



**Does the Adverse Effect Wage Rate Adversely Affect H-2A Hiring Decisions?**

Journal:	<i>Agricultural Finance Review</i>
Manuscript ID	Draft
Manuscript Type:	Research Article
Keywords:	H-2A foreign workers, adverse effect wage rate, crop farms, domestic unemployment, cost efficiency

SCHOLARONE™  
Manuscripts

## Does the Adverse Effect Wage Rate Adversely Affect H-2A Hiring Decisions?

### Introduction

In the U.S. farm sector, foreign workers are usually relied on to fill in seasonal unskilled labor positions (Luo and Escalante, 2017; Escalante, Perkins, and Santos, 2011). Such reliance became even more glaring when stricter immigration control laws were passed in the last two decades. These immigration laws affected an estimated 12 million unauthorized immigrants in the country, of which 40 percent worked in farm businesses (Seid, 2006; Levine, 2004). The apprehension of these workers created a serious farm employment gap when regular pools of potential domestic workers could not supply the much-needed replacement farm laborers (Luo and Escalante, 2017). Farm employers' efforts to attract residents to consider farm work, including making desperate high farm wage offers, were generally futile (Escalante, Wu, and Li, 2016; Escalante, Perkins, and Santos, 2011).

At the backdrop of tight labor markets and shortage of willing domestic farm workforce, U.S. farmers started to increasingly depend on the federal government's H-2A Agricultural Guest Worker Program. The H-2A program is the farmer's legal foreign labor hiring alternative for sourcing the much-needed contractual foreign workers. It allows farm businesses to temporarily hire nonimmigrant foreign workers to perform full-time short-term (seasonal) farm work when domestic workers are unavailable (GAO, 1997).

In more recent years, patronage of the H-2A program has grown more steadily, thus reflecting the farmers' predicament in hiring domestic labor (Escalante, Luo, and Taylor, 2020). For example, in 2013, H-2A visa approvals accounted for 7.69% of all employed workers in farming, fisheries, and forestry. In 2019, this figure increased to 17.72%. Using employment data compiled by the National Agricultural Statistics Service (NASS), the H-2A program's share for

1  
2  
3 farming alone is even larger, at 27.43 % of total hired farm labor in 2019. These facts highlight the  
4  
5 relevance of the H-2A program in augmenting the farm labor supply.  
6

7  
8 The H-2A program is governed by several regulations that are designed to protect the  
9  
10 interests of the foreign laborers as well as ensure that such employment decisions do not deprive  
11  
12 any able, qualified domestic workers of an employment opportunity. In consideration of the overall  
13  
14 welfare of farm workers, the H-2A program sets minimum standards for provision of housing,  
15  
16 transportation, meals, workers' compensation, and other benefits (Mayer, 2008). Hiring under the  
17  
18 program is also guided by Adverse Effect Wage Rates (AEWR), which are determined under a  
19  
20 state-level, federally designed, mechanism. AEWR serves as a minimum hiring rate for H-2A farm  
21  
22 employers and is enforced to help prevent the possibility of dwindling the wage rate of U.S.  
23  
24 domestic workers (UFW n. DOL, 2020; Rutledge et al., 2023) that may be caused by the influx of  
25  
26 H-2A workers.  
27  
28  
29

30  
31 The AEWR principle, however, has been criticized and challenged by analysts. Among  
32  
33 concerns raised is the contention that AEWR has been unreasonably high and could threaten  
34  
35 profitability and long-term business survival, especially among smaller farms. Recent increases in  
36  
37 several state-level AEWRs (Adverse Effect Wage Rates) have outpaced increments in average  
38  
39 wage rates across other sectors in the U.S. labor market. Such trends adversely affect the farm  
40  
41 sector's competitive stance (previously fortified by its low labor costs) against their peer industries  
42  
43 (Crittenden, 2020).  
44  
45

46  
47 On top of that, AEWRs differ across states, which in theory is believed to account for  
48  
49 geographic-based differentials in living conditions. Some, however, support the setting of a similar  
50  
51 national wage benchmark for all workers by arguing that program stipulations anyway require  
52  
53 employers to comply with identical workers' living condition standards. This argument contends  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 that a uniform AEWCR could relieve farmers of internal cost management pressure and justifies  
4  
5 that all farmers compete in almost homogenous market conditions (Lewison, 2021).  
6

7  
8 In the light of these AEWCR issues and the farmers' need for a sustainable, viable labor  
9  
10 sourcing alternative, this study determines the influence of prevailing AEWCRs on farmers' H-2A  
11  
12 hiring decisions. Specifically, our goal is to clarify if farmers' dependence on H-2A labor  
13  
14 diminishes when faced with increasing AEWCRs. Our model incorporates other possible  
15  
16 determinants of farm labor demand such as inter-industry labor and wage differentials, regional  
17  
18 farm labor patterns, and intertemporal transition from pre-pandemic times to the pandemic period.  
19  
20 Our analytical framework also mimics the derivation of each period's AEWCR using lagged  
21  
22 measures of some potential factors that may be related to each state's wage determination.  
23  
24

## 25 26 **Background**

27  
28 Even when the AEWCR is explicitly intended as a benchmark wage for H-2A employment  
29  
30 decisions, its influence on domestic labor market conditions also needs to be clarified.  
31  
32 Theoretically, the wage principle's conception and formulation rely on domestic market dynamics,  
33  
34 which has been confirmed by recent findings on its influence on local employment and wages  
35  
36 (Rutledge, Richards, and Martin, 2023).  
37  
38

## 39 40 ***The Domestic Labor Hiring Predicament***

41  
42 While the U.S. economy was struggling with recessionary shocks in the late 2000s, the  
43  
44 strict immigration policy stance seemed to perfectly coincide with the need to create more domestic  
45  
46 job opportunities and alleviate impending unemployment conditions. However, the farm sector's  
47  
48 actual employment trends defied such logic as the deportation of undocumented immigrants only  
49  
50 resulted in many unfilled/vacated farm work positions (McKissick and Kane, 2011).  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 The farm labor shortage, especially during the late 2000s recession, has been extensively  
4 discussed in many academic, industry, and policy discussion circles. Among other evidence, a  
5 2007 study reported that two-thirds of surveyed farmers experienced difficulties in replacing  
6 displaced undocumented farm workers with the domestic labor pool (Escalante and Santos, 2011).  
7  
8 Notably, such labor issues persisted even before several states enacted their own immigration laws  
9 as supplementary to (and usually more restrictive than) federal policies in place at that time.

