

# Mandated, But Not Compensated:

Exploring the Multifaceted Impacts of Overtime on Farm Workers' Health, Safety, and Well-being

Prepared on behalf of Pineros Y Campesinos Unidos del Noroeste (PCUN) by members of the Oregon Institute of Occupational Health Sciences at OHSU

Contributing Authors: Krista Brockwood, PhD, Lindsey Alley, MS, David Hurtado, PhD, Sam Greenspan, MPH, Anjali Rameshbabu, PhD, Sara Wild, MPH, Leslie Hammer, PhD





## **Executive Summary**

Farm workers – who are responsible for collecting, packaging, and maintaining the bulk of our nation's food products – are subject to the same psychological, physiological, and social impairments as workers performing overtime in any other occupation. However, they face the additional compounding burdens of financial strain, job insecurity, and housing instability. Farm work requires long hours, yet these workers continue to be excluded from protections under the Fair Labor Standards Act (FLSA). Six states currently provide overtime compensation for agricultural workers (CA, WA, HA, MN, NY, MD), though many have limitations and exemptions specific to farm labor. This report describes the role of farm workers in the U.S. economy, workplace risks and exposures affecting their health and safety, and the compounding impact of long work hours on their psychological, physiological, and sociocultural functioning.

#### **Economic Benefits and Burdens**

- The results of farm workers' labor boost the U.S. economy; households dedicate approximately 13% of their income to purchasing agricultural products.
- High rates of work-related injuries and illnesses place a *preventable*, significant financial burden on our Worker's Compensation and health care systems.
- Systemic barriers perpetuate an epidemic of extreme poverty among farm workers, leading many to delay medical care until health issues become critical, and subsequent medical bills become insurmountable.

#### Impact of Long Hours on Physical, Mental, and Familial Functioning

- Routinely working long hours (+40 week) contributes to fatigue and sleep issues, and the onset/progression of heart disease; stroke; diabetes; depression, anxiety, and suicidal ideation; and increased risk of work-related injury.
- High job demands, coupled with little to no control over when and how work is done, exacerbates farm workers' negative mental and physical health outcomes.
- Mandated overtime requires farm workers to spend less time with their families, take
  on greater financial and logistical strain trying to obtain childcare and/or bring
  children to their worksite.
- Fatigue and work-to-life stress adversely impact their ability to maintain the household, support child education, and limit pesticide exposures.

#### **Key Recommendations**

- Compensate farm workers for overtime pay commensurate with FLSA requirements.
- Provide stronger oversight protection for farm workers, including employed minors.
- Teach employers to support worker health and safety, and improve job control.
- Support research on the effects of farm labor on workers and their families, including the implementation and evaluation of workplace interventions.
- Adopt innovative programs, such as the <u>Equitable Food Initiative</u>, to ensure just food production practices.

## **Table of Contents**

Executive Summary	2
Economic Benefits and Burdens	2
Impact of Long Hours on Physical, Mental, and Familial Functioning	2
Key Recommendations	2
Background and Purpose	4
The Backbone of America is Hurting	4
Facing an Epidemic of Financial Strain	5
Working Toward Chronic Health Conditions	6
Experiencing Detrimental Mental Health Issues	6
Under-resourced to Prevent Pandemic Spread	7
Experiencing High Rates of Preventable, Expensive Injuries and Illnesses	7
Long Hours Compound Risk of Long-Lasting Health Conditions	8
Overtime Work Negatively Impacts General Health	8
Overtime Work Impairs Sleep, Escalating Health Impacts	9
Long Hours Negatively Impact Family Health and Functioning	10
Mandated Overtime Reduces Quantity of Family Time	10
Stress and Fatigue Reduce Quality of Family Time	10
Pesticide Exposure Places Families at Risk	11
Childcare Challenges Create Spillover to Worksites	11
Child Labor is Legal in Agriculture, and Sometimes the Only Option	12
Mapping Solutions with Occupational Health and Safety	12
Migrating Toward Progress through Overtime Legislation	14
Conclusion	15
References	16

## **Background and Purpose**

It is well-established in Occupational Health and Safety research that continually working longer than eight hours per day (or 40 hours per week) is associated with significantly greater risk of all-cause mortality, and the development and/or progression of circulatory disease, diabetes mellitus, metabolic syndrome, depression and anxiety, inadequate sleep (quality and quantity), cognitive dysfunction, and engagement in unhealthy coping behaviors (e.g., drinking, smoking).<sup>1,2</sup> Employees who regularly engage in overtime work report significantly higher work-to-family interference (conflict), worse satisfaction in their intimate relationships, and reduced satisfaction with life in general;<sup>3,4</sup> as well as less time spent supporting their children's educational development compared to those performing within normal hours. 5 These findings are important and compelling for highlighting the dangers in sustaining a pattern of working long hours. These findings are also notably derived from samples of primarily white, non-Hispanic, middle-class workers recruited from white- and blue-collar industries. 6 Understanding this caveat is critical for understanding the weight of the risk placed on the shoulders of what is arguably the most important, and most vulnerable, workforce in this country: farm workers.

Farm workers are at equal or greater risk of experiencing the same host of overtime-related health and well-being challenges reported among white- and blue-collar workers. However, these risks are compounded by a systematically perpetuated epidemic of financial strain and poverty among this workforce. White- and blue-collar workers are compensated, by law under the Fair Labor Standards Act (FLSA), the equivalent of time plus one-half for every hour worked outside of a traditional 40-hour work week, and they receive at least minimum wage during their typical working hours. Agricultural work is recognized as the occupation most likely to have mandatory overtime due, in part, to the seasonal nature of the industry. Farm workers commonly perform up to 16 hours of work per day; yet, by law, receive no additional compensation for their overtime labor in nearly all U.S. states. In 16 states, including Oregon, farm workers may even be classified as "exempt" from receiving minimum wage during their normal work hours. It is critical that we acknowledge the inherent historical and systemic issues that perpetuate a culture of under-compensation, under-appreciation, and under-protection of farm workers in the U.S. The protection of the protection of farm workers in the U.S. The protection of the protection of the protection of the U.S. The protection of the protection of the protection of the protection of the U.S. The protection of the protection of the protection of the protection of the U.S. The protection of the protection

**Our purpose** is to describe the role of farm workers in the U.S. economy, workplace risks and exposures affecting their health and safety, and the compounding impact of long work hours on their psychological, physiological, and sociocultural functioning.

