

Understanding and Addressing Agricultural Labor Challenges in the United States

On November 2, 2023, Dr. Zachariah Rutledge of the Michigan State University Department of Agricultural, Food, and Resource Economics held a farm labor conference to investigate labor challenges that domestic agricultural employers and employees are facing, discuss potential solutions, and provide Michigan's agricultural stakeholders with information and resources to help address these challenges. The specific objectives of the conference were to (i) determine the most pressing labor challenges being faced by agricultural employers and employees, (ii) identify industry and government resources that can help address these challenges and disseminate this information to agricultural stakeholders, and (iii) find and discuss (amongst academia, industry, and government) potential policy and regulatory solutions.

The event was a one-day conference that convened experts who disseminated information, facilitated stakeholder engagement, and explored potential solutions to labor challenges facing US and Michigan agriculture. The workshop had two keynote speakers and three speaker panels that included: (i) government organizations involved in farm labor research, data collection, and the administration of current farm employee programs, (ii) farm labor economists from academic institutions; and (iii) farm employer and employee industry groups. The final conference agenda can be found in Appendix A.

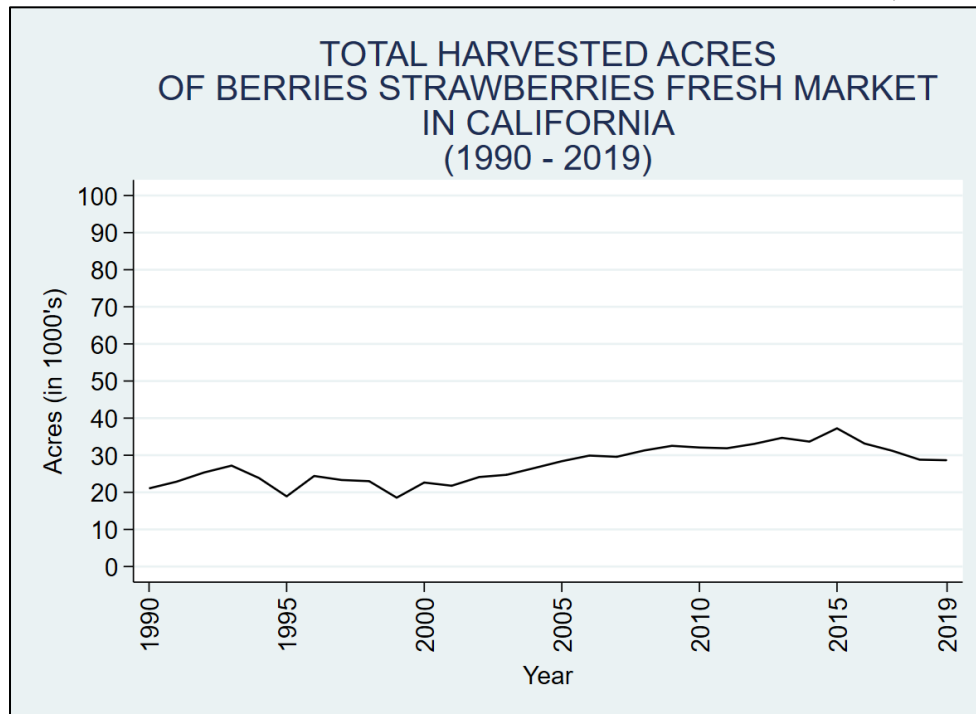
Dr. Rutledge asked speakers to identify one or more labor challenges and propose policy or regulatory solutions that could address them. A written summary of each speaker's presentation can be found in the following pages.

Philip Martin: US Farm Labor in the 2020s

University of California, Davis Professor Emeritus, Dr. Philip Martin, says there are three main options to deal with rising farm labor costs: mechanization, increased H-2A employment, and more imports of labor-intensive commodities. Martin mentioned that viable mechanization for the agricultural industry must be cost effective to be viable for farmers. Martin notes that the agricultural industry is much different than the military industrial complex, where the government may be willing to spend a million dollars on a piece of technology to save a soldier's life. Agricultural technology solutions must be economically feasible, meaning that they cannot cost more than hand workers and must deliver produce that can be sold fresh to consumers. Many harvest machines are commodity specific, and Martin noted there is little incentive for technology firms to invest in the development of agricultural technology because the market for them may be limited.

Martin noted that California grows about 40,000 acres of strawberries (see Figure 1). As such, a company that develops a strawberry harvesting machine capable of harvesting hundreds of acres may only be able to sell relatively few of them, making it unattractive from a venture capital standpoint. While work on robots progresses, Martin noted that interim solutions include technologies that aid employees instead of replacing them, such as hydraulic platforms with vacuum fruit transport systems that transfer harvested fruit to bins, increasing hand-worker productivity.

Figure 1. Harvested Acres of Fresh-Market Strawberries in California, 1990 - 2019



Source: California County Agricultural Commissioners' Reports ([USDA - National Agricultural Statistics Service - California](#))

Martin recommends implementing a TSA-style precheck system for H-2A employers willing to undergo increased scrutiny during an initial vetting process. Martin’s suggestion is to allow their certification of approved employers to be valid for 3 to 5 years. Since two-thirds of H-2A employees work for 600 large employers, certification of some of these employers would free up enforcement resources that could be dedicated to smaller employers, some of whom have business models that rely on regulatory non-compliance. Martin suggests DOL implement an ABC-style rating system that permits employers who make the A grade to self-certify their regulatory compliance in subsequent years, and their employees could skip annual US consulate visits.

Michael Marsh: Agricultural Labor Challenges in the U.S.

The president and CEO of the National Council of Agricultural Employers (NCAE), Michael Marsh, provided an overview of the agricultural employment in the United States along with some of the challenges facing employers. Marsh noted that there are 2.4 million hired workers, 300,000 of which come to the US with an H-2A visa. It has proven very difficult for employers to find US workers to perform farm work. About 50% of the domestic agricultural workers are unauthorized to work in the country.

Figure 2. Wage Comparison of US Employers to Foreign Employers



Source: Michael Marsh, NCAE

The number of H-2A workers has increased consistently since 2013, and it is expected to continue to rise into the future. Marsh provided insights into the minimum wage paid to H-2A workers, known as the Adverse Effect Wage Rate (AEWR). The AEWR was implemented to avoid any adverse effect on the domestic workforce due to the employment of H-2A workers. Marsh notes that the USDA's National Agricultural Statistics Service (NASS) does a great job, but the US

Department of Labor's reliance upon the Farm Labor Survey (FLS) causes the AEWs to become disconnected from the actual wages being received by farm employees. For example, the federal minimum wage is 7.25, while the average 2022 FLS was \$16.62 an hour, which is two times the federal minimum. In 2023, Michigan's AEW was \$17.34. When compared to the wages that foreign producers pay, the higher US wages pose a problem for US producers (see Figure 2).

Issues related to the AEW are being contested by several lawsuits, including some involving the NCAE. Proposed regulatory changes include the US Department of State increasing visa fees by \$15, the US Citizenship and Immigration Services (USCIS) to increase fees by 237%, an Occupational Safety and Health Administration (OSHA) Heat Rule, an OSHA Walkaround Rule, a USDA \$65 million grant program, and an Independent Contractor Rule.

Furthermore, the following efforts have been implemented in an attempt to address agricultural labor challenges: reintroducing Farm Workforce Modernization Act (FWMA), the Dignity Act, the designation of a US House of Representatives Agricultural Labor Working Group, and NCAE's draft legislation. Marsh also notes there is the potential for mechanization and robotics to assist in addressing ag labor challenges.

Finally, Marsh noted that there is a need for further research on this subject. Some potential topics include whether H-2As actually create any adverse effects, the impact of wage rates disconnected from the market on U.S. production and national security, the impacts to productivity and worker safety due to unionization, and the impacts to farmworker take home pay from the elimination of agricultural overtime exemptions.

Hugo Pantoja: Agricultural Employment Services

Hugo Pantoja of the Michigan Department of Labor & Economic Opportunity (LEO) discussed the labor challenges, agencies and resources, and potential policy and regulatory solutions within the Michigan Agricultural Employment Services (AES), which has liaisons throughout Michigan and provides a wide variety of services (see Figure 3).

For job candidates seeking employment, the AES assists job applicants with online job searches using the Pure Michigan Talent Connect website (MiTalent.org). They also assist with online resume posting and career development services, including resume preparation, interviewing techniques, application completion and training. AES also provides referrals to agricultural employment during the growing season and referrals for employment opportunities for settled-out migrants. AES also provides interpretation services between Spanish-speaking job seekers and employers and referrals to supportive service agencies for assistance with health, education, food, housing, and farm worker rights.

AES also provides services for employers. For example, they assist with posting job openings on Pure Michigan Talent Connect (MiTalent.org), and they help create effective job descriptions to attract qualified talent. They also assist with locating workers using the Agricultural Recruitment System. Additionally, AES directs referrals of migrant and seasonal farmworkers. The AES also provides Farm Labor Contractor and Crew Leader registration information, and they provide

technical assistance in the completion of federal forms. (4) Providing farm labor law information pertaining to work hours, wages, and employment of minors. Providing labor market information and on-the-job training information.

Figure 3. AES Staff Photo



Source: Hugo Pantoja

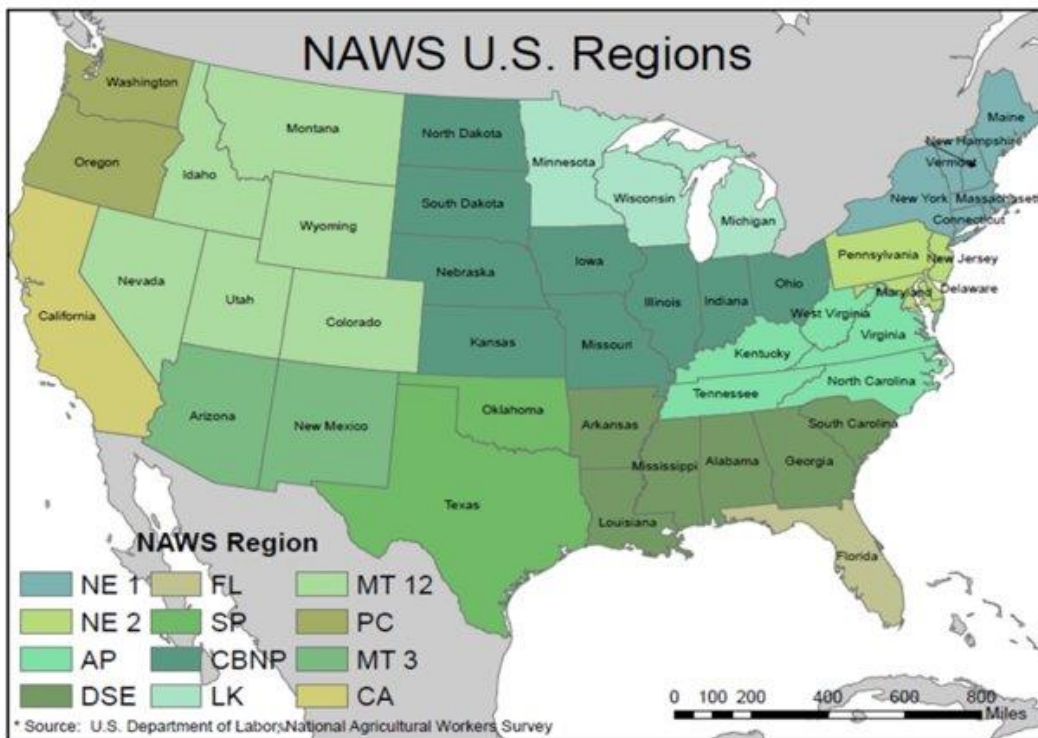
Pantoja indicated that employers struggle with finding an adequate and qualified labor force, and they have reported difficulty having the pay H-2A minimum wage, known as the Adverse Effect Wage Rate. Moreover, Pantoja indicated that there is a lack of affordable housing and there are challenges with having to use the E-Verify system. Employees, on the other hand, struggle with affordable housing, childcare, transportation, medical care, English proficiency and getting verified through the E-Verify system. However, both employers and employees have several agencies and resources available to them, and AES is available to assist them. Other agencies include the Department of Health and Human Services, Farmworker Legal Services, Michigan Immigrant Rights Center, and Migrant Education, among others.

