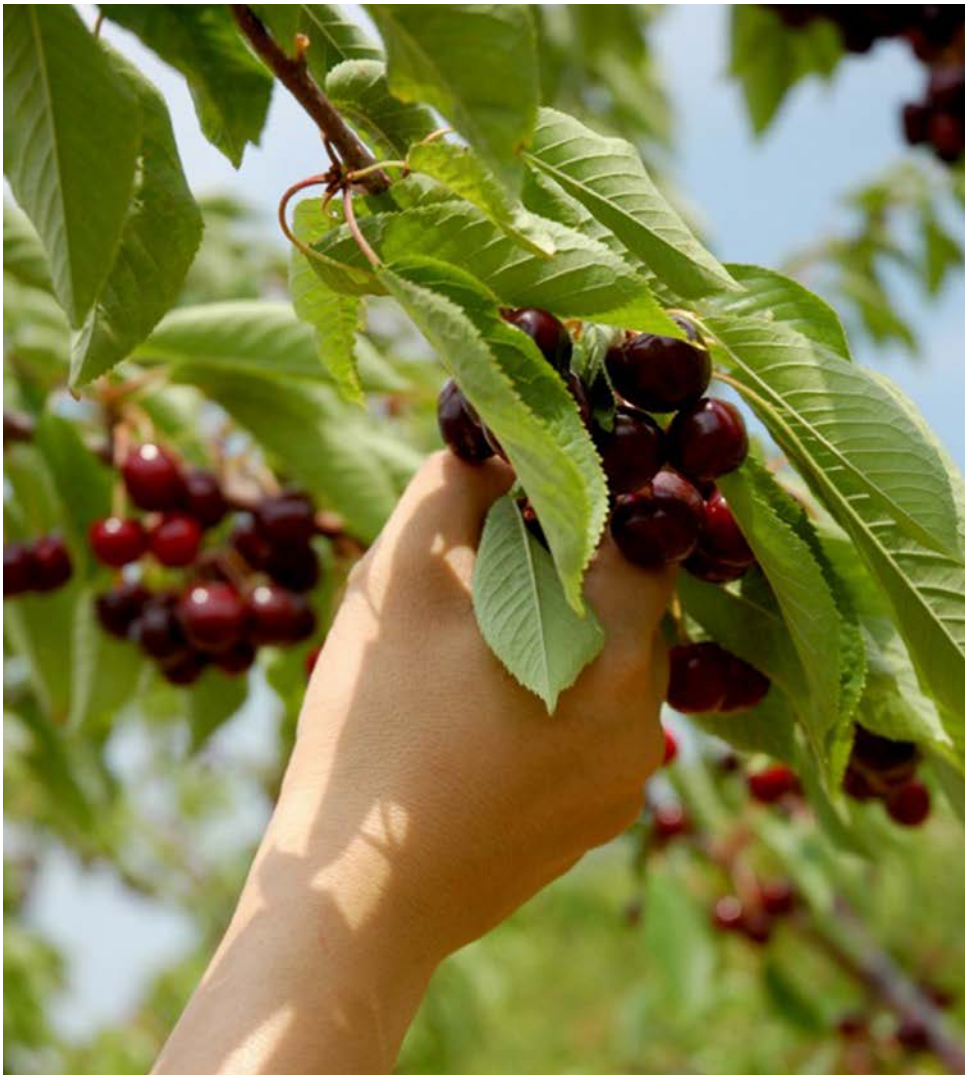
2013 AGRICULTURAL WORKFORCE



Agriculture economy
Employment and earnings
Agriculture labor market
H-2A and prevailing wages

Employment Security Department
WASHINGTON STATE

Labor Market and Performance Analysis
May 2015

2013 Agricultural Workforce Report

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This report was prepared in accordance with the Revised Code of Washington (RCW) 50.38.060.

This report and other agricultural and labor market information are available at www.esd.wa.gov/employmentdata or call our Labor Market Information Center at 800-215-1617.

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"Red and yellow cherries" Photo by ©Bigstock.com
"Pear bins" Photo by ©Lya Cattel/iStock.co

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Any remaining errors are the responsibility of the authors.

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Executive summary

Agricultural employment

Estimated average annual agricultural employment in Washington state increased from 2007 through 2013 by over 12 percent. A large portion of this growth was due to an increase in the demand for seasonal labor.

Tree fruit production drove most of the increases in both permanent and seasonal employment during this period, with the largest portion of jobs linked to apple production. The cherry harvest also created surges in seasonal employment during its peak months.

Average seasonal employment rose substantially from 2007 through 2013. However, seasonal labor needs fluctuated from year to year. For example, seasonal employment in 2011 averaged about 40,000 jobs, while it averaged about 44,000 jobs in 2012 and 38,000 jobs in 2013.

Hourly earnings in agriculture

In 2013, current-dollar average hourly earnings varied by agricultural subsector. At the low end, average earnings in the apple industry were slightly less than $13.00 per hour. At the high end wages were more than $21.00 per hour in support activities for animal production. Current-dollar median hourly earnings also varied by subsector in 2013. The grape industry registered the lowest median rate at $11.40 per hour and the wheat industry registered the highest median rate at $15.43 per hour.

From 2012 through 2013, current-dollar average hourly earnings increased in all subsectors except wheat and rose by nearly 9 percent for the industry as a whole. Current-dollar median hourly earnings for agriculture as a whole rose by about 2 percent from 2012 through 2013. That increase slightly outpaced inflation.

Average hourly earnings for apple, cherry and pear harvesting fluctuated from year to year but declined for all activities in inflation-adjusted terms from 2007 through 2013. Inflation-adjusted earnings for apple harvesters declined by more than 2 percent from 2007 through 2013. Inflation-adjusted average hourly earnings for cherry harvesters declined by more than 22 percent, while they decreased about 20 percent for pear harvesters during the same period.

Labor shortages and the demand for H-2A labor

There is no agreed-upon definition of a labor shortage in economics. However, information reported by Washington growers indicated that there was a generalized shortage of seasonal labor in 2013, with shortages exceeding 8 percent in June and September of that year.

One response to reported shortages among Washington growers has been an increase in the use of the U.S. Department of Labor's Temporary Agricultural Foreign Labor Certification (H-2A) Program. From 2006 through 2013, grower applications for H-2A labor rose by a factor of 5, and the number of certified workers increased by nearly a factor of 8.

From 2005 through 2013, the current-dollar Adverse Effect Wage Rate (AEWR) increased by more than 23 percent, while the inflation-adjusted AEWR increased by over 7 percent.

The current-dollar prevailing wage rates for apple, cherry and pear harvesting all increased from 2007 through 2013. Prevailing wages for apple harvesting increased by more than 29 percent for Golden Delicious apples and by more than 17 percent for Gala apples. For cherry harvesting, prevailing wages increased by 10 percent for both red and yellow varieties. For pear harvesting, prevailing wages increased by more than 23 percent for D'Anjous and by 25 percent for Bartletts.

Chapter 1: Washington's agricultural employment and average earnings

This chapter examines trends in employment and wages for agricultural workers in Washington state. It first covers changes in total employment, regional and seasonal employment patterns and employment patterns for different crops and activities. It then examines average hourly earnings and piece rates by activity and concludes with a summary of key findings.

Data and sources

Four main sources of information were used in this report. These sources have different population definitions and different definitions of key variables. As a result, point estimates for a given variable will change according to the source. However, observed trends are generally consistent among all the sources cited.

The Local Area Unemployment Statistics Program (LAUS) is the first source of information for this report. The U.S. Department of Labor's Bureau of Labor Statistics (BLS) produces LAUS in cooperation with the Washington State Employment Security Department (ESD). LAUS provides estimates of employment and unemployment rates for around 7,300 census regions, states, counties, metropolitan areas and cities. LAUS data come from household surveys that include individuals who are covered and those who are not covered by the unemployment insurance (UI) program.

The second source is the BLS' Quarterly Census of Employment and Wages (QCEW), which is also produced in cooperation with ESD. QCEW provides industry employment and wage data by worksite (i.e., employer location). QCEW data are based on quarterly tax reports from employers for workers covered by the UI program. Covered employment exceeds 85 percent of total employment in the state and includes all hired agricultural labor except small-farm operators, non-resident aliens, independent contractors and corporate officers.

The third source is the monthly Agriculture Employment and Wage Survey, which was conducted by ESD through April 2014. ESD surveyed more than 2,000 agricultural worksites where an employer hired at least one agricultural worker covered by the unemployment insurance program. The reporting period was the week that included the 12th day of each month. Employer worksites selected for the survey provided a monthly count of seasonal jobs by crop and agricultural activity (i.e., pruning) and the wage rates paid for each activity. Seasonal jobs are those jobs for which workers were employed for fewer than 150 days in a calendar year.

The fourth source is the Peak Employment Wage and Practices Surveys conducted by ESD on odd years from 2007 through 2013. These surveys collected piece and hourly wage rates paid to domestic workers during the peak season for apple thinning and apple, cherry and pear harvesting. The U.S. Department of Labor uses this information to establish prevailing piece and hourly wage rates for its Temporary Agricultural Foreign Labor Certification Program (H-2A).[1]

The growth of agricultural employment

Total agricultural employment has grown in Washington state during the past several years. In 2007, average annual employment in agriculture was 94,810 jobs.[2] In 2013, average annual employment was 106,620, which represents a 12.5 percent increase during this 7-year period (see *Appendix Figure A-3*).[3] Seasonal employment grew from an annual average of 31,843 jobs in 2007 to an annual average of 42,454 in 2013, an increase of 33.3 percent.[4] Thus, an increase in the demand for seasonal workers drove most of the growth in agricultural employment during the past several years.

Regional employment patterns in 2013

Washington state has diverse growing regions and climates. This diversity influences the timing and number of workers needed throughout the year and translates into different regional and county-level patterns of agricultural employment.

Tree fruit production is concentrated in the central portion of the state, which includes Kennewick-Pasco-Richland metropolitan statistical area (MSA), Yakima MSA, Wenatchee MSA and Grant and Okanagan counties. LAUS estimated that the average agricultural employment in these three MSAs was 55,590 jobs, which was 52.1 percent of the average state total in 2013. Adding the 11,110 and 6,320 jobs in Grant and Okanogan counties increases this proportion to 68.5 percent. Of the 106,620 average annual jobs, an average of 29,000, or 27.2 percent, were located in the Yakima MSA, comprised of Yakima, Kittitas, Klickitat and Skamania counties (see *Appendix Figure A-1* and *Appendix Figure A-3*).

In terms of agricultural reporting areas (see *Appendix Figure A-2* for a map of areas), Columbia Basin area 4 and Eastern area 6 are heavily devoted to hay, wheat, barley and legume production, such as dry edible peas and lentils. Production of these crops is capital and land intensive, meaning seasonal demand for labor is modest in these areas when compared to

[1] U.S. Department of Labor, Employment and Training Administration, H-2A Temporary Agricultural Program, Foreign Labor Certification, www.foreignlaborcert.doleta.gov/h-2a.cfm, accessed October 15, 2014.

