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Authors
Hooker, Brandon
Martin, Philip
Rutledge, Zachariah
et al.

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RESEARCH ARTICLE

California farmers are turning to nonfarm employers to fill lower wage seasonal jobs

In 2023, California had 894,000 workers filling an average of 412,000 full-time equivalent jobs, a ratio of 2.2 workers per job.

by Brandon Hooker, Philip Martin, Zachariah Rutledge and Matthew Shiroi

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How many workers are employed for wages in California agriculture and who employs them? Answering this question is challenging, as different surveys collect data that are not directly comparable. For example, farm employers report the earnings and hours worked of their directly hired employees during the week that includes the 12th of the month to the U.S. Department of Agriculture Farm Labor Survey (FLS). However, farm and nonfarm employers covered by unemployment insurance (UI) report the number of employees and their combined earnings for the payroll period that includes the 12th of the month, which may be for two weeks or a month, and these data are summarized in the U.S. Department of Labor's Quarterly Census of Employment and Wages (QCEW). Most farmworkers are paid weekly, so both databases miss workers who are employed during other weeks and payroll periods each month.

Abstract

California's agricultural employers hired an average 414,000 workers between 2018 and 2023 and reported an average 886,000 unique farmworkers each year, a ratio of 2.1 workers for each average or full-time equivalent (FTE) job. The ratio of two workers for each FTE job is stable, but a rising share of workers are brought to farms by nonfarm crop support firms, including farm labor contractors (FLCs). Farmers outsource seasonal and specialized tasks to crop support firms to save money by paying for labor and other services when they are needed. FLCs account for two-thirds of average crop support employment, which highlights the challenge of regulating the intermediaries whose average employment is about the same as for workers hired directly by crop farmers.

Workers harvest chili peppers at a UC Cooperative Extension test plot in Santa Clara County. A new analysis of agricultural employment data shows that the number of workers whose highest earnings were with farm labor contractors jumped by 77,000 between 2018 and 2023 *Photo*: Evett Kilmartin.

This article fills the data gap between farmworker employment during one payroll period and the total number of workers employed in agriculture sometime during the year. The QCEW data for California act as a census of farmworkers since they include (1) workers who are hired directly by farmers and (2) workers who are brought to farms by farm labor contractors (FLCs) and other nonfarm employers (EDD 2025a; EDD 2025b). Employers report the names and Social Security Numbers (SSNs) of their employees, including undocumented individuals and H-2A guest workers, when paying UI taxes (California requires all employers who pay $100 or more in wages to enroll in the state's UI system to pay taxes that cover the cost of UI benefits for laid-off workers). The QCEW divides monthly employment numbers by 12 to generate average or full-time equivalent (FTE) employment.

We extracted employment and earnings data on all California SSNs reported by California agricultural employers (NAICS 11) during *all* payroll periods, not just the payroll period that includes the 12th of the month. Next, we cleaned these unpublished data to remove SSNs reported by 50 or more employers in a quarter and other anomalies. We compiled the farm and nonfarm jobs and earnings of each SSN, and defined primary farmworkers as those whose highest-earning job was reported by a California agricultural employer. For a worker with multiple jobs, we assigned the worker to the North American Industry Classification System (NAICS) code or sector of the employer where the worker had his or her highest earnings. For example, a worker who had jobs with both vegetable and strawberry farms was assigned to vegetables if the worker's highest earning job was in vegetables.

California agricultural employment (NAICS 11) averaged 412,000 workers in 2023, ranging from a high of 485,000 in June to a low of 316,000 in January. However, agricultural employers reported a total of 893,645 workers in 2023, a ratio of 2.2 unique workers per FTE job and very similar to previous ratios. In this article, we update and highlight the growing importance of the nonfarm crop support businesses that account for most of the average employment on California crop farms (Martin et al. 2019).

