

## COVID-19 Risk Factors Vary by Legal Status among Florida Crop Workers

Galcan Onel, Skyler Simnitt, Jeanne-Marie Stacciarini, and Antonio Tovar-Aguilar

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### Introduction

COVID-19, the disease caused by the novel coronavirus (SARS-CoV-2), has shaken personal and economic lives across the United States and around the world. Despite the stay-at-home orders, the number of COVID-19 deaths continues to rise at an alarming rate. At the same time, efforts to “re-open the economy” continue after stay-at-home orders have been ended. The ripple effects of COVID-19 in the United States appear to have hit different states, and even counties within a state, at different times and with varying intensity. The Northeastern states of New York and New Jersey, among the hardest hit earlier in spring 2020, have started seeing their rate of infections decrease, as states in the South and Southwest—including Florida, Alabama, Arizona and Texas—are experiencing increasing rates of new COVID-19 cases as summer 2020 progresses (Bosman and Smith, 2020). In Florida, an outbreak among crop workers has contributed to the recent uptick in COVID-19 cases, renewing concerns about the safety of farmworkers as well as the sustainability of the food supply during the pandemic (Mazzei, 2020).

Florida is one of the top crop-producing states in the country, with over 77% of the state’s total agricultural cash receipts coming from the crop sector (U.S. Department of Agriculture, 2020a). The share of specialty crops (i.e., fruits and vegetables, tree nuts, dried fruits, horticulture and nursery crops, and floriculture) in Florida’s total agricultural cash receipts was 66% in 2017 (U.S. Department of Agriculture, 2020). Labor costs account for over 25% of the total gross cash farm income in specialty crop sectors (U.S. Department of Agriculture, 2020b). The viability of the crop sector, including the specialty crops sector, relies on sustaining a healthy labor force.

As new epidemiological data on COVID-19 continue to flow in, it becomes clear that the consequences of the

SAR-CoV-2 infection vary substantially across individuals, depending on underlying risk factors (Jordan, Adab, and Cheng, 2020). While the majority of individuals infected with SAR-CoV-2 exhibit only mild symptoms of the disease, others develop serious complications that can lead to hospitalization or even death. With no vaccine or effective treatment yet in sight, one question of interest for mitigating COVID-19 within the crop sector is whether crop workers vary in their COVID-19 risk factors. We aim to gain insights into this question using available data on the characteristics of Florida crop workers.

Our analysis suggests that COVID-19 risk factors vary across the counties of Florida and between legal status groups—specifically, between H-2A guest workers and unauthorized farmworkers. The federal H-2A guest workers program provides legal, nonimmigrant visa classification to foreign-born workers seeking to perform agricultural work of a temporary nature, typically lasting no longer than one year, for which able, willing, and qualified U.S. workers are not available. Unauthorized workers are foreign-born workers who lack proper, legal documentation to work in the United States. We discuss implications of our findings for planning targeted measures for the health and safety of both legal status groups and for keeping crop farms operational amid the battle against the new virus.

### Crop Workers Are at High Risk of Developing COVID-19 Related Complications

Using data synthesized from the National Health Interview Survey (Blewett et al., 2016) and Quarterly Census of Employment (U.S. Bureau of Labor Statistics, 2020), we examine the underlying health and social conditions of Florida and U.S. crop workers that can increase the likelihood of developing COVID-19

**Table 1. Estimated Crop Workers at Risk of Developing COVID-19 Complications Given SARS-Cov-2 Infection**

	FL Crop Workers at Risk		U.S. Crop Workers at Risk	
	Fraction	Number	Fraction	Number
By health risk factors				
Any health risk	75.1 %	33,317	83.8 %	439,076
BMI >25.5	59.5 %	26,417	67.7 %	354,500
Hypertension	21.1 %	9,354	45.9 %	83,379
Diabetes	10.5 %	4,673	10.2 %	53,673
Liver disease	6.5 %	2,890	2.3 %	12,112
Heart condition	5.3 %	2,335	4.4 %	23,009
Kidney disease	3.7 %	1,636	2.2 %	11,772
Cancer	2.5 %	1,099	3.0 %	15,680
Asthma	0.0 %	0	3.3 %	17,541
Any health risk, except BMI>25.5	55.4 %	24,581	51.4 %	269,292
Over 60, any health risk	16.0 %	7,088	17.1 %	89,592
By social risk factors:	Fraction	Number	Fraction	Number
History of smoking	29.7 %	13,199	31.2 %	163,700
No insurance	23.5 %	10,426	23.0 %	120,518
Can't afford care	4.8 %	2,130	5.9 %	30,947
Male	81.0 %	35,973	72.0 %	377,171
Age 40 or above	57.1 %	25,354	57.3 %	300,102
Age 60 or above	18.0 %	8,002	17.7 %	92,493

