

**California Ag Employment Rose and Became Less Seasonal Since 1990**  
 August 30, 2022

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**Agricultural employment rose 10 percent and seasonality declined as growing seasons lengthened between 1990 and 2020**

**Farm employment, farm workers, seasonality, H-2A guest workers**

## **Abstract**

Employment in California agriculture (NAICS 11) averaged 404,000 in 2020, 10 percent more than average employment of 367,000 in 1990. Seasonality, as measured by peak month employment divided by trough month employment, fell 22 percent over three decades, from 1.8 in 1990 to 1.4 in 2020. Rising employment and declining seasonality combine with an aging and settled farm workforce to reduce farm worker migration and flexibility. Most farm workers have one farm employer a year, although that employer may be a labor contractor who moves workers from one farm to another. Declining seasonality and a higher share of farm workers who have only one employer are associated with ever more H-2A guest workers, the young and flexible legal Mexican workers who are the fresh blood in the state's farm workforce and who are often brought to farms by labor contractors.

## **Introduction**

Over the past decade, the number of H-2A guest workers employed on California farms increased ten-fold, so that over 35,000 farm jobs were certified to be filled by H-2A workers in 2022. Until the 2008-09 recession, most H-2A workers were in the southeastern states such as Florida. However, the slowdown in unauthorized migration after 2008-09, combined with a stable demand for farm workers and the aging and settling of unauthorized workers who arrived before 2008-09, contributed to rapid

growth in the H-2A program in the three Pacific coast states that have half of US farm worker employment, including a third in California.

This paper analyzes employment data submitted by farm employers to understand why the H-2A program is expanding rapidly in California and other Pacific states. The data show that seasonality is declining in most regions and commodities, primarily because of higher employment during the winter months. Second, the data emphasize the growing importance of nonfarm crop support employers, mostly labor contractors, who bring workers to farms to perform specific tasks. The analysis suggests that more farms are developing a year-round workforce that is hired directly and is supplemented when needed with workers brought to farms by labor contractors, including many H-2A guest workers.

California requires all employers who pay \$100 or more in wages to enroll in the state's unemployment insurance system and pay taxes of 1.5 percent to 6.2 percent on the first \$7,000 of each employee's wages (\$105 to \$434) to cover the cost of UI benefits for laid off workers (EDD). Employers also report their employment for the payroll period that includes the 12<sup>th</sup> of the month. Summing these monthly employment totals and dividing by 12 months generates average employment and allows for the identification of the peak and trough employment months.

Agricultural employment (NAICS 11) ranged from a high of 465,000 in May to a low of 344,000 in March in 2020, generating a peak-trough ratio of 1.4. More than 465,000 workers are employed on California farms sometime during the year due to payroll periods that are typical weekly and worker turnover. Workers who are employed only in payroll periods that do not include the 12<sup>th</sup> of the month are excluded from average employment, such as those who work only during the first, third, or fourth weeks of the month. In 2016, when California's agricultural employment averaged 425,000, almost a million unique Social Security Numbers were reported by the state's agricultural employers, suggesting 2.3 unique workers for each year-round equivalent job (Martin, et al 2019).

## **Growth**

California became the leading farm state by sales in 1949, when Los Angeles county led the US in farm sales (Johnston and McCalla, 2004). The state's population doubled between 1950 and 1970, from 10 million to 20 million, and agricultural sales grew fastest in the San Joaquin Valley after water projects allowed more acres to be irrigated and suburbanization reduced the availability of farm land in coastal areas.

Citrus and dairy farms moved eastward in southern California before migrating north to the San Joaquin Valley, while tree fruit farming moved from the urbanizing Bay Area to the San Joaquin and Sacramento Valleys (Johnston and McCalla, 2004). Three SJV counties, Fresno, Kern, and Tulare, accounted for 20 percent of California farm sales in 1949, a third in 2000, and almost half of the state's farm sales in 2020.

**[Figure 1 about here]**

Some crops that were already concentrated in the Sacramento and San Joaquin valleys expanded in acreage. For example, there were 90,000 bearing acres of almonds in 1950, almost 150,000 acres in 1970, 500,000 acres by 2000, and 1.3 million acres in 2022. Most of this additional almond acreage was in the San Joaquin Valley.

New orchards and dairies in the San Joaquin and Sacramento Valleys were often larger and more efficient than the coastal farms they replaced, and their higher productivity was reflected in rising yields. Average yields of many fruits and vegetables doubled and tripled over the past three decades, as with bell peppers and cantaloupes, and rose over 50 percent to 33 tons an acre for strawberries.

**[Figure 2 about here]**

The major change in California crop farming over the past half century has been the rising share of high-value fruits and nuts, vegetables and melons, and horticultural specialties such as flowers and plants in the state's farm sales. In 1960, the value of FVH commodities was two-thirds of the total value of California crops; since 2000, the value of FVH commodities has accounted for over 90 percent of the value of California crops, reflecting growing consumer demand for fresh produce and nursery plants (Johnston and McCalla, 2004, Figure 5). Cotton was California's most valuable crop in 1950; by 2000, cotton was the sixth most valuable crop, and by 2020 cotton was no longer among the state's top 20 crops.

The demand for FVH commodities rises with income, and rising farm land prices encouraged individuals and investors to buy farm land as a hedge against inflation in the 1970s, a decade in which the value of California farm land more than doubled (Johnston and McCalla, 2004). Higher interest rates in the 1980s led to a farm financial crisis that was more severe in midwestern states than in California, but encouraged some oil firms and conglomerates to sell their California farm land.

California's farm sales were \$17.8 billion in 1990, including \$4.4 billion worth of fruits and nuts and \$3.9 billion worth of vegetables. The state's farm sales were \$27.2 billion in

2000, including \$7.3 billion worth of fruits and nuts, \$6.2 billion worth of vegetables, and \$2.8 billion worth of greenhouse and nursery commodities; the \$6.3 billion worth of animal commodities were 23 percent of farm sales.

