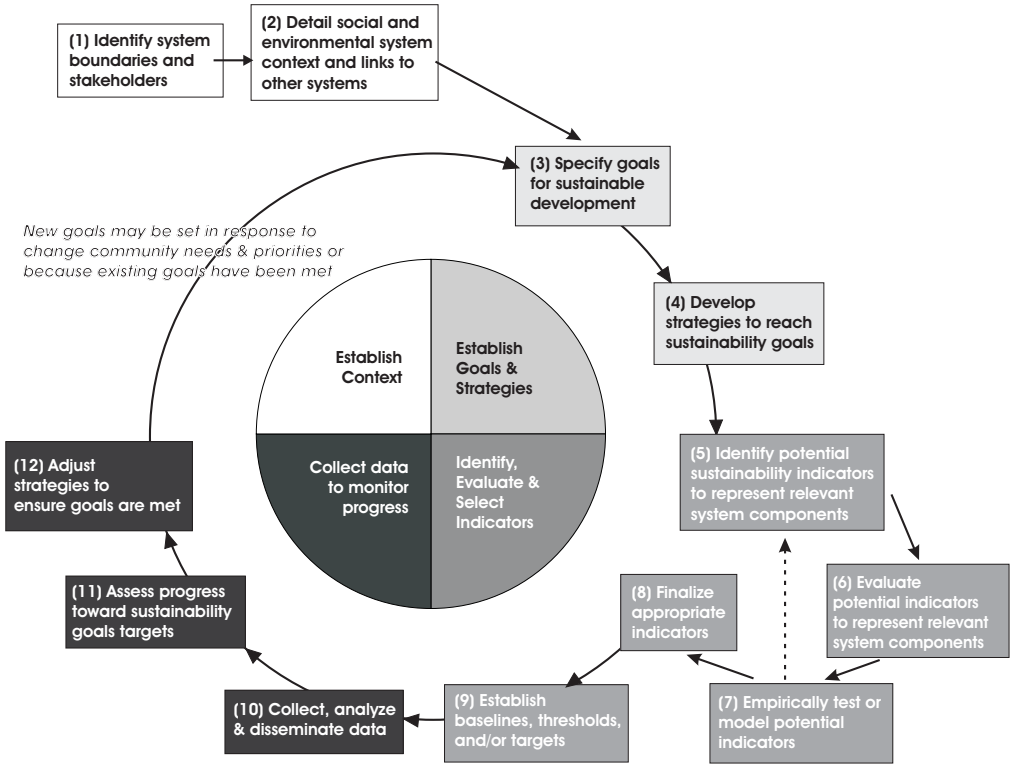

Figure 1B: Adapted from "Adaptive learning process for sustainability indicator development and application (Reed, Fraser, and Dougill, 2005).

Consultant on Science and Public Policy; Suzanne Briggs, Consultant; Gail Feenstra, Professor, University of California, Davis; Shanna Ratner, Facilitator and Principal Yellow Wood Associates, Vermont.

Gathering Stakeholder Input

We designed our stakeholder involvement process after a careful review of alternative methods and discussions with leaders of other food system assessments (Innes and Booher, 2000; Reed et al., 2006; Ozawa, 1993; Helmfird et al, 2007). One of our objectives for the stakeholder input process was to include input from a diverse group of individuals representing different sectors of the food system from both Oregon and Washington. In particular, we pursued participation from stakeholders based on specific criteria. We looked for participants with the following qualifications:

1. Involved in program or policy making organization that impacts the food system.

2. Whose program efforts or expertise relate to specific food system sustainability goals.

3. Contribute to a diversity of substantive and organizational perspectives.

4. Willing to be and stay involved.

5. Found through referrals by other stakeholders or leaders.

6. Provide a mix of "fresh" and "established" voices, e.g. not everyone a member of multiple food system projects to shape opinion/policy.

7. Provide representation from both Oregon and Washington and from both urban and rural areas.

8. Provide a mix of resource scales (e.g. small, medium, large-scale organizations and related amount of economic/land/organization resources).

We employed a snowball sample methodology, initially identifying individuals by reviewing conference lists from other food-related events, conducting internet searches, reviewing industry compendiums of organizations, and through personal relationships. We built the sample by asking initial subjects to identify ten organizations they felt have a large impact on policy/programs regarding the food system. Of the 60 interviews conducted, 10 individuals were from government agencies which oversee city, county and state programs for farmers or the environment, 2 were from academic institutions providing program support at different levels of the food system, 16 were from local small, medium or larger businesses producing, processing, and selling food, 3 were from faith organizations with food or farm labor programs, 9 were from non-profit health advocates, and 13 were from non-profit advocates for the environment, agriculture, labor, farmers, or workers in training.