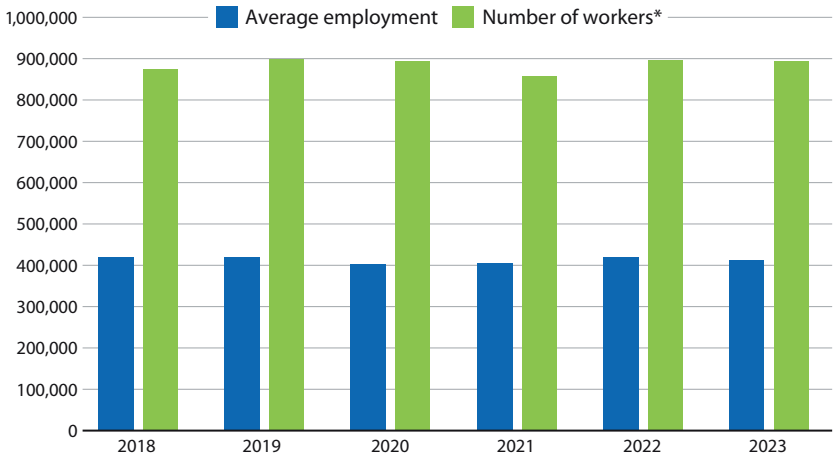

FIG. 1. Farmworkers and jobs, 2018–23. * Number of workers reported by a California farm employer (NAICS 11).

Primary farmworkers

We found 2.1 farmworkers per year-round farm job before, during, and after the COVID-19 pandemic (table 1 and fig. 1). Most farmworkers had only one job, although 40% had two or more California farm and nonfarm jobs.

We distinguish between all workers with at least one farm job, 893,645 in 2023, and primary farmworkers, the 764,000 workers whose highest-earning job was with a California farm employer.

These primary farmworkers earned a total of $14 billion in 2023, including 99% from agricultural employers. Of the 760,000 workers whose highest earning job was in crops, animals, or crop support:

- 218,000 were in crops, where average earnings were $26,700 and 69% had only one farm job in crops in 2023; therefore, 31% also had jobs with animal, crop support, or nonfarm employers;
- 33,300 were in animal agriculture, where average earnings were $41,200 and 75% of workers had only one farm job in animal agriculture;

TABLE 1. Primary farmworkers and jobs, 2018–2023

	2018	2019	2020	2021	2022	2023	Average 2018–2023
Annual average employment in the agriculture sector	419,800	420,100	404,300	407,800	419,812	411,664	413,913
Number of workers*	874,314	900,279	894,691	858,690	895,196	893,645	886,136
Ratio of workers to employment	2.1	2.1	2.2	2.1	2.1	2.2	2
One job per worker†	514,021	542,793	551,449	544,049	487,327	495,872	522,585
Two jobs per worker†	218,475	220,499	213,924	198,340	196,706	196,277	207,370
Three or more jobs per worker†	141,818	136,987	129,318	116,301	211,163	201,496	156,181

*Based upon tabulations of EDD data. May not sum due to rounding.
†May not sum due to rounding.
Source: Quarterly Census of Employment and Wages.

- 509,200 were in support for farm activities, where average earnings for workers whose highest-earning job was in support activities were $13,200, and 63% of workers had only one farm job in support activities. Support (NAICS 115) employment averaged 225,000 in 2023, including 220,000 for crop support (NAICS 1151). The average employment of FLCs was 152,000 (NAICS 115115), followed by 39,000 for postharvest crop activities (NAICS 115114), 12,000 for farm management services (NAICS 115116), and 11,000 for soil preparation and planting (NAICS 115112).

There were two outsourced or support farmworkers in 2023 for each crop or animal worker who was hired directly. Support workers earned half as much as directly hired crop workers and one-third as much as animal workers (table 2).

There are 11 crop subsectors with 5,000 or more primary workers, led by the 42,600 workers whose highest earning job was in strawberries (table 3). Workers who were primarily employed in fruit have the lowest average earnings among crop workers, while workers primarily employed in crops grown under cover such as greenhouse tomatoes have the highest earnings. Note that earnings include the value of overtime, incentive pay, and bonuses, but not the value of free employer-provided housing that employers must provide to H-2A workers.

- The 42,600 primary strawberry workers (NAICS 111333) had the lowest average earnings among direct-hire crop workers of $15,000 in 2023, and 61% had one strawberry employer in 2023.
- The 35,800 primary vegetable and melon workers (NAICS 111219) had average earnings of $35,000 in 2023, and 76% had one vegetable employer during 2023.
- The 27,600 primary grape workers (NAICS 111332) had average earnings of $25,000 in 2023, and 63% had only one grape employer during 2023.

