# Positive Hourly Wage Rate Effects for California's Agricultural Workers from Increases of the State's Minimum Wage

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Policy discourse concerning changes of the minimum wage focuses on concerns about employment effects.[1] The amount of the increase of the minimum wage may be so great as to discourage some employers from hiring new workers or might encourage some employers to invest in automation to reduce labor expenses. On the other hand, the higher the minimum wage, the greater the likelihood that discouraged workers may re-enter the labor force.

Another policy concern focuses on welfare effects, such as whether increasing the minimum wage improves the economic status of the working poor or reduces income inequality.[2] Of equal concern is whether increased labor costs contribute to inflation, which would erode real earnings.

The present paper finds periodic increases of the California minimum wage during the years 1992 – 2015 were associated with a net overall increase of 14.3% (S.D. 2.8%) of inflations-adjusted, wage rates earned by the state's directly-hired[3] farm field workers. In contrast, for production workers employed in California's food manufacturing sector, inflation-adjusted wage rates declined during most of the same period.

This research also finds the annual average of monthly employment of agricultural workers increased substantially during the same period, 1992 – 2015. Also, during this period, production of labor-intense crops in the state increased.

Table 1 presents the recent history of the California minimum wage, for the period 1992 – 2015.[4] Notable are the sporadic, but substantial increases in some

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[1] See Chapter 5, *The Minimum Wage and Labor Market Outcomes*, Christopher J. Flinn, MIT Press, Cambridge and London, 2010. Xii+306 pages.

[2] See *The Spending and Debt Response to Minimum Wage Hikes*, D. Aaronson, S. Agarwai & E. French. *American Economic Review*. **102**:71 3111-3139 (2012).

[3] Direct-hire workers are persons who are employees of farmers, or farm operators. Workers employed by businesses who provide contracted, on-farm services for farmers, such as labor contractors, custom harvesters, or farm management firms, among other categories, are considered to be contract workers.

[4] State of California, Department of Industrial Relations: https://www.dir.ca.gov/iwc/minimumwagehistory.htm

relatively short intervals. For example, from October 1, 1996, through March 1, 1998, the state minimum wage increased in several steps from $4.25 to $5.75 (nominal $), a net overall increase of 35%. Notable, as well, are relatively long periods without any increase of the minimum wage. For example, from January 1, 2002 to January 1, 2007, the minimum wage of $6.75 remained unchanged.

**Table 1**

**History of the California Minimum Wage**

**Pre-1992 to 2015**

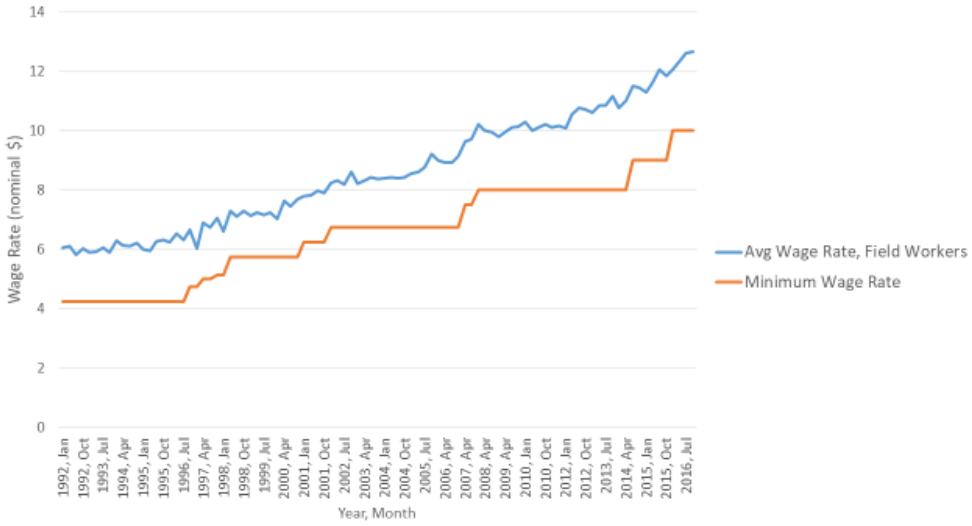
| *Date* | *New minimum wage* | *Old minimum wage* | *Amount of increase* | *Percent increase* |
|---|---|---|---|---|
| 2015 Year | $9.00 | | | |
| July 1, 2014 | $9.00 | $8.00 | $1.00 | 12.5% |
| January 1, 2008 | $8.00 | $7.50 | $0.50 | 6.7% |
| January 1, 2007 | $7.50 | $6.75 | $0.75 | 11.1% |
| January 1, 2002 | $6.75 | $6.25 | $0.50 | 8.0% |
| January 1, 2001 | $6.25 | $5.75 | $0.50 | 8.7% |
| March 1, 1998 | $5.75 | $5.15 | $0.60 | 11.65% |
| September 1, 1997 | $5.15 | $5.00 | $0.15 | 3.0% |
| March 1, 1997 | $5.00 | $4.75 | $0.25 | 5.26% |
| October 1, 1996 | $4.75 | $4.25 | $0.50 | 11.76% |
| 1992 Year | $4.25 | | | |