We collected input from stakeholders at five different stages of the assessment process as described below. The list of stakeholders is in Table B-1. Some interviewees requested anonymity and therefore are identified only by their area of expertise.

Table B-1: Stakeholders Interviewed

Goal Area	Name	Affiliated Organization
Health	Anonymous Health Care Provider	Anonymous Health Care Service for Workers (OR)
Health, Food Access	Anonymous Health Service Programs	Anonymous Health Service (OR)
Health, Resources	Allison Hensey, Program Director	Oregon Environmental Council (OR)
Economic	Ambrose Calcagno, Farmer	Cal Farms (OR)
All	Amy Gilroy, Clark County Food Assessment Consultant	Steps 2010, Clark County (WA)
Economic	Anne Berblinger, Farmer	Gales Meadow Farm (OR)
Worker Opportunity	Andrea Cano, Executive Director	Oregon Farmworker Ministry (OR)
Resiliency	Andrew Haden, Food and Farms	Ecotrust (OR/WA)
Worker Opportunity	Bee Cha, Farm Program Coordinator	Washington State University, Small Farm Program, (WA)
Economic	Brian Rohter, CEO	New Season's Market (OR)
Economic	Anonymous Hazelnut Farmer	Orchard (OR)
Health	Colleen Donovan, NW Program Manager	North American Program of Heifer International (WA)
Economic	Connie and Doc Hatfield, Owners	Natural Country Beef (OR/WA)
	Dan Barnhart, Member Rancher	
Health	Christine Lau, Program Director	Asian Health and Service Center (OR)
Economic, Resiliency	Dave Williams, CEO	Shorebank Pacific (OR/WA)
Resources	Emma Sirois, Program Director	Oregon Center for Environmental Health (OR)
	and John Stoddard	
Resiliency	Eric Hurlburt, Chief,	Washington St. Dept. of Agriculture
	Dom. Mktg. & Econ. Devel.	
Food Access	Erik Sopkin, Food Access Committee Member	Portland Multnomah County Food Policy Council (OR)
Worker Opportunity	Fernando Gutierrez, Workforce Development Manager	Oregon Human Development Corporation (OR)
Economic	Geoff Horning, Executive Director	Agribusiness Council of Oregon (OR)
Economic	Gina Niesl, Buyer	McMenamin's (OR/WA)
Economic	Gretchen Eichentopf, Owner	Otto's Meat Market (OR)
General	Heather Tischbein	Clark County Food System Council
Economic	Heidi Luquette, Public Relations and	Tillamook Cheese (OR)
	Mark Wustenberg, VP Member Relations	
Health	Jeanine Stice, Dietician	Willamette Dieticians Association (OR)
Economic & Resources	Jennifer Allen, Board Member, Professor	Food Alliance (OR/WA)
		Portland State University

Table B-1: Stakeholders Interviewed (cont'd)

