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RESEARCH ARTICLE

California has 882,000 farmworkers to fill 413,000 jobs

California's farm labor supply is stable, with differences in terms of commodities, as well as contracting versus a single employer.

by Brandon Hooker, Philip Martin, Zachariah Rutledge and Marc Stockton

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Abstract

California's agricultural employers hired an average of 413,000 workers between 2018 and 2021 and reported an average of 882,000 farmworkers during these years, a ratio of 2.1 workers for each job. Average agricultural employment has been relatively stable since 2000, while the number of workers reported by agricultural employers declined. Despite concerns about farm labor shortages, the data show a relatively stable pool of farmworkers, including a rising share who are brought to farms by farm labor contractors.

Rising labor costs and shortages of farm labor are major concerns of California farmers, prompting efforts to mechanize labor-intensive tasks and build housing to employ more H-2A guest workers, as well as increasing imports of fresh produce from lower-wage countries (Calvin et al. 2022). To determine the total number of farmworkers, we examined data on farmworker employment and earnings reported by farm employers when they pay unemployment insurance taxes. We found that average employment in California agriculture is stable, but a higher share of workers are being brought to farms by crop support service firms such as farm labor contractors. Crop support employees have the lowest average earnings, which might discourage people from continuing to work in the farm sector. Our method of counting the number of farmworkers identifies "unique" employees — in other words, we avoid double-counting workers who move from job to job.

Strawberry harvest workers in coastal California, where high housing costs are increasing labor costs, reliance on H-2A guest workers, and imports from lower-wage countries. *Photo:* joshuaraineyphotography, iStock.com.

Farm employment

The ratio of unique workers to average farm jobs is remarkably stable, suggesting two workers on average per year-round equivalent farm job. California's agricultural employers reported an average of 882,000 workers to fill an average of 413,000 jobs between 2018 and 2021, generating a 2.1 worker-to-job ratio. Agricultural employment in California ranged from a high of 465,000 in May 2018 to a low of 344,000 in March 2020. The COVID-19 pandemic in 2020 and 2021 reduced average employment by up to 5%, but did not affect the total number of workers reported (Rural Migration News 2020).

The North American Industry Classification System (NAICS) divides agricultural employment (NAICS code 11) into workers hired directly by employers who produce crops (NAICS 111), workers hired directly by employers who produce animal products (NAICS 112), and crop support workers (NAICS 1151).

Crop support workers work at a farm but are not directly hired by the farmer. They include employees of farm labor contractors (code 115115) and others. Employees who work for farm labor contractors comprise the largest share of crop support workers. Farm work may be seasonal (e.g., pruning, weeding or harvesting) or year-round in nature. Seasonal workers may be directly hired by the farmer or brought to the farm by a crop support employer such as a farm labor contractor. Workers who are employed by farm labor contractors are more likely to do seasonal work and less likely to work year-round.

Direct-hire crop workers, direct-hire animal workers, and crop support workers accounted for 82% of the average 882,000 unique workers reported by California agricultural employers between 2018 and 2021. Of the remaining 18% of workers, almost all had their primary (highest-earning) job with a non-farm employer; a handful were employed by a forestry, fishing or hunting employer.

Of the 724,500 workers whose primary job was in agriculture, 33% were employed directly by crop farms, 5% by animal farms, and 62% by crop support firms (see table 1). Within each of these sectors, one subsector accounted for most workers. Within crops, fruit and nut farms accounted for 62% of crop workers. Within animal agriculture, dairies accounted for 61% of animal workers. Within crop support, farm labor contractors accounted for 74% of all crop support workers.

California has had remarkable stability in average annual agricultural employment and the number of farmworkers over the past decade.

Strawberry workers were the largest category of direct-hire fruit and nut workers — which, as noted, is the largest crop subsector in California agriculture. Direct-hire strawberry workers accounted for 40,000 unique workers or a quarter of direct-hire fruit and nut workers, followed by 30,000 or 20% in grapes, 27,000 or 18% in tree nuts, and 22,000 or 14% in other non-citrus fruit, such as peaches and plums.