The pattern of relatively long periods of a stable minimum wage, and some relatively short periods of increases made it possible to examine changes of average wage rates earned by agricultural workers during periods of constant minimum wage and, separately, during periods of minimum wage growth (see

Figure 1).

**Figure 1. Average Wage Rate (Direct-Hire Field Workers) vs. Minimum Wage Rate, California, Quarterly, 1992-2016 (Nominal $)**

*Source: USDA-NASS Farm Labor; CA-DIR*




For this purpose, we identified four, four-year-long periods of substantial growth of the California minimum wage, and four periods during which the minimum wage remained constant. During each period, we computed the percent difference of inflation-adjusted, average, direct-hire, field labor wage rates during the years at the beginning and at the conclusion of the period (see Tables 2 & 3).

The periods chosen cover the entire interval from 1992 to 2015. As indicated in the computations that follow, during the four-year intervals in which the minimum wage was increased, every corresponding change in the inflations-adjusted annual average field labor wage rate was positive. In contrast, during the intervals in which the minimum wage was unchanged, every corresponding change in the reported average field labor wage rate was negative.

**Table 2. Change of Average Direct-Hire Field Labor Wage Rate, Before/After Increase of California Minimum Wage Rate, California, Selected 4-Year Intervals Adjusted 2016 $**

*Source: USDA/NASS Farm Labor (Nov Issue); CA-DIR CA CPI (Annual)*

| Years (start-to-end) | Avg Wage Rate (start year) | Avg Wage Rate (end year) | Difference of Avg Wage Rates | Difference (percent) |
|---|---|---|---|---|
| 1995-1998 | $10.21 | $11.12 | $0.91 | 8.9% |
| 2000-2003 | $10.95 | $11.18 | $0.23 | 2.1% |
| 2006-2009 | $10.92 | $11.44 | $0.52 | 4.8% |
| 2012-2015 | $11.32 | $12.02 | $0.69 | 6.1% |
| *Cumulative total* | | | | *21.9%* |
| *Average per interval (percent; 4 cases)* | | | | *5.5% (S.D. 2.7%)* |

As demonstrated in Table 2, during each of the four-year intervals during which there had been an increase of the California minimum wage, all reported changes of direct-hire field labor wage rates were positive, ranging from 2.1% to 8.9%. The average increase of the wage rate earned by the state's direct-hire field workers during these four periods was 5.5% (S.D. 2.7%).

The fact that every interval in Table 2 corresponded to a positive change in the inflation-adjusted field labor wage rate indicates improvement, on average, of the economic status of farm field laborers. Overall annual earnings, however, depend as well upon hours of work per week, and weeks of employment per year.