Pantoja's presentation suggested that there are few solutions for housing and employee authorization that could help the sector. Michigan LEO participated on the Migrant Housing Taskforce, which evaluated the needs for labor housing expansion and improved housing affordability. They made several recommendations for Fiscal Year 2024 funding. With respect to employee legal work authorization, Pantoja's presentation indicated that the Farm Workforce Modernization Act would help employees by removing their undocumented status.

Andrew Padovani: Insights on Crop Workers from the NAWs

The Project Director of the National Agricultural Workers Survey (NAWS), Andrew Padovani, presented information about crop workers from the NAWS leading off with an overview of the survey. Padovani noted that the NAWS is a national study of crop workers, including migrant and seasonal workers but excluding H-2A workers. The NAWS is the primary source of national and regional information about crop worker demographics and employment, and the data collection was mandated by the Immigration Reform and Control Act (IRCA) of 1986. The survey collection method is a multi-stage, stratified random sample across 12 NAWS sampling regions, which includes between 1,100 and 3,600 crop workers per survey cycle. This public use data can be analyzed for six NAWS regions (see Figure 4).

Figure 4. NAWS Survey Regions



Source: US Department of Labor

The crop workers are interviewed where they work, and the survey asks workers for the following information: demographic characteristics, household characteristics (including family abroad), current job and income, 12-month employment history, housing characteristics, worker health history, access to healthcare. The survey elicits information from individuals currently employed on US farms who are at least 14 years old who are involved in crop production activities (animal production employees are not surveyed).

Padovani provided a summary of the NAWS data for the period 2018-2022 by indicating that the average age of employees is 40 years old, 68% are male, 37% are US citizens, 15% are migrants, 69% were born outside the U.S., and 39% are undocumented. Padovani says the crop workforce is aging, which is partially due to the falling number of “new” crop workers who have only been

crop workers for 23 months maximum (see Figure 5). Additionally, about 85% of crop workers today do not travel for work (see Figure 6). This percentage has been consistently growing, as compared to migrant workers, since 1998-2001. Padovani also noted that the number of individuals legalized under IRCA has been consistently falling since the 1989-1993 sample years.

Figure 5. Percent of Workforce that is New to Farm Work

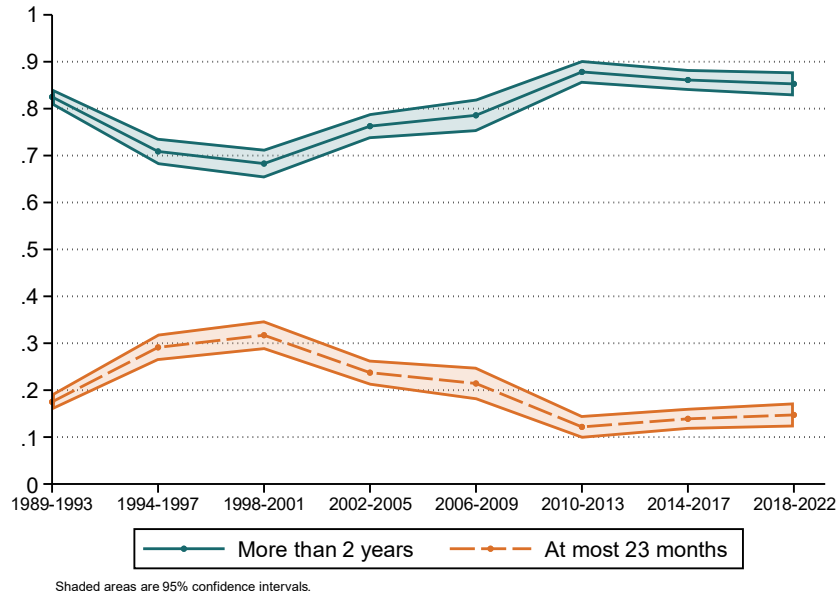
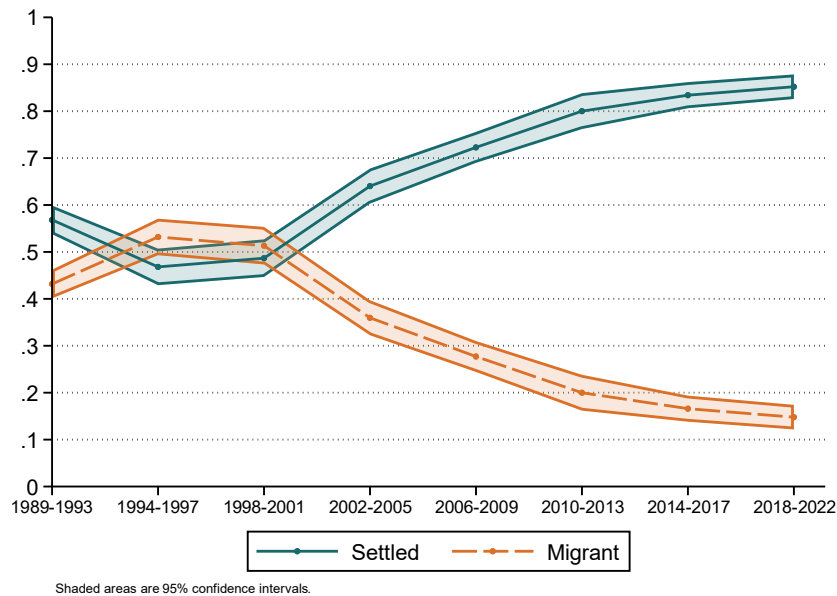


Figure 6. Percent of Workforce that is Settled or Migrant



The unauthorized workforce is not only the greatest percentage of workers in terms of legal status categories, and unauthorized workers comprise a disproportionate share of the number of worker-weeks. Workers who entered the US after 2009 tend to supply fewer weeks of work and employees

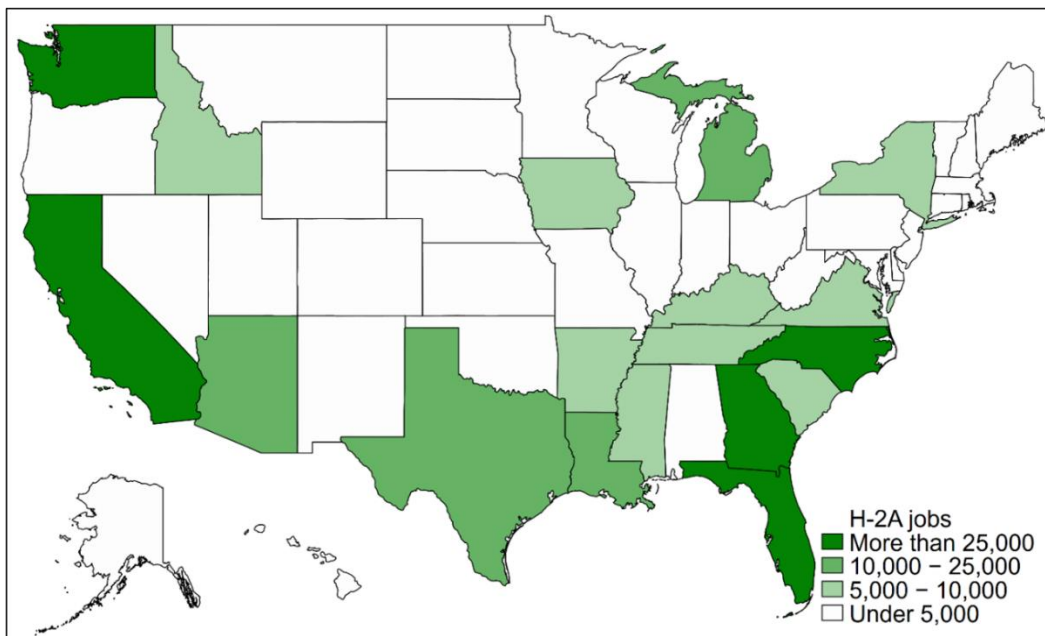
born before the 1986 Immigration Reform and Control Act (IRCA) supply the majority of weeks worked. The workers born after the IRCA are also less likely to plan to stay in the crop workforce. Related to housing costs, the mean wage is now about \$15 per hour, while the mean rent is now over \$800. The real rent increase is up 128% since 1994-1997, while real hourly wages are only up 56% in that timeframe.

Padovani concluded by providing some key takeaways. First, the average crop worker is getting older and is no longer migrating for work. Newer cohorts of workers are supplying fewer work weeks and are report being less likely to stay in crop work over the long run. Finally, real hourly wages are up, but the cost of housing is up even more.

Marcelo Castillo: What's Next for Farm Labor Research? A Declining Farm Labor Force and the H-2A Program

USDA Research Economist, Marcelo Castillo, spoke about the future of research related to the declining supply of labor within the agricultural industry, specifically in the context of the H-2A program. His presentation began with an overview of the farm workforce, noting that immigrants comprise about 70% of the farm labor force, most coming from Mexico, with about 60% of those being unauthorized. He cited evidence about observed trends in reported farm labor shortages, increasing farm wages, and a growing reliance on the H-2A program.