TABLE 2. California farm employment and jobs, 2023

NAICS code	Sector	Primary workers	Earnings ($)	Average earnings* ($)	Only farm job†	Share‡
111	Crop production	217,831	$5,819,197,529	$26,714	149,271	68.5%
112	Animal production	33,297	$1,372,500,906	$41,220	24,937	74.9%
115	Support activities (agriculture)	509,236	$6,699,498,630	$13,156	318,320	62.5%
	Total	760,364	$13,891,197,065		492,528	
	Nonfarm	129,535	$4,475,764,826	$34,552.55		

* Average earnings are total earnings in this NAICS by these workers divided by the number of primary workers (workers whose highest earnings were in this NAICS).
† Only farm job means that this worker had only one job in this NAICS. ‡ Share is the share of primary workers with only one farm job.

TABLE 3. Primary workers, average earnings, and only jobs in 2023

NAICS code	Sector	Primary workers	Earnings ($)	Average earnings ($)	Only farm job	Share*
111219	Other vegetable and melon farming	35,758	$1,252,595,601	$35,030	27,064	75.7%
111332	Grape vineyards	27,551	$686,978,695	$24,935	17,281	62.7%
111333	Strawberry farming	42,590	$639,645,466	$15,019	25,941	60.9%
111334	Non-strawberry farming	14,181	$259,418,050	$18,293	8,804	62.1%
111335	Tree nut farming	17,761	$600,918,501	$33,834	12,500	70.4%
111336	Fruit and tree nut combination farming	5,488	$151,415,969	$27,590	3,798	69.2%
111339	Other noncitrus fruit farming	13,594	$266,122,559	$19,576	8,498	62.5%
111419	Other food crops grown under cover	5,225	$204,994,057	$39,233	3,695	70.7%
111421	Nursery and tree production	18,595	$614,804,584	$33,063	14,436	77.6%
111422	Floriculture production	6,821	$242,495,914	$35,551	5,153	75.5%
111998	All other miscellaneous crop farming	7,996	$228,953,375	$28,633	5,764	72.1%
112	Animal production	33,297	$1,372,500,906	$41,220	24,937	74.9%
112111	Beef cattle ranching & feedlots	4,905	$189,158,296	$38,564	3,889	79.3%
112120	Dairy milk production	19,041	$804,721,304	$42,263	14,017	73.6%
112310	Chicken egg production	1,746	$65,874,215	$37,729	1,270	72.7%
112320	Broilers	1,473	$60,561,847	$41,115	1,080	73.3%
112410	Sheep farming	255	$9,090,742	$35,650	223	87.5%
112420	Goat farming	156	$4,565,143	$29,264	128	82.1%

continued on next page

TABLE 3. Primary workers, average earnings, and only jobs in 2023, *continued from previous page*

NAICS code	Sector	Primary workers	Earnings ($)	Average earnings ($)	Only farm job	Share*
112920	Horses	448	$16,935,765	$37,803	357	79.7%
112990	Other animals	1,200	$62,788,158	$52,323	915	76.3%
113	Forestry and logging	2,906	$115,492,387	$39,743	2,290	78.8%
114	Fishing & hunting	840	$29,721,204	$35,382	673	80.1%
115	Ag support activities	509,236	$6,699,498,630	$13,156	318,320	62.5%
115112	Soil preparation	17,541	$450,354,184	$25,674	11,025	62.9%
115113	Crop harvesting	11,418	$207,030,225	$18,132	7,314	64.1%
115114	Postharvest crop activities	60,763	$1,822,019,006	$29,986	45,332	74.6%
115115	Farm labor contractors	394,074	$3,422,667,806	$8,685	237,092	60.2%
115116	Farm management services	18,286	$537,974,486	$29,420	12,060	66.0%

* Share is the share of primary workers with only one farm job.