[2] Washington State Employment Security Department, Labor Market and Economic Analysis, *2007 Agricultural Workforce in Washington State*, Appendix 4, page 66, June 2008.

[3] When reporting percentages, we observe the rule of *statistically significant digits*. This means that we only report the percent level, including digits to the right of the decimal point, which is supported by the statistical accuracy of the data at hand.

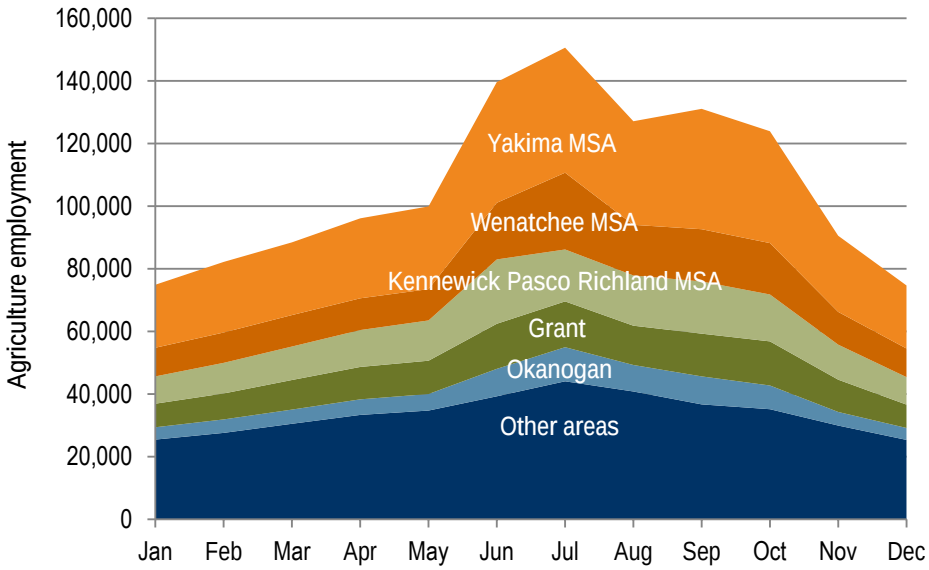
[4] For 2007 estimates, see Washington State Employment Security Department, Labor Market and Economic Analysis, *2007 Agricultural Workforce in Washington State*, Figure 10, page 11, June 2008. For 2013 estimates, see Appendix Figure A-4.

the state's central core. Spokane MSA, in Eastern area 6, had an average of 1,570 agricultural jobs over the year, ranging from its lowest level of 1,160 jobs in January to a peak of 1,870 jobs in June and July.

Figure 1-1 shows monthly estimates for agricultural jobs in 2013. These data are estimates from the LAUS program. LAUS estimates are not adjusted for multiple job holders and are different from the estimates described in the seasonal, nonseasonal and monthly employment sections, which resulted from the employment and wage survey.

Throughout the year, these areas produced between 66.0 and 72.0 percent of total agricultural employment in the state. The Yakima, Wenatchee and Kennewick-Pasco-Richland MSAs created more than half of all agricultural jobs during the year. Yakima MSA was the top contributor to agricultural employment, with 26.0 percent of total employment in August. Tree fruit production heavily influences seasonal and nonseasonal employment patterns in these regions, though hops production also influences employment patterns in the Yakima MSA. The rest of the state contributed between 34.8 and 28.0 percent of total agricultural employment in 2013.

Figure 1-1. Washington state agricultural employment and five geographic areas with the largest agricultural employment
Washington state, 2013
Source: Employment Security Department/LMPA; U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics



Over the growing and harvest seasons, the Yakima, Wenatchee and Kennewick-Pasco-Richland MSAs created more than half of all agricultural jobs. Tree fruit production is concentrated in these MSAs.

Seasonal and nonseasonal employment

Figure 1-2 shows seasonal, nonseasonal and total agricultural employment for 2012 and 2013. The data in this figure come from a monthly survey on seasonal employment and wages conducted by ESD and the Quarterly Census of Employment and Wages (QCEW).[5] The data show little month-to-month variation in nonseasonal employment, but show considerable variation in seasonal employment. In both 2012 and 2013, seasonal employment comprised almost half of the state's total agricultural employment.

Average monthly employment in a given region varies sharply in response to local crop profiles, crop varieties and annual weather patterns. As a result, growers face some degree of uncertainty about the timing and amount of labor needed, though there are general patterns that hold over time. For example, the first significant surge in seasonal labor usually begins sometime in June with the onset of the cherry harvest. This surge will generally peak in late June or early July with elevated levels of labor demand extending into August. A second surge linked to the harvest of pears and some apple varieties begins in August, with the apple harvest peaking in September or early October. The apple harvest can extend into November, weather permitting.

Seasonal employment trends during 2012 and 2013 were consistent with these historical patterns. In June, the start of the cherry harvest, estimated seasonal employment was 65,940 jobs in 2012 and 63,950 in 2013. In July, estimated seasonal employment was 94,976 in 2012 and 86,700 in 2013. Seasonal employment also spiked during the peak period for the pear and apple harvests. In 2012, estimated seasonal employment was 67,717 in September and 62,174 in October. In 2013, estimated seasonal employment was 69,770 in September and 56,850 in October.

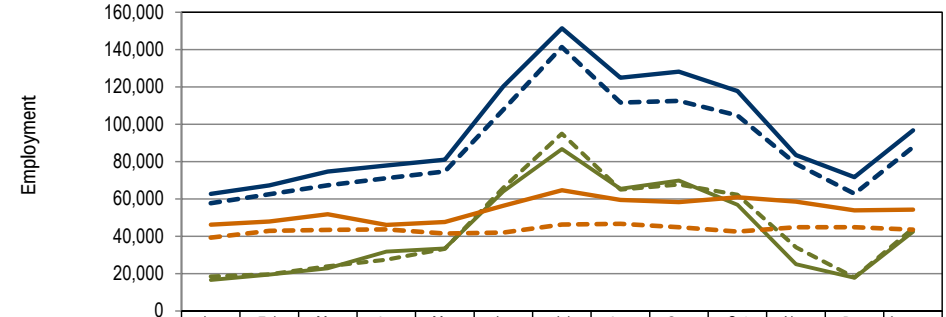
Estimated seasonal employment was almost the same in both years. However, estimated nonseasonal employment increased from an annual average of 43,526 jobs in 2012 to an annual average of 54,281 in 2013 – an increase of 24.7 percent. In 2012, the lowest and highest estimates for monthly nonseasonal employment were 39,249 and 46,651. The lowest and highest estimates for monthly nonseasonal employment were 46,060 and 64,630 in 2013.

As shown in *Figure 1-2*, the lowest estimated levels of agricultural employment for 2013 were reported in January and December, with estimated employment rising gradually from January to May. Total agricultural employment in 2013 increased by almost 40,000 jobs from May (81,030) to June (120,200) and increased again to 151,330 in July – an increase of over 70,000 jobs in a three-month period. After a drop to 124,860 jobs in August, estimated employment climbed back to 128,070

[5] See: Employment Security Department, Labor Market and Performance Analysis, *Agriculture Employment and Wage Report*, various issues, https://fortress.wa.gov/esd/employmentdata/reports-publications/industry-reports/agricultural-employment-and-wage-report, accessed December 29, 2014.

in September, then dropped to 117,770 jobs in October. From October through December, estimated employment dropped by more than 45,000 jobs to 71,640.

Figure 1-2. Total seasonal and nonseasonal agricultural employment by month
Washington state, 2012 and 2013
Source: Employment Security Department/LMPA, Agricultural Employment and Wage Survey



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Seasonal 2013	16,510	19,380	22,870	31,830	33,460	63,950	86,700	65,410	69,770	56,850	24,950	17,770	42,454
Seasonal 2012	18,393	19,608	23,858	27,443	33,197	65,940	94,976	64,914	67,717	62,174	33,980	17,903	44,175
Nonseasonal 2013	46,170	47,890	51,770	46,060	47,570	56,250	64,630	59,450	58,300	60,920	58,490	53,870	54,281
Nonseasonal 2012	39,249	42,809	43,412	43,587	41,486	41,920	46,297	46,651	44,791	42,523	44,757	44,831	43,526
Total 2013	62,680	67,270	74,640	77,890	81,030	120,200	151,330	124,860	128,070	117,770	83,440	71,640	96,735
Total 2012	57,642	62,417	67,270	71,030	74,683	107,860	141,273	111,565	112,508	104,697	78,737	62,734	87,701

Note: Seasonal workers are those hired for a period of less than 150 days in a calendar year. Nonseasonal workers are those who employers report as permanent employees.

The seasonal labor peak for cherries was in July and the seasonal labor peak for apples was in September in both years.

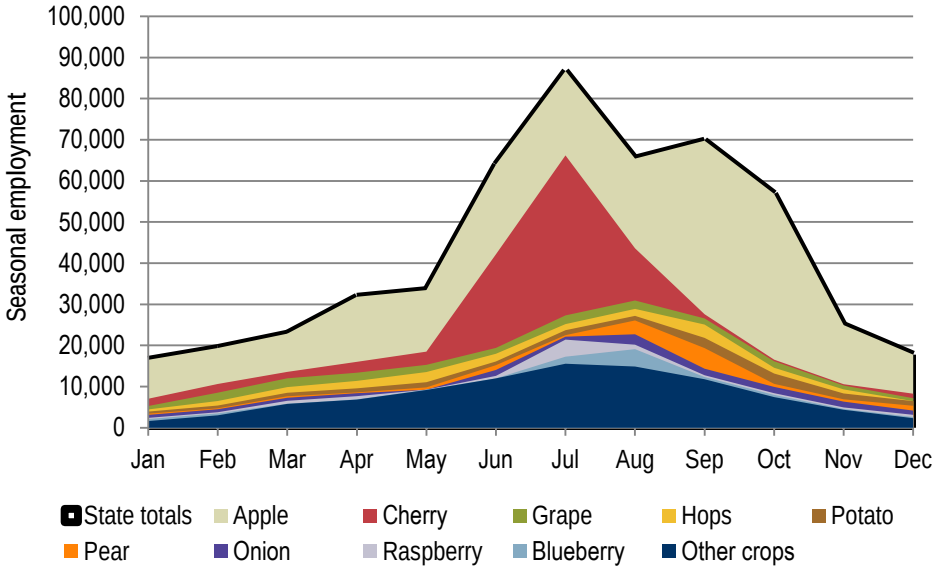
Seasonal employment by crop and production activity

Figure 1-3 shows estimated seasonal employment by crop in 2013. The estimates are based on ESD's monthly Agriculture Employment and Wage Survey. Throughout the year, the crops with the largest proportions of seasonal employment were apples, cherries and grapes, followed by hops, potatoes, pears and onions.