Figure 7. H-2A Jobs Certified in Each State in Fiscal Year 2022

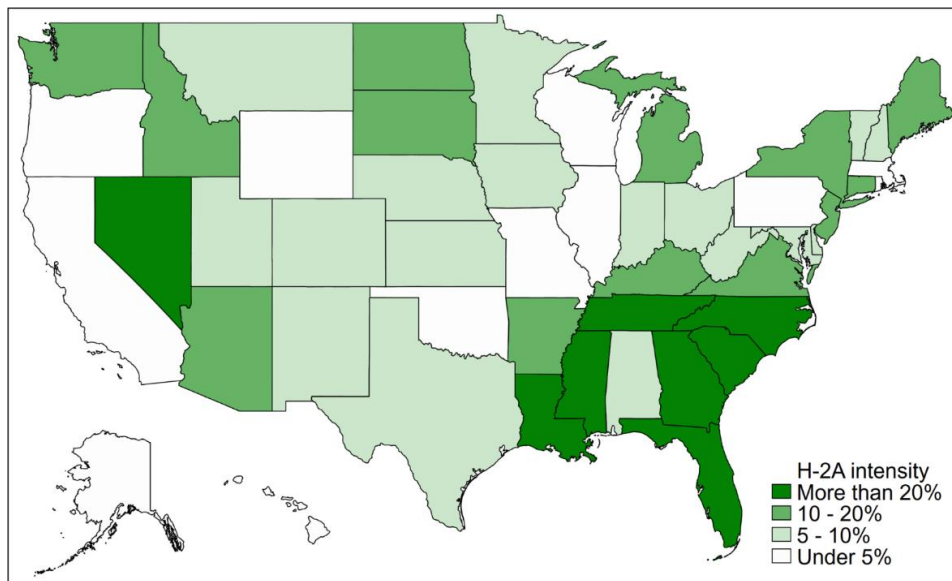


Castillo proposes several potential avenues for future research in the field of farm labor economics. His presentation indicated that the state of current research is largely descriptive and that priority areas include research on the effects of the declining farm labor supply, including topics related to H-2A employment, the impacts on domestic farmworker wages, changes in production levels,

possible relocation of production outside of the US, impacts on farm profitability and food prices, implications for small farms, the influence on farming communities, and increased mechanization. He noted that some limitations of existing econometric studies are that they are usually limited to a single state or farm, and they tend to examine a narrow labor supply channel.

The H-2A program has experienced a massive increase since 2005, which led to increases in jobs in almost all states and sectors. This increase is driven by increased hiring by individual employers and farm labor contractors (FLCs). He noted that five states accounted for 51% of the certified jobs in fiscal year 2022, which included Florida, California, Georgia, Washington, and North Carolina (see Figure 7).

Figure 8. H-2A Share of Total Hired Labor Expenditures

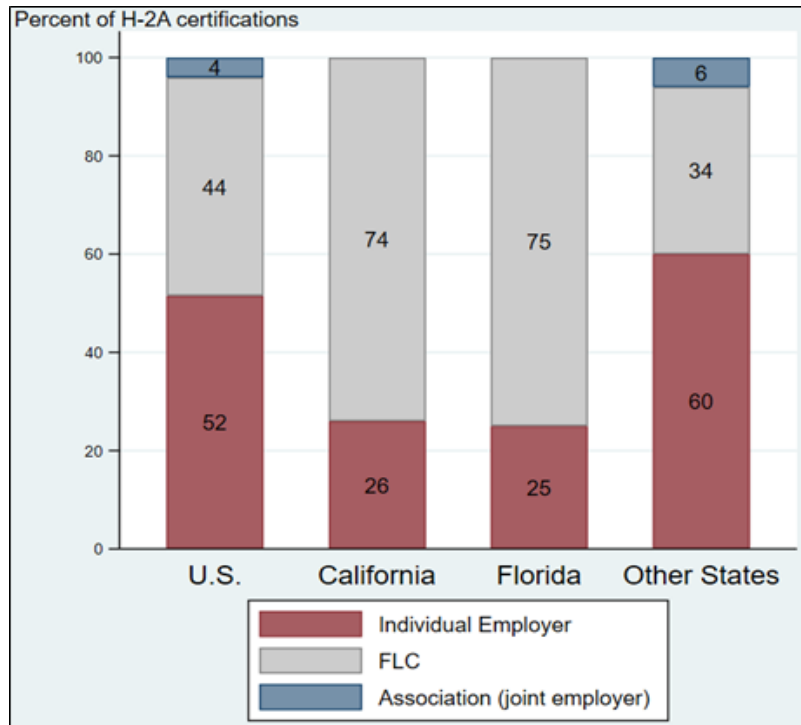


Castillo noted that the H-2A share of total labor expenditures is higher in the southeastern part of the country relative to other regions, and that the majority of employment is concentrated among larger employers, with two-thirds of jobs being certified to the largest 5% of employers (see Figure 8). Moreover, 44% of H-2A jobs were certified to FLCs in FY 2022 (see Figure 9).

Castillo stated that several areas of research are still needed, including gathering information about the demographic profile of H-2A workers, productivity differences between H-2A workers and non-H-2A workers, whether domestic workers are being displaced by H-2A workers, and what H-2A working conditions are like. Regarding the AEW, Castillo says that research needs to be done to understand the impacts of capping including how an AEW freeze would affect employment and wages.

With respect to FLCs, Castillo posed two questions: “Do FLCs benefit from economies of scale in H-2A hiring more than individual employers, hence driving their increasing role?” and “If FLCs do not have economies of scale, could their increasing share in H-2A hiring be due to being more negatively affected by labor supply shocks than farmers?”

Figure 9. H-2A Employers and Certified Jobs by Size Category, FY2022



Timothy J. Richards: Farmworker Productivity and Health Coverage

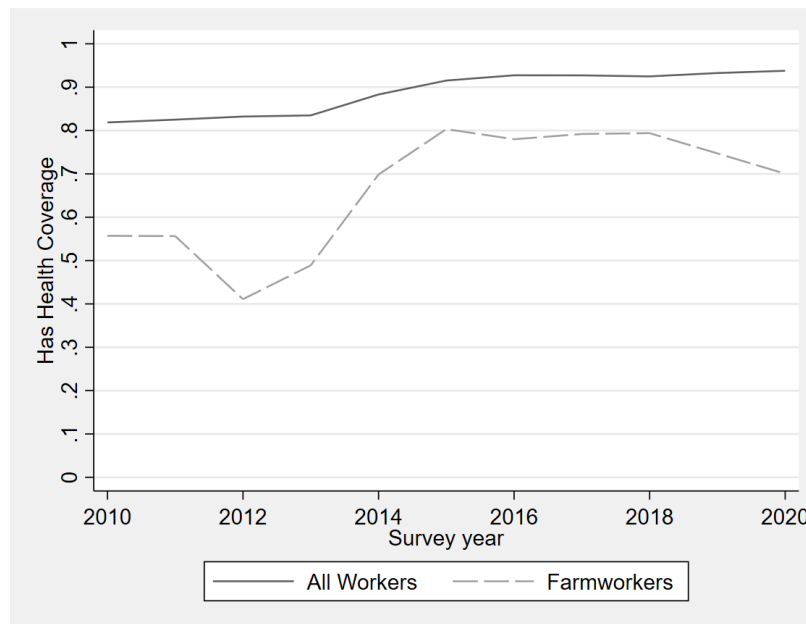
Dr. Timothy J Richards gave a presentation about an academic study he conducted that seeks to quantify the extent to which offering health coverage to farm employees improves employee productivity and farm profitability. Richards noted that most Americans receive healthcare from their employers and the share has increased by about 30% since 1990, with some ups and downs in that timeframe (see Figure 10). However, the number of farmworkers who have health coverage is about 25% less than that of all workers, and that number is dropping.

Richards' presentation indicated that farm employees may tend to have lower levels of health coverage because many workers are migrants, and they rarely return to the same employer, leading employers to be unable to capitalize on potential productivity gains. Therefore, employers avoid offering health coverage to reduce costs. However, Richards observes that the most productive firms provide “safer” workplaces, and there is a non-linear relationship between non-pecuniary cost and benefit.

Healthcare coverage improves worker productivity according to various sources of literature. For example, one study found that wages are higher if a job provides healthcare, and workers are less likely to leave the job. Another study that focuses on the impacts of the Affordable Care Act found that firms offering insurance attract higher-value workers and retain them longer. A third study found that covered workers miss 76.5% fewer days. Additionally, several studies show that

healthcare coverage reduces unemployment duration. Richards notes that no study directly investigates the relationship between healthcare coverage and productivity while focusing on low-skilled jobs.

Figure 10. Share of Farmworkers and Non-Farmworkers with Health Coverage in Western US



His empirical approach uses regression models to provide summary evidence along with a structural model using a searching, matching, and bargaining model. In this model, employees and employers search optimally for matches, and they negotiate wage contracts.

Richards finds that the health of low-skill workers is a “private good,” and farmworker exploitation, in the sense of not offering health insurance, is profit-reducing. In other words, when firms offer health insurance, they are more profitable. Therefore, there should be private incentives to improve matches. Empirically, there is a strong wage effect of covered workers, and increased employment duration. Richards concludes by saying that healthcare coverage is sustainable strategy a key human-resource strategy.

Diane Charlton: Seasonal Farm Employment, COVID-19, and H-2A Demand

Professor Diane Charlton of Montana State University presented joint work with Marcelo Castillo and Skyler Simnitt on Seasonal Farm Employment, COVID-19, and the demand for H-2A workers. Charlton highlighted the fact that access to seasonal labor is essential for production of many agricultural crops, especially perishable fruits and vegetables. H-2A agricultural guest workers can help reduce the incidence and impact of local farm labor shortages. However, little is yet known about whether and to what extent farm employers increase requests for H-2A certified positions in response to adverse labor supply shocks. Charlton, Castillo, and Simnitt use

geographic and monthly variation in the incidence of COVID-19 per capita as a quasi-natural experiment to investigate whether increased risk of worker sickness induced farm employers to request additional H-2A workers in 2020 compared to H-2A requests in 2019.

In recent years, the historic wave of new immigrants from Mexico has subsided, and following the Great Recession, return migration to Mexico exceeded migration from Mexico to the United States for the first time in decades. The COVID-19 pandemic tested the resiliency of U.S. crop production to major disruptions in the supply chain and unpredictable changes in labor supply. The COVID-19 pandemic was not only a health risk, but also a risk to labor supply. Throughout the pandemic, COVID-19 spread rapidly through rural and urban communities, but food production was considered essential, and workers could not isolate. One potential mechanism to cope with increased risk of seasonal farm labor shortages was to contract additional guest workers through the H-2A program. Temporary rules that eased regulations for workers to obtain H-2A visas and permitted workers with H-2A visas to work at multiple certified H-2A positions without leaving the country facilitated increased H-2A use. However, this is the first study to our knowledge that empirically investigates whether increased COVID-19 incidence within counties was associated with increased demand for H-2A workers relative to H-2A requests the same county-month in the previous year.