Turning to other categories of direct-hire crop workers, the 20,000 workers employed by nurseries

TABLE 1. Primary farmworkers by commodity, 2018–2021

Primary workers	2018	2019	2020	2021	Average	Share	Share total	Share of fruit & nut
Crops, animals, crop support	715,200	738,080	735,337	709,251	724,467			
Crops 111	245,910	241,653	247,332	235,063	242,490	100%	33%	
Vegs 1112	46,657	45,406	46,205	42,854	45,281	19%		
Fruit & nut 1113	154,254	149,649	154,392	146,499	151,199	62%		
Grapes 111332	36,269	31,120	28,174	25,555	30,280			20%
Strawberries 111333	38,274	39,911	40,523	39,471	39,545			26%
Other berries 111334	14,188	13,997	15,287	13,675	14,287			9%
Tree nuts 111335	27,560	27,266	27,569	26,766	27,290			18%
Non-citrus fruit 111339	19,446	19,216	24,554	23,552	21,692			14%
Nursery & green 1114	27,633	28,521	28,076	28,177	28,102	12%		
Misc crops 1119	13,035	13,838	14,700	14,085	13,915	6%		
Animals 112	33,658	32,974	33,341	33,046	33,255	100%	5%	
Beef cattle 112111	5,046	4,771	4,770	4,796	4,846	15%		
Dairy 112120	20,219	20,141	20,474	20,389	20,306	61%		
Crop support 1151	435,632	463,453	454,664	441,142	448,723	100%	62%	
Posthar crop 115114	68,838	69,606	61,353	58,914	64,678	14%		
FLCs 115115	316,846	342,705	342,246	332,996	333,698	74%		

FLCs = farm labor contractors.

Farmworkers harvesting lettuce. Of the 724,500 workers whose primary job was in agriculture, 33% were employed directly by crop farms, 5% by animal farms, and 62% by crop support firms. *Photo:* rightdx, iStock.com.

were over 70% of all workers in the nursery and floriculture subsector of direct-hire crop agriculture.

There are agricultural employers in every county, but the top five counties had half of all unique workers, including Kern (135,000 workers), Monterey (94,400), Fresno (91,500), Tulare (72,700) and Santa Barbara (40,900); see table 2. The next five counties included 18% of all unique workers, and the next 11, each with 10,000 to 28,000 workers, had a combined 21% of all unique workers. This means that 21 of the state's 58 counties have 88% of the unique workers reported by agricultural employers. The figure 1 maps show that there are fewer than 10,000 farmworkers in most California counties, including all counties north of the Sacramento–San Joaquin River delta.

TABLE 2. Average number of primary workers by county, 2018–2021

		Average		Share
California		881,994		100%
1	Kern	135,058		15%
2	Monterey	94,448		11%
3	Fresno	91,513		10%
4	Tulare	72,666		8%
5	Santa Barbara	40,886	434,571	49%
6	Ventura	34,852		
7	Los Angeles	33,270		
8	San Joaquin	32,513		
9	Madera	30,743		
10	Riverside	28,920	160,297	18%
11	Merced	27,643		
12	Stanislaus	26,328		
13	Imperial	25,374		
14	San Diego	20,962		
15	Kings	14,677		
16	Santa Cruz	14,557		
17	Orange	12,198		
18	Sonoma	11,515		
19	Yolo	10,093		
20	San Bernardino	10,085		
21	Santa Clara	10,066	183,496	21%

For the majority of individual workers, farm employment is relatively stable. We found that most workers (61% on average between 2018 and 2021) had only one California agricultural employer each year. Figure 2 and table 3 show that the number of farmworkers who had only one employer rose almost 10% between 2018 and 2020, while the number who had two or more employers fell by almost 15%. Similarly, the National Agricultural Workers Survey found that three-fourths of workers interviewed on crop farms in California in 2019–2020 had only one farm employer in the previous 12 months (DOL 2022). It is important to note, however, that workers employed by "one agricultural employer" may be employed by farm labor contractors and therefore may work on multiple farms.