In contrast, as presented in Table 3, during each of the intervals[5] during which there had been no change of the California minimum wage, all reported changes of direct-hire field labor wage rates were negative, from -1.0% to -2.9%. The average decease during these three periods was -1.9% (S.D. 0.9%).

The fact that in all four of these latter intervals, the inflation adjusted annual average field labor wage rates declined indicates that, on average, the economic

[5] It was possible to include the period 1998 to 2000 although the California minimum wage was increased after just two months of 1998, on March 1, 1998, from $5.15 to $5.75, because USDA published annual average wage rate reports for each of the three years.

status of field labors may have deteriorated. Annual earnings during these time frames depend upon hours of work per week, and weeks of employment per year.

**Table 3. Change of Average Direct-Hire Field Labor Wage Rate, Before/After NO Increase of California Minimum Wage Rate, California, Selected Intervals Adjusted 2016 $**

*Source: USDA/NASS Farm Labor (Nov Issue); CA-DIR CA CPI (Annual)*

| Years (start-to-end) | Avg Wage Rate (start year) | Avg Wage Rate (end year) | Diff of Avg Wage | Diff (percent) |
|---|---|---|---|---|
| 1992-1995 | $10.52 | $10.21 | -0.31 | -2.9% |
| 1998-2000 | $11.11 | $10.95 | -0.16 | -1.4% |
| 2003-2006 | $11.18 | $10.92 | -0.26 | -2.3% |
| 2009-2012 | $11.44 | $11.32 | -0.12 | -1.0% |
| *Cumulative total* | | | | -7.6% |
| *Average (percent; 4 cases)* | | | | -1.9% (S.D. 0.9%) |

From the findings in Tables 2 & 3, we next compute the net change in reported direct-hire field labor wag rates during the combined eight periods.

**Table 4**
**Changes of Average Direct-Hire Field Labor Wage Rates**
**Association with Increase of the California Minimum Wage**
**1992-2015**

**Cumulative net change of average wage rate = (21.9% - 7.6%) = 14.3%**

Average wage rate changes when minimum wage increased: +5.5% (S.D. 2.7%)

Average wage rate changes when constant minimum wage: -1.9% (S.D. 0.9%)

From the findings presented in Table 4, it can be inferred that, on average, the effect of a typical increase of California's minimum wage during the four-year intervals discussed herein would likely reverse what would likely have been a wage rate loss of -1.9% into a gain of +5.5%, or an overall net difference of +7.4% (S.D. 2.8%).

## Farm employment in California, 1992 to 2015

Farm employment in California varies greatly from month-to-month, owing to seasonal variations in crop production tasks. Employers who hire workers to perform tasks on farms report their "monthly employment" when filing employment tax payment reports for each calendar quarter.[6]

The "annual average of the reported monthly employment" is then considered to measure on-farm employment.[7] For purposes of this report, the latter measure will be termed "farm employment."

Owing to possible annual variations of farm employment caused by catastrophic weather events, low wholesale market prices for produce, crop losses due to pest infestations, labor shortages, or other disruptions of usual or expected conditions, it is useful to measure long-term changes in farm employment by comparing 3-year averages. In the present study, we compare the 3-year average for 1991-93 with the corresponding 3-year average for 2014-16. This comparison represents the long-term change in farm employment between 1992 and 2015.

The present report finds California farm employment[8] increased from 328,635 to 376,871 between 1992 and 2015, where these figures refer to three-year averages of farm employment between 1991-93 and 2014-16 (Table 5).

**Table 5**
**Change of Farm Employment from 1992 to 2016**
**Three-year averages: 1991-93 and 2014-16, California**
*Source: EDD/LMID Agricultural Employment reports*

Farm employment, 1991-93 average: 328,635

Farm employment, 2014-15 average: 376,871

**Change of farm employment, 1992 to 2015: +48,235 (+14.7%)**

Not only did farm employment increase during the same period that average wage rates earned by field laborers rise, but also the amount of the increase was

[6] The quarterly reports ask for the number of persons on the payroll during the week that includes the 12th day of the month. Since most paychecks in agriculture are paid weekly, persons who may have been on the payroll during only part of that month, say only during the first week or the last week are presumably not enumerated.