10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Claims on millions of dollars of economic losses arising from farm labor shortages (unfilled farm positions) are quantified in some studies (Zahnister et. al, 2012; McKissick and Kane, 2011). Over the years, farmers experienced frustrations in attracting local workers, majority of whom were unwilling and unmotivated to take on farm jobs, even after farmers employed costly advertising and aggressive hiring efforts (Luckstead et. al, 2022 a,b). In some cases, domestic residents yielded to the farmers' pleas, but these workers registered productivity levels that were significantly much lower than those produced by former undocumented employees.

### ***The AEWB Principle***

Historically, employers in the United States have utilized foreign workers for jobs that required hard labor and had to endure harsher climatic as well as economic conditions like the agriculture sector, construction, sanitation, and restaurant jobs. This has not only provided relief to employers' job sourcing woes, but also translated to cost savings as these foreign workers were more willing to accept relatively lower pay (compared to regular wage rates) and subsist with the lack (absence) of fringe benefits, such as insurance and retirement. Employers' abuses of foreign workers are well documented, with reported citations for, among others, non-payment of wages already set at extremely low rates, workers' exposure to serious hazards and health risks uncovered by either minimal or unavailable workers' insurance coverage, and uncompensated injuries

1  
2  
3 incurred at work (Garcia, 2012; Smith and Sugimori, 2015). Even discounting such extreme cases,  
4  
5 the normal inferior compensation arrangements given to foreign workers could create distortions  
6  
7 in market wage determinations.  
8  
9

10 The AEW principle was conceived to specifically revert any possible market anomaly  
11 when foreign workers are hired under the H-2A program. The Department of Labor's Employment  
12 and Training Administration was tasked to issue a fixed wage rate (AEWR) to mitigate adverse  
13 effects arising due to the employment of underpaid alien workers. A current year's AEW is  
14 determined based on the results of the previous year's Farm Labor Survey conducted by the U.S.  
15 Department of Agriculture (USDA) among crop and livestock workers. For non-range occupations  
16 (comprising the bulk of H-2A employers),<sup>1</sup> AEWs are set at the state level and enforced to apply  
17 to all workers regardless of nationality. Thus, H-2A employers must pay their workers at or higher  
18 than either of the following: AEW, agreed-upon collective bargaining rate, the prevailing wage,  
19 if available, or any state or federal minimum wage (Mayers, 2008).  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32

33 Beyond the market argument, AEW also ensures fair treatment of all workers, regardless  
34 of ethnic origins. Thus, the AEW provides protection to temporary agricultural work (H-2A) visa  
35 holders from employers' exploitation (Whittaker, 2008).  
36  
37  
38  
39

#### 40 ***The AEW-Domestic Labor Linkage***

41  
42 An argument against the AEW principle asserts that the concept is valid only if more  
43 domestic workers are willing to be employed in farm businesses (Crittenden, 2020). The  
44  
45  
46  
47  
48  
49

---

50  
51 <sup>1</sup> Distinctions in AEW-setting are made between range and non-range occupations. Non-range workers are  
52 employed under jobs with the following Standard Occupational Classification (SOC) titles: graders and sorters of  
53 agricultural products; agricultural equipment operators; farmworkers and laborers in crop, nursery, and greenhouse;  
54 farmworkers in the farm, ranch, and aquacultural animals; packers and packagers (hand); and all other agricultural  
55 workers (Congressional Research Service, 2023).  
56  
57  
58  
59  
60

1  
2  
3 counterargument posits that AEWRS are determined endogenously as the previous year's market  
4 conditions' influence on wage rates are factored into the AEWRS determination.  
5  
6

7  
8 In principle, the AEWRS serves as a wage floor for the H-2A program whereby employment  
9 contracts are expected to observe such minimum hiring rate for wage offers to foreign guest  
10 workers. Conversely, however, AEWRS can arguably serve as a wage ceiling for domestic workers  
11 since whenever they refuse farm businesses' wage offer at the prevailing AEWRS level (either  
12 because they are uninterested or demanding rates higher than AEWRS), these employers can always  
13 choose to hire H-2A workers instead (Costa, 2022).  
14  
15  
16  
17  
18  
19  
20

21  
22 Some analysts, on the other hand, contend that the AEWRS functions as a "de facto  
23 minimum wage" for all farm workers, including both foreign and domestic workers (Lewison,  
24 2021). Rutledge, Richards, and Martin (2023) provide evidence clarifying that AEWRS's linkage  
25 to domestic farm labor extends beyond that construct. Their study establishes the AEWRS's  
26 significant, positive effect on domestic labor's wages and labor supply.  
27  
28  
29  
30  
31  
32

33  
34 If the AEWRS has a domestic labor effect, this study pursues a more direct investigation on  
35 its effect on H-2A employment trends, which is the decision parameter that such rates are  
36 supposedly inextricably related to. To our knowledge, there has been no explicit empirical  
37 investigation on such direct relationship between AEWRS and H-2A hiring decisions.  
38  
39  
40  
41

## 42 **Empirical Design**

### 43 *Data Sources and Measurement*

44  
45 Our data on H-2A employment and AEWRS were obtained from the Employment and  
46 Training Administration section of the U.S. Department of Labor (DOL). The time period for this  
47 analysis spans from 2018 to 2021, which involves a two-year pre-pandemic period and a  
48 subsequent two-year period capturing the onset and height of the pandemic shock. Specifically,  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 DOL's H-2A disclosure datasets were available at the business (applicant)-level in quarterly  
4 reports over the four-year period. In order to synchronize the data with information available for  
5 the other variables in our models, the H-2A applications were aggregated at the state and annual  
6 levels.  
7  
8  
9  
10

11  
12 State-level farm production, expense, and income-related data were obtained from USDA's  
13 Economic Research Service. Employment and wage data, including unemployment rates and  
14 personal disposable income, were sourced from the Bureau of Labor Statistics (BLS). Information  
15 on livable wages (defined as the estimated income needed to afford the basic needs of a family of  
16 3)<sup>2</sup> were compiled by CNBC using the MIT living wage calculator.  
17  
18  
19  
20  
21  
22  
23

