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Tuberculosis and Poor Health Among Migrant and Seasonal Farmworkers in the United States

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by

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Table of Contents

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-Lucy Cummins, April 2021

Introduction

Between 2004 and 2007, cultural and medical anthropologist Peter Benson conducted 16 months of ethnographic fieldwork among migrant and seasonal farmworkers in North Carolina (Benson, 2008, 589). Summarizing his observations and experiences, Benson concluded that these US farmworkers face a particularly insidious form of prejudice and subjugation- structural violence. Paul Farmer, a physician and anthropologist who popularized that term after it was coined by liberation theologians in the 1960s, defines structural violence as social structures that "stop[s] individuals, groups, and societies from reaching their full potential" (Farmer b, 2006, 1686). It further brings marginalized "individuals and populations in harm's way," placing them at risk for violence in a range of forms. This violence is insidious because it often cannot be pinned on a single actor, but is perpetrated by larger social, political, and economic structures. Benson argues that the migrant and seasonal farmworkers he came to know well face "interlocking political, economic, and cultural processed involved in the continuous reproduction of structural violence" towards farmworkers because of their unique occupational status (Benson, 2008, 589). He points to "international agricultural restructuring, persistent government neglect, and cultural barriers such as stereotyping [which] collude to create a context of ethical variability in which farm labor seems undignified and deserving of squalid conditions and inadequate social response."

Decades, if not centuries of structural violence towards migrant and seasonal farmworkers in the US has built towards a public health crisis today among this uniquely vulnerable population. There are a range of health metrics to illustrate the barriers to good health that farmworkers face- from the prevalence of conditions such as diabetes, cancer, and heart disease; to sky-high rates of occupational injuries which are often left uncompensated and

untreated; to the commonality of malnutrition and obesity among adults and children in farmworker families. However, one of the most striking and least studied is the increased incidence of tuberculosis (TB) among migrant and seasonal farmworkers in the US, where the disease has long been considered a relic of the past.

The following paper will explore the prevalence of TB among migrant and seasonal farmworkers in the United States, and the systemic forces that contribute to that prevalence. Cyclical of poverty, dangerous working conditions, and barriers to healthcare overall have all led to increased risk of TB infection for farmworkers and their families. Moreover, structural violence traps these farmworkers in conditions of increased risk that have a major impact on their general health. Thus, the issue of TB is not a single issue, but one that relates to a range of social, economic, and political factors. Improving TB outcomes for farmworkers will require a dramatic reimagining of our agricultural labor system, and increased investment in the well-being of these essential workers.

Background

The US Agricultural Industry

In 2019, the agriculture and food industries contributed $1.109 trillion to the United States economy, accounting for more than five percent of the national GDP (Kassel and Morrison, 2020). Farm output alone contributed $136.1 billion to this sum. In the US today, there are approximately two million farms, each of which produces enough food in a year for an average of 166 people- for a total of 332 million individuals fed annually (Farm Bureau Federation, 2020). The agriculture and food industry employs nearly 11 percent of Americans, with 1.3 percent employed directly on farms, and as of 2012, 52 percent of land in the US is being used

for agricultural purposes (Kassel and Morrison, 2020). Though it remains a massive industry, agriculture has undergone a rapid decline in size since the start of the 20th century, due largely to the advent of technology that makes the process of farming less labor-intensive for those farms that can afford it (Dimitri et al., 2005).

Today, the narrative of agriculture in the US carries a consistent theme- the decline of smaller, family farms in favor of industrial agriculture which has made farming more efficient, helped prices to drop in grocery stores, and reduced the number of people needed to labor on farms. However, this narrative does not tell the full story, as there are still millions of people living in the US who earn their livelihood exclusively through farm work, and on which the agricultural industry depends (Student Action with Farmworkers, 2020). These are the nation's migrant and seasonal farmworkers, a group that is vital to the US economy, and indeed to the survival of those who live here, but that remains underappreciated, understudied, and often invisible.

The History of Migrant and Seasonal Farmworkers in the US

Migrant and seasonal farmworkers have played a major role in the United States economy for nearly as long as the country has been in existence. Throughout early US history, much of the population was engaged in small-scale farming, and often depended on locally hired workers during harvest and planting seasons (NCFH b, 2020). However, by the 1850s, the production levels of many US farms had increased to the point where farms chose to work with employment agencies to hire additional workers from outside the area during particularly busy seasons. Along the Eastern seaboard, these early seasonal farmworkers were often new European immigrants to the US, as well as poor African American and white citizens. On the West coast,

farmers “hired large numbers of immigrants from China, Japan, and Mexico” (NCFH b, 2020). In the aftermath of the Civil War, farmers in the Southern US turned to Native Americans and African Americans who had formerly been enslaved.

Throughout the 20th century, demand for these seasonal farm laborers continued to grow dramatically. As Americans flocked to cities in droves, the availability of local labor in rural areas fell further than it had in previous decades, exacerbating this demand (NCFH b, 2020). In 1917, as the US entered World War I and much of its potential domestic workforce was shipped overseas, Congress passed the Immigration and Nationality Act of 1917. This law was best known for the discriminatory practices it introduced to US immigration policy- barring immigrants from much of the Middle East and Southeast Asia and introducing a literacy test for those hoping to enter the country- but it did include provisions that facilitated the entry of over 73,000 Mexican citizens as farm laborers (Immigration History, 2019). Immigration from Mexico would continue to be a major source of farm labor in the aftermath of World War I- a relationship which was formalized with the adoption of the Bracero Program in 1942 (BHA, 2020). In the 32 years that the program was active, more than 4.6 million contracts were signed that allowed Mexican nationals into the US as seasonal farmworkers. In theory, these contracts guaranteed that Mexican farmworkers would be paid “at least the prevailing area wage received by native workers,” and provided free and sanitary housing, affordable meals, and free transportation as needed (BHA, 2020). In practice, though, employers were able to get away with ignoring these rules and exploiting Mexican farmworkers for cheap labor in poor conditions. Eventually, these abuses, along with public attention sparked by such exposés as the 1960 documentary *Harvest of Shame*, led to the discontinuation of the Bracero program in 1964.

Through the rest of the 20th century, laborers with temporary H2A visas took the place of many Bracero seasonal farmworkers, supplemented mainly by other Latin American immigrants- with or without documentation- and a smaller proportion of US or foreign-born workers not identifying as Latinx (NCFH b, 2020). A number of movements to improve working conditions and increase protections for migrant and seasonal farmworkers sprang up, including those led by César Chávez and Dolores Huerta. In 1983, Congress passed the Migrant and Seasonal Agricultural Workers Protection Act, which required anyone who employed migrant and seasonal farmworkers to meet minimum several requirements related to "wages, housing, transportation, disclosures, and recordkeeping" (USDL, 2020). Working and living conditions for seasonal farmworkers have improved somewhat over the past several decades as their population has grown and the US agricultural economy has become increasingly dependent on them.

