

2010 AGRICULTURAL WORKFORCE

Employment
Hours Worked
Earnings
Labor Market
Animal Production



**Washington State
Employment Security Department**



Labor Market and Economic Analysis
July 2011



2010

Agricultural Workforce Report

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Foreword

The Employment Security Department (ESD) collects data on agricultural employment, unemployment, wage rates and earnings to assist Washington's agricultural industry in the recruitment of farm workers and in industry management. Over the seasons, it is important to estimate the number of workers needed across the agricultural regions of the state and the available labor supply to meet those needs. Reliable estimates of the wage rates paid to these workers for different jobs are crucial as well. Also, it is important to understand how the industry evolves and responds to economic and weather challenges each year and over time.

A major source of agricultural farm labor data is ESD's *Unemployment Insurance (UI) Wage File*. Since 1990, the data compiled from the UI wage records include virtually all hired agricultural employment and wages paid. These highly reliable data are essential to measure the impact of agriculture on the state and local agricultural regions. Complementing this data source is the *Quarterly Census of Employment and Wages (QCEW)*.

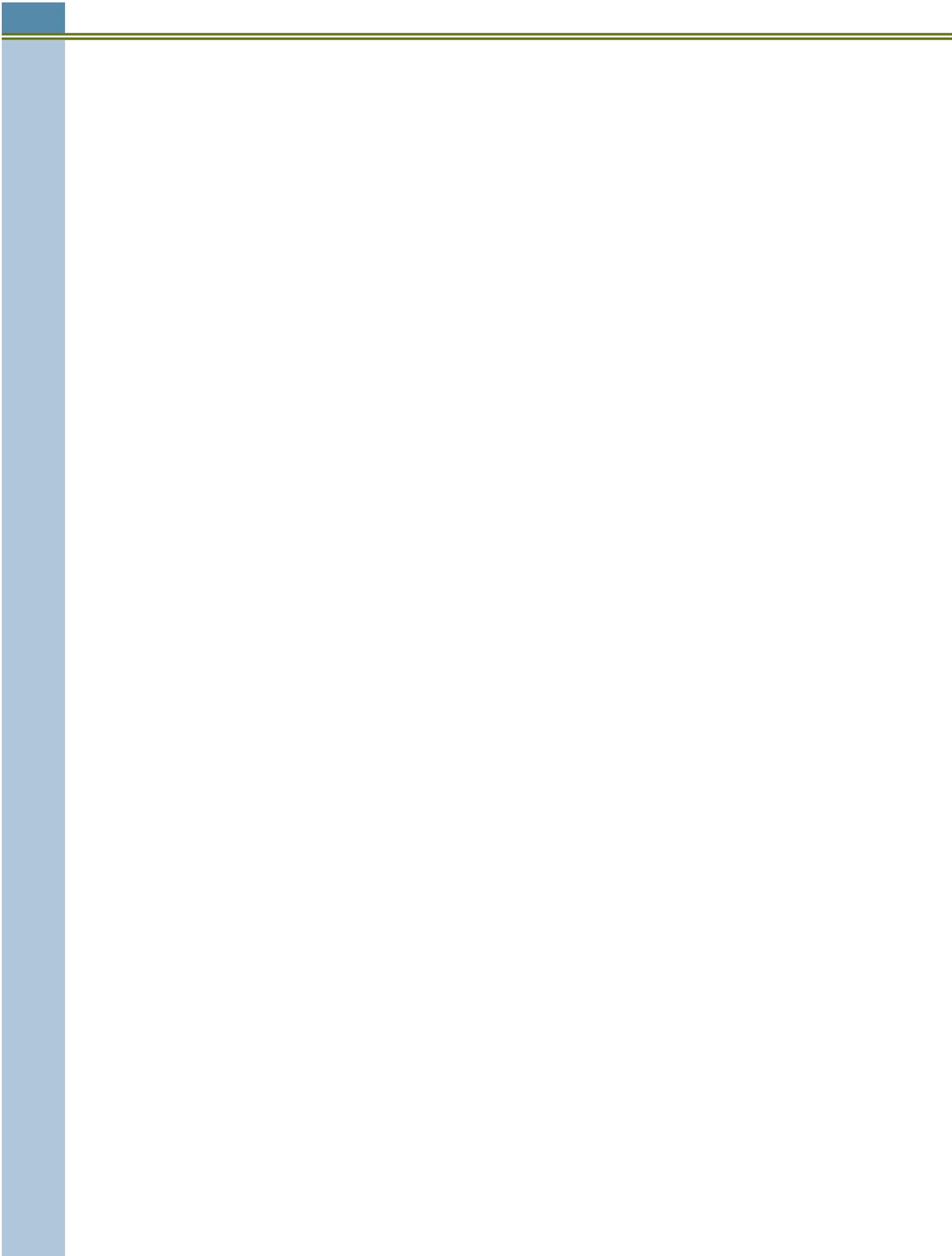
However, the UI wage records and the QCEW do not include information on employment and wages in specific activities such as apple tree pruning or fruit thinning. To obtain these data, ESD conducts a monthly scientific survey – the *Agricultural Labor Employment and Wages* survey – in which approximately 1,100 agricultural producers participate. Information collected in the survey is used to estimate the number of seasonal employees working in specific jobs each month and their wage rates.

The third primary source for the data in this report is the *Washington Annual Agriculture Bulletin* and supporting data from the U.S. Department of Agriculture's National Agricultural Statistics Service website. Complementing this annual report is the *2007 Census of Agriculture* for the state of Washington.

The final primary source of data is the various growers' associations, such as the Northwest Cherry Growers and the U.S. Apple Association.

It is important to note that final, official or even preliminary data are not yet available for some of these data sources for the 2010 calendar or fiscal year. In such cases, data for 2007, 2008 or 2009 are the latest figures available. This is the case in particular for the *Washington Annual Agriculture Bulletin*. Production data for 2010 will not be available until after publication of this report.

Taken as a whole, these data can assist agricultural employers in assessing their labor requirements. These data can also assist economists and policymakers in estimating the impact of seasonal farm work and agricultural labor on Washington's economy. Finally, for state and local officials and social service agencies, these data can provide a basis for estimating the impact of the farmworker population on their existing and proposed programs and facilities.



CHAPTER ONE

The State of the Agricultural Economy

This chapter describes the agricultural sector's role in the overall economy of Washington state.¹ The estimates for physical production and the current and inflation-adjusted dollar production value are for calendar year 2009, and the employment and earnings data are from 2010.

Agricultural production in commodity quantity terms is relatively stable from year to year, assuming other factors, such as weather, do not change significantly. The 2009 physical commodity output and the current dollar value of production help establish the context for analyzing the agricultural workforce during the 2010 production cycle. This is because the demand for labor is a derived demand, dependent on the demand for agricultural goods and services. If the demand for an agricultural good rises, other things equal, the demand for labor to produce that good will increase. The opposite occurs if the demand for an agricultural good falls.

The most striking example of this principle continues to be the sweet cherry harvest in June and July of 2006, when a harvest of high quality and quantity resulted in an increased demand for agricultural labor to harvest the crop, driving up current dollar *and* inflation-adjusted average hourly earnings while the quantity of labor supplied increased.²

The Value of Agricultural Production

The value of total agricultural sector production for Washington state in 2009 was \$7.1 billion in current dollars. The value of the state's gross domestic product in 2009 was \$336.3 billion in current dollars.³

Significant changes in the value of agricultural production continue to occur over the years 2006 through 2009. Between 2006 and 2007, the current dollar value of agricultural production rose by \$1.6 billion, or 23.6 percent. Between 2007 and 2008 the current dollar value of agricultural production fell by \$444.7 million, or 6.6 percent. Then, between 2008 and 2009, the current value of agricultural production fell by \$639 million, or 8.2 percent (*Figure 1-1*).⁴

In contrast, note the inflation-adjusted estimates shown in *Figure 1-1*. Setting 2009 as the base year – standing at the present and looking back in time – we see a different picture. Between 2006 and 2007 the value of inflation-adjusted agricultural production increased by \$2.7 billion, or 46.1 percent. From 2007 to 2008 the value of agricultural production again increased, but only by \$304 million in inflation-adjusted dollars, just 3.6 percent. Then, between 2008 and 2009, the inflation-adjusted value dropped by \$1.7 billion, or 19.4 percent.



Figure 1-1

Total Value of Agricultural Production and Government Payments, in \$1,000s of Current and Inflation-adjusted Dollars, Base Year 2009 = 100, Price Index for All Farm Products

Washington State, 2000 through 2009

Source: Appendix Figures 1-1 and 1-3

YEAR	TOTAL VALUE OF PRODUCTION		TOTAL VALUE OF PRODUCTION PLUS GOVERNMENT PAYMENTS	
	CURRENT	INFLATION-ADJUSTED INDEX ALL FARM PRODUCTS	CURRENT	INFLATION-ADJUSTED INDEX ALL FARM PRODUCTS
2000	\$5,145,716	\$3,770,781	\$5,498,509	\$4,029,307
2001	\$5,430,637	\$4,228,294	\$5,729,658	\$4,461,112
2002	\$5,470,653	\$4,092,596	\$5,686,565	\$4,254,119
2003	\$5,446,008	\$4,406,910	\$5,711,406	\$4,621,670
2004	\$5,526,095	\$5,019,905	\$5,723,069	\$5,198,836
2005	\$6,052,332	\$5,266,739	\$5,428,762	\$5,429,762
2006	\$6,606,517	\$5,799,861	\$6,736,095	\$5,913,618
2007	\$8,165,143	\$8,477,051	\$8,350,247	\$8,669,226
2008	\$7,720,410	\$8,781,194	\$7,921,353	\$9,009,747
2009	\$7,081,348	\$7,081,348	\$7,270,704	\$7,270,704
Absolute Difference: 2008 - 2009	\$(639,062)	\$(1,699,846)	\$(650,649)	\$(1,739,043)
Percent Difference: 2008 - 2009	-8.2%	-19.4%	-8.2%	-19.3%

The market value of current and inflation-adjusted agricultural production changes significantly from year to year. Between 2008 and 2009, the inflation-adjusted value of Washington's agricultural production dropped by \$1.7 billion, or 19.4 percent.

These sharp swings in agricultural production value, both in current and inflation-adjusted prices, make managing the production process and determining the need for labor challenging for agricultural producers.

Figures 1-2 and 1-3 plot key components of the agricultural production process both in current and inflation-adjusted dollars. These figures reflect the fact that the value of final agricultural sector output, net value added and net farm income are directly related and generally move together in the same direction.

Total hired and contract labor, however, does not track the value of final agricultural sector output. These different trends show that labor is supplied and hired in one market structure, while agricultural sector output is produced and sold in an entirely

different market structure. And yet, the demand and supply of labor depend on what happens in the product markets.



Photo Courtesy of USDA NRCS

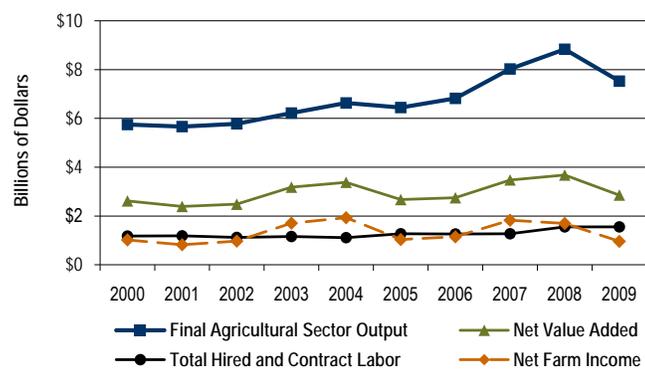
Volatility in Agricultural Prices

The value of agricultural production depends on demand and supply in the United States and world markets. Both short-run and long-run factors affect this demand and supply. An estimated one-third of total agricultural production in Washington state is sold overseas.⁵

Figure 1-2

Final Agricultural Sector Production, Net Value Added, Total Hired and Contract Labor, and Net Farm Income, Current Dollars
Washington State, 2000 through 2009

Source: Appendix Figure 1-2



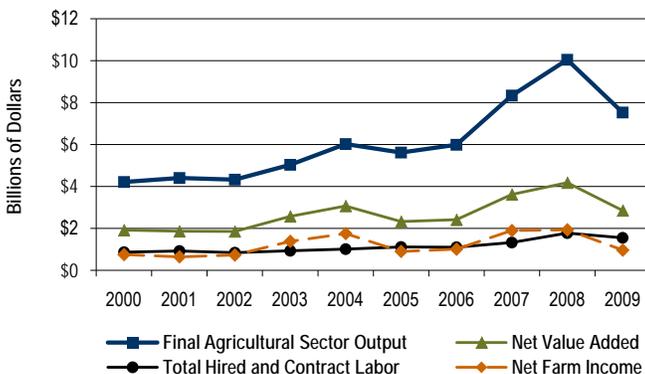
Trend lines show that the value of agricultural sector production in current dollars and total hired and contract labor hired are determined by different markets of supply and demand.

Figure 1-3

Final Agricultural Sector Output, Net Value Added, Total Hired and Contract Labor, and Net Farm Income, Inflation-adjusted Dollars, Base Year 2009 = 100, All Farm Products Price Index

Washington State, 2000 through 2009

Source: Appendix Figures 1-2 and 1-3



Trend lines show that the value of agricultural sector output in inflation-adjusted dollars and total hired and contract labor hired are determined by different markets of supply and demand.

Demand factors affecting agricultural prices include:⁶

- ◆ Increasing population linked with rapid economic growth and rising per capita meat consumption – an interactive set of long-run factors
- ◆ Declining demand for stocks (lower inventories of food commodities) – a long-run factor
- ◆ Rapid expansion in the production of biofuels – a relatively short-run factor
- ◆ Dollar devaluation – a short-run factor
- ◆ Large foreign exchange reserves – a combination of long- and short-run factors
- ◆ Aggressive purchases by importers – a short-run factor
- ◆ Importer policies – a combination of long- and short-run factors

Supply factors affecting agricultural prices include:

- ◆ Slowing growth in agricultural production – a long-run factor
- ◆ Escalating crude oil prices – a combination of long- and short-run factors
- ◆ Rising farm production costs – a combination of long- and short-run factors
- ◆ Adverse weather – generally a short-run factor, with notable exceptions, such as the recent multi-year drought in Australia
- ◆ Exporter policies – a combination of long- and short-run factors

Since these factors are fully discussed in the *2008 Agricultural Workforce in Washington State* report (referenced previously), they will not be elaborated here. In summary, from year to year, different factors affecting demand and supply come into play. The most recent dramatic impact has been on the international wheat market. (Note the price index change for food grains in *Figure 1-4* for 2007 and 2008.)

The sum of these factors is reflected in the price indices shown in *Figure 1-4*. Every product category in *Figure 1-4* exhibits sharp price volatility. The time

Figure 1-4

Agricultural Prices Received by Farmers, Indexed 1990-1992 = 100
Washington State, 2000 through 2010

Source: Haver Analytics Inc., U.S. Department of Agriculture

YEAR	ALL FARM PRODUCTS	FOOD GRAINS	FEED GRAINS AND HAY	FRUITS AND NUTS	COMMERCIAL VEGETABLES	POTATO AND DRY BEANS	MEAT ANIMALS	DAIRY PRODUCTS	POULTRY AND EGGS
2000	96	85	86	98	121	93	94	94	106
2001	102	91	91	109	133	98	97	115	115
2002	98	104	100	105	137	129	87	93	94
2003	106	109	104	106	137	104	103	96	110
2004	119	120	110	123	126	102	116	123	132
2005	114	111	95	128	130	109	118	116	123
2006	115	134	109	154	136	125	116	99	111
2007	136	186	152	158	158	126	118	146	140
2008	149	259	206	149	151	157	117	140	151
2009	131	186	162	135	161	150	106	98	139
2010	144	176	165	141	169	137	124	125	151

Agricultural prices are characterized by sharp volatility from year to year.

patterns are somewhat different among products. Farm products show a sharp jump between 2006 and 2007. Prices peaked in 2008, dropped sharply in 2009, and recovered in 2010.

The price index for food grains rose dramatically, from 111 in 2005 to 259 in 2008. By 2010, food grain prices dropped to 176 index points. Feed grains and hay more than doubled in price between 2005 and 2008, from 95 to 206 index points. Feed grain and hay prices then dropped to a value of 162 in 2009, recovering slightly to 165 in 2010.

The price index for fruits and nuts jumped sharply between 2003 and 2004, with another sharp jump from 2005 to 2006, before dropping from 158 in 2007 to 141 in 2010. Commercial vegetables show a steadily rising trend over the period of 2000 through 2010. There is a steadily rising trend for potatoes and dry beans from 2000 through 2008, with a surge in prices to an index of 157 in 2008 with a drop back to 137 in 2010.

The price index for meat animals shows relative stability over the period 2004 through 2008, with a sharp drop in 2009 and an even sharper recovery in

2010. The price index for dairy products is one of the most volatile among the product indices, rising from 96 to 123 between 2003 and 2004; falling to 99 by 2006 and increasing back to 146 the next year, before falling back to 98 in 2009. The index then recovers to 125 in 2010. Poultry and eggs also fluctuate sharply, but not as dramatically as dairy products. The index rises from 111 in 2006 to 140 in 2007, with a continued increase to 151 in 2008 before a drop in 2009 and subsequent recovery back to 151 in 2010.

Greater detail is shown on year-to-year revenue changes in *Figure 1-5*, which reports on those crops and products whose total revenue has either increased or decreased by 15 percent or more between 2008 and 2009. Among the top 40 revenue-producing agricultural products in Washington state, 16 show revenue drops equal to or greater than 15 percent, while only 7 agricultural products show revenue increases equal to or greater than 15 percent.

Among the high revenue producers, milk shows the greatest year-to-year drop in revenue, from \$1 billion in 2008 to \$648 million in 2009 – a 31.8

percent drop. Among the relatively low revenue producers, barley shows the greatest drop of 53.6 percent between 2008 and 2009. Growers of barley in 2008 may have shifted to other crops such as spring or winter wheat in 2009. Even wheat revenue, though, dropped by 19.9 percent from 2008 to 2009.

Figure 1-5

Selected Agricultural Products from among the Top 40 Agricultural Commodities with Net Revenue Change of 15 Percent or More, Current Dollars Washington State, 2008 and 2009

Source: U.S. Department of Agriculture, 2010 Washington Annual Agriculture Bulletin

COMMODITY	NATIONAL RANK IN TERMS OF VALUE OF PRODUCTION	VALUE OF PRODUCTION IN \$1,000		PERCENT CHANGE VALUE OF PRODUCTION
	2009	2009	2008	
REVENUE FELL BY 15 PERCENT OR MORE				
Milk ¹	2	\$648,003	\$1,002,496	-31.8%
Wheat	4	\$596,962	\$745,163	-19.9%
Hay, All	6	\$441,798	\$581,302	-24.0%
Cherries, All	9	\$223,785	\$297,061	-24.1%
Eggs	14	\$106,499	\$136,448	-21.9%
Red Raspberries	20	\$57,154	\$92,093	-37.9%
Christmas Trees	21	\$43,350	\$51,000	-15.0%
Kentucky Bluegrass Seed	23	\$32,500	\$42,550	-23.6%
Blueberries	24	\$30,525	\$43,360	-29.6%
Haylage	28	\$22,230	\$29,385	-24.3%
Barley	33	\$18,003	\$38,791	-53.6%
Farm Forest Products ²	34	\$15,000	\$30,000	-50.0%
Other Grass Seed	35	\$12,865	\$18,000	-28.5%
Strawberries	37	\$8,338	\$10,092	-17.4%
Carrots for Processing	39	\$7,702	\$11,280	-31.7%
Peaches	40	\$5,222	\$8,361	-37.5%
REVENUE ROSE BY 15 PERCENT OR MORE				
Onions, All	11	\$206,297	\$140,332	47.0%
Sweet Corn, All	12	\$173,447	\$141,208	22.8%
Corn for Grain	15	\$101,588	\$84,132	20.7%
Mint Oil	18	\$71,012	\$54,932	29.3%
Lentils	26	\$27,300	\$20,631	32.3%
Wrinkled Seed Peas	32	\$18,183	\$12,600	44.3%
Cranberries	36	\$9,423	\$6,199	52.0%
SUMMARY				
Total Top 40 Value of Production		\$6,929,622	\$7,440,703	-8.2%
Total Value of Production		\$7,081,348	\$7,720,410	-8.3%

Notes: ¹Value at average returns per 100 pounds of milk in combined marketings of milk and cream plus value of milk used for home consumption and milk fed to calves.

²Value of forest products sold from operations meeting the USDA farm definition.

Many more agricultural products among the top 40 state revenue producers fell in total revenue than increased in total revenue between 2008 and 2009.

The most positive note, however, from the standpoint of demand and supply for growers and agricultural labor was the 14.4 percent increase in total revenue for the 2009 apple crop.⁷ This crop makes significant demands on migrant and seasonal labor.

Crops showing relatively large revenue increases were onions, all, sweet corn, all, and corn for grain, with 47 percent, 22.8 percent, and 20.7 percent revenue increases, respectively, between 2008 and 2009. Cranberries, the 36th largest revenue producer for Washington growers, had a 52 percent increase in revenue between 2008 and 2009.

Figure 1-6
Percent Change in Composition of Total Value of Agricultural Production, Current Dollars
Washington State, 2008 and 2009 Compared to 2004 through 2006
Source: Appendix Figure 1-1

YEAR	FIELD CROPS	FRUITS AND NUTS	COMMERCIAL VEGETABLES	BERRY CROPS	TOTAL CROPS	SPECIALTY PRODUCTS	LIVESTOCK AND PRODUCTS
2004 through 2006 Average Percent	31.2%	27.2%	6.0%	1.2%	65.7%	6.9%	27.4%
2008 Average Percent	36.2%	25.6%	6.1%	2.0%	70.0%	5.5%	24.6%
Difference: 2008 Percent minus 2004 through 2006 Average Percent	5.0%	-1.6%	0.1%	0.8%	4.3%	-1.4%	-2.8%
2009 Average Percent	34.6%	29.5%	7.7%	1.5%	73.3%	5.3%	21.4%
Difference: 2009 Percent minus 2004 through 2006 Average Percent	3.4%	2.3%	1.7%	0.3%	7.6%	-1.6%	-6.0%

Revenues for total crops increased 7.6 percent between 2009 and the base period of 2004 through 2006, while they dropped by 6 percent for livestock and products over the same period.

Compositional Changes in the Total Value of Agricultural Production

Figure 1-6 provides detail on the changing composition in total revenues by product category. Here, percentage revenue changes are compared against an average base period of 2004 through 2006.⁸ Most of the percentage changes are relatively small, compared to the base period.

Berry crop revenues rose only 0.3 percent in 2009 relative to the base period. The most notable changes are the increase of 7.6 percent in revenue for total crops while revenue dropped 6 percent for livestock and products.

The Impact of Changes in the Total Value of Production on Revenue Shares

The year-to-year changes in the total value of production, as well as the changing mix in total revenues accruing each year to the state's agricultural production, affect the returns to net value added, net farm income and total hired and contract labor. *Figure 1-7* shows these relationships over the period 2005 through 2009.

Net Value Added

Net value added is the increase in the net value of agricultural production due to the application of the agricultural producer's resources, such as the producer's time spent in management and direct agricultural production, the producer's land and the labor that the producer hires.

Factors of production purchased to facilitate agricultural production, such as gasoline and diesel fuel, fertilizer and seed, do not contribute to the net value of agricultural production. Prior production processes capture the net value added of these inputs.

The percent of net value added generally tracks the changes in the level of final agricultural sector production over the period 2006 through 2009. When total value rises, net value added rises; when total value falls, net value added falls as a percent of total value.

Figure 1-7

Relationship Between Selected Measures of Agricultural Revenue, Net Farm Income, Labor Costs and Total Costs of Production, Current Dollars
Washington State, 2005 through 2009

Source: Appendix Figure 1-1

	2005	2006	2007	2008	2009
Final Agricultural Sector Production	\$6,052,332	\$6,606,517	\$8,165,143	\$7,720,410	\$7,081,348
Net Value Added as a Percent of Final Agricultural Sector Production ¹	41.4%	40.3%	43.3%	41.6%	37.9%
Net Farm Income as a Percent of Net Value Added	38.8%	41.7%	52.5%	46.1%	33.7%
Total Hired and Contract Labor as a Percent of Net Value Added	47.8%	45.9%	36.7%	42.3%	54.3%
Total Hired and Contract Labor as a Percent of Total Value of Production	19.8%	18.5%	15.9%	17.6%	20.6%
Total Hired and Contract Labor as a Percent of Total Costs of Production ^{2,3}	33.8%	30.9%	28.1%	30.2%	33.2%

Notes: ¹Net Farm Income includes direct government payments; Final Agricultural Sector Output does not. Exclusion of direct government payments will reduce these percentages somewhat.

²Nationwide, over the period 1984 to 2004, labor costs as a percent of total agricultural costs averaged 22 percent. Given the higher concentration of agricultural production of fruits, vegetables and nursery products, the estimates here for Washington state are reasonable. Source: U.S. Department of Agriculture, Economic Research Service, Data Sets. "Agricultural Productivity in the United States: Data Documentation and Methods," May 13, 2008.

³Total Costs of Production equals Total Value of Agricultural Sector Production minus Net Value Added. Factor payments to labor are a part of Net Value Added.

There is an inverse relationship between net farm income as a percent of net value added and total hired and contract labor as a percent of net value added.

Net Farm Income

Net farm income is a component of net value added. It is the revenue left over for owners/operators after all expenses, including the cost of hired and contract labor, have been paid out of the revenue earned from final agricultural sector production. Statewide net farm income in 2009 was \$962 million; nationwide, net farm income was \$62.2 billion.⁹ Net farm income as a percent of net value added has varied from a high of 52.5 percent in 2007 to a low of 33.7 percent in 2009. In addition, there is an inverse relationship between net farm income as a percent of net value added

and total hired and contract labor as a percent of net value added. Net farm income is also adversely affected when the value of final agricultural sector production falls.

Total Hired and Contract Labor

Total hired and contract labor is also a share of net value added.¹⁰ Its percentage share of net value added rises as the total value of agricultural production falls. In 2009, total hired and contract labor rose to a high of 54.3 percent of net value added. Its lowest share was 36.7 percent in 2007

when the total value of agricultural production peaked at \$8.2 million in current dollars. The same pattern is seen with total hired and contract labor as a percent of the total costs of production, falling to a low of 28.1 percent in 2007 and rising back to 33.2 percent in 2009.

Total hired and contract labor was 20.6 percent of the total value of production in 2009. Total hired labor only was 20.1 percent. In contrast, nationwide total hired labor only was 24.9 percent of the total costs of production in 2009 and 25.1 percent in 2010.¹¹

To summarize, in high-revenue years, other things equal, the labor share of value added and the labor share of total costs of production due to hired and contract labor tend to fall. As a result, falling value of production tends to impact the share of net farm income negatively, other things equal.

International Trade

Exports of Washington state agricultural production are the single largest demand component that affects the price and quantity of agricultural production sold. As such, international trade has a large influence on the economic fortunes of Washington growers.¹² Such trade, since it reflects product demand, impacts the demand for agricultural labor as well.

Figure 1-8 displays the level of exports from 2006 through 2010 by both fiscal and calendar year. Agricultural exports have grown sharply in the past five years. While exports fell in 2009 compared to 2008, they recovered in 2010. On a calendar year basis, 2010 exports were an estimated \$1 billion dollars more in 2010 than in 2008. The agricultural trade balance in favor of the United States stood at \$34 billion for calendar year 2010.

Figure 1-8

Agricultural Trade,¹ Fiscal and Calendar Years, in Billions of Current Dollars, Not Seasonally Adjusted
United States, 2006 through 2010

Source: U.S. Department of Agriculture, Foreign Agricultural Trade of the United States (FATUS)

	FISCAL YEAR ²				
	2006	2007	2008	2009	2010
Agricultural Exports	\$68.593	\$82.217	\$114.910	\$96.295	\$108.644
Agricultural Imports	\$64.026	\$70.063	\$79.320	\$73.404	\$78.953
Trade Balance ³	\$4.566	\$12.154	\$35.590	\$22.891	\$29.710
	CALENDAR YEAR				
	2006	2007	2008	2009	2010
Agricultural Exports	\$70.948	\$89.990	\$114.760	\$98.453	\$115.809
Agricultural Imports	\$65.326	\$71.913	\$80.488	\$71.681	\$81.856
Trade Balance ³	\$5.622	\$18.077	\$34.273	\$26.772	\$33.953

Notes: ¹See source document for U.S. Department of Agriculture definitions of agricultural products.

²October 1 of previous year through September 30 of current year.

³Exports minus imports.

On a calendar year basis, U.S. agricultural exports have recovered since the recent Great Recession. This recovery of exports aids in the overall recovery of the U.S. economy.

Agricultural Export Prices

While total export revenues have increased considerably in the past five years, the prices of U.S. agricultural exports have also increased, as shown in *Figure 1-9*. The prices of agricultural commodities increased by 72.6 percent between 2000 (the base year) and 2010. The prices of foods, feeds and beverages have increased by 51.8 percent over

Figure 1-9
U.S. Agricultural Export Price Indices in Inflation-adjusted Dollars, Base Year 2000 = 100
United States, 2006 through 2010
Source: Haver Analytics Inc., U.S. Bureau of Labor Statistics

YEAR	2006	2007	2008	2009	2010
Agricultural Commodities	125.8	150.9	183.5	160.0	172.6
Foods, Feeds, and Beverages	119.2	129.0	144.2	140.1	151.8

The rise in export prices suggests that export demand for U.S. agricultural products is rising faster than U.S. domestic agricultural supply.

the same period. Other things equal, this suggests that export demand is rising faster than domestic agricultural supply.

Exchange Rates

The U.S. dollar has depreciated against international currencies, in particular the currencies of our major agricultural trading partners. This situation benefits and harms U.S. agricultural producers.

For instance, international trade in oil is priced in terms of U.S. dollars. So the depreciation of the dollar makes oil more expensive. All the things made from oil, such as fertilizer, gasoline and diesel, are also more expensive.

On the other hand, the devaluation of the U.S. dollar makes U.S. agricultural exports cheaper to those who buy our agricultural production. Looking at *Figure 1-10*, we see that it takes only 0.988 of a Canadian dollar to buy one U.S. dollar as of April 21, 2011. This is a drop in price of American exports to

Figure 1-10
Exchange Rates for the Top Five Importers of U.S. Agricultural Products
Selected Dates
Source: www.x-rates.com

CURRENCY	APRIL 21, 2011		FEBRUARY 17, 2010		JANUARY 2, 2009		JANUARY 1, 2008		JANUARY 1, 2007
	ONE U.S. DOLLAR BUYS: (a)	U.S. DOLLAR APPRECIATING (A) OR DEPRECIATING (D) ¹ (b)	ONE U.S. DOLLAR BUYS: (c)	U.S. DOLLAR APPRECIATING (A) OR DEPRECIATING (D) ² (d)	ONE U.S. DOLLAR BUYS: (e)	U.S. DOLLAR APPRECIATING (A) OR DEPRECIATING (D) ³ (f)	ONE U.S. DOLLAR BUYS: (g)	U. S. DOLLAR APPRECIATING (A) OR DEPRECIATING (D) ⁴ (h)	ONE U.S. DOLLAR BUYS: (i)
Canadian Dollar	0.9880	D	1.0423	D	1.2218	A	0.9881	D	1.1652
Chinese Yuan	6.4940	D	6.8330	A	6.8230	D	7.2950	D	7.8040
Euro (EU-27)	0.6857	D	0.7285	D	0.7712	A	0.6848	D	0.7577
Mexican Peso	11.6127	D	12.8245	D	13.8265	A	10.9169	A	10.7995
Japanese Yen	81.9528	D	90.8422	D	91.3300	D	111.7100	D	118.8300

Notes: ¹Column (a) compared to column (c).
²Column (c) compared to column (e).
³Column (e) compared to column (g).
⁴Column (g) compared to column (i)

The devaluation of the U.S. dollar is a mixed blessing for U.S. agricultural producers. Inputs made from oil increase in price, but U.S. exports of agricultural goods become more affordable to foreign consumers.

Canada of 5.2 percent.¹³ Similarly, U.S. agricultural goods are now 5 percent cheaper for Chinese consumers between April 21, 2011 and Feb. 17, 2010,¹⁴ 10.5 percent cheaper for consumers of the 27 nations in the European Economic Union, 9.4 percent cheaper for Mexican consumers and 9.8 percent cheaper for Japanese consumers.

The Current Picture of Washington Agricultural Exports

Figure 1-11 details the changing structure of Washington state agricultural exports from 2005 through 2009. Over this period, the total value of exports as a percent of agricultural production

value increased, rising from 30.1 percent in 2005 to 39.4 percent in 2009. Yet, the value of agricultural exports dropped by 5.4 percent between 2008 and 2009, in part due to the Great Recession.

Wheat and wheat-product exports and feed grains and feed grain-product exports reflect a surge in exports in 2008 due to adverse weather in other wheat-producing nations. Exports fell in 2009 relative to 2008 as weather improved among our international competitors. Fruits and preparations have shown a steady rise in the value of exports from \$705.4 million in 2005 to \$1.2 billion in 2009, a 67.1 percent increase over five years. The increase between 2008 and 2009 alone was 11.1 percent.

Figure 1-11

Washington Agricultural Exports: Estimated Total Value and Value by Selected Commodity Group, Current Dollars in Millions¹
Washington State, 2005 through 2009

Source: U.S. Department of Agriculture, Economic Research Service using data from the National Agricultural Services and U.S. Census Bureau, <http://ers.usda.gov/Data/StateExports/2009/sx5yr.xls>

	CALENDAR YEAR					PERCENT CHANGE: 2009 COMPARED TO 2008
	2005	2006	2007	2008	2009	
Value of Agricultural Sector Production	\$6,448.9	\$6,823.5	\$8,021.7	\$8,831.0	\$7,529.4	-14.6%
Total Estimated Exports	\$1,942.0	\$2,187.2	\$2,665.3	\$3,174.4	\$2,963.4	-5.4%
Exports as a Percent of Production Value	30.1%	32.1%	33.2%	35.9%	39.4%	
COMMODITY GROUP						
Wheat and Products	\$320.7	\$355.7	\$450.5	\$624.4	\$372.7	-40.3%
Feed Grains and Products	\$18.7	\$20.1	\$34.8	\$47.6	\$28.0	-41.2%
Fruits and Preparations ²	\$705.4	\$796.0	\$943.8	\$1,060.8	\$1,178.4	11.1%
Vegetables and Preparations	\$401.1	\$419.1	\$517.6	\$627.1	\$667.1	6.4%
Live Animals, Meat, and Poultry	\$39.0	\$65.8	\$95.9	\$117.0	\$114.6	-2.1%
Hides and Skins	\$43.3	\$57.2	\$68.8	\$63.0	\$45.8	-27.3%
Poultry and Products	\$4.9	\$5.2	\$5.6	\$5.8	\$6.6	13.8%
Fats, Oils, and Greases	\$10.3	\$12.6	\$21.3	\$28.6	\$18.6	-35.0%
Feeds and Fodders	\$25.1	\$36.2	\$49.3	\$71.1	\$57.4	-19.3%
Seeds	\$27.7	\$24.4	\$26.1	\$28.7	\$29.5	2.8%
Other ³	\$345.7	\$394.9	\$460.9	\$500.4	\$449.9	-10.1%

Notes: ¹These estimates are based on each state's share of agricultural production for a given commodity group. There are no data for dairy. The method for assigning dairy dollar estimates is under revision starting in 2007.

²Apples, apple juice and apple products as well as other miscellaneous fruits assumed equal to the previous year; current year production is not released until July or later.

³Sugar and tropical products, minor oilseeds, essential oils, beverages other than juice, nursery and greenhouse, wine, and miscellaneous.

Washington state agricultural exports have increased over time as a share of the total value of agricultural sector production. High-value exports, such as fruits and preparations, have increased over time, and wheat and wheat-related products show the effect of international weather patterns.

Vegetables and preparations have shown a 66.3 percent increase over the period 2005 through 2009. Recovering from the mad cow disease scare, live animals, meat and poultry have shown an increase of 294 percent. Exports of hides and skins rose from the 2005 value and then fell back to nearly the same value in 2009. Poultry and products increased from \$4.9 million in 2005 to \$6.6 million in 2009 – a large percent change of 34.7 percent, but a small absolute value change of \$1.7 million. After trending up from 2005 through 2008, fats, oils and greases declined in 2009 by 35 percent relative to 2008. Feeds and fodders show the same general pattern as fats, oil and greases, dropping by 19.3 percent between 2008 and 2009. Seeds show a gradual positive trend starting in 2006. Other products trended up until 2008 and fell off by 10.1 percent between 2008 and 2009.

The Current Picture: Top Five U.S. Agricultural Export Destinations

Figure 1-12 shows the changing pattern of the top five U.S. agricultural export destinations over the period 2006 through 2010. For years, Canada and Mexico were ranked as first and second for U.S. agricultural export destinations. China is now ranked first.

Between 2006 and 2010, U.S. agricultural exports to China increased 260 percent. In contrast, over the same period, world total exports increased

by 63.2 percent. Exports to Canada increased by 39.6 percent; to Mexico, 33.9 percent; to Japan, 40.9 percent; and, to the European Union-27, 20.1 percent. In just five years, exports to China increased from \$6.7 billion to \$17.5 billion.

In calendar year 2000, eight of the top 15 agricultural export destinations were countries in Asia and Southeast Asia. In order of importance they were Japan, South Korea, Taiwan, China, Hong Kong, Philippines, Indonesia and Thailand. By 2010, nine of the top 15 export destinations were in Asia and Southeast Asia, with the addition of Vietnam.

Forecasting the Future

Nationwide, net farm income in 2009 was estimated at \$62.2 billion, a drop of 28 percent from the 2008 estimate of \$86.6 billion. For Washington state, the comparable decline was 43.2 percent. Nationwide, the decline was due to sharp price declines in the value of commodity sales.¹⁵ Nationwide, net farm income was forecasted at \$81.6 billion for 2010, a 31 percent increase over 2009. Net farm income data for Washington state will not be available until August 2011 or later. Given the disparity in percent changes between the national and the state level between 2008 and 2009, it is not reasonable to speculate on what net farm income will be in 2010 for Washington state agricultural producers.

Figure 1-12

Top Five U.S. Agricultural Export Destinations by Calendar Year, U.S. Value in Thousands
World, 2006 through 2010

Source: U.S. Department of Agriculture Economic Research Service, Foreign Agricultural Trade of the United States (FATUS)

2006		2007		2008		2009		2010	
World Total	\$70,949	World Total	\$89,990	World Total	\$114,760	World Total	\$98,453	World Total	\$115,809
Canada	\$11,951	Canada	\$14,062	Canada	\$16,253	Canada	\$15,725	China	\$17,522
Mexico	\$10,881	Mexico	\$12,692	Mexico	\$15,508	China	\$13,109	Canada	\$16,856
Japan	\$8,390	Japan	\$10,159	Japan	\$13,223	Mexico	\$12,932	Mexico	\$14,575
European Union - 27	\$7,408	European Union - 27	\$8,754	China	\$12,115	Japan	\$11,072	Japan	\$11,819
China	\$6,711	China	\$8,314	European Union - 27	\$10,080	European Union - 27	\$7,445	European Union - 27	\$8,894

In just five years, China has moved from being our fifth largest importer of agricultural products to our greatest importer of agricultural products, increasing their U.S. imports by more than 260 percent from 2006 to 2010.