## The Backbone of America is Hurting

Agriculture is an essential business that serves as the backbone of our nation's food system and allows our citizens to survive and thrive. On average, Americans devote 13% of their household budget to the purchase of food items, which amounted to a \$1.109 trillion contribution of Agriculture to the U.S. gross domestic product in 2019;

\$136.1 billion of which was contributed by America's farms. Approximately 22 million jobs, 10.9% of total U. S. employment, are housed within the agricultural industry. In Oregon, there are an estimated 82,961 migrant and seasonal agricultural workers (27,792 migrant workers and 55,169 seasonal workers). Oregon counties with the highest estimated number of migrant and seasonal agricultural workers are Wasco, Marion, Hood River, Washington, Yamhill, and Clackamas. Farm workers in Oregon support several commodities including fruits (e.g., apples, grapes, blueberries, blackberries), vegetables (e.g., sweet corn, onions), herbs (e.g., peppermint), hazelnuts, Christmas trees, and hops. American series of the ser

Successfully working a farm requires a high degree skill and experience. 15 The majority of U.S. farm workers surveyed report having more than 10 years of experience in farm labor. Unfortunately, unlike in other industries, experience is not rewarded in farm work. In fact, Agriculture is considered one of the most dangerous industries for both adult and young workers. Farm workers are made to perform physically demanding manual labor activities in knowingly unsafe conditions, including when confronted with one or more environmental/safety hazards such as severe weather warnings, poor air quality (e.g., wildfire smoke, debris), exposure to toxic chemicals (e.g., pesticides), and risk of disease contagion (e.g., COVID-19). 16,17 For example, recently in Oregon, during record temperatures in excess of 100°F, a farm worker died of heat exhaustion while moving irrigation lines with his work crew. 18 This preventable fatality was, unfortunately, not unique; farm workers die of heat-related illnesses at a rate 20 times greater than that of the entire U.S. workforce.<sup>19</sup> In addition, many Oregon farmworkers also had to endure heavy smoke exposure during the September 2020 fires. Due to its consistently high rates of occupational fatalities, injuries, and illnesses, Agriculture has been declared a priority industry for intervention and surveillance by the National Institute for Occupational Safety and Health (NIOSH).<sup>20</sup>

#### Facing an Epidemic of Financial Strain

Eighty-eight percent of agricultural workers report being paid by the hour, 7% by the piece, 4% salaried, and 1% a combination of hourly and piece-rate. The majority are not financially protected by minimum wage standards or overtime pay, and many are ineligible for health care benefits through Medicaid due to barriers like lack of portability between states, eligibility restrictions (e.g., immigration status, exclusion of single men with no dependents), and inability to meet proof of income requirements (e.g., weekly fluctuation in pay, employer, and pay type (piece-rate vs hourly)). While 13 states have supported the provision of Workers' Compensation insurance for farm workers, financial and access barriers prevent workers and their families from seeking professional care for acute illnesses and chronic health conditions, some of which are indirectly caused by the nature of the work they perform. Thirty-three percent of families working in Agriculture report an annual income below the federal poverty line. The median pay for agricultural workers in 2020 was \$28,900, which is substantially less than the \$63,036 that the average American household spent in 2019. A study of 790,000

migratory and seasonal agricultural workers and dependents found that 80% earned family incomes below 100% of federal poverty level.<sup>23</sup>

Financial strain impacts farm workers and their families in multiple domains, including through food insecurity, poor medication adherence and poor screening for chronic health conditions like diabetes.<sup>24</sup>
Approximately 50% to 71% of farm workers are uninsured and required to pay out-of-pocket for medical care, which is a substantial barrier to seeking proper treatment.<sup>23</sup>
Documentation status can affect the



percentage of agricultural workers who regularly visit a doctor or dentist.<sup>25</sup> Failing to maintain regular medical care places significant financial and physical burden on Emergency Departments and hospitals as health issues escalate and higher costs become irreconcilable.<sup>26</sup>

#### **Working Toward Chronic Health Conditions**

Workplace exposures to harmful chemicals, airborne organic dust, ammonia, and zoonotic pathogens (e.g., manure) increases farm workers' risk of developing chronic respiratory diseases, skin disorders, and hearing loss compared to the general population. Agricultural workers are at an elevated risk for the development of chronic musculoskeletal pain resulting from repetitive motion injuries/re-injuries, poor availability of workplace safety and ergonomic tools and overtime hours. Working more than eight hours per day increases their risk of developing neck pain by 4.39x and upper back pain by 7.95x, and triples rates of low back and knee pain. In Oregon, a study of 3,382 Latino farm workers found that working in the field more than 10 years increased workers' risk of hypertension by 1.72x and obesity by 2.08x.

#### **Experiencing Detrimental Mental Health Issues**

Agricultural workers display significantly worse mental health than is seen in the general population.<sup>33</sup> Their relatively high degree of work and work-life stressors contribute to high levels of depression and anxiety.<sup>34</sup> Family dysfunction, ineffective social support, low self-esteem, lack of decision authority in the immigration process, and high education levels – all contributing to "acculturative stress" – are at risk for high levels of anxiety and depression.<sup>35</sup> Further, those who experience high job demands are almost twice as likely to report fair/poor health and 2.6 times as likely to report depressive symptoms than those reporting lower demands.<sup>36</sup> Common stressors experienced by farm workers include climate variability, financial strain, health status, pesticide exposure, and work-to-family conflict and strain.<sup>33</sup> Agricultural workers often return to work too soon following injury in response to perceived risk of job or income

loss, which has been defined as a health status stressor.<sup>37</sup> Each of these challenges contribute to an elevated rate of suicide reported among agricultural workers (0.7 per 100,000 vs 0.2 per 100,000 in general population),<sup>38</sup> with rates as high as 45 per 100,000.<sup>39</sup>

#### **Under-resourced to Prevent Pandemic Spread**

In June 2021, Hispanics/Latinos comprised 28.8% of COVID-19 cases and 18.7% of COVID -19 deaths with known race/ethnicity. 40,41 This trend was seen in Oregon as well. In September 2020, Hispanic/Latino-identifying Oregon residents comprised 45% of COVID -19 cases and 16% of COVID -19 deaths for which race/ethnicity was known. 42 Throughout the COVID -19 pandemic, farm workers struggled to mitigate the risk of exposure and contagion for themselves and their families. Nationally, due to inadequate workplace safety standards that failed to address shared housing issues, poor worksite access to clean water for hand washing/hygiene, limited access to personal protective equipment, and poor pay and no paid sick leave (incentivizing symptomatic and/or exposed workers to continue working) workers struggled to find opportunities to maintain safe distance, meet the recommended hygiene standards, and properly quarantine. 43,44 In May 2020, a temporary rule was enforced by Oregon OSHA to provide safety provisions to mitigate COVID-19 risks in farm labor, including the provision of additional toileting facilities and cleaning materials on work sites and in private living areas, enforcement of social distancing standards (repealed in October 2021<sup>45</sup>), and improved sanitation practices. <sup>46</sup> Accessing COVID -19 vaccines proved challenging for farm workers, the majority of whom were not provided adequate resources, internet access (for scheduling), protected time and/or transportation to attend vaccination appointments. 47,48 Despite efforts from Pineros Y Campesinos Unidos del Noroeste (PCUN) and other advocates, farm workers in Oregon have yet to receive adequate support to achieve widespread access to COVID-19 vaccines.

#### Experiencing High Rates of Preventable, Expensive Injuries and Illnesses

Ranking within the top 26% of industries for reported nonfatal injuries and illnesses involving days away from work, statistics show agricultural workers are seriously injured at a rate of 131 per 10,000 every day.<sup>49</sup> In Oregon, Agriculture/ Forestry accounted for 5.2% of reported Workers' Compensation injury claims in 2018.<sup>50</sup> Most claims from Oregon Agriculture involve overexertion (22%) and falls/slips (33%).<sup>50</sup> Both safety outcomes, Occupational Health and Safety research has shown, can be caused by health and psychological issues including poor sleep,<sup>51</sup> high job demands,<sup>52,53</sup> and financial strain.<sup>54</sup>

Epidemiologists estimate that the actual rate of injury and illness may be substantially higher in Agriculture than what is reported. In fact, research has shown that as many as 88% of Workers' Compensation cases in US Agriculture may go unreported each year. This significant gap in reporting is attributed to multiple factors including the relatively high rate of undocumented workers employed by the industry, the seasonal migration required to maintain farm employment year-round, and the predominance of workers employed at small, family farms. Adjusting for the number of underreported cases,

occupational injuries and illnesses among farm workers are estimated to cost \$4.5 billion annually in the US.<sup>55</sup> This is comparable to the economic burden of Hepatitis C.