Migrant and Seasonal Farmworkers in the US Today

The definition of a "migrant and seasonal farmworker" has clearly shifted significantly throughout history. Today, the Migrant Clinicians Network defines a migrant and seasonal farmworker as "an individual who is required to be absent from a permanent place of residence for the purpose of seeking remunerated employment in agricultural work" and/or an individual who is "employed in temporary farm work" on a seasonal basis (Migrant Clinicians Network, 2017). Essentially, this definition requires that the individual either be away from their home in order to perform agricultural work, that their work is temporary and varies seasonally, or both.

There are currently more than three million individuals living in the US who meet these criteria (NCFH a, 2012). Sixteen percent of these individuals met the survey criteria to be identified as "migrants," meaning that they traveled more that 75 miles for agricultural work (Migrant Clinicians Network, 2017). Eighty-four percent of migrant and seasonal farmworkers identified as seasonal workers, with "less than full-year farm employment the previous year" (Migrant Clinicians Network, 2017).

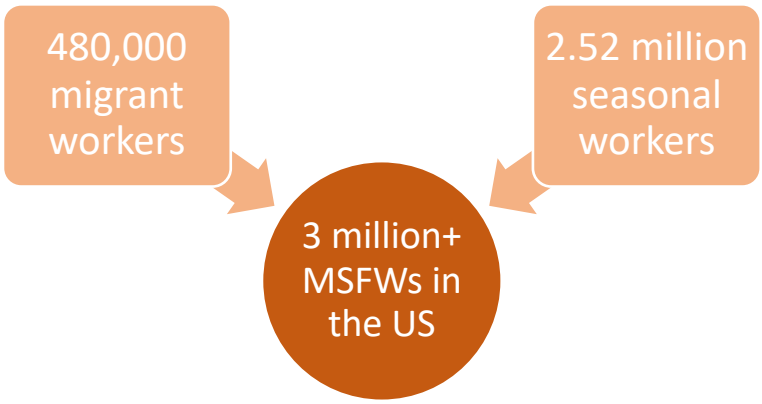

Figure 1. Migrant and/or seasonal farmworkers in the US today.

The states with the highest populations of migrant and seasonal farmworkers are California, Texas, Washington, Florida, Oregon, and North Carolina (Student Action with Farmworkers, 2020). However, migrant farmworker populations in the US are often characterized geographically in terms of three migratory streams: the Western, the Midwestern, and the Eastern (see map at right; Deka, 2019, 8). The crops that migrant and seasonal farmworkers are involved in harvesting vary by stream, but traveling along these streams allows them to maximize their employment prospects through all four seasons.

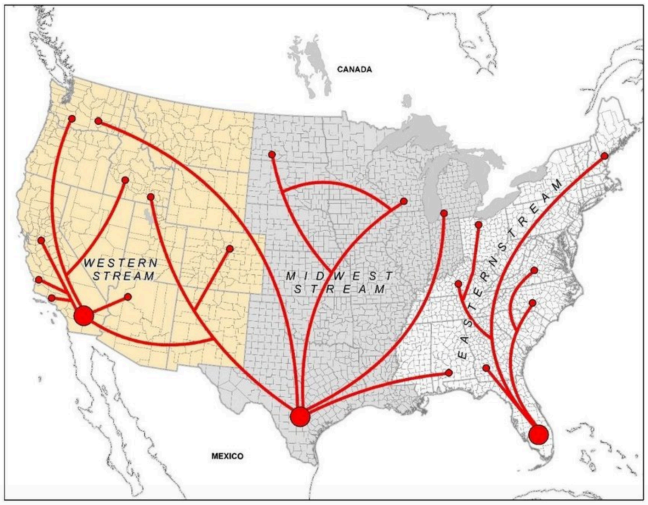

Figure 2. Major farmworker migration streams in the US (Deka, 2019).

Migrant and seasonal farmworkers can be a difficult group to study given their typically mobile lifestyle, limited English proficiency, and potential fears related to their citizenship status (Migrant Clinicians Network, 2017). However, the National Agricultural Workers Survey attempts every few years to collect representative data on this group. According to the most recent survey data, the average age of a migrant and seasonal farmworker in the US is 36, and the large majority (78 percent) are male (NCFH a, 2012). Seventy-two percent of all migrant and seasonal farmworkers surveyed were not born in the US. Sixty-eight percent were born in Mexico, three percent in countries in Central America, and one percent were born elsewhere.

Characteristics of the US Migrant and Seasonal Farmworker Population	
Mean Age	36
% Male	78
% Foreign-Born	72
% Undocumented	53
% US Citizens	25
% Residents for 5+ Years	74
% with Limited English Proficiency	70
% High School Graduates	28
Mean Income Range (in USD)	12,500-14,999

Table 1. Demographic characteristics of US migrant and seasonal farmworkers (NCFH a, 2012).

Fifty-three percent of farmworkers are undocumented, and only 25 percent are US citizens (Student Action with Farmworkers, 2020). Of those not born in the US, though, 29 percent have lived in the US for more than 20 years, and an additional 45 percent have been residents for at least five years (NCFH a, 2012). Seventy percent speak English less than "well," with 35 percent not speaking English "at all." Further, 40 percent of migrant and seasonal farmworkers in the US do not have more than a 6th grade education, with only 28 percent having graduated high school.

Further, the average annual income for a migrant or seasonal farmworker ranged, based on the survey data, from $12,500 to $14,999.

The Health of Migrant and Seasonal Farmworkers in the US

Chronic Disease

Chronic disease is a difficult phenomenon to track and to treat among migrant and seasonal farmworkers. Today, "data on chronic diseases among farmworkers are generally based on clinic data or self-reported diagnoses and must be considered underreports" (Arcury and Quandt, 2007, 349). Given underutilization of rural clinics by migrant and seasonal farmworkers and the unreliability of self-diagnosis, it is very likely that current statistics on the prevalence of chronic diseases among farmworkers are much lower than their true values. Further, surveys of migrant and seasonal farmworker health are not frequently undertaken, and are often limited in scope. One of the few available, the California Agricultural Worker Health Survey, measured several risk factors for chronic disease among farmworkers in California. This survey found that 81 percent of male farmworkers and 76 percent of female farmworkers were either overweight or obese, a significantly higher proportion than the national average of 74 percent for men and 67 percent for women (NIH, 2017).