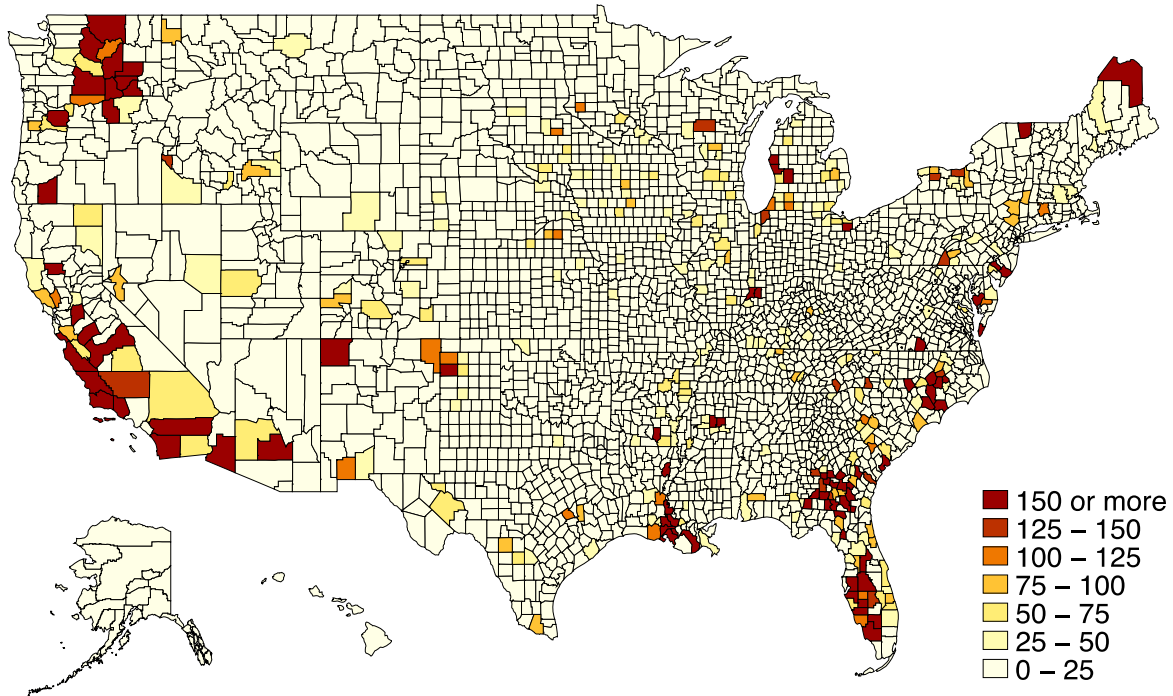
The H-2A visa program has grown by more than 450% from 2001-2019 and was shown to grow more rapidly within commuting zones that were experiencing larger housing demand shocks, which simultaneously increased the demand for immigrant workers in low-skilled industries such as construction and services and likely competed with agriculture for a limited supply of workers in the local labor market.¹ The coronavirus pandemic differs from previous labor supply shocks in that it was temporary and it shocked local and global markets of wide variety of goods and services contemporaneously. According to a UC Berkeley Public Health survey (2020), 13% of 1,091 farm workers in Monterey County, CA tested positive for COVID-19 from July-November 2020, and 37% reported living in crowded housing (2 or more people per bedroom). Additionally, 19% lived with roommates of no relation. Fifty eight percent of those who tested positive for COVID-19 displayed symptoms. Among those who were symptomatic, 57% said they worked while symptomatic.²

In their analysis, Charlton and her research partners investigated the relationship between monthly COVID-incidence and annual change in county-by-month H-2A outcomes, thus differencing out seasonal variation in H-2A demand. Charlton finds robust evidence that increased COVID-19 incidence within counties caused farm employers to request more H-2A workers as a share of total crop employment compared to the same month-county observation the previous year (see Figure 11).

¹ Castillo, Marcelo and Charlton, Diane (2023) "Housing Booms and H-2A Agricultural Guest Worker Employment" *American Journal of Agricultural Economics*. 105(2): 709-731.

² UC Berkeley School of Public Health. 2020. "Prevalence and Predictors of SARS-Cov-2 Infection Among Farmworkers in Monterey County, CA." Working paper, University of California, Berkeley, July-November.

Figure 11. Map of the Maximum Change in H-2A Requests for Each County in 2020 Relative to the Same Month in 2019



Their findings show that a 1 percentage point rise in COVID-19 cases per capita within U.S. counties in 2020 was associated with a 1.6 percentage point increase in H-2A requests as a share of total crop worker employment. They found a positive association with the level change in H-2A arrivals as well, but this was not statistically significant when normalized by crop employment. Charlton concluded that the COVID-19 pandemic tested the resiliency of food supply chains and food production. Emergency allowances helped facilitate H-2A acquisition. Farm employers requested additional H-2A workers as risk of worker sickness within the county rose, suggesting that employers view H-2A as a viable risk management tool when risk of short-term labor shortages are imminent.

Alexandra Hill: Overtime for Agricultural Workers: An Examination of California's New Legislation

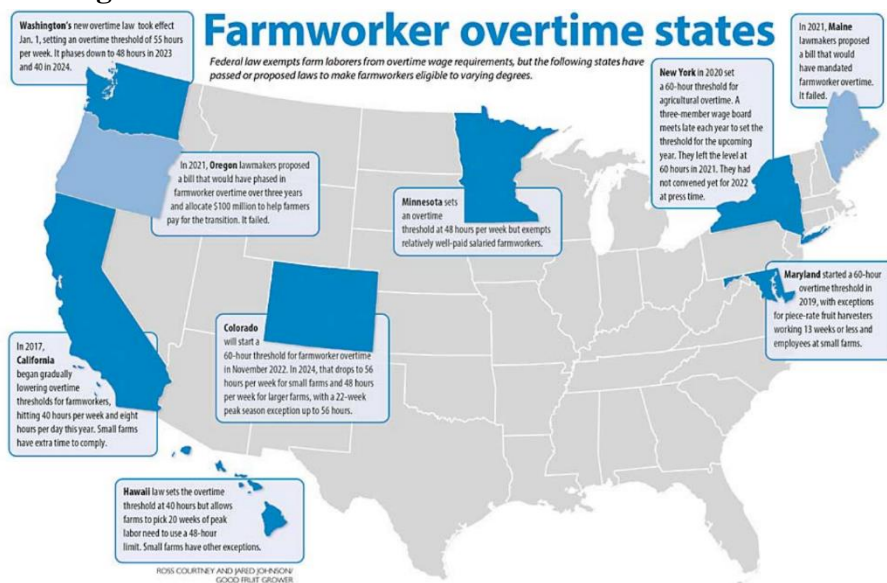
Hill spoke about the Fair Labor Standards Act, and how it set federal standards for minimum wages, child labor, overtime pay, and other terms of employment. The Act, however, exempts some workers and industries from these standards. The federal minimum wage became \$7.25 per hour in 2009 and required 1.5 times the regular rate for overtime pay (see Figure 12).

Figure 12. FLSA Minimum Wage Poster



At the federal level, farmworkers are not covered by overtime laws; however, a handful of states have implemented their own farmworker overtime policies to overcome this discrepancy. Employers are required to comply with state laws, and the states that offer overtime laws often provide other farm employee protections, including higher minimum wages (see Figure 13).

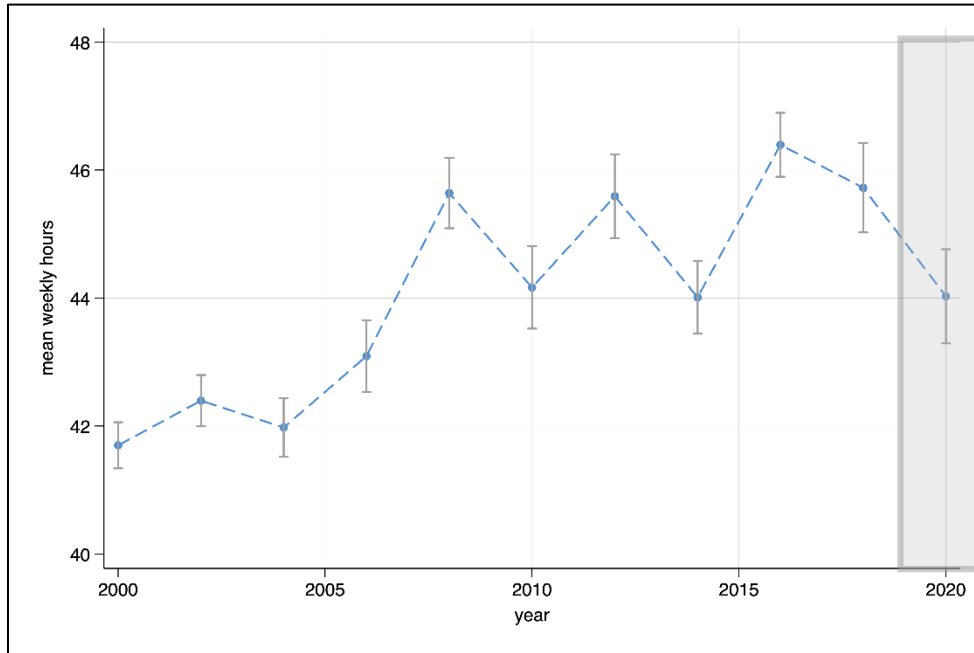
Figure 13. States with Overtime Laws for Farmworkers



California phased in overtime laws starting in 2019 with a 10 hours per day/60 hours per week overtime mandate in 2019 and progressing to an 8 hours per day/40 hours per week mandate in 2022. Hill’s research aims to uncover the effects of California's overtime laws on worker earnings and seeks to understand which workers and operations are impacted.