24 Table 1 presents a descriptive statistical summary for this study's important parameters,  
25 including details on each variable's measurement. Wage-related variables include the AEW, R,  
26 livable wage, minimum wage, and gaps in average weekly wages for several groups of workers:  
27 all workers in both farm and non-farm industries (ALL); those employed in goods-producing  
28 industries (GOODS) such as natural resources and mining (including agriculture), construction,  
29 and manufacturing; employees of the agricultural sector (AG) that covers agriculture, fishing, and  
30 hunting; and those working in crop farms (CROPS). Our estimates (Table 1) indicate that ALL  
31 and GOOD wages are on average larger than AG wages while CROPS wages are slightly higher  
32 than AG wages during the sample period.  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44

45 Worker-related variables include several ratios comparing a subset of workers under a  
46 particular categorization with a larger worker population. In addition to the ALL, GOODS, and  
47 AG worker populations, the subset of H-2A workers is also considered. Estimates in Table 1  
48  
49  
50  
51  
52  
53

---

54  
55 <sup>2</sup> Family of 3 includes 2 working adults and a child.  
56  
57  
58  
59  
60



1  
2  
3 indicate that, at the state-level over the sample period, on average H-2A workers comprise 26.41  
4 percent of all AG workers; AG accounts for 1.00 and 5.18 percent of ALL and GOODS workers,  
5  
6 respectively; CROPS workers comprise 42.11 percent of AG workers.  
7  
8  
9

10 This analysis also considers other relevant measures, including a macroeconomic variable  
11 capturing annual changes in unemployment conditions, an income-related variable measuring  
12 annual changes in personal disposable incomes, and a cost efficiency ratio that depicts a farm  
13 business' cost structure relative to its value of farm production.  
14  
15  
16  
17  
18

19 Regional dummy variables are also included to account for possible variations in labor  
20 utilization and wage levels across different production regions in the country. These dummies  
21 include ATLANTIC, MIDWEST, PLAINS, WEST, and SOUTH.<sup>3</sup>  
22  
23  
24  
25

### 26 *Seemingly Unrelated Regression*

27

28 Our analysis involves a system of equations where each equation is estimated through  
29 linear regression techniques and each observation  $i$  has  $M$  cross-sectional units. This approach is  
30 valid as long as strict exogeneity of the regressors  $X_i$  and homoscedasticity are satisfied (Greene,  
31 2012). The estimation of the component equations using ordinary least squares (OLS) regression  
32 techniques is allowed under zero correlation among error terms to avoid heteroscedasticity.  
33  
34  
35  
36  
37  
38  
39

40 Such violation of the zero-correlation requirement is addressed under the seemingly  
41 unrelated regression (SUR) method. Equations (1) to (3) lays out the formulation of the basic SUR  
42 system, with equation (3) defining the condition for non-zero covariance between error terms:  
43  
44  
45  
46  
47

---

48  
49 <sup>3</sup> U.S. states are assigned as follows: ATLANTIC states include North Carolina, Virginia, West Virginia, Maryland,  
50 Connecticut, Massachusetts, New York, Vermont, New Hampshire, Maine, New Jersey, Rhode Island, and Delaware;  
51 MIDWEST states are Minnesota, Iowa, Wisconsin, Illinois, Missouri, Indiana, Ohio, Pennsylvania, and Michigan;  
52 PLAINS states are Nebraska, Kansas, Texas, North Dakota, South Dakota, and Oklahoma; WEST states include  
53 California, Washington, Oregon, Idaho, Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Alaska,  
54 and Hawaii; and the SOUTH states are Arkansas, Florida, Georgia, Louisiana, Mississippi, Alabama, Tennessee, South  
55 Carolina, and Kentucky  
56  
57  
58  
59  
60

$$X_i = X_j = X \Rightarrow X_i'X_j = X'X \quad (1)$$

$$y_{ij} = X_{ij}\beta_j + \varepsilon_{ij}, \text{ where } i = 1, \dots, N, j = 1, \dots, M \quad (2)$$

$$E(\varepsilon_{it}, \varepsilon_{js}) = \begin{cases} \sigma_{ij}, & t = s \\ 0, & t \neq s \end{cases} \quad (3)$$

In this study, a SUR system is developed to identify the determinants of H-2A employment and explore relationships between AEW R and each previous year's indicators of farm business and labor conditions. The estimation is conducted using Stata's *sureg* procedure that involves an asymptotically efficient, feasible generalized least-squares algorithm (Greene, 2012). The use of an efficient GLS estimator effectively eliminates any interference in the estimation due to autocorrelation and heteroscedasticity.

This study's SUR system consists of two equations (4 and 5) defined below. Specifically, the estimating equations are defined as follows:

$$H2A - AGRatio_t = \beta_{01} + \beta_{11}AEWR_t + \beta_{21}Econ_t + \beta_{31}WorkRat_t + \beta_{41}WageGap_t + \beta_{51}WorkRat_{t-1} + \beta_{61}Region + \varepsilon_1 \quad (4)$$

$$AEWR_t = \beta_{02} + \beta_{12}H2ARatio_{t-1} + \beta_{22}WageIndex_{t-1} + \beta_{32}CostEff_{t-1} + \beta_{42}WorkRat_{t-1} + \beta_{52}WageGap_{t-1} + \beta_{62}Covid_{t-1} + \varepsilon_2 \quad (5)$$

Equation (4) defines the estimation of one of this study's variable of interest, the ratio of H-2A to all agricultural workers (*H2A-AGRatio*). The equation's explanatory variables include the current year's *AEWR*, measures capturing unemployment and personal disposable income (*Econ*), several workers' ratios and wage gap measures relating those employed in the crop sectors, all farms, goods industry, and all U.S. firms (*WorkRat* and *WageGap*, respectively), one-year lags of workers' ratios (*WorkRat<sub>t-1</sub>*), and regional dummies (*Atlantic*, *Midwest*, *Plains*, and *West*) with the Southern region as the excluded category.