California's farm sales were \$37.5 billion in 2010, including \$13.5 billion worth of fruits and nuts and \$6.7 billion worth of vegetables, and \$3.8 billion worth of greenhouse and nursery commodities; the \$9.8 billion worth of animal commodities were 26 percent of farm sales, and farm sales were \$49.1 billion in 2020, including \$20.6 billion worth of fruits and nuts and \$7.8 billion worth of vegetables, and \$6.3 billion worth of greenhouse and nursery commodities; the \$12.1 billion worth of animal commodities were 24 percent of farm sales.

Table 1 shows that farm sales almost tripled in three decades, and that fruit and nut sales almost quintupled. The value of the state's vegetables and melons doubled, as did the value of greenhouse and nursery crops. In real or inflation-adjusted terms, California farm sales rose by 40 percent and fruit and nut sales by 140 percent, while vegetable and nursery sales were little changed.

**[Table 1 about here]**

Many FVH commodities are labor intensive, so expanding FVH production increased the employment of farm workers. Rather than hiring workers directly, many farmers turned to crop support service firms, nonfarm businesses that bring workers to farms to accomplish specific tasks. For example, farmers may rely on labor contractors to bring crews of workers to prune, thin, and harvest their crops. Contractors may be the sole employers of the workers they bring to farms under some labor laws, such as unemployment insurance and workers compensation, and joint employers with farms under others such as the Agricultural Labor Relations Act.

Over the past three decades, California farmers hired 20 percent fewer workers directly, reducing average direct-hire employment in crops (NAICS 11) from 203,000 to 160,000. Meanwhile, crop support employment (NAICS 1151) rose by 60 percent, from an average 132,000 in 1990 to 212,000 in 2020. Combined crop and crop support employment accounts for over 90 percent of California's agricultural employment. Within crop support employment, the labor contractor share of average crop support employment rose from 60 percent to 67 percent.

**[Figure 3 about here]**

FVH commodities account for 90 percent of direct-hire crop employment, including 55 percent for fruits and nuts, 20 percent for vegetables and melons, and 15 percent for greenhouses and nurseries. Employers are assigned to the NAICS code that represents the majority of their sales, so grape vineyards can be distinguished from strawberry, other berry, and non-citrus tree fruit farms.

These four types of farms account for almost three-fourths of direct-hire crop employment. Between 1990 and 2020, average direct hire employment in grapes fell by almost half, strawberry employment doubled and employment in other berries such as blueberries and raspberries tripled, and average employment in non-citrus tree fruits such as peaches, nectarines and plums fell by a third.

**[Figure 4 about here]**

### **Seasonality**

The gaps between peak and trough months of agricultural employment are shrinking. Between 1990 and 2000, average agricultural employment rose by almost 10 percent, from 367,000 to 400,000, and rose especially fast during the winter and spring months, reducing the peak-trough ratio from 1.8 in 1990 to 1.6 in 2000.

Between 2000 and 2010, average ag employment fell from 400,000 to 380,000, and the peak-trough ratio remained at 1.6. Between 2010 and 2020, average employment rose above 400,000 again, and the peak-trough employment ratio fell to 1.4. Average employment rose during the winter months and was stable during the peak summer months.

**[Figure 5 about here]**

Declining seasonality was accompanied by a rising share of farm labor contractor employment; the FLC share of the state's average agricultural employment rose from 20 percent to 35 percent between 1990 and 2020. The largest jump in the FLC share of agricultural employment occurred in the 1990s, when there was an influx of unauthorized Mexican workers seeking jobs at a time of low US unemployment.

The FLC share of California agricultural employment was stable between 2000 and 2010, but jumped between 2010 and 2020. The FLC share of the state's average agricultural employment is highest during the summer months of May through August.

**[Figure 6 about here]**

## **Regions**

Three regions account for over 90 percent of the state's average agricultural employment: the San Joaquin Valley, the Central Coast region centered on Monterey, and the South Coast that includes Santa Barbara and Ventura counties. Monterey county was the leading producer of hand-harvested fruits and vegetables in 1990, and was joined in 2000 by Fresno, Kern, and Tulare counties. Monterey continued to lead in hand-harvested fruits and vegetables in 2020 with over four million tons, but Fresno, Kern, and Tulare also expanded to each produce more than three million tons of hand-harvested fruits and vegetables, explaining rising farm employment and reduced seasonality.

**[Figure 7 about here]**

### **San Joaquin Valley**

The San Joaquin Valley from San Joaquin in the north to Kern county in the south accounts for half of the state's average agricultural employment. SJV average agricultural employment rose from 170,000 in 1990 to 200,000 in 2000, dipped to 185,000 in 2010, and was almost 200,000 in 2020.

Seasonality often increases in smaller geographic areas, but the peak-trough ratio fell more in the SJV than it did statewide. The SJV peak-trough ratio fell from 2.2 in 1990 to 1.4 in 2020, more than the drop in the California peak-trough ratio, which fell from 1.8 to 1.4 over these three decades.

**[Figure 8 about here]**

Almost half of average agricultural employment in the San Joaquin Valley is with FLCs, which explains why the SJV has a higher share of the state's FLC employment than of overall agricultural employment. The SJV had over 60 percent of California's FLC employment in 2020, versus 50 percent of the state's agricultural employment.

Average FLC employment in the SJV rose sharply between 1990 and 2000, was stable between 2000 and 2010, and rose between 2010 and 2020, when FLC employment was 45 percent of the SJV's average agricultural employment. The FLC share of SJV agricultural employment is highest during the summer months and lowest in April.

**[Figure 9 about here]**

## **Central Coast**

This region includes Monterey county, the US salad and berry bowl. Average employment in Central Coast agriculture rose from 54,000 in 1990 and 2000 to 70,000 by 2020 or a sixth of California's agricultural employment, reflecting more strawberry acreage.