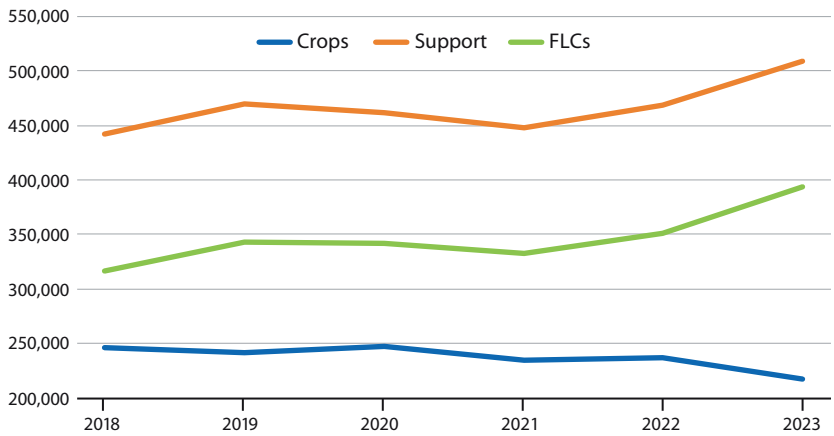

FIG. 2. Between 2018 and 2013, direct hire crop employment declined, while employment in crop support and FLCs increased.

- The 18,600 primary nursery workers (NAICS 111421) had average earnings of $33,100 in 2023, and 78% had only one nursery employer during 2023.

Animal production, forestry, and fishing involve fewer workers than crop farming. Almost 60% of the 33,300 primary animal workers are employed by dairy farms, where average earnings were $42,300 in 2023, and three-fourths of dairy workers had only one dairy employer. There were almost 5,000 beef cattle workers who averaged $38,600 in 2023, and almost 80% had only one beef cattle employer.

The highest shares of only-one-employer workers were in sheep and goat farming. The 255 primary sheep workers had average earnings of $35,700, and 88% had only one sheep farm employer in 2023. The 155 primary goat workers had average earnings of $29,300, and 82% had only one goat farm employer in 2023.

The 2,900 primary forestry workers and 840 primary fishing workers had average earnings of $39,700 and $35,400, respectively, and 80% had only one employer in 2023.

The 509,000 primary workers employed by nonfarm support services were two-thirds of workers whose highest earning job was in crops. These support workers had the lowest average earnings and the lowest share of workers with only one farm employer in 2023:

- The 60,800 workers employed in postharvest crop activities (NAICS 115114) such as packing citrus for the farm that grew it or processing a farm's vegetables had the highest average earnings of $30,000. Almost 75% of these workers had only one employer.
- The 394,000 FLC workers (NAICS 115115) had the lowest average earnings, $8,700. Some 60% of primary FLC employees had only one FLC employer in 2023.

There are more workers whose highest earning job was with FLCs, 394,000, than who had their highest earnings with crop or animal employers, 251,000.

Statewide trends, 2018–2023

The major changes between 2018 and 2023 include the decline in direct hire crop workers, stable employment in animal agriculture, and rising employment in support activities, especially FLCs (fig. 2). The number of workers whose highest earnings were with FLCs jumped by 77,000 between 2018 and 2023.

The largest declines in primary workers between 2018 and 2023 were in four direct-hire crop sectors, tree nuts, grapes, vegetables and melons, and noncitrus fruit farming, and one crop support sector, post-harvest crop handling and processing (including packing sheds and salad plants). Each of these five sectors lost over 5,000 primary workers in six years (table 4).

By contrast, the five sectors that gained the most primary workers were dominated by FLCs, up 77,000, followed by strawberry farms, 4,300, and food crops under cover and miscellaneous crops, each up 2,000. The fastest growth in primary workers was in the lowest-average-earnings sectors.

Between 2018 and 2023, California's minimum wage (for employers with 26 or more employees) rose by 38%,

TABLE 4. NAICS or commodities with the largest changes in primary workers, 2018–2023

NAICS code	Sector	Primary workers (2018)	Primary workers (2019)	Primary workers (2020)	Primary workers (2021)	Primary workers (2022)	Primary workers (2023)	2018–2023 change
111335	Tree nut farming	27,560	27,266	27,569	26,766	23,946	17,761	–9,799
111332	Grape vineyards	36,269	31,120	28,174	25,555	27,184	27,551	–8,718
115114	Postharvest crops	68,838	69,606	61,353	58,914	62,106	60,763	–8,075
111219	Vegetable and melon	43,146	41,380	40,613	38,614	38,671	35,758	–7,388
111339	Noncitrus fruit farming	19,446	19,216	24,554	23,552	19,105	13,594	–5,852
115116	Farm mgt services	16,547	17,369	17,927	17,297	17,296	18,286	1,739
111998	Misc crop farming	5,950	6,668	7,890	7,803	7,943	7,996	2,046
111419	Food crops under cover	3,151	3,747	4,612	4,853	6,286	5,225	2,074
111333	Strawberry farming	38,274	39,911	40,523	39,471	42,379	42,590	4,316
115115	Farm labor contractors	316,846	342,705	342,246	332,996	351,075	394,074	77,228