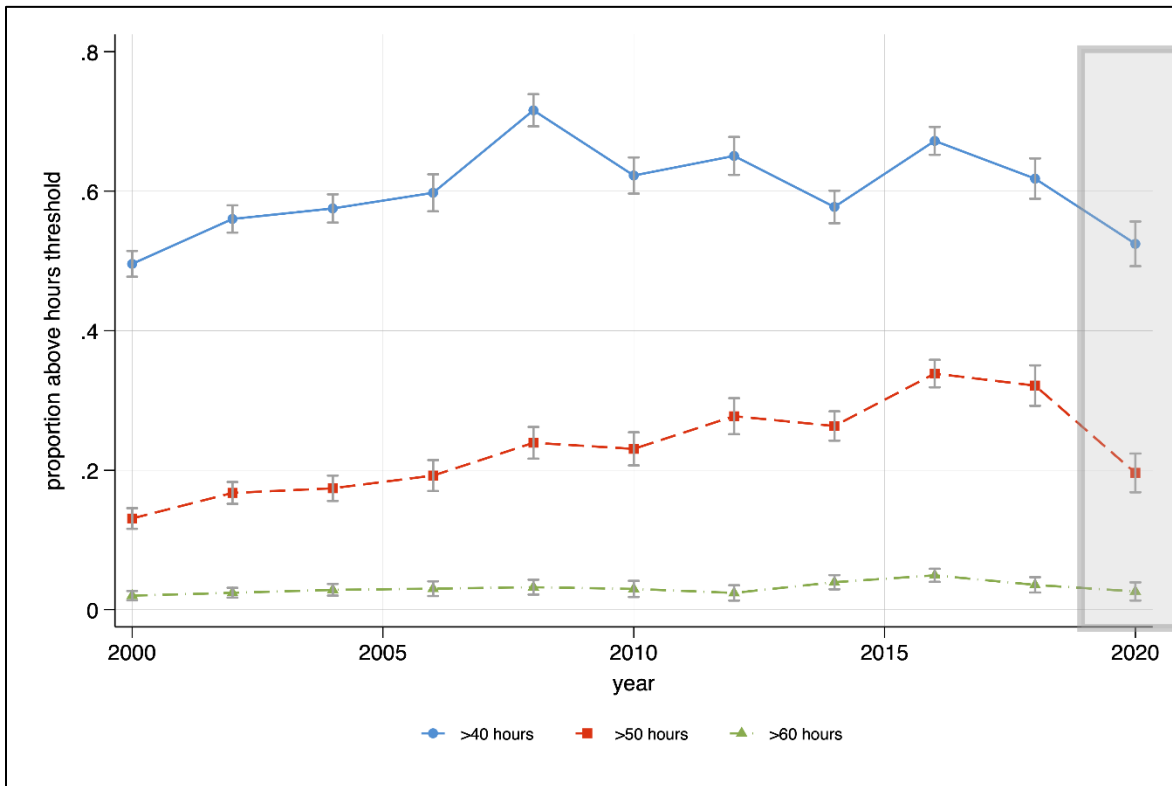
The basic prediction from the existing literature is that employers would cut individual hours and hire more workers, which is supported by economic theory and by some data on hours of work (see Figure 14). Alternative predictions from existing literature suggest that there will be no effect on hours worked, but there will be reductions in base wages or that there would be small effects on hours worked with firms using overtime hours to adjust to unexpected shocks. As such, there are multiple potential outcomes based on prior theory, and it is unclear ex ante what the effect should be.

Figure 14. Summary Data on Hours Worked



Hill presented preliminary results from her analysis using data from the National Agricultural Workers Survey in California. Her findings indicate that there is a general decrease in the number of hours worked after the overtime protections were put in place (see Figure 15). Her preliminary results suggest that there were approximately 15,000 to 45,000 fewer hours worked and a total decline in earnings between \$6 and \$9 million throughout the state. Her findings suggest that instead of making more money, farm employees work less hours and make less money than they otherwise would have.

Figure 15. Summary Data on Hours Worked by Category



Hill also presented preliminary results from robustness tests that used a comparison of California to other states, and those findings also revealed reduced employee hours of work and lower earnings. Hill results also showed that there was a slight increase in the number of jobs per workers, which might suggest that employees were seeking additional employment to compensate for lost hours of work. Moreover, there was a slight decrease in the number of injuries. Hill also found evidence that people who had their hours changed tended to be concentrated among higher educated employees that had less work experience, those performing more skilled tasks, and those that had higher wage rates. Hill concludes that a slower phase-in of these laws may be less disruptive, and a tax subsidy would help increase income while reducing the hours effect and maintaining income levels. However, more research needs to be conducted about the implications on worker well-being.

Margaret Jodlowski: Legal Status and Farm Employee Labor Supply

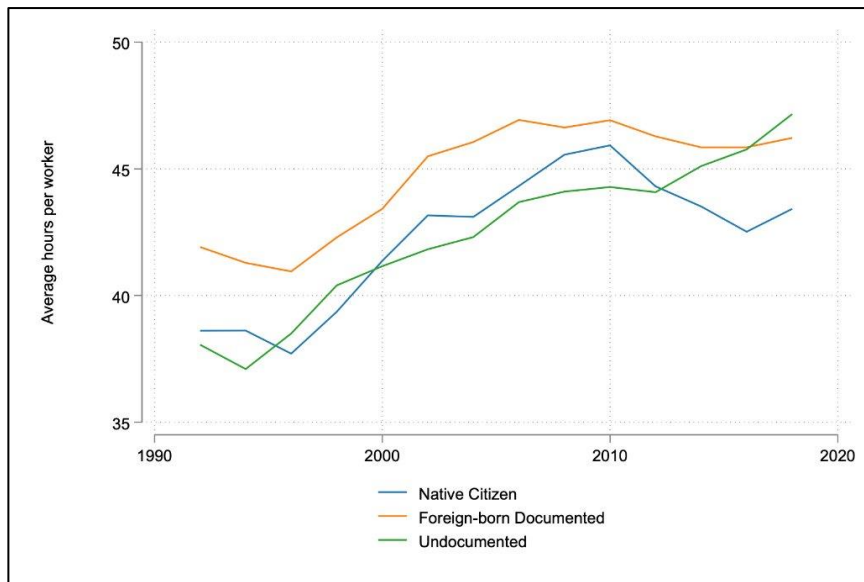
Professor Margaret Jodlowski of The Ohio State University presented joint research with Professor Alexandra Hill of UC Berkeley. Their research project seeks to understand whether workers change their labor market behavior when their legal status changes.

Jodlowski highlighted the fact that labor is a major pressure point across the agricultural supply chain and that automation and visa workers have yet to serve as perfect solutions to the issue.

Moreover, several policy options would potentially change the legal status of farmworkers and offer legal statuses to those not currently working in the agricultural sector.

They use data from the National Agricultural Worker Survey, which is a random sample of non-H-2A crop farmworkers that were interviewed at their workplace (see Figure 16). Their approach is to use a statistical modeling approach known as regression analysis, which generates an estimate of the percentage change in hours worked caused by a 1% change in wages (also known as an elasticity by economists). They allow these effects to vary by legal status of employees. These elasticities are low overall, and their estimates from the 1990s indicate that native-born citizens have the highest response to wage increases, followed by undocumented immigrants, then foreign-born documented immigrants, suggesting that a pathway to legalization would increase workers' wage responses. Moreover, Jodlowski concludes that legalization policies would increase the wage bill because documented employees tend to earn more, but legalization policies might help attract and retain workers. Moreover, the timing of the policies and relative wages of the groups would also matter. Jodlowski noted that this project was still in its initial stages and that future work will focus on how much wages would need to rise to attract sufficient labor to the sector and what would happen when legal statuses change.

Figure 16. Average Hours of Work by Legal Status



Alma Young, Daniel Oropeza, and Sofia Acevedo: Farm Worker Challenges and Solutions

Alma Young, Daniel Oropeza, and Sofia Acevedo of the United Farm Workers of America Foundation gave a presentation about Farmworker challenges and solutions. The UFW Foundation is a nonprofit organization dedicated to improving the lives of farm workers, immigrants, and Latinos through legislative advocacy, community outreach, and organizing. Their core value is to empower communities to ensure human dignity. Farm workers are mostly Hispanic/Latino, with

$\frac{3}{4}$ of the nation's 2.4 million farmworkers being immigrants. More than half are undocumented or are in the US on precarious temporary work visas. Their incomes typically range between \$17,500 to \$19,999, and total family incomes typically range between \$20,000 and \$24,999. Farm workers in some areas are food insecure and often rely on emergency food programs to feed their families. Some of the main challenges farmworkers face are legal status, language barriers, labor violations, sexual harassment, exposure to pesticides, and anti-immigration legislation. The H-2A program has made farm workers vulnerable to exploitation because it makes it difficult for workers to report abuses. Workers will often tolerate terrible conditions until they become unbearable (see Figures 17 and 18). The H-2A program has widespread wage theft and can displace domestic workers. The understaffing of federal and state agencies has made it difficult to investigate these problems.

Figure 17. Farmworker Housing Conditions



Source: Alma Young

Farmworker exploitation became publicized in the recent “Operation Blooming Onion” case, which was the largest human trafficking and visa fraud investigation in the history of the US. This case revealed that workers were charged recruitment fees, kept in inhumane conditions, and forced to work at gunpoint. This resulted in the death of two workers, and cases of rape were uncovered. The conspirators generated around \$200 million, and there have been 24 people charged so far including state labor and education officials.

Solutions to fix the farmworker problems include supporting legislation that seeks to reform our broken immigration system by providing farmworkers a path to citizenship. There should also be improved heat regulations, and wage and labor protections. The H-2A program needs to improve protections in recruitment, increase employer liability, and ensure that workers have a voice in the workplace.

Figure 18. Farmworker Kitchen Conditions



Source: Alma Young

Jamie Clover Adams: Current Situation in Michigan Asparagus and Ideas to Maintain a Viable Vegetable Industry

Jamie Clover Adams, Director of the Michigan Asparagus Advisory Board, began her presentation by discussing vegetable production and wages in Michigan. Clover Adams' presentation indicated that Vegetable production in Michigan consists of 165,000 acres and generates \$535 million in farm gate value (see Figure 19).

Clover Adams' presentation indicated that the AEW in Michigan has gone through a huge transformation, rising from under \$12 an hour in 2015 to almost \$18 an hour in 2023. These wages in Michigan have grown disproportionately relative to the Midwest Employment Cost Index (ECI) and the national construction, extraction, farming, fish, and forestry ECI (see Figure 20).

Clover Adams transitioned into a discussion about the current state of the asparagus industry. Peak yields have grown from 2500 lbs. per acre in 2002, with a harvest cost of \$.25 per lb., to 5500 lbs. per acre (harvesting cost of \$.37 per lb.) in 2023. Asparagus is one of the top ten imported fresh vegetables (Figure 21), and producers in Central and South America have a competitive advantage due to year-round production, government subsidies, lower labor costs, and less environmental

rigor. National retail prices have remained relatively stable since the 2018 season, though the import price has fluctuated consistently as seen in Figure 20.