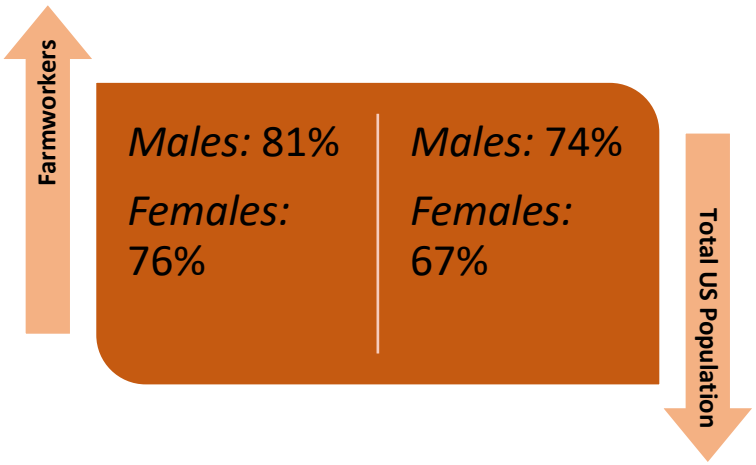

Figure 3. Proportion of overweight and obese individuals among US farmworkers relative to the total US population.

Further, rates of high cholesterol were greater among male migrant and seasonal farmworkers

than among all males in the US, and rates of high blood pressure were greater than the US average for both men and women.

Each of these factors places migrant and seasonal farmworkers at an increased risk for a number of chronic health conditions, including diabetes and heart disease. In the US, the prevalence of diabetes among Latinx Americans is more than 12 percent, relative to only 9.4 percent of the population as a whole (Migrant Clinicians Network, 2017). Beyond this increased prevalence, Latinx Americans also have a higher risk for poor outcomes of unmanaged diabetes. According to the Migrant Clinicians Network, "Latinos with diabetes are twice as likely to be admitted to a hospital for lower extremity amputations compared to non-Hispanic whites with diabetes, and are three times more likely to have end stage renal disease due to diabetes." While data about diabetes prevalence and outcomes specifically among migrant and seasonal farmworker populations are not available, it is likely that they "experience even greater rates of disease complications due to occupational, socioeconomic, cultural, and political factors." This increased risk for diabetes puts farmworkers in a dangerous position in terms of cardiovascular health. The four major risk factors for heart disease are high blood pressure, high cholesterol, obesity, and diabetes (CDC, 2019). Evidence illustrates that migrant and seasonal farmworkers in the US are at greater risk for all four of these conditions.

Migrant and seasonal farmworkers also face an elevated risk for many types of cancer relative to the general US population. Due to the nature of their work in agricultural settings, migrant farmworkers are exposed to a wide array of potential carcinogens on a daily basis. These carcinogens include "pesticides, solvents, oils, fumes, ultraviolet radiation from chronic sun exposure, and biologic agents such as human and animal viruses" (Hansen and Donohoe, 2003, 159). A study of the California branch of the United Farmworkers of America, a labor union for

farmworkers in the US, found that members had a higher prevalence of leukemia, stomach cancer, cervical cancer, and uterine cancer than the general Latinx population in California. Further, it found that these cancers were diagnosed at later stages than for their non-farmworker peers, likely because of barriers to healthcare access. These disparities do not stop at prevalence. Several reports have found that "farm laborers have increased mortality rates for cancers of the lip, stomach, skin…prostate, testes, and hematopoietic and lymphatic systems" (Hansen and Donohoe, 2003, 159). Disparities in prevalence, morbidity, and mortality of diabetes, heart disease, and cancer among migrant and seasonal farmworkers add up to an enormous burden of chronic disease in this vulnerable population.

Infectious Disease

Migrant and seasonal farmworkers are also at increased risk for a variety of infectious diseases. A number of reports have indicated that farmworkers may be up to six times more likely than the general US population to develop tuberculosis during their lifetimes (Arcury and Quandt, 2007, 349). Throughout the US, rates of tuberculin skin test or Quantiferon Gold blood test positivity for TB range between 17 and 50 percent among migrant and seasonal farmworkers, much higher than among their non-farmworker peers. Further, rates of parasitic infection are between 11 and 59 times higher than the general US population, and these infections can cause chronic anemia or malnutrition if left untreated (156). Urinary tract infections, too, are more common among both male and female farmworkers due to limited restroom facilities available near their worksites, promoting chronic urine retention.

Sexually transmitted diseases, especially HIV/AIDS, are also more common for migrant and seasonal farmworkers than others in the US. While the national prevalence rate of HIV is

approximately 0.4 percent, prevalence rates among farmworkers range from 2.6 to 13 percent across the country (157). A number of factors have been associated with this increased risk, including "poverty, limited education, mobility," and perhaps most significantly, "isolated living conditions" (Arcury and Quandt, 2007, 349). Indeed, among single male farmworkers and married male farmworkers living apart from their partners, 40 percent report using commercial sex workers, a major risk factor for contracting HIV and passing it to other female partners. Further, several studies have shown that knowledge about the importance of contraceptives in preventing STDs varies significantly across migrant and seasonal farmworker populations.

Finally, there are significant disparities in immunization rates between migrant and seasonal farmworkers and others in the US. Though there is equity in childhood vaccination rates between Latinx youth and their peers, those vaccines which require later booster shots or that should be renewed annually have poorer coverage of Latinx populations, including farmworkers, in the US (Migrant Clinicians Network, 2017). Indeed, the members of the Latinx population who are most vulnerable to poor vaccine coverage are "those marginalized because of lack of insurance, poverty, limited English proficiency, low educational attainment…and insecurity related to immigration" (Migrant Clinicians Network, 2017). These factors are all characteristic of much of the migrant and seasonal farmworker population in the US, making them especially susceptible to infections such as influenza and pertussis.

Mental Health

Research on the mental health of migrant and seasonal farmworkers has found that 40 percent meet criteria for a clinical diagnosis of depression, and that 30 percent meet the criteria for an anxiety disorder (Arcury and Quandt, 2007, 349). A study of farmworkers in North

Carolina found that 38 percent experienced “significant levels of stress” and 18.4 percent had “impairing levels of anxiety” (Deka, 2019, 28). Some of the most common stressors reported by migrant and seasonal farmworkers are the difficult physical nature of farm work, unpredictable housing as a result of frequent migration, and separation from family (Arcury and Quandt, 2007, 349). The Migrant Clinicians Network further notes that farmworkers experience “mental stress from…documentation status concerns and insecurity of work opportunities” and that “because of their mobility and often due to language and cultural differences, they sometimes lack community support as well” (2017). In combination, all of these circumstances place migrant and seasonal farmworkers at great risk for poor mental health.