Sources: Compiled from Maher et al. (2020).

complications, given infection with the virus (Maher et al., 2020).

Table 1 suggests that 75.1% of crop workers in Florida (33,317 workers) and 83.8% of U.S. crop workers (439,076 workers) have at least one underlying health condition that puts them at risk of developing COVID-19 complications if they are infected with SAR-CoV-2. A common perception is that a typical crop worker should be in a good state of fitness due to the physical demands of their farm jobs. However, this perception does not appear to hold for either Florida or U.S. crop workers, with 59.5% of Florida crop workers and 67.7% of U.S. crop workers at risk due to a body mass index (BMI) over 25.5 (i.e., overweight). Excluding the high BMI, the fraction of crop production workers at risk of developing COVID-19 complications decreases from 75.1% to 55.4% in Florida, and from 83.3% to 51.4% in the United States. Compared to the U.S. average, Florida crop workers have a higher COVID-19 risk due to diabetes, liver disease, heart condition, and kidney disease but a lower risk due to hypertension, cancer, and asthma.

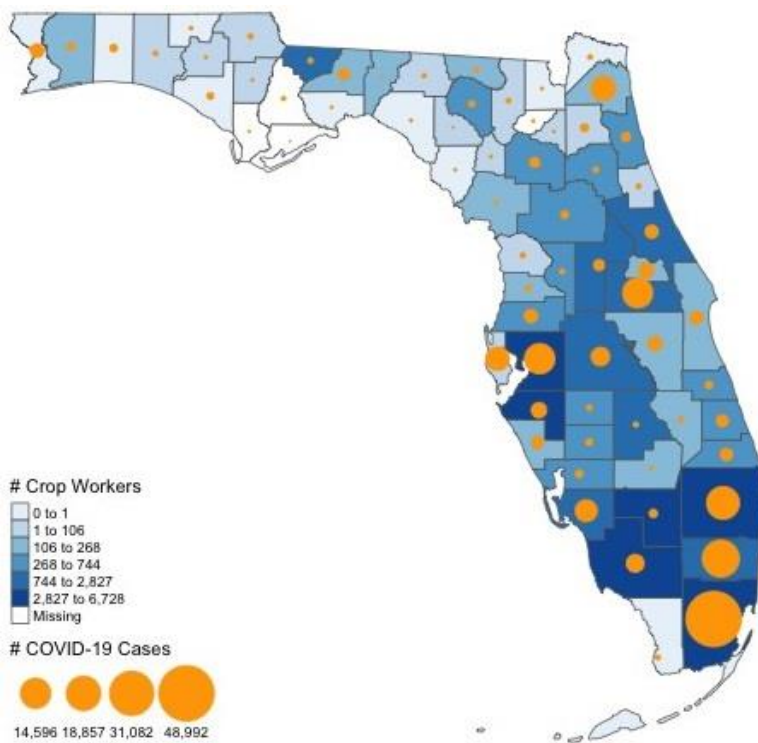
Table 1 also reports social risk factors of crop production workers for developing COVID-19 complications given infection. Scientists agree that being older and male are among the top risk factors for developing a more serious illness after contracting SARS-CoV-2. According to data in Table 1, higher percentages of crop production workers are male (81%) in Florida than in the United States. The age distribution of crop production workers is comparable in Florida (18% at age 60 or above) and in

the United States (17.7% at 60 or above). The fraction of crop production workers who report no access to health care is similar in Florida (28.3%) and in the United States (28.9%). A history of smoking among crop production workers is also comparable between Florida (29.7%) and the United States (31.2%), with slightly fewer smokers among Florida workers. Current scientific knowledge of the virus does not allow predicting exactly who will become seriously ill due to COVID-19. However, the data in Table 1, overall, suggest that crop workers in Florida and the United States are at high risk of developing complications due to underlying health and social risk factors.