Figure 19. Michigan Vegetable Production

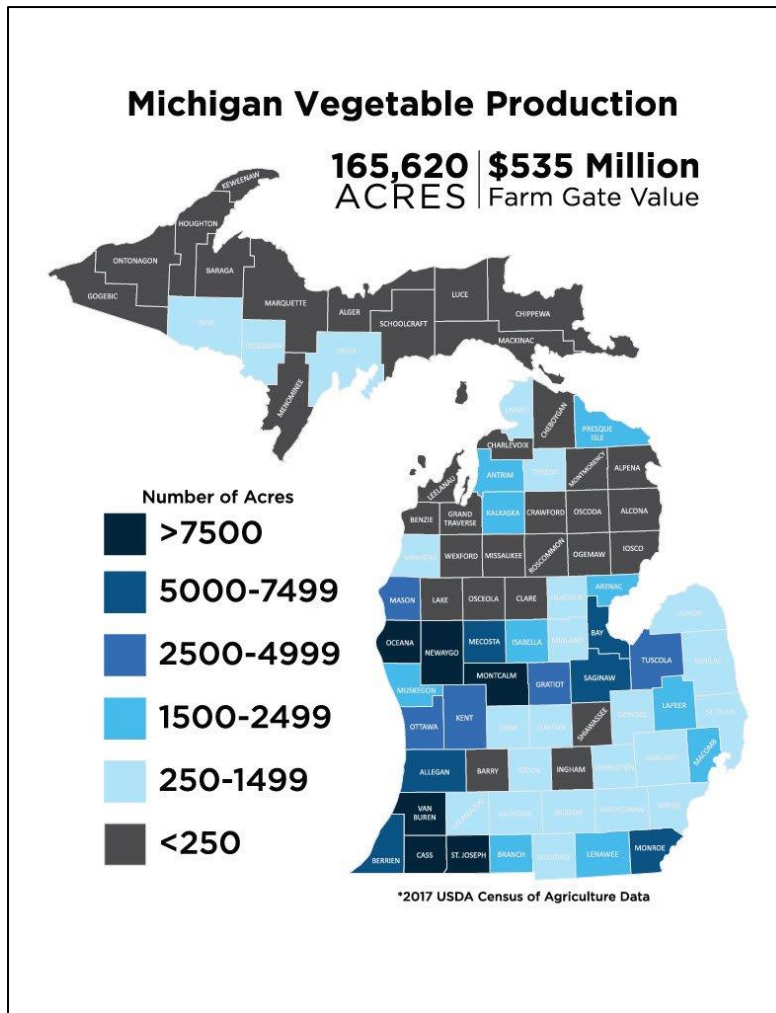


Figure 20. A Comparison of Lake AEWRs to Employment Cost Indices

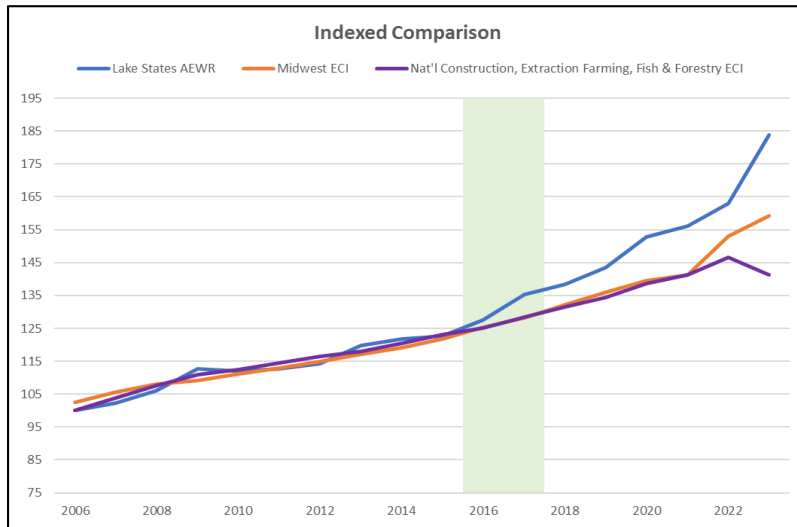


Figure 21. Import Share of Fruits and Vegetables

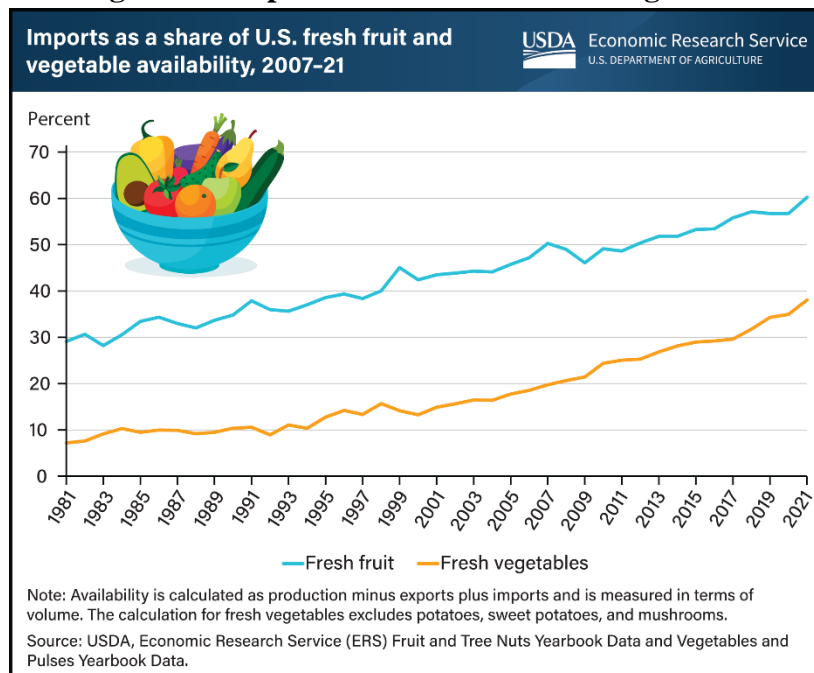
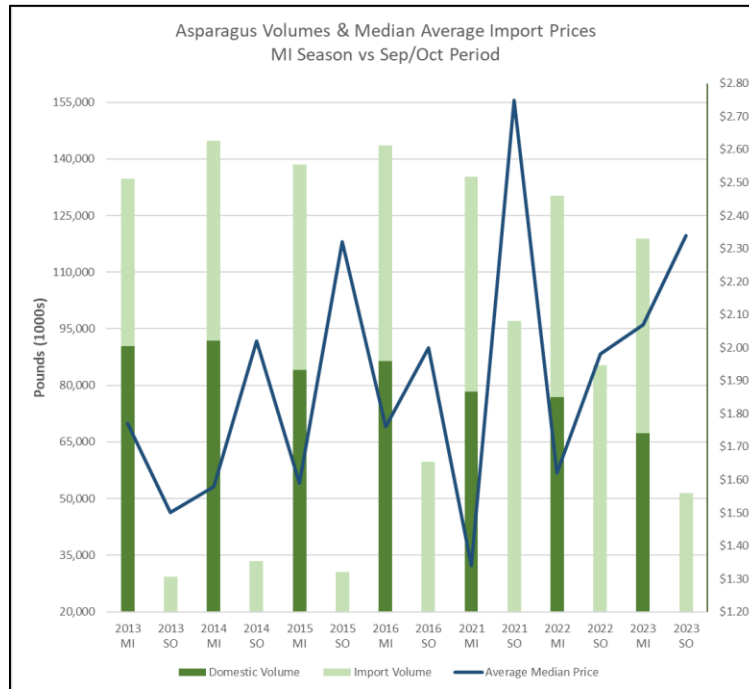


Figure 22. Asparagus Volumes and Import Prices



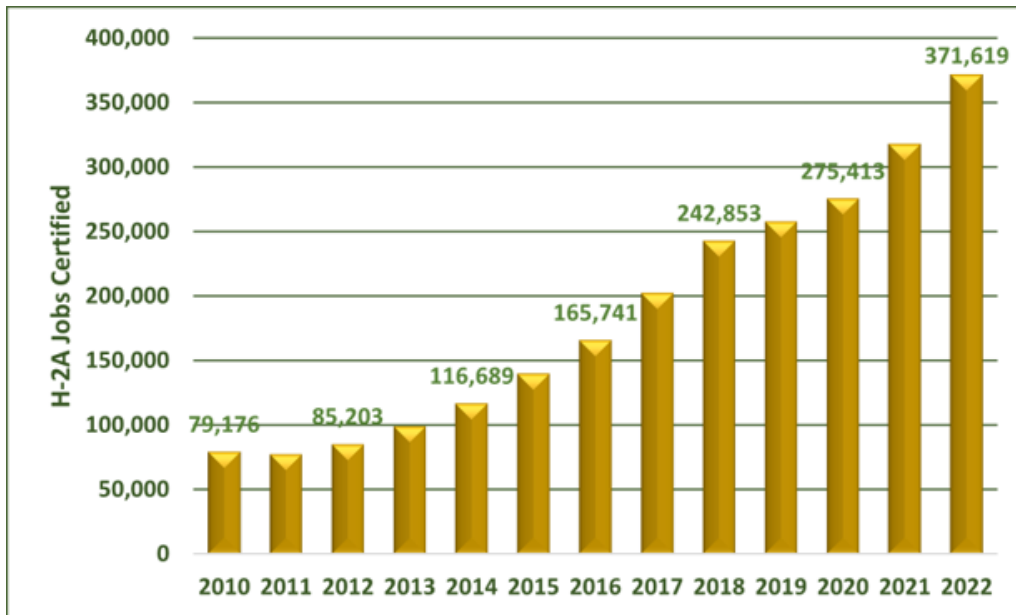
Clover Adams explained that a University of Georgia study using a United States International Trade Commission framework shows that US asparagus growers experience an annual revenue loss of \$13.01 million (see Figure 22). She gives the following policy ideas to help recover this lost revenue:

1. H.R. 4173 – Advancing & accelerating mechanization and automation research and development
2. A refundable federal tax credit to defray cost of guestworker housing
3. A Farm Bill program to defray a portion of specialty crop growers' labor costs
4. A Farm Bill Price Loss Coverage program for seasonal & perishable commodities
5. Increase government purchases of US grown fruits & vegetables for feeding programs, including school lunches

Sarah Black: H-2A Program Overview in the United States and Michigan

Sarah Black (General Manager of Great Lakes Ag Labor Services, LLC) gave a presentation at the Michigan State University Farm Labor Conference, which provided unique insights into the complexities of the H-2A visa program from the perspective of a major H-2A service agency. Black's presentation reveals that H-2A employment has expanded rapidly over the past decade with more than 371,000 jobs being certified nationally in fiscal year 2022 (see Figure 23).

Figure 23. H-2A Jobs Certified in the United States, Fiscal Years 2010 - 2022



Black's presentation indicated that employers are required to adhere to a handful of provisions that are outlined in the H-2A visa programs rules. First, H-2A employers must pay the highest of the state or federal minimum wage or the Adverse Effect Wage Rate. Moreover, H-2A employers are required to provide additional services, which cause them to incur costs that non-H-2A employers do not face. For example, H-2A employers must provide free housing and daily transportation and pay for transportation to the farm at the beginning of the contract and back to the home country at the end of the contract. H-2A employers also must adhere to the "75% rule," in which they must pay H-2A employees at least 75% of the contracted hours, whether those hours of work are completed or not. Additionally, H-2A employers are required to hire any domestic applicants that meet the job requirements through 50% of H-2A employment contract.

To apply for H-2A workers, employers (or those applying on their behalf) must file paperwork with their state workforce agency, the US Department of Labor, US Citizenship and Immigration Services, and schedule appointments with the US Department of State.