Equation (5) explores the relationship between *AEWR* and a number of one-year lagged measures of variables that might have influenced the workers' responses in the previous year's labor survey that were used to determine *AEWR* levels for the current year. The lagged explanatory variables include *H2A-AGRratio*, a couple of wage indexes (*WageIndex*) capturing minimum wages and livable wage estimates, cost efficiency (*CostEff*), and measures on the comparative workers' ratios (*WorkRat*) and wage gaps (*WageGap*). A time period dummy variable (*Covid*) is also included to capture intertemporal changes in the *AEWR*, especially since efforts to freeze the rate during the pandemic has been halted (Dinzeo, 2020).<sup>4</sup>

### Discussion of Results

Figure 1 provides a snapshot of the states' patronage of the H-2A program in 2021 when 317,617 worker certifications were approved. The year's top five state employers (Florida, Georgia, California, Washington, and North Carolina) accounted for 51.78 percent of the approved H-2A positions. The rest of the H-2A positions are sparsely distributed across the rest of the country. Such concentrated H-2A patronage trend mirrors past recent years' utilization pattern. Apparently, H-2A demand in major H-2A user-states was driven by their fruit, vegetable, and horticultural farm businesses that are relatively more labor intensive than other farm operations.

In contrast to Figure 1, Figure 2 presents a more discernible regional pattern in the *AEWR* distribution. States in the West coast pay higher *AEWRs* (\$16 and above) than the rest of the country while lower *AEWRs* (\$10-\$14) are concentrated in the entire South region (and some

---

<sup>4</sup> The time period dummy is not included in the H2A-AgRatio equation since during the pandemic, the government promptly introduced regulations that ensured the continued availability of H-2A workers. These federal policies include the temporary final rule, the exclusion of H-2A visas from the federal list of suspended visa processing activities at consular offices, and granting essential travel status to H-2A-related travels. Thus, H-2A labor certification and visa approvals were not affected during the pandemic (Escalante, Cowart, and Shonkwiler, 2023).

1  
2  
3 West and Plains states). The incongruence of patterns in Figures 1 and 2 provides an interesting  
4  
5 backdrop for discerning any significant relationship between H-2A utilization and AEWL levels.  
6

### 7 ***Modeling Diagnostics***

8  
9  
10 This analysis settles with the SUR modeling method after ruling out possible endogeneity  
11  
12 issues in the model. The endogeneity test's diagnostic statistic ( $\chi^2$ ) confirms the lack of support  
13  
14 for the instrumental variable modeling approach for equations (4) and (5), where *AEWL* is the  
15  
16 instrumented variable in the *H2A-AGRatio* equation.<sup>5</sup>  
17  
18

19 In contrast, a diagnostic test on the SUR method's validity, the Breusch Pagan test of  
20  
21 independence, yields a significant  $\chi^2$  statistic at the 99 percent confidence level. This suggests the  
22  
23 existence of significant contemporaneous correlation among the error terms of our two estimating  
24  
25 equations, thus allowing the use of SUR techniques for simultaneously estimating the equations  
26  
27 for *H2A-AGRatio* and *AEWL*. Both estimating equations' explanatory powers are significant at the  
28  
29 99 percent confidence level, given their respective  $\chi^2$  statistics.  
30  
31  
32

### 33 ***Influential Factors in H-2A Hiring Decisions***

34  
35 One of this study's compelling, crucial results is the significant, negative coefficient of the  
36  
37 AEWL variable, which implies that H-2A hiring decisions are inversely related to AEWL levels.  
38  
39 Such wage rates are way above historically low farm labor wages enjoyed by farm businesses  
40  
41 during many years of unregulated use of locally available foreign labor. H-2A employers can be  
42  
43 sensitive to AEWL considerations in their employment decisions, especially since AEWL is one  
44  
45 of the components of the incremental cost of H-2A labor. Calvin, Martin, and Simnitt (2022)  
46  
47  
48  
49  
50  
51

---

52  
53 <sup>5</sup> Stata's endogeneity test for IV Models produced a GMM C  $\chi^2$  of 0.5346 with p value of 0.4647 which could not  
54  
55 reject the null hypothesis of exogeneity. Results of the alternative IV regression are available from the authors upon  
56  
57  
58  
59  
60 request.

1  
2  
3 estimated that the other required H-2A-related expenditures (such as housing and transportation)<sup>6</sup>  
4  
5 adds \$2.55 per hour in farm hourly wages, thus AEWR levels would expectedly influence the  
6  
7 patronage of the H-2A employment alternative.  
8  
9

10 The gap between wages in crop farms and the rest of the farm sector also negatively affects  
11  
12 H-2A employment decisions. Owing to the nature of the program's implementation guidelines, the  
13  
14 majority of the nation's H-2A employers are crop farms. Hence, higher average crop wages  
15  
16 indicate that these farms compete for domestic workers by luring them with higher wage offers.  
17  
18

19 The other significant crop-related measure is the proportion of crop farm workers to all  
20  
21 farm workers. The resulting significant coefficient estimate is positive, thus reinforcing the crop  
22  
23 farms' reliance on H-2A workers for their labor inputs. Notably, this result suggests a crop bias  
24  
25 under the H-2A program's existing guidelines, especially those that regulate employment term.  
26  
27 Such restrictive provision may have caused the historically minimal H-2A patronage of livestock  
28  
29 farms, whose employment structures require employment terms longer than what is currently  
30  
31 allowed under the H-2A program.  
32  
33  
34

35 The significant positive coefficient result for the unemployment variable confirms the  
36  
37 domestic labor pool's sustained lack of interest and motivation to take on farm work even under  
38  
39 worsening unemployment conditions. This is consistent with the claims made in Luo and Escalante  
40  
41 (2017) on the domestic residents' tendency to seek employment in non-farm industries while  
42  
43 foreign workers supply the much-needed workforce in farms during periods of high economic  
44  
45 stress. This study validates the H-2A program's reliance in supplying replacement labor for  
46  
47  
48  
49  
50  
51  
52

---

53  
54 <sup>6</sup> Calvin, Martin, and Simnitt (2022), however, clarify that with the tradeoff realized from non-payment of social  
55 security and unemployment taxes, additional H2A costs would result in about 5% wage differential.  
56  
57  
58  
59  
60

1  
2  
3 previously displaced undocumented workers and for filling in employment gaps created by an  
4  
5 unwilling, unmotivated domestic labor pool.  
6

7  
8 All regional dummy variables have significant and negative coefficient estimates. These  
9  
10 support the claim that the South (the excluded category) indeed has been the top regional employer  
11  
12 of H-2A workers in recent years. From 2019 to 2021, the region accounted for 43 to 45 percent of  
13  
14 the total number of DOL-certified H-2A positions.  
15