As shown in *Appendix Figure A-4*, total apple production (19,058 average annual jobs) and total cherry production (7,368 average annual jobs) drove seasonal agricultural employment in Washington state. The cherry harvest surged from essentially no jobs in May to 17,163 estimated jobs in June. Cherry harvesting jobs rose to 30,733 in July and then fell sharply to 10,938 jobs in August. During the same period, apple thinning jobs reached 6,958 in April, grew sharply to 17,349 estimated jobs in June, and then fell back to an estimated 15,571 jobs in July.

Appendix Figure A-4 shows apple pruning occurred primarily during the winter and early spring months of 2013. Apple thinning occurred in April and continued through August, while apple harvesting began in August and reached 36,425 jobs in September. The apple industry as a whole produced an estimated 42,180 out of a total of 69,770 seasonal jobs, or 60.5 percent, in September 2013. That same month, total pear production contributed 5,010 seasonal jobs, hops production 3,240 jobs, and potato production 2,480 jobs.

Figure 1-3. Seasonal agricultural workers by crop
Washington state, 2013
Source: Employment Security Department/LMPA, Agriculture Employment and Wage Survey



*Only results which passed publication standards (based on number of responses and confidence intervals) are reported here.

Over the growing and harvest seasons, apple production comprised the largest portion of agricultural employment.

Seasonal labor compared across years

Figure 1-4 compares the number of seasonal agricultural jobs in 2011, 2012 and 2013. The number of jobs has risen gradually over time, though seasonal labor needs still vary with weather patterns from year to year. For 2011, estimated total seasonal employment was 40,282 jobs and rose to an annual average of 44,176 jobs in 2012. Estimated seasonal employment then dropped 5,865 jobs to 38,311 in 2013, a 13.3 percent decline from the previous year.

Seasonal employment declined by 4,182 jobs in South Central area 2 and North Central area 3, or 71.3 percent of the 5,865 total seasonal job reductions from 2012 through 2013.

Seasonal employment for apple production rose from an annual average of 19,663 jobs in 2011 to 20,924 in 2012; it then declined to 17,573 in 2013, a drop of 16.0 percent from employment levels for apple production in 2012. Seasonal employment for cherry production was an estimated 6,685 jobs in 2011, rose to 7,973 jobs in 2012, and then registered a decline of 23.8 percent to an annual average of 6,075 jobs in 2013. Overall, from 2012 through 2013 the number of seasonal jobs fell for 11 of the fifteen crops listed in *Figure 1-4* and rose for only five crops.

Figure 1-4. Average seasonal agricultural employment by region and crop
Washington state, 2011, 2012 and 2013.
Source: Employment Security Department/LMPA, Agricultural Employment and Wage Survey

Agricultural reporting area and crop	2011 average annual seasonal employment	2012 average annual seasonal employment	2013 average annual seasonal employment	2011 to 2013 change	2011 to 2013 percent change	2012 to 2013 change	2012 to 2013 percent change
State totals	**40,282**	**44,176**	**38,311**	**-1,971**	**-4.9%**	**-5,865**	**-13.3%**
Agricultural reporting area							
South Central area 2	12,764	14,003	11,098	-1,666	-13.1%	-2,905	-20.7%
North Central area 3	10,220	10,519	9,242	-978	-9.6%	-1,277	-12.1%
Western area 5	6,765	8,079	7,356	591	8.7%	-723	-8.9%
Western area 1	3,724	3,914	3,501	-223	-6.0%	-413	-10.6%
Columbia Basin area 4	6,419	7,222	6,774	355	5.5%	-448	-6.2%
Eastern area 6	390	439	341	-49	-12.6%	-98	-22.3%
Crop totals*							
Apples	19,663	20,924	17,573	-2,090	-10.6%	-3,351	-16.0%
Cherries	6,685	7,973	6,075	-610	-9.1%	-1,898	-23.8%
Grapes	1,629	1,392	1,527	-102	-6.3%	135	9.7%
Potatoes	1,577	1,130	1,125	-452	-28.7%	-5	-0.4%
Pears	1,560	1,207	917	-643	-41.2%	-290	-24.0%
Nurseries	967	904	948	-19	-2.0%	44	4.9%
Hops	844	960	1,489	645	76.4%	529	55.1%
Raspberries	835	802	717	-118	-14.1%	-85	-10.6%
Onions	831	1,095	1,116	285	34.3%	21	1.9%
Blueberries	726	651	574	-152	-20.9%	-77	-11.8%
Wheat/grain	414	332	232	-182	-44.0%	-100	-30.1%
Other tree fruit	382	349	613	231	60.5%	264	75.6%
Strawberries	335	186	162	-173	-51.6%	-24	-12.9%
Asparagus	323	402	129	-194	-60.1%	-273	-67.9%
Miscellaneous vegetables	678	1,291	785	107	15.8%	-506	-39.2%
Other seasonal crops	2,791	4,504	4,246	1,455	52.1%	-258	-5.7%

*Some crop data are suppressed because they did not meet publication standards. As a result, the sum of crop totals does not match state totals.

Seasonal employment decreased from 2012 to 2013. Apples, cherries and pears accounted for a large portion of the decrease.

Seasonal employment closely followed the total production of apples and cherries. Apple production rose from 2,710,000 tons in 2011 to 3,250,000 tons in 2012, but then declined to an estimated 2,972,000 tons in 2013. Production in 2013 was 8.6 percent below 2012 production levels. Cherry production rose from 196,000 tons in 2011 to 264,000 tons in 2012, but then dropped to 169,000 tons in 2013. From 2012 through 2013, this decline in tonnage represented a drop of 36.0 percent.[6]

Average hourly wage rates and piece rates

Agricultural employers pay workers different pay units according to the activity a worker is hired to perform. For example, cherry harvesters generally receive a piece rate, while apple thinners generally receive an hourly rate. Differences in local demand for agricultural labor, as well as differences in the wage units and rates workers receive, affect the average hourly wage rate in a given area for a given activity. In some areas of the state, workers earn an average hourly wage that is near the state minimum wage. In other areas, workers can earn an average hourly wage that is higher than the state minimum wage, depending on the activity they perform.[7]

Figure 1-5 shows average hourly wage rates and piece rates in current dollars for selected areas and agricultural activities during July 2013, a peak period in the demand for seasonal labor. Wage rates for the same agricultural activity varied among areas, likely reflecting regional differences in the supply and demand for workers by agricultural activity. For example, cherry harvesters who earned piece rates received from $4.00 to $9.00 per lug in the South Central area and from $3.50 to $6.00 per lug in the North Central area. Cherry harvesters paid an hourly rate received an average of $9.22 per hour in South Central area 2 and $11.40 per hour in North Central area 3. Apple hand thinners earned an average of $10.90 per hour in North Central area 3 and $9.85 per hour in the South Central area 2. Contrast these hourly wage rates with the 2013 state minimum wage of $9.19 per hour.

Hay harvesters in Eastern area 6 were paid $10.00 per hour, while wheat harvesters were paid $16.00 per hour. Sorters and packers were paid at or slightly above the state minimum wage in all areas.

[6] Sources: U.S. Department of Agriculture, National Agricultural Statistics Service, *Agri-Facts*, January 31, 2013; U.S. Department of Agriculture, National Agricultural Statistics Service, Agricultural Statistics Board, *Cherry Production*, March 17, 2014; U.S. Department of Agriculture, National Agricultural Statistics Service, "2013 State Agricultural Overview, Washington," www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=WASHINGTON, accessed December 29, 2014.

[7] Washington State Department of Labor and Industries, "History of Washington Minimum Wage," www.lni.wa.gov/WorkplaceRights/Wages/Minimum/History/default.asp, accessed December 29, 2014.

Figure 1-5. Average hourly wage rates and piece rates in current dollars, by reporting area and selected activities[1]
Washington state, July 2013
Source: Employment Security Department/LMPA, Agricultural Employment and Wage Survey

Agricultural reporting area and activity	Employment	Hourly wage rate	Piece rate
Western area 1			
Raspberry harvester	3,150	$9.23/hr.	
Raspberry sorter/grader/packer	2,200	$9.74/hr.	
Blueberry harvester	1,570	$11.81/hr.	
Blueberry worker	540	$9.19/hr.	
South Central area 2			
Cherry harvester	7,880	$9.22/hr. or	$4.00 - $9.00 per lug
Apple hand thinner	4,240	$9.85/hr. or	$0.20 - $1.50 per tree
Cherry sorter/grader/packer	3,390	$9.29/hr.	
Hops worker	1,100	$9.80/hr.	
North Central area 3			
Cherry harvester	17,780	$11.40/hr. or	$3.50 - $6.00 per lug
Apple hand thinner	4,460	$10.90/hr. or	$0.50 - $4.99 per tree
Cherry sorter/grader/packer	3,590	$9.21/hr.	
Contract postharvest worker	1,260	$11.00/hr.	
Columbia Basin area 4			
Cherry harvester	4,610	$9.19/hr. or	$3.50 - $7.00 per lug
Apple hand thinner	2,570	$9.53/hr. or	$1.15 - $10.00 per tree
Apple worker	840	$12.00/hr.	
Potato sorter/grader/packer	700	$9.19/hr.	
South Eastern area 5			
Apple hand thinner	3,880	$9.68/hr. or	$0.90 - $1.75 per tree
Blueberry harvester	2,980	N/A[2]	
Cherry harvester	1,150	$10.00/hr.	
Apple worker	940	$11.01/hr.	
Eastern area 6			
Miscellaneous hay harvester	70	$10.00/hr.	
Wheat worker	40	$10.25/hr.	
Miscellaneous grain/grain seed worker	40	$15.00/hr.	
Wheat harvester	20	$16.00/hr.	

[1] Average hourly rates are calculated only from among employers who reported paying an hourly rate for these activities. Average piece rates are calculated only from among employers who report paying a piece rate for these activites.
[2] Results did not meet publication standards.

Average hourly wage rates for given agricultural activities varied by agricultural reporting area, reflecting area differences in demand and supply conditions at a given point in time.

Figure 1-6. Average hourly wage rates and piece rates in current dollars, by reporting area and selected activities[1]
Washington state, October 2013
Source: Employment Security Department/LMPA, Agricultural Employment and Wage Survey

Agricultural reporting area and activity	Employment	Hourly wage rate	Piece rate
Western area 1			
Blueberry harvester	580	$10.00/hr.	
Blackberry harvester	520	N/A[2]	
Blackberry worker	250	$10.00/hr.	
Potato harvester	230	$10.00/hr.	
South Central area 2			
Apple harvester	18,280	$11.83/hr. or	$16.00 - $25.00 per bin
Apple worker	670	N/A	
Hops planter	490	$9.19/hr.	
Hops preparation	460	$9.21/hr.	
North Central area 3			
Apple harvester	7,210	$10.76/hr. or	$17.00 - $30.00 per bin
Apple hand thinner	3,660	N/A	
Apple worker	2,480	$11.70/hr.	
Contract postharvest sorter/grader/packer	480	$9.19/hr.	
Columbia Basin area 4			
Apple harvester	6,420	$10.89/hr. or	$18.00 - $35.00 per bin
Apple worker	920	$12.00/hr.	
Miscellaneous onion sorter/grader/packer	710	$9.19/hr.	
Field corn sorter/grader/packer	690	$9.19/hr.	
South Eastern area 5			
Apple harvester	6,980	$10.75/hr. or	$10.00 - $35.00 per bin
Apple worker	1,280	$11.04/hr.	
Grapes harvester	350	$10.42/hr.	
Miscellaneous onion sorter/grader/packer	350	$9.37/hr.	
Eastern area 6			
Wheat worker	60	$11.15/hr.	
Nursery and tree worker	50	$12.33/hr.	
Nursery and tree irrigator	30	$10.88/hr.	
Wheat tractor operator	30	$13.67/hr.	