There are several different types of H-2A application models. The first type is known as a "Fixed Site" application where the employer maintains control of the workforce. In this model, the grower pays the filing fees, agency fees, and the individual worker fees plus any payroll. The second type is known as a "Farm Labor Contractor" model in which the grower contracts with an FLC for the employment services, and the FLC controls the workforce. In the FLC model, the grower pays the total payroll amount plus a specified premium to the FLC (usually a percentage) based on the payroll amount. The third model is known as a "Joint Employer" model where multiple growers file a single application together, and they share the fixed-site fees listed above. Under this model, growers share control of the workforce, as well as any liability. The last type of model is known as an "Association" model, where multiple growers form an association, file a single application,

and workers can work for any of the association's member farms. In this model, employers also have joint liability.

The vast majority of Michigan's H-2A applications were accepted in 2022, with less than 1% of applications being denied. In Fiscal Year 2022, Michigan was the sixth largest H-2A state in the US, with 503 H-2A applications and 13,097 workers certified. Two hundred and eighty-four applications hired workers under SOC code 45-2092.00 (Farmworkers and Laborers, Crop, Nursery, and Greenhouse), 98 under code 45-2092.02 (Farmworkers and Laborers, Crop), and 94 under code 45-2091.00 (Agricultural Equipment Operators). Other job codes in less demand included Nursery Workers, Supervisors, and Truck Drivers. Two hundred and thirty-seven applications requested 10 or fewer workers, and 46 requested at least 100 workers with some only requesting a single worker. The largest application requested 270 workers.

Black shared that there are several H-2A policy concerns. These concerns include challenges with the Adverse Effect Wage Rate, H-2A processing challenges, and modernization of the H-2A visa program. Black's presentation indicated that the AEWR has experienced unsustainable increases over the past few years (see Figures 24 and 25), which is partially driven by flawed data. Black also raised concerns about the disaggregation of a worker's job tasks under the new AEWR rule published by DOL in 2023 that could have employers paying multiple different wage rates and filing additional contracts. Some tasks may now be coded in an Occupational Employment and Wage Statistics (OEWS) category, creating further complexity and potentially even higher wages. Black noted the current U.S. government mandated AEWR has led to unfair competitive advantages in certain states (see Figure X), as farmers grow the same commodities and sell them in the same marketplace with many of the same buyers. Black says that farms need a stable and predictable wage rate, so the AEWR either needs to be fixed or replaced. Black's presentation indicated that these fixes can be accomplished by pausing the AEWRs until new wages and process can be developed, limiting or capping the annual increase, fixing the USDA's Farm Labor Survey to improve data accuracy, ensuring that the sample of respondents is representative of the local population, and eliminating the 2023 AEWR rule that disaggregated the AEWRs.

Regarding H-2A processing challenges, Black said there are a few viable fixes. The first fix would be to prioritize visa appointments at consulates for visa applicants who are tied to our food security (H-2A and H-2B) over other industries, such as tourism. The second fix would be to increase the number and availability of consulate appointments for H-2A and H-2B visa workers. The third fix involves increasing funding and staffing for consulates to account for increased growth in the H-2A and H-2B visa programs. Fourth, Black says there should be staffing increases at the US Department of Labor and the State Department so they can handle the increased workload from

Figure 24. 2023 Adverse Effect Wage Rates

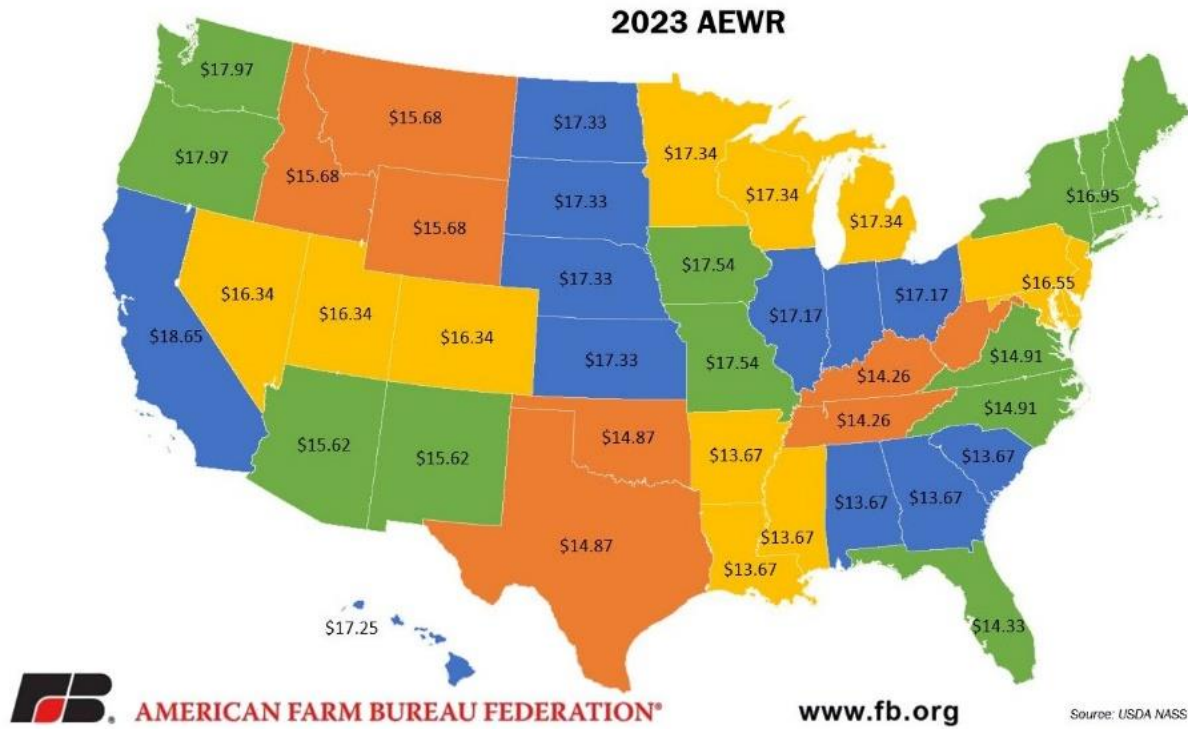
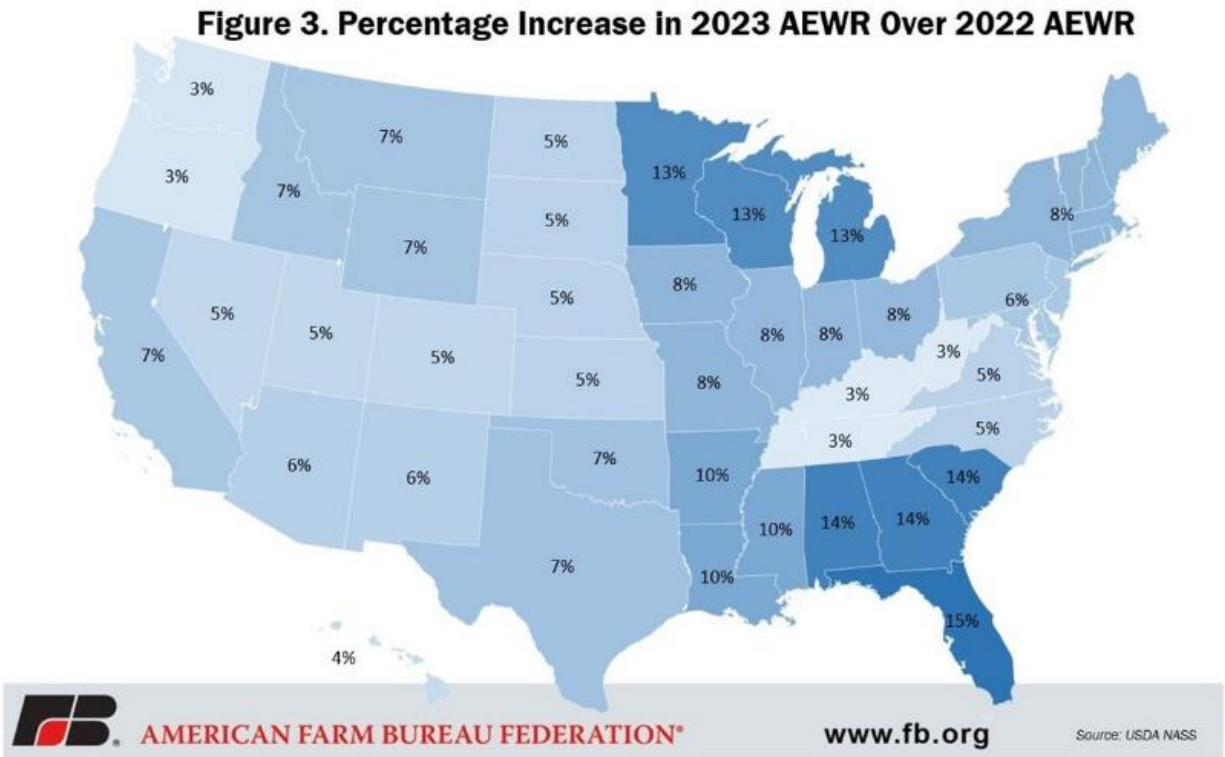


Figure 25. Percentage Increase in the 2023 AEWR



growth in H-2A and H-2B visa programs. Finally, Black suggests allowing expedited processing for returning workers.

Sarah Black emphasized that the H-2A visa program needs to be modernized with a handful of surgical fixes. First, she says that it is important to streamline the process for returning workers. To accomplish this, an option should be added for employees to apply for 2-year visas, eliminating the need for duplicate consulate processing and reducing the backlog of applications. Second, there should be a provision for staggered employee arrivals. Staggered arrivals would reduce processing times and resources for the US DOL and USCIS and reduce costs to farms with lower numbers of contracts needed. Third, there is a need for housing benefit recognition. For example, providing a tax credit or other type of recognition of the value of the housing benefit would help reduce employer costs. The fourth fix has to do with reducing the domestic employee recruitment period to 30 days. Black also suggested requiring electronic processing and communication from USCIS by making applications and processing digital and making the USCIS respond to status updates. Additionally, the rules should be changed to allow for employment contracts that involve work in more than one geographic area and require the DOL to consider post-certification amendments. Moreover, she argued that reinstating the joint employer application flexibilities that were removed under new H2A rule would be helpful. And last, allowing employers with year-round needs to access the H-2A visa program would assist farms that are currently precluded from using the program.

Ines Hanrahan: Technology and Tree Fruit Production

The Director of the Washington Tree Fruit Research Commission (WTFRC), Ines Hanrahan, presented about the Washington fruit industry and technology's role in production. Washington is the largest apple-producing state, with 70% of the nation's production. The state is also a prominent producer of several other products, including milk, wheat, and potatoes and specialty crops, including cherries and grapes. Apple producers in Washington have been innovating consistently, with the world's first fully automated apple picking technology showing up in 2019.

The WTFRC was founded in 1969 to drive automation with the first technology roadmap developed in 2003. The strategy includes a worldwide reach with collaboration between scientists and the private sector working with industry members. Tree harvesting platforms were tested in orchards in 2003 (see Figure 26), and the first fully automated apple picking occurred in Washington and New Zealand in 2019. According to Hanrahan, the Western Growers' Global Harvest Initiative has a goal of achieving 50% automation of the harvest for the top 20 specialty crops by 2030.

