

Estimates of Migrant and Seasonal Farmworkers in Agriculture, 2018 Update

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Table of Contents

Discussion of Estimates..... 1

Background and Study Purpose 1

Agricultural Workers: Methodology and Estimates..... 3

 Step 1: Estimate total workers for agricultural employment 3

 Step 2: Reduce the total number of workers to account for multiple job holders 5

 Step 3: Assume 33.5% of all workers are migrant and 66.5% are seasonal workers 5

 Calculation Examples 5

 Step 4: Reconcile the number of migrant crop workers with the estimates of migrant labor from the Census of Agriculture..... 6

 Table 1: County level migrant and seasonal farmworker estimates 8

 Table 2: Demand for labor calculations by commodity 9

Non-farmworkers and Children and Youth: Methodology and Estimates 11

 Steps 5-6: Estimating the number of accompanying non-farmworkers..... 11

 Step 7: Estimating the number of migrant and seasonal children and youth 12

 Table 4: Total migrant and seasonal youth and children by age in Oregon 13

Presence of Indigenous Workers- not a population estimate 13

 Table 5: Justice Department Statewide Indigenous Language Requests for 2017 Oregon..... 14

Limitations 14

Discussion of Estimates

Estimating the number of migrant and seasonal farmworkers in agricultural positions in Oregon is a difficult task. This report was completed to fulfill the policy and resource allocation needs of the Oregon Health Authority's (OHA) Primary Care Office, and therefore adopts a definition of migrant, seasonal, and agricultural work to best meet the agency's needs. The healthcare sector's need for data on migrant and seasonal farmworkers launched a national effort to estimate the size of this population in 2000. In 2002, Oregon became the 11th state in the US to estimate this type of information. This report strived to adopt the innovative methodology used in previous reports (Larson method), when replicable, while also utilizing a new source of estimates of migrant and seasonal farmworkers by county: the 2012 Census of Agriculture.

The total number of migrant farmworkers is estimated to be 28,940--a statewide increase of 2.1% statewide since the last enumeration study was completed in 2013. In this report, many counties adopt the estimate of migrant farmworkers from the 2012 Census of Agriculture when this estimate is higher than the estimate produced from the Larson method. Benchmarking to the 2012 Census of Agriculture may understate the true growth in migrant agricultural labor. The total number of migrant children and youth, estimated to be 20,954, declined since the last report as a result of now relying exclusively on data from Oregon's Department of Education (and not blending this data with patient records from Multnomah County). Readers are cautioned to take this report's assumptions into account as they use these estimates. There are many factors that could be driving change to the migrant population in Oregon since the last report, and for most we have only anecdotal evidence.

Another point of comparison is a national effort released in 2013 by Kissam and Williams¹ to estimate the number of agricultural workers and their dependents. Those authors' use a different methodology that includes agriculture, processing, and forestry work, and they find Oregon had approximately 178,758 agricultural workers and family members. This total is similar and only slightly higher than the total of 172,611 migrant and seasonal agricultural workers and family members found in this report, but the two components, farmworkers and family members, are substantially different. Kissam and Williams estimate Oregon had 66,951 agricultural workers (nearly 20,000 fewer than noted in this report) with a total of 111,808 dependents (nearly 26,000 more than found in this report).

To the extent that devising timely, transparent, and accurate estimates of this population is important to organizations across the state, I strongly encourage interested partners to seek ways to collaborate on improving the methodology for future estimates. This report relied heavily on two established methods of counting this population: the Census of Agriculture and the Oregon Department of Education Migrant Education Program. More work could be done to improve the ways of estimating the average household size, the percent of farmworkers who travel alone, and the Indigenous population.

Several counties had little to no migrant labor under any source or estimation procedure, which may reflect reality or the challenges of collecting data. Six counties had fewer than 10 migrant workers: Harney, Lake, Sherman, Tillamook, Wallowa, and Wheeler.

Background and Study Purpose

This report provides updated estimates of migrant and seasonal farmworkers in agriculture (see precise definition below) and their households using data from 2012-2016. This is the third set of estimates of

¹ Ed Kissam and Shannon Williams. "Estimate of Agricultural Workers and their Dependents in the United States", June 2013, National Legal Aid and Defender Association.

this population provided to the Oregon Primary Care Office, used in particular to analyze Health Professional Shortage Areas and other workforce access issues. As much as possible, this report follows the methodology and reporting structure established in the two prior reports released in 2002 and 2013 by Dr. Alice Larson.²

The 2002 Oregon Migrant and Seasonal Farmworker Enumeration Profiles Study was the eleventh such study to be completed nationally but was the first for Oregon. Many of the study's assumptions were revisited in an intensive second study published in 2013. Estimates from both of these studies have been used by multiple state agencies, non-profits, researchers, and others for program planning, advocacy, and informational value.