[7] In this paper, we consider farm employment to refer to persons hired to perform farm tasks on a farm. Some off-farm, post-harvest tasks, such as cotton ginning, or preparing fresh-cut, packaged vegetables for market are considered "agricultural employment" and classified as such.

[8] For this purpose, farm employment refers to all of NAICS 111, 112, 115112, 115113, 115210, 115115 & 115116.

substantial. Thus, the farm labor market changed favorably for field laborers during the same period that the California minimum wage increased substantially.

The temporary, non-immigrant, foreign agricultural worker visa program (H-2A), certified an average of 3,472 full-time-equivalent workers during FYs 2014-16.[9] In earlier years, far fewer H-2A visa workers were admitted. At most, this would reduce the net increase of domestic worker employment to +44,763.

## Farm production in California, 1992 to 2012

A separate measure of the performance of the California farm economy is production. The most comprehensive report on farm production is the *Census of Agriculture*, conducted every five years.

The 1992 census data can be compared with the 2012 findings, which finds total California production in 1992 was $17.1 billion (nominal $) and 2012 production had increased to $42.6 billion (nominal $). Table 6 presents the adjusted 2016 figures as well as separate figures for vegetable and fruit production, each of which include data for labor-intensive crops.[10]

**Table 6**
**California Farm Production, Billions (adjusted 2016 $), and Sub-totals for Vegetable and Fruit Crops, 1992-2012**

*Source: USDA/NASS Census of Agriculture*

| *Category* | *1992* | *2012* | *Percent change* |
|---|---|---|---|
| Total production | $26.9 | $45.1 | 68% |
| | | | |
| Vegetables and melons | $4.2 | $6.7 | 60% |
| Fruits, nuts and berries | $7.9 | $18.7 | 137% |
| *Sub-total: Fruit & Vegetable* | *$12.1* | *$25.4* | *112%* |

[9] Reports of certification of employment of temporary foreign agricultural workers show the following totals for California: 2014, 4,346; 2015, 8,687; 2016, 7797. The 3-year average is 6,842. Most California H-2A workers are employed for 6 months or less. Therefore, the full-time-equivalent employment of H-2A workers is estimated to be 3,472. For data, see https://www.foreignlaborcert.doleta.gov/performancedata.cfm

[10] The GDP deflater figures for 1992, 2012 and 2016 are utilized for this purpose because farm production refers to wholesale markets, not to the retail market. Thus, the Consumer Price Index is arguably not the appropriate reference for adjusting nominal U.S. dollars. For data source, see p.536, Appendix B, "Table B-3. Quantity and Price Indexes for Gross Domestic Product, and Percent Changes, 1967-2017," *2018 Economic Report of the President, February 2018*, https://www.whitehouse.gov/wp-content/uploads/2018/02/ERP_2018_Final-FINAL.pdf

The most striking finding of the comparison of production in 2012 with 1992 is very rapid increase of “Fruit & Vegetable” production, by 112%. In fact, the amount of production of the latter increased by $13.5 billion, as compared with an increase of $18.2 billion of production for all commodities. Thus, the increase of Fruit and Vegetable production accounted for nearly three-fourths of the corresponding increase of the production of all commodities.