Seasonality is more pronounced in the Central Coast than in the SJV, peaking in July 2020 at 89,000 and reaching a low of 46,000 in January 2020 for a peak-trough ratio of 1.9, significantly higher than the 1.4 peak-trough ratio in the SJV.

**[Figure 10 about here]**

The FLC share of Central Coast agricultural employment rose sharply between 1990 and 2020. In 1990, FLC average employment was a sixth of Central Coast agricultural employment; by 2020, the FLC share was a third. Peak FLC employment in the Central Coast was 31,000 in June and July 2020, while trough employment was 15,000 in December 2020, a FLC peak-trough ratio of 2.1.

**[Figure 11 about here]**

## **South Coast**

This region, which includes the six coastal counties from San Luis Obispo in the north to San Diego in the south, had average agricultural employment of 70,000 in 2020, the same as the Central Coast. However, growth in average agricultural employment was slower in the South Coast than in the Central Coast over the past three decades.

**[Figure 12 about here]**

FLCs play a relatively small but growing role in South Coast farm labor markets. The FLC share of average agricultural employment rose from less than 10 percent in 1990 to almost a quarter by 2020. FLC seasonality in the South Coast is similar to FLC seasonality in other regions. There were 180 workers employed by FLCs in June 2020 for each 100 workers employed by FLCs in December.

**[Figure 13 about here]**

## **Berries**

Strawberries (NAICS 111333) and other berries (NAICS 111334) are among the most labor-intensive commodities grown in California, and their production doubled and tripled over the past three decades. The state's strawberries were worth \$2 billion in

2020, raspberries were worth \$405 million, and blueberries were worth \$215 million, for total berry sales of over \$2.6 billion.

California's average employment in berries more than doubled from 16,000 to 36,000 between 1990 and 2020, while seasonality declined from 5.9 to 2.5. In 1990, berry employment was lowest at 5,000 in January and highest at 28,000 in May. In 2020, January was still the trough month when almost 20,000 workers were employed, compared with 49,000 in June. Berry employment in January tripled between 1990 and 2020 and doubled in May and June.

**[Figure 14 about here]**

The upsurge in winter and total berry employment is evident in a comparison of the largest sectors of employment in fruit and nut agriculture. In 1990, California fruit and nut employment peaked at 139,000 in September, including 67,000 in grapes, 34,000 in tree fruit, and 16,000 in berries. By 2020, California fruit and nut employment peaked at 108,000 in June, including 49,000 in berries, 20,000 in grapes, and 19,000 in tree fruit.

There were four workers in grapes for each berry worker in 1990, and 2.5 workers in berries for each grape worker in 2020. Note that some of the decline in grape and tree

fruit employment may be due to employers switching from hiring workers directly to hiring them via FLCs; no data are collected on the commodities where FLC employees work.

The Central Coast and South Coast regions accounted for 98 percent of average berry employment in 2020, including 60 percent in the South Coast and 38 percent in the Central Coast. The South Coast share of average berry employment rose from 50 percent in 1990 to 60 percent in 2020 in part due to the expansion of berry production in the Santa Maria area of Santa Barbara county.

## **Conclusions**

Over the past three decades, average employment in California agriculture (NAICS 11) rose by 10 percent to 404,000 and seasonality declined due to more employment during the winter months. The ratio of monthly peak to monthly trough employment fell from 1.8 in 1990 to 1.4 in 2020, reflecting 474,000 workers employed in September 1990 and 270,000 in February 1990, compared with 465,000 workers employed in May 2020 and 344,000 in March 2020.

The FLC share of California agricultural employment rose from 20 percent in 1990 to 35 percent in 2020. FLC employment is more seasonal, with a statewide peak-trough of 1.6

in 2020, higher than the 1.4 ratio for all agricultural employment. Many farming operations that hire large numbers of workers have year-round workforces comprised of local workers and turn to contractors to bring local and H-2A workers to their farms to perform specific seasonal tasks.

The San Joaquin Valley accounts for half of California's agricultural employment, and seasonality in the SJV declined faster than statewide. The SJV has over 60 percent of California's FLC employment, and FLC employment in the SJV is slightly more seasonal than statewide. There were 170 workers employed by FLCs in the SJV in September 2020 for each 100 employed in April 2020.

The Central Coast centered on Monterey county accounts for a sixth of California's agricultural employment, and its farm employment is more seasonal than in the SJV. For each 170 workers employed in June and July 2020 in the Central Coast, 100 were employed in January 2020. FLCs accounted for a third of the 70,000 average agricultural employment in the Central Coast in 2020, up from 20 percent in 1990.

The South Coast region from San Luis Obispo to San Diego has the same average employment as the Central Coast, about 70,000, and experienced less growth between 1990 and 2020, up 12 percent versus a 30 percent increase in the Central Coast. The FLC

share of agricultural employment in the South Coast more than doubled from 1990 to 2020, reaching almost a quarter of ag employment.

The SJV, Central Coast, and South Coast accounted for 49, 17, and 17 percent of the state's average agricultural employment of 404,000 in 2020, respectively, or a total of 83 percent. These three regions accounted for 63, 17, and 11 percent of the state's average FLC employment of 142,500, or 91 percent of the state's total FLC employment.

The trends highlighted by this analysis, viz, stable farm employment, decreased seasonality, and more workers brought to farms by labor contractors, seem poised to continue. A growing share of the workers brought to farms by labor contractors are H-2A guest workers, whose costs are higher because their employers must provide them with transportation and housing and pay them an Adverse Effect Wage Rate of \$17.51 an hour in 2022, when the minimum wage is \$15. The major challenge for the state's agriculture is to ensure that H-2A workers are productive enough to justify their higher costs that are offset in part by the labor insurance H-2A workers provide that ensures farm work is done in a timely way.