## COVID-19 Spreads across Agricultural Counties of Florida

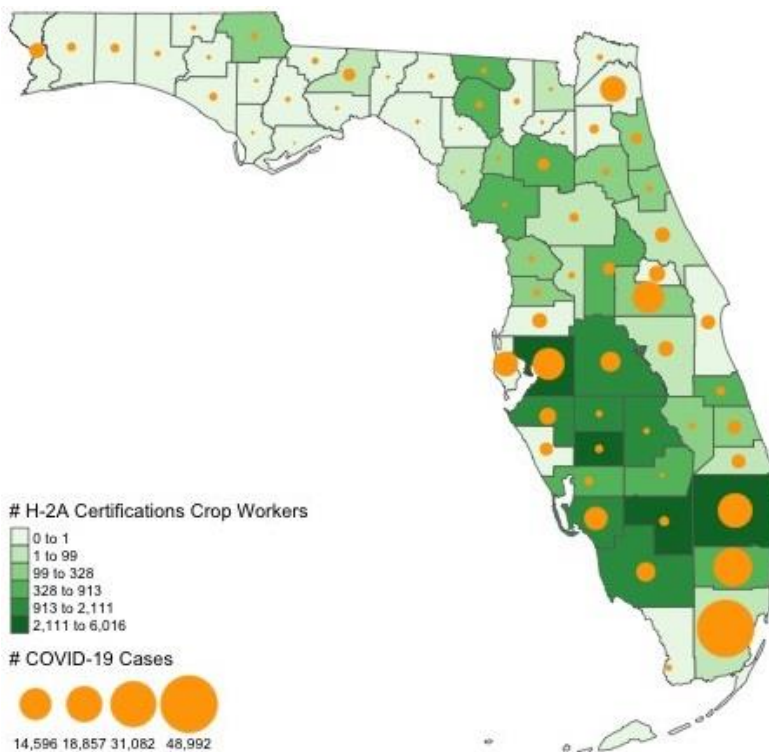
According to the Centers for Disease Control and Prevention (CDC), the SARS-CoV-2 mainly transmits from person to person through respiratory droplets produced by coughing, sneezing, or talking (CDC, 2020). Therefore, one of the most important risk factors for contracting the virus is proximity to locations with a high number of infections. Figure 1 contains mapped data on county-level numbers of crop workers reported in the Quarterly Census of Employment and Wages (QCEW) (U.S. Bureau of Labor Statistics, 2020), along with total COVID-19 cases in each of the counties in Florida (Florida Department of Health, 2020). The QCEW only reports crop workers covered by state unemployment insurance. In Florida, QCEW excludes H-2A guest workers, as employers of H-2A workers are exempt from paying state unemployment insurance (Roka et al.,

**Figure 1. Spread of COVID-19 across Florida Counties with Most Crop Workers (excluding H-2A workers)**



Sources: Authors' calculations based on U.S. Bureau of Labor Statistics (2020) and Florida Department of Health (2020) data (COVID-19 cases were last updated on 7.6.2020).

**Figure 2. Spread of COVID-19 across Florida Counties with Most H-2A Certifications**



Source: Authors' calculations based on U.S. Department of Labor (2020b) and Florida Department of Health (2020) data (COVID-19 cases were last updated on 7.6.2020).

2017). As such, QCEW data in Figure 1 can approximate only domestic crop production workers, some of whom are likely unauthorized. To examine the spatial distribution of H-2A crop workers in Florida compared to the intensity of county-level total COVID-19 cases, we use the data on the number of H-2A certifications in Figure 2.