[1] Average hourly rates are calculated only from among employers who reported paying an hourly rate for these activities. Average piece rates are calculated only from among employers who report paying a piece rate for these activites.
[2] Results did not meet publication standards.

Average hourly wage rates for given agricultural activities varied by agricultural reporting area, reflecting regional differences in demand and supply conditions at a given point in time.

Figure 1-6 shows average hourly wage rates and piece rate ranges for October 2013. As they did in July 2013, wage rates varied by agricultural area and activity. Differences in piece rates paid to apple harvesters by agricultural area are notable. Apple harvesters were paid as little as $10.00 a bin and as much as $35.00 a bin in South Eastern area 5. Apple harvesters also received as much as $35.00 per bin in Columbia Basin area 4. These bin rates reflect not only supply and demand for seasonal labor, but also the variety of apple being picked and the method of picking.[8] Average hourly wage rates ranged as low as $9.19 per hour, the state minimum wage, for hops planters in South Central area 2, to as high as $13.67 per hour for wheat tractor operators in Eastern area 6.

Employment and earnings by industry

QCEW provides industry employment and wage data by worksite (i.e., employer location). QCEW data are based on quarterly tax reports from employers who hired at least one worker covered by the UI program. Unlike the Monthly Agricultural Employment and Wage survey, QCEW includes the entire population of employers and wage reports for all covered employees.

As shown in *Figure 1-7*, crop production firms (4,798) comprised 65.4 percent of all agricultural employers (7,338). These firms also contributed an average of 62,758 agricultural jobs, which was 49.3 percent of the annual average of 127,236 jobs during the same year. Fruit and tree nut farms comprised 50.6 percent of the 4,798 employers dedicated to crop production and contributed 44,763 of the 62,758 agricultural jobs, or 71.3 percent, that were linked to crop production in 2013. These data reflect the importance of apple and cherry farming in Washington state.

Food manufacturing firms were 11.8 percent of all agricultural employers, while animal production, agricultural support and beverage manufacturing firms comprised 11.1 percent, 6.5 percent and 5.2 percent, respectively. Of the firms within these four industry classifications, food manufacturing contributed the highest number of jobs with an annual average of 35,497 or 27.9 percent of average total employment in 2013. Beverage manufacturing contributed the lowest number of jobs, with an annual average of 3,865 jobs or 3.0 percent in 2013.

The average annual wage was $29,628 for all agricultural jobs in 2013, but averages varied by industry sector and subsector. For example, food manufacturing firms paid the highest average annual wage at $43,166, while crop production firms paid the lowest average annual wage at $22,865.

In food manufacturing, the highest paid jobs were linked to seafood product preparation and packaging with an average annual wage of $54,962. The lowest paid food manufacturing jobs were those pertaining to sugar and confectionery product manufacturing with an average annual wage of $27,331.

[8] To understand the complexity of apple harvesting, see, for example, University of Nebraska-Lincoln, UNL Extension: Backyard Farmer, "Harvesting and Storing Apples and Pears," https://byf.unl.edu/StoringApplesPears, accessed December 29, 2014.

Figure 1-7. Total firms, total wages, average employment and average annual wage by industry in current dollars[1]
Washington state, 2011, 2012 and 2013
Source: Employment Security Department/LMPA; U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Industry description	2013 number of firms	2013 total wages paid (wage bill)	2013 average annual employment	2012 average annual wage	2013 average annual wage	Percent change in wages (2011 to 2013)	Percent change in wages (2012 to 2013)
Crop Production	**4,798**	**$1,434,932,422**	**62,758**	**$22,013**	**$22,865**	**9.6%**	**3.9%**
Fruit and tree nut farming	2,428	$914,547,320	44,763	$19,847	$20,431	10.6%	2.9%
Oilseed and grain farming	1,043	$52,338,151	1,950	$25,307	$26,840	7.4%	6.1%
Other crop farming	657	$205,145,845	6,946	$27,314	$29,534	11.1%	8.1%
Vegetable and melon farming	358	$149,584,477	4,863	$30,343	$30,760	3.2%	1.4%
Greenhouse, nursery and floriculture production	312	$113,316,629	4,236	$25,773	$26,751	10.8%	3.8%
Animal production	**814**	**$199,494,244**	**6,398**	**$30,469**	**$31,181**	**6.6%**	**2.3%**
Cattle ranching and farming	578	$144,808,912	4,611	$30,543	$31,405	7.5%	2.8%
Other animal production	118	$10,194,430	331	$30,129	$30,799	11.1%	2.2%
Animal aquaculture	67	$25,792,708	826	$30,842	$31,226	1.2%	1.2%
Poultry and egg production	34	$18,072,712	590	$30,732	$30,632	6.1%	-0.3%
Sheep and goat farming	17	$625,482	40	$12,389	$15,637	17.0%	26.2%
Agriculture support activities[2]	**474**	**$492,467,415**	**18,718**	**$25,644**	**$26,310**	**9.8%**	**2.6%**
Support activities for crop production	308	$479,689,711	18,265	$25,601	$26,263	9.9%	2.6%
Support activities for animal production	166	$12,777,704	453	$27,259	$28,207	6.8%	3.5%
Food manufacturing	**872**	**$1,532,246,052**	**35,497**	**$42,964**	**$43,166**	**3.6%**	**0.5%**
Bakeries and tortilla manufacturing	297	$165,663,624	4,692	$34,966	$35,308	4.7%	1.0%
Other food manufacturing	176	$194,040,576	4,434	$42,234	$43,762	-0.7%	3.6%
Seafood product preparation and packaging	96	$401,003,403	7,296	$57,955	$54,962	-0.1%	-5.2%
Animal slaughtering and processing	84	$183,756,919	5,078	$35,259	$36,187	6.0%	2.6%
Fruit and vegetable preserving and specialty food manuf.	83	$460,306,476	10,834	$41,631	$42,487	9.2%	2.1%
Sugar and confectionery product manufacturing	50	$27,877,398	1,020	$26,847	$27,331	3.5%	1.8%
Animal food manufacturing	48	$33,986,806	751	$43,977	$45,255	3.9%	2.9%
Dairy product manufacturing	27	$44,577,426	974	$45,178	$45,767	-15.2%	1.3%
Grain and oilseed milling	11	$21,033,424	418	$46,900	$50,319	9.0%	7.3%
Beverage manufacturing[3]	**380**	**$110,555,939**	**3,865**	**$28,216**	**$28,604**	**-1.9%**	**1.4%**
Annual total	**7,338**	**$3,769,696,072**	**127,236**	**$28,847**	**$29,628**	**6.2%**	**2.7%**

[1]For 2011 data, please see the *Agriculture Workforce 2012* report, page 26, Figure 2-10, https://fortress.wa.gov/esd/employmentdata/reports-publications/industry-reports/agricultural-workforce-report.
[2]Does not include forestry activities.
[3]Includes only breweries and wineries.

Crop production contributed the largest number of agricultural jobs in 2013, while food manufacturing jobs paid the highest average annual wage.

Workers with jobs in vegetable and melon farming received the highest average annual wage at $30,760, while workers involved in fruit and tree nut farming received the lowest average annual wage at $20,431, among employers devoted to crop production.

Figure 1-7 shows an overall 6.2 percent increase in average annual wages from 2011 through 2013, but percent changes varied by subsector. Excluding other crop farming and other animal production, the five subsectors that registered the largest increase in average annual wages from 2011 through 2013 were: sheep and goat farming (17.0 percent); greenhouse, nursery and floriculture production (10.8 percent); fruit and tree nut farming (10.6 percent); support activities for crop production (9.9 percent); and fruit and vegetable preserving and specialty food manufacturing (9.2 percent). Dairy product manufacturing showed the largest decrease (15.2 percent) in average annual wages from 2011 through 2013, while jobs in beverage manufacturing and seafood product preparation and packaging registered decreases of 1.9 percent and 0.1 percent, respectively.

Figure 1-8 displays average and median hourly earnings in current dollars paid to workers employed in different agricultural subsectors for selected years.[9] These subsectors broadly identify the type of agricultural product or service produced, such as apple production, nursery and floriculture production or support activities for crop production, such as airborne crop spraying.

The median hourly earnings for all agricultural workers ranged from $12.74 in 2011 to $13.67 in 2013.[10] In 2011, the range of median hourly earnings was from a low of $10.48 in grape production to a high of $14.64 in wheat production. In 2013, median hourly earnings ranged from a low of $11.40 in grape production to a high of $15.43 in wheat production.

Average hourly earnings were higher than median hourly earnings for all three years, which indicated that some workers in each production area were paid relatively high hourly wages. This was particularly true of support activities for animal production, which registered an average hourly rate of $21.23 and a median hourly rate of $14.20 in 2013.

[9] The data in this figure are based on the QCEW database, which includes quarterly earnings reports of employers who employ workers covered by the unemployment insurance program in the state. Average hourly earnings are equal to total quarterly earnings divided by total quarterly hours worked. Thus, hourly earnings are comprised of the hourly wage rate plus any bonuses, overtime pay, etc. paid to the worker.

[10] Reporting the median wage eliminates any bias in the measure of central tendency due to extremely high or extremely low wage rates."