The process of creating a core of directly hired workers supplemented by workers hired to perform specific tasks is called hollowing out in the nonfarm economy, so that

manufacturers and service firms from banks to hotels have both directly hired and contractor-provided workers in their workplaces. Many economists note that the result is the polarization of wages and opportunities for upward mobility, with workers brought to workplaces by contractors often earning lower wages and having fewer opportunities to climb the job ladder (Autor, 2019). Fissured workplaces with directly hired and contract workers in the same workplace also raise questions about who is responsible for labor law violations (Weil, 2019).

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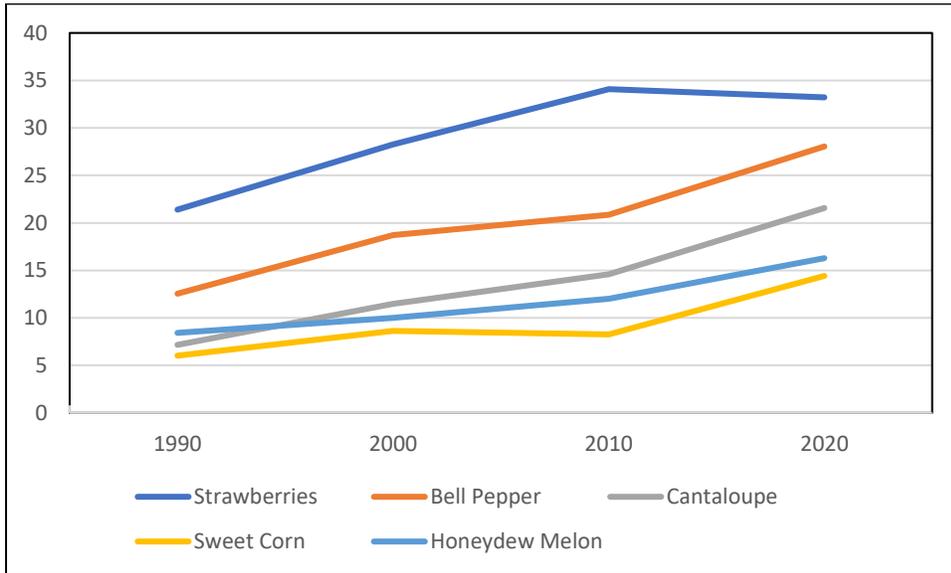
## **Appendix Map Ag Employment in 2021**

The map shows that six counties had average agricultural employment of 20,000 or more in 2021. Fresno, Kern, Monterey, and Tulare were joined in recent years by Santa Barbara and Ventura counties, reflecting the expansion of strawberry acreage in these counties.

**[Appendix Map 1 about here]**



**Figure 2. Yields for Selected Fruits and Vegetables, 1990-2020 (tons per acre)**



Source: [https://www.nass.usda.gov/Statistics\\_by\\_State/California/Publications/AgComm/index.php](https://www.nass.usda.gov/Statistics_by_State/California/Publications/AgComm/index.php)

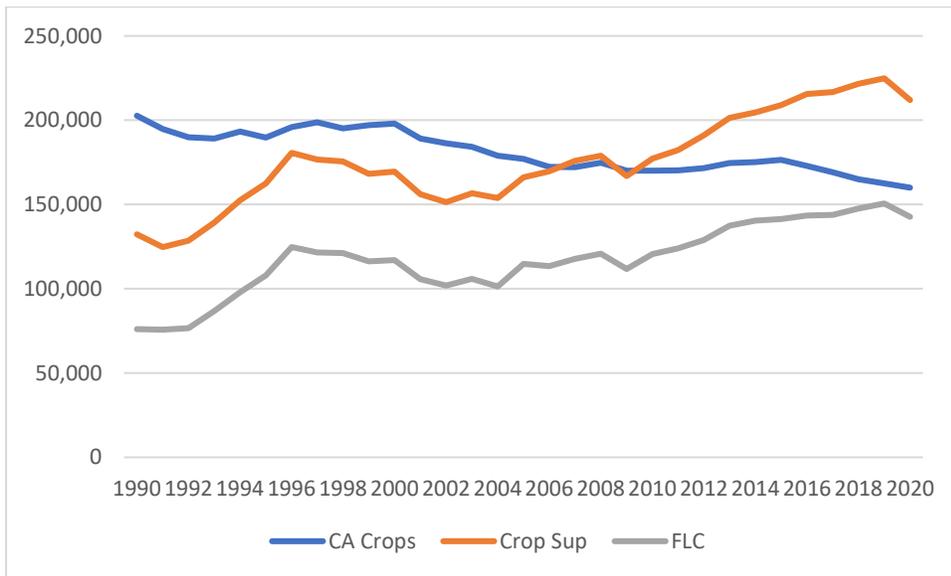
**Table 1. California Farm Sales, 1990-2020 (\$ bil)**

	Total	Fruits & Nuts	Vegs&Melons	Green&Nursery
1990	17.8	4.4	3.9	
2000	27.2	7.3	6.2	2.8
2010	37.5	13.5	6.7	3.8
2020	49.1	20.6	7.8	6.3
1990-2000	53%	66%	59%	
2000-2010	38%	85%	8%	36%
2010-2020	31%	53%	16%	66%
1990-2020	176%	368%	100%	