The Economic Research Service (ERS) notes two major factors accounting for the high levels and the volatility of net farm income: sustained levels of high output and high and persistent levels of volatility in agricultural commodity prices and factor input prices. The ERS forecasts net farm income nationwide to be \$94.7 billion in 2011, up \$15.7 billion, or 19.8 percent, from the 2010 forecast. These estimates are only as good as the assumptions underlying them and are based on the following critical variables:

- ◆ Projected U.S. economic growth.
- ◆ Projected world economic growth.
- ◆ Projected growth rates in developing countries.
- ◆ Projected longer-term increases in global purchasing power and population growth.
- ◆ Continued low inflation worldwide.
- ◆ Value of the U.S. dollar.

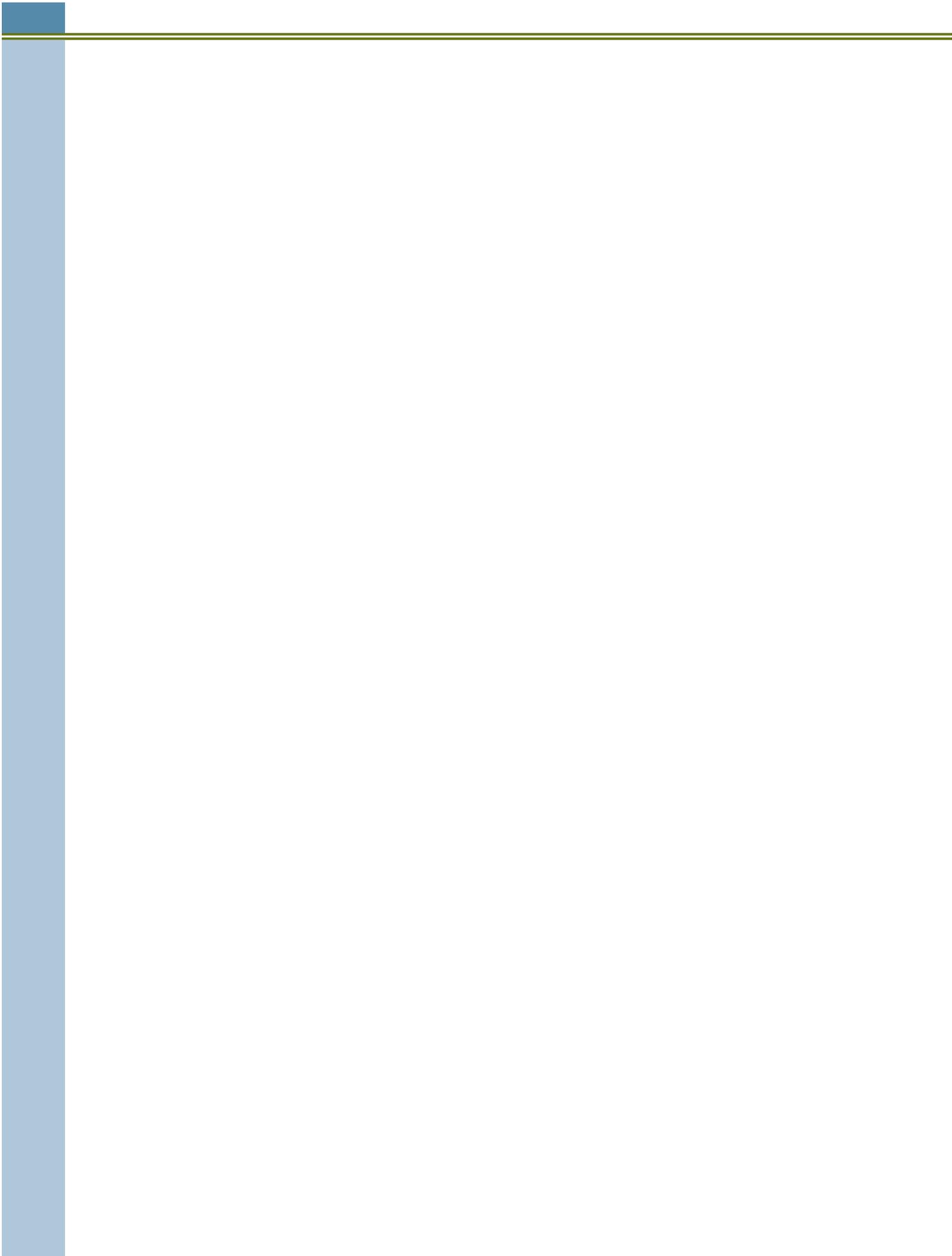
Any of these conditions may change, particularly economic growth, the value of the dollar and inflation, domestically and worldwide. Following the data as it is developed by the National Agricultural Statistics Service (NASS) during the summer of 2011 may provide greater insight.

Summary

- ◆ After reaching more than \$8 billion in current dollars in 2007, the total value of agricultural production in Washington state fell to about \$7 billion in 2009.
- ◆ Nationwide, the total value of production is forecast to rise in 2010 and 2011. We must await developments to see what will happen to Washington state agricultural revenues.
- ◆ Agricultural prices have been extremely volatile over the 2000 through 2010 period, contributing to volatility in agricultural revenues.
- ◆ Total hired and contract labor costs do not move in the same direction as the value of final agricultural sector production, net value added and net farm income. This is due to the fact that different markets influence the labor costs in relation to the revenue variables.
- ◆ After a multi-year downward trend, contract labor costs increased in 2009.
- ◆ Export prices have been increasing.
- ◆ Total national exports of agricultural products have been increasing.
- ◆ Exports of Washington agricultural products have been increasing as a share of the total value of agricultural production.
- ◆ China has become the United States' largest export destination of agricultural products.

Endnotes

- 1 The value of government payments, though reported in *Figure 1-1*, is not included in these estimates of agricultural production in the state. Such payments are transfer payments and do not reflect the net increase in agricultural production.
- 2 Washington State Employment Security Department, *2006 Agricultural Workforce in Washington State. Chapter 3*, page 28.
- 3 U.S. Department of Commerce. Bureau of Economic Analysis. www.bea.gov/regional/gsp/action.cfm.
- 4 The U.S. Department of Agriculture, National Agricultural Statistics Service updates the estimates we present in *Figure 1-1* each year, reaching back as far as six years prior to the current report. Thus, the current dollar values in the *2009 Agricultural Workforce in Washington State, Figure 1*, are different from those reported in this year's report. The most current data are to be considered the most accurate. See *2010 Washington Annual Agriculture Bulletin*. Page 22. www.nass.usda.gov/Statistics_by_State/Washington/Publications/Annual_Statistical_Bulletin/2010/content10.asp.
- 5 The estimate of the share of Washington agricultural production that enters foreign trade is an interpolation based on total agricultural production, by product, in the United States and total exports of each product. The exact figure of Washington's share of international agricultural exports is not known.
- 6 These demand and supply factors are discussed in *Chapter 5* of the *2008 Agricultural Workforce in Washington State*, published by the Washington State Employment Security Department.
- 7 See: *2010 Washington Annual Agriculture Bulletin*. "Top Forty Agricultural Commodities, Washington, 2007-2009." Page 4.
- 8 We choose a three-year period to smooth out some of the effects of seasonal weather.
- 9 U.S. Department of Agriculture. Economic Research Service. *Agricultural Outlook: Statistical Indicators. Table 30.* www.ers.usda.gov/Publications/AgOutlook/AOTables/.
- 10 We include contract labor as a share of value added since the agricultural producer is hiring some management skills, which are labor search costs in this case, plus the direct agricultural labor provided by this service.
- 11 U.S. Department of Agriculture. Economic Research Service. *Agricultural Outlook: Statistical Indicators. Table 29.* www.ers.usda.gov/Publications/AgOutlook/AOTables/.
- 12 A major example of this importance is the change brought about by the North American Free Trade Act (NAFTA) which took effect on January 1, 1994. "...U.S. agricultural trade with Canada and Mexico has more than tripled since NAFTA's implementation in 1994." Total agricultural exports to Mexico averaged annually over 1991-93 were \$3.5 billion; averaged annually over 2008-10, the export value was \$14.3 billion. For the same two periods for Canada, total U.S. exports were \$4.9 billion and \$16.3 billion. Steven Zahniser and Andrew Roe. "NAFTA at 17 Full Implementation Leads to Increased Trade and Integration." Page 7 and Appendix Tables 3 and 4.
- 13 Calculated as: $(0.988 / 1.0423 = 0.9479)$; $(0.9479 \times 100 = 94.79 \text{ or } 94.8 \%)$; $(100.0\% - 94.8\% = 5.2\%)$.
- 14 As of Dec. 30, 2005, the Chinese yuan was fixed by the Chinese government at 8.2765 yuan to the dollar. As of April 21, 2011, only 6.494 yuan were required to buy one U.S. dollar. As a result, U.S. goods and services have fallen in price by 21.5 percent for the Chinese consumer over this time period.
- 15 U.S. Department of Agriculture. ERS/USDA Briefing Room. "Farm Income and Costs: 2009 Farm Sector Income Estimates."
- 16 U.S. Department of Agriculture. ERS/USDA Briefing Room. "Farm Income and Costs: 2011 Farm Sector Income Forecast."



CHAPTER TWO

Employment, Average Hours Worked and Average Earnings

The effects of the Great Recession continued to dominate the state's agricultural labor market during 2010, even though the national economy has been in recovery since June 2009.¹

In 2007, the year the Great Recession began, seasonally unadjusted employment in Washington state was estimated at 3,235,963 workers. In 2010, total employment was estimated at 3,210,400 workers.² Seasonally unadjusted unemployment was estimated at 154,450 workers in 2007; 327,297 workers were estimated as unemployed in 2010. Some of this increase of 172,847 unemployed workers represented potential labor supply to the agricultural sector, as is documented more fully in *Chapter 5*. The seasonally adjusted unemployment rate for Washington state did not fall below 8.9 percent in 2010. June (9 percent), July (8.9 percent), August (9 percent) and September (9.1 percent) were the months with the lowest rates of unemployment for the state in 2010. The year began with unemployment in January estimated at 9.3 percent and ended the following December at 9.3 percent.

The labor supply situation for agricultural labor statewide in 2010 was similar to the situation in 2009. As *Figure 5-1* reports, zero short-term spot shortages of labor were reported by the state's agricultural producers during the last three quarters of 2010.

Farm Labor Compared at the Regional and National Level³

Figure 2-1 compares quarterly hired farm labor employment in Washington and Oregon with quarterly hired farm labor employment in California and nationwide for the period 2007 through 2010. In this four-year period several facts stand out.

First, both the third quarter surge in hired farm labor employment and the average employment over the last three quarters of the year have been creeping up for Washington and Oregon combined. Employment declined in California from 2007 through 2009, and recovered back to 178,000 workers averaged over the last three quarters of 2010. This level of employment is 3.3 percent below the 2007 figure of 184,000.



In contrast, over the same period, employment rose from an estimated 77,000 workers in 2007 to 93,000 workers in 2010 for Washington and Oregon combined, a 20.8 percent increase. Nationwide, over the same four-year period, agricultural employment grew from 799,000 to 806,000, a 0.9 percent increase.

Figure 2-1

Hired Farm Labor Employment

Pacific Region, California and the United States, 2007 through 2010*

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, AGRI-FACTS, various issues

	PACIFIC REGION - WASHINGTON AND OREGON	CALIFORNIA	UNITED STATES EXCEPT ALASKA
2007			
January	n.a.	n.a.	n.a.
April	63,000	176,000	736,000
July	92,000	188,000	843,000
October	75,000	188,000	817,000
Average Last Three Quarters	77,000	184,000	799,000
2008			
January	42,000	132,000	594,000
April	68,000	156,000	700,000
July	110,000	160,000	828,000
October	90,000	173,000	801,000
Average Last Three Quarters	89,000	163,000	776,000
2009			
January	52,000	132,000	595,000
April	61,000	138,000	680,000
July	117,000	170,000	875,000
October	99,000	157,000	807,000
Average Last Three Quarters	92,000	155,000	787,000
2010			
January	52,000	139,000	612,000
April	65,000	140,000	737,000
July	120,000	200,000	855,000
October	94,000	193,000	827,000
Average Last Three Quarters	93,000	178,000	806,000

Notes: n.a. = The January 2007 *Farm Labor Survey* was not conducted.

*All hired farmworkers and wage rates include supervisor/manager and other workers, which are not published separately. This survey has two components: 1) a target population of all farms with a value of sales of \$1,000 or more per year (1,700 sample points); and, 2) for agricultural services, all operations that provide agricultural services to farmers (600 sample points). See Guide to the Sample Survey and Census programs of NASS.

The agricultural labor market in Washington and Oregon combined shows greater growth over time and greater seasonality over time compared to California and the United States.

The seasonal surge in employment differed sharply between Washington and Oregon, compared to California and the United States overall. For Washington and Oregon in 2007, seasonal employment surged from 63,000 to 92,000 between the second and third quarters, an increase of 46 percent. By 2010, the surge was from 65,000 workers to 120,000 workers, or 84.6 percent. In California, the 2007 surge was 6.8 percent between the second and third quarters; by 2010, the surge was from 140,000 workers to 200,000 workers, or 42.9 percent. For the United States, comparable estimates for the 2007 quarters and 2010 quarters were 14.5 percent and 16 percent, respectively. Clearly, compared to California and the United States overall, agricultural employment is becoming more seasonal in Washington and Oregon combined.

Figure 2-2 displays estimates of the third quarter peak employment for the United States and the agricultural economies in the western United States. Only Washington and Oregon combined had a consistent year-over-year increase in total agricultural employment between 2007 and 2010. Peak seasonal employment first decreases sharply, and then increases sharply in California.

Figure 2-2

Number of Hired Farmworkers by Geographic Area
United States and Selected Regions, July 2007 through July 2010

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, AGRI-FACTS, various issues

GEOGRAPHIC AREA	NUMBER OF HIRED FARMWORKERS EXCLUDING AGRICULTURAL SERVICE WORKERS, IN 1,000s				PERCENT CHANGE		
	JULY 2007	JULY 2008	JULY 2009	JULY 2010	JULY 2007 THROUGH JULY 2008	JULY 2008 THROUGH JULY 2009	JULY 2009 THROUGH JULY 2010
United States except Alaska	843	828	875	885	-1.8%	5.7%	1.1%
Pacific: Oregon and Washington	92	110	117	120	19.6%	6.4%	2.6%
California	188	160	170	200	-14.9%	6.3%	17.6%
Mountain I: Idaho, Montana, Wyoming	22	30	29	27	36.4%	-3.3%	-6.9%
Mountain II: Colorado, Nevada, Utah	18	23	20	24	27.8%	-13.0%	20.0%
Mountain III: Arizona, New Mexico	22	20	17	19	-9.1%	-15.0%	11.7%

Only Washington and Oregon combined have a consistent pattern of peak seasonal growth in hired farm labor from 2007 through 2010.

The three mountain regions have no distinct common pattern of seasonality among them. However, except for Mountain I – Idaho, Montana and Wyoming – the western agricultural labor markets all increased employment between 2009 and 2010.

Weekly Hours Worked

Weekly hours worked is a complementary dimension to the number of workers hired in a given week. If there is a relative “shortage” of workers, this shortage can be compensated somewhat by having the existing work force put in more hours per week.

As shown in Figure 2-3, for Washington and Oregon combined, the number of hired farmworkers and the hours they worked increased in 2010 compared to 2009. Average hours worked per week increased by 2.9 hours per worker based on the average of hours worked in the last three quarters of the year. In terms of total hours worked, there was an estimated increase of 308,500 worker-hours in 2010 compared to 2009.⁴ Assuming a typical 40 hour week, this total amounts to 7,700 additional worker-weeks during the production year in Washington and Oregon combined. Workers in California tend to work longer hours per week compared to Washington and Oregon combined and the United States.

Figure 2-3

Average Weekly Hours Worked by Farmworkers

Pacific Region, California and United States, 2007 through 2010

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, AGRI-FACTS, various issues

	PACIFIC REGION – WASHINGTON AND OREGON	CALIFORNIA	UNITED STATES EXCEPT ALASKA
2007			
January	n.a.	n.a.	n.a.
April	38.5	45.5	40.7
July	39.7	46.9	41.4
October	40.7	45.7	42.1
Average Last Three Quarters	39.6	46.0	41.4
2008			
January	35.7	40.7	38.4
April	44.0	44.5	41.0
July	40.6	45.5	40.5
October	45.5	45.8	41.3
Average Last Three Quarters	43.4	45.3	40.9
2009			
January	37.8	41.3	38.3
April	38.0	43.9	40.1
July	40.4	45.6	39.7
October	38.0	42.1	39.0
Average Last Three Quarters	38.8	43.9	39.6
2010			
January	37.0	40.9	37.2
April	41.4	43.0	39.8
July	42.5	43.4	40.7
October	41.2	44.7	41.7
Average Last Three Quarters	41.7	43.7	40.7

Note: n.a. = The January 2007 *Farm Labor Survey* was not conducted.

Average weekly hours worked and the number of hired farm laborers increased between 2009 and 2010 for Washington and Oregon combined.

Average Hourly Earnings

Average hourly earnings are a composite of the average hourly wage rate or piece work rate and any bonuses, overtime premiums and other money payments made to a worker. The average hourly earnings statistic is an equilibrium measure, that is, these earnings measure money payments to workers at the point at which the quantity of labor supplied equals the quantity of labor demanded. Thus, these earnings can vary due to shifts in demand or supply, or both.



Photo by ©iStock/Nancy Nehring

On the whole, average hourly earnings were higher in Washington and Oregon combined relative to the United States for both field workers only and for all agricultural workers across the years 2007 through 2010.⁵

For Washington and Oregon combined, field workers had the highest hourly earnings in the fourth quarter of each growing year compared to hired field workers in California and the United States. This high hourly earnings rate coincides

with the extensive apple harvest during the fourth quarter. With a few exceptions, field workers only, livestock workers only and all agricultural workers earned more per hour in Washington and Oregon combined relative to California, for the fourth quarter of 2007 through 2010.

A number of factors could account for this consistent difference, including the relative supply and demand of labor. The market value of the agricultural products produced in Washington and

Figure 2-4

Average Hourly Earnings by Type of Agricultural Labor,¹ Current Dollars
Pacific Region, California and the United States, 2007 through 2010

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, AGRI-FACTS, various issues

MONTH AND YEAR ³	FIELD WORKERS ONLY			LIVESTOCK WORKERS ONLY			FIELD AND LIVESTOCK WORKERS			ALL AGRICULTURAL WORKERS		
	PACIFIC REGION	CALIFORNIA	U.S. ²	PACIFIC REGION	CALIFORNIA	U.S. ²	PACIFIC REGION	CALIFORNIA	U.S. ²	PACIFIC REGION	CALIFORNIA	U.S. ²
2007												
January ⁴	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
April	\$9.39	\$9.62	\$9.35	\$9.70	\$10.90	\$9.59	\$9.45	\$9.82	\$9.42	\$10.24	\$10.71	\$10.20
July	\$9.64	\$9.60	\$9.24	\$10.65	\$10.60	\$9.73	\$9.71	\$9.72	\$9.37	\$10.41	\$10.32	\$9.99
October	\$10.48	\$9.70	\$9.62	\$11.07	\$11.00	\$10.02	\$10.55	\$9.89	\$9.73	\$11.30	\$10.74	\$10.38
2008												
January	\$9.94	\$10.20	\$9.67	\$11.68	\$10.70	\$10.18	\$10.14	\$10.32	\$9.88	\$11.25	\$11.56	\$10.81
April	\$9.14	\$10.00	\$9.65	\$11.34	\$11.00	\$10.24	\$9.41	\$10.16	\$9.84	\$10.00	\$11.05	\$10.57
July	\$9.85	\$9.85	\$9.66	\$10.22	\$11.00	\$9.98	\$9.87	\$10.00	\$9.74	\$10.35	\$10.74	\$10.34
October	\$10.94	\$9.95	\$10.05	\$10.54	\$11.90	\$10.21	\$10.90	\$10.22	\$10.09	\$11.37	\$10.93	\$10.70
2009												
January	\$10.35	\$9.80	\$9.96	\$9.48	\$10.95	\$10.27	\$10.25	\$10.09	\$10.08	\$11.40	\$11.15	\$10.93
April	\$10.67	\$9.96	\$9.99	\$12.09	\$10.85	\$10.25	\$10.80	\$10.14	\$10.07	\$11.55	\$11.07	\$10.84
July	\$10.93	\$10.10	\$10.04	\$11.77	\$11.30	\$10.05	\$11.00	\$10.30	\$10.04	\$11.43	\$11.08	\$10.66
October	\$11.07	\$10.25	\$10.25	\$10.42	\$11.05	\$10.23	\$11.00	\$11.40	\$10.24	\$11.82	\$11.25	\$10.91
2010												
January	\$9.77	\$10.32	\$10.10	\$10.55	\$11.24	\$10.31	\$9.95	\$10.56	\$10.18	\$11.05	\$11.68	\$11.08
April	\$10.02	\$10.00	\$10.04	\$11.73	\$11.00	\$10.30	\$10.25	\$10.20	\$10.12	\$11.18	\$11.11	\$10.82
July	\$10.65	\$10.10	\$10.09	\$11.89	\$11.10	\$10.15	\$10.75	\$10.23	\$10.11	\$11.27	\$11.12	\$10.79
October	\$10.95	\$10.20	\$10.49	\$10.97	\$11.25	\$10.28	\$10.95	\$10.35	\$10.43	\$11.59	\$11.20	\$11.13

Notes: ¹Excludes agricultural service workers.

²United States excludes Alaska.

³Survey week is the week that includes the 12th of the month.

⁴n.a. = The January 2007 *Farm Labor Survey* was not conducted.

Average hourly earnings for the July and October sample periods for 2007 through 2010 tend to be higher for Washington and Oregon combined relative to California and the United States.

Oregon relative to the market value of agricultural products produced elsewhere is critical to the demand for labor. The average hourly earnings in Washington and Oregon combined fell between 2009 and 2010 for the October sample period for field laborers only and all agricultural workers (*Figure 2-4*). This sample survey data is consistent with data from the Quarterly Census of Employment and Wages (QCEW) reported in *Chapter 5*.

Adverse Effect Wage Rate

As of October 2010, Washington and Oregon field workers combined earned an average of \$10.95 per hour; livestock workers only earned \$10.97 per hour; and all agricultural workers earned \$11.59 per hour. Contrast this average with the Adverse Effect Wage Rate (AEWR) of \$10.85 per hour for Washington and Oregon in 2010. The rate has been reduced to \$10.60 for 2011.⁶

H-2A

Nationwide, H-2A certified employer applications and H-2A certified workers declined in 2010 compared to 2009 (*Figure 2-5*). There were 8,150 certified employer applications in 2009, and 7,425 certified applications in 2010, for an 8.9 percent drop. The number of H-2A workers certified dropped from 99,472 in 2009 to 94,218 in 2010, a decrease of 5.3 percent.

Figure 2-5

H-2A Certifications

United States, Fiscal Years 2004 through 2010

Source: U.S. Department of Labor, Office of Foreign Labor Certification, www.flcdatacenter.com/CaseH2A.aspx

YEAR	EMPLOYER APPLICATIONS CERTIFIED	PERCENT CHANGE YEAR TO YEAR	WORKERS CERTIFIED	PERCENT CHANGE YEAR TO YEAR
2004	6,691	---	44,619	---
2005	6,602	-1.3	48,366	8.4
2006	6,550	-0.8	59,112	22.2
2007	7,491	14.4	76,818	30.0
2008	7,943	6.0	94,445	22.9
2009	8,150	2.6	99,472	5.3
2010	7,425	-8.9	94,218	-5.3

Employer and worker H-2A certifications have declined.

Washington growers requested 3,257 H-2A workers to meet labor needs in 2008. The U.S. Department of Labor certified 2,513 workers. Requests and certifications dropped in 2009 to 2,082 H-2A workers requested, and 1,872 certifications issued, but rebounded to 3,044 and 2,981, respectively, in 2010. Preliminary data suggest that 2011 is surpassing 2008, the highest year for H-2A labor demand in the state.

Agricultural Employment in Washington State

Full- and Part-time Jobs

Full- and part-time agricultural employment, measured as the number of jobs in Washington state for 2009, are shown in *Figure 2-6*. Due to the shift in the North American Industry Classification System (NAICS) definitions as of 2007, it is difficult to establish the presence of any trend in these data prior to 2007. We focus, therefore, on changes in the levels of jobs between 2007 and 2009. There were an estimated 34,522 farm proprietor jobs in the state in 2009. An estimated 34,673 such jobs were reported in 2007. Total farm employment rose from 74,835 jobs in 2007 to 85,042 jobs in 2009, an increase of 10,207 jobs, or 13.6 percent. Wage and salary farm employment increased from 40,162 to 50,520 jobs – an increase of 10,358, or 25.8 percent, in three years. Employment in total support activity rose by 961 jobs over that period, or 4.2 percent. Over the 2007 through 2009 period, wage and salary jobs in agriculture and forestry support increased from 18,905 jobs to 19,543 jobs, a growth of 638 jobs, or 3.4 percent.

Figure 2-6
Number of Full- and Part-time Agricultural Jobs
Washington State, 2000 through 2009

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Accounts, Based on Source Data from the National Income and Products Accounts Estimates

YEAR	FARM EMPLOYMENT (JOBS)			AGRICULTURE AND FORESTRY SUPPORT (JOBS) ACTIVITIES	
	FARM PROPRIETORS EMPLOYMENT ²	TOTAL FARM EMPLOYMENT ²	WAGE AND SALARY EMPLOYMENT ³	TOTAL SUPPORT ACTIVITY EMPLOYMENT ²	WAGE AND SALARY EMPLOYMENT
2000	38,995	80,286	41,291	19,362	15,846
2001	35,472	79,895	44,423	19,178	15,717
2002	34,547	78,663	44,116	20,063	15,809
2003	32,733	80,415	47,682	19,769	16,320
2004	31,561	73,700	42,139	20,550	16,969
2005	31,097	73,746	42,649	21,487	18,036
2006	30,089	73,585	43,496	22,102	18,775
2007	34,673	74,835	40,162	22,751	18,905
2008	34,699	81,862	47,163	22,495	18,531
2009	34,522	85,042	50,520	23,712	19,543

Notes: ¹The estimates for employment for 1990-2006 are based on the 2002 North American Industry Classification System (NAICS).

The estimates for 2007 forward are based on the 2007 NAICS.

²U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Accounts, Table SA25N, Full-time and part-time employment by NAICS industry. Updated March 23, 2011.

³Table SA27N, Full-time and part-time wage and salary employment by NAICS industry. Updated: March 23, 2011.

Between 2007 and 2009, farm employment increased by 10,358 jobs, or 25.8 percent.

Seasonal and Nonseasonal Employment

Total seasonal and nonseasonal employment in Washington state agriculture are reported in *Figure 2-7*. In 2009, 38,745 seasonal and 45,517 nonseasonal workers were reported. For 2010, 39,374 seasonal and 42,731 nonseasonal workers were reported.

As usual, there were two peaks in seasonal employment. The first surge in seasonal employment began in June with 56,571 workers employed compared to 26,782 seasonal workers in May. The June surge increased to 84,214 workers in July, and fell back to 55,795 workers in August. A second peak in seasonal employment was reached in September at 64,052 workers. The total of seasonal and nonseasonal employment peaked at 127,180 workers in July and peaked again at 111,450 in September. This pattern varies little from year to year. The surges, however, still represent a challenge

to growers seeking an adequate labor supply to harvest weather-sensitive crops with short fresh shelf lives, such as sweet cherries.



Photo by ©Paul Merrett/Dreamstime.com

Figure 2-7

Total Seasonal and Nonseasonal Agricultural Employment by Month
Washington State, 2010

Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages (QCEW)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVERAGE
Seasonal	19,159	21,526	24,255	26,892	26,782	56,571	84,214	55,795	64,052	56,254	23,187	13,802	39,374
Nonseasonal	45,201	45,454	46,045	36,828	38,648	41,649	42,966	43,505	47,398	46,406	40,683	37,988	42,731
Total	64,360	66,980	70,300	63,720	65,430	98,220	127,180	99,300	111,450	102,660	63,870	51,790	82,105

Note: *Includes only unemployment insurance-covered agricultural employment.

Each year there are two major surges in seasonal employment. More than 55,000 seasonal and migrant workers were added to the agricultural workforce from May through July.

The Regional Distribution of Agricultural Employment

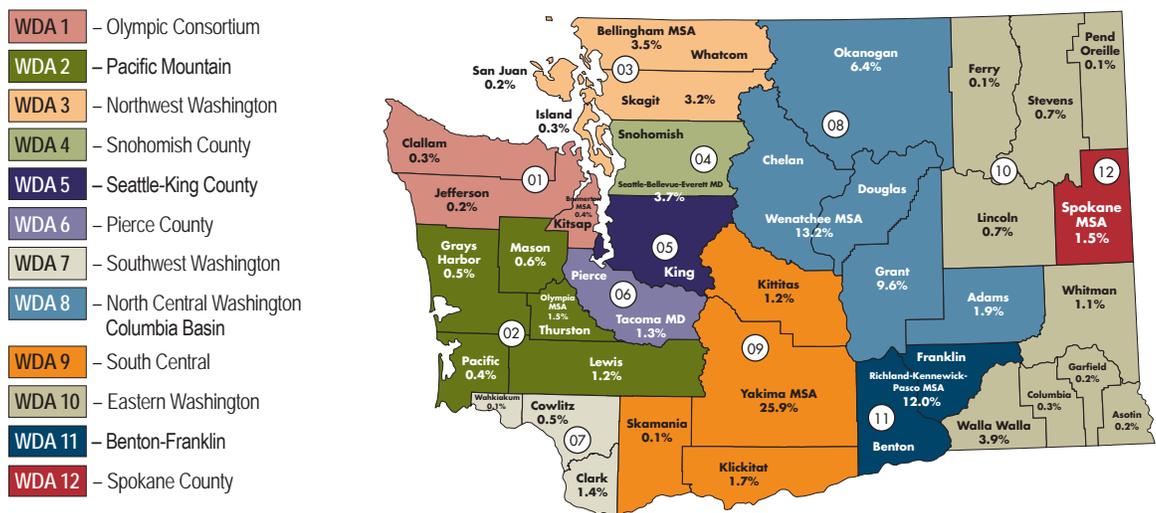
Figure 2-8 displays the geographic distribution of agricultural employment in the state. On a year-over-year basis, the percentage distribution of employment is relatively stable. For example, the Yakima Metropolitan Statistical Area (MSA) held 25.9 percent of agricultural employment in 2010. In 2009, the estimate was 26.1 percent. Likewise, the Wenatchee MSA held 13.2 percent of employment in 2010. For 2009, the estimate was 12.9 percent. In 2010, three areas accounted for 51.1 percent of total agricultural employment: Yakima MSA, Wenatchee MSA and Richland-Kennewick-Pasco MSA. The estimate for 2009 was 50.8 percent for these three regions combined.

Four counties also contained a sizable percent of total agricultural employment. These were: Grant, 9.6 percent; Okanogan, 6.4 percent; Skagit, 3.2 percent; and Walla Walla, 3.9 percent. These counties plus the MSAs discussed above comprised 74.2 percent of all agricultural employment in Washington state in 2010.

Figure 2-8

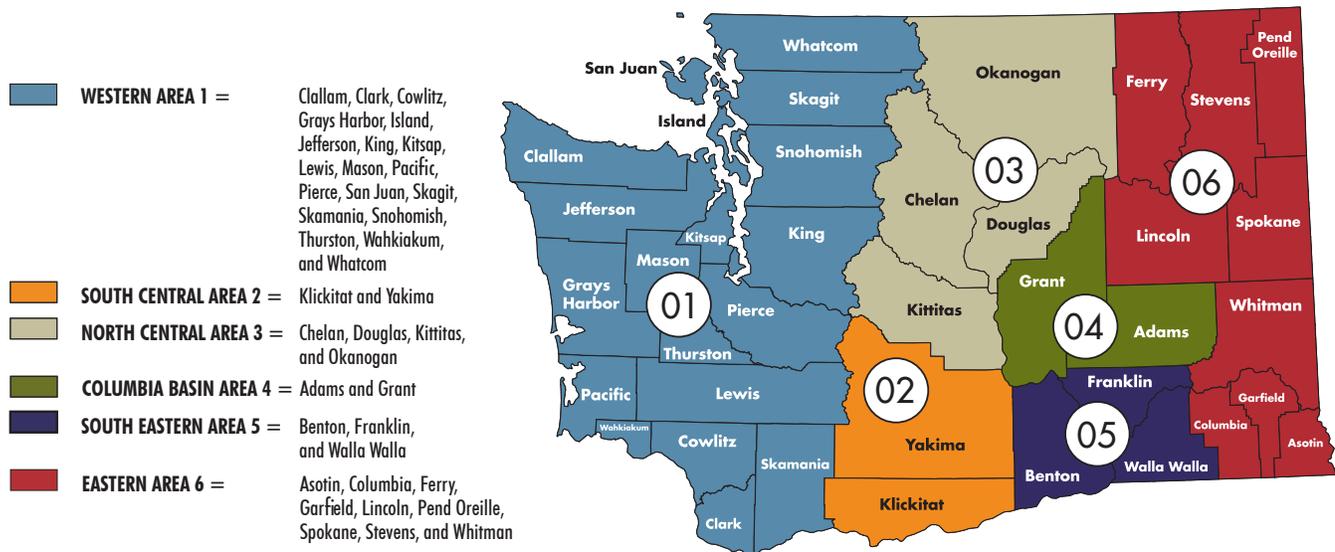
Percent of Total Agricultural Employment by MSA, Metropolitan Division (MD) and County Within the 12 Workforce Development Areas
Washington State, 2010

Source: Employment Security Department/LMEA, U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS)



Agricultural employment is concentrated in three workforce development areas in the state: North Central Washington (08), 30.8 percent; South Central (09), 29.1 percent; and Benton-Franklin (11), 11.8 percent.

Figure 2-9
 Agricultural Reporting Areas 1 through 6
 Washington State, 2010
 Source: Employment Security Department/LMEA



For reporting purposes, the state is divided into six agricultural growing regions. Some of these are geographically similar to the state’s workforce development areas shown in *Figure 2-8*.

Figure 2-10 provides further detail on agricultural and nonagricultural employment measured in jobs for agricultural reporting areas, and compares 2010 with 2009 and 2008. Note, first, that from 78 percent to 78.7 percent of total employment in the state is in the western area of the state; the rest is in the eastern portion of the state. This distribution has been stable for a number of years.

Some counties are more heavily dependent on agricultural employment than others. This is particularly true of Okanogan County, with 31.8 percent of its jobs in direct-production agriculture; Adams with 25 percent; Grant with 24.8 percent; Chelan-Douglas with 21.9 percent; and Yakima with 21.7 percent.

Next, workers employed in the 98,940 direct agricultural production jobs comprised 3.1 percent of the total state employment in jobs for 2010. Of this number, 79,790, or 80.6 percent, were found in the eastern part of the state. While statewide agricultural jobs in direct production comprised only 3.1 percent of total state jobs, these agricultural jobs comprised 11.3 percent of the total jobs for the eastern part of the state. Inspection of *Figure 2-10* indicates that these proportions have been stable over the very recent past.



Figure 2-10

Total State and Agricultural Employment (Number of Jobs)

Washington State and Selected Areas, 2010 Compared to 2009 and 2008

Source: Employment Security Department/LMEA, U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS)

			2010		2009		2008	
	2010 TOTAL EMPLOYMENT STATEWIDE	2010 TOTAL AGRICULTURAL STATEWIDE*	PERCENT OF TOTAL REGION/COUNTY	PERCENT OF TOTAL STATE AGRICULTURAL	PERCENT OF TOTAL REGION/COUNTY	PERCENT OF TOTAL STATE AGRICULTURAL	PERCENT OF TOTAL REGION/COUNTY	PERCENT OF TOTAL STATE AGRICULTURAL
Washington	3,210,400	98,940						
Western - Agricultural Reporting Area 1	2,505,160	19,150	78.0%	19.4%	78.2%	19.6%	78.7%	19.9%
Eastern - Agricultural Reporting Areas 2-6	705,240	79,790	22.0%	80.6%	21.8%	80.4%	21.3%	80.1%
AGRICULTURAL REPORTING AREAS								
Columbia Basin Area 4	46,130	11,440	24.8%	11.6%	25.0%	11.7%	24.4%	11.6%
Adams	7,630	1,910	25.0%	1.9%	23.9%	1.9%	24.1%	1.9%
Grant	38,500	9,530	24.8%	9.6%	25.2%	9.8%	24.5%	9.7%
North Central Area 3	98,780	20,580	20.8%	20.8%	20.3%	20.3%	19.6%	20.0%
Chelan-Douglas MD	59,380	13,020	21.9%	13.2%	21.2%	12.9%	21.0%	12.8%
Kittitas	19,370	1,190	6.1%	1.2%	6.4%	1.2%	5.8%	1.2%
Okanogan	20,030	6,370	31.8%	6.4%	30.5%	6.2%	29.2%	6.1%
South Central Area 2	128,050	27,250	21.3%	27.5%	21.8%	27.8%	21.8%	28.0%
Klickitat	9,960	1,660	16.7%	1.7%	16.9%	1.7%	17.2%	1.7%
Yakima	118,090	25,590	21.7%	25.9%	22.2%	26.1%	22.2%	26.3%
South Eastern Area 5	155,180	15,730	10.1%	15.9%	10.4%	15.8%	10.3%	15.4%
Benton and Franklin	125,860	11,840	9.4%	12.0%	9.7%	11.8%	9.8%	11.8%
Walla Walla	29,320	3,890	13.3%	3.9%	13.2%	3.9%	12.3%	3.7%
Eastern Area 6	277,100	4,790	1.7%	4.8%	1.7%	4.8%	1.7%	5.0%
Asotin	9,560	160	1.7%	0.2%	1.6%	0.2%	1.6%	0.2%
Lincoln	4,500	690	15.3%	0.7%	15.1%	0.7%	14.8%	0.7%
Spokane MSA	216,950	1,530	0.7%	1.5%	0.7%	1.6%	0.7%	1.5%
Whitman	19,800	1,080	5.5%	1.1%	5.2%	1.1%	5.2%	1.1%
Other Eastern Areas	26,290	1,330	5.1%	1.3%	5.0%	1.4%	5.3%	1.5%

Notes: *Total agricultural employment includes unemployment insurance-covered employment plus noncovered employment, not adjusted for multiple jobholders. The comparable estimate for 2008 is 95,740; for 2007, it is 94,810.

Most nonagricultural employment is concentrated in the western part of the state. Most agricultural employment is concentrated in the eastern part of the state, and is heavily localized in eight counties.

Seasonal Employment

Seasonal employment varies by crop in the short-run due mainly to weather. Over the long-run, seasonal employment varies by crop composition and changing technology, to name the most obvious reasons. There is considerable season-over-season

change in seasonal employment, as is shown in *Figure 2-11*. Seasonal employment increased by 21.3 percent over the period of 2008 through 2010. It increased by 1.8 percent between 2009 and 2010. A three-year period is too short to allow speculation about the existence of a long-run trend, however.