## Long Hours Compound Risk of Long-Lasting Health Conditions

#### **Overtime Work Negatively Impacts General Health**

Working long hours has been associated with a variety of negative physical health outcomes, a finding that has been well documented in the literature.<sup>57,58</sup> A meta-analysis spanning 20 years of research across various industries estimated that overtime hours (>40) compared to a typical 40 hour work week account for 24.5% of occupational health conditions and 36.6% of mental health conditions.<sup>58</sup> Similarly, a systematic analysis of millions of workers in over 194 countries in 2000, 2010 and 2016 found that people working long hours (≥55 hours/week) had significantly higher risk of ischemic heart disease and stroke compared to people working standard hours (35–40 hours/week), resulting in 745,194 deaths (705,786–784,601) and 23.3 million disability-adjusted life years (see Figure 1).<sup>59</sup>

A report from the CDC and NIOSH summarizing 52 studies on the impact of work hours and overtime on health found that overtime was associated with poorer perceived general health, increased injury rates, increased illnesses, and increased mortality. <sup>60</sup> Though the findings were more mixed, the review reported links between overtime and

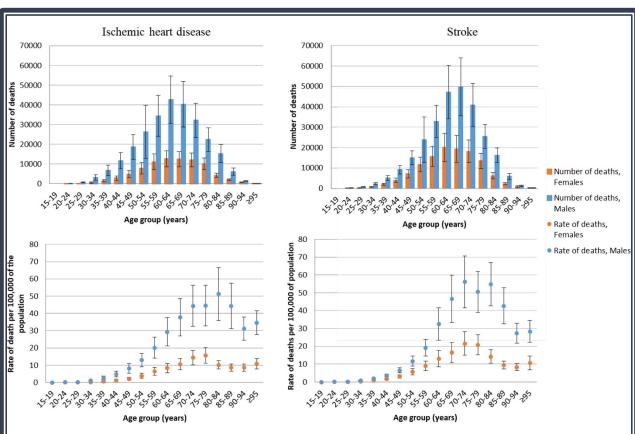


Figure 1. Long work hours (>55/wk) on number / rate of deaths (per 100,000) by ischemic heart disease and stroke

unhealthy weight gain, increased alcohol use, increased smoking, and poorer neuropsychological test performance. Overtime work has been associated with cardiovascular and immunological issues, poorer lifestyles such as poor sleep, unhealthy diet, and lack of exercise, all of which can further increase the risk for illness, and negatively affect cognitive performance.<sup>61</sup>

The negative effects of overtime are most pronounced when employees work 52-60 hours within one week. A study of 110,236 job records encompassing 89,729 person-years of accumulated working time found that compared to jobs without overtime, jobs with overtime had a 61% higher injury hazard rate. Working at least 12 hours per day was associated with a 37% increased hazard rate and working at least 60 hours per week was associated with a 23% increased hazard rate. Injuries per 100 accumulated worker-years in a particular schedule increased as work hours increased. Another study analyzing surveillance data spanning 1986-2011 with a representative sample of various US workers (n=2,306) found that workers who performed 52 or more hours for a minimum of 10 years were 1.28x more likely to report poor health, 1.42x more likely to have cardiovascular disease, and 1.62x more likely to have cancer compared with those working 35–51 hours per week for the same time period. Agricultural work is recognized for its comparatively exorbitant rates of mandatory overtime, due primarily to the seasonal nature of the industry, with workers maintaining as many as 14-16 hours a day.

#### **Overtime Work Impairs Sleep, Escalating Health Impacts**

Sleep has a reciprocal relationship with health and well-being; maintaining adequate sleep is bolstering, while sleep impairments and regular sleep interruptions are detrimental. Working weekly overtime (>40 hours) accounts for 46.5% of sleep issues and fatigue. Fatigue is defined as the feeling of extreme tiredness, reduced functional capacity, and need for increased effort to perform regular tasks. Fatigue is considered a guaranteed outcome of the combination of long work hours and repeated performance of difficult, strenuous work activities, and contributes to high levels of work errors, absenteeism, occupational injuries, work impairment, and pain across all industries. Poor sleep and fatigue both significantly impact productivity, and contribute to worsened attention to safety rules and adherence to safety practices, which results in greater risk of injury. For farm workers, inadequate sleep worsens physical balance at work, contributing to increased risk of injury given that these workers have the most frequent exertion and standing demands of any industry. Pesticide exposure, another common work hazard in farm labor, has been linked to the development of sleep apnea.

Fatigue and inadequate sleep also contribute significantly to reports of pain among employees in Agriculture.<sup>64</sup> A study of 390 farm workers showed that reports of chronic back pain were 2.26x more likely on less than 8 hours of sleep, 3.25x more likely if sleep quality was poor, and 8.72x more likely if the worker was also experiencing depression symptoms.<sup>71</sup> Psychologically, some farm workers have reported that their experiences of

stress and depression related to family separation (migration/ immigration) caused or worsened their sleep issues, while others note that receiving eight hours of sleep before their shift helps them de-stress and feel better.<sup>72</sup>

## Long Hours Negatively Impact Family Health and Functioning

#### **Mandated Overtime Reduces Quantity of Family Time**

Working overtime requires farm workers to spend little time with their families, which may be seen as a cultural loss associated with farm work.<sup>6</sup> Additionally, different family members may have different shifts resulting in a loss of total family time (i.e., when the whole family is together). In a study of migrant workers in Michigan, the average amount of time spent workers together as a family was only *1 hour per week*.<sup>73</sup> Other low-income working families spend, on average, 37 hours together; highlighting the unique demands and stressors for farm worker families.<sup>73</sup> This deficit can be exacerbated for migrant families who are forced to leave children behind to be cared for

by relatives or friends while they

pursue work.

The amount of time primary caregivers spend with their child is related to the child's intellectual<sup>74</sup> and social development,<sup>75</sup> obesity risk and reduction,<sup>76</sup> depressive symptoms, and reduction in risky

Long work hours, lack of autonomy, job insecurity, and a heavy workload are also associated with adult mental health problems, and parents' mental health is believed to play a fundamental role in their children's mental and physical development.

- HEINRICH (2014)

behaviors.<sup>75</sup> Potential negative impacts of lost time between a parent and child are greater when working parents experience (1) little control over when, how, and where their work is done and 2) their job demands are high. Heinrich, who examined the link between parental employment and child wellbeing, took this concept one step further to recognize the reciprocal nature of parents' mental health on their children's mental and physical development.<sup>77</sup> These conditions define most agricultural workers' experiences. Farm workers' families are highly vulnerable to these developmental, social, and psychological challenges.

#### Stress and Fatigue Reduce Quality of Family Time

Farm workers, and working mothers in particular, who regularly work long hours are plagued by an interdependent combination of stress and fatigue while attempting to perform family responsibilities like childcare, cooking, and cleaning before and after the workday. When children of farm workers experience difficulties at school, parents experience this as an additional stressor that impacts their mental health and, subsequently, their work performance and engagement.