Oral Health

In 2009, 62 percent of all US adults visited the dentist, but only 37.6 percent of Latinx adults within 100 percent of the federal poverty line did (Kline, 2013, 389). Further, in a study of migrant and seasonal farmworkers in central Florida, 30 percent of participants had either never seen a dentist, or had last been to the dentist more than five years ago (Kline, 2013, 392). Ninety-two and one half percent of these same farmworkers rated dental care as just as important as, or even more important than medical care. Further, the California Agricultural Workers Health Survey found that more than two-thirds of those interviewed had “at least one adverse condition, including untreated caries, periodontal disease, and missing or broken teeth” (Arcury and Quandt, 2007, 349). Poor oral health has been linked to a variety of other health impairments including diabetes, heart disease, and pancreatic cancer, as well as modified social behaviors including reduced talking and smiling (Kline, 2013, 390).

Occupational Hazards

Agricultural labor is physically demanding, arduous work. In the Binational Farmworker Health Survey, 27 percent of migrant and seasonal farmworkers reported at least one serious occupational injury during their lifetime (Arcury and Quandt, 2007, 348). Cuts, tears, fractures, and crush injuries were the most common single-event injuries reported, while pain, sprains, and dislocations were reported as a result of repetitive movements. Farm work involves equipment which can be dangerous if operational errors are made, and stressful motions such as prolonged kneeling, stooping, working with the arms above shoulder height, and whole-body vibration (Hansen and Donohoe, 2003, 158). In a cohort study of migrant and seasonal farmworkers in Texas, 12.5 occupational injuries were reported every year for every 100 full-time workers (Arcury and Quandt, 2007, 348).

Beyond direct physical injury, migrant and seasonal farmworkers are placed at risk for a number of different health issues because of the chemicals they work around on a daily basis. The Environmental Protection Agency has reported that more than 300,000 farmworkers suffer acute pesticide poisoning each year, making them the group in the US most at risk of toxic chemical injury (Hansen and Donohoe, 2003, 157). Further, extended exposure to pesticides and other toxic chemicals used in farm work can cause a variety of chronic skin diseases. The Bureau of Labor Statistics reports that farmworkers have the greatest incidence of occupational skin disease of any industrial group, at 31 out of 10,000 workers (Arcury and Quandt, 2007, 348). Other studies have found that at any given time, up to 46 percent of migrant and seasonal farmworkers report some kind of skin rash. Exposure to agricultural chemicals also increases the risk of several respiratory conditions including “allergies, asthma, hypersensitivity pneumonitis,

pulmonary fibrosis, chronic bronchitis, pulmonary edema, tracheobronchitis, and emphysema" (Hansen and Donohoe, 2003, 158).

Migrant and seasonal farmworkers also face a range of hazards to good eye health because of their work. A survey of farmworkers in North Carolina found that "41 percent...reported eye pain at some point after working in the fields all day; 43 percent, redness; 25 percent, itching; and 13 percent, blurred vision" (Arcury and Quandt, 2007, 348). These findings were corroborated by a similar survey in California, which found that after farmworkers returned from a day of work, "23 percent reported irritated itchy eyes, and 12 percent, blurred vision" (Arcury and Quandt, 2007, 348). These symptoms could be attributed to any one of a number of potential causes, including prolonged exposure to agricultural chemicals, wind, dust, allergens, or ultraviolet light.

Barriers to Good Health for Migrant and Seasonal Farmworkers

Socioeconomic

The average annual income for a migrant and seasonal farmworker ranges from $12,500 to $14,999 (NCFH a, 2012). This places most farmworkers well within 100 percent of the federal poverty line, if not below it (Health and Human Services, 2020). Poverty is most prevalent among farmworkers in the Eastern migratory stream, with 85% having incomes at or below 100 percent of the federal poverty line (Deka, 2019, 11). An additional 76 percent of those working in the Midwestern migratory stream live in poverty, followed by 73 percent of those in the Western stream. As of 2012, only 35 percent of migrant and seasonal farmworkers whose incomes were over 100 percent of the federal poverty line made a sustainable "living wage" of more than 200 percent of the federal poverty line (Deka, 2019, 12).

This chronic impoverishment presents a number of barriers to good health, and to healthcare access, for migrant and seasonal farmworkers. Only 42 percent of migrant farmworkers can afford to own and drive personal vehicles in the US, and many of those are not able to obtain US driver's licenses or automobile insurance (Arcury and Quandt, 2007, 351). This can make finding reliable transportation to make essential purchases such as groceries and hygiene items incredibly difficult, and getting to a clinic for regular appointments nearly impossible. Further, "at least 75 percent of farmworkers and as many as 90 percent of children in farmworker families do not have health insurance" (Arcury and Quandt, 2007, 351). Another study of migrant and seasonal farmworkers in North Carolina found that, in 2017, 92 percent of adult farmworkers had no form of health insurance (Lambar and Thomas, 2019, 109). Because 72 percent of migrant and seasonal farmworkers were not born in the US, most do not qualify for assistance programs such as Medicare and Medicaid, making most healthcare services obscenely expensive. Poverty has additionally been linked to chronically high stress levels, which can lead to a variety of mental health conditions, as well as high blood pressure, heart disease, and diabetes (Conway, 2016).

Migrant and seasonal farmworkers are the primary source of most of the fresh produce available in the US, but because of their socioeconomic status are highly vulnerable to food insecurity. In Oregon, for example, 72.7 percent of all migrant farmworker households report food insecurity, relative to only 12.7 percent of all households statewide (Deka, 2019, 25). These findings were corroborated by a survey of farmworkers in central Florida, where 82.5 percent of participants reported experiencing food insecurity (Kline, 2013, 392). In Michigan, a series of dietary assessments found that 89 percent of migrant and seasonal farmworkers consumed fewer than the recommended five servings of fruits and vegetables each day (Deka, 2019, 26). In the

central Florida survey, further ethnographic data was collected, and migrant farmworker participants explained that when money is limited, purchasing food must be prioritized over paying for healthcare (Kline, 2013, 392). Still, others emphasized that the availability of work is a major limiting factor in their ability to afford food at all, with some only being able to find paid work for "2-3 hours a day, 2-3 days a week" in the agricultural off-seasons. When money to buy food is limited, nutrient-poor foods that are high in fats and sugars become an attractive option due to their low cost (Kline, 2013, 394). When these are the only foods available to eat in food-insecure households, the risk for serious health conditions such as obesity, diabetes, and heart disease as well as poor oral health can skyrocket. Wages that leave migrant farmworkers and their families vulnerable to food insecurity, and without reliable transportation or health insurance, are a form of structural violence against them.