Goal Area	Name	Affiliated Organization
Health	Jenny Holmes, Environmental Ministries Director	Ecumenical Ministries (OR)
Food Access	Jessica Chanay, Programs and Communication	Oregon Hunger Relief Task Force (OR)
Economic	Joe McGarry, Company Chef	Bon Appetit Management (OR)
Resources	John Roney, Agriculture Coordinator	Snohomish County (WA)
Health	Julie Piper Finley, Dietician	Loaves and Fishes (OR)
Resources	Kat West, Sustainability Coordinator	Multnomah County (WA)
Resources	Kate Kimball, Lawyer	1000 Friends of Oregon (OR)
Economic	Karl Kupers, Co-owner	Shepherd's Grain (OR/WA)
Food Access, Worker Opportunity	Karla Smith-Jones, Marketing Communications Manager	Farestart in Seattle (WA)
Resources	Kristy Korb, Certification Director	Oregon Tilth (OR)
Health, Worker Opportunity	Leda Garside, Clinical Nurse Manager	Tuality Healthcare, Oregon Latino Health Coalition (OR)
Resources	Lonnie Dicus, Business Services and Plant Manager	City of Beaverton (OR)
Economic	Mary Embelton, Executive Director	Cascade Harvest Coalition (WA)
Resources	Martine Roberts-Pillon, Solid Waste Department	DEQ (OR)
All	Megan Fehrman, Education and Outreach	Friends of Family Farmers (OR)
Resources	Michael Piper, Sustainability Coordinator	City of Vancouver (WA)
Health, Food Access	Nancy Becker, Dietician and Adjunct Professor	Oregon Dietitic Association, PSU Chemistry Department (OR)
Health	Nancy Ludwig, Program	Lincoln County WIC Program (OR)
Resiliency	Patrice Barrentine, Direct Mktg. Coordinator	WSDA, Small Farm and Direct Marketing Program (WA)
Resources	Tom Badrick, Sustainability Coordinator	Legacy Hospital (OR)
Economic	Ryan Wist, Quality Assurance Manager	Scenic Fruit Company (OR)
Economic	Rick Jacobsen, Consultant	Retired President & CEO of NORPAC (OR/WA)
Health	Sandra Kelly, Food and Nutrition	Kaiser Permanente (OR)
Food Access	Sharon Thornberry, and Shawn DeCarlo	Oregon Food Bank (OR)
Resiliency	Shina Wysocki, Shellfish Farmer	Chelsea Farms, member of Pacific Coast Shellfish Growers (WA)
Worker Opportunity	Steve Witte, Regional Director	United Farm Workers (OR/WA)
Resources	Steve Cohen, Office of Sustainability	City of Portland (OR)
Health, Resiliency	Tom Badrick, Sustainability Coordinator	Legacy Health Systems (OR)
Resources, Economics	Tracey Liskey, Farmer	Liskey Farms Inc. (OR)

APPENDIX C

Process to Develop Strategies

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Process to Develop Strategies

This appendix describes action items participants developed in the April 25, 2008 forum as part of the Regional Food System Sustainability Assessment. While we did not design the exercises to developing a strategic plan, the list of actions that emerged can be used as a starting point for developing a regional food systems sustainability strategy.

Introduction

In the previous appendix, we described the Adaptive Learning Process for developing sustainability indicators in assessments. Step 4 of this process is to "develop strategies to reach sustainability goals." The foundation for this step occurred in the forum when stakeholders brainstormed potential actions that can be taken on three food system issues. This list of actions can be incorporated into a plan for how to attain different food system goals, and issues related to those goals. Please refer to the Conclusions section in the assessment for strategies that link stakeholder actions to food system goals.

Issue Selection

During the food system forum, nearly 100 participants were asked to prioritize a list of issues developed from stakeholder assessment interviews and workshops. This list was not complete or all-encompassing. Each issue was directly related to one, or a combination, of the stakeholder-defined sustainable food system goals. Figure C-1 shows the group worksheet used in the forum. Each group had a volunteer facilitator and note-taker to guide participants through the process. In the morning session, sixteen separate groups selected issues they felt were most immediately important; no other criterion for selection was given. Each group voted for their top three issues; facilitators compiled the votes; and participants re-visited the final three issues in the afternoon session. No one topic received overwhelming consensus as being the most important. Participants' voting indicates that many issues are in need of equal attention at this time.

The top three issues, voted as most pressing by seven to eight of the sixteen groups, are listed below.

- Supporting producers who change their farming and ranching practices to build soil health, support natural animal instincts, and reduce air and water pollution.

- Ensuring that alternative farming and ranching practices are profitable (result: more brands, products available that use sustainable practices).

- Increasing the affordability of nutritious food.

These three issues represent economic, environmental, and social health components of the food system. Specifically, they relate to human capital, land, water and animal resources, and ensuring the profitability of sustainable practices.

The second set of issues received equal weighting (six groups for each) by participants. This second tier of issues reflects participants' concern for the social and human capital in the food system.

- Ensuring that we have sufficient labor to do farm work (this includes both farmers and workers).

- Increasing access to capital (public and private) and tools to achieve professional advancement and improve the quality of life of every food system worker.

- Increasing the percentage of regionally-owned businesses (including producers, distributors, and wholesale chains).

- Increasing the number of nutrition programs in schools (e.g. programs that give information about growing food, understanding where, how and by whom food is produced, or teaching how to prepare food).

■ Reducing fossil fuel dependence to reduce costs.

The first three focus on stabilizing the food system's work force through regional ownership, professional advancement, education, and supporting access to tools and capital. Further, participants revealed a concern for sustaining the health of future generations of food system workers by focusing on both school nutrition programs and reducing dependence on fossil fuels.