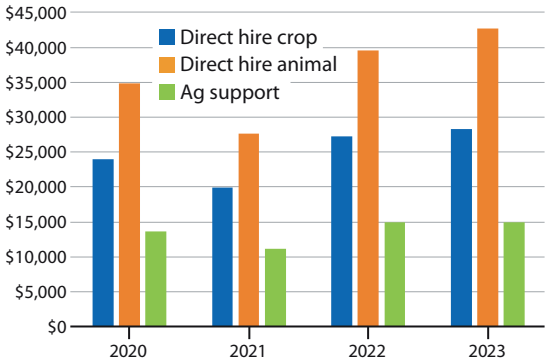

FIG. 3. Direct hire animal and crop wages rose faster than ag support wages from 2020 to 2023.

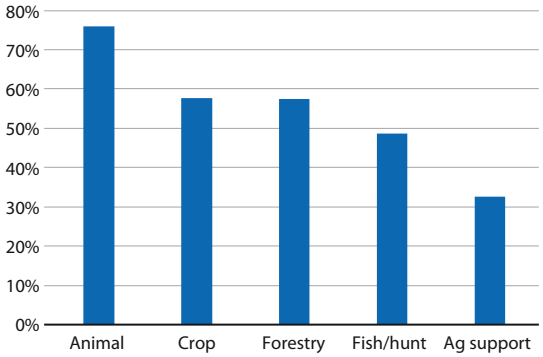

FIG. 4. Average earnings relative to QCEW FTE earnings.

while the average hourly earnings of California crop and livestock workers rose by 42% (fig. 3). Wages rose more slowly in the major farm sectors as follows:

- primary crop workers earnings rose by 23%,
- animal worker earnings rose by 33%,
- support worker earnings rose 3%.

These are the average earnings (not total income) from all jobs of workers who had their highest-earning job in each NAICS. Workers could have additional income from the Earned Income Tax Credit, unemployment insurance, or other sources.

Within detailed commodities, sheep primary earnings rose the most, 74%, while broiler, food under cover, and tree nut earnings rose by 60% or more (table 5).

Average primary strawberry worker earnings fell by 7%, crop harvesting earnings fell 4%, and FLC earnings were flat between 2018 and 2023. Dairy and goat earnings rose in lockstep with the minimum wage.

The earnings of primary workers are affected by wage rates and hours worked. Almost all farmworkers earn at least the minimum wage, but some may be working fewer hours as farm employers seek to avoid paying overtime wages (Hill and Tanabe 2023). We compared the earnings of workers whose highest-wage jobs was in crops, animals, or support with what a FTE worker would have earned if employed in crops, animals, or support, and found that animal workers earned 76% as much as an FTE worker would have earned, crop workers 58%, and support workers 33% (table 6).

FTE earnings in a particular NAICS code are what a worker would have earned at the average weekly wage if employed in that NAICS code for 52 weeks a year. FTE earnings for a particular NAICS code are total earnings divided by average employment.

More detailed data show that six major commodities had average earnings that were less than half of what a full-time worker would have earned. FLC employees earned an average of $8,700 in 2023, a quarter of the $33,300 that an FLC employee would have earned if employed full time (table 7). There are several likely reasons for the low earnings of primary FLC employees. Many earn the minimum wage, but they may not work many days or weeks.

The highest ratios of average earnings to FTE earnings were in animal agriculture and mushrooms, where primary workers earned 75% to 85% of FTE earnings. Average earnings in crop, animal, and forestry were more than half of what an FTE worker would have earned (fig. 4).