Most workers reported by California agricultural employers had only one job in one commodity. Almost 78% of workers reported by animal agriculture and agricultural support employers had only one job in 2021, compared with 71% of workers hired directly by crop producers. Within crop production, over 70% of tree nut and citrus workers had only one job, compared with about 65% of the workers employed in other berries and non-citrus tree fruit. About 80% of workers employed by farm labor contractors had only one job in California in 2021.

Rounding out the picture, a quarter of workers had two California jobs, and 15% had three or more California jobs. Further, our data do not capture the jobs of workers employed in other states, such as California workers who do farm work in Oregon and Washington.

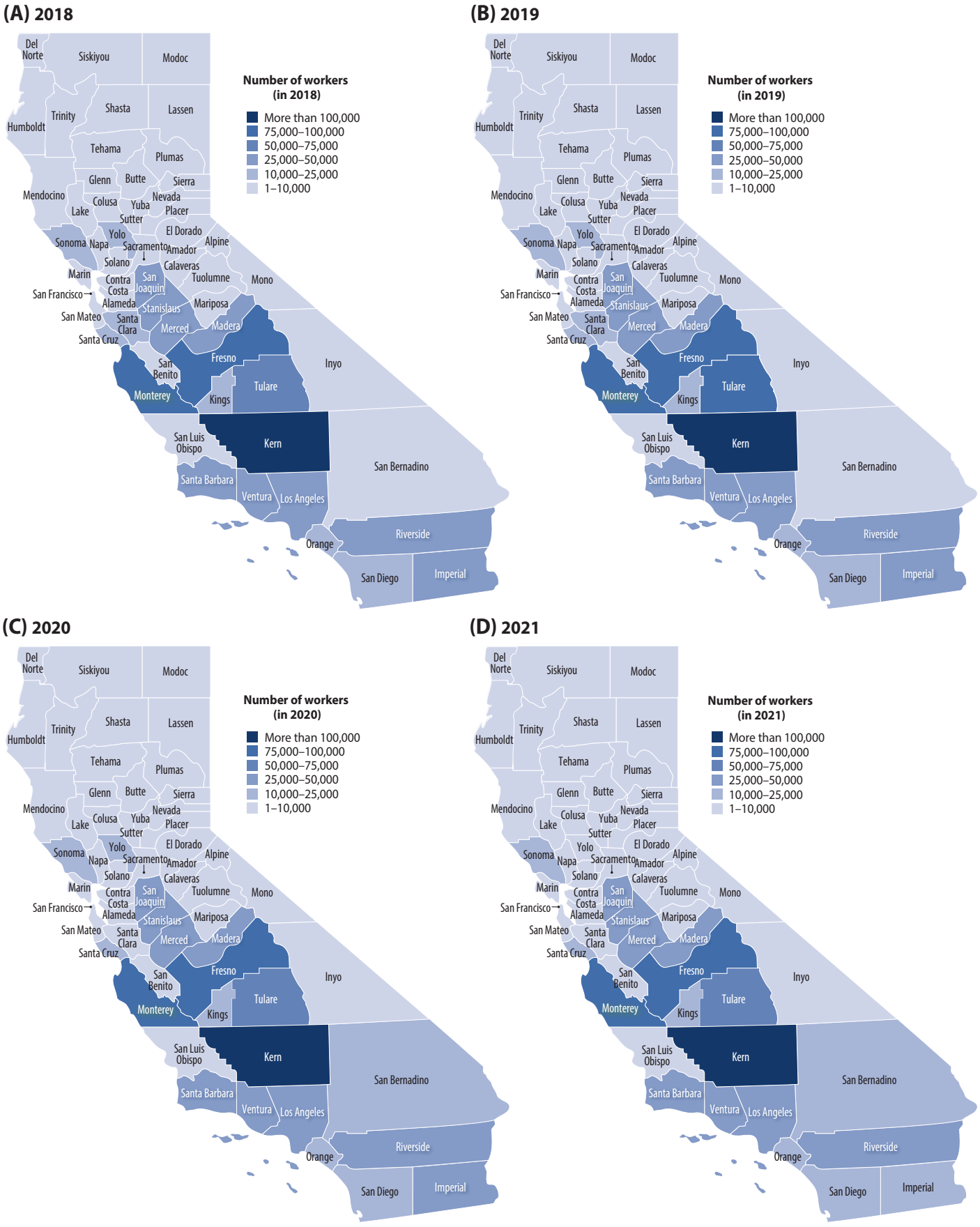

FIG. 1. Number of workers by county and year, 2018–2021. Source: EDD Quarterly Census of Employment and Wages, EDD Base Wage File.