As agricultural employers experience challenges in hiring domestic workers, the H-2A guest worker program gains popularity despite the high costs and administrative complexities involved in utilizing the program (Onel and Farnsworth, 2016; Roka, Simnitt and Farnsworth, 2017; Luckstead and Devadoss, 2019). The number of H-2A visas issued to foreign-born workers has increased every year since 2011. In fiscal year 2019, 204,801 visas were issued by the U.S. Department of State (2020) and 257,667 positions were certified by the U.S. Department of Labor (2020a). In 2019, Florida ranked first among all states requesting H-2A positions, with over 33,000 H-2A positions certified for work in Florida (U.S. Department of Labor, 2020a). The existence of a large specialty crops sector, which is characterized by labor-intensive tasks, is a contributing factor for the quick adoption of the H-2A program in Florida.

The darker shades in Figures 1 and 2 correspond to Florida counties with higher crop worker populations. Accordingly, counties with the highest numbers of domestic crop workers are Miami-Dade, Palm Beach, Collier, Hendry, Hillsborough, and Manatee (Figure 1); four of those six counties also are among the ten counties with the highest number of COVID-19 cases. Counties with the most H-2A crop workers are Palm Beach, Hendry, DeSoto, and Hillsborough (Figure 2); two of those four counties are among the ten counties with the highest number of COVID-19 cases.

## Workers' Legal Status Matters in the Battle to Help Farmworkers Control COVID-19

The National Agricultural Workers Survey (NAWS), which has been the main data source for the socioeconomic characteristics and legal status of farmworkers since the 1990s, excludes information on H-2A guest workers—an emerging legal status group among farmworkers (U.S. Department of Labor, 2018). With H-2A hires growing exponentially in recent years, information provided by the NAWS is becoming increasingly limited. To this end, we utilize a unique dataset, the Florida Citrus Harvesters Survey (FCHS) (Onel, 2016), to compare demographic, housing, commute, and work variables for H-2A and unauthorized workers, to the extent that these variables are relevant for COVID-19 risks. The FCHS was conducted during the 2016 spring harvesting season by a team of researchers and community partners from the University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS), and the Farmworker Association of Florida

(FWAF). More than 300 citrus workers were interviewed across seven Florida counties: Collier, DeSoto, Hendry, Highlands, Indian River, Okeechobee, Polk, and Pasco. While the majority of surveyed workers (about 80%) were in the United States on H-2A visas, nearly 15% of the total number of farmworkers surveyed did not have legal authorization to work in the United States (Simnitt, Onel, and Farnsworth, 2017). The FCHS asked citrus harvesters demographic and economic questions similar to those in the NAWS but excluded the NAWS health questions. While the FCHS data are not representative of the entire Florida farmworker population, they provide rare information on a relatively unknown group of workers—the H-2A guest workers.