TABLE 5. Primary worker earnings by 6-digit NAICS, 2018–2023

NAICS code	Sector	Average earnings (2018)	Average earnings (2019)	Average earnings (2020)	Average earnings (2021)	Average earnings (2022)	Average earnings (2023)	2018–2023 percent change
111	**Crop production**	**$21,776**	**$22,781**	**$23,922**	**$19,956**	**$27,200**	**$26,714**	**23%**
111219	Other vegetable and melon farming	$26,623	$28,148	$30,485	$24,793	$34,649	$35,030	32%
111332	Grape vineyards	$19,953	$21,968	$23,719	$18,875	$24,349	$24,935	25%
111333	Strawberry farming	$16,099	$15,894	$16,099	$13,582	$16,726	$15,019	–7%
111334	Other berry farming	$16,314	$16,599	$18,244	$15,246	$19,871	$18,293	12%
111335	Tree nut farming	$21,341	$22,836	$25,006	$19,816	$29,006	$33,834	59%
111339	Noncitrus fruit	$17,004	$16,185	$16,648	$13,672	$20,028	$19,576	15%
111411	Mushroom production	$33,263	$34,120	$36,268	$30,338	$40,744	$40,550	22%
111419	Food crops under cover	$24,282	$25,838	$31,336	$26,577	$51,139	$39,233	62%
111421	Nursery and tree production	$26,233	$27,882	$29,095	$24,704	$32,149	$33,063	26%
111422	Floriculture production	$28,939	$29,993	$30,151	$26,788	$35,767	$35,551	23%
111998	Misc crop farming	$23,479	$25,164	$23,775	$19,927	$29,215	$28,633	22%
112	**Animal production**	**$30,928**	**$32,458**	**$34,862**	**$27,688**	**$39,602**	**$41,220**	**33%**
112111	Beef farming	$30,616	$29,786	$31,295	$24,845	$36,496	$38,564	26%
112120	Dairy	$31,006	$32,488	$35,034	$26,864	$40,118	$42,263	36%
112210	Hog and pig farming	$31,848	$37,492	$40,694	$33,776	$41,971	$37,991	19%
112310	Chicken egg production	$29,879	$31,739	$36,329	$29,785	$36,444	$37,729	26%
112320	Broilers	$24,424	$28,120	$22,342	$21,451	$17,088	$41,115	68%
112410	Sheep farming	$20,492	$20,930	$23,392	$20,901	$31,667	$35,650	74%
112420	Goat farming	$20,870	$24,412	$22,901	$19,261	$27,390	$29,264	40%
112920	Horses	$30,896	$32,506	$34,200	$33,779	$37,482	$37,803	22%
112990	Other animals	$35,045	$38,223	$41,719	$43,349	$53,247	$52,323	49%
113	**Forestry and logging**	**$34,852**	**$33,673**	**$39,459**	**$36,520**	**$45,587**	**$39,743**	**14%**
114	**Fishing**	**$36,430**	**$30,755**	**$27,989**	**$27,377**	**$38,582**	**$35,382**	**–3%**
115	**Support activities**	**$12,712**	**$12,876**	**$13,643**	**$11,161**	**$14,986**	**$13,156**	**3%**
115112	Soil preparation	$20,293	$20,986	$25,105	$18,669	$28,612	$25,674	27%
115113	Crop harvesting	$18,840	$18,222	$18,852	$14,629	$20,147	$18,132	–4%
115114	Postharvest crop activities	$22,888	$24,126	$26,947	$22,557	$29,258	$29,986	31%
115115	Farm labor contractors	$8,664	$8,778	$9,220	$7,620	$10,300	$8,685	0%
115116	Farm management services	$27,860	$28,511	$28,362	$23,474	$31,418	$29,420	6%
	Calif. minimum wage (26 or more employees)	$11.00					$15.15	38%
	USDA CA Farm Labor Survey earnings of Calif. crop & livestock workers	$13.92					$19.75	42%

TABLE 6. Primary worker and QCEW earnings, 2023

	Primary earnings (2023)	FTE earnings (QCEW)	Percent
Crop production	$26,714	$46,304	58%
Animal production	$41,220	$54,257	76%
Support activities	$13,156	$40,214	33%