Figure 2-11

Seasonal Agricultural Employment by Region and Crop
Washington State, 2010 Compared to 2008 and 2009

Source: Employment Security Department/LMEA, Agricultural Labor Employment and Wages Survey

	2008 AVERAGE SEASONAL EMPLOYMENT	2009 AVERAGE SEASONAL EMPLOYMENT	2010 AVERAGE SEASONAL EMPLOYMENT	2010-2008 CHANGE	2010-2008 PERCENT CHANGE	2010-2009 CHANGE	2010-2009 PERCENT CHANGE
State Totals	32,454	38,669	39,374	6,920	21.3%	706	1.8%
Area Totals							
Western Area 1	3,783	3,754	3,865	82	2.2%	112	3.0%
South Central Area 2	9,739	11,935	11,142	1,403	14.4%	-793	-6.6%
North Central Area 3	7,877	10,089	9,513	1,636	20.8%	-576	-5.7%
Columbia Basin Area 4	4,833	6,053	5,920	1,087	22.5%	-133	-2.2%
South Eastern Area 5	5,800	6,476	8,392	2,592	44.7%	1,916	29.6%
Eastern Area 6	422	362	543	121	28.7%	181	49.9%
Crop Totals							
Apples	15,741	18,886	18,909	3,168	20.1%	23	0.1%
Cherries	3,392	5,680	6,213	2,821	83.2%	533	9.4%
Pears	926	1,262	1,705	779	84.1%	443	35.1%
Other Tree Fruit	867	952	503	-364	-42.0%	-449	-47.2%
Grapes	1,497	1,594	1,717	220	14.7%	123	7.7%
Blueberries	519	430	500	-20	-3.8%	70	16.3%
Raspberries	826	699	728	-98	-11.9%	29	4.1%
Strawberries	414	331	368	-46	-11.1%	38	11.4%
Bulbs*	*	*	*	*	*	*	*
Hops	1,008	957	534	-474	-47.0%	-422	-44.1%
Nurseries*	1,162	1,121	1,290	128	11.0%	169	15.0%
Wheat/Grain	218	182	417	199	91.1%	235	129.4%
Asparagus	785	899	462	-323	-41.1%	-437	-48.6%
Cucumbers	17	11	5	-12	-70.1%	-6	-55.5%
Onions	533	690	851	318	59.6%	161	23.4%
Potatoes	1,290	1,159	913	-377	-29.3%	-247	-21.3%
Misc. Vegetables	915	1,223	1,205	290	31.6%	-18	-1.5%
Other Seasonal Crops	2,274	2,556	3,056	782	34.4%	500	19.6%

Note: *The conversion from the Standard Industrial Classification (SIC) to North American Industry Classification System (NAICS) industry codes placed bulb growers into the nursery sector.

Short-run changes in the demand for seasonal labor are due largely to weather changes from year to year. Long-run changes in the demand for seasonal labor are due largely to productivity and technology changes, along with product demand changes.

Seasonal employment in Western Area 1 has been relatively stable over the period of 2008 through 2010. The variations in the five other agricultural regions of the state are more volatile. There have been sharp changes in Eastern Area 6, but small

numbers of workers are involved. The greatest volatility occurs in regions 2, 3, 4 and 5, where tree fruit production is dominant. A review of the crop totals shows the influence on seasonality by crop.

The apple harvest makes the largest absolute demand on seasonal labor in any given production year. Between 2008 and 2010, seasonal employment in apples increased by 3,168 workers, or 20.1 percent, totaling 18,909 workers in 2010. Seasonal employment in apples between 2009 and 2010 was essentially stable, with only 112 additional seasonal workers added in 2010 compared to 2009.

Cherries make the second largest demand on seasonal employment. An estimated 3,392 seasonal workers were employed in 2008; this increased to 6,213 by 2010, an 83.2 percent increase. Weather patterns drive this kind of short-run variation in labor demand. The same situation is true for pears, whose seasonal employment was 926 workers in 2008, but 1,705 seasonal workers in 2010, an 84.1 percent change.

Grapes have shown a steady increase in seasonal employment, increasing from 14.7 percent between 2008 and 2010 and 7.7 percent between 2009 and 2010.

Seasonal employment in potato production has been declining, a reflection of a reduction of acreage planted from 160,000 acres in 2007 to 145,000 acres in 2009, with production falling from 397.7 million pounds in 2007 to 383.9 million pounds in 2009. Acres planted have dropped 9.1 percent over this three-year period while production has dropped only 3.5 percent. Improvements in technology may be influencing this seasonal change in potato production.

The final notable crop seasonality is in hops. Since 2000, the value per acre of harvested hops has increased by 54 percent. Planted acres have increased from 22,745 in 2007 to 29,588 in 2009. Yield per acre has increased over this time period from 2,048 pounds per acre to 2,533 pounds. In contrast, between 2008 and 2010, seasonal employment has decreased by 47 percent, from 1,008 seasonal workers to 534. Here, it is reasonable to argue, changes in productivity and technology have resulted in a drop in the quantity demanded of seasonal labor.

Earnings and Jobs by Industry Subsector

In 2009 there were 5,572 agricultural producers that employed an average monthly labor force of 76,290 workers in Washington state (*Figure 2-12*). The wage bill for this sector in 2009 was \$1.3 billion in current dollars. This wage bill also represents a share of the total value added for this sector to the state's economy.

The products from this sector and from agricultural imports outside of Washington state feed into the state's agriculture manufacturing sector. This sector supported 1,282 firms in 2009, employing an average monthly labor force of 38,025 workers. The wage bill for this sector in 2009 current dollars was \$1.6 billion. Average annual earnings per job in production agriculture were \$21,420, somewhat more than half of the \$41,413 annual earnings per job in agriculture manufacturing. No subsector in production agriculture pays lower earnings in 2009 compared to 2007; however, in agriculture manufacturing, average annual earnings have fallen in four of the subsectors between 2007 and 2009: Seafood product preparation and packaging; beverage manufacturing; animal slaughtering and processing; and other industries.

Fruit and tree nut farming, which supported a monthly average of 37,856 jobs in 2009, paid average annual earnings per job of just \$17,221 – the lowest average annual earnings in the production agriculture sector. In contrast, poultry and egg production employed an average of 778 workers per month and paid them average annual earnings of \$31,638. Cattle ranching and farming and vegetable and melon farming are the second and third highest paying subsectors in production agriculture.

Seafood product preparation and packaging has the highest contribution to value added in this sector and this subsector paid its workers an average of \$52,698 in earnings in 2009 – the highest paying subsector in this group. Animal food manufacturing is a distant second, paying \$41,733 per year. Animal slaughtering and processing pays the lowest average annual earnings at \$33,647. This sum still exceeds the highest paying jobs in production agriculture.

Figure 2-12

Total Employers, Total Jobs, Annual Total and Annual Average Before-tax Earnings, by Industry, in Current Dollars
Washington State, 2009 Compared to 2008 and 2007

Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages (QCEW)

Notes: ¹Not included in this figure is the value of milk production which equalled \$684,003,000 in 2009.

INDUSTRY	2009 AVERAGE NUMBER OF FIRMS	2009 ANNUAL TOTAL EARNINGS (INDUSTRY SECTOR WAGE BILL)	2009 AVERAGE MONTHLY JOBS	2009 AVERAGE ANNUAL EARNINGS PER JOB	2008 AVERAGE ANNUAL EARNINGS PER JOB	PERCENT CHANGE IN 2009 EARNINGS COMPARED TO 2008	PERCENT CHANGE IN 2009 EARNINGS COMPARED TO 2007 ³
Production Agriculture¹	5,572	\$1,634,117,872	76,290	\$21,420	\$21,446	-0.1%	5.1%
Poultry and Egg Production	34	\$24,614,187	778	\$31,638	\$29,775	6.3%	4.6%
Animal Aquaculture ²	-	-	-	-	-	-	-
Cattle Ranching and Farming	615	\$122,842,269	4,267	\$28,789	\$28,320	1.7%	10.4%
Other Crop Farming	760	\$162,635,456	6,181	\$26,312	\$25,000	5.2%	10.0%
Support Activities for Crop Production	256	\$368,341,983	15,156	\$24,303	\$24,459	-0.6%	3.9%
Greenhouse, Nursery and Floriculture	344	\$107,027,770	4,596	\$23,287	\$22,849	1.9%	5.3%
Other Animal Production	140	\$10,144,184	428	\$23,701	\$24,280	-2.4%	7.8%
Vegetable and Melon Farming	154	\$116,368,228	4,160	\$27,973	\$28,043	-0.3%	7.3%
Support Activities for Animal Production	164	\$11,604,341	487	\$23,828	\$23,430	1.7%	8.3%
Oilseed and Grain Farming	908	\$36,427,404	1,612	\$22,598	\$21,681	4.2%	9.0%
Hog and Pig Farming ²	-	-	-	-	-	-	-
Fruit and Tree Nut Farming	2,139	\$651,918,755	37,856	\$17,221	\$17,413	-1.1%	4.2%
Other Industries	58	\$22,193,295	769	\$28,860	\$28,399	1.6%	10.8%
Agriculture Manufacturing	1,282	\$1,574,731,257	38,025	\$41,413	\$42,133	-1.7%	2.9%
Seafood Product Preparation and Packaging	92	\$345,907,754	6,564	\$52,698	\$60,194	-12.5%	-6.1%
Dairy Product Manufacturing ²	-	-	-	-	-	-	-
Grain and Oilseed Milling ²	-	-	-	-	-	-	-
Beverage Manufacturing	272	\$165,187,734	4,135	\$39,949	\$40,613	-1.6%	-1.6%
Animal Food Manufacturing	47	\$27,835,678	667	\$41,733	\$40,771	2.4%	5.1%
Other Food Manufacturing	179	\$158,243,244	4,217	\$37,525	\$38,178	-1.7%	3.0%
Fruit and Vegetable Preserving and Specialty	79	\$411,420,123	10,853	\$37,908	\$37,356	1.5%	5.6%
Bakeries and Tortilla Manufacturing ²	-	-	-	-	-	-	-
Animal Slaughtering and Processing	71	\$120,389,619	3,578	\$33,647	\$33,474	0.5%	-5.7%
Sugar and Confectionery Product Manufacturing ²	-	-	-	-	-	-	-
Other Industries	321	\$246,951,008	7,179	\$34,399	\$34,997	-1.7%	-0.2%

²Not published due to confidentiality. Totals are folded into "Other Industries."

³For a comparison of calendar year 2008 with calendar year 2007, see the *2009 Agricultural Workforce in Washington State*, published June 2010 by the Washington State Employment Security Department.

Production agriculture supports four times the number of workers compared to agriculture manufacturing. However, agriculture manufacturing pays about twice as much in terms of average annual earnings.

Summary

- ◆ The Great Recession continued to influence the supply of workers to the agricultural sector in 2010, even though the recession officially ended in June 2009.
- ◆ There is zero reported spot “shortages” of agricultural labor in the state during the last three quarters of 2010.
- ◆ Average hourly wage rates are generally higher in Washington and Oregon combined, compared to California and the United States.
- ◆ The Adverse Effect Wage Rate (AEWR) has been lowered for Washington from \$10.85 per hour in 2010 to \$10.60 per hour in 2011.
- ◆ The distribution of agricultural labor differs sharply between eastern and western Washington and within agricultural areas in eastern Washington. These proportions have been relatively stable over time.
- ◆ There are sharp peaks in the demand for seasonal agricultural labor, amounting to tens of thousands of workers between one month and the next. These peak demands add to the challenges facing agricultural producers in Washington state.
- ◆ Production agriculture employs about four times more workers than agriculture manufacturing, but pays about half the annual earnings that workers earn in agriculture manufacturing.

Endnotes

- 1 National Bureau of Economic Research. “Business Cycle Dating Committee, National Bureau of Economic Research.” Wednesday, May 4, 2011. See also, *The Capital Press*. “Farmers expect plentiful labor this year.” April 23, 2010. *The Wenatchee World*. “Idled blue-collar workers turn to ag jobs.” April 14, 2010.
- 2 Local Area Unemployment Statistics (LAUS) and Haver Analytics, Inc. Reported in the Washington State Employment Security Department *2010 Washington State Labor Market and Economic Report*.
- 3 The data in this section are based on the quarterly nationwide Farm Labor Survey conducted by the U.S. Department of Agriculture. See Guide to the Sample Survey and Census programs of NASS for a discussion of the survey design.
- 4 Calculated as $(92,000 \times 2.9 = 266,800)$ and $(1,000 \times 41.7 = 41,700)$; then, $(266,800 + 41,700 = 308,500)$ worker-hours).
- 5 Standard deviations are not provided for these averages, nor are sample sizes provided in the tables in AGRI-FACTS. Thus, we cannot perform standard tests of statistical significance on these data.
- 6 “Temporary Agricultural Employment of H-2A Workers in the United States: 2010 Adverse Effect Wage Rates, Allowable Charges for Agricultural Workers.” Meal and Maximum Travel Subsistence Reimbursement. <http://govpulse.us/entries/2010/02/18/2010-3078/temporary-agricultural-employment-of-h-2a-workers-in-the-united-states-2010-adverse-effect-wage-rate#1d494666> and U.S. Department of Labor. Employment and Training Administration. “Adverse Effect Wage Rates-Year 2011.”

CHAPTER THREE

The Condition of Washington's Agricultural Labor Market:

Employment, Unemployment, Job Vacancies and the Insured Unemployed

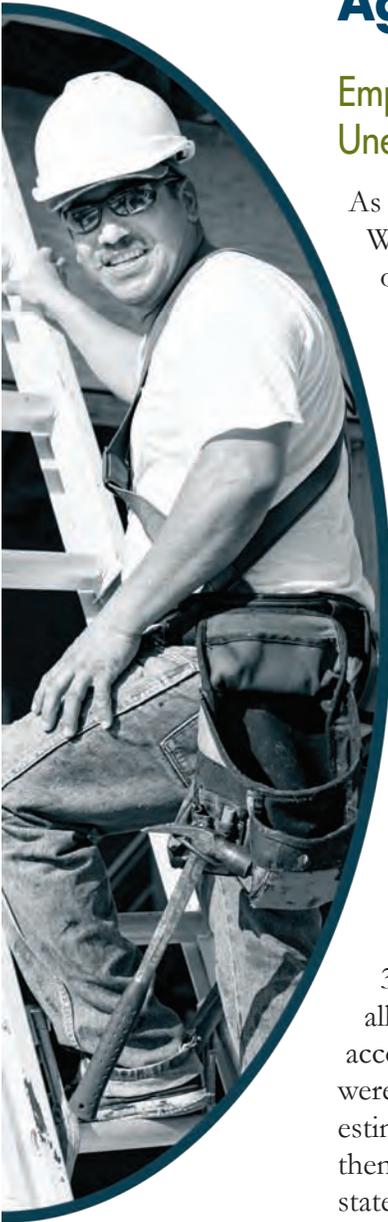
As discussed in *Chapter 2*, the Great Recession continued to affect the Washington state labor market during 2010, even though the recession officially ended in June 2009. As *Chapter 5* points out, there were no reports of spot “shortages” of labor during the last three quarters of 2010 by Washington state growers. Nationwide and in the state, H-2A applications also dropped off during the year.

In short, 2010, like 2009, was a year in which agricultural labor supply was adequate to meet the needs of Washington's agricultural producers.

Unemployment at the National Level

Since 2007, agriculture unemployment at the national level has increased by 270 percent. An estimated 78,000 agricultural workers were unemployed in 2007; the estimate for 2010 was 211,000. The unemployment rate dropped from 14.4 percent in 2009 to 9.6 percent in 2010.¹ However, as shown in *Figure 3-1*, in absolute numbers, unemployed agricultural workers increased by 5.5 percent in 2010 compared to 2009.

Nationwide, an estimated 1.8 million construction workers were unemployed in 2010. This represented an unemployment rate of 34.5 percent. An estimated 1.6 million workers were unemployed in all manufacturing in 2010, an unemployment rate of 14.1 percent. If, according to Passel and Cohn,² 17 percent of the workers in construction were undocumented in 2008, this high unemployment could have freed up an estimated 306,000 undocumented construction workers, some of whom may then have sought employment in agriculture both nationwide and in Washington state. An additional 162,000 undocumented workers might have been released from production occupations. The potential flow of workers out of these sectors and into agriculture is further discussed in *Chapter 5*.³



Unemployment in Washington

Figure 3-2 shows the estimated monthly unemployment rates for peak agricultural months by selected counties, Metropolitan Divisions (MDs) and Metropolitan Statistical Areas (MSAs).⁴ The selected counties have a high concentration of agricultural production as do the Bellingham, Wenatchee and Yakima MSAs. While there is a large amount of data in Figure 3-2, three strong patterns stand out:

- ◆ Unemployment rates uniformly increased across all counties, MDs and MSAs between 2008 and 2009. The lowest year-over-year monthly increase was 1.5 percent for Wenatchee MSA from July 2008 to July 2009. The highest year-over-year increase was 4.8 percent for Skagit County from May 2008 to May 2009.
- ◆ For the six key agricultural counties, the unemployment rate increased in 12 of the 24 year-over-year monthly comparisons for the totality of May, June, July and August. Thus, to some degree, unemployment continued to increase in the heavily agricultural counties in 2010 compared to 2009. This tendency was not true of the MDs and MSAs.
- ◆ For the MDs and MSAs, the year-over-year monthly unemployment rates revealed a tendency to drop beginning in August and September. This drop became a marked tendency in October when contrasting 2010 with 2009. The selected counties did not show a marked tendency for the unemployment rate to drop until October, year-over-year, for 2010 versus 2009.

Figure 3-1

Unemployment Level and Unemployment Rate for Agricultural Workers and Construction and Manufacturing Workers, Not Seasonally Adjusted, in 1000s U.S., 2001 through 2010

Source: Haver Analytics, Inc. Table A-14, Unemployment by Industry, U.S. Bureau of Labor Statistics

YEAR	NATIONAL UNEMPLOYMENT LEVEL AND RATE					
	AGRICULTURE		CONSTRUCTION		ALL MANUFACTURING	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
2001	153,000	11.3%	609,000	7.1%	992,000	5.2%
2002	139,000	10.3%	800,000	9.2%	1,205,000	6.6%
2003	140,000	10.4%	810,000	9.3%	1,166,000	6.6%
2004	129,000	10.1%	769,000	8.4%	966,000	5.6%
2005	104,000	8.4%	712,000	7.5%	812,000	4.9%
2006	95,000	7.4%	671,000	6.7%	699,000	4.2%
2007	78,000	6.2%	757,000	7.4%	706,000	4.3%
2008	123,000	9.3%	1,030,000	10.6%	945,000	5.8%
2009	200,000	14.4%	1,770,000	19.0%	1,890,000	12.1%
2010	211,000	9.6%	1,801,000	34.5%	1,622,000	14.1%
2010 Minus 2009	11,000	5.5%	31,000	1.8%	-268,000	-14.2%

Notes: For 2008, the estimated number of unauthorized workers in agriculture is 25 percent; in construction, 17 percent; in production occupations, 10 percent. See Jeffrey S. Passel and D'Vera Cohn. "A Portrait of Unauthorized Immigrants in the United States," Pew Hispanic Center, Washington, D.C., April 14, 2009.

While the national unemployment rate for agricultural workers fell, the absolute number of agricultural workers unemployed rose between 2009 and 2010.

Unemployment in the Workforce Development Areas

The number of unemployed workers available for work by workforce development area (WDA) is shown in *Figure 3-3*. The 12 WDAs are serviced by WorkSource, Washington's partnership of workforce agencies that make up the state's public labor exchange. WorkSource centers use these data to aid agricultural producers in meeting their labor supply needs.

Across the state, the unemployment level increased by 137,298 workers to 328,748 between 2008 and 2009. The unemployment level increased by an

additional 10,761 workers between 2009 and 2010. WDAs 8 through 12 are heavily agricultural. In these WDAs, the unemployment level increased from 44,113 in 2008 to 67,591 in 2009, and then to 70,866 in 2010. An additional 3,275 unemployed workers were looking for jobs in the combined labor markets of the five WDAs in 2010.

The Unemployment Level and the Peak Employment Month

The relationship between unemployment in January, the month of lowest demand for agricultural labor, and unemployment in the peak employment month

Figure 3-2

Comparison of Selected Unemployment Rates by Season
Selected Washington Counties, MSAs and MDs

Source: Employment Security Department/LMEA, Local Area Unemployment Statistics, Benchmarked First Quarter 2010

COUNTY, MD OR MSA	UNEMPLOYMENT RATE																	
	MAY			JUNE			JULY			AUGUST			SEPTEMBER			OCTOBER		
	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010
COUNTIES																		
Benton	4.8%	6.9%	7.1%	4.6%	6.8%	6.6%	4.8%	6.6%	6.8%	4.9%	6.9%	6.8%	4.4%	6.4%	6.3%	4.7%	6.5%	6.2%
Franklin	5.6%	7.8%	8.0%	5.3%	7.6%	7.1%	5.6%	6.8%	7.3%	5.2%	7.7%	7.3%	4.7%	6.7%	6.3%	4.9%	6.8%	6.0%
Grant	5.7%	9.3%	10.1%	5.2%	8.5%	9.1%	5.3%	7.9%	8.8%	5.5%	8.6%	9.3%	4.7%	7.6%	7.9%	4.8%	8.5%	7.9%
Okanogan	6.2%	9.2%	10.6%	5.8%	8.1%	9.0%	4.6%	6.9%	7.5%	5.6%	8.0%	9.0%	4.7%	7.3%	7.4%	4.6%	7.3%	7.0%
Skagit	5.3%	10.1%	10.2%	5.5%	10.2%	9.9%	5.4%	10.0%	9.6%	5.7%	10.1%	9.7%	5.2%	9.9%	9.2%	5.5%	9.9%	9.1%
Walla Walla	4.7%	6.5%	7.6%	4.5%	6.5%	6.9%	4.6%	6.2%	6.8%	4.5%	6.6%	7.1%	4.2%	5.9%	6.3%	4.2%	5.9%	6.1%
MD/MSA¹																		
Bellingham MSA ²	4.6%	8.4%	8.7%	4.9%	8.9%	8.9%	5.0%	8.8%	8.5%	5.0%	8.9%	8.6%	4.8%	8.6%	8.0%	4.8%	8.2%	7.6%
Bremerton MSA	4.8%	7.9%	7.9%	5.1%	8.2%	7.6%	5.1%	7.8%	7.6%	5.1%	7.9%	7.7%	4.9%	7.6%	7.2%	5.0%	7.6%	7.1%
Olympia MSA	4.8%	8.0%	8.2%	5.0%	8.2%	7.9%	5.0%	7.9%	7.9%	5.1%	8.1%	8.0%	4.7%	7.8%	7.5%	5.1%	7.7%	7.4%
Seattle MD	4.5%	8.8%	8.9%	4.8%	9.5%	9.3%	4.8%	9.1%	8.9%	4.9%	8.9%	8.8%	5.2%	9.4%	9.1%	5.6%	9.5%	9.2%
Spokane MSA	5.4%	9.0%	9.4%	5.2%	9.1%	9.1%	5.4%	9.0%	9.1%	5.5%	9.2%	9.2%	5.0%	8.9%	8.5%	5.2%	8.7%	8.1%
Tacoma MSA	5.4%	9.9%	10.0%	5.6%	10.0%	9.6%	5.7%	9.9%	9.5%	5.8%	10.1%	9.8%	5.4%	9.6%	9.0%	5.8%	9.5%	8.8%
Wenatchee MSA ²	5.9%	8.5%	9.3%	5.4%	7.5%	7.5%	4.1%	5.6%	6.3%	5.5%	8.0%	8.0%	3.9%	6.6%	6.5%	4.0%	6.6%	6.5%
Yakima MSA ²	6.8%	8.8%	8.9%	6.4%	8.3%	8.7%	6.1%	7.4%	8.3%	7.1%	9.0%	9.6%	5.1%	7.1%	7.4%	5.1%	7.2%	7.1%

Notes: ¹MD = Metropolitan Division; MSA = Metropolitan Statistical Area

²Bellingham, Wenatchee and Yakima MSAs are significant agricultural markets.

Year-over-year, monthly unemployment increased across the selected counties, MDs and MSAs in 2009 compared to 2008. Year-over-year monthly unemployment did not show a marked tendency to decrease until September.

is shown in *Figure 3-4*.⁵ The effects of the Great Recession and the seasonal demand for agricultural labor are revealed in the figure. Several facts stand out:

- ◆ January unemployment, year-to-year, rose in all of the key agricultural counties and all of the MDs and MSAs except Yakima from 2008 through 2010.
- ◆ With the exception of Skagit County, unemployment fell in the peak employment month relative to January for all of the selected counties in 2008 and 2009. Unemployment fell in all key agricultural counties in 2010.
- ◆ January to peak employment month unemployment fell for all key agricultural counties by 3,450 workers in 2008, 1,880 workers in 2009 and 7,290 workers in 2010.
- ◆ Unemployment rose in all MDs and MSAs in 2008 and 2009 when comparing January unemployment with peak month unemployment, except for Yakima MSA, which has a very large agricultural sector.
- ◆ In 2010, unemployment fell, or did not increase, in all MDs and MSAs in the peak employment month relative to January.
- ◆ In the MDs and MSAs, January to peak employment month unemployment rose by 43,180 workers in 2008, rose by 30,100 workers in 2009 and then fell by 28,580 workers in 2010. This is an absolute shift of 58,680 unemployed workers from January 2009 to the peak month in 2010 ($|30,100| + |-28,580| = |58,680|$).

The Employment Level and the Peak Employment Month

The labor force is comprised of employed and unemployed individuals and the composition of employed and unemployed can change from month to month and year to year due to a variety of factors.⁶ *Figure 3-5*, as with *Figure 3-4*, shows the interplay of the Great Recession and the seasonal demand and supply of agricultural labor.

Figure 3-3
Unemployed Workers by Workforce Development Area (WDA), Not Seasonally Adjusted
Washington State, 2008 through 2010
Source: Haver Analytics, Inc. DLX Database - LAUSDB

WORKFORCE DEVELOPMENT AREA ¹	CALENDAR YEAR			DIFFERENCE: 2010 MINUS 2008	DIFFERENCE: 2010 MINUS 2009
	2008	2009	2010		
WDA 1 Olympic Consortium	9,052	13,869	14,232	5,180	363
WDA 2 Pacific Mountain	14,084	22,647	23,163	9,079	515
WDA 3 Northwest Washington	10,826	18,537	19,186	8,360	649
WDA 4 Snohomish County	20,690	38,087	39,110	18,420	1,023
WDA 5 Seattle-King County	51,521	94,363	97,373	45,852	3,010
WDA 6 Pierce County	22,306	38,402	39,414	17,108	1,012
WDA 7 Southwest Washington	18,858	35,252	36,165	17,307	913
WDA 8 North Central Washington - Columbia Basin	7,841	12,183	12,941	5,100	758
WDA 9 South Central	10,818	14,942	16,131	5,313	1,189
WDA 10 Eastern Washington	5,607	8,679	8,855	3,248	176
WDA 11 Benton-Franklin	6,550	9,717	10,132	3,582	415
WDA 12 Spokane County	13,297	22,070	22,807	9,510	737
Total	191,450	328,748	339,509	148,059	10,761

Note: ¹See *Chapter 2, Figure 2-9* for the counties included in each of the workforce development areas.

Statewide, unemployed workers increased by 148,059 from 2008 to 2010.

For the six selected counties in *Figure 3-5*, January employment rises from a level of 242,320 employed workers in 2008 to 247,360 employed workers in 2009 before falling to 245,140 workers in January 2010. However, seasonally unadjusted, peak employment over the same period goes from 276,100 workers in 2008, to 278,660 in 2009, and then to 282,870 workers in 2010.

In contrast, January employment in the eight MDs and MSAs fell from 2.49 million workers in 2008 to 2.47 million workers in 2009 and then to 2.4 million

workers in 2010. Peak month employment fell from 2.56 million workers in 2008 to 2.52 million workers in 2009 to 2.49 million workers in 2010. Indeed, in 2009, Wenatchee and Yakima MSAs added 39,660 workers in the peak month of 2009, or 84.5 percent of the total addition to employment among the eight MDs and MSAs. The relative impact of seasonal agricultural demand during the peak season is clear for this 2009 recession year. In addition, note that the seasonal change among the six key highly agricultural counties was relatively stable over the three-year period. The peak employment

Figure 3-4

Total Unemployed Workers, January and Peak Employment Month

Selected Washington Counties, MSAs and MDs, 2008, 2009 and 2010

Source: Employment Security Department/LMEA, Local Area Unemployment Statistics Benchmarked First Quarter 2010

COUNTY, MD OR MSA	2008			2009			2010		
	JANUARY	PEAK EMPLOYMENT MONTH	DIFFERENCE: PEAK MONTH MINUS JANUARY	JANUARY	PEAK EMPLOYMENT MONTH	DIFFERENCE: PEAK MONTH MINUS JANUARY	JANUARY	PEAK EMPLOYMENT MONTH	DIFFERENCE: PEAK MONTH MINUS JANUARY
COUNTIES									
Benton	4,960	4,220	-740	6,990	6,640	-350	8,250	6,610	-1,640
Franklin	2,650	1,850	-800	3,550	2,920	-630	4,150	2,900	-1,250
Grant	3,310	2,110	-1,200	4,580	3,580	-1,000	5,570	4,010	-1,560
Okanogan	1,690	1,200	-490	2,230	1,870	-360	2,850	2,080	-770
Skagit	3,270	3,410	140	5,370	6,030	660	7,320	5,800	-1,520
Walla Walla	1,710	1,350	-360	2,300	2,100	-200	2,780	2,230	-550
Total	17,590	14,140	-3,450	25,020	23,140	-1,880	30,920	23,630	-7,290
MD/MSA¹									
Bellingham MSA ²	5,240	5,560	320	8,320	9,450	1,130	10,830	9,450	-1,380
Bremerton MSA	5,690	6,770	1,080	8,790	9,710	920	11,030	11,030	0
Olympia MSA	6,370	7,800	1,430	9,750	10,510	760	12,310	11,070	-1,240
Seattle MD	61,570	96,550	34,980	111,000	137,660	26,660	144,540	130,180	-14,360
Spokane MSA	14,090	17,040	2,950	22,010	23,710	1,700	27,580	21,170	-6,410
Tacoma MSA	20,580	27,360	6,780	34,040	38,070	4,030	45,210	45,210	0
Wenatchee MSA ²	3,940	2,950	-990	5,190	4,600	-590	6,570	4,710	-1,860
Yakima MSA ²	10,470	7,100	-3,370	10,050	5,540	-4,510	9,970	6,640	-3,330
Total	127,950	171,130	43,180	209,150	239,250	30,100	268,040	239,460	-28,580

Notes: ¹MD = Metropolitan Division; MSA = Metropolitan Statistical Area

²Bellingham, Wenatchee and Yakima MSAs are significant agricultural markets.

See *Appendix 3-3* for definitions of peak employment month for each geographical area.

With the exception of Skagit County, unemployment fell in the peak employment month relative to January for all of the key agricultural counties in 2008 and 2009. Unemployment fell in all key agricultural counties in 2010.

gain dropped by 8 percent between 2008 and 2009 and rose by 20 percent between 2009 and 2010. In contrast, the proportional changes for the MDs were a drop of 22 percent and an increase of 77 percent.

Job Vacancies

As with unemployment levels and rates, job vacancy data are another indicator of how loose (easy to hire workers at existing wage rates) or tight (hard to hire workers at existing wage rates) the labor market is. The greater the number of advertised vacancies, the tighter the labor market, and the harder it is to

find workers without raising the wage rate offer. The reverse is true when there are few vacancies posted by agricultural producers.

Job Vacancies Statewide

Figure 3-6 shows statewide job vacancies for all industries, including agriculture, in April 2009 and 2010. April immediately precedes the annual surge in seasonal employment that begins in May and June. Year-over-year, vacancies increased from 32,635 to 38,732, an increase of 19 percent, indicating that the labor market statewide has started to tighten up.

Figure 3-5

Total Employment, January and Peak Employment Month
Selected Washington Counties, MDs and MSAs, 2008 through 2010

Source: Employment Security Department/LMEA, Local Area Unemployment Statistics Benchmarked First Quarter 2010

COUNTY, MD OR MSA ¹	CALENDAR YEAR 2008			CALENDAR YEAR 2009			CALENDAR YEAR 2010		
	JANUARY EMPLOYMENT	PEAK EMPLOYMENT MONTH	PEAK EMPLOYMENT GAIN	JANUARY EMPLOYMENT	PEAK EMPLOYMENT MONTH	PEAK EMPLOYMENT GAIN	JANUARY EMPLOYMENT	PEAK EMPLOYMENT MONTH	PEAK EMPLOYMENT GAIN
COUNTIES									
Benton	79,610	87,690	8,080	82,080	90,930	8,850	83,960	93,880	9,920
Franklin	30,220	33,290	3,070	32,090	35,550	3,460	32,830	36,700	3,870
Grant	33,890	42,750	8,860	34,590	43,360	8,770	33,430	41,970	8,540
Okanogan	16,900	24,880	7,980	17,660	25,010	7,350	16,310	25,470	9,160
Skagit	54,910	56,490	1,580	53,180	53,430	250	51,080	53,930	2,850
Walla Walla	26,790	31,000	4,210	27,760	30,380	2,620	27,530	30,920	3,390
Total	242,320	276,100	33,780	247,360	278,660	31,300	245,140	282,870	37,730
MD/MSA¹									
Bellingham MSA ²	103,090	104,700	1,610	100,330	101,570	1,240	96,240	98,590	2,350
Bremerton MSA	118,860	119,890	1,030	118,360	118,360	0	115,640	116,560	920
Olympia MSA	124,500	126,500	2,000	124,310	124,310	0	119,580	121,780	2,200
Seattle MD	1,395,660	1,408,000	12,340	1,373,200	1,379,220	6,020	1,347,450	1,371,810	24,360
Spokane MSA	224,390	230,190	5,800	222,990	222,990	0	212,650	220,330	7,680
Tacoma MSA	372,830	376,010	3,180	369,240	369,240	0	355,410	363,980	8,570
Wenatchee MSA ²	53,220	68,590	15,370	54,350	77,240	22,890	53,000	70,210	17,210
Yakima MSA ²	106,230	124,830	18,600	108,080	124,850	16,770	105,970	126,030	20,060
Total	2,498,780	2,558,710	59,930	2,470,860	2,517,780	46,920	2,405,940	2,489,290	83,350

Notes: ¹MD = Metropolitan Division; MSA = Metropolitan Statistical Area

²Bellingham, Wenatchee and Yakima MSAs are significant agricultural markets.

See Appendix 3-3 for definitions of peak employment month for each geographical area.

Seasonal agricultural labor demand has somewhat insulated counties with a high concentration of agricultural employment from the recent recession.

WDAs 8 through 12 are heavily agricultural. In these WDAs, job vacancies fell year-over-year from 7,589 to 7,259, a decrease of 330 vacancies, or 4.3 percent. Year-over-year, full-time vacancies increased statewide from 66 percent to 68 percent. Vacancies for permanent positions rose from 76 percent to 84 percent statewide. New job vacancies rose from 3 percent to 12 percent statewide. These changes show that economic recovery is occurring in the state.

Figure 3-7 displays job vacancy data for October 2009 and 2010. October and September represent the second annual surge in seasonal agricultural labor statewide. Statewide, the vacancy data reveal that the labor market has continued to tighten up.

Vacancies, year-over-year rose from 32,037 to 41,889, an increase of 9,852, or 31 percent. Statewide, the percent of full-time vacancies dropped from 69 percent to 62 percent year-over-year. Permanent job vacancies dropped from 85 percent to 77 percent year-over-year. However, new job vacancies increased from 4 percent to 14 percent.

The heavily agricultural WDAs 8 through 12 revealed an increase in vacancies year-over-year of 1,569, or 23.1 percent (8,363 in fall 2010 versus 6,795 in fall 2009). Contrast these data with the spring data of the 330 vacancy decrease, or a drop of 4.3 percent. On the whole, the impact of relative seasonal demand for labor is clearly shown for these five WDAs.

Figure 3-6

Job Vacancies by Workforce Development Areas
Washington State, April 2009 and 2010

Source: Employment Security Department/LMEA, Spring 2009 and Spring 2010 Job Vacancy Surveys

WORKFORCE DEVELOPMENT AREA	APRIL								DIFFERENCE IN VACANCIES BETWEEN 2010 AND 2009	PERCENT CHANGE IN VACANCIES BETWEEN 2010 AND 2009
	2009				2010					
	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW		
WDA 1 Olympic Consortium	1,301	61%	75%	5%	1,384	50%	77%	7%	83	6%
WDA 2 Pacific Mountain	2,000	57%	77%	2%	1,830	58%	82%	8%	-170	-9%
WDA 3 Northwest Washington	1,349	65%	75%	6%	1,981	61%	80%	13%	632	47%
WDA 4 Snohomish County	1,971	69%	84%	2%	3,600	63%	79%	24%	1,628	83%
WDA 5 Seattle-King County	13,868	70%	77%	3%	17,098	76%	89%	10%	3,230	23%
WDA 6 Pierce County	3,120	64%	83%	1%	3,179	59%	91%	12%	59	2%
WDA 7 Southwest Washington	1,418	67%	94%	3%	1,999	69%	86%	17%	581	41%
WDA 8 North Central Washington/ Columbia Basin	2,427	75%	40%	1%	1,285	58%	55%	13%	-1,142	-47%
WDA 9 South Central	1,011	55%	82%	4%	1,429	64%	69%	5%	418	41%
WDA 10 Eastern Washington	784	53%	81%	3%	834	46%	75%	16%	50	6%
WDA 11 Benton-Franklin	1,341	57%	73%	3%	1,236	72%	92%	8%	-105	-8%
WDA 12 Spokane County	2,026	66%	79%	2%	2,475	61%	81%	14%	449	22%
Statewide	32,635	66%	76%	3%	38,732	68%	84%	12%	6,097	19%

Notes: Percentages may not equal 100 due to rounding.

Job vacancy data from spring 2009 and spring 2010 show the beginning of economic recovery statewide.

Figure 3-8 displays vacancy data from October 2009 and October 2010. Compared to the 2008 through 2009 year-over-year period, when vacancies dropped uniformly across all industries, vacancies increased, in general, year-over-year, for the 2009 through 2010 period. Vacancies in the agriculture, forestry, fishing and hunting industry increased by 200, or 37 percent. Construction vacancies, a potential source of agricultural labor supply, decreased by 47 percent. This particular sub-labor market has

loosened up year-over-year. In contrast, vacancies in manufacturing have increased by 104 percent. This sub-labor market has tightened up. Vacancies in the healthcare and social assistance industry vacancies increased a modest 4 percent. Accommodation and food services also tightened up, with vacancies increasing by 29 percent. The structure of job vacancies across industries bears out the fact that the state economy is beginning to recover from the Great Recession.

Figure 3-7

Job Vacancies by Workforce Development Areas
Washington State, October 2009 and 2010

Source: Employment Security Department/LMEA, Fall 2009 and Fall 2010 Job Vacancy Surveys

WORKFORCE DEVELOPMENT AREA	APRIL								DIFFERENCE IN VACANCIES BETWEEN 2010 AND 2009	PERCENT CHANGE IN VACANCIES BETWEEN 2010 AND 2009
	2009				2010					
	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW		
WDA 1 Olympic Consortium	1,167	62%	90%	10%	1,177	43%	69%	20%	10	1%
WDA 2 Pacific Mountain	1,545	57%	88%	4%	2,036	41%	61%	22%	491	32%
WDA 3 Northwest Washington	1,438	56%	77%	4%	2,137	56%	69%	21%	699	49%
WDA 4 Snohomish County	2,359	65%	88%	4%	3,598	64%	80%	15%	1,239	53%
WDA 5 Seattle-King County	13,665	78%	87%	5%	19,366	71%	86%	12%	5,701	42%
WDA 6 Pierce County	2,987	56%	89%	2%	3,311	57%	80%	13%	324	11%
WDA 7 Southwest Washington	1,834	55%	90%	2%	1,613	59%	88%	14%	-222	-12%
WDA 8 North Central Washington/ Columbia Basin	1,534	67%	55%	5%	1,350	61%	52%	14%	-184	-12%
WDA 9 South Central	1,321	53%	83%	5%	970	64%	78%	23%	-351	-27%
WDA 10 Eastern Washington	764	67%	84%	4%	698	64%	77%	17%	-65	-9%
WDA 11 Benton-Franklin	1,222	71%	84%	4%	2,849	27%	33%	7%	1,628	133%
WDA 12 Spokane County	1,954	72%	84%	6%	2,496	60%	78%	11%	542	28%
Statewide	32,037	69%	85%	4%	41,889	62%	77%	14%	9,852	31%

Notes: Percentages may not equal 100 due to rounding.