Commissioned by the OHA's Primary Care Office for use in health policy programming as stated above, the previous reports used a definition of migrant and seasonal farmworker that met these needs. For consistency, the MSFW (Migrant and Seasonal Farmworker) definition used in the 2002 and 2013 studies is incorporated into this work. The definition partially corresponds to the MSFW definition used by the Migrant Health Program, but our MSFW definition is unable to count the number of migrant and seasonal farmworkers who may have been employed in a prior year but are not currently employed. As noted below, the estimates in this report do not cover all agricultural jobs equally. No effort was made to determine the legal status of MSFWs or non-farmworker household members. Many agencies serve migrant and seasonal farmworkers and have set their own definitions, the total count of workers would change using a different set of definitions.

This report uses the following definitions:

A seasonal farmworker is defined as an individual who was actively employed in agriculture on a seasonal basis (not more than 9 months out of the survey year for some industries).

A migrant farmworker meets the same definition as a seasonal farmworker, but establishes for the purposes of such employment a temporary abode.

Agricultural employment includes jobs in crop production and some processing of crops grown in the state (see list in Table 2), nurseries and greenhouses, reforestation efforts, and specialty forest product gathering. In some counties, estimates will also cover livestock, other field crops like hay and grass seed, and aquaculture. Commercial fishing and commercial processing and packaging off-farm operations are not covered by these estimates. See the methodology section below for more details.

Estimates are provided for the following:

- Migrant farmworkers and seasonal farmworkers by county.
- Non-farmworkers present in the same household as migrant farmworkers and seasonal farmworkers (defined by the term "accompanied") by county.
- Migrant and seasonal children and youth under the age of 20, statewide only.

² Previous reports can be accessed here: Migrant and Seasonal Farmworker Enumeration Profiles Study Oregon Final 2002, <http://library.state.or.us/repository/2010/201003081303391/index.pdf>; Migrant and Seasonal Farmworker Enumeration Profiles Study Oregon Final 2013, http://www.ohdc.org/uploads/1/1/2/4/11243168/2013_update_to_msfw_enumeration_studies_report.pdf.

The methods used to create all estimate are described in brief below, while the Appendix offers more details on the methodology.

Agricultural Workers: Methodology and Estimates

This study was conducted with two primary objectives:

1. To maintain consistency with the previously used methodology;
2. To produce new estimates in a shorter time frame and with fewer resources, acknowledging that it would not be possible to update the full methodology which had relied on a statewide survey and extensive interviews with agricultural production experts.

The current report uses an expedited methodology in order to provide updates estimates in time for key policy decisions. This report accepts many of the assumptions made in the last report. Readers are encouraged to reference lengthier descriptions of adopted methodologies given in the previous reports. During the course of this study, another objective arose:

3. Compare estimates of total crop workers by county to the Census of Agriculture migrant workers by county estimates since both are based on 2012 crop acres.

Since the last study was published, the Census of Agriculture has begun collecting an estimate of the number of migrant farmworkers from businesses designated as farms (farms are defined as businesses that sold or intended to sell at least \$1,000 of agricultural products in the year the Census is taken). Federal law requires anyone who receives the Census of Agriculture to respond either online or by mail. The first set of estimates of migrant labor were collected as part of the 2012 Census of Agriculture and were released in 2014. Since the Census of Agriculture is conducted every five years, the next available estimates collected during 2017 will be released in 2019. Our current study compares the estimates calculated based on the same methodology used in the two previous studies with the estimates provided by the 2012 Census of Agriculture. The Census of Agriculture estimates only cover migrant workers and not their family members.

Step 1: Estimate total workers for agricultural employment

This report starts by estimating the total workers employed in agriculture in four different industries: crops, nurseries and greenhouses, reforestation, and specialty forest products.

Step 1a: Estimating total workers for 55 different labor intensive crops

The two previous Oregon MSFW Enumeration study reports undertook extensive efforts to:

1. Create a list of labor intensive crops in Oregon;
2. Identify the components of planting and cultivation, harvesting, and processing that were the most labor intensive for each crop; and
3. Estimate the number of hours each task would require per acre.

In order to convert the total hours of labor to number of workers, the previous reports also assumed that the average worker works a set number of hours a day and established a number of peak season days of work for each crop (See Table 2). The 2013 report applied these labor demand assumptions to acreage estimates from the 2007 Census of Agriculture (the most recent data available at the time).