### 16 17 ***AEWR's Lagged Determinants*** 18

19  
20 Three lagged workers' ratio (*WorkRat*) variables are significant, but with varied effects.  
21  
22 The lagged ratio of H-2A to ALL (farm and non-farm) workers is negative, thus implying that the  
23  
24 previous year's lower H-2A worker proportions result in higher AEWR estimates. This reinforces  
25  
26 and validates the reverse influence of between H-2A and AEWR as noted in the *H-2A-AGRatio*  
27  
28 equation, although time perspective is not identical. Specifically, this analysis established the  
29  
30 following sequential relationships: last year's H-2A worker proportions significantly influence  
31  
32 resulting AEWR levels, while the latter (now mandated to be the current year's benchmark wage)  
33  
34 significantly determine the current year's H-2A employment decisions.  
35  
36

37  
38 The other two significant variables are the lagged workers' ratios of AG-ALL and AG-  
39  
40 GOODS with positive and negative coefficient results, respectively. AEWR levels are higher  
41  
42 under higher proportions of AG to ALL workers and lower AG proportion to GOODS workers. A  
43  
44 higher AG-ALL proportion is indicative of a more active, perhaps expanding, agricultural sector  
45  
46 where the demand for labor inputs could be higher; thus, raising the AEWR level. On the other  
47  
48 hand, when other industries in the GOODS sector have higher labor demand vis-à-vis the  
49  
50 agricultural sector, then AEWR must be raised to lure workers back to farm positions.  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 AEWWR levels are also significantly guided by the previous year's minimum wage levels,  
4 but surprisingly do not rely on livable wage standards. This only confirms the objective nature of  
5 the workers' responses in last year's survey based on their actual wages, rather than their own  
6 perceived or expected wage rates. If most workers' survey responses were dominated by the latter  
7 perspective, livable wage considerations would most likely emerge as an important AEWWR  
8 determinant, in addition to minimum wages.  
9

10  
11 The nature of H-2A incremental cost structure is further supported by the significant  
12 positive coefficient result for the lagged cost efficiency variable. Lower cost efficiencies (higher  
13 cost proportion to total revenues) could result from inflationary push on input prices, which  
14 naturally could also pressure farm wages, including the AEWWR, to rise.  
15

## 16 17 18 19 20 21 22 23 24 25 26 **Conclusions and Implications**

27  
28 This study provides empirical support to the logical contention that AEWWR is an important  
29 consideration in farmers' H-2A employment decisions. Our findings confirm the notion of the  
30 costly nature of the H-2A labor alternative due to the AEWWR hiring mandate, in addition to other  
31 fringe benefits imposed under the program. This H-2A cost perception is best understood from an  
32 historical perspective as farmers need to be weaned out of the conveniences and substantial profit-  
33 boosting benefits of previously availing of much cheaper undocumented labor inputs before the  
34 strict immigration control regime. The AEWWR serves as a farm labor market normalization and  
35 correction mechanism in its attempt to assign a proper value to farm labor inputs. Its domestic  
36 labor effect (established in another study) further supports this assertion.  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48

49 There are at least a couple of crucial implications that may help guide and direct future  
50 labor-related policies. First, our findings confirm the crop farm bias of existing H-2A program  
51 guidelines. Based on past H-2A utilization trends, farm operations (such as fruit, tree nuts,  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 vegetable, nursery, and greenhouse farms) that are more labor-intensive and with high demand for  
4 seasonal labor account for 80 to 90 percent of H-2A employment, with only about 4 to 8 percent  
5 employment in livestock farms (Castillo et al., 2021). Existing H-2A restrictions on the maximum  
6 employment duration do not coincide with the much longer livestock production cycle. Moreover,  
7 these farms also have a more pronounced need for employment continuity given that these farmers  
8 invest in workers' training and skill development with a longer worker retention goal in mind. If  
9 the government intends to resolve the farm labor problem through the H-2A hiring alternative,  
10 then existing provisions should be revisited to make H-2A a more inclusive, viable hiring strategy  
11 for all types of farm operations.  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23

24 There is also the perennial issue of the local residents' reluctance to consider farm  
25 employment. This study's results clearly show the farmers' significant reliance on H-2A workers  
26 even under persisting unemployment conditions. Theoretically, the AEWB principle should help  
27 elicit available local workers' interest in farm work; however, as empirical, and anecdotal evidence  
28 has established, previous higher wage offers from farm employers have been futile, so the issue of  
29 domestic workers' farm employment goes beyond financial matters. Rather, the employment gap  
30 is driven more by disparities in working conditions in the farm and non-farm sectors. Under an  
31 overriding goal of striking a balance between domestic and foreign suppliers of farm labor inputs,  
32 multi-sectoral cooperative efforts involving policymakers, industry, academia, and other interest  
33 groups must be undertaken to explore opportunities to minimize such sectoral labor disparities.  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

47 Overall, the farm employment situation that seems resigned to the costly H-2A alternative  
48 becomes a more pressing issue when business size considerations are factored into the analysis.  
49 Larger farms usually possess the financial capability to implement labor input-substitution  
50 strategies (such as mechanization) that can avert the need for more H-2A labor especially when  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3 this becomes a “very expensive” option. In contrast, smaller farms are less financially flexible as  
4 they could hardly afford the larger farms’ usual coping mechanisms. Thus, since the AEWB  
5 mandate inflates farm wages in general, the survival and sustainability of more financially  
6 vulnerable smaller farms would then depend on a host of external provisions and support from  
7 several fronts of their multi-sectoral advocates, especially from the government sector. These  
8 efforts must help them devise more appropriate business coping strategies within and beyond the  
9 H-2A labor sourcing alternative.  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## References

Calvin, L., P. Martin, and S. Simnitt. (2022). *Adjusting to Higher Labor Costs in Selected U.S. Fresh Fruit and Vegetable Industries*. EIB-235, Economic Research Service, U.S. Department of Agriculture, Washington, DC.

Castillo, M., S. Simnitt, G. Astill, and T. Minor. (2021) *Examining the Growth in Seasonal Agricultural H-2A Labor*, EIB-226, U.S. Department of Agriculture, Economic Research Service, Washington, DC.

Congressional Research Service. (2023) *Adverse Effect Wage Rate (AEWR) Methodology for Temporary Employment of H-2A Nonimmigrants in the United States*. Washington DC. Available online at <https://crsreports.congress.gov> | IF12408. Accessed on August 3, 2023.