Figure 1-8. Average and median hourly earnings in current dollars by selected agricultural subsectors
Washington state, 2011, 2012 and 2013
Source: Employment Security Department/LMPA, Unemployment Insurance Wage File

Agricultural subsector	Number of growers	Average hourly earnings[1]	Median hourly earnings[1]
2011			
Non-apple tree fruit[3]	923	$12.07	$12.70
Apples[2]	839	$11.83	$11.76
Animal production	732	$16.95	$13.57
Wheat	688	$14.92	$14.64
Other crop farming	521	$13.16	$13.06
Nursery and floriculture	275	$13.21	$12.00
Support activities for crop production	257	$13.75	$13.41
Grapes	224	$15.42	$10.48
Vegetables	183	$13.19	$11.13
Support activities for animal production	121	$19.75	$13.90
Potatoes	101	$15.39	$14.22
All agriculture	**5,597**	**$13.54**	**$12.74**
2012			
Non-apple tree fruit[3]	1004	$13.16	$13.81
Apples[2]	885	$12.65	$12.70
Wheat	789	$16.10	$15.00
Animal production	770	$15.84	$13.84
Other crop farming	563	$13.28	$13.42
Support activities for crop production	298	$13.31	$14.14
Nursery and floriculture	286	$13.80	$11.96
Grapes	245	$14.56	$10.98
Vegetables	225	$13.73	$11.58
Support activities for animal production	158	$19.71	$13.87
Potatoes	113	$15.23	$14.40
All agriculture	**5,787**	**$13.38**	**$13.39**
2013			
Non-apple tree fruit[3]	793	$13.22	$13.67
Apple[2]	721	$12.96	$12.78
Wheat	623	$16.03	$15.43
Animal production	597	$18.70	$14.60
Other crop farming	457	$13.94	$13.95
Nursery and floriculture	239	$14.09	$12.44
Support activities for crop production	228	$14.57	$14.79
Grapes	193	$16.44	$11.40
Vegetables	164	$13.94	$11.92
Support activities for animal production	107	$21.23	$14.20
Potatoes	97	$15.91	$14.71
All agriculture	**5,383**	**$14.53**	**$13.67**

[1]Based on full-time equivalent of 173 hours per month.
[2]Includes some producers who also grow apples.
[3]Includes some producers who also grow non-apple tree fruit.

Support activities for animal production had the highest average hourly wage in 2011, 2012 and 2013. The wheat subsector had the highest median hourly wage during the same period.

Summary

- The number of seasonal and nonseasonal agricultural jobs has increased since 2007.
- The increase in agricultural jobs was mostly due to an expansion of seasonal jobs.
- Tree fruit production drove the demand for seasonal and nonseasonal agricultural labor.
- Average monthly agricultural employment varied sharply by month.
- Seasonal employment surges occurred in June through July and September through October.
- Average seasonal employment in 2013 was lowest in January and highest in July.
- Average annual wages increased overall from 2011 through 2013, but changes in annual averages varied by industry sector and subsector.
- Tree fruit production accounted for the largest portion of seasonal agricultural workers.
- Average hourly earnings were highest in support activities for animal production and lowest in the apple industry during 2013.
- Median hourly earnings were highest in the wheat industry and lowest in the grape industry during 2013.

Chapter 2: Labor shortage and the H-2A Program

This chapter discusses agricultural labor shortages in Washington state. In this report, labor shortage is the number of additional workers agricultural employers said they were unable to hire due to a lack of available seasonal laborers. This number is derived from the Monthly Agriculture Employment and Wage Survey and then calculated as a percent of total seasonal employment.

This chapter first discusses factors that influence agricultural labor needs and availability, including weather patterns and macro-economic variables like unemployment rates. It then discusses short-term changes in piece rates and employer applications for temporary foreign workers in the context of reported labor shortages, concluding with a summary of key findings.

The labor shortage issue

Agricultural employers face uncertainty when planning for seasonal labor needs, which depend on weather conditions that affect harvest size and crop quality. For example, the threat of rainfall can create a surge in the demand for cherry harvesters over the course of a few days, as heavy rains can cause cherries to absorb more water and burst their skins. If this happens, the fruit is no longer suitable for the fresh fruit market and the value of the crop drops sharply. Likewise, the threat of an early frost can create a short-term surge in the demand for apple harvesters. Surges in demand caused by weather patterns can be local or can affect large areas.

The business cycle also affects the available supply of agricultural labor, as periods of low growth and high unemployment in other sectors usually increase the number of workers available to agricultural employers. The effects of the Great Recession were notable in this regard. In 2007, both the national and state unemployment rates were at a historic low of 4.6 percent. In 2009, both the state and national unemployment rates increased to 9.3 percent. The state unemployment rate rose to almost 9.9 percent in 2010, but dropped back to 7.0 percent in 2013.[11]

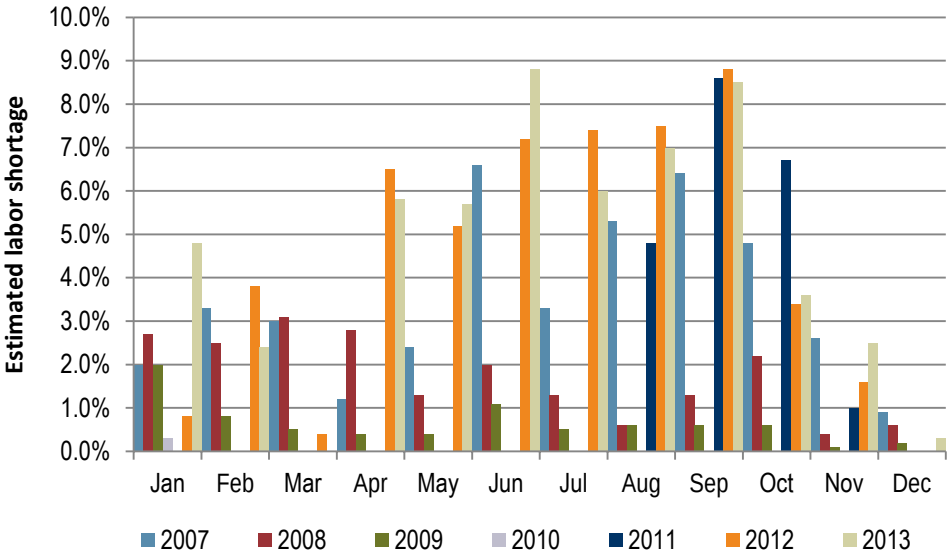
As shown in *Figure 2-1*, monthly labor shortages reported by employers from year to year generally trended in the opposite direction of unemployment rates from 2007 through 2013. Reported labor shortages exceeded 6 percent in June and September of 2007, a period of low unemployment.[12] Reported shortages dropped to 3 percent or lower in 2008 and were typically less than 1 percent during 2009 and 2010, years during which state unemployment rates were relatively high. As the unemployment rate dropped from 2011 through 2013, employers again reported higher labor

[11] Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS), statewide data, annual average.

[12] Please refer to footnote 4 in Chapter 1 for a discussion of reporting percentages based on the estimated level of statistical significance.

shortages. By 2013 the state annual unemployment rate was 7.0 percent, though employers still reported labor shortages for some months that were higher in 2013 than they were in 2007. It is worth noting that reported shortages in 2013 were statewide, rather than localized.

Figure 2-1. Seasonal agricultural labor shortage as reported by agricultural employers, in percent, weighted by the total labor force reported by producers*
Washington state, 2007 through 2013
Source: Employment Security Department/LMPA, Agriculture Employment and Wage Survey



*Labor shortage percent is the reported total additional seasonal labor needed divided by reported total seasonal labor.

Generalized, not spot, shortages were reported in 2013. The Great Recession and the post-recession recovery were among the macro-economic factors that affected agricultural labor shortages.

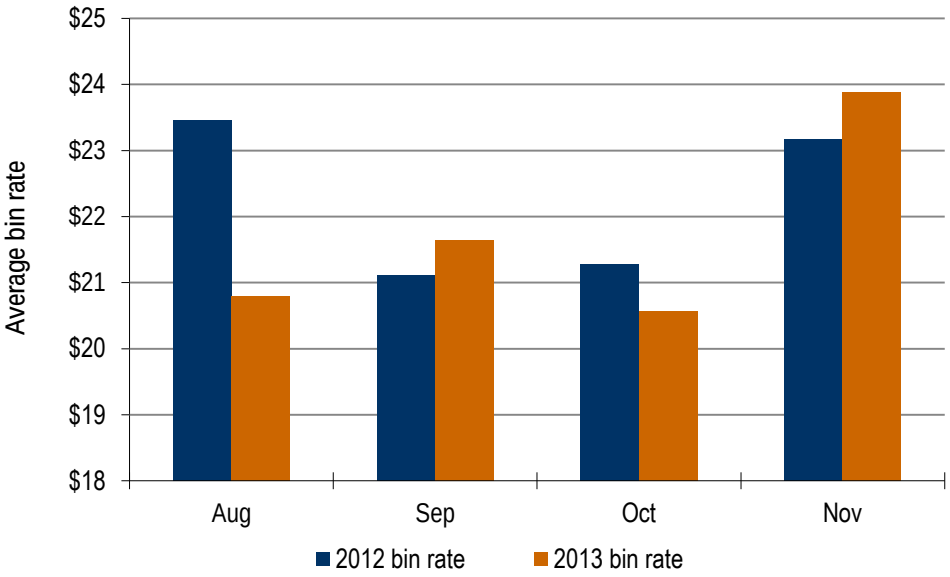
Recent harvest piece rates for apples, cherries and pears

Figure 2-2 shows 2012 and 2013 average piece rate data for apple harvesters during the months of August, September, October and November.

In 2012, apple harvesters received an average of $23.46 per bin in August, $21.12 per bin in September, $21.28 per bin in October and $23.17 per bin in November. Reported labor shortages in 2012 were 7.5 percent in August, 8.8 percent in September, 3.4 percent in October and 1.6 percent in November (as shown in *Figure 2-1*).

In 2013, wage rates for apple harvesters were $20.79 per bin in August, $21.64 per bin in September, $20.57 per bin in October, and then rose to $23.89 per bin in November. Reported shortages in 2013 were 7.0 percent in August, 8.5 percent in September, 3.6 percent in October and 2.5 percent in November.

Figure 2-2. Apple harvest bin rates in current dollars
Washington state, 2012 and 2013
Source: Employment Security Department/LMPA, Agriculture Employment and Wage Survey

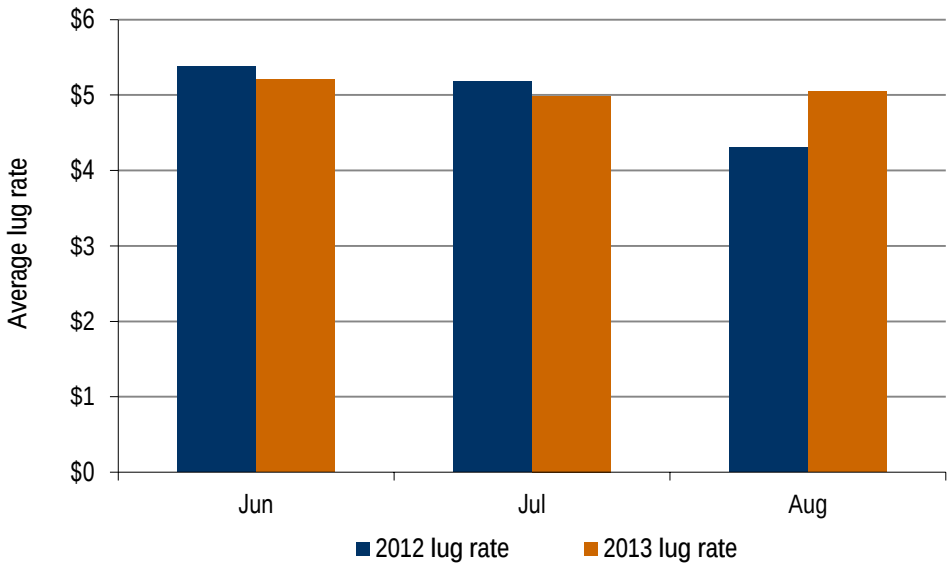


Bin rates reflected the seasonal harvest demand.