Action Items for Food System Issues

The afternoon session followed a discussion of food system issues, including a review of regional assessment data and panelist dialogues about how their efforts are impacted by resource trends in the system. In this session, groups brainstormed a list of actions the government, businesses and lenders, non-profit or community groups, and the academic sector could take to support each of the three top issues from the morning. Five or six groups worked on developing action items for one of the three food system issues. In order to develop actions, multiple groups re-worded the original issue statements to make them relevant from the participants' perspectives.

Despite arising from three different substantive issues, the suggested practices, programs, and policies had a great deal of overlap. This section summarizes common suggestions by sector, including a list of the most popular actions. It is important to note that some items are actually values, or ideals, for improving the whole food system. For example, increased transparency in communication is an objective that would require a series of actions to attain.

All groups favored increasing education, fostering new partnerships, and supporting sustainable practices and nutritious eating habits through institutional purchasing policies. Participants repeatedly suggested that every institution follow procurement policies that support local and sustainable businesses. This would effectively drive market demand for local, regional and sustainably produced food. Additionally, if institutions develop educational and outreach materials about why they adopt such policies, they help increase consumer understanding about how food is sourced. Fostering communication among diverse stakeholders was repeatedly highlighted. New relationships would help resource sharing, utilize existing infrastructure, and identify gaps in the system.

Stakeholder Suggested Government Actions

Restructure the Federal Farm Bill and Commodity Programs. All groups favored reprioritizing and restructuring the Federal Farm Bill and federal funding for support programs. Participants suggested lowering, removing, capping or phasing out commodity subsidies while developing new subsidies for organic, bio-diverse or other farming and ranching practices that build soil health, support natural animal instincts, and reduce air and water pollution.

Change Funding, Programs and Regulations. Suggested actions reflect a desire to prioritize government funding and policy making to support sustainable farm practices. This includes educating farmers and ranchers, incorporating this focus in agricultural extension service programs at land grant universities, regulating markets (e.g. ending large industry monopolies), and developing monetary incentives. A desire for point of origin labeling requirements emerged in addition to a desire for an easy and cost-efficient third-party certification process.

Innovative policies include a tax on junk food, redefining interstate and commerce laws to encourage local food purchases, establishing a state-level food policy council, creating organic farming homesteads through county tax breaks, and requiring large companies to buy and sell sustainable products. One group suggested creating a green payment program where farmers or ranchers are paid for providing environmental services (e.g. promoting ecosystem health).

Table C-1: Group-favored Government Actions across Three Issues (based on group votes)

Promote environmental benefits to sustainable practices.
Promote the producer's story in government funded marketing.
Include Community Supported Agriculture (CSAs) and farmers markets into federal food programs (e.g. so food stamps can be used in this way).
Change the farm bill to encourage fruit and vegetable production and discourage corn (e.g. corn syrup) production.
Lower, shift, remove, cap, or phase out commodity subsidies.
Create new subsidies for organic, bio-diverse, and other sustainable farming and ranching practices.
Create consumer incentives (e.g. rebates) to buy locally made/grown products.
Provide vouchers based on nutrition instead of food price.
Create label regulations to discourage misleading ads about food.
Create a tax on "junk" food.
Create tax credits for environmental service improvement (e.g. water, air) for targeted areas.
Create organic farming homesteads through county tax breaks
Establish a state-level food policy council.
Regulate markets to support sustainable food growing practices.
Create a point of origin labeling requirement.
Provide space for farmers' markets.
Develop cooperative equipment purchasing.
Create an improved guest worker program (without labor for more labor-intensive sustainable practices, growers can't continue producing this way).
Continue USDA small farm support programs.
Expand USDA farm support programs to large farms.
Subsidize equipment purchases.
Increase funding to encourage institutions to use sustainable food (e.g. schools, hospitals).
Improve waste-stream management.
Establish political campaign finance reform.
Address all costs, not just monetary (e.g. equipment funding).

Stakeholder Suggested Business and Lender Actions

Increase Collaboration across All Sectors in the Food System. Participants underscored the desire to include a social ethics perspective in business and lending practices. They repeatedly voiced the need for collaboration and partnerships across sectors. Suggested actions reflect a desire to develop cooperatives, including cooperative purchasing of equipment.