TABLE 7. Primary worker and QCEW earnings, 2023

	Average earnings (2023)	Annual earnings (QCEW)	Average 2023 earnings share of QCEW
Farm labor contractors	$8,685	$33,257	26%
Vegetable and melon farming	$16,471	$45,568	36%
Crop harvesting	$18,132	$46,827	39%
Strawberry farming	$15,019	$35,867	42%
Soil preparation	$25,674	$52,846	49%
Noncitrus fruit	$19,576	$39,549	49%
Sheep farming	$35,650	$46,083	77%
Beef cattle ranching	$38,564	$49,740	78%
Dairy	$42,263	$54,459	78%

TABLE 8. Primary workers by county, 2018–2023 average

County	Average employment 2018–2023
Kern	133,598
Monterey	96,619
Fresno	91,188
Tulare	73,629
Santa Barbara	42,427
Los Angeles	36,376
Ventura	35,100
San Joaquin	33,010
Madera	32,051
Merced	27,181

The average number of workers whose highest earning job was in agriculture (NAICS 111) and employed by a farm employer in this county.

County trends, 2018–2023

We assigned primary workers to the agricultural employer where they had their highest earnings. An average 134,000 workers had their highest earning farm job with a Kern employer between 2018 and 2023, followed by 97,000 in Monterey, 91,000 in Fresno, 74,000 in Tulare, and 42,000 in Santa Barbara (table 8 and fig. 5). Half of the primary farmworkers were in these top five counties, followed by 18% in the next top five counties: Los Angeles, Ventura, San Joaquin, Madera, and Riverside.

Between 2018 and 2023, the number of primary farmworkers fell in Southern California counties including Riverside, Imperial, and Orange, and rose in Central Valley and coastal counties such as Fresno, Kings, and Kern, and Monterey, San Luis Obispo, and Santa Barbara (fig. 5).

Given the growing importance of FLCs, it would be interesting to know in which counties FLCs provide workers. However, FLC employee earnings are assigned to the county in which the FLC is located, so that all of the earnings of FLC employees are assigned to this county, even if the FLC employees never worked in the county where the FLC is located.

Conclusions

There has been remarkable stability in average agricultural employment and the number of unique farmworkers over the past decade: some 850,000 workers fill an average 425,000 FTE jobs (one FTE job is created when two workers are each employed for six months or three workers are each employed for four months). Almost 60% of farmworkers have only one California farm job, and almost half of these one-farm-job workers were employed by FLCs in 2023.

Our analysis of California farmworkers and their employers emphasizes that (1) half of the state's farmworkers are in five counties, led by Kern, with little change over the past six years; (2) the largest and fastest-growing employers of farmworkers are FLCs; and (3) FLC employees have the lowest earnings, less than $9,000 a year, which likely reflects relatively short periods of work.

California agriculture is a pioneer in many areas of farming and is the only state in which the average employment of crop support workers exceeds the employment of crop workers who are hired directly by farm operators. FLCs account for 70% of average crop support employment, over 150,000 a year, about the same as the average employment of workers hired directly by farm operators.

What are the implications of farm operators relying on nonfarm crop support services firms to bring workers to their farms? A higher share of FLCs employees are not legally authorized to work than workers who are hired directly by crop farm operators, and FLC employees have lower average earnings.

FLCs act as bilingual intermediaries between farmer clients who may not speak the language or understand the culture of farmworkers, and economic theory suggests that FLCs can be beneficial to farmers and workers. They allow farmers to concentrate on growing crops, and FLCs can arrange a series of seasonal jobs for workers more efficiently than the workers could on their own. However, FLCs may also serve as risk absorbers in a farm labor market rife with labor law violations, as farm operators avoid the risk of