For families who have experienced one or more separation-reunion experiences with their children during the immigration/migration process, additional forced time apart from their children during the week can exacerbate existing feelings of depression, guilt, and family dysfunction; these feelings are mitigated for workers who have a strong support network to assist in reunifications and school transitions.<sup>80</sup> For those whose children and/or extended family are currently separated from them by distance, not being able to see them or, in some cases, know their current location/status is a source of significant stress (family-to-work conflict) for workers.<sup>72</sup>

#### Pesticide Exposure Places Families at Risk

Farm workers are exposed to pesticides at varying degrees, depending upon the nature and location of their work assignment. Farm employers are required to provide clean towels, changing areas, and emergency facilities for workers; however, reports from farm workers show that adherence to these requirements can be inconsistent and/or poorly advertised. The Workers have listed acute symptoms related to pesticide exposure to include headache, nausea, dizziness, and vomiting; while long-term outcomes include infertility, miscarriage, autoimmune diseases, kidney disease, and cancer. The location of their work assignment are required to provide clean towels, changing areas, and emergency facilities for workers; however, reports from farm workers show that adherence to these requirements can be inconsistent and/or poorly advertised.

Children are particularly vulnerable to the effects of pesticide exposure as their bodies are still in development, their metabolic systems process chemicals at a slower rate, and they engage in regular hand-to-mouth behaviors. Among children of farm workers, pesticide exposure is most commonly linked to cancer, <sup>82</sup> respiratory effects, <sup>83</sup> and cognitive impairments. <sup>84</sup> Exposure occurs through several pathways, including transference from the clothing of parents and familiar adults who work directly with pesticides (e.g., applicators) and indirect exposure through contact with plants and produce. <sup>85</sup> Most research in this area shows that children of agricultural workers have higher levels of pesticide metabolites. A study in Washington State found that 47% of children of pesticide applicators had detectable levels of pesticides in their urine, compared to 27% from a non-agricultural reference group. <sup>85</sup>

#### **Childcare Challenges Create Spillover to Worksites**

A primary concern of agricultural workers is the availability of free or affordable childcare near their worksite, especially during times when long hours are required. Obtaining affordable childcare is an issue most working parents struggle with, but the impact is more profound for these low-income, under-resourced families. Programs like Migrant Head Start<sup>86</sup> are designed to provide low-cost care to young children of farm

Before [the pandemic], when I would work in Georgia or Florida, kids would go to school, so I only had to find a little bit of time for someone to take care of her. Now, she does school in the fields.

OLGA, 31

workers but are scarce and often have a long waitlist. Without adequate daycare or family options available, many workers have no alternative but to bring their children with them to the fields, potentially exposing them to hazardous equipment, extreme weather conditions, and pesticides.<sup>73</sup> During the COVID-19 pandemic, even those whose children are typically in school were forced to bring children to work and watch them complete homework from across the worksite.<sup>87</sup>

#### Child Labor is Legal in Agriculture, and Sometimes the Only Option

Childcare challenges – resulting from low wages, scheduling issues, and/or lack of accessibility – may drive parents to bring their children to work, literally. It is not uncommon for minors on farms to supplement their household income by joining their parents to work the fields. Bullike in all other industries, it is completely legal to employ a minor of any age, with parental permission and outside of school hours, in farm work fregardless of the inherent dangers and lack of safety and health protections rife across the industry. While this is not the preferred choice for most working parents, their significant financial strain resulting from poverty-level wages, requirement to work long hours during productive seasons, and lack of compensation for mandated overtime has left few alternative options to ensure that the basic health, childcare, and resource needs of their families are met.

In 2017, Agriculture employed approximately 2.5 million children of ages 16 and younger (including those under 12 accompanying a parent). Ohildren's risk of farm work-related injury and illness is heightened by their use of mis-fitting farm equipment, handling of materials of significant weight inappropriate for their body sizes, and higher vulnerability to weather and environmental exposures. Approximately 115 children die in agricultural-related incidents annually, and approximately 12,000 experience nonfatal injuries.

## Mapping Solutions with Occupational Health and Safety

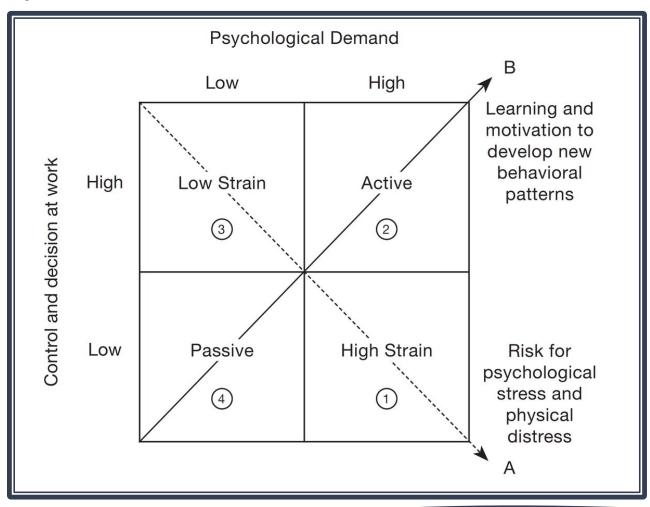
Having a sense of control and flexibility over one's work hours can buffer the impact of working long hours, resulting in fewer physical symptoms, and lower stress and burnout across industries, and reduce physical fatigue and need for recovery among agricultural workers specifically. <sup>64,92,93</sup> The Job Strain Model by Karasek (1979), demonstrates that employees experience mental strain when they are in jobs, like farm work, that are both demanding and where the worker has little to no control over their tasks and/or schedule (see Figure 2). <sup>94</sup> As physically intense and high-risk as agricultural work can be in and of itself, it is often accompanied by low job control, unpaid overtime work, and work-life conflict. Farm workers have little control over their unpaid overtime work, which can bear even more heavily on their health and well-being.

In a study of nurses, another industry with often high levels of overtime, researchers found that if overtime was involuntary, nurses reported negative effects on mental health and work engagement; for voluntary overtime, however, there results showed a beneficial effect on nurses' well-being. Similar findings have been demonstrated in other industries, in some cases even if overtime does not come with additional compensation. Another study of the impact of overtime with high and low rewards in 535 full-time postal workers found that when workers work overtime, having higher rewards lessened the odds of reporting burnout (0.73 vs 2.19 for exhaustion, 1.54 vs 3.41 for cynicism), work-life balance challenges (1.26 vs 3.03 for work-home interference, 1.23 vs 2.49 for home-work interference), poor recovery (1.50 vs 3.28) and psychosomatic complaints (0.67 vs 1.64).

Studies of agricultural workers have shown that their worry over pay and job security may lead them to work through injury and pain, <sup>37</sup> and their strenuous work is linked with higher prevalence of mental health issues, <sup>33</sup> such as depression <sup>97</sup> and suicide. <sup>38</sup> For the largely immigrant farmworker population in the United States, <sup>13</sup> these occupational stressors are compounded by worries over immigration, documentation status, and separation from family. Decades of research have validated the detrimental effects of strenuous working conditions such as long work hours and low control over work. Grzywacz et al. (2010) found that farm workers' depressive symptoms across the agricultural season followed a u-shaped pattern, with high levels of symptoms at the beginning of the season that may reflect the initial stress of migration, and again toward the end potentially reflecting the cumulative burden of seasonal work. <sup>97</sup> Depressive symptoms appeared to increase in conjunction with the increased reporting of stressors across work and life related domains.