Occupational

As detailed in the previous section, the labor that migrant and seasonal farmworkers engage in presents a number of direct threats to their health. Musculoskeletal injuries, acute chemical poisonings, respiratory illnesses, skin conditions, and chronic eye irritation are all very real possibilities. Heat stroke, heat exhaustion, and heat cramps are all also common among farmworkers due to the extended time they spend working outdoors, often with few sources of potable water available near their work sites (Hansen and Donohoe, 2003, 158). Further, only eight percent of migrant and seasonal farmworkers report having any kind of employer-provided health insurance (NCFH a, 2012). A dangerous, low-paying occupation combined with impaired access to health insurance means that the health of many migrant and seasonal farmworkers suffers because of their jobs.

There are two main laws today that protect migrant and seasonal farmworkers, and set minimum guidelines that their employers are required to meet. The first, the Fair Labor Standards Act, was originally passed in 1938 (Farmworker Justice, 2020). It set a minimum hourly wage that all employers would be required to pay their employees, and guaranteed that any hours worked beyond 40 per week would warrant extra pay. However, the Act excluded farmworkers until 1966. Today, the overtime provisions of the Fair Labor Standards Act still do not apply to farmworkers, though they work an average of 42 hours per week, with 25 percent working 50 hours or more (NCFH a, 2012). The second law that protects migrant and seasonal farmworkers in the US is the Migrant and Seasonal Agricultural Worker Protection Act, passed in 1983 (Farmworker Justice, 2020). This Act ensures that terms of an employment contract must be set before a farmworker signs it, and that any provided housing and transportation must meet federal safety guidelines. However, it does not apply to small farms, and many larger employers have started to higher farmworkers through sub-contractors in order to skirt these regulations. The lack of up to date legislation on migrant and seasonal farmworker well-being, and the number of ways that employers can successfully evade the protective legislation that does exist, mean that these already dangerous jobs become even less safe for those in the US who take them on.

Figure 4. Migrant and seasonal farmworker housing in Skagit County, WA (Wiltz, 2016).

Indeed, there are some cases where existing laws have actually made living and working conditions for migrant and seasonal farmworkers worse. After the passage of the Migrant and

Seasonal Agricultural Worker Protection Act, and as attempts to enforce its regulations around housing safety became more frequent, many employers simply stopped providing any housing for farmworkers (Hansen and Donohoe, 2003, 155). Instead, they suggested that their employees find local private housing, which is often very expensive and not federally regulated. Many of these private housing units do not have laundry facilities, so "pesticide contaminated clothing maybe washed in the same sink in which food is prepared or in the bathtub in which children are bathed" (Hansen and Donohoe, 2003, 155). Others may be overcrowded with poor ventilation and faulty plumbing, an environment which facilitates the spread of a number of infectious diseases including tuberculosis and hepatitis (see image above; Wiltz, 2016).

Legal

Fifty-three percent of migrant and seasonal farmworkers in the US today do not have legal documentation to reside in the country (Student Action with Farmworkers, 2020). For many, their lack of documentation leads them to avoid contact with individuals they do not know well because of a fear of deportation (Arcury and Quandt, 2007, 347). These individuals may include healthcare providers, especially in emergency departments and migrant and community clinics which immigration authorities have been known to monitor for potentially undocumented persons (351). Healthcare facilities in general can be a place of heightened fear around documentation status because of the paperwork they require and their almost universal financial connections to the federal government. Thus, the reasons why migrant and seasonal farmworkers may avoid healthcare services and the treatment they need when possible are clear.

In 2014, William Alexander and Magdalena Fernandez discussed the issue of legal status and barriers to healthcare access for migrant and seasonal farmworkers with attendees of the East

Coast Migrant Stream Forum, a North Carolina conference for healthcare providers who care for farmworkers (Alexander and Fernandez, 2014, 13). Their study was timely, as it came in the aftermath of the passage of an immigration reform bill which allotted 25-30 billion new dollars to border security and funded the hiring of 20,000 more border patrol agents. In essence, the bill did not so much reform immigration as it increased border policing, and the policing of immigrants without documentation in the US.

The healthcare providers and health outreach workers who Alexander and Fernandez spoke to made the alarming report that "ICE targeting of patients has even included setting up checkpoints between agricultural fields and health centers, and establishing an intimidating presence at clinics, something that is explicitly not allowed by law" (Alexander and Fernandez, 2014, 23). Immigration and Customs Enforcement officials may even be attempting to deliberately deter migrant and seasonal farmworkers from seeking the healthcare they need under these new policies. Another informant lamented the devastating consequences that can result from avoiding healthcare services for fear of deportation, explaining that "when fear of deportation causes farmworkers and their families to delay seeking care and avoid health fairs and other means of regular screenings, the result is an increase in the severity of health problems, which in turn leads to more costly emergency department visits" (14). Current policies that leave undocumented immigrants like those in migrant and seasonal farmworker communities, even those who provide essential labor and may have been in the country for multiple decades, vulnerable to forcible deportation threaten the health of farmworkers and their families. They are farther evidence of the structural violence that migrant and seasonal farmworkers face in caring for their health.

Lack of Investment

Perhaps the greatest indicator of structural violence against migrant and seasonal farmworkers in the US is the lack of investment into research about their health, or the ways that it could be improved. One of the most comprehensive reviews of existing literature on migrant farmworker health that I was able to find in my own research was published in 2003, and stated that "much of the information available concerning [migrant and seasonal farmworkers] has been derived from secondary sources and has been limited in scope" (Hansen and Donohoe, 2003, 161). The authors explain that no "systematic epidemiological investigation of the causes and prevention of the health problems" experienced by migrant farmworkers had been conducted at the time of their review, and that "basic health status indicators such as age-related death rates and prevalence rates for common causes of morbidity and mortality" had not yet been characterized.