## Summary of Findings

1. The evidence indicates inflation-adjusted, annual average wage rates for California agriculture's direct-hire field workers increased between 1992 and 2015.
2. Increases of direct-hire field worker wage rates were found to occur precisely during the four, four-year calendar periods when the state's minimum wage was increased.
3. During all four intermediate periods when the state's minimum wage rate remained constant, the inflation-adjusted, annual average wage rates for California's direct-hire field workers decreased.
4. The net increase of inflation-adjusted, annual average wage rates for California's direct-hire field workers between 1992 and 2015 was 14.3% (S.D. 2.8%)
5. Comparison of changes of inflation-adjusted field worker wage rates during all eight periods from 1992 to 2015 suggests increases of the state minimum wage could offsets what would otherwise have been a decline in field worker wage rates, for an average net value of +7.4% during the four-year periods.
6. Both on-farm employment and production increased during the 1992-2015 period, primarily because of substantial growth of production in the fruit, tree nut and berry crop sector, and modest increases in the production of the vegetable, melon, sweet potato and sweet corn sector.

## Discussion

Employers increased some of California's lowest paid direct-hire field worker wage rates in response to increases of the state minimum wage, certainly for those earning at or near the mandated minimum. But some employers may have voluntarily raised wages to attract workers in response to growing labor demand, especially in labor-intensive crop industries, such as the berry and premium wine grape sectors in which production expanded.

However, the fact that inflation-adjusted wage rates for field workers declined in every intermediate period during which the state minimum wage remained constant suggests that few employers sought to attract workers by raising wage rates during those intervals. This finding suggests that the labor supply was

likely to have been sufficiently adequate that employers could avoid voluntarily raising wages to attract new workers, even though labor demand was rising.

These findings support the policy perspective that increases of the minimum wage likely attracts new workers to participate in the labor market, perhaps attracting some discouraged workers who had previously left the labor market. Clearly, employers continued to hire new workers despite the substantial increase in the state minimum wage.

At the same time, it is also important to note that the farm labor market is a segmented labor market. Relatively few farm workers have the requisite skills or qualifications to compete in California's general labor market in which high levels of educational attainment are essential. There is anecdotal evidence that employers seeking skilled workers are having difficulty finding and hiring suitably qualified individuals at the wages being offered.

The main shortcoming of the present report's analysis of associations between direct-hire field labor wage rates and increases of California's minimum wage is the absence of reports of wage rates earned by employees of agricultural service companies, such as farm workers hired by farm labor contractors (FLC). These were separately reported for only a portion of the period 1992-2015, then discontinued after 2011.[11] It was not possible to report findings for FLC workers for the entire period of interest; only findings for direct-hire workers are included.

Moreover, even reports of wage rates and employment of agricultural service workers that were published in USDA's *Farm Labor* report were likely inadequate. For example, for the week of July 11-17, 2010, USDA reported, "Agricultural service workers in California numbered 120,000 this July…"[12] On the other hand, California's EDD Labor Market Information unit reported employment in NAICS 000115 (Agricultural Services) for July 2010 was 206,500.[13] The discontinuance of this data series from the USDA's *Farm Labor* report was clearly warranted.

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[11] The May 17, 2012, edition of *Farm Labor*, the USDA/NASS report on hired labor employment, wage rates and hours per week, stated, "…the agricultural service component was discontinued in 2012. Hired worker estimates exclude agricultural service employees."

[12] See USDA/NASS *Farm Labor*, released August 19, 2010, p. 15.

[13] See Monthly Employment Data 1990-2017 for California: http://www.labormarketinfo.edd.ca.gov/data/ca-agriculture.html

The labor market share of California's agricultural service workers increased substantially during the period 1992 through 2015, and now comprise a majority of agricultural employment of the state. It is well-established that survey research efforts conducted by Federal agencies of firms within the Agricultural Services sector yielded unsatisfactory results, such as statistically unstable findings.[14]

The National Agricultural Workers Survey (NAWS) of the U.S. Department of Labor obtains self-reported information from in-person interviews with all types of crop workers throughout the United States, including on-farm agricultural service workers. The NAWS is the only source of information about the employment characteristics of all U.S. crop farm workers.