All farm workers who contribute to these labor intensive tasks are assumed to be either migrant or seasonal workers and this report does not set any maximum number of hours or days of work. This assumption likely overstates the total migrant and seasonal workforce as some workers, including

owner operators, are full-time. Similarly, the same labor demands are applied to all farms without considering farm size. For labor intensive crops, medium and larger farms are likely to experience some labor efficiencies compared to smaller farms.

This report undertook this same methodology for labor intensive crops, with the intent of maintaining consistency with previous reports. Two primary changes were made:

1. The average number of hours of work performed daily by a single person was increased from 8.09 hours to 8.27 hours, based on updated information from the U.S. Department of Agriculture Farm Labor Report in the Pacific Region (Oregon and Washington). This same data source was used during previous reports, and updating the average number of hours was consistent with previous methods.
2. This report used the number of acres by county from the 2012 Census of Agriculture survey results, which were released in the summer of 2014. Updated estimates of acres of crops by county will next be released in the summer of 2019, based on data collected during 2017.

Step 1b&c: Estimating total workers for nurseries and greenhouses and specialty forest products

The list of crops in Step 1A excluded nursery and greenhouse products and the gathering of specialty forest products. These three industries are also known to be labor intensive. In the previous reports, in order to estimate the total number of workers in these areas, Dr. Larson worked with the Oregon Employment Department to calculate a 5-year average of the number of workers who worked for 9 months or less in each industry and who were covered by the state's Unemployment Insurance program. Oregon businesses are required to report employment by "all individuals, including aliens and minors, who are employed for any compensation or under any contract of hire by an employer... including contract, causal or temporary labor." Agricultural farm employers must submit records on employees once they pay \$20,000 or more in wages during a quarter or have 10 or more employees in 20 weeks of a calendar year. In addition, a second data source, the 2014 Census of Horticulture statewide count of workers who worked less than 150 days was used to estimate the number of nursery and greenhouse workers. The two derived estimates of the total size of the workforce were averaged to create a final total employment number by industry, see these calculations on the next page. These same procedures were replicated using newer data in this report.

Using five year averages of unemployment insurance records for nursery and greenhouse employment smooths the estimates. Total employment in this industry has been rather stable across 2012-2016, such that in 2016 there were only about 400 fewer workers who worked 9 months or less than in 2012. Using five year averages of unemployment insurance records for nursery and greenhouse employment smooths the estimates as well. Total employment in this industry has been rather stable across 2012-2016, such that in 2016 there were only about 400 fewer workers who worked 9 months or less than in 2012.

Step 1d: Estimating total workers for reforestation

The final labor intensive agricultural area of employment that was included in the Larson method was reforestation, or the replanting of trees post-harvest. Reforestation businesses are grouped together with other forestry support businesses which include activities unrelated to tree planting. These other business activities which include support activities for timber production, wood technology, forestry economics, marketing and consulting, forest firefighting, and forest pest control were deemed to be less likely to use labor that fit the definitions of seasonal and migrant. Unemployment Insurance records for workers who worked 9 months or less in this industry were accessed and the researcher entered a

confidential data agreement with the Oregon Employment Department to access business specific employment records in order to identify seasonal labor more directly related to reforestation. This statewide estimate was used as one source of labor and averaged with two other estimates based on different assumptions about the amount of time it takes to replant an acre of trees. See the Appendix for more details.

Step 2: Reduce the total number of workers to account for multiple job holders

As noted in Step 1 above, attempting to account for all labor needs and differences across businesses is complicated. Some people will work in more than one crop as a migrant or seasonal worker. This report, following the previous methodology, assumes that some people will fill multiple jobs at different rates by industry, i.e., “duplication rates.” The total number of identified crop jobs is divided by 2.068. This reduces total labor by one half to address that not all identified labor needs will be filled by different individuals. Reforestation jobs are divided by 1.148 to reduce total labor and total nursery and greenhouse jobs were divided by 1.057 to more accurately reflect the total number of workers. Specialty forest product jobs are not reduced, as very few jobs are present in this industry statewide.

These adjustments were derived by Dr. Larson in the 2012 report by consulting different data sources for each industry. Updating the previous methodology for handling multiple job holders is outside the scope of this report.

Step 3: Assume 33.5% of all workers are migrant and 66.5% are seasonal workers

This report, consistent with prior reports, starts with the assumption that all estimated agricultural workers are either migrant or seasonal. We do know that some crop workers do work full-time and some seasonal workers work off-farm as their primary source of income. However, it is too difficult to account for all of these scenarios. Instead this report assumes that of all identified agricultural workers, 33.5 percent of them are migrant workers and the remaining 66.5 percent are seasonal workers. Dr. Larson derived these estimated percentages by analyzing health clinic patient data in 2012 (updating these assumptions is outside the scope of this report).