As validated approaches from Occupational Health, such as Total Worker Health<sup>®</sup>, have shown, it is not only possible but also imperative to design work in a manner that prevents strain.<sup>98</sup> For farm workers, a key avenue for change is overtime work. Limiting overtime work can reduce exposure to demanding work conditions and allow much-

Figure 2. The Job Strain Model (Karasek, 1979)



needed time for personal rest and recovery, as well as paying farmworkers time and a half for overtime work would afford more control over their financial and life situations, and overall serve to promote safety, health, and well-being.

## Migrating Toward Progress through Overtime Legislation

Despite this status as a dangerous industry with the highest rates of mandatory overtime, workers are rarely offered overtime or hazard pay. Only California, Maryland, Maine and Minnesota offer some form of overtime pay to farmworkers, due to definitions of employee and standards established in FLSA. However, ambiguity in the extent of overtime compensation for agricultural workers remains an issue for workers seeking compensation in "covered" states. For example, Washington State enacted its Minimum Wage Act (MWA) in 2019 to enforce fair hours and compensation for workers across "blue collar" industries, including Agriculture, but the definition excluded most agricultural worker designations (e.g., farm workers, dairy workers). In 2020, a Washington Supreme Court ruling determined that dairy workers should be included in coverage under the MWA, but the fate of farm laborers has yet to be determined.

California passed Assembly Bill 1066 in 2016, which provided coverage across a broad definition of agricultural work that included employees involved in the preparation and treatment of farmland, the care and harvesting of crops, sheepherding, irrigation, and licensed crew members on commercial fishing vessels. The California phase-in schedule designated the provision of overtime pay for hours per day as well as hours per week. The overtime pay schedule started January 1, 2019 with overtime pay required after 9.5 hours per day or 55 hours per workweek. Overtime pay requirements have increased each year and will be fully rolled out on January 1, 2022 when overtime pay will be required after 8 hours per day or 40 hours per workweek. The phase-in schedule is delayed 3 years for employers with 25 or fewer employees with the first overtime pay requirements starting January 1, 2022 and in full effect January 1, 2025. For both employer size categories, once the overtime pay requirement is in full effect, they will be required to pay double the regular rate of pay after 12 hours in a workday. This phase-in schedule builds on pre-existing overtime requirements for agricultural workers defined in Wage Order 14.

In Summer 2021, Oregon legislature passed on an opportunity to consider a provision that would have extended overtime rights to farmworkers (House Bill 2358). This Bill would have expanded the definition of "agricultural worker" to farm workers across all branches including the cultivation and tillage of the soil, dairying, farming activities related to agricultural or horticultural commodities, and the raising of livestock, bees, and other animals; and would have instated an Overtime Rule. The purpose of an Overtime Rule is to require employers to compensate farm workers' time and one-half their regular rates of pay for hours worked in excess of forty per week; piece-rate workers would be paid one and one-half times the regular price for all work done on a piece-rate basis during every worked hour exceeding the typical 40 hours. Essentially the Rule would bring to farm workers the same financial protections awarded to other

occupations under the FLSA.<sup>8</sup> Potentially, its instatement would both encourage employers to reduce unnecessary overwork of workers and provide additional compensation to workers in occasions when they are required to work overtime.

### **Conclusion**



Farm workers face a multitude of challenges to achieving equitable health and safety standards compared to workers in other occupations within and outside of Agriculture. Systematic and environmental barriers have perpetuated a culture of poverty and hazardous exposures that have significantly impacted workers' short- and long-term wellness, creating a significant strain on the U.S. economy. Instating an Overtime Rule in

Oregon would be a step in the right direction, but additional work is needed to create an equitable solution to protect farm worker safety and health. Ideally, in addition to compensating farm workers' overtime pay to make it equal to the overtime requirements mandated for all other essential occupations, hourly workers would also be guaranteed to earn at least minimum wage during their typical working hours. The minimum wage in Oregon depends on job location with \$11.50 per hour in non-urban areas, \$12 per hour in standard counties, and \$13.25 per hour in the Portland metro area. The minimum wage in Oregon increases annually on July 1. Many "minimum wage exempt" workers' families are reliant on overtime work to supplement their income as a result of systemically low pay and job instability; 103 therefore, disincentivizing the allowance of overtime work by employers may further diminish families' already low incomes without additional legislation to ensure that workers are paid a living wage commensurate with standards under the FLSA.

#### References

- 1. Bannai A, Tamakoshi A. The association between long working hours and health: A systematic review of epidemiological evidence. *Scand J Work Environ Health*. 2014;40(1):5-18. doi:10.5271/sjweh.3388
- 2. Taris T, Ybema J, Beckers D, Verheijden M, Geurts S, Kompier M. Investigating the Associations among Overtime Work, Health Behaviors, and Health: A Longitudinal Study among Full-time Employees. *Int J Behav Med.* 2011;18:352-360. doi:10.1007/s12529-010-9103-z
- 3. Hughes EL, Parkes KR. Work hours and well-being: The roles of work-time control and work–family interference. *Work Stress*. 2007;21(3):264-278. doi:10.1080/02678370701667242
- 4. Golden L, Wiens-Tuers B. Mandatory Overtime Work in the United States: Who, Where, and What? :25.
- 5. Sayer LC, Gornick JC. Cross-national Variation in the Influence of Employment Hours on Child Care Time. *Eur Sociol Rev.* 2012;28(4):421-442. doi:10.1093/esr/jcr008
- 6. Kossek EE, Burke LB. Developing Occupational and Family Resilience among US Migrant Farmworkers. *Soc Res.* 2014;81(2):362-374. doi:10.1353/sor.2014.0022
- 7. Saxton DI, Stuesse A. Workers' Decompensation: Engaged Research with Injured Im/migrant Workers: Anthropology of Work Review. *Anthropol Work Rev.* 2018;39(2):65-78. doi:10.1111/awr.12147
- 8. U.S. Department of Labor. Wages and the Fair Labor Standards Act. Wage and Hour Division. Accessed July 2, 2021. https://www.dol.gov/agencies/whd/flsa
- 9. Caxaj CS, Cohen A. "I Will Not Leave My Body Here": Migrant Farmworkers' Health and Safety Amidst a Climate of Coercion. *Int J Environ Res Public Health*. 2019;16(15):2643. doi:10.3390/ijerph16152643
- 10. State of Oregon, Bureau of Labor & Industries. Minimum Wage and Overtime in Agriculture: For Employers. Oregon Bureau of Labor & Industries. Accessed July 2, 2021. https://www.oregon.gov/boli/employers/Pages/minimum-wage-and-overtime-in-agriculture.aspx
- 11. Farmworker Justice. Overtime map. Farmworker Justice. Accessed July 8, 2021. https://www.farmworkerjustice.org/overtime-map/
- 12. Jordan M. Farmworkers, Mostly Undocumented, Become 'Essential' During Pandemic. *The New York Times*. https://www.nytimes.com/2020/04/02/us/coronavirus-undocumented-immigrant-farmworkers-agriculture.html. Published April 2, 2020. Accessed July 2, 2021.
- 13. U.S. Department of Agriculture, Economic Research Service. Ag and Food Sectors and the Economy. Ag and Food Statistics: Charting the Essentials. Published June 2, 2021. Accessed July 2, 2021. https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/
- 14. Rahe M. *Estimates of Migrant and Seasonal Farmworkers in Agriculture, 2018 Update.* Oregon State University Extension Service; 2018:1-17. Accessed July 8, 2021.