The NAWS finds inflation-adjusted wage rates earned by California crop workers (dollars per hour, 2016 $), increased slightly, from $10.51 to $10.56 between 1989-91 and 2013-14.[15] The NAWS wage rate findings, in nominal dollars, and the corresponding wage rates, adjusted for inflation, are presented in Table 7.

**Table 7. Average Wage Rates (dollars per hour) for Crop Workers, California, NAWS (all crop workers), 1989-91 vs. 2013-14**

*Source: National Agricultural Workers Survey (NAWS); California Department of Industrial Relations CPI*

| *Period* | *Crop Workers Wage Rate NAWS (nominal)* | *Crop Workers Wage Rate NAWS (adjusted 2016 dollars)* |
|---|---|---|
| 1989-91 | $5.53 | $10.51 |
| 2013-14 | $10.09 | $10.56 |

At the same time, NAWS data indicate that annual average earnings of crop workers likely increased substantially between 1989-91 and 2013-14. This was a consequence of increases of both the average number of weeks of crop farm work from 31 to 36 weeks per year, and an increase in the average number of hours of farm work per week, from 39 to 45 hours. Thus, the total number of hours of

[14] During both 1974 and 1978, as part of the *Census of Agriculture*, efforts were made to conduct a census of agricultural service firms. In both instances, it was determined that the master address file for such businesses was inadequate and yielded statistically unstable results. Efforts to survey these employers were abandoned

[15] See https://www.doleta.gov/naws/pages/research/data-tables.cfm

employment for crop workers in a year, on average, increased from 1,209 hours to 1,620 hours.

Strict comparison of self-reported crop worker wage rates from the NAWS with those reported by employers of direct-hire field workers from the USDA/NASS *Farm Labor* must be qualified. First, the NAWS is comprised of self-reports by a representative sample of crop workers, whereas the USDA/NASS findings are based on reports by a representative sample of farmers who described wage rates and pay practices for their own employees. Second, the NAWS findings includes self-reports by crop workers who were employed by labor contractors as well as those directly hired by farm operators, whereas the USDA/NASS findings did not include information about wage rates paid by labor contractors.

It is possible that data from the two surveys may refer to differing mixes of crops and tasks. This follows from the fact that the NAWS is a continuous survey of crop workers, conducted year-round, while the USDA/NASS survey refers only to findings for persons who were employed during one of four specified weeks, one in each calendar quarter, timed to coincide with the same weeks of the Bureau of Labor Statistics national employment survey during those months.

**Do wage rates for FLC workers differ from direct-hire employees?**

Information from the NAWS provided some limited information about whether wage rates differ between grower employees and labor contractor employees. For the period 1995-97, the NAWS published estimates of wage rates for direct-hire and labor contractor crop workers in California. The grower employee average wage rate was $5.87 (nominal $) while the labor contactor employee average wage rate was $5.27 (nominal $), about 10% lower.[16] Care must be used in interpreting this result because this difference does not take account of possible differences in pay rates for the mix of crops and tasks for each group.

The Farm Employers Labor Service (FELS) survey of farm employers included reported wage rates for both groups as well, and yielded mixed results for 2012.[17] While labor contractor employees earned, on average, slightly less per hour

[16] See p. 14, Table 1, in *Who Works on California Farms?*, H. Rosenberg, A. Steirman, S.M. Gabbard, R. Mines. 1998.
[17] The Farm Employers Labor Service *2012 Agricultural Wage and Benefit Survey* report was based on responses from 165 California farm employers who chose to voluntarily participate in the survey.

than direct-hire workers, the difference was not statistically significant.[18] For the General Labor 1 occupational category, direct-hire workers were paid an average of $10.19 per hour while labor contactor employees hired at the same occupational category averaged less, $9.83 per hour. But for direct-hire workers in the General Labor 2 category, it was the reverse, an average of $9.58 per hour while the labor contractor employees in that category were paid $9.88 per hour.