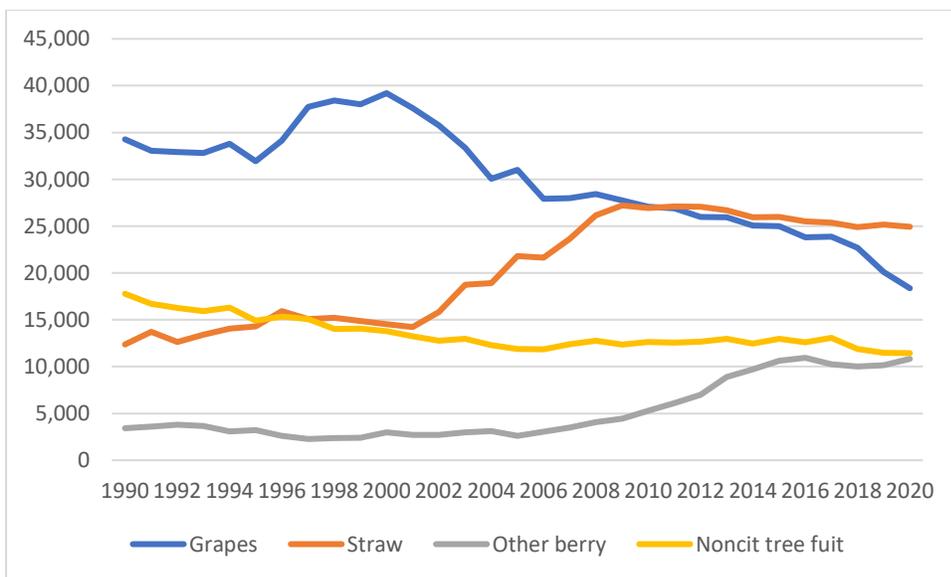
Source: CDFA Ag Stats

<https://www.cdfa.ca.gov/Statistics/>

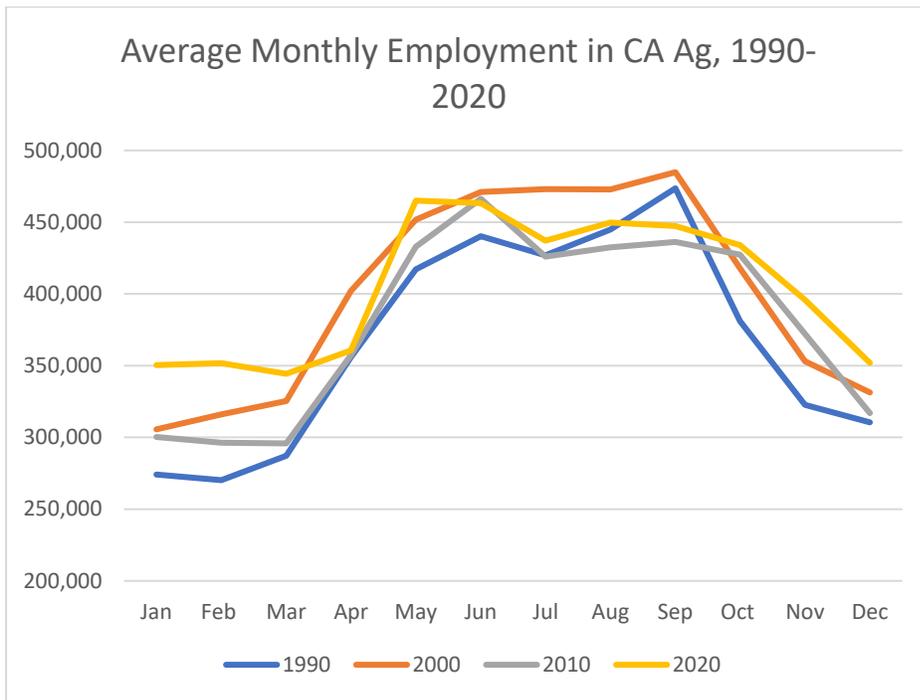
**Figure 3. California Crop, Crop Support, and FLC Employment, 1990-2020**



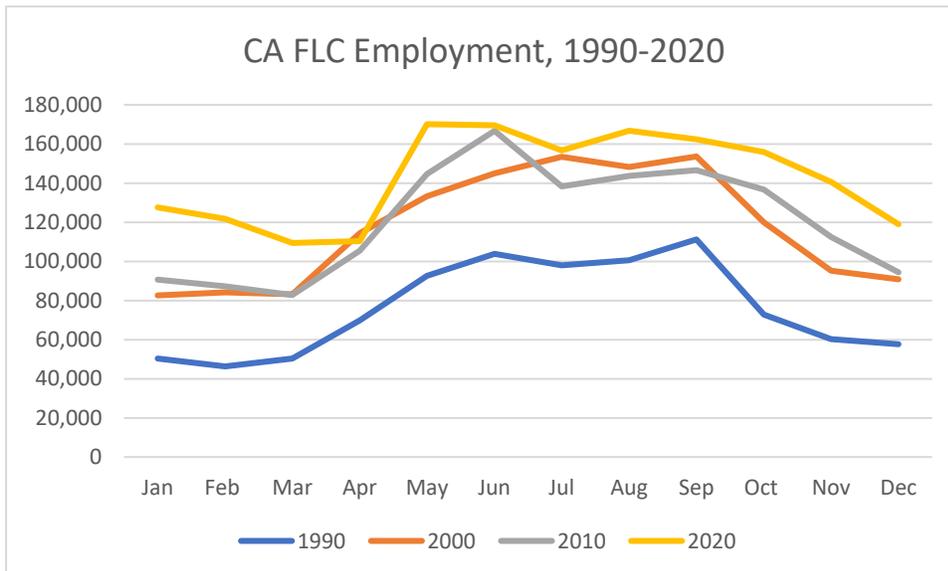
**Figure 4. Average employment in grapes, strawberries, other berries, and tree fruit, 1990-2020**