Figure 2-3 shows 2012 and 2013 piece rate data for cherry harvesters. In 2012, the average piece rate was $5.38 per lug in June, which typically marks the start of the harvest season. The average piece rate then declined to $5.18 per lug in July and to $4.30 per lug in August. During the same year, agricultural employers reported a general labor shortage of 7.2 percent in June, 7.4 percent in July and 7.5 percent in August. Despite the consistent general labor shortage reported by employers, the piece rate for cherry harvesters dropped from June through August in 2012.

Piece rates for cherry harvesters were more stable in 2013, with an average of $5.21 per lug in June, $4.99 per lug in July and $5.05 per lug in August. Estimated general labor shortages for 2013 were at 8.8 percent in June, 6.0 percent in July and 7.0 percent in August.

Figure 2-3. Cherry harvest lug rates in current dollars
Washington state, 2012 and 2013
Source: Employment Security Department/LMPA, Agriculture Employment and Wage Survey

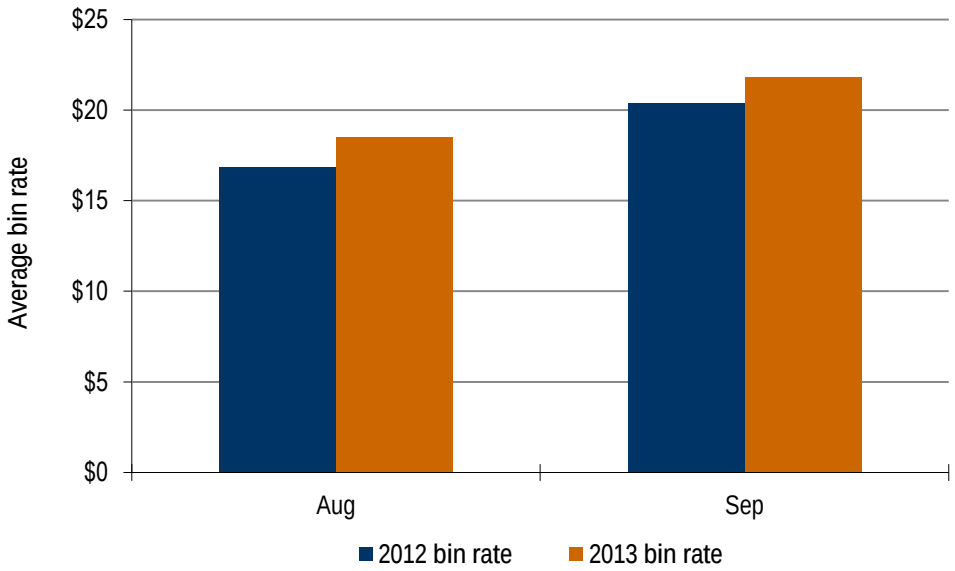


Cherry lug rates were relatively stable year over year for June and July.

As shown in *Figure 2-4*, average pear harvest piece rates increased from August through September in both 2012 and 2013. The average piece rate increased 21.0 percent within 2012, going from $16.85 per bin in August to $20.39 per bin in September. In 2013, average piece rates increased 17.6 percent, going from $18.55 in August to $21.82 in September.

Reported general labor shortages also increased from August through September in both 2012 and 2013. For 2012, the reported labor shortage was 7.5 percent in August and 8.8 percent in September. For 2013, the reported labor shortage was 7.0 percent in August and 8.5 percent in September.

Figure 2-4. Pear harvest bin rates in current dollars
Washington state, 2012 and 2013
Source: Employment Security Department/LMPA, Agriculture Employment and Wage Survey



Pear harvest piece rates increased from August through September in both 2012 and 2013.

H-2A certifications

The federal H-2A guest worker program allows U.S. employers to hire foreign workers on a temporary basis to perform agricultural work when there are not sufficient U.S. workers. The H-2A program was instituted to meet this need for seasonal and temporary labor, without adding permanent residents to the population. Since workers under the program do not remain in the United States after the end of their contracted employment period, there is no annual limit to the number of H-2A workers who may enter the United States to work. A potential response to labor shortages is to apply for foreign workers through the U.S. Department of Labor's Temporary Agricultural Foreign Labor Certification Program (H-2A).

As shown in *Figure 2-5*, 6,550 H-2A applications were certified nationwide in 2006, with only 11 in Washington state. By 2013, the number of applications reached 8,352 nationwide with 56 in Washington state. Nationally, the number of applications increased by 27.5 percent, but at the state level the number of applications increased by a factor of 5 from 2006 through 2013.

Despite the overall increase in H-2A applications, there was variation from year to year in Washington state. Applications rose from 11 in 2006 to 34 in 2008 and then dropped to 30 in 2009, 25 in 2010 and 18 in 2011. The decline in H-2A applications between 2008 through 2011 likely reflects an increase in the supply of domestic workers during the Great Recession. The number of applications then rose during the post-recession recovery, going from 33 in 2012 to 56 in 2013.

The average number of H-2A workers per certified application in Washington state also varied from year to year. There was an average of 74 workers per application in 2006, an average of 65 workers per application in 2007 and an average of 74 workers per application in 2008. The average then dropped to 63 workers per application in 2009, increased to 119 in 2010 and rose again to 177 workers per application in 2011. The average dropped again to 120 workers per application in 2012 and to 111 workers per application in 2013.

The total number of certified H-2A workers increased by nearly a factor of 8 in Washington state, going from 814 in 2006 to 6,196 in 2013. Nationally, the number of certified H-2A workers almost doubled from 59,110 workers in 2006 to 115,957 workers in 2013.

Figure 2-5. Number of certified H-2A applications and workers
United States and Washington state, 2006 through 2013
Source: Employment Security Department/Workforce and Career Development Division; U.S. Department of Labor, Office of Foreign Labor Certification, Fiscal Year Performance Summaries

	United States[1]				Washington state[2]			
Year	Employer applications certified	Percent change year to year	Workers certified	Percent change year to year	Employer applications certified	Percent change year to year	Workers certified	Percent change year to year
2006	6,550	NA	59,110	NA	11	NA	814	NA
2007	7,491	14.4%	76,814	30.0%	26	136.4%	1,688	107.4%
2008	7,944	6.0%	82,099	6.9%	34	30.8%	2,513	48.9%
2009	7,665	-3.5%	86,014	4.8%	30	-11.8%	1,882	-25.1%
2010	6,988	-8.8%	79,011	-8.1%	25	-16.7%	2,981	58.4%
2011	7,000	0.2%	77,246	-2.2%	18	-28.0%	3,182	6.7%
2012	7,836	11.9%	85,487	10.7%	33	83.3%	3,953	24.2%
2013	8,352	6.60%	115,957	35.60%	56	69.70%	6,196	56.70%

NA = Not applicable. The base year for comparison is 2006.
[1]National data are on a federal fiscal year basis.
[2]Washington data do not include applications submitted for sheepherder or beekeeper jobs.

With the exception of 2009, the number of certified H-2A workers steadily increased in Washington state.

The adverse effect wage rate

Agricultural H-2A employers must pay the highest of the following wage rates to foreign workers: 1) the prevailing wage for a given activity in a given wage reporting area; 2) the applicable federal or state minimum wage (whichever is higher); or, 3) the adverse effect wage rate.[13] Thus, the adverse effect wage rate (AEWR) is the minimum hourly wage rate that must be paid to H-2A workers in a given state or agricultural reporting area.

[13] Other requirements also apply. These requirements are relatively detailed. See U.S. Department of Labor, Employment and Training Administration, H-2A Temporary Agricultural Program," www.foreignlaborcert.doleta.gov/h-2a.cfm, accessed December 29, 2014.

Figure 2-6 shows the history of the AEWR from 2005 through 2014 in Washington, Oregon and California. In Washington, the AEWR increased 31.5 percent from $9.03 per hour to $11.87 per hour in current dollars over this 10-year period. The inflation-adjusted AEWR increased 10.0 percent, going from $10.70 in 2005 to $11.53 in 2014, though it decreased slightly between 2013 and 2014.

Average hourly earnings for all agricultural workers in the state were generally higher than the AEWR between 2005 and 2014. In 2005, the current-dollar AEWR was $9.03 per hour, while the current-dollar average for Washington state agricultural workers was $10.89 per hour.[14] The current-dollar AEWR was $12.00 in 2013 while the current-dollar average for Washington agricultural workers was $14.53 per hour in the same year (see *Figure 1-8* in *Chapter 1* of this report).

The per-hour costs of the H-2A program to growers exceed the AEWR, since growers must provide additional benefits to their workers in order to comply with federal regulations. These costs vary from grower to grower, depending on the number of H-2A workers certified and the specific benefits a grower must provide in any given H-2A contract.

Figure 2-6. The Adverse Effect Wage Rate (AEWR), current and inflation-adjusted dollars, CPI-W 2012 = 100
Washington, Oregon and California, 2005 through 2014
Source: Employment Security Department/LMPA; U.S. Department of Labor, Employment and Training Administration, Office of Foreign Labor Certification, Adverse Effect Wage Rate (AEWR)

	Current dollars			Inflation-adjusted dollars		
Year	Washington	Oregon	California	Washington	Oregon	California
2005	$9.03	$9.03	$8.56	$10.70	$10.70	$10.14
2006	$9.01	$9.01	$9.00	$10.34	$10.34	$10.33
2007	$9.77	$9.77	$9.20	$10.90	$10.90	$10.26
2008	$9.94	$9.94	$9.72	$10.65	$10.65	$10.42
2009	$10.12	$10.12	$10.16	$10.92	$10.92	$10.96
2010	$10.85	$10.85	$10.25	$11.47	$11.47	$10.84
2011	$10.60	$10.60	$10.31	$10.82	$10.82	$10.53
2012	$10.92	$10.92	$10.24	$10.92	$10.92	$10.24
2013	$12.00	$12.00	$10.74	$11.84	$11.84	$10.60
2014	$11.87	$11.87	$11.01	$11.53	$11.53	$10.69

For Washington, from 2005 through 2014, the AEWR increased by 7.8 percent in inflation-adjusted dollars.

[14] See Employment Security Department, Economic and Policy Analysis, *2005 Agricultural Workforce in Washington State*, Table 11, page 56, July 2006.

Prevailing piece rates for selected agricultural functions

Every two years, the Employment Security Department surveys agricultural employers in Washington state to help the U.S. Department of Labor determine prevailing wage rates for selected agricultural activities.[15] *Figure 2-7* displays the prevailing wage rates paid to Washington state agricultural workers for apple thinning and apple, cherry and pear harvesting from 2007 through 2013.

Apple thinning is usually paid by the hour. Note that the wage rate paid for 2013 of $10.00 per hour was somewhat higher than the state minimum wage of $9.19 per hour for that year.