Calculation Examples

Example of applying Steps 1-3 to calculate crop employment

The following example illustrates how steps 1-3 were used to estimate total employment for apricot production. This example is at the state level, but in the actual calculations, these numbers were produced for individual counties and the state total is the total of all counties. These calculations use the labor demand assumptions found in Table 2.

Step 1: Estimating total workers for apricots using the demand for labor calculations

Method 1:

$$\frac{2012 \text{ Acres (35)} * \text{Hours to Perform Task (96)}}{\text{Season length (16.83 days)} * \text{Hours per day (8.27)}} = 24.14 \text{ workers}$$

Method 2:

$$= 1 \text{ worker per acre (35 acres)} = 35 \text{ workers}$$

$$\text{Average the two estimates: } (24.14 + 35)/2 = 29.6 \text{ workers}$$

Step 2: Divide the total estimate of workers by 2.068 to account for duplication =14.3 workers

Step 3: Assign migrant and seasonal worker percentages to the total. 14.3 workers * .335 = 4.8 migrant workers; 14.3*.665 = 9.5 seasonal workers statewide in apricot production

Example of applying Steps 1-3 to calculate nursery and greenhouse employment

The following example illustrates how these steps were used to estimate total employment in the nursery and greenhouse industry. This example is at the state level, but in the actual calculations, these numbers were produced for individual counties and the state total is the total of all counties.

Step 1: Estimating total workers for nurseries and greenhouses

Calculate total workers who were employed 9 months or less in a nursery or greenhouse

business using a 5 year average of Unemployment Insurance records = 11,557 workers

Total workers who worked < 150 days using the 2014 Horticultural Survey = 12,904 workers

Average the two estimates = 12,230 workers

Step 2: Divide the total estimate of workers by 1.057 to account for duplication = 11,570 workers

Step 3: Assign migrant and seasonal worker percentages to the total

11,570 workers * .335 = 3,876 migrant workers; 11,570 * .665 = 7,694 seasonal workers

statewide in the nursery and greenhouse industry.

Step 4: Reconcile the number of migrant crop workers with the estimates of migrant labor from the Census of Agriculture

Since the last study was published in 2013, the Census of Agriculture, a national survey conducted every five years by the United States Department of Agriculture, added a question about the use of migrant labor on farms. Responding to the Census of Agriculture is mandatory and the census has an exhaustive method for reaching farm establishments.³ While mandatory, fewer resources allocated by the Census for farm outreach meant that the 2012 Census had only an 80.1% response rate nationally. The Census of Agriculture uses the following definitions:

Farm: "Any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year." This includes any plant crops grown in the field or in a greenhouse, livestock including aquaculture, nursery products, and floriculture products.

Migrant farm workers are defined as: "a farm worker whose employment required travel that prevented the worker from returning to his/her permanent place of residence the same day."

The Census of Agriculture asks farm business operators to report the number of migrant farmworkers employed on the farm either as hired labor or contract labor.

The Larson approach used in the previous studies and the Census of Agriculture use different definitions and methods to establish an estimate of migrant workers. However, since the majority of workers are crop workers, and the two methods use the same data year (2012), it is reasonable to assume that the Larson method of estimating workers by crop and the actual reported workers for crops and all agricultural businesses should be comparable. In fact, the Census of Agriculture estimates could be larger than the estimates derived by the process explained in Steps 1A-1E for the following reason:

- The Census of Agriculture covers all farm establishments, and includes livestock production and hay, grass seed, and other crops omitted from the approach described above.

³ The 2012 Census of Agriculture methodology and details for county coverage in Oregon can be found here: https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/orappa.pdf.

However, the Census of Agriculture estimates may be smaller than the established method of identifying migrant workers for the following reasons:

- The assumptions about labor needs per crop, as used in previous studies and described above, are too high, because we assume all acres require the same amount of labor without considering farm size and because we do not account for the use of full-time labor.
- The assumption that 33.5% of all workers are migrant workers is too high.
- Farm operators responding to the 2012 Census of Agriculture are underestimating the number of migrant workers on their farm.
- Farms that use migrant labor are less likely to respond to the Census of Agriculture.