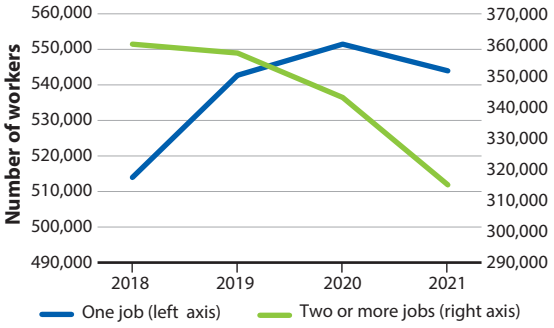

FIG. 2. Number of workers, by number of employers and year.

TABLE 3. Workers by jobs, 2018–2021

	2018	2019	2020	2021	Average (2018–2021)	Shares
One job (left axis of fig. 2)	514,021	542,793	551,449	544,049	538,078	61%
Two or more jobs (right axis of fig. 2)	360,293	357,486	343,242	314,641	343,916	39%
Two jobs	218,475	220,499	213,924	198,340	212,810	24%
Three or more jobs	141,818	136,987	129,318	116,301	131,106	15%

Differences in the worker-to-job ratio predictably vary by commodity. The ratio of unique workers to average jobs is higher for crop support firms that bring workers to farms, such as farm labor contractors, than for dairy farms that hire workers directly to fill year-round jobs. Previous analyses using 2012, 2014 and 2015 data found worker-to-job ratios of 2.0, suggesting that more workers are sharing each average job today than previously (fig. 3 and table 4). The increase in the worker-to-job ratio could reflect more employment in crop support and less direct hiring of farmworkers, since crop support firms such as labor contractors often bring workers to farms to perform specific tasks. Contract employees may get fewer hours of work if contractors are unable to arrange a continuous succession of jobs.

Our analysis does not consider immigration status. We note that some workers in each NAICS category may have H-2A or "guest worker" visas. We categorize non-H-2A workers as domestic, regardless of immigration status. With very few exceptions, H-2A workers are allowed to stay in the United States for only 10 months to perform seasonal work, and many H-2A employees work for farm labor contractors. This information will be of interest when we discuss how the lower earnings of farm labor contractor workers (relative to direct-hire crop and direct-hire animal workers) may affect the supply of domestic farm labor and lead to increased reliance upon the H-2A visa program.