Seasonal demand for labor in WDAs 8 through 12 is clearly evident in the higher number of vacancies during the fall, when the second seasonal employment surge draws more workers into the agricultural workforce.

Figure 3-8

Job Vacancies by Industry

Washington State, October 2009 and 2010

Source: Employment Security Department/LMEA, Fall 2009 and Fall 2010 Job Vacancy Surveys

INDUSTRY	OCTOBER								DIFFERENCE IN VACANCIES BETWEEN 2010 AND 2009	PERCENT CHANGE IN VACANCIES BETWEEN 2010 AND 2009
	2009				2010					
	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW		
Agriculture, Forestry, Fishing, and Hunting	545	93%	6%	1%	745	89%	14%	20%	200	37%
Mining	Less than 25	100%	100%	0%	2	100%	100%	0%	0	0%
Utilities	Less than 25	100%	92%	0%	40	70%	100%	10%	0	0%
Construction	1,193	92%	73%	15%	630	93%	85%	29%	-563	-47%
Manufacturing	1,126	93%	98%	6%	2,302	96%	92%	20%	1,176	104%
Wholesale Trade	801	74%	91%	8%	1,425	87%	89%	15%	624	78%
Retail Trade	5,182	47%	58%	3%	7,743	32%	47%	22%	2,562	49%
Transportation and Warehousing	744	88%	78%	0%	1,029	83%	78%	24%	285	38%
Information	1,555	96%	98%	3%	1,639	95%	99%	10%	84	5%
Finance and Insurance	1,424	90%	98%	6%	2,704	82%	91%	4%	1,280	90%
Real Estate and Rental and Leasing	597	82%	92%	2%	539	72%	86%	10%	-58	-10%
Professional and Technical Services	2,687	93%	94%	7%	2,954	87%	90%	21%	268	10%
Management of Companies and Enterprises	298	91%	96%	3%	961	77%	72%	4%	663	223%
Administrative and Waste Services	1,253	86%	89%	9%	2,259	83%	86%	15%	1,006	80%
Educational Services	2,172	57%	80%	6%	2,644	50%	68%	6%	472	22%
Healthcare and Social Assistance	8,788	58%	97%	3%	9,124	49%	80%	7%	336	4%
Arts, Entertainment, and Recreation	330	78%	90%	2%	749	69%	91%	3%	419	127%
Accommodation and Food Services	2,278	50%	85%	2%	2,945	36%	95%	12%	667	29%
Other Services, except Public Administration	1,046	74%	94%	3%	1,454	69%	89%	20%	409	39%
Statewide	32,037	69%	85%	4%	41,889	62%	77%	14%	9,852	31%

The structure of job vacancies across industries bears out the fact that the state economy is beginning to recover from the Great Recession.

Job Vacancies for Direct Agriculture

Figures 3-9 and 3-10 display job vacancies for direct production agriculture. Year-over-year vacancies are shown for April and October, contrasting 2009 with 2010. To place these data in the context of the Great Recession, note that statewide year-over-year vacancies for 2008 compared to 2009 decreased 68.7 percent for April and 66.9 percent for October. The agricultural labor market loosened up considerably during the first months of the Great Recession.⁷

In contrast, for April, 2009 versus 2010, statewide vacancies decreased from 1,249 to 635, a drop of 614, or 49.2 percent. This change was dominated by a

drop in vacancies of 964 positions for WDA 8, North Central Washington/Columbia Basin. The majority of vacancies in both years were permanent positions.

By October, year-over-year, vacancies increased. The statewide estimate for October 2009 was 545; the statewide estimate for October 2010 was 745, an increase of 200, or 36.7 percent. The agricultural labor market began to tighten up.

Figure 3-9

Job Vacancy Data for the Direct Production Agriculture Industry (NAICS 11)
Washington Workforce Development Areas, April 2009 and 2010¹

Source: Employment Security Department/LMEA, Spring 2009 and Spring 2010 Job Vacancy Surveys

INDUSTRY	APRIL								DIFFERENCE IN VACANCIES 2010-2009
	2009				2010				
	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW	
WDA 1 Olympic Consortium	*				Less Than 25	0.0%	33.3%	100.0%	
WDA 2 Pacific Mountain	7	50.0%	100.0%	0.0%	57	100.0%	100.0%	0.0%	51
WDA 3 Northwest Washington	54	30.8%	0.0%	0.0%	Less Than 25	100.0%	100.0%	60.0%	
WDA 4 Snohomish County	24	62.5%	100.0%	0.0%	Less Than 25	100.0%	100.0%	0.0%	
WDA 5 Seattle-King County	3	100.0%	100.0%	0.0%	109	100.0%	5.4%	0.0%	106
WDA 6 Pierce County	*				Less Than 25	0.0%	0.0%	100.0%	
WDA 7 Southwest Washington	3	100.0%	100.0%	0.0%	28	100.0%	9.1%	0.0%	25
WDA 8 North Central Washington/Columbia Basin	1,077	100.0%	0.6%	0.0%	113	100.0%	0.0%	9.1%	-964
WDA 9 South Central	4	100.0%	100.0%	0.0%	224	100.0%	3.2%	1.6%	221
WDA 10 Eastern Washington	24	100.0%	11.1%	0.0%	Less Than 25	100.0%	100.0%	0.0%	
WDA 11 Benton-Franklin	45	41.7%	0.0%	16.7%	34	100.0%	100.0%	0.0%	-11
WDA 12 Spokane County	9	100.0%	0.0%	0.0%	37	87.5%	0.0%	0.0%	28
Statewide	1,249	93.9%	3.7%	0.6%	635	100.0%	20.2%	5.5%	-614

Notes: ¹These job vacancy estimates are based on a scientific sample of all industries in the state. Agriculture is a relatively small industry sector. Therefore, weighted estimates of job vacancies statewide are more reliable than those estimates for the WDAs.

* = insufficient data to project a WDA estimate of vacancy.

Percentages may not equal 100 due to rounding.

Based on vacancy data, it appears the agricultural labor market loosened up, year-over-year, between April 2009 and April 2010.

Figure 3-10

Job Vacancy Data for the Direct Production Agriculture Industry (NAICS 11)
Washington Workforce Development Areas, October 2009 and 2010¹

Source: Employment Security Department/LMEA, Fall 2009 and Fall 2010 Job Vacancy Surveys

INDUSTRY	OCTOBER								DIFFERENCE IN VACANCIES 2010-2009
	2009				2010				
	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW	VACANCIES	PERCENT FULL TIME	PERCENT PERMANENT	PERCENT NEW	
WDA 1 Olympic Consortium	*				Less Than 25	0.0%	100.0%	0.0%	
WDA 2 Pacific Mountain	6	0.0%	100.0%	0.0%	*				
WDA 3 Northwest Washington	*				*				
WDA 4 Snohomish County	5	100.0%	100.0%	0.0%	Less Than 25	0.0%	100.0%	0.0%	
WDA 5 Seattle-King County	10	100.0%	100.0%	50.0%	Less Than 25	100.0%	100.0%	0.0%	
WDA 6 Pierce County	*				Less Than 25	100.0%	60.0%	0.0%	
WDA 7 Southwest Washington	5	100.0%	100.0%	0.0%	Less Than 25	100.0%	100.0%	0.0%	
WDA 8 North Central Washington/Columbia Basin	483	100.0%	0.0%	0.0%	513	92.4%	4.1%	21.8%	30
WDA 9 South Central	*				142	100.0%	32.1%	17.4%	
WDA 10 Eastern Washington	5	100.0%	100.0%	0.0%	46	52.7%	0.0%	0.0%	41
WDA 11 Benton-Franklin	31	0.0%	0.0%	0.0%	Less Than 25	31.9%	100.0%	68.1%	
WDA 12 Spokane County	*				*				
Statewide	545	93.0%	6.0%	1.0%	745	89.2%	14.5%	20.4%	200

Notes: ¹These job vacancy estimates are based on a scientific sample of all industries in the state. Agriculture is a relatively small industry sector. Therefore, weighted estimates of job vacancies statewide are more reliable than those estimates for the WDAs.

* = insufficient data to project a WDA estimate of vacancy.

Percentages may not equal 100 due to rounding.

Based on vacancy data, it appears the agricultural labor market began to tighten up, year-over-year, between October 2009 and October 2010.

Unemployment Compensation: Agriculture Compared to Nonagriculture

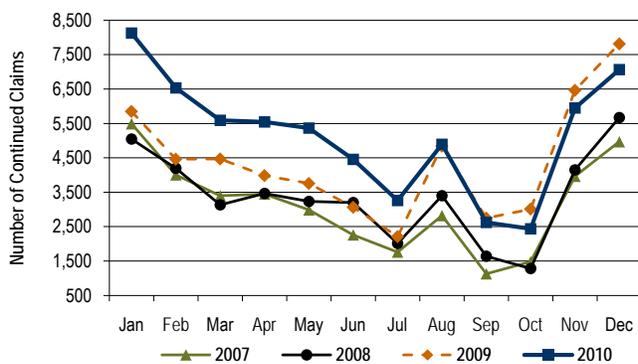
Examination of the number of continued unemployment benefits claims gives one an idea of the number of unemployed workers who are available for work and who are looking for work.⁸ Unemployment claims data in this section are based on workers authorized to work in Washington and who are covered by unemployment insurance.



Photo by ©iStock/Nancy Nehring

Figure 3-11 displays the time pattern of continued unemployment claims for 2007 through 2010. Appendix Figure 3-1 shows the numerical data that define this figure. Continued claims in agriculture have been as low as 1,127 workers in September 2007, during the peak apple harvest season, just before the onset of the Great Recession. Continued claims in agriculture reached a peak of 8,127 in January 2010, fell to a low of 2,438 by October 2010, then rose to 7,063 in December 2010.

Figure 3-11
Agriculture Continued Unemployment Claims, Unduplicated by Individual Washington State, 2007 through 2010
Source: Appendix Figure 3-1

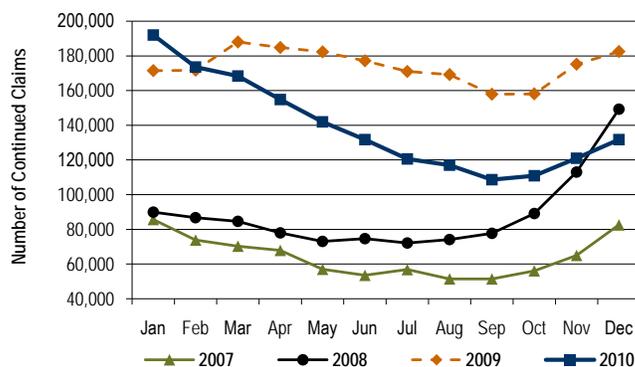


Continued unemployment claims in agriculture have been as low as 1,127 in September 2007 and as high as 8,127 in January 2010.

In 2010, the July surge of seasonal workers was 127,180 and in October, 102,660 (Figure 2-7 in Chapter 2). If one-half of the surge of employed workers in these two periods was undocumented, the availability of legally authorized workers with continued claims could not have replaced them at these peak demand periods. Even so, authorized workers with continued claims from other sectors in the state were available for work.

Figure 3-12 shows the time pattern of continued claims in nonagricultural occupations from 2007 through 2010. Continued claims in the totality of nonagricultural workers reached a low of 51,392 in September 2007. The low for 2010 was 108,591 and the high was 191,984. The average number of continued claims was 139,361 for 2010. It was 174,121 in 2009, but only 64,284 in 2007, before the

Figure 3-12
Nonagriculture Continued Unemployment Claims, Unduplicated by Individual Washington State, 2007 through 2010
Source: Appendix Figure 3-2



The high level of continued unemployment claims in nonagricultural occupations in 2009 and 2010 provided a potential source of labor to the agricultural sector during the recent recession.

Great Recession set in. This shows it is possible that some workers in the nonagricultural sector might have sought work in the agricultural sector in 2009 and 2010.

Continued claims by agricultural subsector are shown in Figure 3-13 for the years 2007 through 2010. Annual averages are shown, which mask the seasonal pattern. Even so, the annual pattern is instructive.

The agricultural subsector of deciduous tree fruits has the highest absolute number of continued claims over the four-year period. The average fell from 4,682 in 2007 to 4,522 in 2008 before rising to a high of 5,721 in 2010. The increase between 2008 and 2009 was 19.1 percent, and between 2008 and 2010, 26.5 percent. Continued claims increased by 6.3 percent between 2009 and 2010 for this subsector. Crop preparation services increased by 37.6 percent between 2008 and 2010. Field crops, on the other hand, increased their number of continued claims by only 17.5 percent between 2008 and 2010. The wheat subsector had a very large increase of continued claims of 72 percent, though only 332 workers were affected in 2010.

Figure 3-13

Continued Unemployment Claims by Selected Agricultural Subsector with the Highest Four-Year Total, Unduplicated by Individual Washington State, 2007 through 2010

Source: Employment Security Department/LMEA, Unemployment Insurance Data Warehouse Continued Claims Table

AGRICULTURAL SUBSECTOR	2007	2008		2009		2010	
	CONTINUED CLAIMS	CONTINUED CLAIMS	ANNUAL CHANGE 2008/2007	CONTINUED CLAIMS	ANNUAL CHANGE 2009/2008	CONTINUED CLAIMS	ANNUAL CHANGE 2010/2009
Deciduous Tree Fruits	4,682	4,522	-3.4%	5,384	19.1%	5,721	6.3%
Crop Preparation Services	3,412	3,622	6.2%	4,313	19.1%	4,984	15.6%
Field Crops	1,001	1,004	0.3%	1,167	16.2%	1,180	1.1%
Ornamental Floriculture	522	614	17.6%	887	44.5%	946	6.7%
Grapes	580	617	6.4%	671	8.8%	683	1.8%
General Farms	461	569	23.4%	687	20.7%	707	2.9%
Vegetables and Melons	591	505	-14.6%	595	17.8%	600	0.8%
Potatoes	452	433	-4.2%	434	0.2%	477	9.9%
Wheat	208	193	-7.2%	274	42.0%	332	21.2%
Berry Crops	155	173	11.6%	279	61.3%	320	14.7%
Animal Specialty Services	137	177	29.2%	294	66.1%	298	1.4%
Farm Labor Contractors	102	162	58.8%	184	13.6%	185	0.5%
Farm Management Services	173	154	-11.0%	158	2.6%	132	-16.5%
Dairy Farms	105	106	1.0%	197	85.8%	169	-14.2%

Deciduous tree fruits, crop preparation services and field crop subsectors dominate continued claims in agriculture.

Similar large percentage changes occurred in berry crops and animal specialty services, though just 320 and 298 workers were affected, respectively, in 2010. The largest single year-over-year change occurred in dairy farms, with an 85.8 percent increase in 2009 over 2008 – 197 workers in 2009, followed by a 14.2 percent drop in 2010 to a level of 169 continued claims.

Seasonal Continued Claims Compared to Seasonal Agricultural Employment

To complete the picture of workers available to the agricultural sector during 2010, we compare seasonal continued unemployment claims in agriculture against the seasonal pattern of employment in agriculture (*Figure 3-14*).

The data span the Great Recession from 2007 through 2010. The monthly average of continued claims increased from 3,143 in 2007 to 5,154 in 2010. Over the same period, continued claims as a percent of seasonal employment increased from 9.9 percent in 2007, to 10.4 percent in 2008, to 11.3 percent in 2009 and then reached 13.1 percent in 2010. Over this period, average monthly seasonal employment rose from 31,729 in 2007 to 39,374 in 2010. Thus, even as seasonal employment rose over time by 24.1 percent, continued claims in agriculture rose by 64 percent. The absolute rise in seasonal employment over this period, 2007 through 2010, was 7,645 unduplicated workers, while the absolute rise in unduplicated agricultural continued unemployment claims was 2,011. Thus, the net supply of potential agricultural workers, as indicated by continued claims, increased over the four-year period.

Figure 3-14

Seasonal Pattern of Continued Claims in Agriculture Compared to Seasonal Employment in Agriculture
Washington State, 2007 through 2010

Source: Employment Security Department/LMEA, Unemployment Insurance Data Warehouse, Agriculture Labor Employment and Wages Survey

MONTH	2007			2008			2009			2010		
	CONT. CLAIMS	SEASONAL EMPL.	CONT. CLAIMS AS A PERCENT OF SEASONAL EMPLOYMENT	CONT. CLAIMS	SEASONAL EMPL.	CONT. CLAIMS AS A PERCENT OF SEASONAL EMPLOYMENT	CONT. CLAIMS	SEASONAL EMPL.	CONT. CLAIMS AS A PERCENT OF SEASONAL EMPLOYMENT	CONT. CLAIMS	SEASONAL EMPL.	CONT. CLAIMS AS A PERCENT OF SEASONAL EMPLOYMENT
March	3,398	19,906	17.1%	3,131	17,993	17.4%	4,468	19,268	23.2%	5,590	24,255	23.0%
April	3,447	24,614	14.0%	3,465	22,063	15.7%	3,984	23,700	16.8%	5,544	26,892	20.6%
May	2,987	23,050	13.0%	3,230	24,035	13.4%	3,755	27,077	13.9%	5,366	26,782	20.0%
June	2,259	53,901	4.2%	3,202	45,847	7.0%	3,062	56,983	5.4%	4,458	56,571	7.9%
July	1,760	63,453	2.8%	2,012	62,047	3.2%	2,210	88,085	2.5%	3,259	84,214	3.9%
August	2,821	41,873	6.7%	3,396	48,079	7.1%	4,840	58,992	8.2%	4,891	55,795	8.8%
September	1,127	54,094	2.1%	1,637	53,497	3.1%	2,747	63,104	4.4%	2,624	64,052	4.1%
October	1,479	47,990	3.1%	1,282	55,715	2.3%	3,010	60,765	5.0%	2,438	56,254	4.3%
November	3,965	13,277	29.9%	4,150	20,421	20.3%	6,465	19,800	32.7%	5,952	23,187	25.7%
December	4,970	11,354	43.8%	5,672	14,221	39.9%	7,816	14,860	52.6%	7,063	13,802	51.2%
Monthly Average	3,143	31,729	9.9%	3,368	32,444	10.4%	4,389	38,745	11.3%	5,154	39,374	13.1%

The net supply of potential agricultural workers, as indicated by continued unemployment claims, increased from 2007 to 2010.



Photo by ©Ondagoarts/Dreamstime.com

Summary

- ◆ As in 2009, labor supply was adequate to meet the demand of agricultural producers in 2010.
- ◆ Nationwide, the percent of unemployed agricultural workers dropped in 2010 compared to 2009, though the number of unemployed agricultural workers increased over the same period.
- ◆ The absolute levels of unemployment in construction and manufacturing remained high in 2010, thus potentially supplying additional labor to the agricultural sector nationwide and in the state.
- ◆ Monthly year-over-year unemployment tended to increase in selected key agricultural counties in 2010 compared to 2009. The counties did not show a marked tendency for unemployment to drop until October 2010.
- ◆ In the key agricultural workforce development areas (WDAs) 8 through 12, the absolute level of unemployed workers increased in 2010 compared to 2009.
- ◆ Seasonal agricultural labor demand has somewhat insulated counties with a high concentration of agricultural production from the Great Recession.
- ◆ Seasonal demand for agricultural labor is clearly evident in job vacancy and continued claims data.
- ◆ Based on job vacancy data, it appears that the agricultural labor market continued to loosen in 2010. Agricultural producers were able to gain their needed labor supply without having to raise wage rates. This situation is borne out by the average hourly earnings data presented in *Chapter 5*.
- ◆ Seasonal continued unemployment claims in agriculture continued to increase from 2007 through 2010.

Endnotes

- ¹ This can occur as long as the total agricultural labor force (the denominator), increases.
- ² Jeffrey S. Passel and D'Vera Cohn. "A Portrait of Unauthorized Immigrants in the United States." Pew Hispanic Center, Washington, D.C., April 14, 2009.
- ³ See "Farmers expect plentiful labor this year." *The Capital Press*. April 23, 2010.
- ⁴ The unemployment rates shown in this table are estimates from several data sources. They are not sample statistics. Thus, an increase or decrease of 0.5 percent is seen as the necessary change to identify an increase or a decrease in the county, MD or MSA unemployment rate.
- ⁵ Due to the regional composition of crops, and seasonal weather, the peak employment month can vary from year to year.
- ⁶ For example, the number of unemployed workers and unemployment rate can increase as the economy pulls out of recession. This happens as jobless workers who stopped looking for work re-enter the labor force in search of newly created jobs.
- ⁷ See the *Washington State Labor Market and Economic Report*, Figures 33 and 34. Washington State Employment Security Department. December 2010.
- ⁸ Actively looking for work and being available for work defines one as being a member of the unemployed in the labor force.

CHAPTER FOUR

Animal Production: Beef Cattle and Calves, Milk, Poultry and Eggs, and Aquaculture

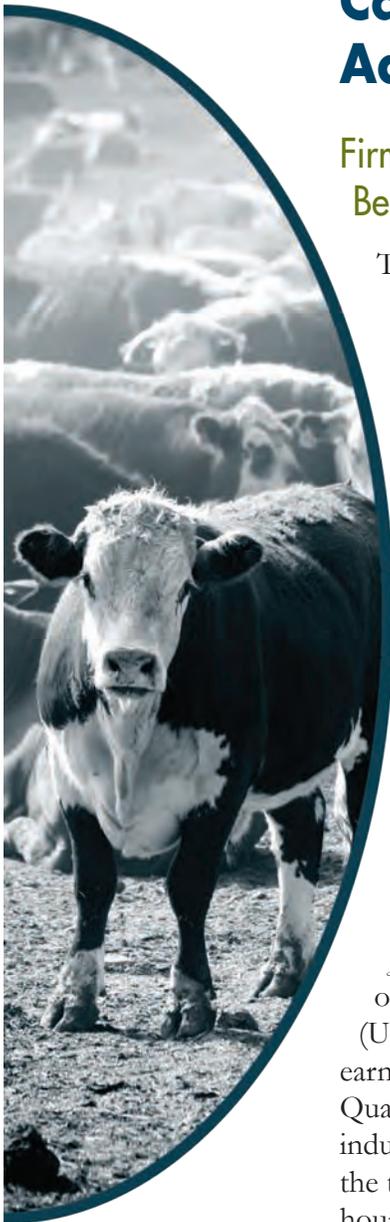
Firms, Employment, Hours Worked and Average Hourly Before-tax Earnings

The animal production subsectors are major revenue producers for the state of Washington. This chapter discusses the historical changes in the number of agricultural producers, the number of workers employed by those producers, the average hours worked per calendar quarter and the average hourly before-tax earnings per calendar quarter over the period 2006 through 2010 for the following agricultural subsectors:¹

- ◆ Beef cattle ranching and farming (NAICS² 112111) and cattle feedlots (NAICS 112112)
- ◆ Dairy cattle and milk production (NAICS 112120)
- ◆ Poultry and egg production (NAICS 1123)
- ◆ Aquaculture (NAICS 1125)

The years 2000 through 2009 are covered for production, sales and revenue using data from the *2010 Washington Annual Agricultural Bulletin*. Selected production data are based on the *2007 Census of Agriculture*. The third data source for this chapter is the U.S. Bureau of Labor Statistics' *Quarterly Census of Employment and Wages* (QCEW), which depends heavily on the Employment Security Department's *Unemployment Insurance Wage File* (UI Wage File) – a cross-section/longitudinal database that reports quarterly earnings paid to individual workers covered by unemployment insurance. Quarterly hours of work are also reported in this data set, as is the firm's industrial classification. As noted, the years 2006 through 2010 are covered for the type and number of firms, workers employed, hours worked and average hourly before-tax earnings. These latter key statistics are contrasted with all other agriculture subsectors combined (NAICS 111, 112, 1151 and 1152), excluding the five animal production subsectors indicated above.

In reviewing the data presented, it is important to remember that the two primary data sources – the *2007 Census of Agriculture* and the QCEW – define “farm” differently. The census defines a farm as any agricultural establishment with \$1,000 or more a year in gross sales of agricultural products. The QCEW defines a farm based on whether wage payments are being made by that



agricultural producer to workers who are covered by unemployment insurance. This agricultural producer has to be large enough to hire at least one agricultural worker over the course of the agricultural production cycle.³

These different definitions of “farm” account for the disparities between the number of agricultural establishments measured by the *2007 Census of Agriculture* and the number measured by the QCEW/UI Wage File data. Given the different design of the population of agricultural producers in these two data sets, both data sets are of use. However, the data in the two sets are not directly comparable. We consider the QCEW data on the firm/agricultural producer count, worker count, before-tax earnings per quarter and hours worked per quarter to be the more informative of the two data sets both in tracking important changes in these variables over time and for informing agricultural producers and workers of agricultural economic conditions.

International Trade

An estimated \$185.6 million of Washington-produced animal products were exported overseas in 2009. This is a drop of \$28.8 million in total revenue, or 13.4 percent, from total exports of animal products in 2008. Live animals and meat dropped only 2.1 percent between the two years, but hides and skins dropped 27.3 percent. Exports of fats, oils and greases dropped 35 percent; poultry and poultry products rose by 13.8 percent. Bilateral trade liberalization is being negotiated with South Korea that will expand beef, milk, wheat and other agricultural exports, once the agreement has been ratified by the two nations’ legislative bodies (*Figure 1-11 in Chapter 1*).⁴



Photo by ©Alptraum/Dreamstime.com

Production

Washington Animal Production in the National Context

In 2009, Washington ranked second in the nation for the value of milk production. An estimated \$648 million in total revenue was earned, down from \$1 billion earned in 2008 – a 31.8 percent drop in one year (*Figure 1-5 in Chapter 1*). In contrast, in 2009, Washington apples ranked first in the nation in revenue earned, bringing in nearly \$1.5 billion for 2009 and nearly \$1.3 billion for 2008.⁵

In 2009, Washington ranked fifth in the nation for cattle and calve production, having total revenue of \$472 million. Egg production ranked 14th in the nation in 2009 with total revenues of \$106.5 million. Aquaculture ranked 16th in the nation with total revenues of almost \$100 million in 2009. Broilers ranked 19th with total revenues of \$61.1 million in 2009.

These agricultural subsectors have a volatile year-to-year history of total revenue yield. With the exception of aquaculture, these sectors experienced a drop in total revenue from 2008 to 2009. *Figure 4-1* shows that total revenue for livestock and products in 2009 dropped 18.2 percent compared to 2008. Cattle and calves total revenue dropped just 0.8 of a percent. As noted, milk total revenue dropped 31.8 percent. Poultry and eggs revenue dropped 21.6 percent. Chicken eggs revenue dropped 21.9 percent. Other poultry revenue dropped 38.6 percent. Aquaculture total revenue as a whole increased 1.9 percent, but trout total revenue dropped 56.3 percent.

Animal Production as a Dynamic Sector

The animal production sector is characterized by dynamic change over time. Based on scientific survey data from the *2007 Census of Agriculture*, cattle and calves were raised on 12,731 farms⁶ throughout the state in 2007, down from 17,381 farms in 1997. Beef cows were raised on 10,065 farms in 2007; 11,735 farms were reported in the 1997 Census.

Figure 4-1
Cash Receipts for Selected Livestock and Products Commodity Groups, Current Dollars
Washington State, 2000 through 2009

Source: U.S. Department of Agriculture, 2009 Washington Annual Agriculture Bulletin, 2005 Washington Annual Agriculture Bulletin

COMMODITY	CALENDAR YEAR										PERCENT CHANGE 2008/2009
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009 (p)	
Livestock and Products	\$1,712,827	\$1,755,285	\$1,552,649	\$1,527,014	\$1,733,329	\$1,832,722	\$1,622,952	\$2,173,913	\$2,004,017	\$1,640,135	-18.2%
Cattle and Calves	\$762,401	\$654,241	\$614,385	\$560,900	\$543,428	\$696,553	\$649,290	\$724,533	\$605,380	\$600,834	-0.8%
Milk, Wholesale	\$711,168	\$822,000	\$671,040	\$671,792	\$857,010	\$832,165	\$686,196	\$1,059,264	\$1,000,032	\$681,912	-31.8%
Poultry and Eggs	\$152,351	\$161,537	\$140,274	\$169,543	\$205,809	\$161,124	\$151,675	\$200,668	\$222,148	\$174,258	-21.6%
Chicken Eggs	\$59,759	\$62,501	\$55,445	\$70,323	\$77,348	\$44,791	\$56,661	\$105,372	\$136,448	\$106,499	-21.9%
Other Poultry	\$12,285	\$13,178	\$11,824	\$13,604	\$12,180	\$12,220	\$10,420	\$10,170	\$10,664	\$6,544	-38.6%
Aquaculture	\$47,932	\$78,516	\$85,385	\$80,191	\$84,792	\$94,124	\$84,007	\$100,329	\$90,805	\$92,537	1.9%
Trout	\$3,033	\$3,516	\$5,385	\$5,191	\$4,792	\$4,124	\$4,007	\$5,329	\$5,805	\$2,537	-56.3%

Note: (p) = preliminary

Trend data show large fluctuations in total annual cash receipts for each agricultural product displayed, not only over the period of 2000 through 2009, but from year to year.

The 2007 *Census of Agriculture* data also show that in 10 years, the number of farms producing dairy products dropped 48.6 percent. Milk cows were producing on 817 farms in 2007, down from 1,590 producing farms in the 1997 Census.⁷ The number of milk cows dropped by only 1.7 percent over the same period, indicating that dairy farms are consolidating into larger operations. Total milk production was 5,305 million pounds in 1997 while it rose to 5,531 million pounds sent to market in 2007 – a 4 percent increase.

As of January 1, 2009, there was a state inventory of 1 million beef cattle and calves, having a market value of \$1.1 billion and generating a gross income of \$607.4 million (*Figure 4-4*). This gross income estimate is down 0.7 percent compared to 2008 and 21.1 percent compared to 2000. Viewing *Figure 4-4*, we see that inventory of heads of cattle and calves, production, the value of production and marketing are all down in 2009 compared to 2000. Japan and South Korea put an indefinite block on imports of U.S. beef in December 2003 due to the mad cow disease scare in Washington state. Production in Washington state had begun to decline prior to that date, but fell off sharply in 2004. Since 2004, gross income has risen from \$551.9 million to \$607.4 million in 2009 – a 10.1 percent increase.

Layers were actively producing eggs on 4,878 farms in 2007. Five years earlier, as shown in the 2002 Census, only 2,533 farms were producing eggs. The number of egg-producing farms rose by 92.6 percent in five years – the subsector is expanding sharply. An estimated 307 farms



Photo by ©Zagor/Dreamstime.com

were producing broilers and other meat-type chickens in 2007. This is an increase over the 1997 Census, when only 222 farms were involved in this type of production (*Figure 4-2*).

There were an estimated 7.4 million chickens in Washington state in 2009, of which 6.2 million were active layers, with a market value of \$16.3 million. An estimated 1.7 billion eggs were produced with a value of production estimated at \$106.5 million (*Figure 4.5*). The egg-producing sector has shown considerable long-term growth, while the poultry meat-producing sector has shown a dramatic decline between 2000 and 2009.

Figure 4-2

Animal Production Subsectors: Selected Historical Highlights
Washington State, 1997, 2002 and 2007

Source: U.S. Department of Agriculture, 2007 Census of Agriculture

ANIMAL PRODUCTION SUBSECTOR	1997 – NUMBER OF:		2002 – NUMBER OF:		2007 – NUMBER OF:	
	FARMS	ANIMALS	FARMS	ANIMALS	FARMS	ANIMALS
Cattle and Calves Inventory	17,381	1,211,350	12,215	1,100,181	12,731	1,088,846
Beef Cows	11,735	301,814	9,128	248,664	10,065	274,001
Milk Cows	1,590	247,437	1,208	246,753	817	243,132
Cattle and Calves Sold	14,401	1,109,756	8,979	1,081,584	9,521	912,299
Layers Inventory	N.A.	N.A.	2,533	5,008,881	4,878	5,785,648
Broilers and Other Meat-type Chickens Sold	222	30,327,052	327	33,017,116	307	31,669,170

Note: N.A. = Data are not available.

Given the survey's definition of a farm – an entity having annual cash receipts from agriculture of \$1,000 or more in a given year – note the large reduction in the number of farms over the 10-year period while the inventory of animals changes little.

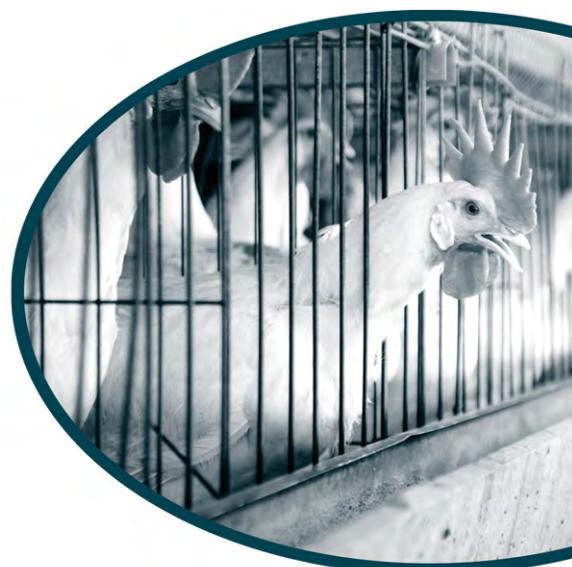


Photo by ©Ryan Beiler/Dreamstime.com

Figure 4-3

Milk Cows: Number, Production and Value of Milk Produced
Washington State, 2000 through 2009

Source: U.S. Department of Agriculture, 2010 Washington Annual Agriculture Bulletin

YEAR	NUMBER OF COWS, ANNUAL AVERAGE, 1,000s	TOTAL ANNUAL MILK PRODUCTION, MILLIONS OF POUNDS	MILK PRODUCTION PER COW, POUNDS PER HEAD	VALUE OF MILK PRODUCED, CURRENT DOLLARS*
2000	247	5,593	22,644	\$715,904,000
2001	247	5,514	22,324	\$827,100,000
2002	247	5,620	22,753	\$674,400,000
2003	245	5,581	22,780	\$675,301,000
2004	237	5,416	22,852	\$861,144,000
2005	241	5,608	23,270	\$835,592,000
2006	237	5,464	23,055	\$688,464,000
2007	238	5,531	23,239	\$1,061,952,000
2008	244	5,696	23,344	\$1,002,496,000
2009	240	5,561	23,171	\$684,003,000

Note: *Cash receipts divided by milk or milkfat represented in combined marketings. Includes value of milk fed to calves.

While total annual milk production is relatively stable over time, total annual revenues can change by large amounts.

Figure 4-4

Cattle and Calves: Inventory, Production and Income
Washington State, 2000 through 2009

Source: U.S. Department of Agriculture, 2010 Washington Annual Agriculture Bulletin

YEAR	JANUARY 1 INVENTORY, 1,000 HEAD	PRODUCTION, 1,000 POUNDS	VALUE OF PRODUCTION, \$1,000s	MARKETINGS, 1,000 POUNDS	AVERAGE PRICE, CATTLE, \$ PER CWT.	AVERAGE PRICE, CALVES, \$ PER CWT.	VALUE OF ALL CATTLE AND CALVES, \$1,000s	GROSS INCOME, \$1,000s
2000	1,210	708,743	\$560,729	944,500	\$81	\$97	\$919,600	\$770,328
2001	1,180	643,794	\$492,641	835,560	\$78	\$96	\$991,200	\$661,541
2002	1,130	663,388	\$451,016	880,440	\$70	\$83	\$1,062,200	\$621,030
2003	1,100	573,726	\$475,522	668,620	\$84	\$97	\$957,000	\$568,173
2004	1,120	508,639	\$476,099	577,680	\$94	\$114	\$1,086,400	\$551,940
2005	1,080	589,184	\$600,698	676,190	\$103	\$125	\$1,198,800	\$705,092
2006	1,100	613,015	\$583,955	673,480	\$96	\$116	\$1,342,000	\$657,220
2007	1,140	623,218	\$574,073	779,850	\$93	\$106	\$1,276,800	\$732,180
2008	1,090	591,334	\$496,127	711,330	\$85	\$92	\$1,384,300	\$611,797
2009	1,080	582,189	\$472,958	728,200	\$83	\$93	\$1,123,200	\$607,473

The average price of cattle and calves in dollars per hundred weight varies considerably from year to year, resulting in large fluctuations in annual gross income.

Figure 4-5

Chicken and Eggs: Number, Production and Income
Washington State, 2000 through 2009

Source: Employment Security Department/LMEA, UI Wage File

YEAR	ALL CHICKENS, 1,000 HEAD*	HENS AND PULLETS OF LAYING AGE, TOTAL, 1,000 HEAD	CHICKENS, TOTAL VALUE, \$1,000	CHICKENS, POUNDS SOLD, 1,000 POUNDS	EGGS PRODUCED, 1,000,000s	EGGS, VALUE OF PRODUCTION, \$1,000
2000	6,721	4,883	\$12,770	9,122	1,306	\$59,985
2001	6,372	4,968	\$14,656	9,531	1,339	\$62,544
2002	6,484	5,162	\$15,562	7,498	1,369	\$55,460
2003	6,230	4,906	\$15,575	8,226	1,307	\$70,323
2004	5,933	4,892	\$14,239	8,762	1,332	\$77,348
2005	6,066	4,873	\$12,132	8,092	1,343	\$44,791
2006	6,931	6,009	\$32,576	5,914	1,458	\$56,661
2007	6,726	5,505	\$28,249	1,752	1,520	\$105,372
2008	6,789	5,826	\$24,440	1,267	1,533	\$136,448
2009	7,410	6,188	\$16,302	383	1,705	\$106,499

Note: *Excludes commercial broilers.

Like other animal production subsectors, egg production is steady over time while the value of eggs fluctuates.

Figure 4-6

Number of Firms and Employment in Selected Animal Production Subsectors
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

NAICS	SUBSECTOR DESCRIPTION	2006		2007		2008		2009		2010	
		FIRMS	EMPLOYMENT								
112111 and 112112	Beef – Cattle and Calves	217	1,094	253	1,170	249	986	269	1,119	221	928
112120	Dairy	377	3,187	390	3,498	407	3,796	384	3,698	320	3,360
1123	Poultry and Eggs	31	622	33	592	36	602	35	627	29	697
1125	Aquaculture	47	700	50	752	54	776	54	740	49	711
111, 112, 1151 and 1152	All Other Agriculture*	5,042	66,854	5,339	69,466	5,557	71,337	5,690	78,487	5,252	80,306

Note: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.

Average annual employment in agriculture, excluding cattle and calves, dairy, poultry and eggs, and aquaculture, has increased steadily over time. Employment in these animal production subsectors has fluctuated over time.

Agricultural Producers and Employment⁸

Data in this section are from the QCEW and UI Wage File.

In 2006, there were 217 agricultural producers employing a full-time average annual workforce of 1,094 workers in the production of beef. Five years later, in 2010, there were 221 firms employing 928 annualized workers (*Figure 4-6*).⁹

In 2006, there were 377 dairy producers that employed an average annual full-time workforce of 3,187 workers. By 2010, there were 320 dairy firms that employed 3,360 full-time annual workers. Thus, consistent with the *2007 Census of Agriculture* data, it appears that consolidation has occurred in the Washington state dairy industry, for the number of reporting dairy producers has dropped by 15.1 percent. This estimate is lower than that based on the *2007 Census of Agriculture* by one-third over a 10-year period. However, a 15.1 percent consolidation in five years is still economically important.

In 2006, beef production employed an average of five workers per agricultural producer. Dairy firms employed an average of 8.5 workers. Poultry and egg-producing firms employed an average of 20.1 workers. Aquaculture firms employed an average of 14.9 workers per producer. The remaining 5,042 agricultural producers employed an average annual workforce of 13.3 workers.¹⁰

In 2010, these averages had become 4.2 workers for beef, 10.5 workers for dairy, 24 workers for poultry and eggs, and 14.5 workers for aquaculture. The remaining agricultural producers, dominated by apple, cherry and pear production, employed an annualized average of 15.3 workers per year.