A comparison of the two data sets showed substantial differences in the number of migrant workers across Oregon's counties. For 18 counties, the derived number of migrant workers was more than 10 percent higher than the Census of Agriculture estimate, while the opposite was true in 10 counties. In the remaining 8 counties, the two estimates were within 10 percent of each other. This analysis resulted in the following changes to the methodology:

1. The Census of Agriculture estimates of migrant workers were assumed to be a minimum number. This minimum number was adopted for the 14 counties where the derived number was less than the Census of Agriculture number. These counties are identified with a * in Table 1. This increased the total number of migrant workers by 2,033 in 13 counties and by 5,694 in Wasco County (It is unknown why these numbers differ so dramatically for Wasco County).
2. Step 1A was revised for two labor intensive crops, grapes and potatoes, using updated production data. In both cases, the new estimates reduced the total number of workers and increased alignment between the Larson method which uses a hand labor calculation and the Census of Agriculture estimate. This decreased the total number of migrant workers by 1,296 in potatoes and by 3,270 in grapes.
3. After these two revisions, the number of migrant workers statewide was now less than the estimate of migrant workers in the Census of Agriculture and no further revisions were made.
4. The new number of migrant workers was divided by .335 to derive a new estimate of total workers, and 66.5% of this total were assumed to be seasonal workers in order to maintain the previous assumption about migrant and seasonal workers.

The adjustments made to incorporate the Census of Agriculture estimates as a benchmark did more to change the distribution of migrants across the state rather than adjust their total. For example, adjusting the total labor demands for potatoes reduced the worker estimates in Baker, Klamath, and Umatilla counties the most as this crop was their largest contributing factor to total labor demands. Reducing total employment for grape harvest, pruning, and processing reduced migrant labor the most in Douglas, Josephine, Lane, Polk, and Yamhill counties, where grape production accounted for between 35-68 percent of total migrant workers.

These estimates represent the best attempt to enumerate the number of migrant and seasonal agricultural workers in the Oregon.

Table 1: County level migrant and seasonal farmworker estimates

County	MSFW		Non-Farmworkers		Non-Farmworkers		Total MSFW Workers and Non- Farmworkers
	Estimates Total	Migrant Workers	Seasonal Workers	in Migrant Households	in Seasonal Households	Workers and Non- Farmworkers	
Field agriculture, nursery and greenhouse, and specialty forest gathering							
Baker	96	32	64	29	67	192	
Benton*	1,707	572	1,135	508	1,197	3,412	
Clackamas	6,154	2,062	4,093	1,830	4,313	12,296	
Clatsop	399	134	266	119	280	798	
Columbia	143	48	95	42	100	285	
Coos*	313	105	208	93	220	626	
Crook*	146	49	97	43	103	292	
Curry	282	95	188	84	198	564	
Deschutes*	87	29	58	26	61	173	
Douglas	1,313	440	873	390	920	2,624	
Gilliam*	96	32	64	28	67	191	
Grant*	63	21	42	19	44	125	
Harney	3	1	2	1	2	7	
Hood River	9,772	3,273	6,498	2,905	6,848	19,524	
Jackson	3,287	1,101	2,186	977	2,303	6,567	
Jefferson*	469	157	312	139	328	936	
Josephine	413	138	274	123	289	824	
Klamath	140	47	93	41	98	279	
Lake*	21	7	14	6	15	42	
Lane	1,451	486	965	431	1,017	2,899	
Lincoln	65	22	43	19	46	131	
Linn	2,118	710	1,409	630	1,485	4,233	
Malheur	4,567	1,530	3,037	1,358	3,201	9,126	
Marion	13,350	4,472	8,877	3,969	9,355	26,673	
Morrow	3,040	1,018	2,022	904	2,130	6,074	
Multnomah*	1,588	532	1,056	472	1,113	3,173	
Polk	3,328	1,115	2,213	989	2,332	6,650	
Sherman*	24	8	16	7	17	48	
Tillamook	20	7	13	6	14	40	
Umatilla	2,764	926	1,838	822	1,937	5,523	
Union*	1,090	365	725	324	764	2,177	
Wallowa	7	2	5	2	5	14	
Wasco*	22,337	7,483	14,854	6,641	15,654	44,631	
Washington*	7,463	2,500	4,963	2,219	5,230	14,911	
Wheeler	1	0	1	0	1	2	
Yamhill*	6,191	2,074	4,117	1,840	4,339	12,370	
Oregon Statewide	82,961	27,792	55,169	24,663	58,138	165,762	
Reforestation	3,428	1,148	2,280	1,019	2,402	6,849	
State Total	86,389	28,940	57,449	25,682	60,540	172,611	

*2012 Census of Agriculture migrant labor estimates, these values include migrant labor in livestock production