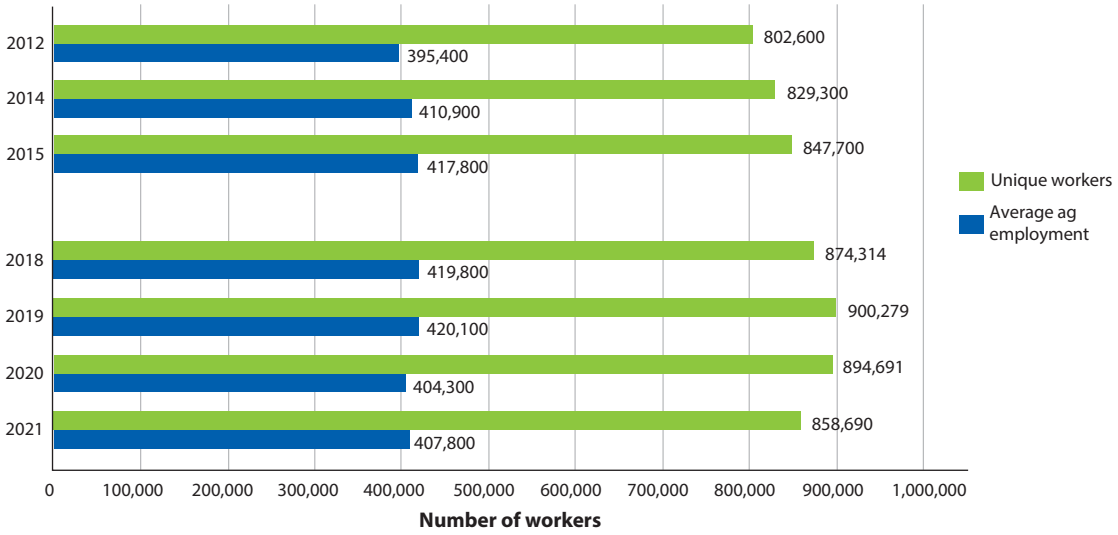

FIG. 3. Agricultural workers and average agricultural employment, 2012–2021. Source: California EDD.

TABLE 4. Agricultural workers and average agricultural employment, 2012–2021

	2012	2014	2015	2018	2019	2020	2021	Average (2018–2021)
Unique ag workers	802,600	829,300	847,700	874,314	900,279	894,691	858,690	881,994
Average ag employ	395,400	410,900	417,800	419,800	420,100	404,300	407,800	413,000
Ratio	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.1

Average earnings between 2018 and 2021 were highest in animal agriculture ($31,500) and lowest in support agriculture ($12,600); direct-hire crop workers had average earnings of $22,100. *Photo:* rightdx, iStock.com.

Counting jobs and workers

California requires all employers who pay $100 or more in wages to enroll in the state's Unemployment Insurance (UI) system and to pay taxes of 1.5% to 6.2% on the first $7,000 of each employee's wages ($105 to $434) to cover the cost of UI benefits for laid-off workers (California EDD 2023a). Employers report the names and Social Security numbers (SSNs) of all of their employees, including H-2A guest workers, for the payroll period that includes the 12th of the month (Castillo et al. 2022). Summing these monthly employment totals and dividing by 12 months generates average employment.

More than 465,000 workers are employed on California farms sometime during the year due to payroll periods that are typically weekly, as well as worker turnover (California EDD 2023b; California EDD 2023c). Workers who are employed only in payroll periods that do not include the 12th of the month, such as those who work only during the first, third, or fourth weeks of the month, are excluded from monthly and average employment. In 2016, when California's agricultural employment averaged 425,000, almost a million unique SSNs were reported by the state's agricultural employers, suggesting 2.3 unique workers for each average or year-round equivalent job (Martin et al. 2019).

Almost 20 million workers are employed in California sometime during the year by 1.7 million establishments. An "establishment" usually is one employer, but sometimes it is each unit of a multi-site employer. For this analysis, we extracted the employment and earnings data of all SSNs or workers reported by agricultural establishments (NAICS 11) in 2018, 2019, 2020 and 2021 to examine the relationship between unique workers and the average number of jobs by commodity. All SSNs reported by agricultural establishments are considered to be farmworkers. We compiled the earnings of each farmworker to determine where each worker or SSN had the highest earnings. We considered workers to be primarily employed in the commodity or NAICS where they had the highest earnings. Therefore, a primary farmworker is someone whose highest-earning job was from an establishment in NAICS 11, while farm labor employees had their highest-earning job with a farm labor contractor.

The 882,000 average unique workers reported by agricultural employers can be assigned to the county of the employer who reported the highest earnings for a particular worker. Most farmworkers have only one California farm job, allowing our analysis to assign them to the commodity and county of their farm employer. We assigned the 40% of workers with two or more jobs to the commodity and county of their highest-earning farm job.

These data are available only for California, and only after a significant data mining exercise. Most other states do not require all farm employers to enroll their employees in the UI system, and none extract the SSNs reported by farm employers, compile all of the jobs of these farmworkers, and provide the data for analysis.

Worker earnings

As noted above, COVID-19 reduced average employment, but did not affect the total number of workers (Rural Migration News 2020). The reduction in average employment reduced average earnings because the same number of workers shared fewer farm jobs.