Costa, D. (2022). EPI comments on DOL's proposed changes to the Adverse Effect Wage Rate methodology for H-2A visas for temporary migrant farmworkers. Economic Policy Institute. Available online at <https://www.epi.org/publication/epi-comments-on-dols-proposed-changes-to-the-adverse-effect-wage-rate-methodology-for-h-2a-visas-for-temporary-migrant-farmworkers/>. Accessed on August 3, 2023.

Critterden, A. (2020) *The Adverse Effect of the H-2A Wage Rate*. The American Farm Bureau Federation. Washington, DC. Available online at <https://www.fb.org/focus-on-agriculture/the-adverse-effect-of-the-h-2a-wage-rate>. Accessed on August 3, 2023.

Dinzeo, M. (2020) "Judge Blocks Federal Wage Freeze on Farmworkers." *Courthouse News Service*, Available online at <https://www.courhousenews.com/judge-blocks-federal-wage-freeze-on-farmworkers/>. Accessed on September 6, 2023.

Escalante, C.L., W.L. Cowart, and V.P. Shonkwiler. (2023) "Coping with Delayed H-2A Worker Arrivals During the Pandemic." *Journal of the American Society of Farm Managers and Rural Appraisers*. 86,1: 15-20.

Escalante, C.L., T. Luo, and C.E. Taylor. (2020) "The Availability of H-2A Guest Farm Workers during the COVID-19 Pandemic." *Choices*. 35,3.

Escalante, C.L., S.L. Perkins, and F.I. Santos. (2011) "When the Seasonal Foreign Farm Workers Are Gone." *Journal of the American Society of Farm Managers and Rural Appraisers*,74,1: 83-96.

Escalante, C.L. and F.I. Santos. (2011) "Seasonal Farm Labor Hiring Challenges and Labor Input Substitution Decisions of Organic and Conventional Farm Operators in the Southeast." *Journal of International Business and Economics*, 11,1: 75-86.

Escalante, C.L., Y. Wu, and X. Li. (2016) "Organic Farms' Seasonal Farm Labor Sourcing Strategies in the Pre- "Arizona" Mode of Immigration Control." *Applied Economics Letters*, 23,5: 341-346.

1  
2  
3  
4 Garcia, R.J. (2012) Ten years after Hoffman Plastic Compounds, Inc. V. NLRB: the power of a  
5 labor law symbol. *Scholarly works paper 778*. Available at: [http://scholars.law.unlv.edu/](http://scholars.law.unlv.edu/facpub/778)  
6 [facpub/778](http://scholars.law.unlv.edu/facpub/778) (accessed 19 March 2017).  
7

8  
9 Greene, W.H. (2012) *Econometric Analysis*. Upper Saddle River, NJ: Prentice Hall.  
10

11 Levine, L. (2004) *Farm Labor Shortages and Immigration Policy*. Washington, DC:  
12 Congressional Research Service.  
13

14  
15 Lewison, P. (2021). "Federal Regulations Push Farm Labor Costs Higher at a Difficult Time for  
16 Farmers." Washington Policy Center Blog. Retrieved July 7, 2023, from: [https://www.washingtonpolicy.org/publications/detail/federal-regulations-pushfarm-labor-costs-](https://www.washingtonpolicy.org/publications/detail/federal-regulations-pushfarm-labor-costs-higher-at-a-difficult-time-for-farmers)  
17 [higher-at-a-difficult-time-for-farmers.](https://www.washingtonpolicy.org/publications/detail/federal-regulations-pushfarm-labor-costs-higher-at-a-difficult-time-for-farmers)  
18  
19

20  
21 Luckstead, J., R.M. Nayga Jr, and H. Snell. (2022a). US workers' willingness to accept  
22 meatpacking jobs amid the COVID-19 pandemic. *Journal of the Agricultural and Applied*  
23 *Economics Association*, 1, 47-60.  
24

25  
26 Luckstead, J., R.M. Nayga Jr, and H. Snell. (2022b). US domestic workers' willingness to accept  
27 agricultural field jobs. *Applied Economic Perspectives and Policy*, forthcoming.  
28

29  
30 Luo, T., and C.L. Escalante. (2017) "US farm workers: What drives their job retention and work  
31 time allocation decisions?" *Economic and Labour Relations Review*. 28,2: 270-293.  
32

33  
34 Mayer, G. (2008, November). Temporary Farm Labor: The H-2A Program and the US Department  
35 of Labor's Proposed Changes in the Adverse Effect Wage Rate (AEWR). Congressional Research  
36 Service, the Library of Congress.  
37 [https://www.everycrsreport.com/files/20081106\\_RL34739\\_a1d37bc65f8492a3fadca78615e2d8c-](https://www.everycrsreport.com/files/20081106_RL34739_a1d37bc65f8492a3fadca78615e2d8cfa743a7d7.pdf)  
38 [fa743a7d7.pdf](https://www.everycrsreport.com/files/20081106_RL34739_a1d37bc65f8492a3fadca78615e2d8cfa743a7d7.pdf)  
39

40  
41 McKissick, J. C., and S. P. Kane. (2011). "An Evaluation of Direct and Indirect Economic Losses  
42 Incurred by Georgia Fruit and Vegetable Producers in Spring 2011." Center for Agribusiness and  
43 Economic Development, University of Georgia, Athens, GA.  
44

45  
46 Rutledge, Z., Richards, T., & Martin, P. (2023) Spillover Effects from Minimum Wages in  
47 Agriculture. Draft retrieved July 7, 2023, at:  
48 [https://www.zachrutledge.com/uploads/1/2/5/6/125679559/aewr\\_paper\\_current\\_draft.pdf](https://www.zachrutledge.com/uploads/1/2/5/6/125679559/aewr_paper_current_draft.pdf)  
49

50  
51 Seid, J. (2006) Immigration Reform Could Cost You. *CNN Money*. Available online at  
52 [http://money.cnn.com/2006/04/28/smbusiness/immigration\\_reform\\_prices](http://money.cnn.com/2006/04/28/smbusiness/immigration_reform_prices) (accessed  
53 on December 12, 2011).  
54

55  
56 Smith R and Sugimori A (2015) *Undocumented Workers: Preserving Rights and Remedies after*  
57 *Hoffman Plastic Compounds v. NLRB*. New York: National Employment Law Project. Available  
58 at: [www.nelp.org/content/uploads/2015/03/wlghoff040303.pdf](http://www.nelp.org/content/uploads/2015/03/wlghoff040303.pdf) (accessed 1 March 2017).  
59  
60

1  
2  
3  
4 UFW v. DOL. 2020. “Order Granting Plaintiff’s Motion for a Preliminary Injunction.” Retrieved  
5 July 31, 2023, from: <https://casetext.com/case/united-farm-workers-v-us-dept-of-labor-1>  
6

7  
8 United States General Accounting Office (GAO). (1997) *H-2A Agricultural Guest worker*  
9 *Program: Changes Could Improve Services to Employers and Better Protect Workers*. Report to  
10 Congressional Committees, GAO/HEHS-98-20.