Change Lending Protocol to Reflect Food System Limitations. Actions involve lenders revisiting their loan and funding protocol to make it more in line with the realities and limitations of a food system. Examples include banks engaging in long-term lending practices, giving preference to businesses using sustainable practices, and programs supporting local cooperatives or collectives. Specific lending protocol changes include using longer time lines, providing lower interests rates for sustainable practices, establishing micro-lending programs, and using "skip payments" modeled after the lumber industry to address seasonality issues for farmers.

Fund and Implement Programs Supporting Sustainable Practices. Innovative pro-

gram suggestions include funding Individual Development Accounts for farmers, using fixed price seasonal contracts based on the cost of production and a reasonable rate of return, coordinating a state-wide gleaning program, re-evaluating waste products from fruit and vegetables (e.g. creating compost for farms), providing parking lot space for farmers' markets and establishing workplace nutrition programs.

Stakeholder Suggested Non-profits and Community Group Actions

Support Continuing Food System Dialogues. Participants suggested that non-profit and community groups should continue mobilizing membership and community advocacy for food system changes. They also highlight the need for this sector to contribute to fostering communication among the other sectors, and connecting resource gaps.

Table C-2: Group-favored Business and Lender Actions across Three Issues (based on group votes)

Businesses should transfer knowledge.
Invest in long-term relationships with sustainable suppliers.
Develop institutional purchasing standards that support local and sustainable foods (e.g. universities, hospitals, schools, Nike).
Restructure loans to have longer timelines with lower interest rates.
Provide low-interest loans for sustainable farm practices.
Create lending policies that support cooperatives and collectives at the local level.
Create innovative lending practices that increase access to capital.
Use "skip payments" modeled after the lumber industry to address seasonality issues (e.g. where loans/ contracts are not payable during the off season for farmers).
Provide low-cost loans for start-up farmers.
Work with government to create incentives for vendors and grocery stores.
Include carbon footprint information in grocery store and food labels.
Use fixed-price seasonal contracts based on the cost of production and a reasonable rate of return.
Businesses should connect with small sustainable agricultural concerns.
Create distribution chains through larger businesses buying from smaller producers.
Large institutions should develop internal procurement goals focused on sustainable and/or local vendors.
Develop co-op leasing arrangements for technological assistance.
Use education and outreach in the workplace.
Teach about seasonal and nutritious foods, combined with tastings, in grocery stores.
Include carbon footprint information in grocery store and food labels.
Businesses incorporate ethical citizenship policies into practices (e.g. rethink the bottom line).
Assist in promoting food access programs with advertising and outreach in the local community.
Shift from commodity-based supply chains to community-based supply chains.
Create work-food exchanges between farmers and urban produce pickers.
Establish workplace cafeteria programs that promote healthy food now and will reduce healthcare costs later.
Re-evaluate waste products from fruits and vegetables for other uses (e.g. compost).

Contribute to Innovative Programs. Suggested programs reflect the role of promotion and education that non-profits can play. These include developing integrated banking systems, increasing recognition for sustainably produced items, creating gardening and cooking classes, donating land for community gardens (e.g. churches and other organizations), and fostering youth programs that connect students to farming.

Stakeholder Suggested Academic and Educational Institution Actions

Develop and Implement Food System Curricula for All Ages. Forum participants recommended incorporating food system issues in the curriculum across all schooling levels. Specific classes should include nutrition, gardening, cooking, and physical education. Farm-to-school programs could encompass all of these topics.

Table C-3: Group-favored Non-Profit or Community Actions across Three Issues (based on group votes)

Educate and mobilize membership for grassroots advocacy.
Put a face on producers at related non-profits (e.g. the Oregon Food Bank).
Educate the public about food systems.
Connect food organizations with farmers.
Involve the community in outreach.
Encourage public participation in food issues.
Connect youth to the food system, from seed to harvest, through educational programs.
Coordinate complementary programs that link adolescents to farm employment and fulfill labor needs.
More food banks and gleaning projects.
Teach skill-building in gardening courses.
Teach cooking skills, especially using healthier foods.
Educate about personal choices.
Introduce different flavors and textures to children through tastings.
Churches and organizations donate land for community gardens.
Bring proposed policies to government.
Support, or partner to create, micro-credit lending (e.g. could receive money from for-profits and redistribute it this way).
Foster communication and collaboration between diverse stakeholders.
Share resources in collaboration to build critical mass and weigh in on policy.
Utilize existing infrastructure to fill gaps in the food chain (e.g. help with efficiencies).
Offer farmers' market classes as part of pre-natal program.
Create mobile processing facilities (e.g. for slaughter).
Link the Portland metropolitan region with education farms (e.g. Zenger Farm).
Create buyers' clubs to encourage neighborhood level food-sheds.
Coordinate statewide donation and gleaning projects.
Advocate food system policy changes to consumers.