The next comprehensive review that I was able to find, published four years later in 2007, echoes those same concerns. The authors lament that "few data exist on the national health services utilization patterns of the farmworker population or on regional variations in these patterns," and that while there are programs attempting to address the health needs of migrant and seasonal farmworkers, "there is currently no information that evaluates the efficacy of these programs" (Arcury and Quandt, 2007, 357). Further, they explain that the peer-reviewed literature that does exist on farmworker health is "out of date and fragmented," with a focus on "single states, counties, or communities" that may or may not be representative of the migrant farmworker population as whole (352). "These factors," they say, "make it difficult to draw any conclusions about farmworker health services."

The peer-reviewed, broad scope analyses of migrant and seasonal farmworker health that I was able to find ended there, in 2007. Other, more recent data that I found was either published by individual advocacy organizations and not peer-reviewed, or focused on a particular region or health issue. Early in my research, I attempted to find basic metrics of migrant and seasonal farmworker health, such as average life expectancy and the prevalence of various infectious and chronic conditions, and discovered that they were simply not available. This incredible dearth of basic epidemiological research on such a vulnerable population is evidence of extraordinary neglect of the health needs of migrant and seasonal farmworkers by those who might fund such research- namely the major agricultural corporations who employ so many of them and the US federal government.

Tuberculosis Among Migrant and Seasonal Farmworkers

Today in the United States, TB is viewed largely as a relic of the past, or as a condition that afflicts only faraway people and places. Yet, while the prevalence of TB has been dramatically reduced in the US over the past century, that is far from the case. Having started this thesis with the idea of structural violence against migrant and seasonal farmworkers, it seems appropriate to introduce another concept popularized by Paul Farmer in this context- the geography of blame. Farmer introduced the idea of a "geography of blame" to analyze the propaganda and fearmongering used to frame Haiti as a source of AIDS in the 1980s (Farmer a, 2006). Haiti, and Haitians, were scapegoats for the problem of AIDS because they were easy victims in the popular consciousness of the United States. Pre-existing prejudices made centering the geography of blame for AIDS on Haiti convenient. In discussing TB among farmworkers in the US, I'd propose to employ this concept in a slightly altered manner. As TB has become

relatively rare in the US in the last 100 years, it has also been exoticized. TB, to most in this country, is a threat only in the developing world, where health is poor and health systems are ill-equipped. This understanding of the geography of blame for TB facilitates neglect of the TB cases that do emerge in the US- the vast majority of which affect marginalized populations, including migrant and seasonal farmworkers. Indeed, in a 2017 survey of migrant and seasonal farmworkers in Arizona, more than three-quarters of participants identified TB as a serious health concern in their community (Osuchukwu et al., 62).

Pathology of Tuberculosis

Tuberculosis is a bacterial infection caused by *Mycobacterium tuberculosis* that typically affects the lungs, but can involve the kidneys, spine, or brain in severe cases (Mayo Clinic, 2021). It is an airborne pathogen that spreads primarily through droplets released when an infected person coughs, sneezes, or shouts. However, transmission between strangers in passing is unlikely- TB is typically spread among those who remain in close contact for extended periods of time, such as co-workers or co-habitants. In a large majority of cases, a person infected with TB will not develop active disease. Instead, it remains latent in their body until it undergoes a process called reactivation- though this process only occurs in 5-10% of people with latent TB (WHO, 2015). It has been estimated that as much of one-third of the world's population today is infected with latent TB.

For those with active TB disease, symptoms can include coughing, chest pain, weight loss, fatigue, fever, night sweats, and appetite loss (Mayo Clinic, 2021). Left unaddressed, TB is often fatal, even today. Treatment for TB involves an intensive course of antibiotics, typically lasting between six and nine months. Often, several drugs that target TB are taken together,

including isoniazid, rifampin, ethambutol, and pyrazinamide. While these drugs are often very effective in curing TB, in the past several decades a variety of strains of drug-resistant TB have emerged. Worldwide, half a million people develop active drug-resistant TB every year, and only 56 percent receive effective treatment (WHO, 2020). Drug resistant TB can fall into two categories- multidrug-resistant and extensively drug resistant (XDR). Multidrug resistant TB is resistant at least isoniazid and rifampin- the two main antibiotics used in TB treatment (CDC, 2016). Extensively drug resistant TB is the hardest form of the disease to treat, as well as the rarest. To be classified as extensively drug resistant, TB must be resistant to isoniazid and rifampin, as well as any fluoroquinolone (another kind of antibiotic) and at least one of the three injectable second-line TB treatments (amikacin, kanamycin, and capreomycin). While there are currently some treatments available for most forms of extensively drug resistant TB, new strains continue to emerge, making TB a formidable global health threat.

History of Tuberculosis in the US

The prevalence of tuberculosis, or consumption as it was known then, in the United States increased dramatically during its early history (Murray, 2004, 1181). Though deaths from consumption are thought to have peaked in Europe and North America around 1800, it accounted for more than 25 percent of deaths in New York City from 1810 to 1815. Indeed, by the start of the nineteenth century, it is estimated that TB had killed one in every seven people that had ever lived (PBS, 2015). This incredible prevalence was “undoubtedly linked to the appalling socioeconomic conditions (overcrowding, poor nutrition, lack of hygiene and sanitation, dearth of medical care) that prevailed during the early years of the unfolding industrial revolution” (Murray, 2004, 1181). Throughout the rest of the nineteenth century in the US though, TB death

rates began to fall from their dizzying peak. This has been attributed to a variety of social and medical developments, including improved nutrition, better living and working standards, the beginnings of public health regulation, and the "dawning realization that tuberculosis was probably an infectious disease and the beginning of sequestration of (contagious) consumptives in hospitals and sanatoriums."

After this decline had begun, two major scientific advancements occurred that changed the landscape of TB management in the US, and the world, forever. In 1882, Robert Koch built on discoveries in the growing fields of microscopy and bacteriology and identified *Mycobacterium tuberculosis*, giving a face to the previously anonymous killer (Murray, 2004, 1181). Then, in 1895 Wilhelm Konrad Röntgen discovered x-rays, which would become a primary diagnostic tool for TB. By 1905, physicians could accurately diagnose tuberculosis through sputum smears and chest x-rays. Around that time, the dominant treatment for TB was fresh air, with sanatoriums around the US offering patients exposure to the elements (PBS, 2015). While this often not effective in curing the disease, public screenings and prevention education led to a sharp decline in TB prevalence in the US throughout the 1920s and 1930s.