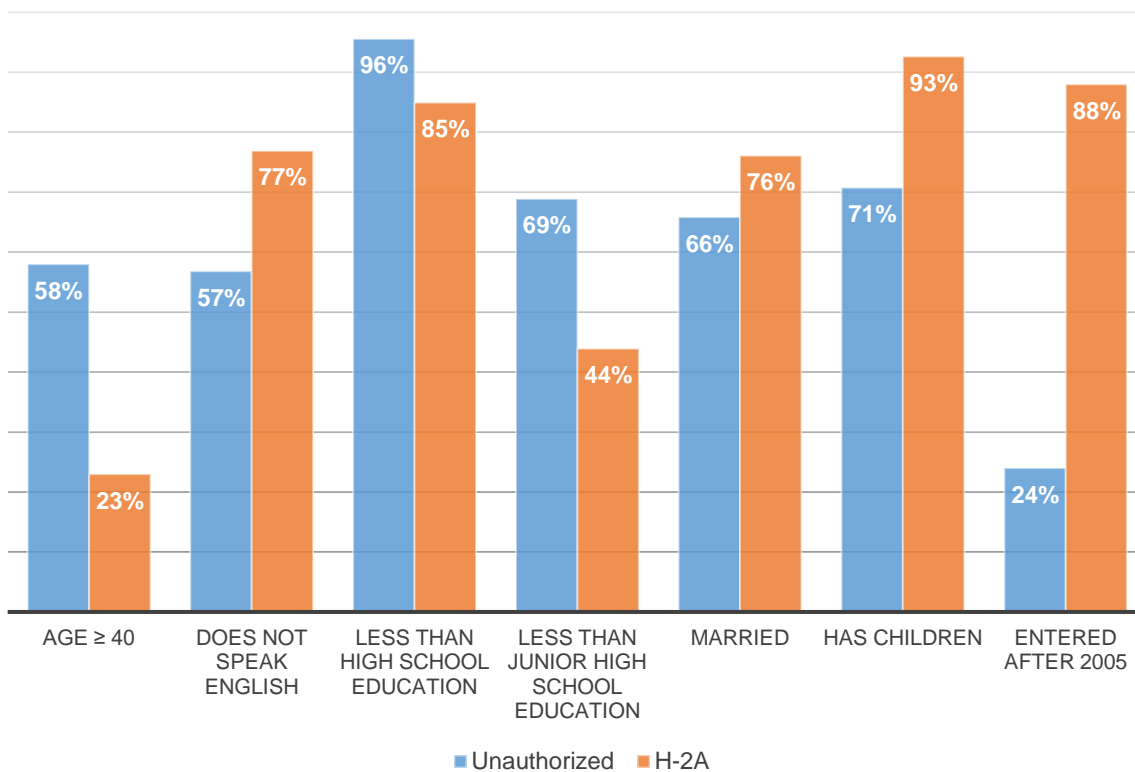
Figure 3 presents a comparison of the demographic variables for H-2A and unauthorized citrus workers in Florida. Almost all workers in the sample were male. The majority of the workers were married (66% of unauthorized workers and 76% of H-2A workers) and had dependent (minor-aged) children (71% of unauthorized workers and 93% of H-2A workers). Unlike the H-2A workers, the unauthorized workers typically lived with their families in Florida, increasing the likelihood of contracting and spreading the disease within these households. Another implication of COVID-19 for unauthorized workers with young children is that school closures may force them to stay at home with their children during the pandemic, shrinking the available pool of farm workers (Costa and Martin, 2020). There was a significant gap in age between the two legal groups in the survey, where 58% of unauthorized workers were 40 years old or above compared to only 23% of H-2A workers. This is not surprising, as most unauthorized immigrants in the United States are settled migrants, who have been in the country for over 10 years. As such, they are aging (U.S. Department of Agriculture, 2020b). Time of first U.S. entry in the last column of Figure 3 confirms this, showing that only 24% of unauthorized citrus workers entered the United States after 2005 (i.e., within 10 years of the survey year, 2016) compared to 88% of H-2A workers. These two findings have significant implications for relative COVID-19 risks between the two legal groups. Unauthorized workers are at higher risk of serious COVID-19 illness as they are significantly older than H-2A workers. Language skills and education level are among other important social risk factors for COVID-19. Figure 3 illustrates that 57% of unauthorized workers and 77% of H-2A workers did not speak any English. In addition, 69% of unauthorized workers and 44% of H-2A workers had less than a junior high school education. These findings highlight the need for and importance of outreach efforts to educate workers about preventative measures for COVID-19.

Figure 4 presents housing and commute data that are relevant for mitigating COVID-19 among workers. A significant portion of Florida citrus workers (89% of unauthorized workers and 99% of H-2A workers) commuted daily to their worksite by bus. However, time