- https://www.ohdc.org/uploads/1/1/2/4/11243168/05-24-18-awhft-oregon-msfw-enumeration-study.pdf
- 15. Klocker N, Dun O, Head L, Gopal A. Exploring migrants' knowledge and skill in seasonal farm work: more than labouring bodies. *Agric Hum Values*. 2020;37(2):463-478. doi:10.1007/s10460-019-10001-y
- 16. Tigchelaar M, Battisti DS, Spector JT. Work adaptations insufficient to address growing heat risk for U.S. agricultural workers. *Environ Res Lett.* 2020;15(9):094035. doi:10.1088/1748-9326/ab86f4
- 17. Arcury TA, Quandt SA. *Latinx Farmworkers in the Eastern United States: Health, Safety, and Justice.* Springer Nature; 2020.
- 18. Goldberg J. Oregon farmworker dies at worksite during heat wave. *Oregonian/OregonLive*. https://www.oregonlive.com/business/2021/06/oregonfarmworker-dies-during-heat-wave.html. Published June 29, 2021. Accessed July 4, 2021.
- 19. Jackson LL, Rosenberg HR. Preventing Heat-Related Illness Among Agricultural Workers. *J Agromedicine*. 2010;15(3):200-215. doi:10.1080/1059924X.2010.487021
- 20. NIOSH. Agricultural Safety | NIOSH | CDC. CDC. Published October 30, 2020. Accessed July 5, 2021. https://www.cdc.gov/niosh/topics/aginjury/default.html
- 21. Fan M, Pena AA. Do minimum wage laws affect those who are not covered? Evidence from agricultural and non-agricultural workers. Tumen S, ed. *PLOS ONE*. 2019;14(10):e0221935. doi:10.1371/journal.pone.0221935
- 22. U.S. Bureau of Labor Statistics. Agricultural Workers: Occupational Outlook Handbook. Accessed July 5, 2021. https://www.bls.gov/ooh/farming-fishing-and-forestry/agricultural-workers.htm
- 23. Boggess B, Bogue HO. The health of U.S. agricultural worker families: A descriptive study of over 790,000 migratory and seasonal agricultural workers and dependents. *J Health Care Poor Underserved*. 2016;27(2):778-792. doi:10.1353/hpu.2016.0089
- 24. Moreno G, Morales LS, Isiordia M, et al. Latinos With Diabetes and Food Insecurity in an Agricultural Community. *Med Care*. 2015;53(5):423-429. doi:10.1097/MLR.000000000000348
- 25. Villarejo D, McCurdy SA, Bade B, Samuels S, Lighthall D, Williams D. The health of California's immigrant hired farmworkers. *Am J Ind Med.* 2010;53(4):387-397. doi:10.1002/ajim.20796
- 26. Reiter KL, Noles M, Pink GH. Uncompensated Care Burden May Mean Financial Vulnerability For Rural Hospitals In States That Did Not Expand Medicaid. *Health Aff (Millwood)*. 2015;34(10):1721-1729. doi:10.1377/hlthaff.2014.1340
- 27. R. H. Rautiainen, S. J. Reynolds. Mortality and Morbidity in Agriculture in the United States. *J Agric Saf Health.* 2002;8(3):259-276. doi:10.13031/2013.9054
- 28. Kirkhorn SR, Earle-Richardson G, Banks RJ. Ergonomic Risks and Musculoskeletal Disorders in Production Agriculture: Recommendations for Effective Research to Practice. *J Agromedicine*. 2010;15(3):281-299. doi:10.1080/1059924X.2010.488618

- 29. Lee S, Buxton OM, Andel R, Almeida DM. Bidirectional associations of sleep with cognitive interference in employees' work days. *Sleep Health*. 2019;5(3):298-308. doi:10.1016/j.sleh.2019.01.007
- 30. Scribani M, Wyckoff S, Jenkins P, Bauer H, Earle-Richardson G. Migrant and seasonal crop worker injury and illness across the northeast: Northeast Migrant Occupational Morbidity. *Am J Ind Med.* 2013;56(8):845-855. doi:10.1002/ajim.22150
- 31. Xiao H, McCurdy SA, Stoecklin-Marois MT, Li C-S, Schenker MB. Agricultural work and chronic musculoskeletal pain among latino farm workers: The MICASA study. *Am J Ind Med.* 2013;56(2):216-225. doi:10.1002/ajim.22118
- 32. Dianat I, Afshari D, Sarmasti N, Sangdeh MS, Azaddel R. Work posture, working conditions and musculoskeletal outcomes in agricultural workers. *Int J Ind Ergon*. 2020;77:102941. doi:10.1016/j.ergon.2020.102941
- 33. Daghagh Yazd, Wheeler, Zuo. Key Risk Factors Affecting Farmers' Mental Health: A Systematic Review. *Int J Environ Res Public Health*. 2019;16(23):4849. doi:10.3390/ijerph16234849
- 34. Crain R, Grzywacz JG, Schwantes M, Isom S, Quandt SA, Arcury TA. Correlates of Mental Health Among Latino Farmworkers in North Carolina: Farmworker Mental Health. *J Rural Health*. 2012;28(3):277-285. doi:10.1111/j.1748-0361.2011.00401.x
- 35. Hovey JD, Magaña C. Acculturative stress, anxiety, and depression among Mexican immigrant farmworkers in the Midwest United States. *J Immigr Health*. 2000;2(3):119-131.
- 36. Grzywacz JG, Alterman T, Gabbard S, et al. Job Control, Psychological Demand, and Farmworker Health: Evidence From the National Agricultural Workers Survey. *J Occup Environ Med.* 2014;56(1):66-71. doi:10.1097/JOM.0000000000000005
- 37. Liebman AK, Juarez-Carrillo PM, Reyes IAC, Keifer MC. Immigrant dairy workers' perceptions of health and safety on the farm in America's Heartland: Immigrant Farm Workers' Perceptions on Health and Safety. *Am J Ind Med.* 2016;59(3):227-235. doi:10.1002/ajim.22538
- 38. Ringgenberg W, Peek-Asa C, Donham K, Ramirez M. Trends and Characteristics of Occupational Suicide and Homicide in Farmers and Agriculture Workers, 1992-2010: Suicide and Homicide in Farmers and Ag Workers. *J Rural Health*. 2018;34(3):246-253. doi:10.1111/jrh.12245
- 39. Peterson C, Sussell A, Li J, Schumacher PK, Yeoman K, Stone DM. Suicide rates by industry and occupation—National Violent Death Reporting System, 32 states, 2016. *Morb Mortal Wkly Rep.* 2020;69(3):57.
- 40. Townsend MJ, Kyle TK, Stanford FC. Outcomes of COVID-19: disparities in obesity and by ethnicity/race. Published online 2020.
- 41. Gold JA, Rossen LM, Ahmad FB, et al. Race, ethnicity, and age trends in persons who died from COVID-19—United States, May–August 2020. *Morb Mortal Wkly Rep.* 2020;69(42):1517.
- 42. Smith AR. Emergency Department Visits for COVID-19 by Race and Ethnicity—13 States, October–December 2020. *MMWR Morb Mortal Wkly Rep.* 2021;70.