By the mid-twentieth century, newfound antibiotics meant that treating tuberculosis was possible. Efforts by public health officials at prevention were also seeing success. Indeed, when the CDC began collecting TB incidence data in 1953, only 52.6 in every 100,000 people in the US had TB (CDC, 2020). By 1980, that number had further declined to 12.2 cases

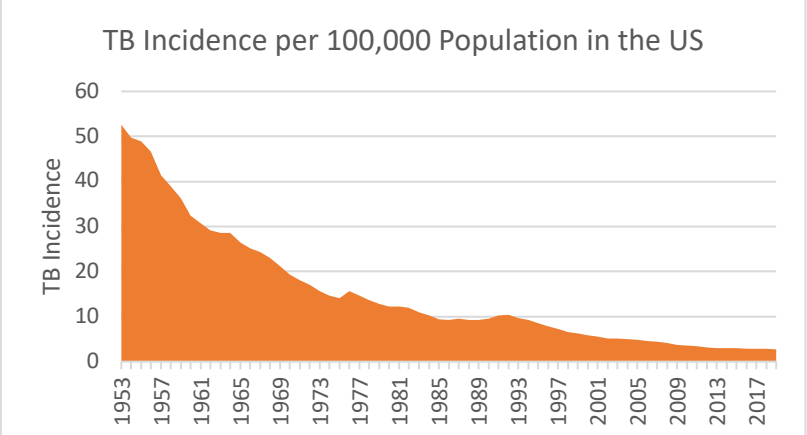

Figure 5. Incidence of tuberculosis in the US from 1953-2019 (CDC).

per 100,000 population. Trends in incidence lowered steadily throughout the twentieth century, with the exception of several years in the late 1980s and early 1990s due to the HIV/AIDS epidemic.[1] As of 2019, the incidence of TB in the US is only 2.7 cases per 100,000 populations, one of the lowest national incidence rates in the world. However, this achievement may belie disparities in TB incidence across different racial groups in the US. As they do with so many health conditions, white people in the US have a dramatically lower incidence rate of TB than their minoritized counterparts.

Race	TB Incidence per 100,000
White	0.5
American Indian/Alaska Native	3.4
Black/African American	4.3
Hispanic/Latinx	4.5
Asian	16.7
Native Hawaiian/Other Pacific Islander	17.6

Table 2. Incidence of tuberculosis in the US by racial/ethnic group (CDC, 2019).

Today, the CDC lists "homeless persons, injection drug users, and persons with HIV infection" as well as "persons who work or reside with people who are at high risk for TB in facilities or institutions such as hospitals, homeless shelters, correctional facilities, nursing homes, and residential homes for those with HIV" as having a high level of risk for developing active TB in the US (CDC, 2016). The unique characteristics of these populations make them vulnerable to TB for a number of reasons, but among the most prominent are residence in congregate housing and weakened immune systems due to pre-existing illnesses. The CDC further advises that those born outside of the US are much more likely than those born in the country to develop active TB, as they may have contracted a latent infection in their home

[1] Individuals with HIV/AIDS are left more vulnerable to developing active TB due to their weakened immune systems. The two diseases are so often connected that HIV/AIDS and TB have been termed a "syndemic" (Kwan and Ernst, 2011).

countries. Indeed, in 2019, 71 percent of all US cases occurred in those born outside of the country (CDC, 2019).

On a page dedicated to "TB in Specific Populations," the CDC includes subsections on several specific groups, ranging from pregnant people, to those living in correctional facilities, to children (2013). Notable in the context of migrant and seasonal farmworker health are subsections on "Health Disparities in TB," "Hispanic or Latino Persons," and "International Travelers." In the Health Disparities section, the CDC highlights its efforts to reduce the burden of TB disease in certain high-risk groups. They note that they maintain a Spanish-language TB information website, and that they collaborate "with other national and international public health organizations to improve TB screening of immigrants and refugees, test recent arrivals from countries with high rates of TB, and improve TB control and prevention activities along the border between the United States and Mexico." On the page dedicated to TB and international travel, the CDC recommends that travelers to nations with high TB prevalence avoid spending time in "crowded, enclosed environments" and take special precautions if they may enter a hospital or other clinical environment. Additionally, the CDC recommends annual TB testing for any international traveler who might "anticipated repeated or prolonged exposure" to someone with TB or who may have an "extended stay [in a country with high TB prevalence] over a period of years." Finally, the CDC's page on TB in "Hispanic or Latino Persons" notes that Latinx individuals are nine times more likely to contract TB than white individuals in the US, and that they may be at greater risk if they are "born in a country with a high rate of TB or travel to a country with a high rate of TB." Further, in 2019, 30% of all TB cases in the US occurred in Latinx individuals (CDC, 2019).

Tuberculosis in US Farmworkers: What We Know, and Don't

The most recent report on TB in migrant seasonal farmworkers from the CDC, or any other US government agency, that I could locate was published nearly three decades ago, in 1992. It was released on June 6th of that year as part of the CDC's series of "Morbidity and Mortality Weekly Reports," and outlines available data regarding TB in migrant and seasonal farmworkers, as well as recommendations for controlling the disease in that population. At the time, a government taskforce within the Department of Health and Human Services called the Advisory Council for the Elimination of Tuberculosis had set a goal to eliminate TB from the US by the year 2010 (CDC, 1992). The Council had identified migrant and seasonal farmworkers as a high-risk group, and hoped to identify and implement "strategies to prevent TB" in the population.

Based on a survey conducted between 1985 and 1989 across 29 states, the CDC estimated that migrant and seasonal farmworkers were six times more likely to develop active TB than the general population of employed adults in the US. Further, a 1987 study found that latent TB is highly prevalent among farmworker populations, with TB test positivity ranging from 29 to 55 percent between various demographic groups. Given these findings, the CDC reports that the Advisory Council for the Elimination of Tuberculosis recommended that a set of "prevention and control activities should be undertaken for all migrant and seasonal farm workers and their families," including:

1. "Detection and diagnosis of those persons with current symptoms of active TB.
2. Appropriate treatment for those persons with disease.
3. Contact investigation and appropriate preventive therapy for those persons exposed to infectious (sputum positive) TB.
4. Screening and appropriate preventive therapy for workers who may be immunosuppressed, including those with HIV infection.

5. …screening and appropriate preventive therapy for children of migrant and seasonal farm workers.
6. …widespread tuberculin skin-test screening of workers and families, followed by appropriate preventive therapy."

Further, the Council recommended that health departments ensure that "inpatient care…is available at no cost to migrant farmworkers or family members," and that contact tracing is carried out as soon as a farmworker is diagnosed with active TB. Finally, the report underscored the importance of making TB screening available to migrant and seasonal farmworkers "in cooperation with [their] employers." Each of these strategies, the report asserts would be critical to wiping out TB among farmworkers. Ultimately though, as we know today, many of these recommendations were not carried out and TB is still a major problem for migrant and seasonal farmworkers and their families.