**Figure 3. Demographic Characteristics of H-2A and Unauthorized Citrus Workers (Florida, 2016)**

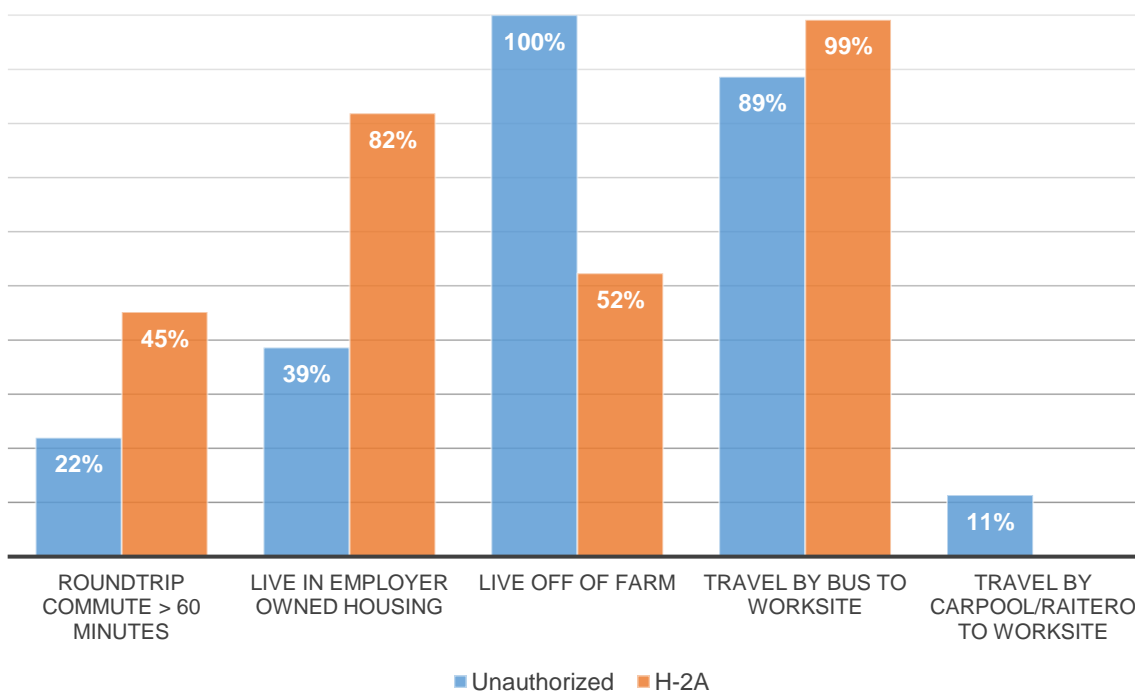
### Demographic Characteristics



Source: Onel (2016).

**Figure 4. Housing and Commute Status of H-2A and Unauthorized Citrus Workers (Florida, 2016)**

### Housing and Commute



Source: Onel (2016).

**Table 2. Work Characteristics of H-2A and Unauthorized Citrus Workers (Florida, 2016)**

	H-2A		Unauthorized		Difference
	Average	Std. Dev.	Average	Std. Dev.	
Hourly wage	\$11.59	4.04	\$8.96	5.92	\$2.64*
Employed by farm labor contractor (%)	66.23%	7.14	95.45%	1.38	-29.23%*
Paid by piece rate (%)	95.60%	2.77	73.33%	1.71	22.27%*
Years of farm work experience (in U.S. only)	4.96	5.56	13.76	8.79	-8.80*
Years of farm work experience (in U.S. and abroad)	18.53	10.11	25.09	12.41	-6.56*
Monthly remittances sent home	\$823.37	372.71	\$549.38	265.39	\$273.99*

Note: The “\*\*” denotes statistically significant differences between the two legal groups.  
Source: Onel (2016).

spent for the roundtrip journey was different between the two groups of workers, with 45% of H-2A workers and 22% of unauthorized workers daily commuting more than an hour roundtrip for work. SARS-CoV-2 infection risk increases in enclosed spaces and directly correlates with time spent indoors (Mittal, Ni, and Seo, 2020). Therefore, relatively long commute times for H-2A workers on buses increase the infection risk for this group of workers. Housing data show that all unauthorized workers and about half of H-2A workers lived off the farm in 2016. Further, 82% of H-2A workers and 39% of unauthorized workers lived in employer-owned housing. The remaining H-2A housing was employer-leased housing. This implies that employers of H-2A workers have relatively more control over implementing social distancing and other preventative measures for COVID-19 at workers’ housing quarters. Employer-controlled H-2A housing could make it easier to set up strict COVID-19 testing procedures, limit workers’ contact with outsiders, and establish a dedicated space within the housing camp to isolate COVID-19 positive workers who do not need hospitalization. Employer-controlled H-2A housing could also make contact tracing easier if a worker became infected with SARS-CoV-2. On the other hand, further restricting the movement of H-2A workers could draw criticism from farm labor advocates, who already raise concerns for potential exploitation of H-2A workers.