- 43. Fielding-Miller RK, Sundaram ME, Brouwer K. Social determinants of COVID-19 mortality at the county level. *PloS One*. 2020;15(10):e0240151.
- 44. Handal AJ, Iglesias-Ríos L, Fleming PJ, Valentín-Cortés MA, O'Neill MS. "Essential" but Expendable: Farmworkers During the COVID-19 Pandemic—The Michigan Farmworker Project. Published online 2020.
- 45. Oregon OSHA, Department of Consumer and Business Services. Changes to Rules Addressing the COVID-19 Workplace Requirements for Employer-Provided Labor Housing. Published online June 30, 2021. Accessed July 8, 2021. https://osha.oregon.gov/OSHARules/adopted/2021/ao4-2021-letter-cov19-laborhousing.pdf
- 46. Oregon OSHA. Temporary Oregon rule addresses COVID-19 in employer-provided housing, farm operations. 2020 News | News Releases by Oregon OSHA. Published April 28, 2020. Accessed July 8, 2021. https://osha.oregon.gov/news/2020/Pages/nr2020-14.aspx
- 47. Thomas CM, Liebman AK, Galván A, Kirsch JD, Stauffer WM. Ensuring COVID-19 Vaccines for Migrant and Immigrant Farmworkers. *Am J Trop Med Hyg*. 2021;104(6):1963.
- 48. Matthew OO, Monaghan PF, Luque JS. The Novel Coronavirus and Undocumented Farmworkers in the United States. *NEW Solut J Environ Occup Health Policy*. 2021;31(1):9-15.
- 49. Bureau of Labor Statistics. Economic News Release: Employer-Reported Workplace Injury and Illness, 2018. *US Dep Labor*. Published online November 7, 2019.
- 50. Central Services Division, Oregon Department of Consumer and Business Services. Table 19. Accepted disabling claims by occupation and accident or exposure event, Oregon 2019. Published online November 2020. http://www.cbs.state.or.us/external/imd/rasums/2055t/19web/table19.pdf
- 51. Brossoit RM, Crain TL, Leslie JJ, Hammer LB, Truxillo DM, Bodner TE. The effects of sleep on workplace cognitive failure and safety. *J Occup Health Psychol*. 2019;24(4):411-422. doi:10.1037/ocp0000139
- 52. Bronkhorst B. Behaving safely under pressure: The effects of job demands, resources, and safety climate on employee physical and psychosocial safety behavior. *J Safety Res.* 2015;55:63-72. doi:10.1016/j.jsr.2015.09.002
- 53. Nahrgang JD, Morgeson FP, Hofmann DA. Safety at work: A meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *J Appl Psychol*. 2011;96(1):71-94. doi:10.1037/a0021484
- 54. Sinclair RR, Sears LE, Probst T, Zajack M. A multilevel model of economic stress and employee well-being. In: *Contemporary Occupational Health Psychology: Global Perspectives on Research and Practice, Vol 1.* Wiley Blackwell; 2010:1-20. doi:10.1002/9780470661550.ch1
- 55. Leigh JP, McCurdy SA. Costs of Occupational Injuries in Agriculture. *Public Health Rep.* 2001;116:14.

- 56. Leigh JP, Du J, McCurdy SA. An estimate of the U.S. government's undercount of nonfatal occupational injuries and illnesses in agriculture. *Ann Epidemiol*. 2014;24(4):254-259. doi:10.1016/j.annepidem.2014.01.006
- 57. van der Hulst M. Long workhours and health. *Scand J Work Environ Health*. 2003;29(3):171-188. doi:10.5271/sjweh.720
- 58. Wong K, Chan AHS, Ngan SC. The Effect of Long Working Hours and Overtime on Occupational Health: A Meta-Analysis of Evidence from 1998 to 2018. *Int J Environ Res Public Health*. 2019;16(12):2102. doi:10.3390/ijerph16122102
- 59. Pega F, Náfrádi B, Momen NC, et al. Global, regional, and national burdens of ischemic heart disease and stroke attributable to exposure to long working hours for 194 countries, 2000–2016: A systematic analysis from the WHO/ILO Joint Estimates of the Work-related Burden of Disease and Injury. *Environ Int*. 2021;154:106595. doi:10.1016/j.envint.2021.106595
- 60. Caruso CC, Hitchcock EM, Dick RB, Russo JM, Schmit JM. *Overtime and Extended Work Shifts: Recent Findings on Illnesses, Injuries and Health Behaviors.* U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health; 2004. doi:10.26616/NIOSHPUB2004143
- 61. Virtanen M, Ferrie JE, Gimeno D, et al. Long Working Hours and Sleep Disturbances: The Whitehall II Prospective Cohort Study. *Sleep*. 2009;32(6):737-745. doi:10.1093/sleep/32.6.737
- 62. Dembe AE. The impact of overtime and long work hours on occupational injuries and illnesses: new evidence from the United States. *Occup Environ Med*. 2005;62(9):588-597. doi:10.1136/oem.2004.016667
- 63. Conway SH, Pompeii LA, Gimeno Ruiz de Porras D, Follis JL, Roberts RE. The Identification of a Threshold of Long Work Hours for Predicting Elevated Risks of Adverse Health Outcomes. *Am J Epidemiol*. 2017;186(2):173-183. doi:10.1093/aje/kwx003
- 64. Ramos AK, McGinley M, Carlo G. Fatigue and the Need for Recovery among Latino/a Immigrant Cattle Feedyard Workers. *J Agromedicine*. 2021;26(1):47-58. doi:10.1080/1059924X.2020.1845894
- 65. Cunningham TR, Guerin RJ. Work-related Fatigue: A Hazard for Vulnerable Workers (Extended version). Working Hours, Sleep, & Fatigue Forum. Published May 22, 2019.

  https://www.cdc.gov/niosh/tonics/workschedules/2019abstracts/yulnopulations2.htm
  - $https://www.cdc.gov/niosh/topics/workschedules/2019 abstracts/vulpopulations 2. htm \\ l$
- 66. Ricci JA, Chee E, Lorandeau AL, Berger J. Fatigue in the U.S. Workforce: Prevalence and Implications for Lost Productive Work Time: *J Occup Environ Med.* 2007;49(1):1-10. doi:10.1097/01.jom.0000249782.60321.2a
- 67. Gingerich SB, Seaverson ELD, Anderson DR. Association Between Sleep and Productivity Loss Among 598 676 Employees From Multiple Industries. *Am J Health Promot*. 2018;32(4):1091-1094. doi:10.1177/0890117117722517