Figure 26. Harvest Picking Platform



The move towards technology solutions will require improved automated irrigation, planting, spraying, mapping/sensing, and netting procedures. The computerized vision systems are particularly intricate, and they need to see the fruit in accessible canopies, which are typically vertical trellises (see Figure 27). Moreover, the technologies will have to sort the produce in the field and place the fruit into specific bins. There are several prototypes under development that include mechanical arms that reach into the canopy and manually pick the fruit, vacuums that suck fruit off the trees, and drone systems that fly above the ground and pick fruit (see Figures 28 - 30). Hanrahan believes we are on the right path to successful automation solutions, but a lot will need to happen between now and their 2030 goal.

Figure 27. Vertical Trellis Apple Orchard



Figure 28. Vacuum Harvester



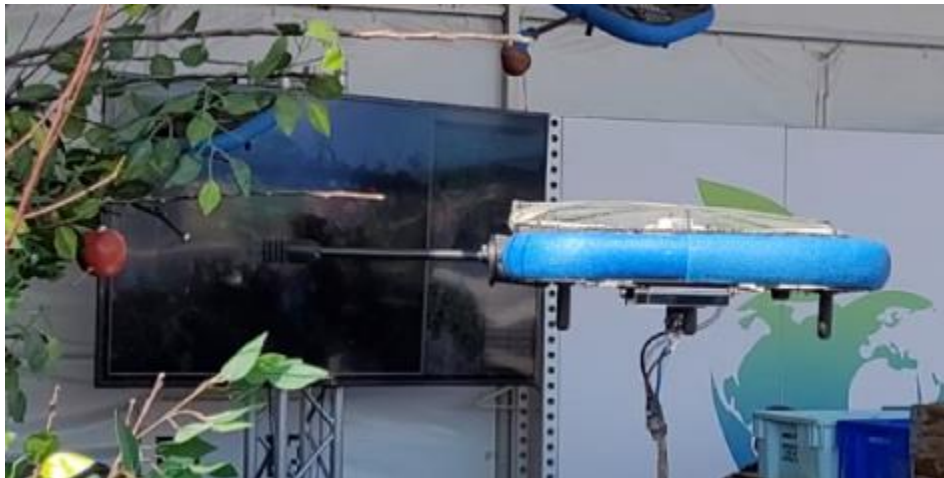
Source: Ines Hanrahan

Figure 29. Mechanical Hand Harvester



Source: Ines Hanrahan

Figure 30. Drone Harvester



Source: Ines Hanrahan

In order for the technologies to be feasible, they need to be able to perform for 80 consecutive days and pick 75,000 bins per day with a single machine picking 100 to 200 bins per day at a cost of \$0.02 to \$0.03 per fruit. Current technologies can only pick for days or weeks and can only pick in the range of one bin per hour or slower with an unknown harvest cost per fruit.

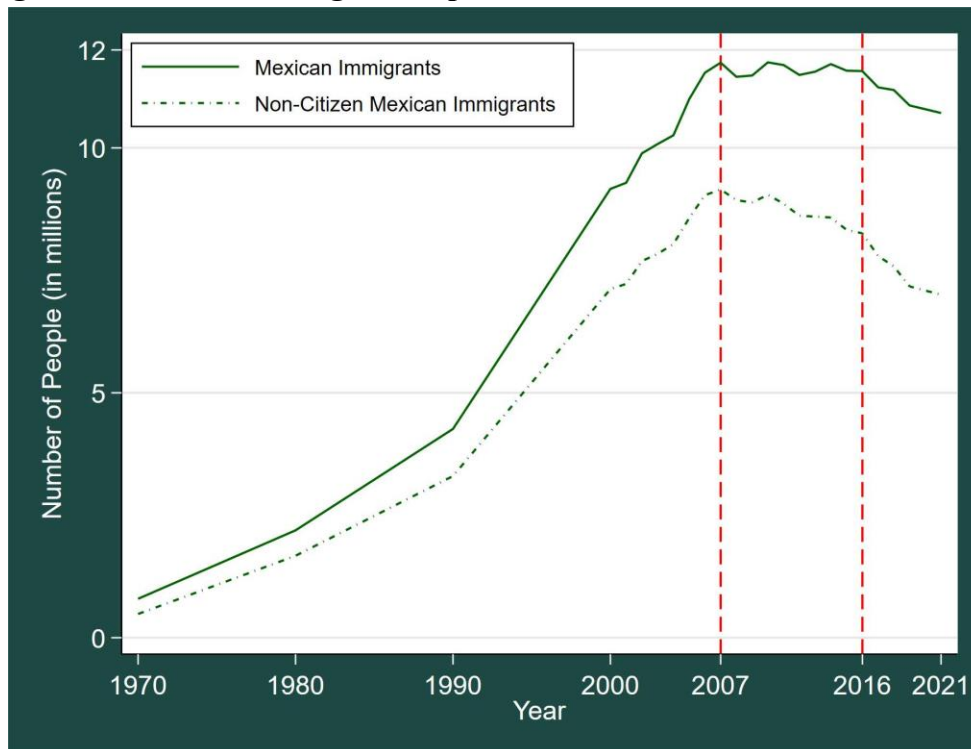
For now, Hanrahan says the H-2A program is increasingly becoming the deciding factor of whether a Washington grower can stay in business or will lose their farm. This program is incredibly costly, complex, and burdensome, to the point where it is impossible for many small growers to access. Hanrahan reported that the US Congress must reform the H-2A program to make it accessible and workable for growers of all sizes.

Zachariah Rutledge: Agricultural Labor Policy Outlook

Michigan State University professor Zachariah Rutledge gave a presentation about policy options for addressing agricultural labor issues in the United States. Rutledge noted that number of Mexican immigrants residing in the United States has been declining, which has added to the labor supply pressures for agricultural producers (see Figure 31). Rutledge noted that these pressures add a myriad of other factors that have led to a declining farm labor supply, including better educational and job opportunities for Mexican nationals, tighter border security, and families that have settled down in the US and no longer perform follow-the-crop migration.

Rutledge notes that there is a rising share of fruit and vegetable imports coming into the US, and that Mexico is the leader among exporting countries. However, rising imports creates risk exposure to supply chain disruptions, such as those that might arise from another global pandemic or a major armed conflict. When imports flood the US market, this creates market pressures that keep prices low, which makes it difficult for US producers to maintain economically viable production activities, especially because labor is more expensive here than in the countries that export to the US. Rutledge views solutions to the labor scarcity challenge as falling under three umbrellas, Migration, Compensation, and Technology.

Figure 31. Mexican Immigrant Population in the United States, 1970 - 2021



With respect to migration, the options include increasing permanent legal migration opportunities and making changes to the H-2A visa program. With respect to permanent migration, some options include legalizing undocumented farmworkers and increasing the number of green cards that are for work in the agricultural sector. While immigrant workers tend to be highly productive, one of

the challenges of a legalization process includes vetting individuals who might skirt through the system. Moreover, some economic research shows that when the number of individuals coming into the labor market increases, workers who are already in the labor market may be harmed with fewer work opportunities and lower wages. With respect to the H-2A visa program, employer advocates argue that freezing or capping the AEWL would help relieve the high cost of using the program, which could help sustain domestic production activities.

Compensation policies could include subsidies or tax credits to help offset the higher costs of hiring farm employees. These policies could also be applied to the H-2A program exclusively. These types of policies could help offset employer costs, while making sure that employees receive a fair wage. One of the downsides of these policies is that they cost taxpayers money, so they may be difficult to gain political support.

With respect to technology, government policies that promote the development and adoption of technologies that reduce the need for labor could help domestic agricultural producers. Some of these policies may be grant programs for technology developers or low-cost loans for farmers seeking to purchase new labor-saving equipment.

Labor supply pressures reduce the economic welfare of domestic producers, threaten the production capacity of the United States, and expose the US to food security risks. Market or policy solutions are needed to maintain domestic production. To make this happen, the US needs to incentivize labor, mechanize labor intensive tasks, or increase its reliance upon imports.

Appendix A. Conference Agenda

MSU University Club (Heritage Room), Lansing, Michigan, November 2, 2023

7:30 – 8:20 – Breakfast/Coffee

Early Morning Session – Intro and Keynote

8:20 – 8:35 – Welcoming Comments (Zach Rutledge, Michigan State University)

8:35 – 8:50 – Overview of Land Grant University Mission (Kelly Millenbah, Michigan State University)

8:50 – 9:20 – Keynote Part I – Farm Labor in the 2020s (Phil Martin, University of California, Davis)

9:20 – 9:50 – Keynote Part II – Farm Employer Challenges and Solutions (Michael Marsh, NCAE)

9:50 – 10:05 – Panelist Q&A

10:05 – 10:20 – Coffee Break

Late Morning Panel – Government (20-minute talks)

10:20 – 10:40 – Overview of Michigan Agriculture and Farm Labor Challenges (Tim Boring, MDARD)

10:40 – 11:00 – Michigan Farm Employee Challenges and Services (Hugo Pantoja, Michigan Department of LEO)

11:00 – 11:20 – Insights from the National Agricultural Workers Survey (Andrew Padovani, JBS International)

11:20 – 11:40 – H-2A Overview and Farm Labor Research Priorities (Marcelo Castillo, USDA-ERS)

11:40 – 12:00 – Panelist Q&A

12:00 – 1:00 – Lunch

Early Afternoon Panel – Ag Labor Economists (20-minute talks)

1:00 – 1:20 – Health Coverage, Employee Productivity, and Farm Profits (Timothy Richards, Arizona State University)

1:20 – 1:40 – COVID and the H-2A Visa Program (Diane Charlton, Montana State University)

1:40 – 2:00 – Agricultural Overtime Legislation (Alexandra Hill, Colorado State University)

2:00 – 2:20 – Legal Status and Farm Employee Labor Supply (Margaret Jodlowski, Ohio State University)

2:20 – 2:40 – Panelist Q&A

2:40 – 2:55 – Refreshment Break

Late Afternoon Panel – Industry (20-minute talks)

2:55 – 3:15 – Farm Worker Challenges and Solutions (Alma Salazar Young, UFW Foundation)

3:15 – 3:35 – Labor Issues in Michigan Specialty Crops (Jamie Clover Adams, Michigan Asparagus Advisory Board)

3:35 – 3:55 – H-2A and Michigan Agriculture (Sarah Black, Great Lakes Ag Labor Services)

3:55 – 4:15 – Technology and Tree Fruit Production (Ines Hanrahan, Washington Tree Fruit Research Commission)

4:15 – 4:35 – Panelist Q&A

4:35 – 5:00 – Agricultural Labor Policy Outlook (Zach Rutledge, Michigan State University)