Comparative work data in Table 2 can provide further insights on the safety of workers during the pandemic. First, H-2A citrus workers, on average, were paid higher wages (\$11.59 in 2016) compared to unauthorized workers (\$8.96 in 2016). This is expected, as the minimum wage for H-2A workers is federally set higher than the state minimum wage through the Adverse Effect Wage Rate. At a glance, this would mean that H-2A workers have higher disposable income compared to unauthorized workers. However, remittances to home country complicate this picture. H-2A workers also sent significantly more money home per month than

unauthorized workers did (Table 2). Higher remittances not only imply a reduction in workers’ disposable income for use in the United States but also indicate that H-2A workers likely have stronger ties with family in their countries of origin than unauthorized domestic workers. This is important with the recent spikes in COVID-19 cases in Mexico and South America; that is, H-2A workers—who are mostly married, have minor-aged children, and have stronger ties to their country of origin—might be more reluctant to return to U.S. farms amid the COVID-19 pandemic. Field reports from university extension faculty confirm that some H-2A workers left before the end of the harvest season to be with their families in their home countries during the pandemic (E.J. McAvoy, personal communication, March 20, 2020). On the other hand, low earnings coupled with high propensity to remit may encourage existing workers in the fields to continue working even when sick, posing a significant challenge for containing outbreaks.

The channel through which crop workers are hired is changing. For example, in 2016, almost all unauthorized citrus workers (95%) and the majority of H-2A citrus workers (66%) in Florida were hired through Farm Labor Contractors (FLCs) rather than directly by growers (Table 2). However, the proportion of workers hired by FLCs, as opposed to directly by growers, likely differs based on the specific crop and farm operation size. Whether workers are hired directly by growers or through FLCs will have implications for extension and outreach during COVID-19, as university extension agents will likely have more established relationships with growers who manage their own labor crews than with FLCs. As a result, outreach and delivery of vital COVID-19 training to FLCs would likely be more challenging. Finally, the payment scheme data in Table 2 show that H-2A and unauthorized citrus harvesters were paid overwhelmingly by piece rates (i.e., by the number of tubs of citrus fruit they picked). Piece-rate payments pose a challenge during COVID-19, where

employers need workers to be vigilant about hand hygiene and wearing masks. Workers, especially H-2A workers, may be reluctant to follow safety guidelines that would slow them down and yield fewer pieces of fruit.

## Challenges and Opportunities for Mitigating COVID-19 among Crop Workers

Reports from University of Florida extension agents indicate that growers quickly implemented several preventative measures for COVID-19. Efforts include installing handwashing stations, distributing face masks and hand sanitizers, regularly disinfecting buses in which workers commute, and providing COVID-19 educational materials to employers for developing safety protocols for workers.

There remain substantial challenges for both preventing the spread of the disease and for mitigating an outbreak once it occurs. Low levels of English language proficiency and formal education among workers emphasize the need for training materials and training sessions in workers' native languages that are culturally appropriate and accessible to workers. Florida farms are diverse, with increasing numbers of workers who speak Haitian Creole and several indigenous languages. While the extension faculty of UF/IFAS, staff of the Florida Department of Health, and members of the Farmworker Association of Florida have developed COVID-19 education materials in English, Spanish, and Haitian Creole, additional opportunities exist to expand outreach through translations in other indigenous languages. Community partnerships with the Farmworker Association of Florida and the Rural Women's Health Project can assist efforts to make educational materials relatable and culturally appropriate for each group of workers.

Federal laws require H-2A employers to provide housing at no cost for H-2A workers and "[U.S.] workers in corresponding employment" (20 CFR § 655.122(d)). Housing regulations establish the maximum occupant density in living quarters and other housing standards. Many H-2A workers share sleeping quarters and live in close proximity, making social distancing difficult. Housing related problems for mitigating the disease include the challenge of isolating infected workers, given limited space. Arranging additional housing for workers who need to be quarantined due to infection may not be feasible for most employers in a rapidly evolving environment. The daily commute to worksite adds further difficulty for containing the virus. Despite frequent disinfecting of buses, an asymptomatic worker can easily carry the virus from housing quarters to daily commute buses, given long transit times to jobs sites and difficulty with social distancing during transport.