Harvesting is paid by piece rate. These piece rates vary by crop and variety. For example, cherry harvesters received $5.50 per lug in 2013, while pear harvesters received $21.00 per bin for D'Anjou pears and $20.00 per bin for Bartlett pears. Apple harvesters received a median of $19.00 per bin for Red Delicious and $28.00 per bin for Fuji Apples in 2013 current dollars.

Figure 2-7. H-2A prevailing wage rates and percent change for apple thinning and apple, cherry and pear harvest
Washington state, 2007, 2009, 2011 and 2013
Source: Employment Security Department/LMPA, Peak Employment Wage and Practices Survey

	H-2A tree fruit prevailing wage rates (reported as median)						
Fruit	**United States**				**Washington state**		
Apples	**2007**	**2009**	**2011**	**2013**	**2009**	**2011**	**2013**
Fuji	$23.60	$22.00	$25.00	$28.00	-6.8%	5.9%	18.6%
Gala	$20.00	$20.00	$20.00	$23.50	0.0%	0.0%	17.5%
Pink Lady	$20.00	$17.00	$23.25	$25.00	-15.0%	16.3%	25.0%
Golden Delicious	$17.00	$17.00	$20.00	$22.00	0.0%	17.6%	29.4%
Braeburn	$15.50	$17.00	$20.00	$20.00	9.7%	29.0%	29.0%
Red Delicious	$15.00	$15.00	$17.00	$19.00	0.0%	13.3%	26.7%
Granny Smith	NA	$18.00	$20.00	$22.00	NA	NA	NA
Honey Crisp	NA	NA	$20.00	$25.00	NA	NA	NA
Apple thinning[1]	NA	$8.75	$8.67	$10.00	NA	NA	NA
Cherry harvest	**2007**	**2009**	**2011**	**2013**	**2009**	**2011**	**2013**
Red[2]	$5.00	$5.00	$5.00	$5.50	0.0%	0.0%	10.0%
Yellow[3]	$5.00	$5.00	$5.00	$5.50	0.0%	0.0%	10.0%
Pear harvest	**2007**	**2009**	**2011**	**2013**	**2009**	**2011**	**2013**
D'Anjou	$17.00	$17.00	$19.00	$21.00	0.0%	11.8%	23.5%
Bartlett	$16.00	$17.00	$18.00	$20.00	6.3%	12.5%	25.0%

NA = Not available
[1]Hourly, [2]Per 30-lb lug, [3]Per 20-lb lug

Median prevailing piece rates in current dollars increased in the range of 10.0 to 29.4 percent from 2007 through 2013.

[14] See U.S. Department of Labor, Wage and Hour Division, "Fact Sheet #26: Section H-2A of the Immigration and Nationality Act," February 2010, www.dol.gov/whd/regs/compliance/whdfs26.htm, accessed December 29, 2014.

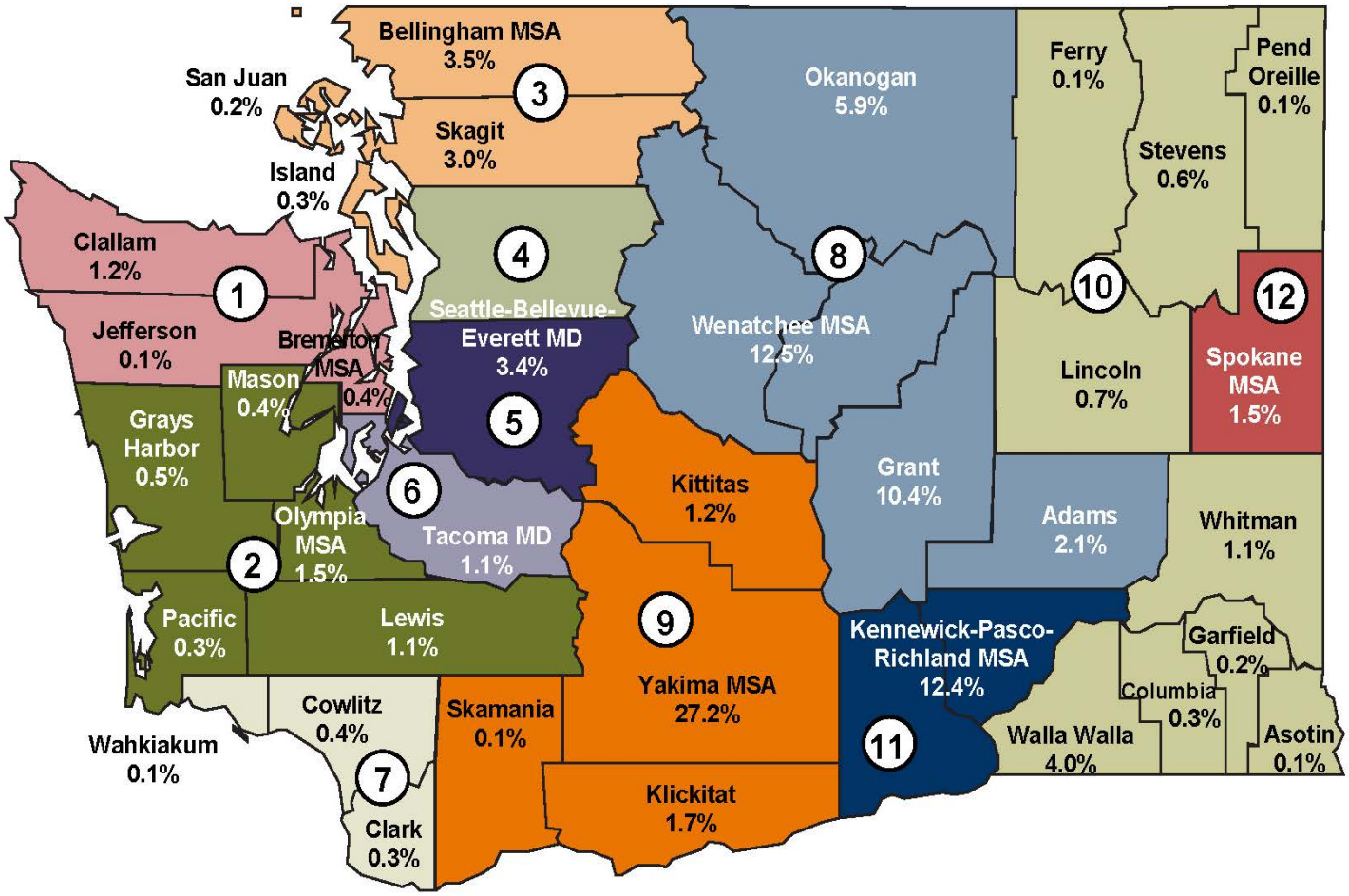
These rates do not directly compare with the AEWR, as they are not hourly averages for individuals employed in these activities. The AEWR is more comparable to the current-dollar median hourly earnings for agricultural workers in Washington state, which was $13.67 in 2013 (See *Figure 1-8* in *Chapter 1* of this report).

Summary

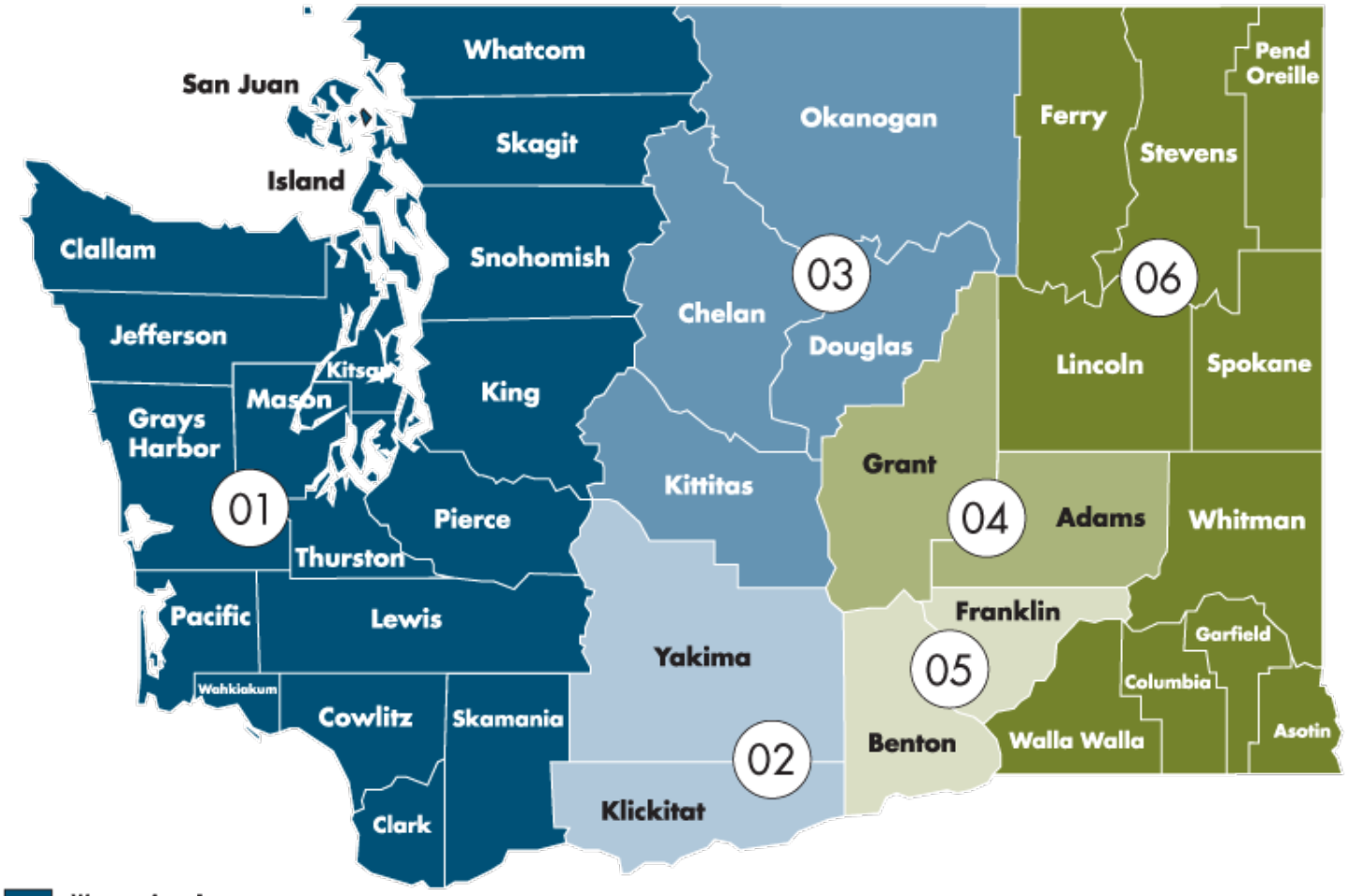
- The Great Recession and the post-recession recovery affected agricultural labor shortages reported in Washington.
- Reported shortages were smallest during the Great Recession and the first year of post-recession recovery in 2010.
- Generalized labor shortages were reported in 2013.
- H-2A certifications have increased significantly for Washington state growers in both absolute and percentage terms over the past decade.
- The AEWR for Washington state was below average hourly earnings for agriculture in current dollars. However, other benefits an employer must provide to H-2A workers increased average hourly wage costs to the employer.