**Figure 5. Employment by month in California agriculture, 1990-2020**

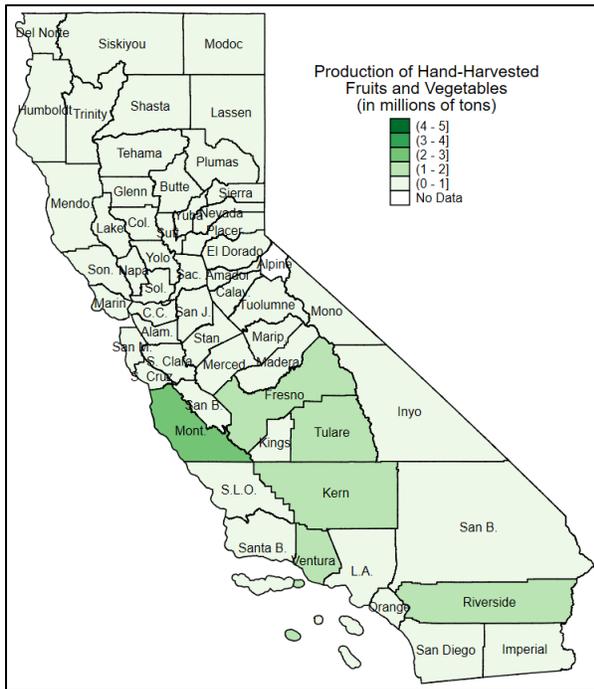


**Figure 6. Average FLC employment, 1990-2020**

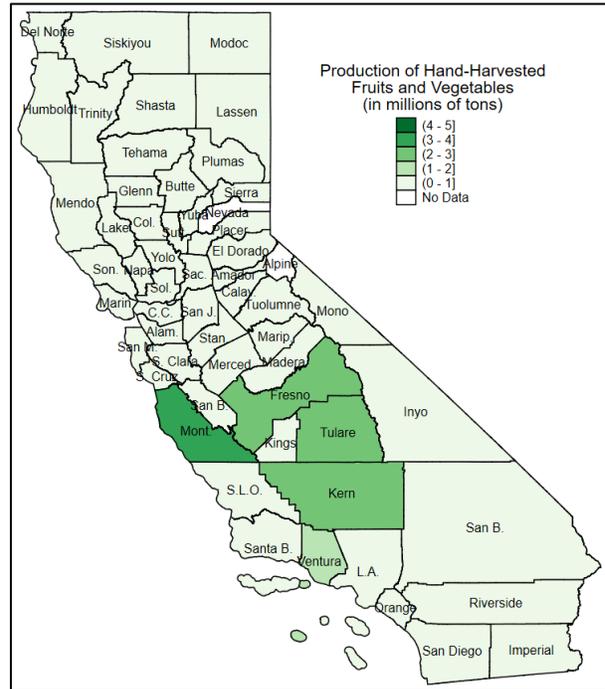


**Figure 7. Hand-harvested Fruits and Vegetables by County, 1990-2020**

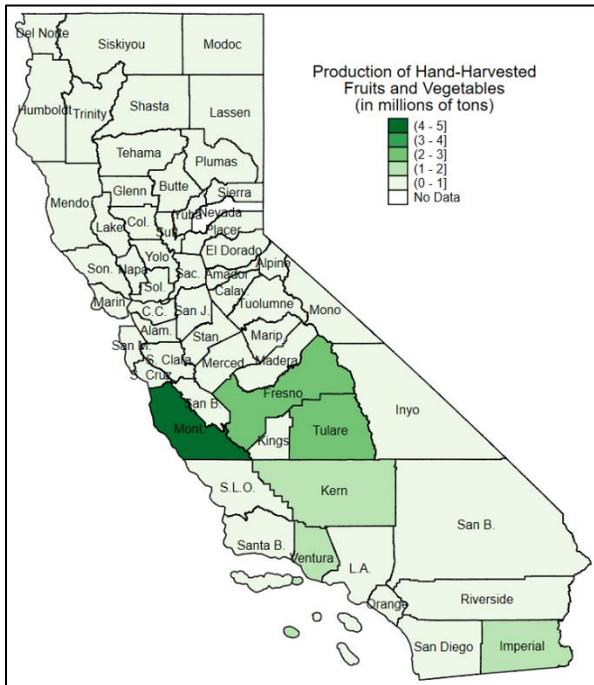
**A. 1990**



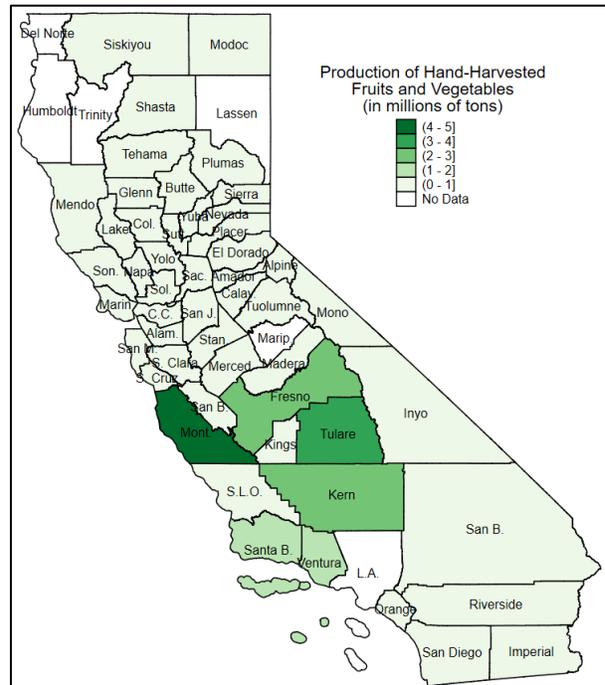
**B. 2000**



**C. 2010**



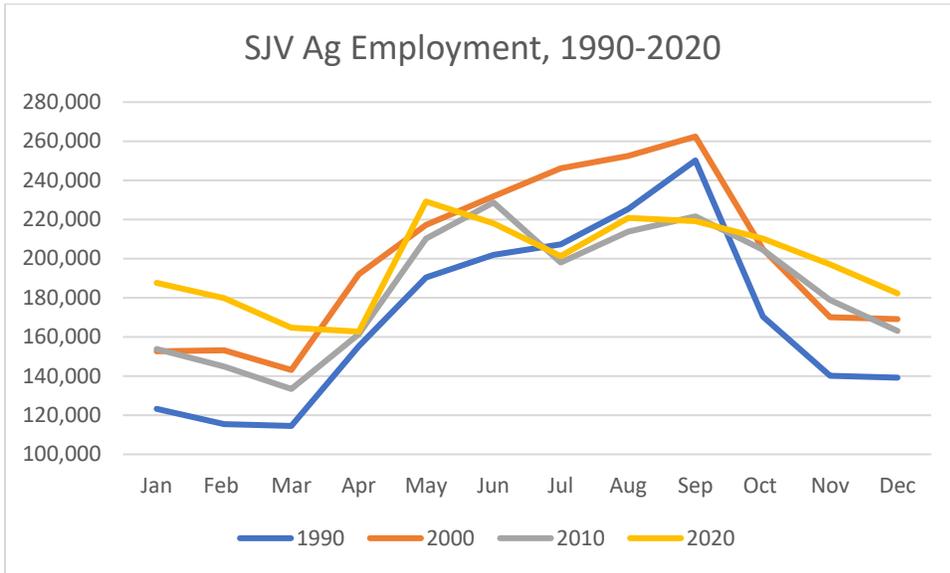