Table 2: Demand for labor calculations by commodity

Crop	Task	Method 1		Method 2	
		Hours per task per acre	Work Days	Hours per task per acre	Work Days
Apples	harvest	187.38	30.48		
	prune/thin	47.92	35		
Apricots	harvest	96	16.43	1 worker/acre	
Asparagus	harvest	59.59	28.57	3 worker/acre	
Beans - lima					
green/dry	preharvest	10.65	5.71		
Beans - green/snap	grade/clean/box/ storage	35.95	32.86		
Beets	harvest	29.02	43.57		
	prune/tie/train	162.93	21.43		
Blackberries	harvest	137.3	48.57		
	prune/thin/train	162.93	21.43		
Blueberries	harvest	648	51	.25 workers/acre	
	prune	60	21.43	48	21.43
	process/pack	140	51	.05 worker/acre	
	weed	65	8.13		
Boysenberries	harvest	76.5	15		
	prune/tie	57.5	21.43		
Broccoli	harvest/pack	101.44	43.57		
Cabbage	harvest	114.69	38.57		
Cantaloups	harvest	73.42	23.9		
Carrots	wash/grade/size/ pack	7.88	21.43		
Cauliflower	harvest	87	44.29		
Celery	harvest	125.7	10.71		
	harvest 1 & 2	28.66	10	185.63	43.57
	harvest 3 & 4	2.5 workers/acre		.33 workers/acre	
	harvest 5	.8 workers/acre			
	prune	44.75	43.57		
Cherries - Tart	preharvest	13	6.67		
Chestnuts	all activities	45	17.86		
Christmas Trees	all activities	31.7	21.43	Apply to 2015 acres	
	1. harvest-dry 70% 2. harvest-wet 30% - Coos				
Cranberries	wet only	24	12.5	12	12.5
Cucumbers/ Pickles	harvest	105.72	47.86		
	grade/pack	53.88	47.86		
Currants	harvest	75	13.57		
Garlic	plant/pre-harvest	18	21.43		
	harvest	115.73	87.86		
Grapes - Wine	mechanically harvested (87.5%)	3.85	17.14		
	hand harvested (12.5%)	200.83	17.14		
	general harvest 1	1.74 workers/acre			
	overall harvest	average both methods			
	prune/thin 1&2	.3 workers/acre		1/3rd of harvest workers	

Table 2: Demand for labor calculations by commodity, continued

Crop	Task	Method 1		Method 2	
		Hours per task per acre	Work Days	Hours per task per acre	Work Days
Grapes - Wine cont.	prune/thin 3&4	.1375 workers/acre		59.15	39
	process	0.0667 workers/acre			
Hazelnuts	all activities	1.46	7.86		
Herbs	harvest	293	33.57		
Hops	harvest	.0567 workers/acre			
	tie/train	15.43	18.4		
Kiwifruit	harvest	175	155		
Lettuce	harvest	109.6	59.29		
Loganberries	harvest	137.3	48.57		
Mint	Prune/weed	4	31		
Nectarines	harvest	38	30		
Onions	weed	100	21.43	82.94	21.43
	sort/pack	.25 workers/acre		.5 workers/acre	
Other berries	harvest	246.46	31.25		
Other crops	prune/tie/weed	10.55	23.67		
Peaches	harvest	87.59	32.86	1 worker/acre	
Pears - Bartlett	harvest	68.57	18.2	5 workers/acre/day	
	prune/thin	46.8	35		
Pears - Bosc and others	harvest	72.57	15	1.6 workers/acre	
	prune/thin	36.07	41.43		
Peppers - all types	harvest	176.09	57		
	grade/pack	156.08	57		
Plums	harvest	34	16.19		
Potatoes	general labor	3.44	54.29		
	sort/pack	5.06	54.29		
Pumpkins	harvest	46	53		
Radishes	harvest	105	32		
Raspberries	harvest	76.5	18.57	no est. for Clackamas, Washington, Multnomah	
	prune	40	22		
Rhubarb	harvest	120	15.71		
Spinach	harvest	150	9.29		
Squash - summer	harvest	83.79	30		
Squash - winter	harvest	82.46	30		
Strawberries	harvest	465.47	40.77		
Sugar beets	preharvest	5.91	21.42		
Sweet corn	harvest	44.21	31.07		
	pack	.175 workers/acre			
Sweet corn-seed*	detassel	71.6 acres/worker			
Tomatoes	harvest	166.67	32.69		
Turnips	harvest	178.5	77.15		
Walnuts	harvest	80	22.86	no est. for Washington	
Watermelon	harvest	78.01	28.54		

Non-farmworkers and Children and Youth: Methodology and Estimates

Steps 5-6: Estimating the number of accompanying non-farmworkers

To better understand the health needs of migrant and seasonal farmworkers, this report also estimates:

- the percent of migrant and seasonal farmworkers who live and travel with household members (accompanied migrant and seasonal farmworkers),
- the average number of people in an accompanied migrant and seasonal household,
- the average number of farmworkers and non-farm workers per accompanied household,
- the total number of children and youth under the age of 20, who may or may not be farmworkers.