The most recent direct comparison of wage-rates paid by farm operators to direct-hire employees and to contract laborers in California was the 2015 FELS Wage & Benefit Survey. Regrettably, the FELS survey was discontinued following publication of the July 2015 findings.

Table 8 presents the 2015 findings which compare the average wage rates paid by responding farm operators to "own employees" and to "FLC employees."

**Table 8**

**Average Wage Rate Payments, Own Employees, FLC Employees, and Number of Farm Operators Responding, All Commodities, 2015**

*Source: 2015 Wage & Benefit Survey Results, FELS*

| *Job Title* | *Employer* | *Average Wage Rate* | *Number Respondents with Workers of the Job Title* |
|---|---|---|---|
| General Laborer 1 | Own employee | $11.54 | 279 |
| General Laborer 1 | FLC Employee | $11.15 | 107 |
| General Laborer 2 | Own Employee | $10.65 | 176 |
| General Laborer 2 | FLC Employee | $10.68 | 90 |

The differences between the reported "own employee" and "FLC employee" average wage rates are quite small. There was no statistically significant difference found between wage rates paid to "own employees" and "FLC employees" in either job title.

[18] Published standard deviations of all four reported average wage rates and the number of corresponding reports were used to compute the probable error of the difference of two weighted wage rates to be $0.12 (95% C.I.).

## How different are wages rates for direct-hire field worker from low-wage, non-farm workers?

A question that arises in considering possible labor market mobility of persons employed as field workers in agriculture: could direct-hire field workers in agriculture readily find employment in another industry sector? The sector that is probably the most likely candidate is one in which Latino workers predominate, and where production facilities in California are located in agricultural regions of the state. The most obvious candidate is food manufacturing workers, including canneries. This sector is classified within the non-durable goods producing industry category. But it does not include facilities that process fresh produce in forms described as "value-added," such as salad plants.[19]

Comparable wage rate data is limited. The most recently published wage rate data for food manufacturing production workers is for 2007.[20] The findings for that year, and all years prior, including 1992, indicate the following. Production workers in food manufacturing earned and average of $12.02 per hour in 1992 and $14.58 per hour in 2007, while the present paper finds direct-hire field workers earned an average of $6.00 per hour in 1992 and $9.56 per hour in 2007.

When adjusted to 2016 $, the average wage rates for production workers in food manufacturing fell precipitously from $21.08 in 1992 to $17.12 in 2007, or a decline of 19%. While average wages were still higher in food manufacturing, another factor was facing those industries: sharply falling consumer purchases of canned and some processed food products. The result has been permanent plant closings and layoffs as well as weakening of labor's ability to prevent further erosion of worker earnings.

## Concluding remarks

This paper presents new findings which indicate that direct-hire agricultural field workers have experienced modest but significant gains in real wage rates during the period 1992 – 2015. Moreover, the findings also indicate that much of

[19] Salad plants do not cook, freeze or otherwise alter the fresh character of produce. Bagged salad mix, for example, involves washing and chopping fresh produce and placing the mix in a non-oxidizing atmosphere bag. This industry sector is NAICS 115114: "Crop preparation for market." In this process, value to consumers is added to produce products, such as bagged salads. Hence, the term "value-added."

[20] See Section C. Table C-9, p. 55, "Average hours and Earnings of Production Workers in Select Manufacturing Industries, California, 2007," *2008 California Statistical Abstract*, California Department of Finance, Sacramento, California, 2009.

these gains, if not all, were associated with regular increases in the California minimum wage.

These findings also suggest that many agricultural employers, if not most, did not voluntarily raise wage rates during periods when the minimum wage rate remained constant. Despite widespread reports of labor shortages, most direct-hire field labor employers apparently did not find it necessary to voluntary raise wages to attract workers.

Equally significant, during this period from 1992 to 2015, farm employment actually increased substantially, and production also rose. Notable gains in production were in agricultural sectors in which labor demand is high.