11  
12 Whittaker, W. G. (2008). Farm labor: the adverse effect wage rate (AEWR). CRS Report for  
13 Congress, Congressional Research Service, The Library of Congress. RL32861 retrieved July 7,  
14 2023, at: <https://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32861.pdf>  
15

16  
17 Zahniser, S., T. Hertz, P. Dixon, and M. Rimmer. (2012) “Immigration Policy and Its Possible  
18 Effects on U.S. Agriculture and the Market for Hired Farm Labor: A Simulation Analysis.”  
19 *American Journal of Agricultural Economics* 94: 477–482. doi:10.1093/ajae/aar082.  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Table 1. Descriptive Statistics of Measures of H-2A Employment, AEW, and Related Variables, 2019-2021**

Variable	Description	Mean	Standard Deviation
<b>Wage-Related Variables</b>			
AEWR	AEWR per hour	13.3606	2.3132
Livable Wage	Livable wage per hour (for family of three; 2 working adults and 1 child)	15.9041	2.2312
Minimum Wage	Minimum wage per hour	9.0450	2.1878
Weekly Wage Gap – ALL-AG	Difference between all and agriculture-related industries' average weekly wage	347.5200	225.7503
Weekly Wage Gap – GOODS-AG	Difference between Goods and agriculture-related industries' average weekly wages	516.5867	226.3575
Weekly Wage Gap – CROPS-AG	Difference between crop and agriculture-related industries' average weekly wages	71.1533	90.2448
<b>Worker-Related Variables</b>			
H-2A Certifications	No. of H-2A positions certified	5,792.7070	10,733.51
H-2A-AG Workers Ratio	Ratio of H-2A positions certified to agriculture-related workers employed in the same specific year	0.2641	0.2820

AG-ALL Workers Ratio	Ratio of agriculture-related workers to all workers employed in the same specific year	0.0100	0.0085
AG-GOODS Workers Ratio	Ratio of agriculture-related workers to goods-producing industries workers employed in the same specific year	0.0518	0.0310
CROPS-AG Workers Ratio	Ratio of crop workers to agriculture-related workers employed in the same specific year	0.4211	0.1634
Unemployment Rate Change	Annual % change in rate of unemployment	4.8440	2.1455
Disposable Income Change	Annual % change in personal disposable income	6.0787	1.8819
Cost Efficiency	Ratio of total production expenses to value of agricultural sector production	0.5996	0.3723

**Table 2. Results of Seemingly Unrelated Regression**

Variable	H-2A-AG Ratio Equation		AEWR Equation	
	Coefficients <sup>1</sup>	Standard Errors	Coefficients <sup>1</sup>	Standard Errors
Intercept	1.4573***	0.2457	10.4731***	1.2516
Wage-Related Variables				
AEWR	-0.0878***	0.0209		
Wage Gap – ALL-AG	0.0001	0.0002		
Wage Gap – GOODS-AG	-0.0002	0.0002		
Wage Gap – CROPS-AG	-0.0004*	0.0002		
Lagged Wage Gap –ALL-AG			-0.03417	1.4178
Lagged Wage Gap – GOODS-AG			0.3337	1.7292
Lagged Wage Gap – CROPS-AG			0.1834	0.6121
Lagged Livable Wage			0.0645	0.0836
Lagged Minimum Wage			0.2222***	0.0616
Worker-Related Variables				
Lagged H-2A-AG Workers Ratio			-2.0782***	0.3517
AG-ALL Workers Ratio	2.5180	10.3362		
AG-GOODS Workers Ratio	-0.5507	2.1950		
CROPS-AG Workers Ratio	0.3430***	0.1178		
Lagged AG-ALL Workers Ratio	8.1257	8.7840	116.6261**	48.0507

Lagged AG-GOODS Workers Ratio	-1.5468	1.8090	-21.3918**	10.3434
Lagged CROPS-AG Workers Ratio	0.1368	0.1166	0.6631	0.7599
Unemployment Rate Change	0.0215***	0.0083		
Disposable Income Change	0.0144	0.0094		
Lagged Cost Efficiency			0.5617**	0.2671
Regional Dummies <sup>2</sup>				
Atlantic	-0.3492***	0.0661		
Midwest	-0.4281***	0.0735		
Plains	-0.3285***	0.0803		
West	-0.3518***	0.0773		
Covid Dummy			0.1037	0.3608
Model's Statistics				
R Squared		0.5220		0.3258
Model's $\chi^2$		239.58***		104.22***
Breusch Pagan Independence Test ( $\chi^2$ )				11.7110***

Notes:

<sup>1</sup>Asterisks denote significance at the 10 percent (\*), 5 percent (\*\*), and 1 percent (\*\*\*) confidence levels.

<sup>2</sup> The regional groupings of U.S. states are as follows: ATLANTIC states include North Carolina, Virginia, West Virginia, Maryland, Connecticut, Massachusetts, New York, Vermont, New Hampshire, Maine, New Jersey, Rhode Island, and Delaware; MIDWEST states are Minnesota, Iowa, Wisconsin, Illinois, Missouri, Indiana, Ohio, Pennsylvania, and Michigan; PLAINS states are Nebraska, Kansas, Texas, North Dakota, South Dakota, and Oklahoma; WEST states include California, Washington, Oregon, Idaho, Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Alaska, and Hawaii; and the SOUTH states are Arkansas, Florida, Georgia, Louisiana, Mississippi, Alabama, Tennessee, South Carolina, and Kentucky