Quarterly Hours Worked

Figure 4-7 displays median and average quarterly hours worked per worker over the period 2006 through 2010. Median hours worked is systematically lower than average hours worked, indicating that the distribution of hours is humped on the left and tails off to the

Figure 4-7

Median and Average Quarterly Hours per Worker per Firm in Animal Production Subsectors
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

NAICS	SUBSECTOR DESCRIPTION	2006			2007			2008			2009			2010		
		MEDIAN	AVG.	S.D.												
112111 and 112112	Beef – Cattle and Calves	314.0	377.3	167.0	360	394.6	182.2	320.0	318.5	174.0	331.5	409.4	180.8	343.3	427.1	171.5
112120	Dairy	421.1	472.6	161.2	416	436.1	150.1	402.5	448.6	164.6	415.2	458.7	159.0	440.1	479.1	152.4
1123	Poultry and Eggs	278.8	419.8	161.1	295.2	402.9	168.2	295.3	470.4	169.6	278	465.2	168.5	360.0	427.1	177.8
1125	Aquaculture	244.3	316.2	138.8	217.1	319.4	140.0	228.1	326.2	141.0	250	338.4	142.3	282.3	332.7	138.4
111, 112, 1151 and 1152	All Other Agriculture*	164.5	215.1	146.8	166.6	216.7	151.4	170.4	229.1	150.7	171	218.6	157.3	183.7	230.7	156.3

Notes: AVG. = Average

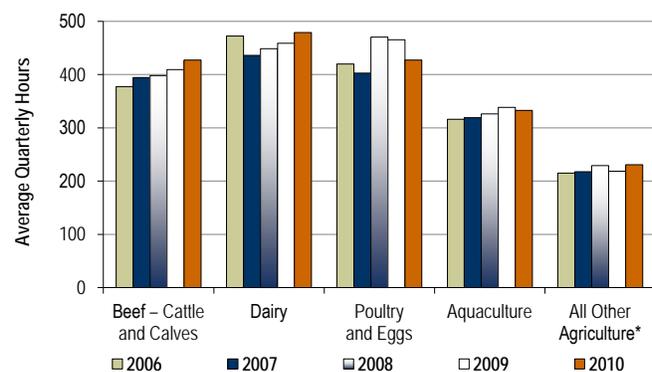
S.D. = Standard Deviation

*All agriculture less beef, dairy, poultry and eggs, and aquaculture.

Median and average quarterly hours worked are greater over time for cattle and calves, dairy, poultry and eggs, and aquaculture compared to the rest of agricultural production.

right. This characteristic with respect to hours worked is true of all agricultural subsectors. Because of this skewedness, one should use median hours worked and average hours of work to gain an idea of the central tendency in hours worked.¹¹

Figure 4-8
Average Quarterly Hours per Worker per Firm in Selected Animal Production Subsectors
Washington State, 2006 through 2010
Source: Employment Security Department/LMEA, UI Wage File



Note: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.

Average quarterly hours worked per worker have usually increased from 2006 through 2010.

In general, average hours per worker per quarter are highest in dairy production and lowest in aquaculture. All of the animal production sectors appear to work more hours per worker per agricultural producer than for all other agriculture. Statistical significance tests bear out these general patterns.

Average Hourly Before-tax Earnings, Current Dollars¹²

Figures 4-9 and 4-10 display average hourly before-tax earnings in current dollars for the animal production subsectors. Two facts stand out:

- ◆ Average hourly earnings in current dollars (not inflation-adjusted) usually increased every year for each subsector.
- ◆ Workers in the four animal production subsectors typically earn more per hour than do workers in all other agricultural subsectors.

In 2006, aquaculture workers were receiving an average of \$16.65 per hour, poultry and egg workers \$14.55 per hour, cattle and calves (beef) workers \$13.93 per hour and dairy workers \$12.73 per hour. This contrasts with average hourly earnings of \$11.12 for all other agricultural workers, of whom a very large proportion are seasonal and migrant workers.

In comparing all other agricultural workers' average hourly earnings with the four animal production subsectors, we see that workers in each of those subsectors earned statistically significantly higher average hourly earnings than their counterparts in all other agriculture. It is generally true that aquaculture workers have the highest average hourly earnings and dairy workers the lowest average hourly earnings at a point in time and over time.

Figure 4-9

Average Hourly Before-tax Earnings by Year, Selected Animal Production Subsectors, Current Dollars
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

NAICS	SUBSECTOR DESCRIPTION	2006			2007			2008			2009			2010		
		MEDIAN	AVG.	S.D.												
112111 and 112112	Beef – Cattle and Calves	\$10.98	\$13.93	\$3.76	\$11.38	\$14.17	\$4.37	\$11.96	\$14.54	\$2.61	\$11.43	\$14.11	\$4.59	\$12.53	\$14.51	\$4.25
112120	Dairy	\$12.23	\$12.73	\$3.44	\$12.79	\$12.97	\$3.77	\$13.08	\$13.43	\$4.04	\$13.35	\$13.56	\$4.15	\$13.70	\$13.77	\$4.54
1123	Poultry and Eggs	\$12.55	\$14.55	\$4.71	\$13.43	\$14.80	\$4.75	\$12.95	\$15.34	\$4.97	\$14.41	\$15.30	\$6.66	\$14.77	\$16.24	\$6.78
1125	Aquaculture	\$14.37	\$16.65	\$5.19	\$14.79	\$17.69	\$5.42	\$16.31	\$18.22	\$7.44	\$16.26	\$18.34	\$7.60	\$17.08	\$18.62	\$7.49
111, 112, 1151 and 1152	All Other Agriculture*	\$11.03	\$11.12	\$4.81	\$11.45	\$11.56	\$5.15	\$11.92	\$11.84	\$5.33	\$12.24	\$12.16	\$5.75	\$12.19	\$12.23	\$5.63

Notes: AVG. = Average
S.D. = Standard Deviation
*All agriculture less beef, dairy, poultry and eggs, and aquaculture.

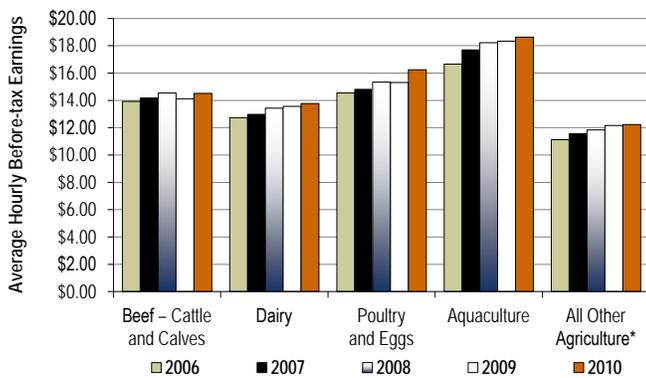
Average hourly before-tax earnings for cattle and calves, dairy, poultry and eggs, and aquaculture exceed those in the remainder of agriculture, often by large dollar-per-hour amounts.

Figure 4-10

Average Hourly Before-tax Earnings by Selected Animal Production Subsectors, Current Dollars

Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File



Note: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.

Except for cattle and calves, average hourly before-tax earnings have risen steadily over the most recent five-year period.

Average Hourly Before-tax Earnings, Inflation-Adjusted Dollars

Figures 4-11 and 4-12 display average hourly before-tax earnings in inflation-adjusted dollars for the animal production subsectors. Again, two facts stand out:

- ◆ Inflation-adjusted average hourly earnings tend to stay flat over time or even decrease.
- ◆ On average, workers in the four animal production subsectors typically earn more per hour than do workers in all other agricultural subsectors.

In 2006, aquaculture workers were receiving an average of \$14.27 per hour in year 2000 inflation-adjusted dollars, poultry and egg workers \$12.47 per hour, cattle and calves (beef) workers \$11.94 per hour and dairy workers \$10.91 per hour. This contrasts with average hourly earnings of \$9.53 in year 2000 inflation-adjusted dollars for all other agricultural workers. The 2010 Washington state minimum wage rate is \$6.75 per hour in 2000 prices ($\$8.55 \times 0.7892 = \6.75).¹³

Figure 4-11

Average Hourly Before-tax Earnings by Year, Selected Animal Production Subsectors, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

NAICS	SUBSECTOR DESCRIPTION	2006			2007			2008			2009			2010		
		MEDIAN	AVG.	S.D.												
112111 and 112112	Beef – Cattle and Calves	\$9.40	\$11.94	\$3.22	\$9.45	\$11.77	\$3.63	\$9.75	\$11.85	\$3.52	\$9.50	\$11.12	\$3.62	\$9.81	\$11.35	\$3.33
112120	Dairy	\$10.27	\$10.91	\$2.95	\$10.62	\$10.77	\$1.98	\$10.82	\$10.95	\$3.29	\$10.52	\$10.69	\$3.27	\$10.72	\$10.77	\$3.55
1123	Poultry and Eggs	\$10.75	\$12.47	\$4.04	\$11.15	\$12.29	\$3.94	\$10.56	\$12.50	\$4.05	\$11.35	\$12.06	\$5.24	\$11.56	\$12.71	\$5.31
1125	Aquaculture	\$12.32	\$14.27	\$4.44	\$12.28	\$14.69	\$4.50	\$13.29	\$14.85	\$6.06	\$12.81	\$14.46	\$5.99	\$13.37	\$14.57	\$5.86
111, 112, 1151 and 1152	All Other Agriculture*	\$9.45	\$9.53	\$4.12	\$9.51	\$9.60	\$4.28	\$9.71	\$9.65	\$4.35	\$9.65	\$9.59	\$4.53	\$9.54	\$9.57	\$4.40

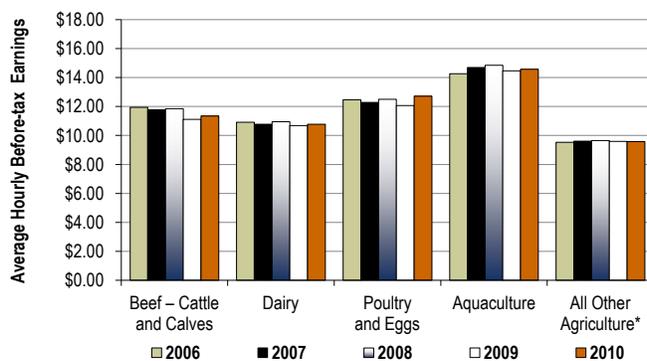
Notes: AVG. = Average
 S.D. = Standard Deviation
 *All agriculture less beef, dairy, poultry and eggs, and aquaculture.

Average hourly before-tax earnings are greater, year-by-year, in cattle and calves, dairy, poultry and eggs, and aquaculture compared to the remainder of agriculture.

Figure 4-12

Average Hourly Before-tax Earnings by Year, Selected Animal Production Subsectors, Inflation-adjusted Dollars, Base Year = 2000, CPI-W Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, QCEW, UI Wage File



Note: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.

Since 2006, average hourly before-tax earnings have been declining for cattle and calves and dairy, rising for poultry and eggs and aquaculture, and remained essentially constant for the remainder of agriculture.

In general, inflation-adjusted dollar average hourly earnings decreased, or did not increase, for the four animal production worker groups over the period of 2006 to 2010. Inflation-adjusted average hourly earnings increased for all other agricultural workers from 2006 through 2008, then decreased.

For every year of the study period, workers in each of the four animal production subsectors had higher average hourly earnings than did all other agricultural workers, who were largely seasonal and migrant workers. Beef production workers typically earned more than dairy workers for all five years of the study period. Poultry and egg production workers tended to earn more than beef and dairy production workers. Aquaculture workers tended to earn more than the other three groups of animal production workers. *Figure 4-12* displays these statistically significant differences.

Average Hourly Before-tax Earnings Distributions

Figures 4-13 through 4-17 display the full earnings distributions for the four animal production subsectors and for all other agricultural workers. Comparable distributions in current dollar terms are displayed in Appendix Figures 4-1 through 4-5.

The data points in these figures are equilibrium measures. They display average hourly earnings at the point where the quantity of agricultural labor supplied is equal to the quantity of agricultural labor demanded. The stability of these distributions over time, especially as shown in Figure 4-13, suggests that labor supply has been such that inflation-adjusted average hourly earnings have not increased in any important way over time. However, the equilibrium inflation-adjusted average hourly earnings rate has not increased since 2006 except for poultry and aquaculture. This suggests that agricultural labor supply in the state is very responsive to changes in producer demand over the study period.

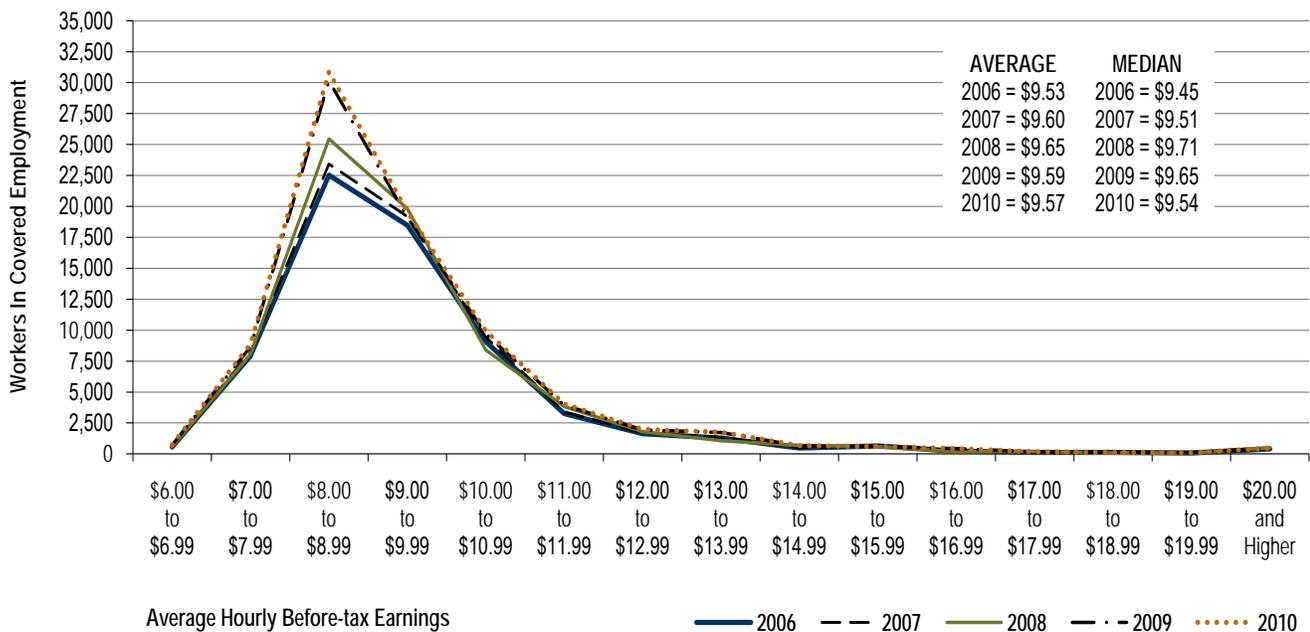
Note that the data series began in 2006 when the Washington state economy was essentially at full employment. The Great Recession officially began in December 2007.

Figure 4-13

Average Hourly Before-tax Earnings, All Agricultural Sectors Less Cattle and Calves, Dairy, Poultry and Eggs, and Aquaculture, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W

Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

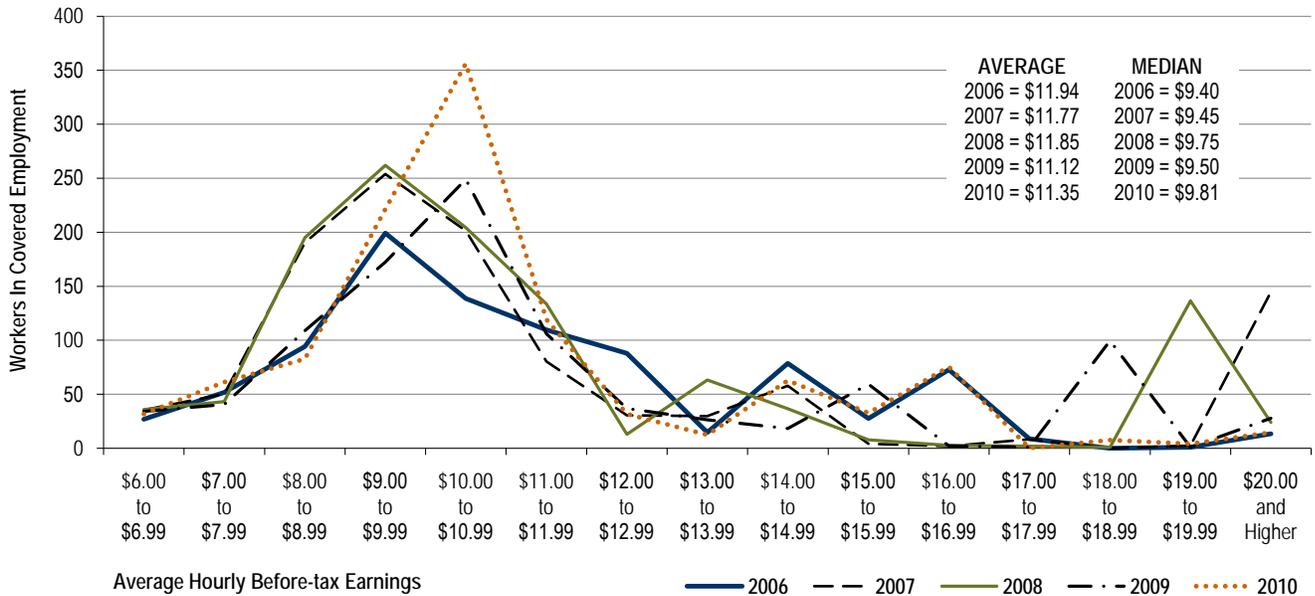


The number of workers earning greater than \$11 per hour has increased over time, but the overwhelming number of workers earn in the range between \$8 and \$10 per hour, as is indicated by the median values of average hourly before-tax earnings.

Figure 4-14

Average Hourly Before-tax Earnings, Cattle and Calves, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

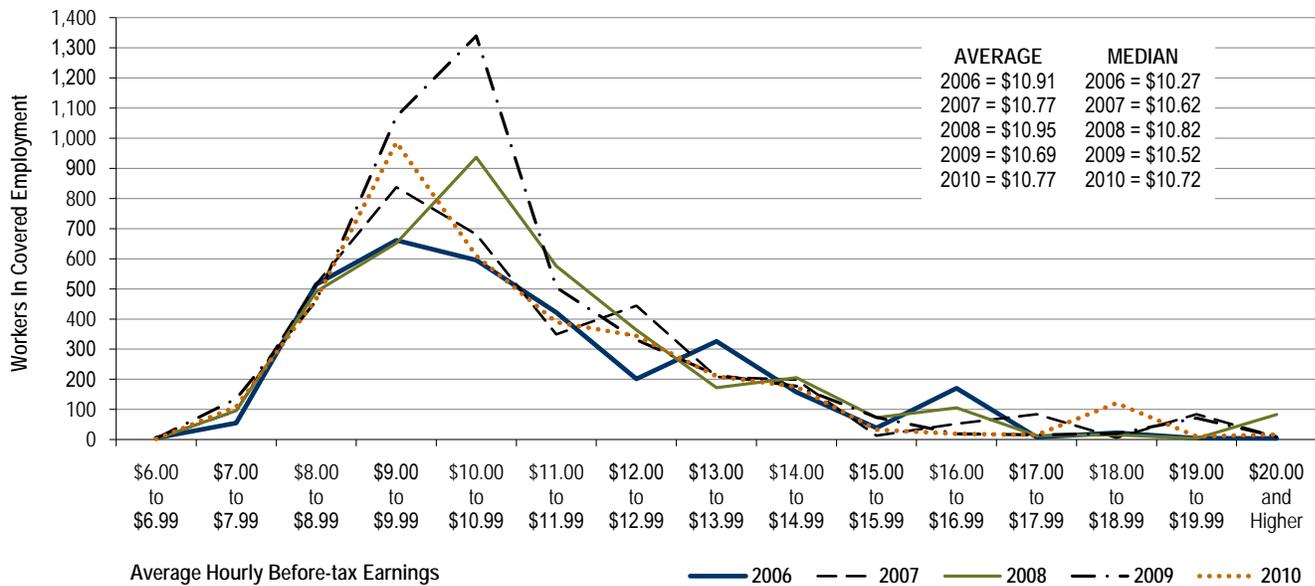


Average hourly before-tax earnings distribution is skewed strongly to the right. Since 2006, average earnings have fallen but median earnings have risen.

Figure 4-15

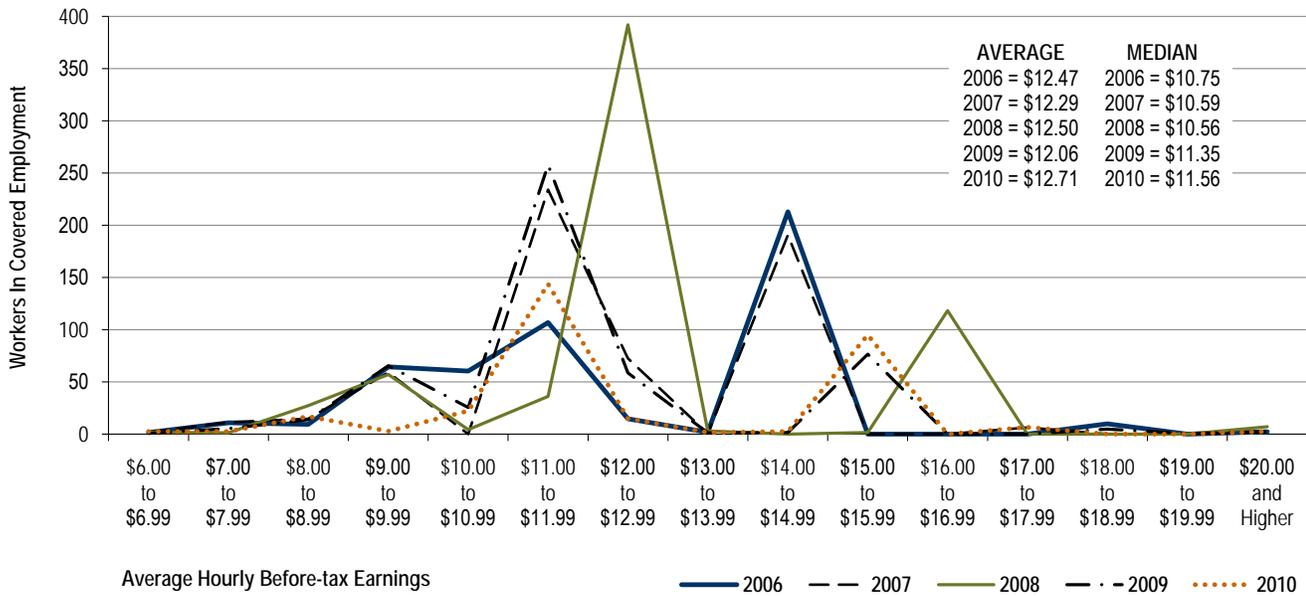
Average Hourly Before-tax Earnings, Dairy, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File



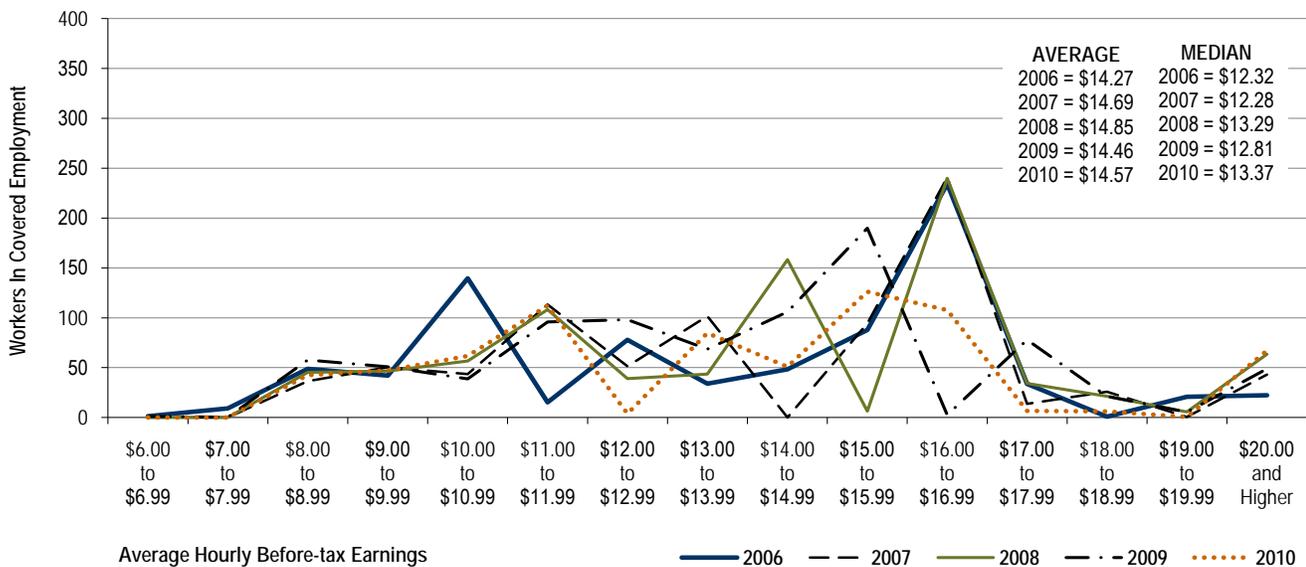
The earnings distribution is skewed sharply to the right. Average hourly before-tax earnings have remained in the range of \$10 to \$10.99.

Figure 4-16
Average Hourly Before-tax Earnings, Poultry and Eggs, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
Washington State, 2006 through 2010
Source: Employment Security Department/LMEA, UI Wage File



Since 2006, both median and average hourly before-tax earnings, in inflation-adjusted dollars, have risen.

Figure 4-17
Average Hourly Before-tax Earnings, Aquaculture, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
Washington State, 2006 through 2010
Source: Employment Security Department/LMEA, UI Wage File



Average hourly before-tax earnings in inflation-adjusted dollars have remained in the range of \$14 to \$14.99. However, median earnings are showing a tendency to increase, moving out of the range of \$12 to \$12.99 and into the range of \$13 to \$13.99.

Summary and Conclusions

- ◆ Animal production is a significant contributor to agricultural revenue in Washington state and the nation.
- ◆ Agricultural workers in animal production earn statistically significant higher average hourly before-tax earnings than do all other agricultural workers, the majority of whom are seasonal and migrant workers.
- ◆ Workers in aquaculture earn more than workers in beef production, dairy, and poultry and egg production.
- ◆ Poultry and egg production workers tend to earn more than workers in beef and dairy production.
- ◆ Except for poultry and aquaculture, inflation-adjusted average hourly before-tax earnings have not risen for the animal production subsectors over the period of 2006 through 2010.
- ◆ Inflation-adjusted average hourly before-tax earnings have not risen in all other agriculture, which is dominated by seasonal and migrant workers.
- ◆ Differences in the definition of what constitutes a farm account for the disparities in the number of agricultural establishments measured by the *2007 Census of Agriculture* and the QCEW and UI Wage File data. Each set of estimates are of use, depending on the question being asked.

Endnotes

- ¹ We have omitted from this discussion hog and pig farming (NAICS 1122), sheep and goat farming (NAICS 1124) and other animal production (NAICS 1129). These sectors are characterized by few producers and relatively low annual total revenue.
- ² NAICS = North American Industry Classification System.
- ³ Note that most farms in the United States do not employ any labor; the work is being done on the farm by family members. Based on the *2007 Census of Agriculture*, only 22 percent of the 2.2 million farms counted in the census reported expenditures for hired labor. See Martin and Calvin (2010), page 233 ff. Note that, by definition, all of the agricultural producers in the QCEW and the UI Wage File employ at least one worker for every quarter that the employer reports wages paid.
- ⁴ On Dec. 3, 2010, a bilateral agreement between the United States and South Korea was reached to liberalize trade in boneless and bone-in beef and other agricultural products. The agreement has yet to be ratified as of Feb. 28, 2011. However, the agreement as currently negotiated, will, over the next 15 years reduce to 0 the 40 percent tariff on beef levied by South Korea. The agreement is estimated to yield \$325 million in tariff reductions annually once it is fully implemented. Overall, the agreement is estimated to increase U.S. agricultural trade by as much as \$1.8 billion annually. “U.S. livestock groups hail South Korea pact.” *The Capital Press*. December, 17, 2010. For more background see: *U.S.-South Korea Beef Dispute: Issues and Status*. CRS Report RL34528. Sept. 23, 2010 and *The Proposed U.S.-South Korea Free Trade Agreement (KORUS FTA): Provisions and Implications* CRS Report 34330. Feb. 12, 2010.
- ⁵ All revenue estimates in this chapter are in current dollars unless otherwise noted.
- ⁶ In the *2007 Census of Agriculture* a “farm” is defined for statistical sampling purposes as ...“an operation that produces, or would normally produce and sell, \$1,000 or more of agricultural products per (calendar) year.” *2007 Census of Agriculture*. Appendix A. Page A-1. In contrast, no such firm size definition of a farm as a firm is specified in the UI Wage File. Inclusion of a firm, regardless of size, occurs in the UI Wage File if that firm is covered by the unemployment insurance law and reports on a quarterly basis as having paid wages to one or more covered workers.
- ⁷ Consolidation in the milk-producing sector over this 10-year period has been dramatic. In 2007, these 817 farms were hosts to 243,132 cows; in 1997 the 1,590 farms were hosts to 247,437 cows.
- ⁸ The data for the remainder of this chapter are based on the *Quarterly Census of Employment and Wages* (QCEW). These data draw heavily on the UI Wage File which reports earnings and hours worked for unemployment insurance-covered workers in the state of Washington. QCEW data on before-tax earnings and employment are highly reliable. The data are not sample data. They are universe data based on employment and earnings records submitted quarterly to the unemployment insurance program by active agricultural producers.
- ⁹ Data for the UI Wage File are reported quarterly. For each calendar year, four quarters of workers are summed based on unduplicated Social Security numbers and then divided by four to gain an estimate of the average number of workers employed over the year. To the extent that different undocumented workers may be using the same Social Security number, the estimate is undercounted.
- ¹⁰ Clearly, on average, these agricultural producers have annual sales greater than \$1,000 per year, the definitional cut-off for the *2007 Census of Agriculture*; hence, the much smaller number of reported firms in the UI Wage File database.

- 11 The median is that measure of central tendency in which 50 percent of the values lie below the median and 50 percent of the values lie above the median. The average is the sum of total hours worked divided by total workers. The average can be influenced by either very small or very large outlying values.
- 12 Throughout the remainder of this chapter, the term “average hourly earnings,” is understood to mean “average hourly before-tax earnings.”
- 13 It is not strictly correct to compare an hourly wage rate with average hourly earnings, because average hourly earnings can include bonuses, overtime premiums, piece-work earnings, etc., in addition to the base hourly wage rate.

CHAPTER FIVE

Employment and Earnings in Agriculture and Industries with a High Concentration of Undocumented Workers *Washington State, 2002 through 2009*

“Slowdowns in other industries may be helping sustain the labor pool for Washington’s agricultural employers.... But leaders of several trade groups and others say they fear the labor supply will tighten in the future as workers again leave agriculture for higher-paying jobs in the construction industry as the economy recovers.” *Tri-City Herald*. “Ag industry says labor pool ‘plentiful.’” Section B. May 3, 2010.

“The reality is, as the economy gets better, you’re going to find less and less (available workers) in the field.” Paul Simonds, Western Growers spokesman. *Capital Press*. “Farmers expect plentiful labor this year.” April 23, 2010.

This chapter describes the employment and earnings for agricultural workers in Washington state and compares that employment with employment in Washington state industries that have been identified nationally as having a high concentration of undocumented workers.

While we do not know the exact nature of the flows of undocumented labor between the agriculture sector and other sectors in the state and national economy, we hypothesize that such flows do exist. In addition, those sectors other than agriculture that have a high concentration of undocumented workers, we hypothesize, are more likely to have labor markets that interact with the state’s agricultural labor market over the business cycle.¹

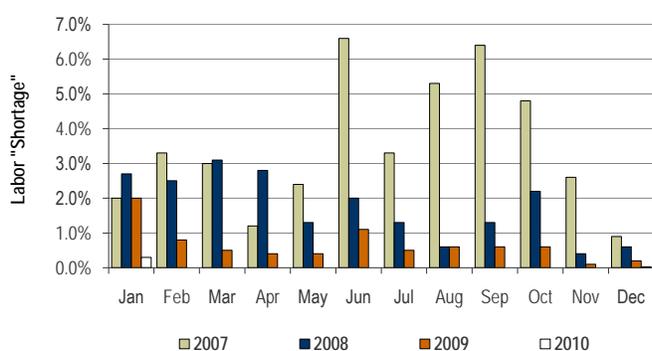
The motivation for investigating these labor flows among agricultural and other industrial sectors is the concern of agricultural producers that they will be faced with a structural “shortage” of agricultural labor over the production cycle. There is also concern over incurring spot “shortages.”

This notion of shortage can best be understood as awareness on the part of agricultural producers that they will have to offer higher wages in order to acquire enough labor at a given point in the growing and harvesting seasons to successfully manage their agricultural production.



Figure 5-1 shows sample survey estimates of seasonal agricultural employment shortage provided by Washington state agricultural producers for the years 2007 through 2010. The reported shortages fall to 0 percent by 2010, a time when the Great Recession had a firm hold on Washington state. At the same time, employment in agriculture declined in 2010 compared to 2009.

Figure 5-1
 Seasonal Agricultural Employment Shortage, Weighted by Labor Force Size of Employer Reporting
 Washington State, 2007 through 2010
 Source: Employment Security Department/LMEA, Monthly Seasonal Farm Labor Survey



Reports of labor “shortage” by agricultural producers have essentially dropped to 0 percent as of the 2010 agricultural cycle.

As suggested above, one hypothesis for this apparent absence of a shortage of agricultural workers is that, as the recession progressed, both documented and undocumented workers became unemployed, particularly in sectors such as construction. Some of these workers may then have moved back to the agricultural labor market, seeking work. The existing data for the Washington state agricultural sector indicate that agricultural producers have had sufficient workers over the past several years. In Washington state, labor supply has been such that inflation-adjusted average hourly before-tax earnings at the equilibrium between supply and demand have actually fallen since the start of the Great Recession.²

A Schematic View of the Washington State Agricultural Labor Market

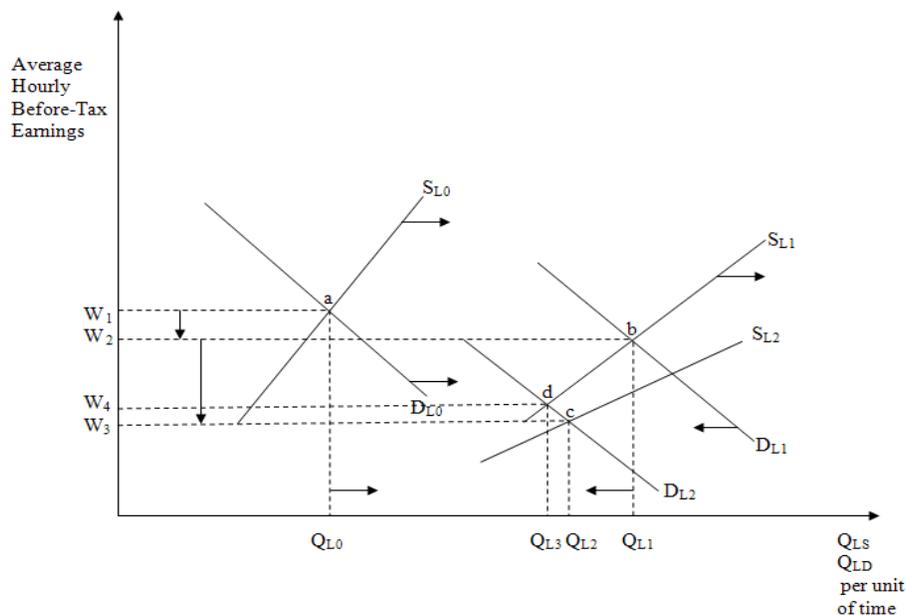
Figure 5-2 is an experienced-based depiction of employment and earnings changes in the Washington state agricultural labor market that could account for the observed empirical fact that over the past three years, inflation-adjusted average hourly earnings have decreased.

The average annual employment of workers at the equilibrium between labor supply and labor demand increased through 2009, but then decreased in 2010. This labor market adjustment process is shown in Figure 5-2 by the shift of employment from Q_{L0} to Q_{L1} and then back to Q_{L2} (or Q_{L3}). At the same time, average hourly before-tax earnings at the equilibrium between labor demand and labor supply have shown a downward trend. This downward trend is depicted by the drop in average hourly before-tax earnings from W_1 to W_2 and then to W_3 (or W_4).

An important qualification to this analysis is that we cannot statistically identify the actual empirical shifts in the agricultural labor demand and supply curves with these data, since we are working only with equilibrium measures of average hourly before-tax earnings and employment.

However, starting with S_{L0} and D_{L0} , for employment to increase in the next period while average hourly before-tax earnings fall, there must have been an increase in labor supply. There may or may not have been an increase in labor demand, though we have drawn the diagram to indicate such an increase. However, in the third period, from 2009 to 2010, we see a further drop in average hourly before-tax earnings and a decrease in equilibrium labor supplied. For this situation to have occurred, either labor demand shifted back down along S_{L1} , or there was an increase in labor supply to S_{L2} while labor demand also decreased from D_{L1} to D_{L2} . We cannot tell which is the true case with the equilibrium data that we have.

Figure 5-2
An Experienced-Based Diagram of the Demand for and Supply of Agricultural Labor with Falling Equilibrium Average Hourly Before-tax Earnings



The Pattern of Unauthorized Immigrants by Industry and Occupation

In 2008, 5.4 percent of the civilian labor force were undocumented workers.³ Passel and Cohn identify five industry sectors and six occupations across the national economy that have a high concentration of unauthorized immigrants working in them. As of 2008, these were:⁴

Industries:

- ◆ Construction – 14 percent
- ◆ Agriculture – 13 percent
- ◆ Leisure and hospitality – 10 percent
- ◆ Professional and business services – 7 percent
- ◆ Manufacturing – 7 percent

Occupations:

- ◆ Farming – 25 percent
- ◆ Building, groundskeeping and maintenance – 19 percent
- ◆ Construction – 17 percent
- ◆ Food preparation and serving – 12 percent
- ◆ Production – 10 percent
- ◆ Transportation and material moving – 7 percent

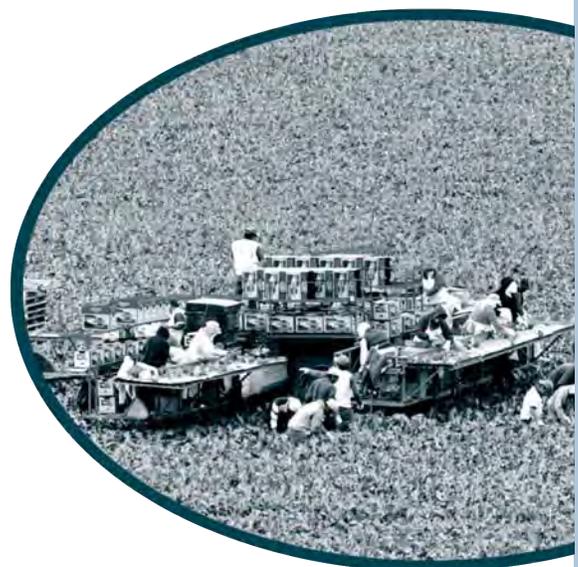


Photo by ©iStock/Nancy Nehring

Passel and Cohn point out that the number of unauthorized immigrants in the national civilian labor force (both employed and unemployed workers) fell from an estimated 8.4 million in 2007 to 7.8 million in 2009.⁵ They also state that, “Immigration from Mexico to the U.S., especially unauthorized immigration, began to drop off in mid-2006, and that pattern has continued into 2009.”⁶

Finally, Passel and Cohn estimate that 230,000 unauthorized immigrants were living in Washington state in 2010, with the range of that estimate being from 140,000 to 325,000 individuals.⁷

Comparisons of Employment and Earnings: Agriculture and Selected Industrial Sectors in Washington State

Following the analysis of Passel and Cohn, we have identified seven industrial sectors in the Washington state economy in addition to agriculture that are likely to have some undocumented workers employed in them. The workers in these seven sectors, both documented and undocumented, were a potential source of labor for the agricultural sector as the state economy moved through the business cycle and into recession after the fourth quarter of 2007.