There is no evidence that increases of California's minimum wage adversely impacted overall agricultural employment or production. At the same time, it is certainly possible that some agricultural employers faced serious, short-term, temporary interruptions of production owing to the lack of an adequate local labor supply.

However, one employer, Christopher Ranch, as of July 1, 2018, set $15 per hour as the firm's lowest wage rate. This will likely encourage hiring of local workers.

Martin has recently released new research based on analysis of agricultural worker employer identification numbers, typically Social Security Numbers, and earnings.[21] The new report indicates a growth of 20% in the estimated number of unique individuals employed in California agriculture during 2016 as compared with the number in 2014. If there actually is a one-to-one correspondence between SS#s and unique individuals in employment records, this may indicate that raises in the California minimum wage has encouraged workers to seek and obtain farm jobs in the state. But the use of "borrowed" or false SS#s in California employment is not unknown among farm laborers, raising a concern about the findings.

Since the NAWS has reported that 56% of California crop farm workers told U.S. Department of Labor interviewers they lacked authorization for U.S. employment,[22] the current Federal administration's immigration enforcement

[21] See *California Farm Workers in 2016*, P.Martin, B. Hooker and M. Stockton. July 6, 2018, 11 pp.
[22] See https://www.doleta.gov/naws/pages/research/data-tables.

program has spread alarm among families and workers in agricultural regions. Employers, too, are facing serious obstacles in assuring their workforce will remain in the face of potential enforcement actions. As a result, employers are increasingly turning to the H-2A program.

Also, the labor supply was tight in many of those years and there is ample anecdotal evidence of labor shortages in some regions. The shortage of employment-authorized domestic workers encouraged agricultural employers, growers and labor contractors, to increase use of the H-2A program.

It is also the case that the H-2A workers are required by law to be paid the "adverse effect wage rate," determined annually by the U.S. Department of Labor. This AEWR is determined by analyzing local, state level labor markets, establishing a wage rate that will not depress wage rates for domestic workers. In practice, the AEWR for California has always been higher than the state minimum wage, but very slightly lower than the annual average wage rates discussed in this research. For example, the California AEWR for 2015 was $11.33 per hour[23] (nominal $), versus the annual average wage rate for California farm field workers of $11.75 per hour (nominal $).

The evidence is clear that the AEWR H-2A wage rate, itself, has not contribute to the observed increase of annual average wage rates for field workers in California. On the other hand, if a domestic worker paid the minimum wage was displaced by an H-2A worker, this would clearly contribute to higher reported wage rates. At the same time, employment costs for H-2A workers are substantial, and include the provision of housing subject to government inspection, as well as the cost of transporting workers back and forth from their homes communities in foreign countries. Thus, employment costs will be higher than for domestic workers.

The main limitation of the present report is the lack of published information about agricultural service firms, especially farm labor contractor wage rates. The limited information available indicates that FLC wage rates were, on average, slightly lower than or not statistically different from wage rates paid by farmers to their direct-hire employees at comparable job categories. But there is the caveat

[23] See https://www.foreignlaborcert.doleta.gov/pdf/2015_adverse_map.pdf

that average wage rates will only be strictly comparable for the same farm tasks in the same crops. If one group is predominately engaged in harvest work in one crop but the other performs many different types of tasks in several different crops in a different region of the state, comparisons will be less meaningful

The absence of adequate, contemporary research about the agricultural services sector, including farm labor contractor wage rates, presents a persistent gap in knowledge that is necessary to inform policy discourse. A Census of the rapidly expanding agricultural services sector in California is warranted.

Finally, as is widely discussed, the California minimum wage was increased again in 2016, and in 2017 and 2018, and will increase in successive steps for several more years until it reaches $15 per hour. There is also a small-employer carve-out now, which allows employers with 25 or fewer employees to follow a somewhat more gradual pace of minimum wage increase than larger employers. Prospective research to inform policy discourse will be essential to track labor markets and wage responses to these developments.