Farmers report their total wage bill, so dividing total wages by average employment generates average earnings in each sector. Average earnings between 2018 and 2021 were highest in animal agriculture ($31,500) and lowest in support agriculture ($12,600); direct-hire crop workers were in between the other two sectors, with average earnings of $22,100 (table 5). Reasons for differences in average annual earnings include differences in hourly earnings and hours worked. For example, workers in animal agriculture typically work more hours than workers employed by contractors.

Figure 4 shows the average earnings of direct-hire crop workers (NAICS 111), direct-hire animal workers (NAICS 112), and agricultural support services workers (NAICS 115). Between 2018 and 2020, the average earnings in the three sectors rose in lockstep with California's minimum wage, which increased from $11.00 in 2018 to $14.00 in 2021 (for firms with 26 or more employees).

Average earnings peaked in 2020, when direct-hire crop, direct-hire animal, and agricultural support workers earned an average of $24,000, $35,000, and $14,000, respectively. Average earnings fell 15% to 20%

TABLE 5. Average earnings of primary farmworkers, 2018–2021 ($/year)

	2018	2019	2020	2021	Average	2018–2019	2019–2020	2020–2021
Crops 111	21,776	22,781	23,922	19,956	22,109	5%	5%	–17%
Vegs 111219	26,623	28,148	30,485	24,793	27,513	6%	8%	–19%
Grapes 111332	19,953	21,968	23,719	18,875	21,129	10%	8%	–20%
Strawberries 111333	16,099	15,894	16,099	13,582	15,418	–1%	1%	–16%
Other berries 111334	16,314	16,599	18,244	15,246	16,601	2%	10%	–16%
Tree nuts 111335	21,341	22,836	25,006	19,816	22,250	7%	10%	–21%
Noncitrus fruit 111339	17,004	16,185	16,648	13,672	15,877	–5%	3%	–18%
Nursery 111421	26,233	27,882	29,095	24,704	26,979	6%	4%	–15%
Misc crops 111998	23,479	25,164	23,775	19,927	23,086	7%	-6%	–16%
Animals 112	30,928	32,458	34,862	27,688	31,484	5%	7%	–21%
Beef cattle 112111	30,616	29,786	31,295	24,845	29,135	–3%	5%	–21%
Dairy 112120	31,006	32,488	35,034	26,864	31,348	5%	8%	–23%
Support 115	12,712	12,876	13,643	11,161	12,598	1%	6%	–18%
Posthar crop 115114	22,888	24,126	26,947	22,557	24,129	5%	12%	–16%
FLCs 115115	8,664	8,778	9,220	7,620	8,570	1%	5%	–17%

FLCs = farm labor contractors.

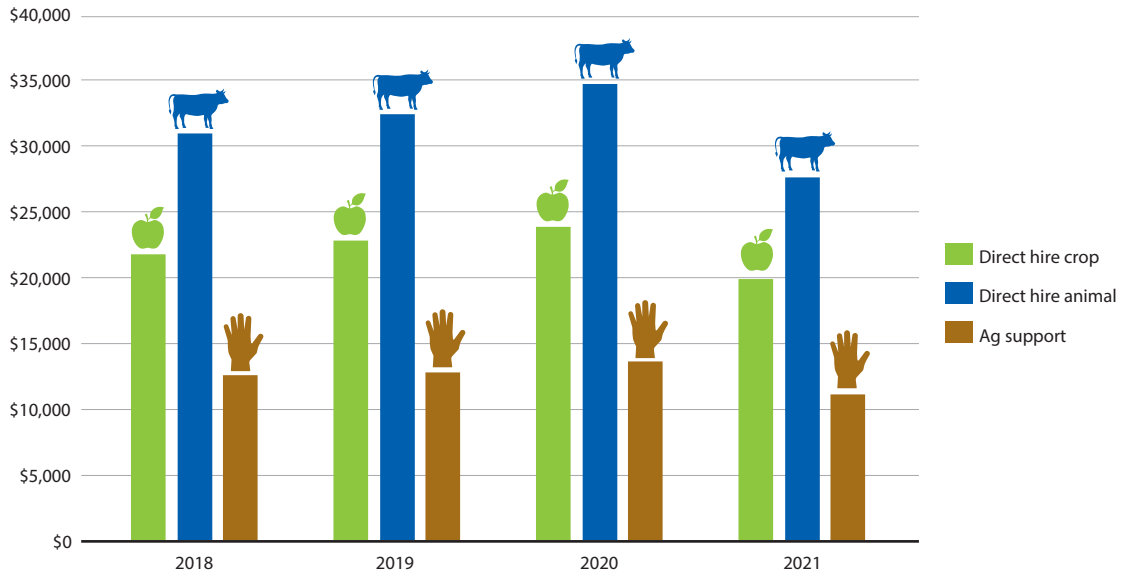

FIG. 4. Earnings of primary workers, 2018–2021 ($/year).