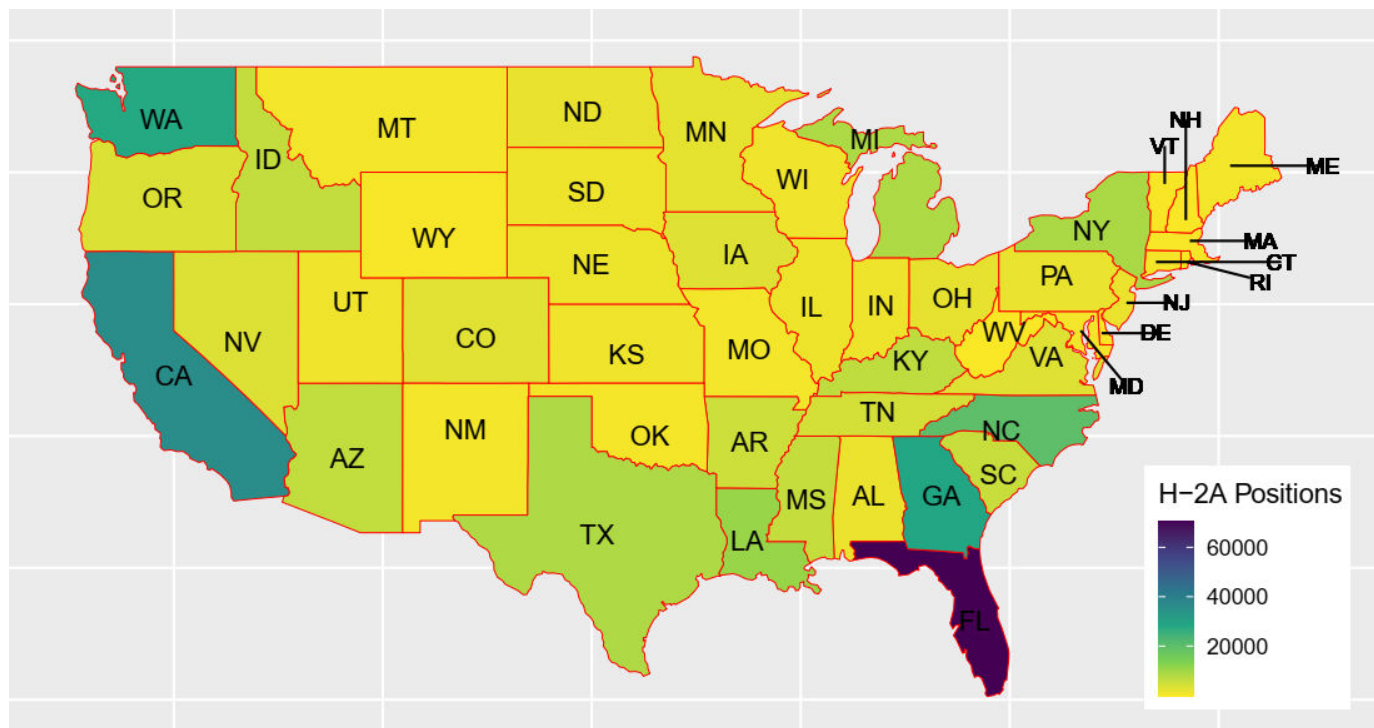


Figure 1. Number of Certified H-2A Workers in each State, 2021

Source: 2021 H-2A Disclosure Data, U.S. Department of Labor (DOL)

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

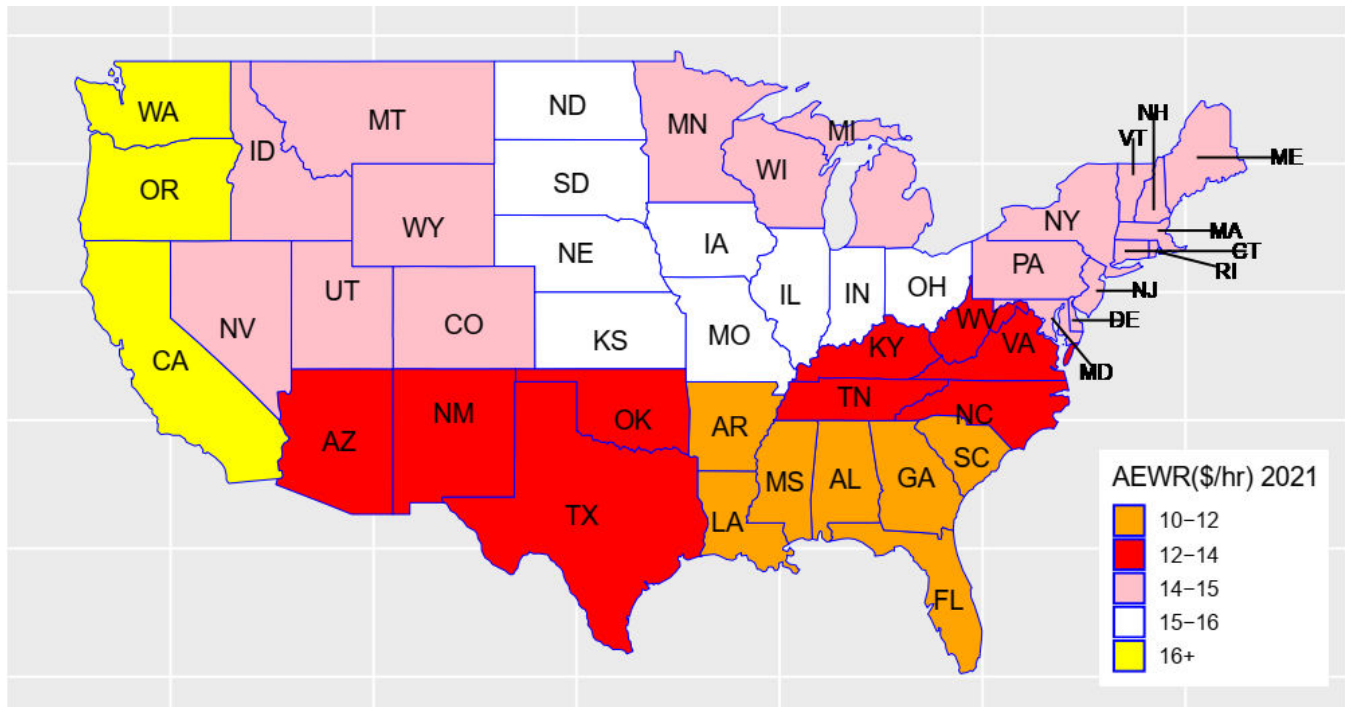


Figure 2. Adverse Effect Wage Rates for each State, 2021

Source: U.S. Department of Labor (DOL)

Agricultural Finance Review