The Quarterly Census of Employment and Wages (QCEW) and Unemployment Insurance (UI) Wage File data allow us to identify population statistics on average annual before-tax earnings and average quarterly employment for these North American Industry Classification System (NAICS) sectors:⁸

- ◆ Agriculture
 - ▶ Crop production – 111
 - ▶ Animal production – 112
 - ▶ Support activities for crop production – 1151
 - ▶ Support activities for animal production – 1152
- ◆ Accommodation and food services – 72
- ◆ Food manufacturing
 - ▶ Food manufacturing – 311
 - ▶ Beverage and tobacco product manufacturing – 312
- ◆ Health care
 - ▶ Nursing and residential care facilities – 623
 - ▶ General medical and surgical hospitals – 622110
- ◆ Janitorial services – 561720

- ◆ Other manufacturing
 - ▶ Textile mills – 313
 - ▶ Textile product mills – 314
 - ▶ Apparel manufacturing – 315
 - ▶ Leather and allied product manufacturing – 316
 - ▶ Wood product manufacturing – 321
 - ▶ Paper manufacturing – 322
 - ▶ Furniture and related product manufacturing – 337
 - ▶ Miscellaneous manufacturing – 339
- ◆ Residential building construction – 2361

Average Quarterly Employment⁹ in Agriculture Contrasted with Selected Industrial Sectors

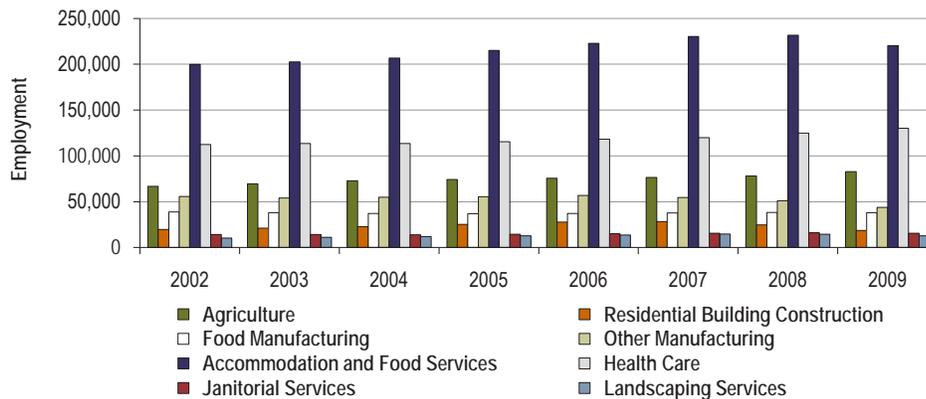
Figure 5-3 shows average quarterly employment for these eight industry sectors in Washington state. As shown, in 2009, accommodation and food services and health care had the highest levels of quarterly employment. Agriculture and health care were the only industries to have employment increases from 2008 to 2009.¹⁰

Figure 5-3

Average Quarterly Employment for Agriculture and Selected Industries

Washington State, 2002 through 2009

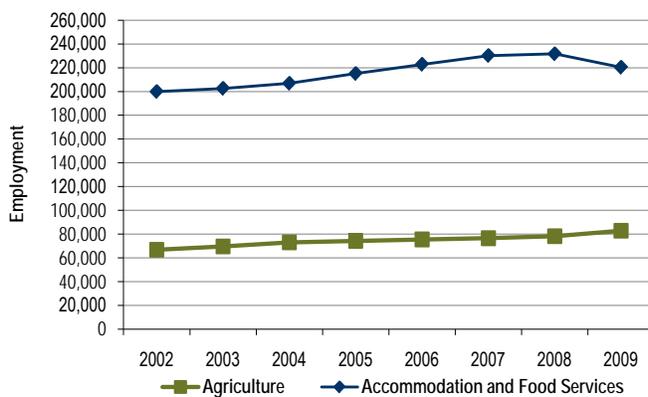
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



As of 2009, there are approximately 500,000 workers in industrial sectors that could feed labor, at the margin, into the agricultural labor market.

Accommodation and Food Services. *Figure 5-4* compares the trend in average quarterly employment of agriculture with accommodation and food services. As can be seen in this and subsequent figures, average quarterly employment in agriculture has gradually increased over the period of 2002 through 2009. The increase between 2008 and 2009 was particularly large – 6 percent – given the short-run stability in agricultural production, largely due to factors such as weather. Average quarterly employment in accommodation and food services increased steadily from 2002 to 2008, where after it dropped by 11,328 workers, or 4.9 percent, between 2008 and 2009. Some of the workers released from accommodation and food services likely became candidates for potential employment in agriculture.

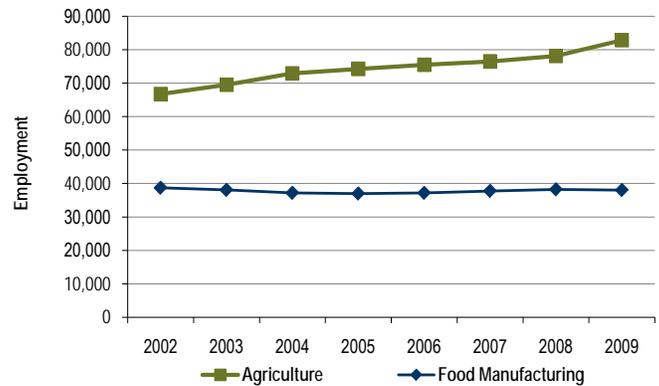
Figure 5-4
Average Quarterly Employment for Agriculture and Accommodation and Food Services
Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



As employment in accommodation and food services decreased, falling by 11,328 workers between 2008 and 2009, employment in agriculture increased. Some of the workers from accommodation and food services likely became workers in agriculture.

Food Manufacturing. As shown in *Figure 5-5*, average quarterly employment in food manufacturing fluctuated little from 2002 through 2009. This stability in employment suggests that this sector was not a significant source of potential workers in agriculture during the recession.

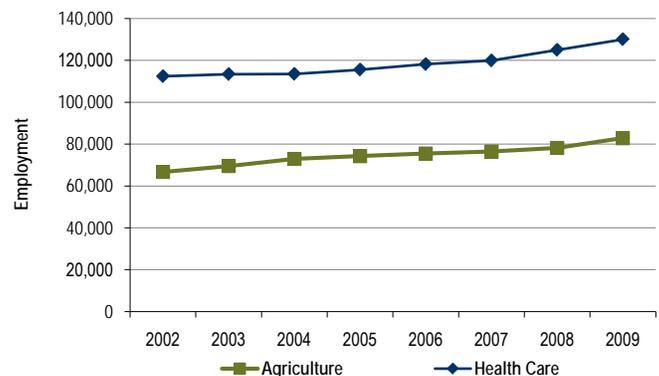
Figure 5-5
Average Quarterly Employment for Agriculture and Food Manufacturing
Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



Stability in employment in food manufacturing suggests that this sector was not a source of agricultural workers during the recession.

Health Care. As shown in *Figure 5-6*, average quarterly employment in health care grew steadily over the period of 2002 to 2009, expanding 15.7 percent.¹¹ Employment expansion continued during the recession, from 119,900 workers in 2007 to 130,032 workers in 2009, an 8.5 percent increase. This growth suggests that the healthcare sector likely competed with the agriculture sector for workers during the recession.

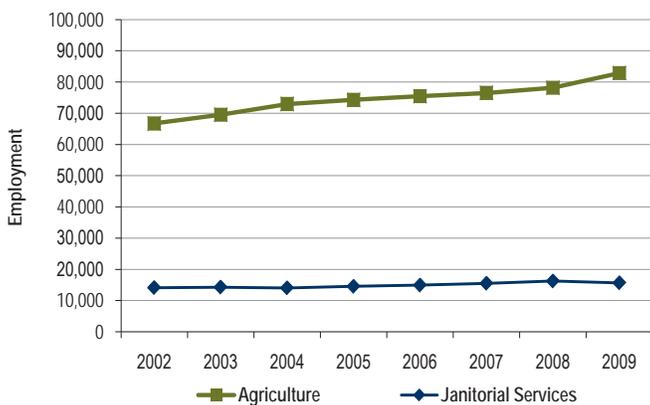
Figure 5-6
Average Quarterly Employment for Agriculture and Health Care
Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



Healthcare employment increased by 10,132 workers between 2007 and 2009. Steady growth in the healthcare sector suggests this industry competed with agriculture for workers during the recession.

Janitorial Services. *Figure 5-7* shows a slow, steady increase in average quarterly employment in janitorial services until 2008, when average quarterly employment dropped by 564 workers – 3.5 percent – between 2008 and 2009. This sector was likely not a significant source of potential workers for the agricultural sector, for its average quarterly employment in 2009 was only 18.9 percent of average quarterly agricultural employment in that year.

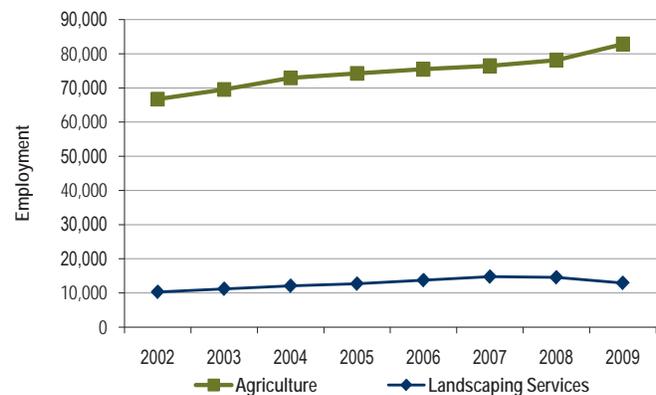
Figure 5-7
Average Quarterly Employment for Agriculture and Janitorial Services Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



The gradual increase in employment in janitorial services from 2002 to 2008 reversed in 2009. The janitorial services sector is much smaller than the agricultural sector and was likely not a source of agricultural labor during the recession.

Landscaping Services. It is reasonable to assume that workers in landscaping services are close substitutes for workers in agriculture. However, as *Figure 5-8* shows, landscaping services is a very small sector in terms of average quarterly employment. Average quarterly employment peaked in 2007 at 14,753 workers – 19.2 percent of average quarterly employment in agriculture. From 2007 to 2009 landscaping services employment fell by 1,818 workers, a 12.3 percent drop. At the margin, these 1,818 workers were a potential source of employment in the agricultural sector.

Figure 5-8
Average Quarterly Employment for Agriculture and Landscaping Services Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



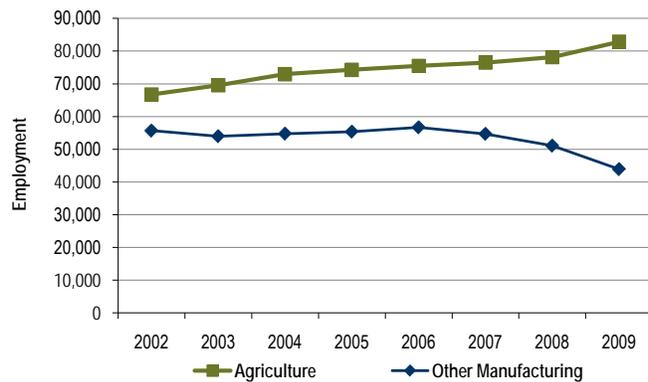
The gradual increase in employment in landscaping services peaked at 14,753 workers on a quarterly average in 2007, and then dropped 14.1 percent to 12,935 workers in 2009.



Photo by ©iStock/WoodenDinosaur

Other Manufacturing. In 2002, other manufacturing employed 83.5 percent of the average number of quarterly employment in agriculture – 55,689 workers compared to 66,722 agricultural workers (*Figure 5-9*). By 2009 this ratio dropped to 53 percent. The recession hit other manufacturing hard, with employment dropping from 56,706 workers in 2006 to 43,882 workers in 2009, a decline of 22.6 percent. This release of workers from other manufacturing was likely a significant source of potential labor for the agricultural sector.

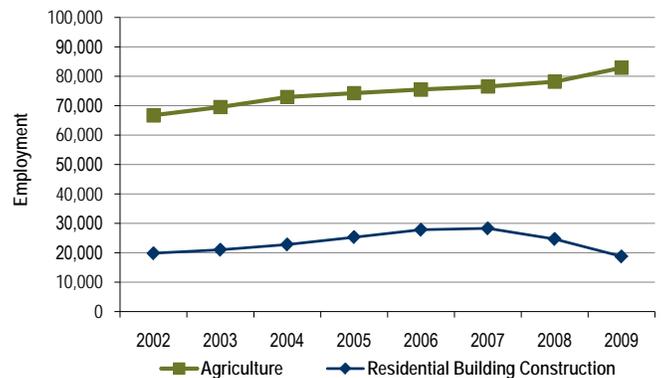
Figure 5-9
Average Quarterly Employment for Agriculture and Other Manufacturing Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



Other manufacturing released over 12,000 workers into the labor market between 2006 and 2009, enhancing the potential labor supply to the agricultural labor market.

Residential Building Construction. In 2002, average quarterly employment in residential building construction was 29.7 percent of average quarterly employment in agriculture (*Figure 5-10*). By 2007 this ratio rose to 37 percent, but then fell to 22.6 percent by 2009. Peak average quarterly employment in residential building construction was 28,272 workers in 2007, right before Washington’s housing bubble burst. Employment fell by 9,539 workers in 2009. This sector likely represents a large potential source of additional labor to the agricultural labor market.

Figure 5-10
Average Quarterly Employment for Agriculture and Residential Building Construction Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



Between 2007 and 2009, residential building construction released almost 10,000 workers into the Washington state labor market, enhancing the potential labor supply to agriculture.

The Overall Picture. We have the following picture of workers who were potential labor for the agricultural sector, based on the total change in average quarterly employment between 2006 and 2009 in the industry sectors discussed in this chapter (*Figures 5-3 and 5-11*):

- ◆ While agricultural employment grew by 1,023 average quarterly workers between 2006 and 2007, the seven industry sectors discussed in this chapter grew by 9,571 workers.
- ◆ While agricultural employment grew by 1,656 average quarterly workers between 2007 and 2008, the seven industry sectors remained essentially static at an average quarterly increase of 315 workers.
- ◆ While agricultural employment grew by 4,703 average quarterly workers between 2008 and 2009, the seven industry sectors released 21,798 workers back into the state’s labor market, providing a significant source of labor for the agricultural industry.

Figure 5-11
 Year-to-Year Change in Average Quarterly Employment for Agriculture and Selected Industries
 Washington State, 2006 through 2009
 Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages

INDUSTRY	2006-2007	2007-2008	2008-2009
Agriculture	1,023	1,656	4,703
Accommodation and Food Services	7,370	1,467	(11,328)
Food Manufacturing	594	468	(216)
Health Care	1,746	5,073	5,059
Janitorial Services	571	724	(564)
Landscaping Services	1,021	(192)	(1,626)
Other Manufacturing	(2,015)	(3,622)	(7,187)
Residential Building Construction	464	(3,603)	(5,936)
Net Total	9,571	315	(21,798)

From 2006 to 2009, agricultural employment grew by 4,703. At the same time, the seven other industry sectors with high concentrations of undocumented workers released 21,798 workers back into the state's labor market.

Average Annual Before-tax Earnings, Inflation-adjusted Dollars

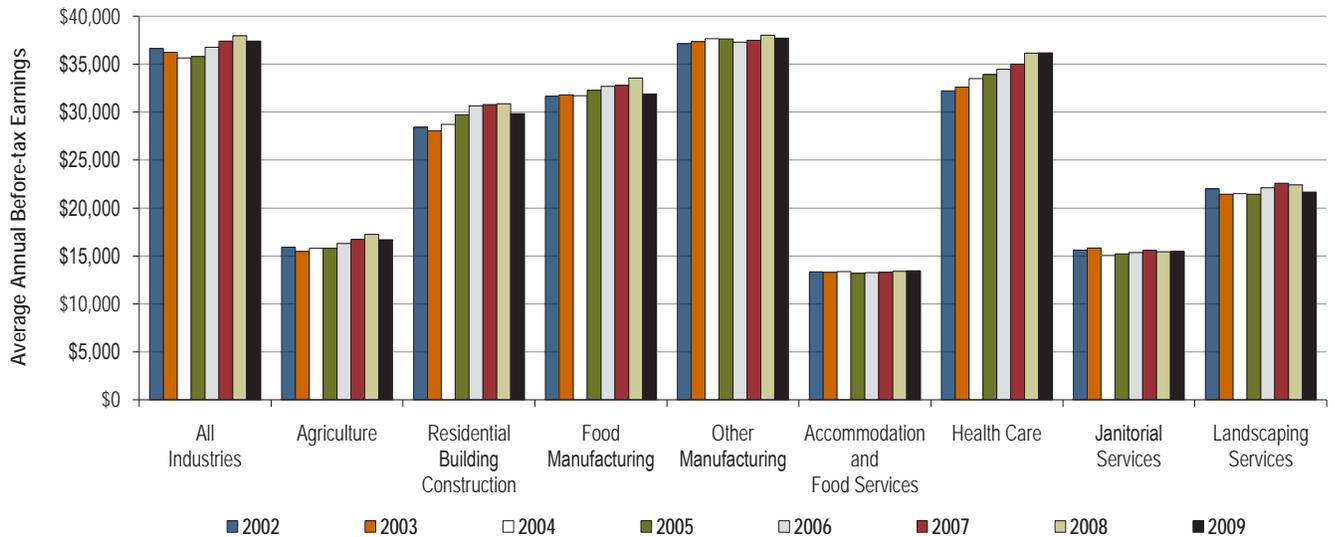
Figure 5-12 shows the distribution of average annual before-tax earnings over the period 2002 to 2009 for all industries in the state, agriculture, and the industries selected to compare with agriculture.

In general, economic theory predicts that workers will attempt to move from lower-paying to higher-paying industrial sectors. Note that agriculture is the third lowest-paying sector in terms of average annual earnings.¹² Only the janitorial services sector and accommodation and food services sector pay lower average annual earnings. Also note that landscaping services pays about \$5,000 more per year, on average, than does employment in the agricultural sector. Residential building construction, food manufacturing, other manufacturing and health care all pay considerably more per year than does agriculture.^{13, 14}

Figure 5-12

Average Annual Before-tax Earnings for All Industries, Agriculture and Selected Industries, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2002 through 2009

Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



Agriculture ranks third from the bottom in average annual earnings, exceeding only janitorial services and accommodation and food service. Yet, average quarterly employment in agriculture grew from 2002 to 2009.

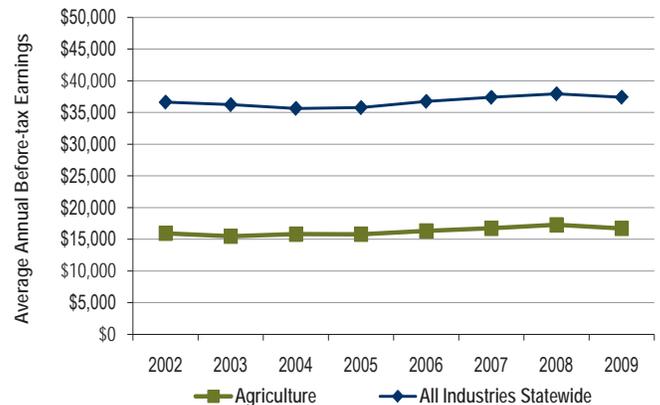
All Industries, Statewide. *Figure 5-13* compares the trend of average annual earnings over time in agriculture with the earnings trend in all industries statewide. Average annual earnings in agriculture ranged from a low of 42.7 percent of average annual earnings in statewide industry in 2003 to a high of 45.5 percent in 2008. Average annual earnings in agriculture were relatively stable from 2002 through 2005. Average annual earnings then began to increase in 2006, reaching \$17,266 by 2008. They then fell to \$16,708 as of 2009.

In contrast, average annual earnings for all statewide industries ranged between \$35,000 to \$36,000 over the period of 2002 to 2006 and then broke in to the \$37,000 range in 2007, reaching \$37,948 in 2008 before dropping about \$500 to \$37,404 in 2009. For agriculture, the drop from 2008 to 2009 – the worst period of the recession – was 3.3 percent; for all industries it was only 1.5 percent.

Figure 5-13

Average Annual Before-tax Earnings for Agriculture and All Industries, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2002 through 2009

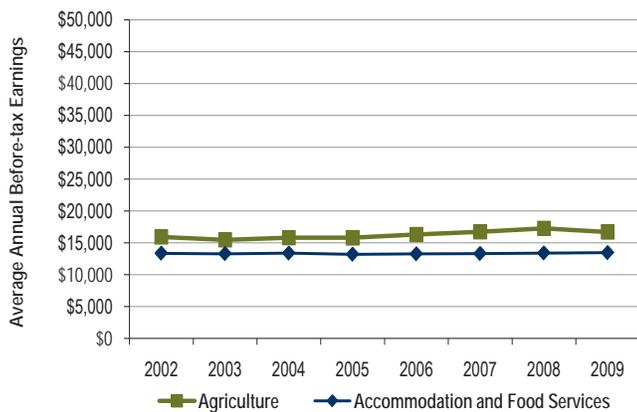
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



Average annual earnings in agriculture are about 44 percent of average annual earnings in all industries statewide.

Accommodation and Food Services. *Figure 5-14* displays the relationship between average annual earnings in agriculture and average annual earnings in accommodation and food services. Accommodation and food service earnings ranged from a low of 77.5 percent of agricultural earnings in 2008 to a high of 85.9 percent of agricultural earnings in 2003. Average annual earnings in accommodation and food services were very stable over time, averaging in the low \$13,000s. Agricultural earnings, in contrast, rose steadily through 2008 to a high of \$17,266, and then fell in 2009 to \$16,708. Accommodation and food service earnings were essentially unchanged between 2008 and 2009 even though employment in this sector fell over the current business cycle.

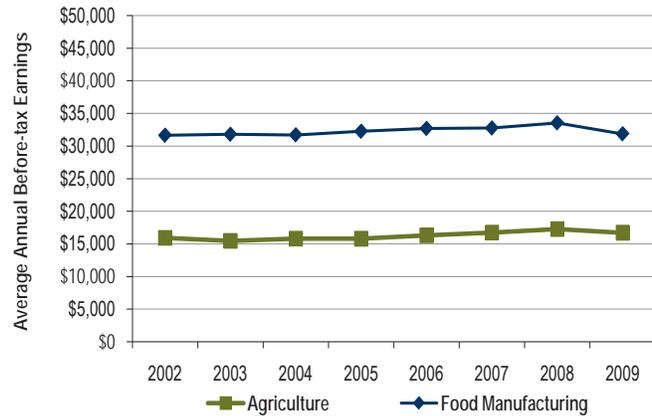
Figure 5-14
Average Annual Before-tax Earnings for Agriculture and Accommodation and Food Services, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



In contrast to agricultural earnings, inflation-adjusted average annual earnings in accommodation and food services are stable over time.

Food Manufacturing. Average annual earnings in food manufacturing have risen gradually since 2002, peaking at \$33,551 in 2008. Average annual earnings then dropped 5 percent in one year, falling to \$31,862 in 2009. Recall, though, that employment in food manufacturing has been relatively stable in recent years. In 2009, agricultural earnings were 52.4 percent of earnings in food manufacturing. This is an increase from a low of 48.7 percent in 2003.

Figure 5-15
Average Annual Before-tax Earnings for Agriculture and Food Manufacturing, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



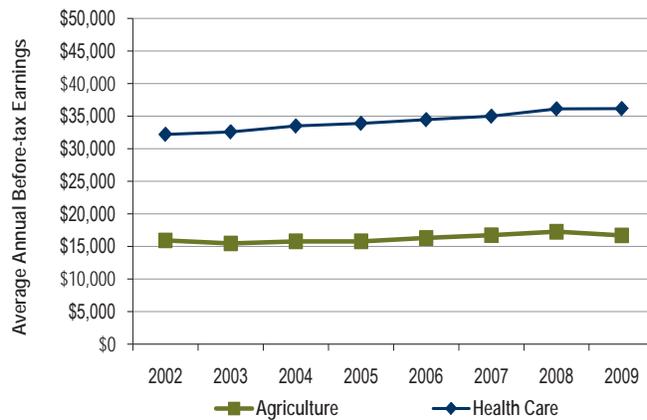
Average annual earnings have been relatively stable in food manufacturing.



Photo by ©Sebastian Czupnik/Dreamstime.com

Health Care. Average annual earnings and average quarterly employment in health care rose over the period of 2002 to 2009. For earnings and employment to rise at the same time, one of two situations has to be occurring: Either labor demand is increasing and moving out along the labor supply curve, or both the labor demand curve and the labor supply curve are increasing over time. If this latter situation is occurring, workers are likely to be attracted away from the agriculture sector, where average annual earnings remain at less than half of those in health care over the entire period of 2002 to 2009. In 2009, for example, agriculture average annual earnings were only 46.2 percent of average annual earnings in health care.

Figure 5-16
Average Annual Before-tax Earnings for Agriculture and Health Care, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages

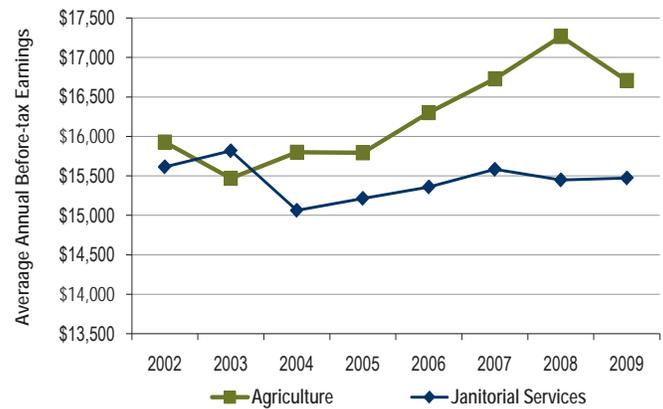


Average annual before-tax earnings in health care rose consistently from 2002 through 2009. Earnings in health care are more than double the earnings in agriculture.

Janitorial Services. Except for 2003, average annual earnings in janitorial services have been lower than earnings in agriculture, and, on the whole, the earnings trend has been relatively flat, with annual earnings falling in the low-to mid-\$15,000s. From 2004 through 2008, average annual earnings in agriculture rose. Employment in janitorial services rose moderately over the same period, falling from 2008 to 2009 by 664 workers.

Thus, while agriculture has a modest average annual earnings advantage over janitorial services, this sector was not likely a significant source of added workers to the agricultural labor market.

Figure 5-17
Average Annual Before-tax Earnings for Agriculture and Janitorial Services, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



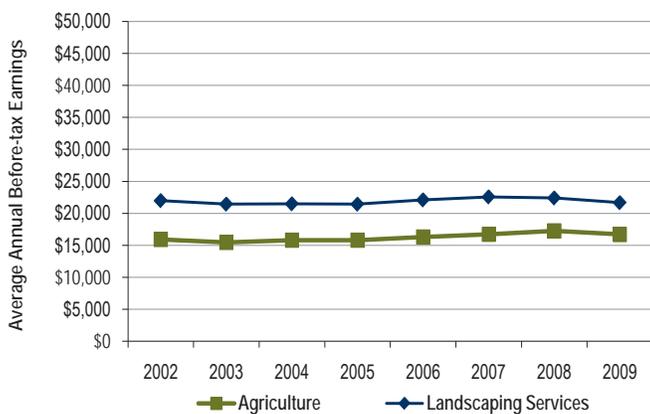
Average annual earnings in janitorial services are relatively stable over time and are consistently lower than earnings in agriculture starting in 2004.



Photo by ©Razgunip/Dreamstime.com

Landscaping Services. The skill requirements and working conditions in agriculture and landscaping services overlap somewhat. As shown in *Figure 5-18*, average annual earnings in landscaping services were consistently higher than earnings in agriculture over the period of 2002 to 2009. Over time, however, the earnings ratio has narrowed, from a low of 72.1 percent in 2003 to a high of 77.1 percent in 2009. As noted above, landscaping services released 1,626 workers into the labor market between 2008 and 2009. It is likely that some of these workers entered the agricultural labor market.

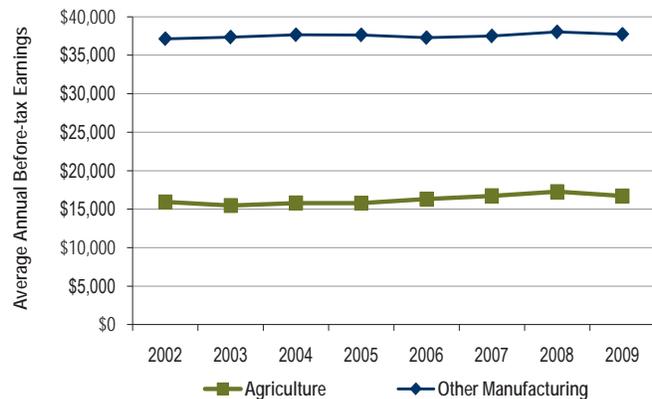
Figure 5-18
Average Annual Before-tax Earnings for Agriculture and Landscaping Services, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



Average annual earnings in agriculture are approximately 75 percent of average annual earnings in landscaping services.

Other Manufacturing. With the exception of 2008, average annual earnings in other manufacturing have averaged in the mid- to high-\$37,000s. Agricultural average annual earnings have never exceeded 45.4 percent of other manufacturing earnings and have been as low as 41.4 percent. However, firms in the other manufacturing sector released over 10,000 workers into the labor market between 2008 and 2009. Some portion of these workers likely entered the agricultural labor market.

Figure 5-19
Average Annual Before-tax Earnings for Agriculture and Other Manufacturing, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



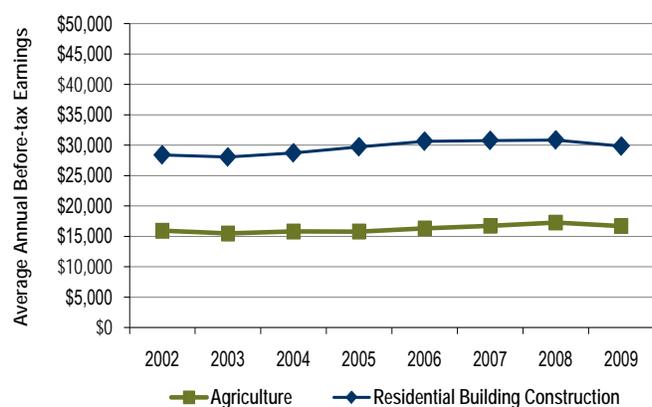
Average annual earnings in other manufacturing have been relatively stable over time, even as a significant number of workers were laid off between 2008 and 2009.



Photo by ©L. J. P. Smokowski/Dreamstime.com

Residential Building Construction. Construction, including residential building construction, is seen by representatives of the agricultural sector as being a source of additional labor during the current business cycle. (See *Endnote 10*.) While average annual earnings have risen somewhat over time and have been relatively stable, the construction industry did release an estimated 9,539 workers from 2007 to 2009. It is, thus, a recognized source of added labor for the agriculture sector.

Figure 5-20
Average Annual Before-tax Earnings for Agriculture and Residential Building Construction, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
Washington State, 2002 through 2009
Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages



Average annual earnings in residential building construction have remained relatively stable. The industry released almost 10,000 workers back into the state economy between 2007 and 2009.

Tree Fruit: Apples, Cherries and Pears

The impact of recent recessionary labor market conditions on Washington state apple, cherry and pear production is particularly important because these three subsectors employ the overwhelming share of seasonal and migrant labor.

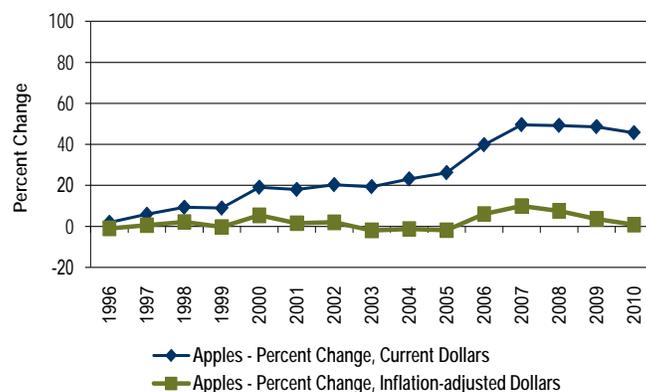
There are two surges, or shifts, in labor demand each year. The first surge is typically in mid-June, depending on the weather, and is due to the highly valuable sweet cherry harvest. This harvest tapers off in July. Demand increases again in early August

as the apple and pear harvests accelerate and culminate in a maximum labor demand surge in September or October, depending on the weather.

Figures 5-21 to 5-23 compare cumulative percent change in current and inflation-adjusted average hourly before-tax earnings in apples, cherries and pears for the period 1996 through 2010. For all three tree fruit subsectors, average hourly before-tax earnings rose in both current and inflation-adjusted terms over the period 2005 through 2007. The Great Recession hit the state in the second or third quarter of 2008. As the figures show, at the equilibrium between labor demand and labor supply, current and inflation-adjusted average hourly before-tax earnings fell in 2008, 2009 and 2010.

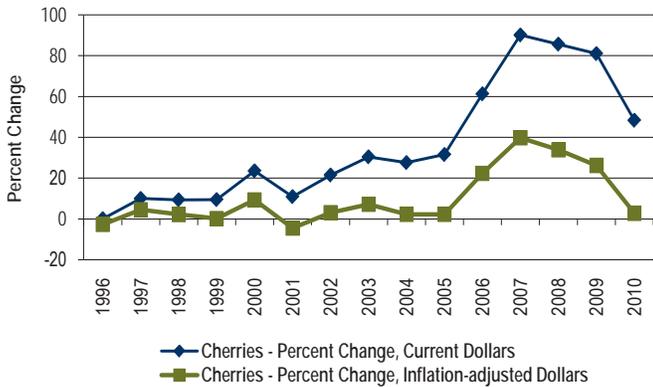
Two-tailed t-tests were conducted separately for each tree fruit for all annual pairs of average hourly before-tax earnings between 2006 and 2010. Except for cherries, when comparing 2006 with 2009 average hourly earnings, all annual hourly earnings pairs for each tree fruit are statistically significantly different from each other. Average hourly before-tax earnings in tree fruit fell consistently over the current business cycle.

Figure 5-21
Comparison of Cumulative Percent Change in Current and Inflation-adjusted Average Hourly Before-tax Earnings, Apples, Base Year 2000 = 100, CPI-W
Washington State, 1996 through 2010, Fourth Quarter Data
Source: Employment Security Department/LMEA, UI Wage File



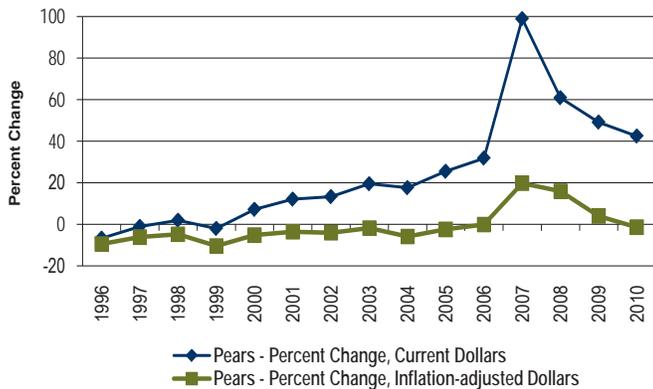
The cumulative change in average hourly before-tax earnings for apples dropped by 6.7 percentage points between 2009 and 2010.

Figure 5-22
Comparison of Cumulative Percent Change in Current and Inflation-adjusted Average Hourly Before-tax Earnings, Cherries, Base Year 2000 = 100, CPI-W
Washington State, 1996 through 2010, Third Quarter Data
Source: Employment Security Department/LMEA, UI Wage File



The cumulative change in average hourly before-tax earnings for cherries dropped by 32.7 percentage points between 2009 and 2010.

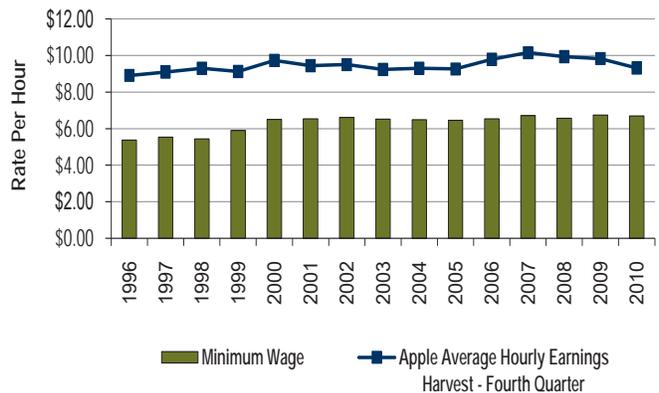
Figure 5-23
Comparison of Cumulative Percent Change in Current and Inflation-adjusted Average Hourly Before-tax Earnings, Pears, Base Year 2000 = 100, CPI-W
Washington State, 1996 through 2010, Third Quarter Data
Source: Employment Security Department/LMEA, UI Wage File



The cumulative change in average hourly before-tax earnings for pears dropped by 2.9 percentage points between 2009 and 2010.

Figures 5-24 to 5-26 compare inflation-adjusted average hourly before-tax earnings for work in apples, cherries and pears with the inflation-adjusted Washington state minimum wage. Consistent with the data in Figures 5-23 to 5-25, inflation-adjusted average hourly before-tax earnings rose relative to the state minimum wage rate from 2005 through 2007. Inflation-adjusted average hourly earnings then fell from 2008 through 2010, though they are still well above the inflation-adjusted state minimum wage.

Figure 5-24
Average Hourly Before-tax Earnings in Apples Compared to the Washington State Minimum Wage, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
Washington State, 1996 through 2010
Source: Employment Security Department/LMEA, UI Wage File

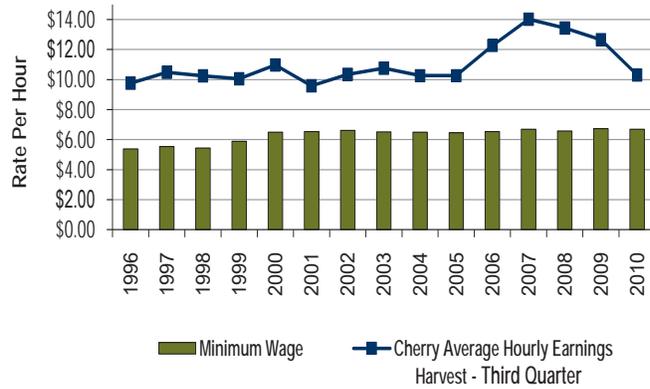


Inflation-adjusted average hourly before-tax earnings in apples fell from \$9.83 in 2009 to \$9.31 in 2010, still well above the inflation-adjusted state minimum wage of \$6.69 in 2010.