**D. 2020**



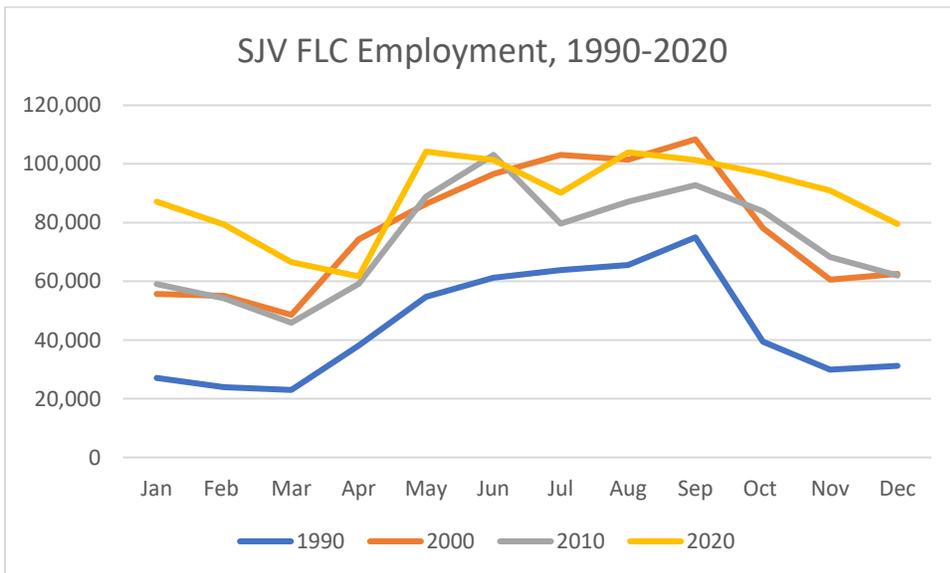
Source:

[https://www.nass.usda.gov/Statistics by State/California/Publications/AgComm/index.php](https://www.nass.usda.gov/Statistics%20by%20State/California/Publications/AgComm/index.php)

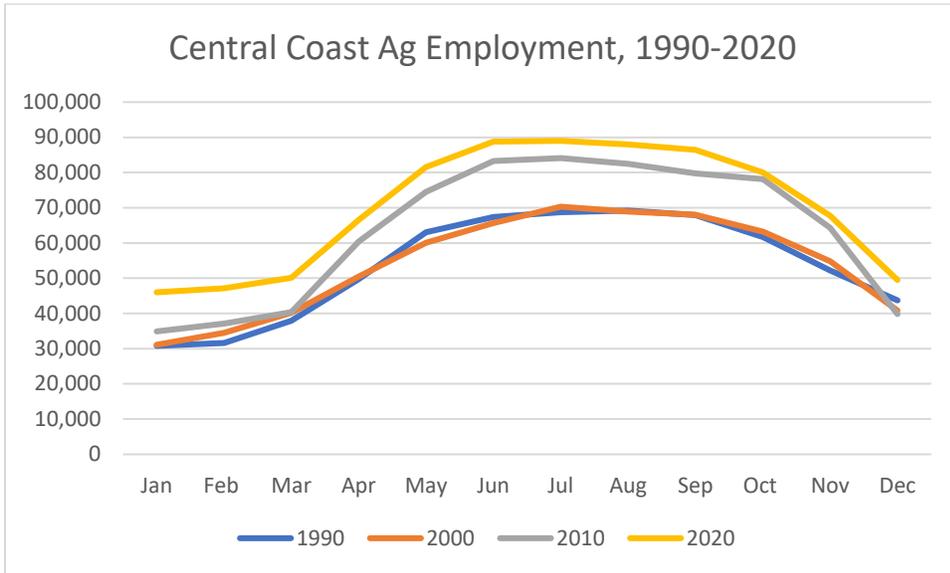
**Figure 8. Ag employment in the San Joaquin Valley, 1990-2020**



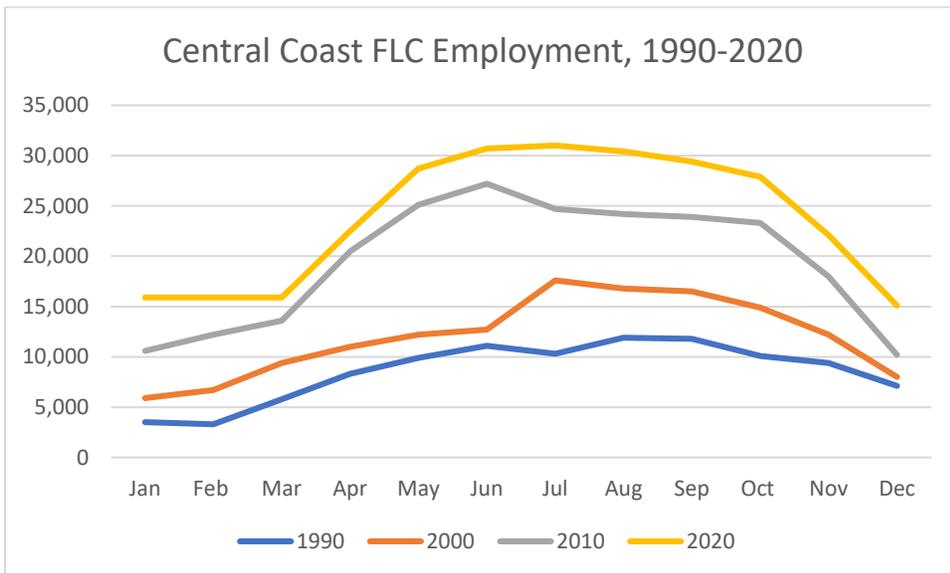
**Figure 9. FLC employment in the San Joaquin Valley, 1990-2020**