Within the animal agriculture sector, dairies accounted for 61% of animal workers. *Photo:* JackF, iStock.com.

in each sector in 2021, to $20,000, $28,000, and $11,000, respectively; this reflected employment dropping more than the number of farmworkers during COVID-19.

Within the fruit and nut sector, average earnings between 2018 and 2021 were highest for tree nut workers at $22,250 and lowest for strawberry workers at $15,400, likely reflecting differences in both hourly earnings and hours worked. The three fruit sectors with the highest share of harvest workers — strawberries, non-citrus fruit, and other berries — had the lowest earnings. Grapes and tree nuts, which have higher shares of non-harvest workers, have higher average earnings, although workers hired directly by nurseries had the highest annual earnings in crop agriculture, at $27,000.

Dairy workers had average earnings of $31,300, and support workers earned an average of $12,600. The largest support sector is farm labor contractors, where average annual earnings were $8,600 between 2018 and 2021. Average annual earnings for workers in some commodities increased up to 10% between 2018 and 2019, as well as between 2019 and 2020, but decreased by 15% to 20% for every commodity between 2020 and 2021 during COVID-19.

Trends in contract employment

California has had remarkable stability in average annual agricultural employment and the number of unique farmworkers over the past decade, with about 880,000 workers filling an average 415,000 jobs, or 2.1 unique workers per job. However, there are trends that bear watching.

Over 80% of all workers reported by an agricultural employer had their highest-earning job in California crop, animal or crop support agriculture; the others had their highest-earning job in the nonfarm economy, and a handful earned the most in forestry, fishing or hunting. Among the 725,000 primary farmworkers whose highest-earning job was in agriculture, a third were hired directly by crop farmers, 5% were employed directly by animal agriculture farms, and 62% were employed by crop support firms. More unique workers were reported by farm labor contractors — an average of 334,000 between 2018 and 2021 — than were hired directly by crop farms (242,000) and animal farms (33,000) combined.

California is unique among states in having more workers brought to farms by crop support firms such as labor contractors, where average earnings are less than $10,000. This trend indicates that California agricultural employment is changing from direct to indirect hires; that is, instead of crop farmers hiring workers directly, a rising share of farmworkers on crop farms are brought there by contractors. The result may be lower labor costs for crop farmers because workers are employed only when they are needed to perform tasks, but also lower earnings for farmworkers, since labor contractor employees earn a third as much as workers who are hired directly by crop farmers. The low average earnings of labor contract employees could encourage workers to leave the farm workforce.

Throughout U.S. agriculture, there are two directly hired workers for each crop support worker, but in California, there are two crop support workers for each directly hired worker, with farm labor contractor workers making up the vast majority of the crop support workforce. California agriculture is a pioneer in developing separate workforces for directly hired and crop support workers, which may lower labor costs. However, the increasing share of farmworkers who are employed by labor contractors may also lead to a shrinking pool of domestic seasonal farmworkers, eventually increasing reliance on H-2A guest workers. While this might seem counterintuitive — since the share of employment through farm labor contractors is rising and those employees tend to be the ones doing seasonal work — the low earnings of domestic employees who work for farm labor contractors may encourage them to leave the agricultural sector. In that case, H-2A workers may replace seasonal domestic workers who were previously working for farm labor contractors but left for better-paying work elsewhere. As such, increased reliance upon farm labor contractors may eventually lead to increased reliance upon the H-2A program. CA

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The views expressed in this report do not necessarily reflect the policies of the Employment Development Department or the state of California.

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