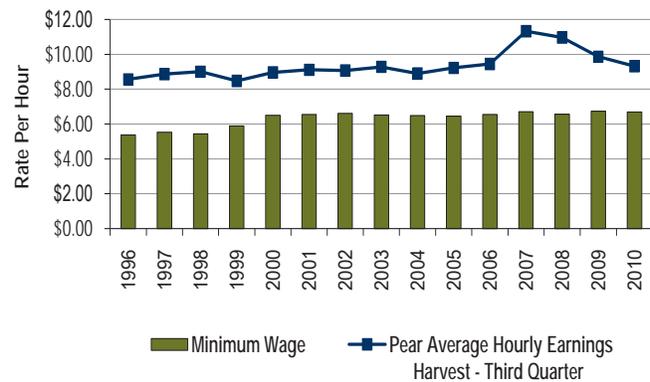
Photo by ©Lya Cattel/Dreamstime.com

Figure 5-25
 Average Hourly Before-tax Earnings in Cherries Compared to the Washington State Minimum Wage, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
 Washington State, 1996 through 2010
 Source: Employment Security Department/LMEA, UI Wage File



Inflation-adjusted average hourly before-tax earnings in cherry work fell from \$12.66 in 2009 to \$10.31 in 2010, still well above the inflation-adjusted state minimum wage of \$6.69 in 2010.

Figure 5-26
 Average Hourly Before-tax Earnings in Pears Compared to the Washington State Minimum Wage, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
 Washington State, 1996 through 2010
 Source: Employment Security Department/LMEA, UI Wage File



Inflation-adjusted average hourly before-tax earnings in pears fell from \$9.86 in 2009 to \$9.32 in 2010, still well above the inflation-adjusted state minimum wage of \$6.69 in 2010.

Finally, note the following estimates of average annual employment at labor market equilibrium for fruit and tree nut production in Washington state:¹⁵

- ◆ 2006 – 38,398 workers
- ◆ 2007 – 38,973 workers
- ◆ 2008 – 39,961 workers
- ◆ 2009 – 42,758 workers



Summary and Conclusions

- ◆ There has been no structural “shortage” of agricultural labor supply in the period of 2007 to 2009 and spot “shortages,” as measured by the responses of agricultural producers, have declined to 0 percent over the period of 2007 to 2010.
- ◆ Representatives of the agricultural economy in Washington state are aware that the Great Recession has alleviated concerns over labor “shortages” in agriculture.
- ◆ While agricultural employment grew by 1,023 average quarterly workers between 2006 and 2007, the seven industry sectors discussed in this study grew by 9,571 workers.
- ◆ While agricultural employment grew by 1,656 average quarterly workers between 2007 and 2008, the seven industry sectors remained essentially static with an average quarterly increase of 315 workers.
- ◆ While agricultural employment grew by 4,703 average quarterly workers between 2008 and 2009, the seven industry sectors released 21,798 workers back into the state’s labor market, providing a significant source of labor for the agricultural industry.
- ◆ Undocumented workers likely respond to the incentive of higher average annual earnings as well as to higher hourly wage rates when seeking employment in the United States.
- ◆ Inflation-adjusted average annual earnings in agriculture are the third lowest in the eight industry sectors discussed in this chapter, yet employment has increased in agriculture over the period of 2002 to 2009.

Endnotes

- ¹ Historically, the primary industry entry point into the U.S. labor market for undocumented workers from Mexico and Central America has been agriculture. Then, as individual workers became more familiar with the opportunities for employment in the U.S. economy, some would move on to other industrial sectors, such as construction. A conversation with Dr. Philip Martin, University of California-Davis, however, indicates that in recent years, some undocumented workers have by-passed agriculture and moved directly into industries such as construction and the service sector.
- ² Nevertheless, there is still concern among agricultural producers that there is a shortage of legal, documented workers. An Immigration and Customs Enforcement (ICE) official reports that 1,000 audits were scheduled for 2010, of which 30 were scheduled for Washington state, not all of which were in agriculture. See: *The Wenatchee World*. “Gebbers Farm audit worries state ag industry.” February 17, 2010. *Capital Press*. “Farm Bureau: More ICE audits soon.” October 1, 2010.
- ³ Passel and Cohn. April 14, 2009. Figure 21. Page 16.
- ⁴ Passel and Cohn. April 14, 2009. Figure 19. Page 15.
- ⁵ Passel and Cohn. Sept. 1, 2010. Figure 10. Page 8.
- ⁶ Passel and Cohn. July 22, 2009. Page 3.
- ⁷ Passel and Cohn. Feb. 1, 2011. Table 4. Page 14.
- ⁸ The numbers following the industry titles are NAICS industry codes. Go to www.bls.gov/bls/naics.htm for an explanation of the NAICS system.

- ⁹ Average quarterly employment represents a count of the unduplicated Social Security numbers that occur each calendar quarter in the QCEW/UI Wage File database. To the extent that two or more undocumented workers may be using the same SSN, the quarterly employment estimates are an undercount of the actual number of workers in any given industrial sector for that quarter. These data are counts of individuals that have *ever worked* during each production quarter. They are not adjusted for actual hours of work over the production quarter. We do not adjust for hours worked because we are interested in measuring the number of individual persons who make themselves available for work over the course of the production quarter.
- ¹⁰ From October 2009 through September 2010 there were 140,053 exhaustees of unemployment benefits in Washington state. Of this number, 29,665 were in construction. *Washington State Labor Market and Economic Report*. December 2010. *Exhibit 4.7*. And note the following: “Jon DeVaney, executive director of the Yakima Valley Growers-Shippers Association in Washington, also points to the construction industry’s collapse as a trigger for greater availability of workers.” *Capital Press*. “Farmers expect plentiful labor this year.” April 23, 2010. “Edwards said about 15 percent of 250 applicants received so far for cherry-season warehouse work appear to be workers from construction trades.” Quote from Linda Edwards, human resources manager, Oneonta Starr Ranch Growers. *The Wenatchee World*. “Idled blue-collar workers turn to ag jobs.” April 14, 2010.
- ¹¹ Source: U.S. Bureau of Labor Statistics. Updated March 8, 2011.
- ¹² Throughout the remainder of this section, we will generally drop the modifiers “inflation-adjusted” and “before-tax” and use only the term “average annual earnings,” it being understood that we always are discussing inflation-adjusted before-tax average annual earnings.
- ¹³ In comparing average annual earnings between agriculture and the other seven sectors in this chapter, the implicit assumption is being made that compensating wage variations cancel out between any two industrial sectors. This is likely to be a strong assumption, for it is common to hear that workers prefer to work in industries other than agriculture, where the work is seasonal, often outside in the weather, potentially dangerous and physically demanding, relative to other industrial occupations.
- ¹⁴ Earnings comparisons in this section are based on the assumption that a significant portion of the hired workers in agriculture, at least half nationwide, are undocumented.
- ¹⁵ Tree fruit production dominates the statewide agricultural employment data. These annual employment data are calculated in this way: The number of workers employed is measured each month. The number of workers is then summed for the 12 months of the year, gaining a measure of total worker-months employed during the year. Dividing that total by 12 yields an annualized measure of “worker-months,” where 12 worker-months equal one worker full time over the year. Tree nut production data are not reported in the *Washington Annual Agriculture Bulletin*.

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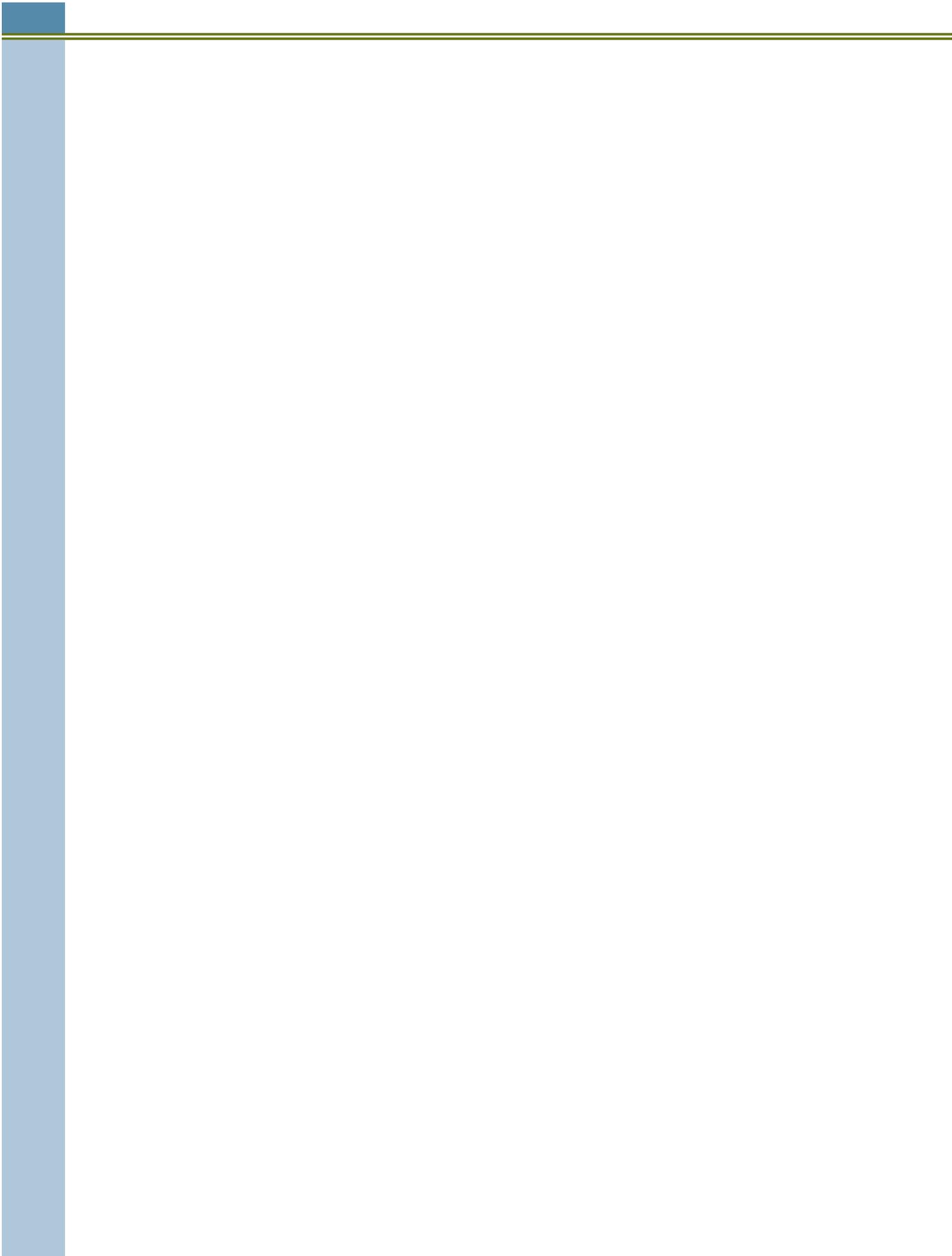
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Appendices

Appendix Figure 1-1

Value of Agricultural Production and Government Payments in \$1,000s of Current Dollars¹

Washington State, 2000 through 2009

Source: 2010 Washington Annual Agriculture Bulletin, Page 3.

YEAR	FIELD CROPS	FRUITS AND NUTS	COMMERCIAL VEGETABLES	BERRY CROPS	TOTAL CROPS	SPECIALTY PRODUCTS ²	LIVESTOCK AND PRODUCTS	TOTAL VALUE OF PRODUCTION	GOVERNMENT PAYMENTS	TOTAL VALUE ³
2000	\$1,697,526	\$1,164,734	\$329,667	\$46,739	\$3,238,666	\$387,994	\$1,519,056	\$5,145,716	\$352,793	\$5,498,509
2001	\$1,750,181	\$1,315,186	\$310,235	\$61,534	\$3,437,136	\$389,386	\$1,604,115	\$5,430,637	\$299,021	\$5,729,658
2002	\$1,798,986	\$1,450,719	\$361,775	\$62,378	\$3,673,858	\$400,334	\$1,396,461	\$5,470,653	\$215,912	\$5,686,565
2003	\$1,732,339	\$1,467,637	\$322,026	\$66,164	\$3,588,166	\$408,751	\$1,449,091	\$5,446,008	\$265,398	\$5,711,406
2004	\$1,814,623	\$1,265,769	\$264,957	\$77,620	\$3,422,969	\$424,951	\$1,678,175	\$5,526,095	\$196,974	\$5,723,069
2005	\$1,797,042	\$1,671,177	\$339,939	\$75,976	\$3,884,134	\$418,912	\$1,749,286	\$6,052,332	\$239,909	\$6,239,671
2006	\$2,067,154	\$2,012,925	\$495,204	\$68,104	\$4,643,387	\$402,676	\$1,560,454	\$6,606,517	\$196,466	\$6,736,095
2007	\$2,810,960	\$2,486,562	\$328,123	\$97,159	\$5,722,804	\$420,962	\$2,021,377	\$8,165,143	\$185,104	\$8,350,247
2008	\$2,795,746	\$1,977,972	\$473,862	\$153,184	\$5,400,764	\$423,422	\$1,896,224	\$7,720,410	\$200,943	\$7,921,353
2009	\$2,451,025	\$2,085,560	\$548,360	\$106,559	\$5,191,504	\$372,939	\$1,516,905	\$7,081,348	\$189,356	\$7,270,704

Notes: ¹The data in this table do not reflect the later revisions in the total estimates and economic components that are shown in Appendix Figure 1-2.

The data in Appendix Figure 1-2 have the benefit of revisions based on the 2007 Census of Agriculture. This is not the case for the data in the *2009 Washington Annual Agriculture Bulletin*.

²Includes forest products, Christmas trees, floriculture, nursery and other horticultural products, and agaricus and other (shitake, oyster, etc.) mushrooms.

³Includes government payments.

Appendix Figure 1-2

 Value Added to the U.S. Economy by the Agricultural Sector via the Production of Goods and Services, Current Dollars in \$1,000s
 Washington State, 2000 through 2009^{1,2}

 Source: U.S. Department of Agriculture, Economic Research Service, Data Sets, Farm Income, Data Files
<http://www.ers.usda.gov/Data/FarmIncome/FinfidmuXls.htm>

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cash Receipts:										
Value of Crop Production	\$3,563,241	\$3,401,646	\$3,765,788	\$4,007,189	\$4,274,234	\$4,033,376	\$4,493,964	\$5,182,936	\$6,123,333	\$5,069,713
Value of Livestock Production	\$1,692,138	\$1,711,091	\$1,526,930	\$1,540,989	\$1,699,855	\$1,872,876	\$1,690,965	\$2,125,520	\$2,001,978	\$1,613,186
Machine Hire and Custom Work	\$85,196	\$59,205	\$57,605	\$88,552	\$47,249	\$30,360	\$66,988	\$104,969	\$49,474	\$76,174
Forest Products Sold	\$25,000	\$25,000	\$25,000	\$120,000	\$140,000	\$25,000	\$30,000	\$30,000	\$30,000	\$15,000
Other Farm Income	\$128,270	\$210,224	\$131,077	\$185,718	\$176,407	\$195,107	\$235,929	\$241,477	\$277,209	\$411,993
Gross Imputed Rental Value of Farm Dwellings	\$252,501	\$254,640	\$269,218	\$279,284	\$293,063	\$292,184	\$305,631	\$335,750	\$349,008	\$343,350
Value of Agricultural Sector Production	\$5,746,346	\$5,661,806	\$5,775,619	\$6,221,732	\$6,630,808	\$6,448,903	\$6,823,477	\$8,021,652	\$8,831,002	\$7,529,416
Less: Intermediate Consumption Outlays:										
Farm Origin	\$894,249	\$814,805	\$834,937	\$769,987	\$698,188	\$824,754	\$852,575	\$898,640	\$1,064,915	\$920,584
Manufactured Inputs	\$699,831	\$759,829	\$685,737	\$647,287	\$787,766	\$911,298	\$983,331	\$1,088,864	\$1,119,920	\$1,115,306
Other Purchased Inputs										
Repair and Maintenance of Capital Items	\$314,809	\$271,690	\$265,167	\$223,369	\$279,137	\$235,862	\$339,013	\$376,900	\$301,010	\$420,897
Machine Hire and Custom Work	\$106,706	\$102,441	\$177,527	\$98,740	\$85,189	\$92,679	\$84,463	\$78,153	\$79,399	\$92,031
Marketing, Storage, and Transportation Expense	\$383,071	\$423,538	\$379,833	\$483,963	\$421,559	\$623,857	\$624,789	\$913,178	\$1,104,879	\$833,115
Contract Labor	\$38,603	\$54,892	\$47,585	\$40,285	\$34,207	\$23,828	\$25,094	\$44,243	\$26,135	\$40,128
Miscellaneous Expenses	\$463,476	\$549,968	\$549,776	\$457,699	\$523,096	\$643,454	\$646,439	\$577,222	\$790,668	\$623,608
Total Intermediate Consumption Outlays	\$2,900,745	\$2,977,163	\$2,940,562	\$2,721,330	\$2,829,142	\$3,355,732	\$3,555,704	\$3,977,200	\$4,486,296	\$4,045,669
Plus: Net Government Transactions										
Plus Direct Government Payments	\$352,793	\$299,021	\$215,912	\$265,398	\$196,974	\$239,909	\$196,466	\$185,104	\$200,943	\$189,356
Less Motor Vehicle Registration and License Fees	\$17,438	\$19,416	\$13,105	\$10,812	\$11,001	\$7,711	\$12,206	\$11,171	\$11,575	\$13,619
Less Property Taxes	\$164,220	\$165,226	\$142,699	\$160,000	\$170,000	\$190,000	\$230,000	\$240,000	\$320,000	\$240,000
Gross Value Added	\$3,016,736	\$2,799,021	\$2,895,164	\$3,594,989	\$3,817,639	\$3,135,369	\$3,222,033	\$3,978,385	\$4,214,059	\$3,419,484
Less Capital Consumption	\$399,873	\$408,174	\$413,478	\$414,986	\$438,397	\$463,078	\$475,135	\$501,426	\$537,661	\$563,536
Net Value Added	\$2,616,863	\$2,390,847	\$2,481,686	\$3,180,003	\$3,379,242	\$2,672,291	\$2,746,898	\$3,476,959	\$3,676,398	\$2,855,948
Less Factor Payments:										
Employee Compensation (Total Hired Labor)	\$1,141,855	\$1,134,115	\$1,073,301	\$1,117,324	\$1,076,391	\$1,252,389	\$1,234,424	\$1,232,587	\$1,529,940	\$1,511,261
Net Rent Received by Nonoperating Landlords	\$166,215	\$170,956	\$189,460	\$145,412	\$170,790	\$141,960	\$91,623	\$131,463	\$160,185	\$95,534
Real Estate and Non-Real Estate Interest	\$287,315	\$260,571	\$246,452	\$211,253	\$204,306	\$240,877	\$274,690	\$287,062	\$291,898	\$287,149
Net Farm Income	\$1,021,478	\$825,205	\$972,473	\$1,705,704	\$1,927,755	\$1,037,065	\$1,146,161	\$1,825,847	\$1,694,375	\$962,004

Notes: ¹Value of agricultural sector production is the gross value of the commodities and services produced within a year. Net value added is the sector's contribution to the national economy and is the sum of the income from production earned by all factors of production, regardless of ownership. Net farm income is the farm operator's share of income from the sector's production activities. The concept presented is consistent with that employed by the Organization for Economic Cooperation and Development. The careful reader will note that many of the values in this exhibit change from year to year. These changes represent edits by NASS to values calculated for previous years.

²The estimates in this table have been revised extensively for some variables in some cases. This is due to the fact that the 2007 Census of Agriculture became available so that earlier estimates of the data in this table could be benchmarked and adjusted using the Census data.

³Includes government payments. http://www.nass.usda.gov/Statistics_by_State/Washington/Publications/Annual_Statistical_Bulletin/annual2010.pdf.

Appendix Figure 1-3

Price Indices – Consumer Price Index – Urban Wage Earners and Clerical Workers, Seasonally Adjusted, 1982-1984 = 100 CPI-W, and Prices Received by Farmers, All Farm Products, 1990-1992 = 100 CPI-W

Washington State, 2000 through 2009

Source: Haver Analytics Inc., U.S. Bureau of Labor Statistics, U.S. Department of Agriculture

YEAR	CPI-W		ALL FARM PRODUCTS	
	1982-1984 = 100	2009 = 100	1990-1992 = 100	2009 = 100
2000	168.88	80.56	96	73.28
2001	173.48	82.75	102	77.86
2002	175.88	83.90	98	74.81
2003	179.83	85.78	106	80.92
2004	184.48	88.00	119	90.84
2005	190.89	91.06	114	87.02
2007	202.76	96.72	136	103.82
2008	210.99	100.64	149	113.74
2009	209.64	100.00	131	100.00



Appendix Figure 2-1

Total Agricultural Employment (Number of Jobs) in Washington State,* Statewide by MSA, MD and County
 Washington State, 2010 (Benchmarked September 2010)

Source: Employment Security Department/LMEA

AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Washington	70,090	76,570	82,630	85,710	87,740	122,620	148,680	118,120	126,880	119,970	78,780	69,510	98,940
Bellingham MSA	2,480	2,630	2,870	2,910	3,210	3,550	6,010	5,780	3,290	2,880	2,750	2,710	3,420
Bremerton MSA	300	340	370	420	450	480	480	440	420	370	380	350	400
Olympia MSA	1,250	1,310	1,390	1,520	1,610	1,680	1,760	1,710	1,630	1,390	1,340	1,380	1,500
Kennewick-Pasco-Richland MSA	8,080	8,670	9,120	9,710	10,380	17,690	17,720	13,470	15,370	14,760	9,370	7,690	11,840
Seattle-Bellevue-Everett MD	2,850	3,220	3,520	3,820	4,020	4,220	4,410	4,170	3,870	3,780	3,130	3,110	3,680
Spokane MSA	1,170	1,310	1,510	1,640	1,760	1,820	1,860	1,720	1,640	1,490	1,280	1,190	1,530
Tacoma MD	1,040	1,220	1,610	1,310	1,360	1,410	1,490	1,420	1,300	1,190	1,060	1,090	1,290
Wenatchee MSA	8,930	9,980	10,520	9,710	9,220	17,060	23,740	15,620	17,410	15,910	9,530	8,610	13,020
Yakima MSA	18,770	20,100	20,700	20,640	21,150	31,630	38,310	28,960	35,320	33,040	20,450	17,960	25,590
Adams	1,230	1,260	1,540	1,840	1,850	2,430	2,900	2,640	2,520	2,370	1,210	1,100	1,910
Asotin	120	140	170	190	190	180	180	180	170	150	140	130	160
Clallam	270	290	310	330	350	380	450	420	380	320	300	290	340
Clark	980	1,090	1,130	1,240	1,410	1,830	2,050	1,600	1,330	1,200	1,250	1,040	1,340
Columbia	210	230	240	250	260	310	310	360	310	270	210	220	270
Cowlitz	320	340	410	510	480	590	820	760	560	360	350	360	490
Ferry	80	90	100	110	120	130	140	120	110	100	90	80	110
Garfield	120	130	150	160	160	180	200	210	180	150	130	130	160
Grant	6,660	7,050	7,650	9,010	9,410	11,570	12,760	10,630	12,610	12,810	7,700	6,480	9,530
Grays Harbor	420	530	580	560	590	610	580	540	510	530	450	420	530
Island	280	290	310	330	350	370	380	360	330	310	280	290	320
Jefferson	120	130	140	170	180	220	200	180	150	130	110	110	150
Kittitas	860	940	1,100	1,780	1,140	1,260	1,370	1,430	1,330	1,490	890	710	1,190
Klickitat	1,120	1,360	1,500	1,660	1,630	2,050	2,460	1,980	1,970	1,620	1,320	1,230	1,660
Lewis	940	1,040	1,120	1,190	1,260	1,310	1,430	1,600	1,370	1,100	1,120	1,030	1,210
Lincoln	550	600	680	650	690	720	770	890	800	680	630	600	690
Mason	460	480	510	530	560	610	620	610	550	580	590	610	560
Okanogan	3,370	3,820	4,590	4,770	4,920	6,980	11,840	8,250	9,770	10,240	4,320	3,610	6,370
Pacific	300	320	350	380	390	400	420	400	380	370	310	290	360
Pend Oreille	110	130	140	140	160	170	180	160	150	130	120	110	140
San Juan	150	160	180	190	200	210	210	200	190	170	150	150	180
Skagit	2,400	2,940	3,050	3,000	3,000	3,110	4,480	4,330	4,010	3,270	2,520	2,470	3,210
Skamania	80	80	90	90	100	100	90	90	90	100	70	70	90
Stevens	490	550	650	700	740	790	810	770	690	600	540	490	650
Wahkiakum	50	50	60	60	70	70	70	70	60	50	50	50	60
Walla Walla	2,670	2,800	3,230	3,160	3,250	5,310	5,940	4,650	4,920	5,000	3,680	2,120	3,890
Whitman	860	940	1,050	1,050	1,110	1,170	1,230	1,380	1,180	1,070	950	940	1,080

Notes: MSA = Metropolitan Statistical Area

MD = Metropolitan Division

*Total agricultural employment includes unemployment insurance-covered employment plus noncovered employment, not adjusted for multiple jobholders.

Appendix Figure 2-2

Employment of Covered Seasonal Workers by Crop and by Agricultural Reporting Areas
Washington State, 2010

Source: Employment Security Department/LMEA, Agricultural Labor Employment and Wages

WASHINGTON STATE													
ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
State Totals	19,159	21,526	24,255	26,892	26,782	56,571	84,214	55,795	64,052	56,254	23,187	13,802	39,374
Apples, Total	10,500	10,094	10,133	9,874	8,832	25,190	23,823	21,687	42,005	43,498	14,693	6,574	18,909
Apple Pruning	9,935	8,713	7,327	3,815	1,386	514	1,049	4,826	138	*	1,261	4,877	3,654
Apple Thinning	*	0	63	2,966	1,909	21,037	18,765	5,701	114	*	*	*	4,216
Apple Harvester	0	0	0	0	0	0	0	4,030	38,440	41,661	10,719	0	7,904
Apple Sort, Grade, Pack	325	368	376	134	86	88	911	119	416	510	325	431	341
Other Apple Activities	229	1,013	2,367	2,959	5,451	3,551	3,098	7,011	2,897	1,309	2,382	1,259	2,794
Cherries, Total	2,172	2,081	2,471	2,373	2,048	14,983	38,178	9,248	108	101	372	424	6,213
Cherry Pruning	1,740	1,806	1,753	874	232	449	37	81	*	*	138	354	623
Cherry Harvester	0	0	0	0	0	11,824	31,492	5,180	0	0	0	0	4,041
Other Cherry Activities	432	275	718	1,499	1,816	2,710	6,649	3,987	104	96	234	70	1,549
Pears, Total	1,454	913	943	723	623	1,928	1,035	4,167	6,124	1,009	365	1,173	1,705
Pear Pruning	1,217	855	838	411	178	199	242	159	73	0	244	1,153	464
Pear Thinning	0	0	0	41	252	1,478	412	104	0	0	0	0	191
Pear Harvester	0	0	0	0	0	0	103	3,243	5,511	850	0	0	809
Other Pear Activities	237	58	105	271	193	251	278	661	540	159	121	20	241
Other Tree Fruit Workers	161	409	562	682	803	554	564	1,483	393	32	157	237	503
Grape Workers	1,006	2,432	2,930	2,708	2,125	1,549	1,605	1,358	1,450	1,389	1,366	682	1,717
Blueberry Workers	185	72	81	119	55	59	778	2,862	982	591	92	118	500
Raspberry Workers	695	627	260	220	232	1,116	2,342	1,414	317	353	498	659	728
Strawberry Workers	*	57	54	120	89	869	3,047	141	18	*	16	0	368
Bulb Workers**	0	0	0	0	0	0	0	0	0	0	0	0	0
Hop Workers	100	98	329	403	1,006	746	541	316	2,166	136	430	142	534
Nursery Workers	451	1,196	2,039	2,015	2,023	1,564	1,362	1,206	953	584	1,021	1,064	1,290
Wheat/Grain Workers	108	104	288	247	373	559	713	1,383	604	342	188	91	417
Asparagus Workers	0	*	*	1,676	2,370	1,394	83	*	*	0	0	0	462
Cucumber Workers	0	0	0	0	0	0	0	33	*	*	0	0	*
Onion Workers	542	723	851	979	543	653	1,742	1,166	930	1,058	544	480	851
Potato Workers	524	399	718	706	467	323	469	1,471	2,081	2,328	856	609	913
Misc. Vegetable Workers	196	195	313	686	676	1,009	1,980	3,319	2,557	1,883	1,032	609	1,205
Other Seasonal Workers	1,062	2,124	2,282	3,361	4,517	4,075	5,952	4,534	3,338	2,932	1,557	940	3,056

Notes: *Not published due to lack of statistical significance or to ensure employer's confidentiality.

**The 2007 conversion from SIC to NAICS industry codes placed bulb growers into the nursery sector.

Appendix Figure 2-2, continued

WESTERN AREA 1													
ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Total	1,900	2,351	2,803	3,161	3,330	4,420	8,483	7,686	4,548	3,495	2,050	2,150	3,865
Blueberry Workers	185	72	81	119	55	59	778	2,862	982	591	92	118	500
Raspberry Workers	695	627	260	220	232	1,116	2,342	1,414	317	353	498	659	728
Strawberry Workers	0	57	54	120	70	781	2,690	52	*	*	*	0	321
Bulb Workers**	0	0	0	0	0	0	0	0	0	0	0	0	0
Cucumber Workers	0	0	0	0	0	0	0	33	*	*	0	0	*
Potato Workers	245	141	165	192	92	59	22	26	306	522	311	201	190
Misc. Vegetable Workers	111	189	293	506	508	568	890	1,364	1,070	713	185	112	542
Nursery Workers	404	960	1,669	1,643	1,638	1,333	1,180	971	752	468	609	807	1,036
Rhubarb Workers	0	0	0	44	53	131	51	81	*	*	0	0	31
Other Seasonal Workers	260	305	281	317	682	373	530	883	1,093	824	341	253	512

Notes: *Not published due to lack of statistical significance or to ensure employer's confidentiality.

**The 2007 conversion from SIC to NAICS industry codes placed bulb growers into the nursery sector.

Appendix Figure 2-2, continued

SOUTH CENTRAL AREA 2													
ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Total	5,857	6,021	6,677	6,908	7,770	16,682	22,657	14,804	19,317	16,423	7,064	3,520	11,142
Apples, Total	3,944	2,946	2,736	2,101	2,348	7,276	6,739	4,807	12,425	14,075	5,142	2,258	5,566
Apple Pruning	3,649	2,462	2,090	1,006	226	223	280	583	43	0	471	1,223	1,021
Apple Thinning	0	0	0	327	503	6,007	5,647	1,953	0	0	0	0	1,203
Apple Harvester	0	0	0	0	0	0	0	1,343	11,763	13,737	3,185	0	2,502
Apple Sort, Grade, Pack	226	145	125	87	86	88	150	119	143	175	73	165	132
Other Apple Activities	69	339	521	681	1,533	958	662	809	476	163	1,413	870	708
Cherries, Total	283	515	812	545	456	5,415	12,211	3,497	37	*	89	184	2,004
Cherry Pruning	215	420	427	129	87	347	0	0	0	0	28	131	149
Cherry Harvester	0	0	0	0	0	2,894	7,839	1,455	0	0	0	0	1,016
Other Cherry Activities	68	95	385	416	369	2,174	4,372	2,042	37	*	61	53	840
Pears, Total	722	283	280	336	193	281	249	2,682	2,082	93	147	288	636
Pear Pruning	654	276	273	311	158	152	*	*	0	0	66	288	183
Pear Thinning	0	0	0	0	*	109	149	52	0	0	0	0	26
Pear Harvester	0	0	0	0	0	0	64	2,555	1,921	*	0	0	380
Other Pear Activities	68	*	*	25	30	20	29	69	161	77	81	0	48
Other Tree Fruit, Total	41	334	458	477	27	*	134	339	42	0	0	0	156
Other Tree Fruit Pruner	0	334	436	430	0	0	0	0	0	0	0	0	100
Other Tree Fruit Harvester	0	0	0	0	0	0	53	339	42	0	0	0	36
Other Tree Fruit Activities	41	0	22	47	27	*	81	0	0	0	0	0	20
Grapes, Total	519	1,187	1,326	986	747	763	669	808	567	623	530	399	760
Grape Pruning	454	1,088	1,024	365	114	*	*	*	*	*	*	264	281
Grape Harvester	0	0	0	0	0	0	0	0	416	483	185	0	99
Other Grape Activities	65	99	302	621	633	748	661	797	139	137	327	135	389
Asparagus Workers	0	0	0	777	1,227	669	63	*	*	0	0	0	229
Hops, Total	100	98	329	396	925	735	537	314	2,166	136	429	142	526
Hop Twining and Training	67	0	35	248	705	633	0	0	0	0	0	0	141
Hop Harvester	0	0	0	0	0	0	0	200	2,097	51	0	0	196
Other Hop Activities	33	98	294	148	220	102	537	114	69	85	429	142	189
Onion Workers	*	0	0	0	0	38	64	73	220	181	0	*	50
Potato Workers	41	0	0	0	0	44	164	305	295	89	0	*	80
Misc. Vegetable Workers	57	0	0	71	57	262	644	883	746	564	308	63	305
Other Seasonal Workers	133	658	736	1,219	1,790	1,182	1,183	1,094	731	654	419	158	830

Note: *Not published due to lack of statistical significance or to ensure employer's confidentiality.

Appendix Figure 2-2, continued

NORTH CENTRAL AREA 3													
ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Total	3,400	4,207	5,015	4,934	4,401	12,353	26,961	15,194	16,858	14,735	3,756	2,344	9,513
Apples, Total	1,757	2,552	3,233	2,917	2,859	7,260	8,567	7,415	12,619	13,438	3,145	1,206	5,581
Apple Pruning	1,629	1,927	2,139	219	789	6,114	431	2,755	27	0	394	917	983
Apple Thinning	*	0	0	0	0	0	5,944	1,358	55	*	*	*	1,209
Apple Harvester	0	0	0	47	0	0	0	179	10,524	12,427	1,986	0	2,093
Apple Sort, Grade, Pack	99	223	251	1,402	1,780	1,111	761	0	273	335	252	266	209
Other Apple Activities	*	402	843	1,261	760	2,455	1,431	3,123	1,740	670	507	*	1,087
Cherries, Total	907	860	924	682	57	94	15,617	5,509	27	*	237	117	2,391
Cherry Pruning	643	748	757	0	0	1,998	28	*	0	0	87	114	269
Cherry Harvester	0	0	0	579	703	363	13,701	3,725	0	0	0	0	1,619
Other Cherry Activities	264	112	167	385	422	1,606	1,888	1,768	27	*	150	*	504
Pears, Total	667	622	658	100	20	47	786	1,410	3,910	916	213	885	1,040
Pear Pruning	563	579	565	41	247	1,369	235	153	73	0	178	865	282
Pear Thinning	0	0	0	0	0	0	263	52	0	0	0	0	164
Pear Harvester	0	0	0	244	155	190	39	688	3,590	834	0	0	429
Other Pear Activities	104	43	93	81	89	147	249	517	247	82	35	20	165
Other Tree Fruit Workers	0	38	47	290	271	885	120	311	*	*	30	49	79
Other Seasonal Workers	69	135	153	265	247	725	1,871	549	283	346	131	87	423

Note: *Not published due to lack of statistical significance or to ensure employer's confidentiality.

Appendix Figure 2-2, continued

COLUMBIA BASIN AREA 4													
ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Total	2,883	3,268	3,538	5,434	4,845	8,130	9,417	7,396	9,862	9,744	4,295	2,224	5,920
Apples, Total	1,977	2,002	1,750	2,946	2,125	4,131	3,098	4,238	7,743	7,427	2,770	1,314	3,460
Apple Pruning	1,956	1,877	1,055	503	696	224	336	1,396	43	*	191	1,306	799
Apple Thinning	0	0	22	1,906	310	3,716	2,301	1,482	*	0	0	0	812
Apple Harvester	0	0	0	0	0	0	0	154	7,407	7,187	2,383	0	1,428
Other Apple Activities	21	125	673	537	1,119	191	461	1,206	283	236	196	*	421
Cherries, Total	299	239	330	127	146	1,621	4,060	79	*	*	*	94	587
Cherry Pruning	244	202	248	34	44	0	0	63	0	0	*	90	78
Cherry Harvester	0	0	0	0	0	1,574	3,972	0	0	0	0	0	462
Other Cherry Activities	55	37	82	93	102	47	88	*	*	*	0	*	46
Pear Workers	65	*	*	*	*	41	0	75	132	0	*	0	28
Mint Workers	0	0	0	0	107	26	27	0	20	0	0	0	*
Other Tree Fruit Workers	0	*	28	97	68	108	128	119	21	*	127	*	61
Asparagus Workers	0	0	0	383	474	400	0	0	0	0	0	0	105
Onion Workers	178	263	233	280	145	312	411	175	177	382	183	140	240
Potatoes, Total	46	34	224	370	176	83	193	625	780	1,120	418	253	360
Potato Harvester	0	0	0	0	0	0	0	71	180	238	0	0	41
Potato Sort, Grade, Pack	30	0	137	155	0	21	27	384	335	449	293	150	165
Other Potato Activities	*	*	87	215	176	62	166	170	265	433	125	103	154
Misc. Vegetable Workers	*	*	20	*	37	33	122	943	*	*	*	*	101
Wheat/Grain Workers	*	*	145	83	218	261	162	276	138	84	57	*	122
Nursery Workers	*	0	24	23	55	51	42	52	69	0	286	196	67
Other Seasonal Workers	297	694	779	1,104	1,286	1,063	1,174	814	760	686	427	197	773

Note: *Not published due to lack of statistical significance or to ensure employer's confidentiality.

Appendix Figure 2-2, continued

SOUTHEASTERN AREA 5													
ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Total	4,867	5,296	5,706	5,862	5,903	14,430	15,994	9,572	12,686	11,295	5,741	3,350	8,392
Apples, Total	2,822	2,594	2,414	1,910	1,500	6,523	5,419	5,227	9,218	8,558	3,636	1,796	4,301
Apple Pruning	2,701	2,447	2,043	1,057	174	32	*	92	25	0	205	1,431	851
Apple Thinning	0	0	41	514	307	5,200	4,873	908	49	*	0	0	992
Apple Harvester	0	0	0	0	0	0	0	2,354	8,746	8,310	3,165	0	1,881
Other Apple Activities	121	147	330	339	1,019	1,291	544	1,873	398	240	266	365	578
Cherries, Total	683	467	405	440	686	5,492	6,290	163	29	59	34	29	1,231
Cherry Pruning	638	436	321	29	44	*	*	*	*	*	*	*	127
Cherry Harvester	0	0	0	0	0	5,358	5,980	0	0	0	0	0	945
Other Cherry Activities	45	31	84	411	642	126	301	161	25	54	23	*	159
Other Tree Fruit Workers	120	27	29	27	619	282	182	714	311	0	0	178	207
Grape Workers	487	1,245	1,604	1,722	1,378	786	936	550	883	766	836	283	956
Asparagus Workers	0	*	*	516	669	325	20	*	*	0	0	0	129
Hop Workers	0	0	0	*	81	*	*	*	0	0	*	0	*
Onion Workers	347	460	618	699	398	303	1,267	918	533	495	361	329	561
Potatoes, Total	192	224	329	144	199	137	90	515	700	597	127	138	283
Potato Harvester	0	0	0	0	0	*	0	102	139	184	0	0	36
Potato Sort, Grade, Pack	147	174	203	0	122	0	0	371	143	171	87	116	128
Other Potato Activities	45	50	126	144	77	137	90	42	418	242	40	22	119
Misc. Vegetable Workers	26	0	0	46	21	*	273	48	728	583	529	431	225
Wheat/Grain Workers	26	38	46	*	39	117	257	370	76	70	29	*	92
Nursery Workers	*	*	22	27	34	*	56	91	23	28	*	*	27
Strawberry Workers	*	0	0	0	*	88	357	89	*	*	*	0	48
Other Seasonal Workers	160	229	238	305	260	336	843	880	169	136	183	145	324

Note: *Not published due to lack of statistical significance or to ensure employer's confidentiality.