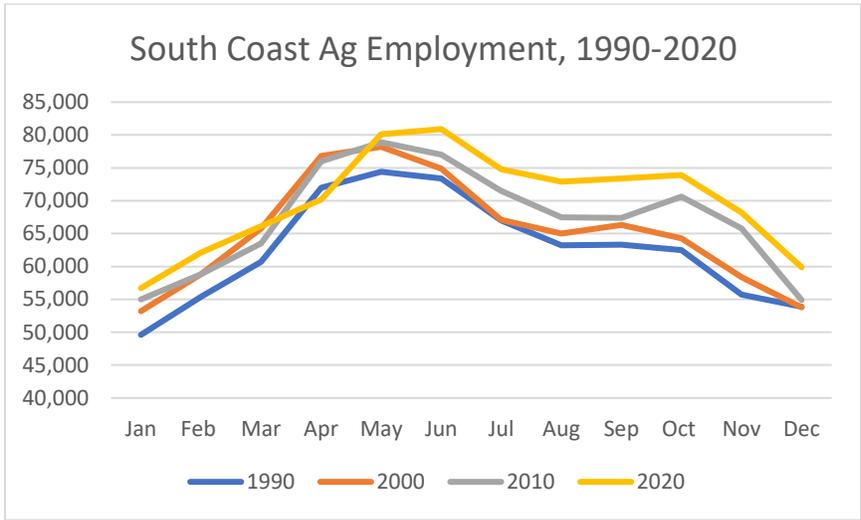
**Figure 10. Ag employment in the Central Coast, 1990-2020**



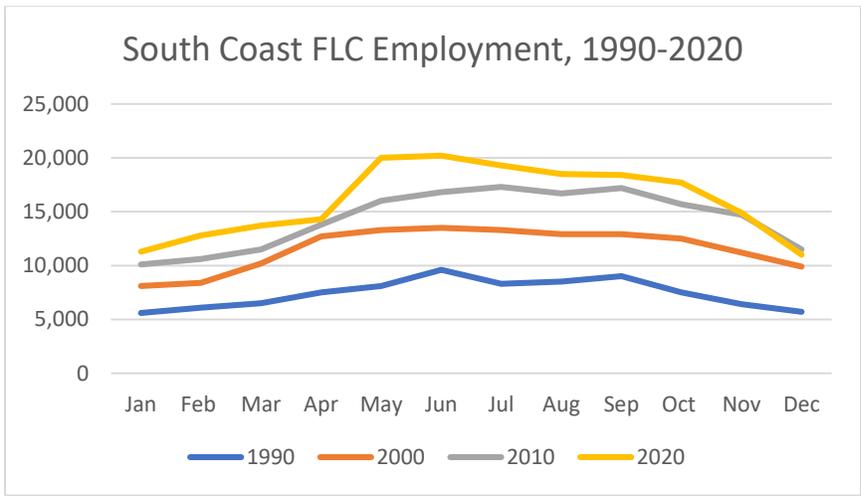
**Figure 11. FLC employment in the Central Coast, 1990-2020**



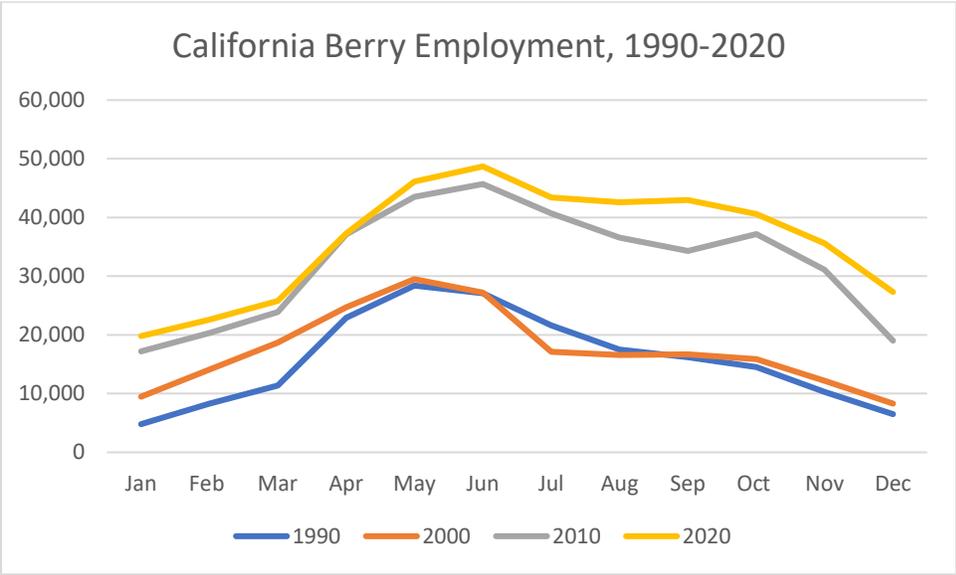
**Figure 12. Ag employment in the South Coast, 1990-2020**



**Figure 13. FLC employment in the South Coast, 1990-2020**



**Figure 14. California berry employment, 1990-2020**



# Appendix Map 1. California Agricultural Employment in 2021