There are not adequate data sources for estimating the percent of workers who are accompanied or the average number of people per accompanied household specific to Oregon. These estimates carry forward the assumptions from past reports, which were based on patient records from some health clinics, the Oregon Child Development Coalition and the Oregon Human Development Coalition, and a national survey. While updating this report, the newer national survey was consulted - in the 2014 data, the average number of farmworkers per household had declined to 1.69 in migrant households and 1.24 in seasonal households. Adjusting this population component without being able to adjust the total household size greatly increased the total number of non-farmworkers. In an effort to not overstate the size of the population, all population components were retained from the previous reports. The first step in creating these population estimates are to source four population parameters (see Table 3).

Table 3: Population Component Assumptions used to estimate non-farmworkers

Population Component	Estimate	Data Source
% of accompanied migrant and seasonal farmworkers	75.8%	Patient databases from 8 health centers or farmworker clinics; using 2012 data.
Average number of people per accompanied household	4.09 people/accompanied household	Patient databases from 6 health clinics, the Oregon Child Development Coalition, and the Oregon Human Development Coalition; using 2012 data.
Average number of farmworkers per accompanied household	2.05 farmworkers per household	2005-2009 National Agricultural Workers Survey (NAWS) data for Region 5: CO, ID, MT, NV, OR, UT, WA
Average number of non-farmworkers per accompanied household	$2.04 = 4.09 - 2.05$ = Household size – farmworkers per household	Mathematical equation

These population parameters are used in the following three equations to estimate the total number of non-farmworkers that accompany both migrant and seasonal farmworkers. The examples below use the current data for migrant farmworkers:

Equation 1: Determine the total number of farmworkers living in accompanied households(hh).

$$\begin{aligned} & \text{Total migrant farmworkers (28,940) * \% Accompanied farmworkers (0.758)} \\ & = \text{Total accompanied migrant farmworkers (21,936)} \end{aligned}$$

Equation 2: Determine the total number of accompanied migrant farmworker households

$$\frac{\text{Accompanied workers (21,936)}}{\text{Avg. farmworkers per hh (2.05)}} = \text{Total accompanied farmworker hh (10,700)}$$

Equation 3: Determine the total number of non-farmworkers accompanying migrant and seasonal farmworkers

$$\begin{aligned} & \text{Total accompanied farmworker hh (10,700) * Non – farmworkers per hh(2.04)} \\ & = \text{Total Non – farmworkers accompanying migrant workers (21,829)} \end{aligned}$$

Step 7: Estimating the number of migrant and seasonal children and youth

The previous reports used a combination of data sources to derive an estimate of the total number of children and youth accompanying migrant and seasonal farmworkers. These estimates were derived separately from the estimates of total people per household and average number of farmworkers and non-farmworkers per household to allow for the possibility that some children and youth may be farmworkers while others are not. This report replaces the previous methodology with one data source: the number of eligible migrant children from the Oregon Department of Education’s Migrant Education Program.

The Oregon Department of Education releases data on the total number of eligible migrant children and youth in seventeen age or grade categories, which also includes people ages 20 and 21. The definitions used by the agency differ from the definitions used to identify migrant farmworkers; however, this methodology is preferable to the above since the state employs a network of trained ‘recruiters’ who seek to identify and recruit migrant children. In addition, they use a linked software system to avoid double counting. The system counts all migrant children encountered and separately notes the number of children who go on to utilize one or more educational programs. More details can be found on the state’s methods on page 19 of this report:

<https://www2.ed.gov/admins/lead/account/consolidated/sy15-16part2/or.pdf>

Previous migrant enumeration studies have limited children and youth to people under the age of 20 and created only six age categories. Table 4 uses the number of eligible migrant student data from the 2014-2015 school year and assumes students are evenly distributed across grades by age (i.e. 50% of 12 year olds are in 6th grade and 50% are in 7th grade) to produce estimates which preserves the previous age categories. The final estimate of 20,954 children is lower than the total identified eligible migrant youth (21,187), as people in the unassigned grade category (UG) and a portion of the out-of-school youth category (OSY) that reflects 20- and 21-year-olds are removed. These numbers were then used to calculate new averages of all children and youth per age group. The percent of migrant children in each category was applied to seasonal farmworkers – consistent with previous reports. It is unknown to what extent these two populations are similar.