Provide Education, Research and Technical Support to Producers. Stakeholders want programs specific to farmers' needs—for example, courses on the economic principles of institutional purchasing, labor training programs, and ensuring that food system information is disseminated to rural areas. Participants suggested that agricultural extension programs continue at land grant universities, with sustainable agriculture becoming a stronger focus.

Research specific to farmers' needs was emphasized, as well as developing a strategic research agenda that supports all of aspects of sustainability.

Table C-4: Group-favored Academic Institution Actions across Three Issues (based on group votes)

Improve standards for healthy food in schools.
Include home economics, gardening and cooking classes in K-12 curriculum.
Support physical education and nutrition classes.
Conduct service learning field trips so students can learn about harvesting, farming, and production.
Create farm-to-school courses for youth.
Integrate sustainability concepts into other academic subjects.
Include education about farm system soil health in the curriculum.
Teach farmers the economic principles of institutional purchasing.
Provide sustainable agriculture courses in the traditional agriculture curriculum at land grant universities.
Make sustainable agriculture essential to land grant universities' mission so that it becomes a major focus.
Increase the number of sustainability program degrees.
Train advocates for sustainable food systems.
Engage more people in the food conversation.
Increase awareness of cooking and nutrition education programs.
Increase agriculture extension outreach.
Develop institutional purchasing of local and sustainable products at all education levels.
Establish gardening and cooking education programs.
Develop a systematic, non interest-based, strategic research agenda that supports all aspects of sustainability.
Define, assess and monitor trends.
Create a repository, or library, of data indicators and food information.
Increase funding for food-related research and data collection.
Create and implement a farm curriculum that is tied to state benchmarks (e.g. kids can be taught science, math and business on farms).
Connect culinary arts programs to sustainable food production programs.
Limit junk food marketing in schools.
Collect data on consumption.

Stakeholder Suggested System-level Changes

Participants in the forum listed desired outcomes that are beyond any single-sector or two-sector actions. Many of these changes require shifts at the national and state levels in order to impact the local region.

Table C-4: System-level Changes or Values Requiring Collaboration among All Sectors

Create living wage jobs.
Reduce transportation costs.
Create new economic development.
Establish more participatory processes in food issues.
Make production and advertising transparent.
Shift from commodity-based supply chains to community-based.
Businesses incorporate ethical citizenship policies into practices (e.g. rethink the bottom line).
Improve waste-stream management.
Increase access to equipment.
Put a value on all environmental and social costs.
Educate the urban population about the food system (e.g. effects of weather on crops).
Conduct a comprehensive assessment of current pollution levels in agriculture (involves all sectors).
Create uniform messages and goals among academic, non-profit and government sectors regarding improving soil health.

Figure C-1: Group Worksheet

Planting Prosperity and Harvesting Health
April 25, 2008, 8-3pm
Group Break-Out Issue Sheet

Morning Instructions:
Below are some of the issues stakeholders told us are important. Based on what you heard in the data overview and on your own experience in the food system, please identify **the top five issues your group thinks are most important.** You do not need to rank them all, just read through the list and choose the top five (in your group's opinion).

- Supporting producers who change their farming and ranching practices to build soil health, support natural animal instincts, and reduce air and water pollution.
- Ensuring that alternative farming and ranching practices are profitable (result: more brands, products available that use sustainable practices).
- Reducing fossil fuel dependence to reduce costs.
- Increasing diversity (sources and materials) in food production and processing.
- Increasing the percentage of regionally-owned businesses (including producers, distributors and wholesale chains).
- Increasing the value of productive farm land to be more competitive with development.
- Increasing the number of food outlets in low-income neighborhoods that provide a wide selection of nutritious, affordable foods.
- Increasing the number of nutrition programs in schools (e.g. programs that give information about growing food, understanding where, how and by whom food is produced, or teaching how to prepare food).
- Increasing the affordability of nutritious food.
- Making information available to consumers that describes food origins.
- Creating mechanisms to transfer ownerships of farms so they stay in production (e.g. an owner to a worker).
- Ensuring that we have sufficient labor to do farm work (this includes both farmers and workers).
- Increasing access to capital (public and private) and tools to achieve professional advancement and improve the quality of life of any food system worker.

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