- 68. Siu K-C, Huang C-K, Beacom M, Bista S, Rautiainen R. The Association of Sleep Loss and Balance Stability in Farmers. *J Agromedicine*. 2015;20(3):327-331. doi:10.1080/1059924X.2015.1042615
- 69. Shockey TM, Luckhaupt SE, Groenewold MR, Lu M-L. Frequent Exertion and Frequent Standing at Work, by Industry and Occupation Group United States, 2015. MMWR Morb Mortal Wkly Rep. 2018;67(1):1-6. doi:10.15585/mmwr.mm6701a1
- 70. Baumert BO, Carnes MU, Hoppin JA, et al. Sleep apnea and pesticide exposure in a study of US farmers. *Sleep Health*. 2018;4(1):20-26. doi:10.1016/j.sleh.2017.08.006
- 71. Shipp EM, Cooper SP, del Junco DJ, et al. Chronic Back Pain and Associated Work and Non-Work Variables Among Farmworkers from Starr County, Texas. *J Agromedicine*. 2009;14(1):22-32. doi:10.1080/10599240802612539
- 72. Winkelman S, Chaney E, Bethel J. Stress, Depression and Coping among Latino Migrant and Seasonal Farmworkers. *Int J Environ Res Public Health*. 2013;10(5):1815-1830. doi:10.3390/ijerph10051815
- 73. Kossek EE, Meece D, Barratt ME, Prince BE. US Latino migrant farm workers: Managing acculturative stress and conserving work-family resources. *Work Fam Int Res Perspect*. Published online 2005:47-70.
- 74. Cooksey EC, Fondell MM. Spending time with his kids: Effects of family structure on fathers' and children's lives. *J Marriage Fam*. Published online 1996:693-707.
- 75. Crouter AC. Processes linking families and work: Implications for behavior and development in both settings. In: Parke RD, Kellam S, eds. *Exploring Family Relationships with Other Social Contexts*. Erlbaum; 1994:55-79.
- 76. Orban K, Edberg A-K, Thorngren-Jerneck K, Önnerfält J, Erlandsson L-K. Changes in parents' time use and its relationship to child obesity. *Phys Occup Ther Pediatr*. 2014;34(1):44-61.
- 77. Heinrich CJ. Parents' employment and children's wellbeing. *Future Child*. Published online 2014:121-146.
- 78. Curl CL, Meierotto L, Som Castellano RL. Understanding Challenges to Well-Being among Latina FarmWorkers in Rural Idaho Using in an Interdisciplinary, Mixed-Methods Approach. *Int J Environ Res Public Health*. 2020;18(1):169. doi:10.3390/ijerph18010169
- 79. Crouter AC, McHale SM. Work, family, and children's time: Implications for youth. In: *Work, Family, Health, and Well-Being*. Routledge; 2006:59-76.
- 80. Rusch D, Reyes K. Examining the Effects of Mexican Serial Migration and Family Separations on Acculturative Stress, Depression, and Family Functioning. *Hisp J Behav Sci.* 2013;35(2):139-158. doi:10.1177/0739986312467292
- 81. Irani T, Pierre BF, Nesbit TS. Agricultural Stakeholders' Perceptions of Occupational Health and Safety in the Southeastern U.S. Coastal States. *Int J Environ Res Public Health*. 2021;18(12):6605. doi:10.3390/ijerph18126605
- 82. Anderson LM, Diwan BA, Fear NT, Roman E. Critical windows of exposure for children's health: cancer in human epidemiological studies and neoplasms in experimental animal models. *Environ Health Perspect*. 2000;108(suppl 3):573-594.

- 83. Buralli RJ, Dultra AF, Ribeiro H. Respiratory and allergic effects in children exposed to Pesticides—A systematic review. *Int J Environ Res Public Health*. 2020;17(8):2740.
- 84. Rasoul GMA, Abou Salem ME, Mechael AA, Hendy OM, Rohlman DS, Ismail AA. Effects of occupational pesticide exposure on children applying pesticides. *Neurotoxicology*. 2008;29(5):833-838.
- 85. Loewenherz C, Fenske RA, Simcox NJ, Bellamy G, Kalman D. Biological monitoring of organophosphorus pesticide exposure among children of agricultural workers in central Washington State. *Environ Health Perspect*. 1997;105(12):1344-1353.
- 86. National Migrant & Seasonal Head Start Association. About NMSHSA. Accessed July 5, 2021. https://www.nmshsa.org/about-us/
- 87. Critchfield H, November 16 NCHN, 2020. More farmworker women are bringing their children to work during the pandemic. North Carolina Health News. Published November 16, 2020. Accessed July 5, 2021. https://www.northcarolinahealthnews.org/2020/11/16/more-farmworker-womenare-bringing-their-children-to-work-during-the-pandemic/
- 88. Vasquez Guzman CE, Hess JM, Casas N, et al. Latinx/@ immigrant inclusion trajectories: Individual agency, structural constraints, and the role of community-based organizations in immigrant mobilities. *Am J Orthopsychiatry*. 2020;90(6):772-786. doi:10.1037/ort0000507
- 89. U.S. Department of Labor, Wage and Hour Division. Child Labor Provisions of the Fair Labor Standards Act (FLSA) for Nonagricultural Occupations. Accessed July 4, 2021. https://www.dol.gov/agencies/whd/fact-sheets/43-child-labor-non-agriculture
- 90. U. S. Government Accountability. Working Children: Federal Injury Data and Compliance Strategies Could Be Strengthened. GAO@100. Accessed July 5, 2021. https://www.gao.gov/products/gao-19-26
- 91. Oregon Legislature. *Minimum Wages; Employment Conditions; Minors*. Vol ORS 653.025.; 2019. Accessed July 2, 2021. https://www.oregonlegislature.gov/bills\_laws/ors/ors653.html
- 92. Butler AB, Grzywacz JG, Ettner SL, Liu B. Workplace flexibility, self-reported health, and health care utilization. *Work Stress*. 2009;23(1):45-59. doi:10.1080/02678370902833932
- 93. Ala-Mursula L. Employee worktime control moderates the effects of job strain and effort-reward imbalance on sickness absence: the 10-town study. *J Epidemiol Community Health*. 2005;59(10):851-857. doi:10.1136/jech.2004.030924
- 94. Karasek RA. Job demands, job decision latitude, and mental strain: Implications for job redesign. *Adm Sci Q.* 1979;24(2):285-308. doi:10.2307/2392498
- 95. Watanabe M, Yamauchi K. The effect of quality of overtime work on nurses' mental health and work engagement. *J Nurs Manag.* 2018;26(6):679-688. doi:10.1111/jonm.12595
- 96. Van Der Hulst M, Geurts S. Associations between overtime and psychological health in high and low reward jobs. *Work Stress*. 2001;15(3):227-240. doi:10.1080/026783701110.1080/02678370110066580

- 97. Grzywacz JG, Quandt SA, Chen H, et al. Depressive symptoms among Latino farmworkers across the agricultural season: Structural and situational influences. *Cultur Divers Ethnic Minor Psychol.* 2010;16(3):335-343. doi:10.1037/a0019722
- 98. NIOSH. What is Total Worker Health? What is Total Worker Health? Published December 18, 2018. Accessed December 2, 2019. https://www.cdc.gov/niosh/twh/totalhealth.html
- 99. Rodman SO. Agricultural Exceptionalism in U.S. Policies and Policy Debates: A Mixed Methods Analysis. Published online March 15, 2016. Accessed July 8, 2021. https://jscholarship.library.jhu.edu/handle/1774.2/39712
- 100. Griffith KL. THE FAIR LABOR STANDARDS ACT AT 80: EVERYTHING OLD IS NEW AGAIN. *CORNELL LAW Rev.* 104:50.
- 101. Martinez-Cuevas v. DeRuyter Brothers Dairy Inc.(Washington 2020).
- 102. 81st Oregon Legislative Assembly. *House Bill 2358*. https://olis.leg.state.or.us/liz/2021R1/Downloads/MeasureDocument/HB2358/Introduc ed
- 103. Barham BL, Melo AP, Hertz T. Earnings, Wages, and Poverty Outcomes of US Farm and Low-Skill Workers. *Appl Econ Perspect Policy*. 2020;42(2):307-334. doi:10.1002/aepp.13014