This data is an estimate of the population and should not be considered a complete count. This data source was chosen to maintain consistency with the estimates produced by the Oregon Education Department, and because this process was more transparent than the previous methods.

Table 4: Total migrant and seasonal youth and children by age in Oregon
Estimated number of migrant youth and children

Age Groups	Migrant Percent	Number of Migrant Children and Youth	Seasonal Percent	Number of Seasonal Children and Youth
< 1	2.9%	617	2.9%	1224
1 to 4	11.5%	2,420	11.5%	4804
5 to 12	52.6%	11,030	52.6%	21895
13 to 14	11.0%	2,307	11.0%	4578
15 to 18	18.6%	3,891	18.6%	7724
19	3.3%	689	3.3%	1368
Total	100.0%	20,954	100.0%	41,592

Presence of Indigenous Workers- not a population estimate

This report is unable to produce a statewide estimate of Indigenous workers. Yet, it is critical to understand the presence and needs of Indigenous workers separately from all migrant and seasonal farmworkers due to the extra challenges these populations may face navigating health care systems. This report is only able to provide one indicator of the presence of Indigenous populations in Oregon: language requests recorded by the Oregon Judicial Department.

In 2012, there were 96 requests for 15 different languages; the total number of requests more than quadrupled to 451 in 2017. In 2017, 12 Oregon counties submitted language requests; an increase from 6 counties in 2012 and 10 counties in 2011 (see Table 5). These trends suggest that the number of Indigenous people living in Oregon is increasing and that this population is present in more counties. Clackamas, Linn, and Polk counties are shown in Table 4 with 0 requests in 2017 although each county had multiple requests in prior years.

Table 5:

Oregon Justice Department Statewide Indigenous Language Requests for the Calendar Year 2017

2017	Benton	Clackamas	Clatsop	Deschutes	Lane	Lincoln	Linn	Malheur	Marion	Morrow	Multnomah	Polk	Umatilla	Washington	Yamhill	# by Language
Akateko								1	1	30						32
Chuj									16				7	1	4	28
Huichol													7			7
Ixil										5						5
Mam	33	1			4	29			46	3			16	1		133
Maya Yucatan																18
Mixteco								1	22					5		28
Mixteco Alto									1							1
Mixteco Bajo						3			30	1		2	12	4		52
Nahuatl		2												6		8
Q'Anjobal		1								3			27	2		33
Quiche	4									2	6		13			25
Purepecha (Tarasco)		2		13							4					19
Trique								1	10		8			1		20
Zapoteco		2			6	2			16				9			35
Total Requests by County	37	8	0	13	10	34	0	3	142	2	78	0	81	28	8	
County Language Count	2	5	0	1	2	3	0	3	8	1	9	0	7	7	3	

Limitations

This report represents a best effort to rely on existing secondary sources of data in order to estimate the MSFW population. This population changes rapidly and in response to a wide number of different incentives, which complicates these efforts. The provided estimates should not be considered definitive but rather as reasonable estimates.

- This report uses multiple data sources, which may count the same migrant more than once. A duplication rate has been applied to the total, which may or may not fully account for all duplication.
- Only the Census of Agriculture explicitly estimates the number of migrant workers and the number of seasonal non-migrant workers. This report attempts to count all seasonal workers and assumes that only 33.5 percent of all seasonal jobs (after the duplication rate has been applied) are held by migrant workers.

- Irregular data collection and releases require the report to use data sources from 2012 through 2016.
- Migrant populations change quickly. This report prefers to utilize all data sources available which allows some estimates to be averaged over multiple data points instead of relying on only the most recent time period. This smoothing may over or under estimate the current population count.
- The majority of migrant labor in Oregon appears to be in the agricultural production sector. Changes in mechanization rates, weather, and yield estimates may affect required labor in each commodity differently. This study was unable to update all of the assumptions from the last study; for example, it is likely that as agricultural production continues to become more efficient that the per acre labor utilization rates used in this report are now too high.
- Oregon contains many small population counties which can reduce the quality and completeness of estimates of the number of acres per crop provided in the Census of Agriculture. This can lead to underestimating migrant workers in these small counties.
- This report does not uniformly cover migrant and seasonal labor used for livestock and fishing, or the processing of animal products. This was done so as to provide a report that was in congruence with Dr. Larsen's previous works. It is well understood that workers in these industries can be incorporated into a broader definition of "migrant" or "seasonal." Therefore, in addition to what has been said above, it should be noted that the totals provided here represent a very conservative and intentionally incomplete estimate of a total migrant and seasonal worker profile in Oregon.