EASTERN AREA 6													
ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Total	252	383	516	593	533	556	702	1,143	781	562	281	214	543
Wheat/Grain, Total	71	54	97	145	116	181	294	737	390	188	102	63	203
Wheat/Grain Harvester	0	0	0	0	0	0	84	417	144	*	0	0	55
Wheat/Grain Equipment Operator	0	*	24	48	27	21	61	240	162	62	*	*	56
Other Wheat/Grain Activities	71	45	73	97	89	160	149	80	84	107	90	59	92
Nursery Workers	38	226	324	322	296	165	84	92	109	88	123	51	160
Other Seasonal Workers	143	103	95	126	121	210	324	314	282	286	56	100	180

Note: *Not published due to lack of statistical significance or to ensure employer's confidentiality.

Appendix Figure 3-1

Continued Claims for Unemployment Compensation, Agriculture, Monthly Data Unduplicated by Individual
Washington State, 2007 through 2010

Source: Employment Security Department/LMEA, UI Data Warehouse, Continued Claims Table

MONTH	CALENDAR YEAR			
	2007	2008	2009	2010
January	5,494	5,044	5,851	8,127
February	4,006	4,197	4,462	6,533
March	3,398	3,131	4,468	5,590
April	3,447	3,465	3,984	5,544
May	2,987	3,230	3,755	5,366
June	2,259	3,202	3,062	4,458
July	1,760	2,012	2,210	3,259
August	2,821	3,396	4,840	4,891
September	1,127	1,637	2,747	2,624
October	1,479	1,282	3,010	2,438
November	3,965	4,150	6,465	5,952
December	4,970	5,672	7,816	7,063

Appendix Figure 3-2

Continued Claims for Unemployment Compensation, Nonagriculture, Monthly Data Unduplicated by Individual
Washington State, 2007 through 2010

Source: Employment Security Department/LMEA, UI Data Warehouse, Continued Claims Table

MONTH	CALENDAR YEAR			
	2007	2008	2009	2010
January	85,703	89,849	171,486	191,984
February	73,846	86,655	171,748	173,604
March	70,304	84,569	188,022	168,366
April	67,874	77,977	184,829	154,799
May	56,967	73,064	182,311	141,985
June	53,476	74,692	177,174	131,723
July	56,791	72,126	170,993	120,642
August	51,418	74,081	169,205	116,973
September	51,392	77,627	157,879	108,591
October	56,085	89,053	158,101	110,847
November	64,981	112,982	175,212	121,010
December	82,568	149,278	182,488	131,802

Appendix Figure 3-3

Peak Employment Months for the Seasonal Surge in the Demand for Labor, Selected Counties, MDs and MSAs

Washington State, 2007 through 2010

Source: Employment Security Department/LMEA, Resident Civilian Labor Force and Employment, Benchmarked First Quarter 2010

AGRICULTURAL AREA	CALENDAR YEAR			
	2007	2008	2009	2010
January	5,494	5,044	5,851	8,127
February	4,006	4,197	4,462	6,533
March	3,398	3,131	4,468	5,590
April	3,447	3,465	3,984	5,544
May	2,987	3,230	3,755	5,366
June	2,259	3,202	3,062	4,458
July	1,760	2,012	2,210	3,259
August	2,821	3,396	4,840	4,891
September	1,127	1,637	2,747	2,624
October	1,479	1,282	3,010	2,438
November	3,965	4,150	6,465	5,952
December	4,970	5,672	7,816	7,063

Notes: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.

The data reported in this figure are probabilities of statistical significance based on two-tailed t-tests.

N.S. = Not statistically significant.

Appendix Figure 4-1

Two-tailed t-Tests, Average Quarterly Hours Worked per Worker per Firm by Selected Animal Production Subsectors
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

NAICS	SUBSECTOR DESCRIPTION	2006 VS 2007	2006 VS 2008	2006 VS 2009	2006 VS 2010	2007 VS 2008	2007 VS 2009	2007 VS 2010	2008 VS 2009	2008 VS 2010	2009 VS 2010
112111 and 112112	Beef – Cattle and Calves	N.S.	N.S.	N.S.	0.045058	N.S.	N.S.	0.045742	N.S.	N.S.	N.S.
112120	Dairy	N.S.	N.S.	0.04164	0.015822	N.S.	N.S.	0.001351	N.S.	0.0014	N.S.
1123	Poultry and Eggs	N.S.									
1125	Aquaculture	N.S.									
111, 112, 1151 and 1152	All Other Agriculture*	N.S.	0.001236	0.0000559	2.95E-09	N.S.	0.01794	0.00002	N.S.	0.006734	N.S.

Notes: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.
The data reported in this figure are probabilities of statistical significance based on two-tailed t-tests.
N.S. = Not statistically significant.

Appendix Figure 4-2

Two-tailed t-Tests, Before-tax Average Hourly Earnings by Selected Animal Production Subsectors, Current Dollars
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

NAICS	SUBSECTOR DESCRIPTION	2006 VS 2007	2006 VS 2008	2006 VS 2009	2006 VS 2010	2007 VS 2008	2007 VS 2009	2007 VS 2010	2008 VS 2009	2008 VS 2010	2009 VS 2010
112111 and 112112	Beef – Cattle and Calves	0.002095	2.45E-04	3.36E-07	1.33E-04	N.S.	3.74E-02	N.S.	N.S.	0.000133	N.S.
112120	Dairy	0.003973	4.92E-08	1.87E-06	1.23E-03	8.49E-03	4.36E-02	N.S.	N.S.	N.S.	N.S.
1123	Poultry and Eggs	N.S.	N.S.	0.0288	N.S.						
1125	Aquaculture	N.S.	0.0057	0.0084	3.27E-03	0.0376	N.S.	2.35E-02	N.S.	N.S.	N.S.
111, 112, 1151 and 1152	All Other Agriculture*	2.54E-16	1.29E-49	4.55E-81	1.2E-57	3.49E-11	3.42E-29	1.02E-15	0.00000137	N.S.	0.001212

Notes: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.
The data reported in this figure are probabilities of statistical significance based on two-tailed t-tests.
N.S. = Not statistically significant.

Appendix Figure 4-3

Two-tailed t-Tests, Before-tax Average Hourly Earnings by Selected Animal Production Subsectors, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

NAICS	SUBSECTOR DESCRIPTION	2006 VS 2007	2006 VS 2008	2006 VS 2009	2006 VS 2010	2007 VS 2008	2007 VS 2009	2007 VS 2010	2008 VS 2009	2008 VS 2010	2009 VS 2010
112111 and 112112	Beef – Cattle and Calves	0.038646	0.042547	0.014345	N.S.						
112120	Dairy	N.S.	0.002912	N.S.	N.S.	N.S.	N.S.	N.S.	0.02932	0.001445	N.S.
1123	Poultry and Eggs	N.S.									
1125	Aquaculture	N.S.	0.0311	N.S.							
111, 112, 1151 and 1152	All Other Agriculture*	0.000023	2.41E-17	7.85E-19	0.00000209	0.0000254	0.00000245	N.S.	N.S.	0.000324	0.0000401

Notes: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.
The data reported in this figure are probabilities of statistical significance based on two-tailed t-tests.
N.S. = Not statistically significant.

Appendix Figure 4-4

Two-tailed t-Tests, Average Quarterly Hours Worked per Worker per Firm, by Selected Animal Production Subsectors Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

SUBSECTOR DESCRIPTION	2006	2007	2008	2009	2010
Beef vs Dairy	0.000000158	0.000000642	0.0000304	7.15E-08	0.00001392
Beef vs Poultry and Eggs	N.S.	N.S.	N.S.	N.S.	N.S.
Beef vs Aquaculture	N.S.	N.S.	0.017235	0.021167	0.017792
Dairy vs Poultry and Eggs	N.S.	N.S.	N.S.	N.S.	N.S.
Dairy vs Aquaculture	0.000365	0.000329	N.S.	0.000136	0.0505057
Poultry and Eggs vs Aquaculture	N.S.	N.S.	0.022842	N.S.	N.S.
All Other Agriculture* vs Beef	9.17E-13	8.84E-12	5.51E-12	1.38E-10	7.28E-13
All Other Agriculture* vs Dairy	2.30E-54	8.46E-53	3.16E-50	4.42E-52	5.45E-47
All Other Agriculture* vs Poultry and Eggs	0.00205749	0.0000401	0.00313532	N.S.	0.000281
All Other Agriculture* vs Aquaculture	N.S.	N.S.	N.S.	N.S.	0.001228

Notes: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.
The data reported in this figure are probabilities of statistical significance based on two-tailed t-tests.
N.S. = Not statistically significant.

Appendix Figure 4-5

Two-tailed t-Tests, Before-tax Average Hourly Earnings by Selected Animal Production Subsectors, Current Dollars
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

SUBSECTOR DESCRIPTION	2006	2007	2008	2009	2010
Beef vs Dairy	8.9E-17	8.5E-14	4.39E-17	1.7E-11	4.33E-11
Beef vs Poultry and Eggs	0.00000529	8.43E-10	2.52E-08	0.0000601	0.000319
Beef vs Aquaculture	0.037493	0.000942	N.S.	N.S.	N.S.
Dairy vs Poultry and Eggs	4.63E-09	3.5E-10	3.49E-11	0.0000495	0.0000011
Dairy vs Aquaculture	0.000211	0.000038	0.007484	0.013345	0.022925
Poultry and Eggs vs Aquaculture	0.0000489	0.0000813	0.0000032	0.000734	0.000128
All Other Agriculture* vs Beef	2.75E-58	3.51E-74	3.36E-84	3.64E-71	4.23E-71
All Other Agriculture* vs Dairy	1.81E-77	3.05E-88	4.77E-101	5.32E-81	2.01E-81
All Other Agriculture* vs Poultry and Eggs	1.33E-14	9.50E-23	2.61E-22	1.22E-20	3.03E-19
All Other Agriculture* vs Aquaculture	1.13E-17	6.15E-27	1.38E-26	2.39E-24	5.79E-23

Notes: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.
The data reported in this figure are probabilities of statistical significance based on two-tailed t-tests.
N.S. = Not statistically significant.

Appendix Figure 4-6

Two-tailed t-Tests, Before-tax Average Hourly Earnings by Selected Animal Production Subsectors, Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File

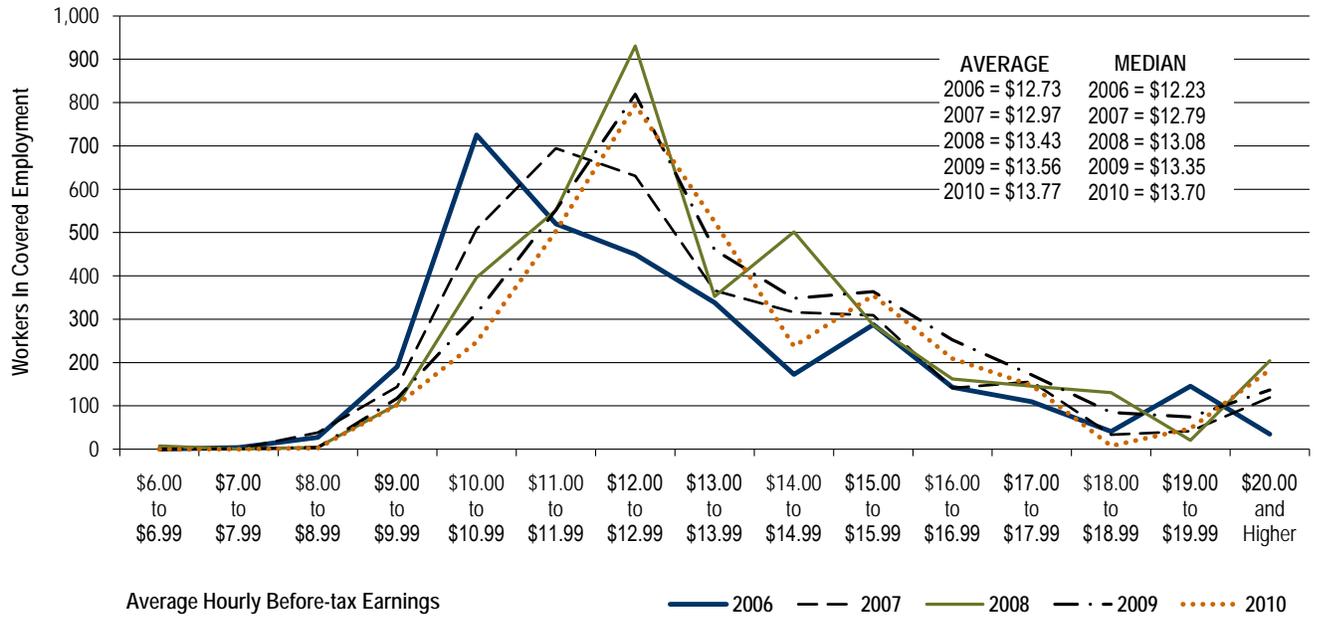
SUBSECTOR DESCRIPTION	2006	2007	2008	2009	2010
Beef vs Dairy	8.9E-17	8.5E-14	4.39E-17	1.7E-11	4.33E-11
Beef vs Poultry and Eggs	0.00000529	8.43E-10	2.52E-08	0.0000601	0.000319
Beef vs Aquaculture	0.028755	0.000942	N.S.	N.S.	N.S.
Dairy vs Poultry and Eggs	4.63E-09	3.5E-10	3.49E-11	0.0000495	N.S.
Dairy vs Aquaculture	0.000136	0.000038	0.0007484	0.013345	0.022925
Poultry and Eggs vs Aquaculture	0.0000489	0.0000813	0.0000032	0.000734	0.000128
All Other Agriculture* vs Beef	2.75E-58	5.62E-74	3.36E-84	3.64E-71	4.23E-71
All Other Agriculture* vs Dairy	1.81E-77	3.05E-88	4.77E-101	0.002595496	0.000114
All Other Agriculture* vs Poultry and Eggs	4.61E-14	9.50E-23	2.61E-22	6.01351E-05	3.03E-19
All Other Agriculture* vs Aquaculture	1.13E-17	6.15E-27	1.38E-26	0.013345351	5.79E-23

Notes: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.
The data reported in this figure are probabilities of statistical significance based on two-tailed t-tests.
N.S. = Not statistically significant.

Appendix Figure 4-7

Average Hourly Before-tax Earnings, Dairy (NAICS 112120), Current Dollars
Washington State, 2006 through 2010

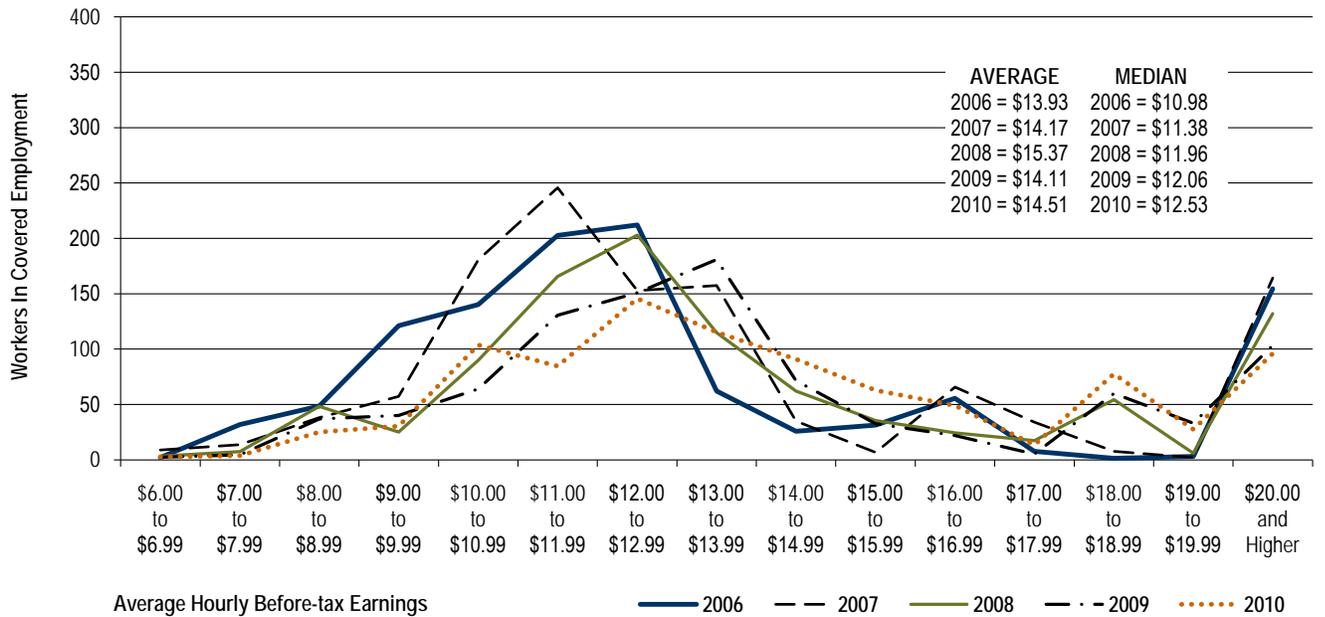
Source: Employment Security Department/LMEA, UI Wage File



Appendix Figure 4-8

Average Hourly Before-tax Earnings, Beef – Cattle and Calves (NAICS 112111 and 112112), Current Dollars
Washington State, 2006 through 2010

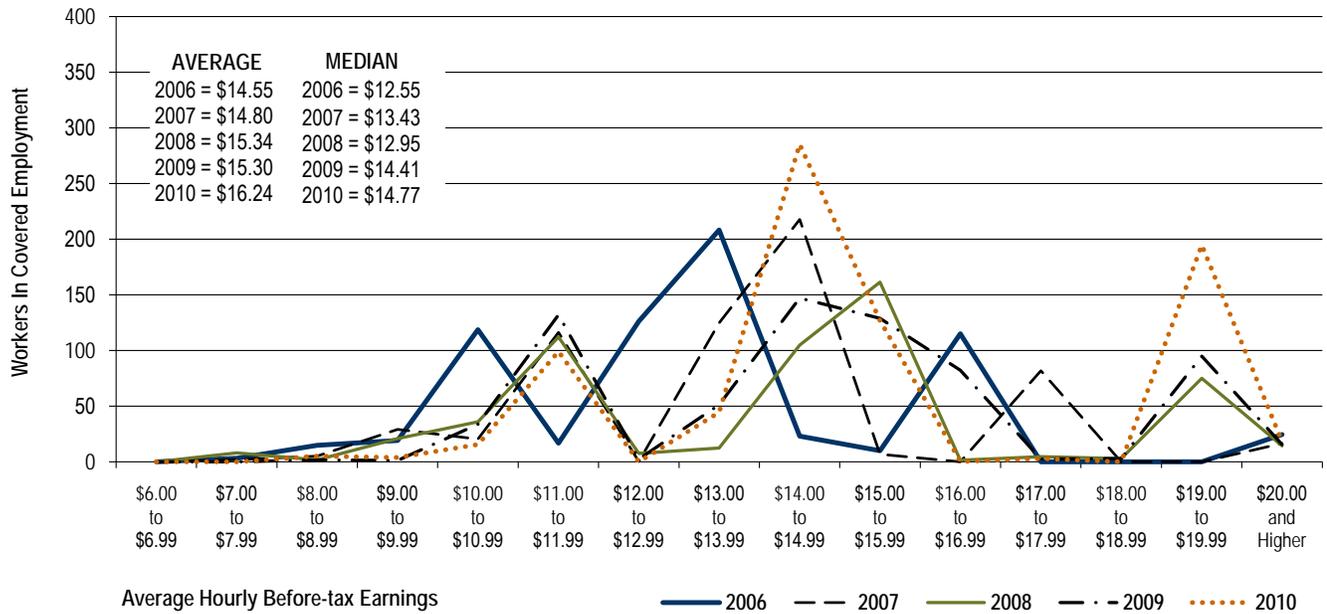
Source: Employment Security Department/LMEA, UI Wage File



Appendix Figure 4-9

Average Hourly Before-tax Earnings, Poultry and Eggs (NAICS 1123), Current Dollars
Washington State, 2006 through 2010

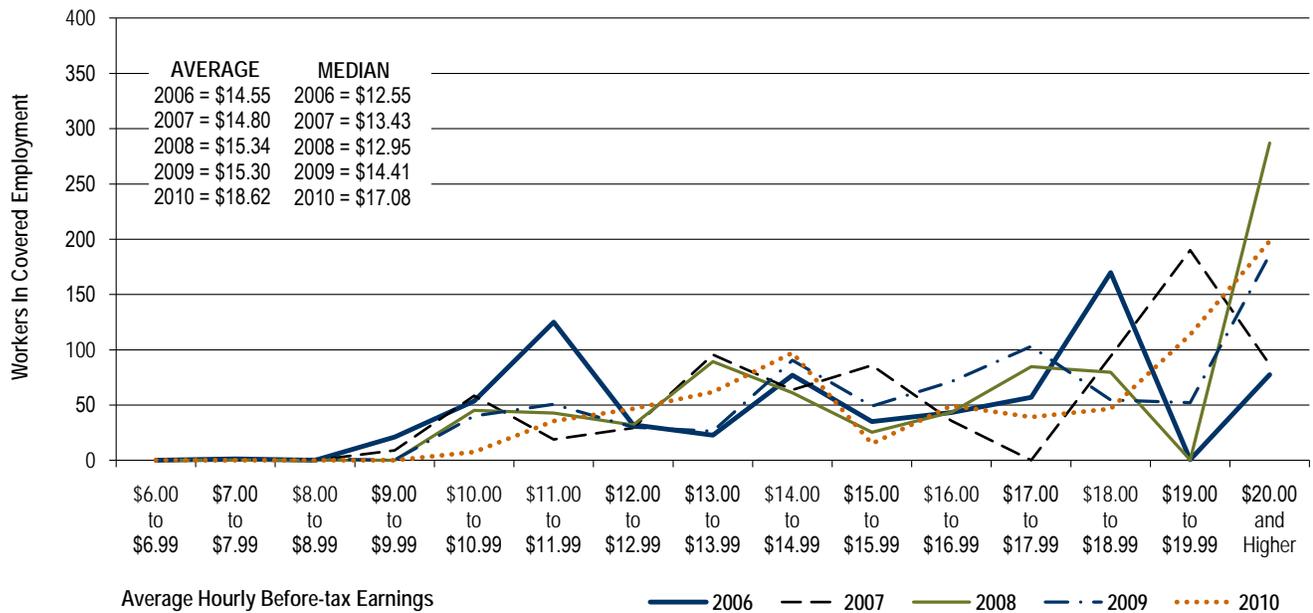
Source: Employment Security Department/LMEA, UI Wage File



Appendix Figure 4-10

Average Hourly Before-tax Earnings, Aquaculture (NAICS 1125), Current Dollars
Washington State, 2006 through 2010

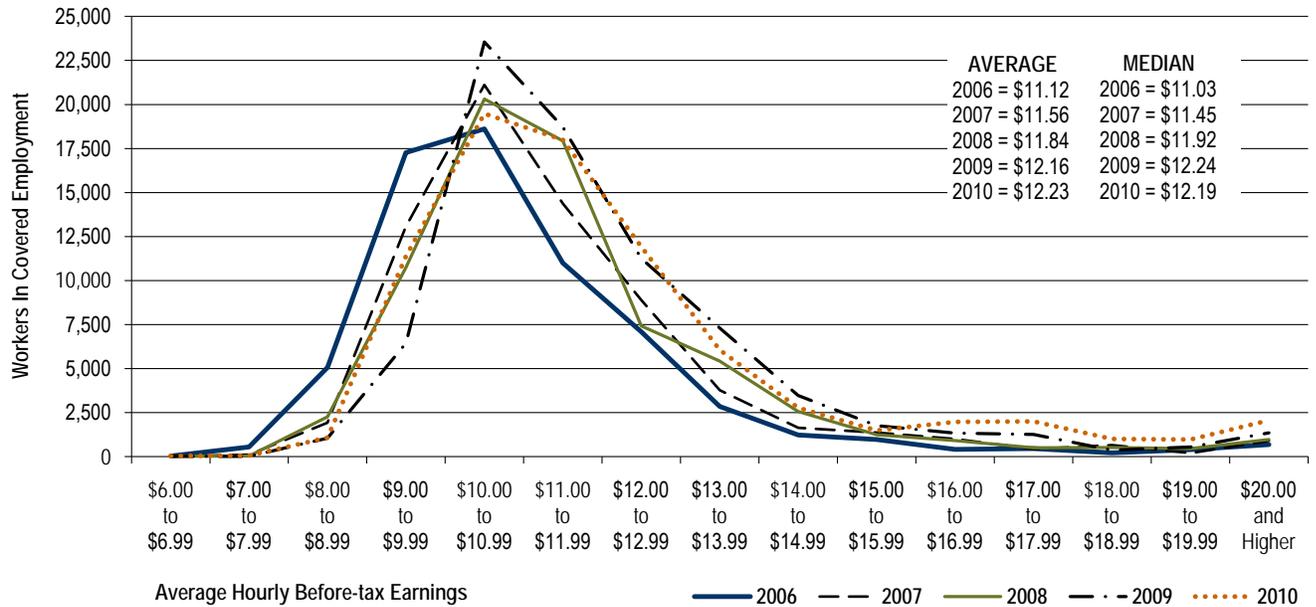
Source: Employment Security Department/LMEA, UI Wage File



Appendix Figure 4-11

Average Hourly Before-tax Earnings, All Agricultural NAICS less Beef, Dairy, Poultry and Eggs, and Aquaculture, Current Dollars
Washington State, 2006 through 2010

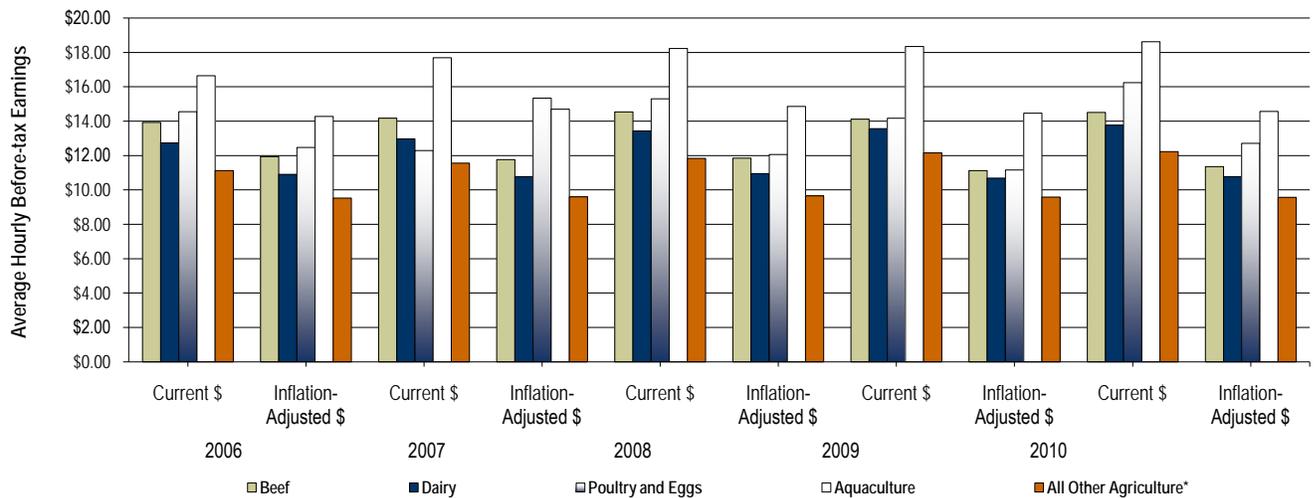
Source: Employment Security Department/LMEA, UI Wage File



Appendix Figure 4-12

Average Hourly Before-tax Earnings, Beef – Cattle and Calves (NAICS 112111 and 112112), Dairy (NAICS 112120), Poultry and Eggs (NAICS 1123) and Aquaculture (NAICS 1125), Current and Inflation-adjusted Dollars, Base Year 2000 = 100, CPI-W
Washington State, 2006 through 2010

Source: Employment Security Department/LMEA, UI Wage File



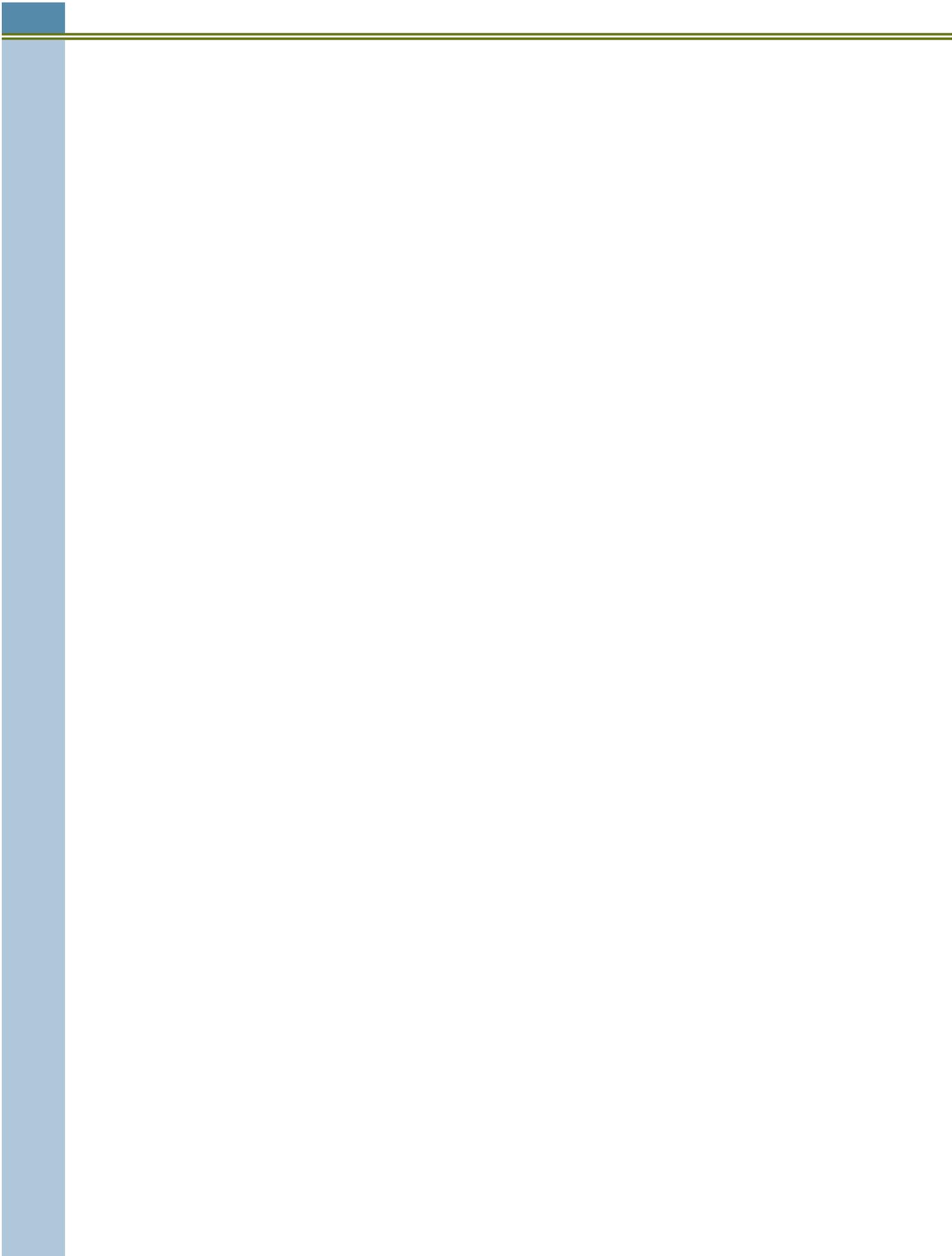
Notes: *All agriculture less beef, dairy, poultry and eggs, and aquaculture.

Appendix Figure 5-1

Cumulative Percent Change in Average Hourly Before-tax Earnings, Apples, Cherries and Pears, Base Year 2000 = 100, CPI-W Washington State, 1996 through 2010

Source: Employment Security Department/LMEA, UI Wage File

YEAR	APPLES PERCENT CHANGE CURRENT DOLLARS	APPLES PERCENT CHANGE INFLATION-ADJUSTED DOLLARS	CHERRIES PERCENT CHANGE CURRENT DOLLARS	CHERRIES PERCENT CHANGE INFLATION-ADJUSTED DOLLARS	PEARS PERCENT CHANGE CURRENT DOLLARS	PEARS PERCENT CHANGE INFLATION-ADJUSTED DOLLARS
1996	1.96%	-0.95%	0.11%	-2.69%	-6.70%	-9.42%
1997	5.88%	0.54%	10.02%	4.49%	-1.08%	-6.14%
1998	9.30%	2.15%	9.35%	2.19%	1.91%	-4.76%
1999	8.94%	-0.30%	9.46%	0.20%	-2.03%	-10.37%
2000	19.09%	5.40%	23.54%	9.37%	7.18%	-5.19%
2001	17.99%	1.58%	10.92%	-4.49%	12.08%	-3.60%
2002	20.32%	1.99%	21.51%	3.09%	13.28%	-4.02%
2003	19.34%	-1.94%	30.41%	7.18%	19.50%	-1.80%
2004	23.13%	-1.29%	27.59%	2.29%	17.58%	-5.82%
2005	26.19%	-1.86%	31.53%	2.29%	25.48%	-2.43%
2006	39.78%	6.05%	61.26%	22.33%	31.82%	-0.11%
2007	49.57%	9.95%	90.09%	39.78%	98.92%	19.79%
2008	49.20%	7.56%	85.59%	33.90%	60.89%	15.98%
2009	48.59%	3.67%	80.97%	26.22%	49.16%	4.02%
2010	45.65%	0.85%	48.31%	2.79%	42.46%	-1.38%



Glossary

Additional economic terms are defined in our online glossary at www.workforceexplorer.com.

Absolute advantage – The economic situation in which a person or firm requires fewer resources, such as labor hours, to produce a given amount of goods or services relative to some competitor. American agricultural workers, on the whole, have an absolute advantage in agriculture compared to China because the American farmworker produces over \$70,000 worth of output per year while the farmworker in China produces about \$3,000 worth of output per year.

Adverse Effect Wage Rate (AEWR) – Under the H-2A program, the hourly wage rate that must be paid for foreign contract laborers.

Appreciation of the U.S. dollar – The U.S. dollar is said to appreciate against the foreign currency of a particular trading partner when the dollar buys an increased quantity of the currency of the trading partner in question. Generally, appreciation of the U.S. dollar has a negative impact on U.S. exports, including agricultural exports, to other nations.

Comparative advantage – The economic situation in which an economic actor – a person, firm or trading nation – has a lower opportunity cost in producing a good or service compared to the opportunity cost of the good or service produced by one's trading partner. Consider the following simple example that assumes labor is the only factor of production used to produce two goods:

Trading Partner	Output in Pounds Achieved by One Hour of Labor	
	Apples	Avocados
Farmer A	15	10
Farmer B	4	2

Farmer A has an *absolute advantage* in producing apples and avocados, since Farmer A is absolutely more productive than Farmer B in producing both apples and avocados for a given hour of labor. However, it costs Farmer A 1.5 pounds of apples to produce 1 pound of avocados ($15/10 = 1.5$). This is the opportunity cost of producing apples – the quantity of avocados one has to give up in order to increase the production of apples by 1 pound. Yet the cost to Farmer A of producing 1 pound of apples is only $2/3$ of 1 pound of avocados ($10/15 = .667$). In contrast, it costs Farmer B 2 pounds of apples to produce 1 pound of avocados ($4/2 = 2$). Yet it costs Farmer B only $1/2$ ($2/4 = .5$) of 1 pound of avocados to produce 1 pound of apples. Farmer B produces avocados *relatively* cheaper in real terms than does Farmer A. Farmer A produces apples *relatively* cheaper than Farmer B. Farmer A will tend to specialize in apples and trade them for avocados produced by Farmer B. Farmer B will tend to specialize in avocado production and trade avocados for apples. The result will be an overall increase in the total production of apples and avocados. Each party to the trade can consume more of both apples and avocados.

Continued claims – Unemployment claims that are monetarily and nonmonetarily eligible and have received waiting period credit or payment for at least one week.

Current dollars or prices – The dollar value or price of a good or service that is not adjusted for inflation in the economy.

Depreciation of the U.S. dollar – The U.S. dollar is said to depreciate against a foreign currency of a particular trading partner when the dollar buys a decreased quantity of the currency of the trading partner in question. Generally, depreciation of the U.S. dollar has a positive effect on U.S. exports, including agricultural exports, to other nations.

Derived demand for labor – This concept recognizes the fact that the demand for labor is a direct function of the demand for a particular product or service produced by that labor.

Equilibrium – In economic terms, the equilibrium is the point at which the quantity supplied of a good or service, such as agricultural labor, is equal to the quantity demanded.

Foreign exchange rate – This is the price of one international currency in terms of another. This is also called the exchange rate.

Inflation-adjusted dollars or prices – The adjustment of the dollar value or price of a good or service to compensate for inflation. Adjusting for inflation allows comparisons in the real value of a good or service over time.

Loose labor market – A loose labor market is a labor market in which there are sufficient workers looking for work that an employer can hire the number of desired workers without having to increase the wage rate being offered.

Migrant agricultural worker – A person employed in agricultural work of a seasonal or other temporary nature who is required to be absent overnight from his or her permanent place of residence. Exceptions are immediate family members of an agricultural employer or a farm labor contractor, and temporary foreign workers. Temporary foreign workers are nonimmigrant aliens authorized to work in agricultural employment for a specified time period, normally less than a year.

NAICS – The North American Industry Classification System. A standardized system of classifying industries that allows comparable research and reporting by individual states and the federal government. For more information, go to <http://www.bls.gov/bls/naics.htm>.

Seasonal agricultural worker – A person employed in work of a seasonal or other temporary nature who is not required to be absent overnight from his or her permanent place of residence. The same exceptions listed above for migrant agricultural worker apply to the seasonal agricultural worker.

Seasonal hired worker – Any worker employed less than 150 calendar days during a calendar year.

Shortage of labor – There is no official definition of a labor shortage. Empirically, a labor shortage is the difference between the quantity of labor supplied and the quantity of labor demanded when the hourly wage rate (or its piece-rate equivalent) lies below the equilibrium wage rate – the wage rate that exactly balances the quantity supplied and the quantity demanded. The shortage concept can also be thought of as excess demand at the price or wage currently being offered. For this kind of shortage to exist, the wage rate offered must be below what workers are willing to accept. Increasing the wage rate will tend to eliminate the shortage.

Tight labor market – A tight labor market is a labor market in which there are relatively few workers looking for work at the wage rate currently offered, such that an employer can hire the number of desired workers only by increasing the wage rate offered.

Value added – In general, the difference between the price at which some quantity of output can be sold, such as a metric ton of apples, and the cost of all intermediate inputs used to produce that output. Gasoline and fertilizer would be intermediate inputs, but the labor of the agricultural producer and any hired labor is a contribution to value added.

Worker/Month – One worker employed in an occupation or activity for one month during a calendar year. Summing these for a calendar month yields the total number of workers employed in an activity in a given month. This is also called average monthly workers.

Worker/Year – The sum of all worker/months over a calendar year divided by 12. This is also called average worker year.