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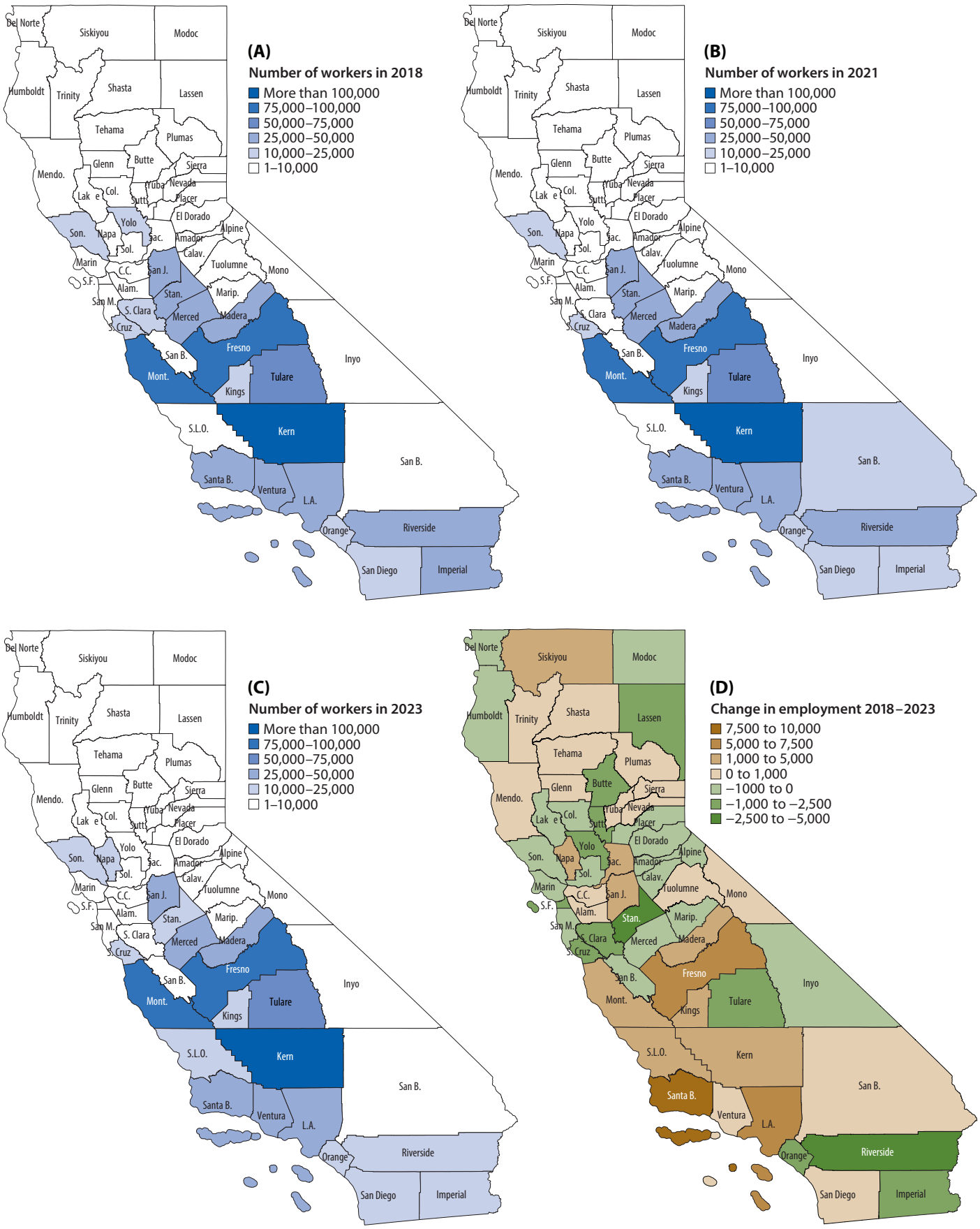

FIG. 5. Primary workers by county in (A) 2018, (B) 2021, and (C) 2023; change in employment from 2018 to 2023 (D).

Workers operate harvesting machinery in a pistachio orchard near Arbuckle, California. *Photo*: Evett Kilmartin.

labor and immigration enforcement (Costa et al. 2020; Thilmany 1996).

There are many private and public efforts to improve the FLC industry. Federal and state agencies provide education and enforce labor laws that, inter alia, require FLCs to obtain licenses, undergo background checks, and post bonds so that any back wages can be paid even if the FLC declares bankruptcy. Private efforts include certification schemes based on audits to certify that FLCs are in compliance with labor laws and other protocols to protect often vulnerable workers. CA

B. Hooker is Senior Research Data Specialist at Employment Development Department of California (EDD); P. Martin is Professor Emeritus at UC Davis; Z. Rutledge is Asssistant Professor at Michigan State University; M. Shiroi is Research Data Specialist at EDD.

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