Another significant issue during the COVID-19 pandemic relates to immigration rules. During the initial onset of COVID-19, the Department of Homeland Security (DHS,

2020) announced a temporary final rule, 85 FR 21739, relaxing certain H-2A program requirements until August 18, 2020, to help U.S. agricultural employers avoid disruptions in employment during the pandemic. The temporary rule allows certified H-2A employers to offer new contracts to H-2A workers who are already in the United States concluding their existing contracts. In addition, the rule allows H-2A workers to temporarily extend their stay in the United States beyond the three-year maximum allowable period of stay. These efforts to retain existing H-2A workers are expected to preserve up to 20,000 H-2A positions (U.S. Department of Agriculture, 2020c) but are likely not sufficient to meet the employment needs of the U.S. crop sector. As the spread of COVID-19 in Mexico and South America intensifies, new H-2A arrivals for the upcoming harvest season may be further disrupted. Agricultural employers may, therefore, need to redouble their efforts to recruit workers from the U.S. domestic labor market (Costa and Martin, 2020).

Nationally, about half of domestic seasonal farm workers are estimated to be unauthorized (U.S. Department of Labor, 2018). Since these workers lack valid Social Security numbers, they are unable to access most federal safety net programs, including the stimulus checks sent to legal residents through the Coronavirus Aid, Relief, and Economic Security Act (CARES). As discussed above, unauthorized workers are older and thus are more likely to develop COVID-19 complications requiring medical attention. However, most fear deportation in today's immigration environment and typically avoid seeking medical care or other services (Haedicke, 2020). This will hinder COVID-19 testing and contact tracing efforts among farmworkers. Unauthorized crop workers also lack health insurance (U.S. Department of Labor, 2018) and typically visit emergency rooms when clinical care is necessary. This poses a risk of overwhelming hospitals in case of a large COVID-19 outbreak. Additionally, the reluctance to seek social and medical services among immigrant farmworkers is impacted by the new Public Charge Rule, under which immigrants using (or, likely to use) Medicaid, food stamps, and other safety net programs would face greater scrutiny from immigration officials when applying for change of legal status. Paid sick leave provided through the Families First Coronavirus Response Act (HR 6201) is an exception to the Public Charge Rule, requiring private-sector (including agricultural) employers with fewer than 500 employees to provide up to two weeks of fully or partially paid sick leave for COVID-19-related reasons until the end of calendar year 2020 (Beatty et al., 2020). Both H-2A and unauthorized workers are eligible to benefit from the Families First Coronavirus Response Act, although it is not clear what proportion of employees and employers are aware of the temporary paid sick leave benefit. Out of fear of negative immigration consequences, many immigrant farmworkers may continue avoiding public benefits of any kind during the COVID-19 pandemic.

## Conclusion

COVID-19 continues spreading across Florida and the United States. Scientists expect a second wave of COVID-19 cases in fall 2020 (Xu and Li, 2020). While the spring harvest seasons for most fruit and vegetable farms in hard-hit counties of Florida have already passed the peak, worker safety concerns for the upcoming harvest season in fall 2020 are growing. With guidance from available data, the article provides insights for targeted prevention and mitigation plans for COVID-19

infections among crop workers. Similar to other sectors of the U.S. economy, COVID-19 has exposed existing weaknesses in food production systems. Disruptions to food supply chains are estimated to result in billions of dollars of revenue loss for Florida growers. While struggles to keep farms afloat financially continue, growers and policy makers are also increasingly wary about keeping the farm workforce healthy during the pandemic, as worker safety is essential for the sustainability and resilience of food supply chains.

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## For More Information

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**Author Information:** Gulcan Onel ([gulcan.onel@ufl.edu](mailto:gulcan.onel@ufl.edu)) is Assistant Professor, Food and Resource Economics Department, University of Florida, Gainesville, FL. Skyler M. Simnitt ([skyler.simnitt@usda.gov](mailto:skyler.simnitt@usda.gov)) is Economist, Economic Research Service, U.S. Department of Agriculture, Kansas City, MO. Jeanne-Marie Stacciarini ([jeannems@ufl.edu](mailto:jeannems@ufl.edu)) is Associate Professor and Assistant Dean for Diversity, Inclusion and Global Affairs, College of Nursing, University of Florida, Gainesville, FL. Antonio Tovar-Aguilar ([tonytovar@hotmail.com](mailto:tonytovar@hotmail.com)) is Interim Director, Farmworker Association of Florida, Apopka, FL.

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