Appendices

Appendix figure A-1. Total agricultural employment in percent by metropolitan division (MD), metropolitan statistical area and county within the 12 workforce development areas (WDAs)
Washington state, 2013
Source: Employment Security Department/LMPA; U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics



Appendix figure A-2. Agricultural reporting areas 1 through 6
Washington state, 2015
Source: Employment Security Department/LMPA



Western Area 1
Clallam, Clark, Cowlitz, Grays Harbor, Island, Jefferson, King, Kitsap, Lewis, Mason, Pacific, Pierce, San Juan, Skagit, Skamania, Snohomish, Thurston, Wahkiakum and Whatcom

South Central Area 2
Klickitat and Yakima

North Central Area 3
Chelan, Douglas, Kittitas and Okanogan

Columbia Basin Area 4
Adams and Grant

South Eastern Area 5
Benton, Franklin and Walla Walla

Eastern Area 6
Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Spokane, Stevents and Whitman

Appendix figure A-3. Number of agricultural workers* by month and annual average, statewide, by county, metropolitan divisions (MDs) and metropolitan statistical areas (MSAs)
Washington state, 2013
Source: Employment Security Department/LMPA; U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Washington	74,910	82,260	88,450	96,140	99,970	139,660	150,640	127,140	131,080	123,940	90,570	74,690	106,620
Adams	1,430	1,500	1,740	2,400	2,480	2,870	3,210	3,040	3,050	2,740	1,600	1,380	2,290
Asotin	120	140	160	180	190	170	170	170	160	140	130	120	150
Bellingham MSA	2,940	3,040	3,360	3,280	3,440	4,150	6,480	5,380	3,550	3,170	2,890	2,770	3,700
Bremerton MSA	290	320	350	390	420	440	450	410	390	370	360	320	380
Clallam	290	300	320	340	370	400	440	420	380	330	320	290	350
Clark	980	1,070	1,140	1,210	1,370	1,710	1,660	1,360	1,260	1,230	1,140	1,080	1,270
Columbia	230	240	260	260	280	320	340	390	340	280	240	210	280
Cowlitz	330	380	440	540	530	600	580	450	400	400	390	380	450
Ferry	90	110	120	120	130	140	150	140	130	100	90	90	120
Garfield	130	140	160	170	180	200	220	220	180	170	140	130	170
Grant	7,530	8,290	9,450	10,350	10,640	14,400	14,630	12,550	13,650	14,090	10,310	7,460	11,110
Grays Harbor	400	550	610	560	590	610	610	560	530	520	420	380	530
Island	260	290	320	340	360	390	420	380	380	320	300	300	340
Jefferson	120	130	140	140	170	180	180	180	150	130	130	120	150
Kennewick-Pasco-Richland MSA	8,720	9,780	10,690	11,780	12,860	20,540	16,580	16,050	16,670	14,980	11,180	8,780	13,220
Kittitas	920	1,050	1,190	1,840	1,330	1,420	1,570	1,430	1,400	1,410	1,260	730	1,300
Klickitat	1,380	1,520	1,600	1,790	1,670	2,320	2,580	2,130	1,990	2,040	1,630	1,200	1,820
Lewis	960	1,040	1,130	1,180	1,270	1,330	1,500	1,520	1,320	1,120	1,120	960	1,200
Lincoln	590	630	690	680	720	760	820	930	800	710	630	590	710
Mason	360	380	400	440	470	490	500	490	440	440	450	430	440
Okanogan	3,940	4,300	4,530	4,970	5,280	8,770	10,890	8,460	8,940	7,570	4,340	3,810	6,320
Olympia MSA	1,310	1,400	1,450	1,600	1,770	1,870	1,890	1,830	1,740	1,590	1,500	1,450	1,610
Pacific	290	320	350	380	400	420	440	410	380	380	320	290	360
Pend Oreille	110	120	140	150	160	170	180	160	150	140	120	120	140
San Juan	130	140	160	170	190	200	210	190	180	160	140	130	170
Seattle-Bellevue-Everett MD	2,720	3,000	3,310	3,650	3,960	4,220	4,360	4,040	3,750	3,830	3,210	2,860	3,580
Skagit	2,370	2,470	2,920	2,990	3,060	3,090	4,050	4,240	3,830	3,800	2,700	2,420	3,160
Skamania	70	90	100	110	110	120	130	130	140	110	90	70	110
Spokane MSA	1,160	1,360	1,520	1,680	1,810	1,870	1,870	1,820	1,700	1,540	1,340	1,210	1,570
Stevens	490	550	640	720	750	790	810	760	700	600	530	490	650
Tacoma MD	1,030	1,100	1,220	1,230	1,290	1,350	1,350	1,300	1,230	1,180	1,020	950	1,190
Wahkiakum	50	50	60	60	70	70	70	70	60	50	50	50	60
Walla Walla	3,020	3,200	3,450	3,670	4,060	5,420	5,540	4,880	4,750	5,060	4,720	2,930	4,220
Wenatchee MSA	9,150	9,690	10,050	10,140	10,000	18,100	24,520	16,160	16,680	16,410	10,460	9,140	13,370
Whitman	910	990	1,080	1,090	1,150	1,210	1,310	1,410	1,260	1,120	980	930	1,120
Yakima MSA	20,120	22,540	23,220	25,540	26,410	38,550	39,920	33,080	38,440	35,720	24,320	20,130	29,000

*Total agricultural employment includes individuals who are covered and not covered by the unemployment insurance program. The data are not adjusted for multiple job holders.

Appendix figure A-4. Seasonal agricultural workers by crop and production activity
Washington state, 2013
Source: Employment Security Department/LMPA, Agriculture Employment and Wage Survey

	Seasonal employment, Washington state												
Activity	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Average**
State totals, all activities	**16,510**	**19,380**	**22,870**	**31,830**	**33,460**	**63,950**	**86,700**	**65,410**	**69,770**	**56,850**	**24,950**	**17,770**	**42,454**
Apples, total	**9,460**	**8,740**	**9,290**	**15,810**	**14,960**	**21,790**	**20,510**	**21,800**	**42,180**	**40,300**	**14,370**	**9,480**	**19,058**
Apple pruning	8,508	7,762	4,972	2,559	2,125	345	237	1,499	889	670	1,608	7,643	3,235
Apple thinning	0	0	540	6,958	5,709	17,349	15,571	4,362	1,464	3,002	0	0	4,580
Apple harvester	0	0	0	0	0	23	23	7,171	36,425	30,528	8,266	N/A	7,494
Apple sort, grade, pack	464	539	597	480	483	429	213	260	574	517	331	430	443
Other apple activities	488	439	3,182	5,813	6,643	3,644	4,465	8,508	2,829	5,583	4,164	1,408	3,930
Cherries, total	**1,770**	**2,110**	**1,560**	**2,640**	**3,210**	**22,750**	**38,880**	**12,680**	**1,020**	**380**	**310**	**1,100**	**7,368**
Cherry pruning	1,694	1,762	578	121	91	126	N/A	393	0	178	120	786	532
Cherry harvester	0	0	0	0	0	17,163	30,733	10,938	N/A	30	N/A	0	5,886
Other cherry activities	76	348	982	2,519	3,119	5,461	8,127	1,349	1,016	172	183	314	1,972
Pears, total	**290**	**220**	**360**	**190**	**549**	**1,137**	**380**	**3,349**	**5,010**	**740**	**553**	**1,163**	**1,162**
Pear pruning	290	201	233	0	N/A	N/A	0	0	0	0	343	944	201
Pear thinning	0	0	0	110	419	944	105	N/A	119	0	0	0	154
Pear harvester	0	0	0	0	0	0	0	3,037	3,804	307	N/A	N/A	715
Other pear activities	0	19	127	80	130	192	275	311	1,088	433	210	219	257
Hops workers	520	1,100	1,380	1,810	2,470	1,870	1,480	1,700	3,240	1,400	990	N/A	1,633
Grape workers	830	2,030	2,140	1,990	1,750	1,430	2,120	2,040	1,490	1,590	950	710	1,589
Potato workers	510	680	850	990	1,260	900	1,200	1,110	2,480	2,510	1,420	1,130	1,253
Onion workers	730	730	740	720	N/A	1,440	710	2,530	1,590	1,530	1,410	1,030	1,196
Nursery workers	260	790	1,710	1,480	1,270	1,130	1,080	940	790	520	1,140	670	982
Other tree fruit workers	90	130	210	N/A	1,250	630	3,270	2,360	890	360	N/A	120	931
Raspberry workers	280	290	700	790	N/A	610	4,150	1,090	440	410	360	540	878
Blueberry workers	490	460	50	40	70	N/A	1,710	4,220	530	540	210	280	782
Strawberry workers	N/A	N/A	N/A	N/A	N/A	1,860	N/A	N/A	N/A	N/A	N/A	N/A	1,860
Wheat/grain workers	20	N/A	80	90	130	430	600	1,040	480	140	160	N/A	317
Asparagus workers	N/A	0	210	280	N/A	570	N/A	N/A	N/A	N/A	N/A	N/A	265
Cucumber workers	N/A	N/A	N/A	N/A	N/A	80	110	160	N/A	N/A	N/A	N/A	117
Bulb workers	60	30	N/A	20	60	N/A	N/A	50	70	N/A	110	80	60
Miscellaneous vegetable workers	70	230	790	1,050	840	1,010	900	1,160	1,010	1,160	760	180	763
Other crops or farm activities	1,130	1,840	2,800	3,930	5,630	6,290	9,600	9,170	8,550	5,270	2,200	1,270	4,807

N/A = Results did not meet publication standards.

Glossary

Following are definitions of terms and concepts used in this report.

Adverse Effect Wage Rate (AEWR) – The annual weighted average hourly wage for field and livestock workers (combined) in the states or regions as published annually by the U.S. Department of Agriculture (USDA) based on its quarterly wage survey.

Current dollars – The dollar value or price of a good or service at the time a good or service is received. In general, when there is a continuous increase in the general price level over time it is incorrect to compare the dollar value of goods or services between time periods in current-dollar prices. The incomparability of current-dollar prices increases as the interval between comparison years increases.

Inflation-adjusted dollars – The adjustment of the dollar value or price of a good or service to compensate for general inflation in the economy over time. Inflation adjustment of a good or service relative to some base year of comparison allows one to observe changes in what is termed the real value of that good or service over time.

Seasonal 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 previously listed for migrant agricultural workers apply here.

Shortage of labor – There is no official definition of a labor shortage. Empirically, a 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 market 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 being offered is below what workers are willing to accept. Increasing the wage rate will tend to reduce or eliminate the shortage.

Wage bill – The product of the earnings or wages paid to workers times the number of workers hired. From the growers and society's standpoint, this is a cost of production.