In 2018, the National Center for Farmworker Health published a fact sheet about tuberculosis for advocates and health workers involved in the care of migrant and seasonal farmworkers. The sheet notes that in 2016, foreign-born individuals in the US had a TB incidence rate of 14.7 cases per 100,00 population, and that 75 percent of all agricultural workers were foreign-born (NCFH d, 2018, 3). Many of the common countries of origin for foreign-born migrant and seasonal farmworkers in the US have high incidence rates of TB, placing them at particular risk for developing active TB. However, the Center notes that available data on the prevalence of TB in farmworkers is very limited, and references the 1992 CDC report as its most recent source of farmworker-specific TB information. It does report that in 2016, 261 migrant

Country	TB Incidence Rate in 2016
United States	3.1
Mexico	22
Guatemala	24
Honduras	40
Nicaragua	48
El Salvador	60
Haiti	188

Table 3. TB incidence rates per 100,000 population in the US and common countries of origin for migrant and seasonal farmworkers (NFCH d, 2018, 3).

and seasonal farmworkers were diagnosed with TB at certified Migrant Health Centers across the US, equating to an incidence rate of 30.3 cases per 100,000 population, but does note that this statistic is likely imprecise given its limited sample.

A 2016 study conducted by researchers at the University of Arizona examined the prevalence of latent TB among migrant farmworkers along the US-Mexico border (Oren et al.). Out of 109 farmworkers tested, 59, or 55 percent, were positive for latent tuberculosis (4). The CDC estimates that within the US population as a whole, only around 4.7 percent have latent tuberculosis (Miramontes et al., 2015). Though proximity to and relative fluidity of movement through Mexico, where TB prevalence is high, may have inflated this finding, earlier studies such as the CDC's 1985-89 survey suggest that the level of disparity it exposes is accurate. Further, a 1995 study found a 17 percent prevalence of latent TB among migrant and seasonal farmworkers in Yolo County, California, and a 1988 study found a 52 percent prevalence among farmworkers in Franklin County, Pennsylvania (Ortega, 2016, 4). Taken together, these studies provide overwhelming evidence that latent TB is many times more common among migrant and seasonal farmworkers than the general US population, and that this has been the case for decades.

While all of this existing data does establish that migrant and seasonal farmworkers are a high-risk group for both active and latent TB, there are significant gaps in our understanding of the disease's impact on the population. I was unable to find large-scale studies on TB mortality among farmworkers, on the percentage of identified cases that are able to access and complete effective treatment, or geographic areas where farmworkers are particularly at risk. Even more glaring is the lack of government reporting on TB among migrant and seasonal farmworkers for the last 29 years, despite a commitment that the Department of Health and Human Services made

more than 30 years ago to eliminating TB in the US. The incredible dearth of basic public health analysis on this issue facilitates its neglect.

Tuberculosis in US Farmworkers: Causes

When examining the causes of this increased risk for latent and active TB disease among migrant and seasonal farmworkers, an obvious place to start is with immigration status. As reported by the National Center for Farmworker Health in 2012, 72 percent of farmworkers were born in a country other than the US. The most common countries of origin for farmworkers, such as Mexico, Honduras, Guatemala, El Salvador, Nicaragua, and Haiti, have very high TB prevalence relative to the US (Table 2). It follows, then, that migrant and seasonal farmworkers in the US from those countries would have higher TB prevalence than their US-born peers. However, the overall incidence of TB in the US among foreign-born individuals is 14.7 cases per 100,000 population (CDC, 2019). Migrant Health Center data suggests that incidence among migrant and seasonal farmworkers is more than twice that number, around 30.3 cases per 100,000 population, suggesting that there is something else at play for this vulnerable population (NCFH d, 2018, 3).

One factor that may be key in the increased prevalence of TB among migrant and seasonal farmworkers is housing. Overcrowded and congregate housing is known to be a primary risk factor for TB in the US as indicated by the CDC, which points to nursing homes, homeless shelters, and correctional facilities as breeding grounds for TB infection (CDC, 2013). Indeed, from his extensive experience with TB reduction work Paul Farmer asserts that “more or less crowding and improper housing” will mean “more or less tuberculosis” (Farmer b, 2000, 209). These kinds of housing are nearly omnipresent in migrant and seasonal farmworker

communities, where housing is often employer-provided. One pilot study of a Connecticut farm in 2005 conducted inspections of living quarters for migrant and seasonal farmworkers and found that they

> "lived in a pair of cinderblock barracks, each over 5,600 square feet, that housed 50 and 80 persons. Three or four MFWs slept to a room having three sides: one outside wall and two plywood partitions that did not reach the ceiling. Each room was separated from a central hallway by a single curtain, and no mechanical air handling system was present in the barracks. Any ventilation was the result of dilution through windows or small fans. Each room had a single window, including the common bathroom or shower area, and only a fraction of the rooms had area fans. The close living quarters were compounded by crowded transportation conditions as farm workers travelled daily from barracks to work locations on former school buses" (Ortega, 2016, 7).

Researchers in southeastern Pennsylvania found that the migrant and seasonal farmworkers they studied had between five and twenty-two roommates or campmates at a time (Garcia, 2008, 17). A third study of farmworkers in several labor camps found that "the assigned buildings often lacked private bathrooms and the majority of the migrant families shared a shower/sink/commode with others" (Wyss and Alderman, 2006). A third of migrant and seasonal farmworker camps reviewed as part of a North Carolina study had fewer than 50 square feet of space per occupant, or an area smaller than seven feet by seven feet (Vallejos et al., 2011, 4). The study also noted that 63% of farmworker camps had mold or mildew in one or multiple housing areas (10). In sum, employer-provided housing for farmworkers is often egregiously overcrowded and unsanitary. In a report on housing conditions that increase the risk of TB infection, the Canadian Tuberculosis Committee lists crowding, inadequate ventilation, and mold growth- which may result from unsanitary conditions or a lack of air flow- as primary culprits (Larcombe and Orr, 2007). Each of these is a common issue in housing provided to migrant and seasonal farmworkers in the US.

A second factor that can increase farmworkers' risk of contracting TB is close contact with cattle. Today in the US, there are more than 100,000 workers in dairy farms, most of whom are classified as migrant and seasonal farmworkers by the Public Health Service Act (NFCH e, 2014). Many dairy workers work very long hours, with an average work week of 62 hours reported in New York state, and ventilation in dairy facilities is often poor. This is relevant, because dairy workers exposed to cattle infected with *Mycobacterium bovis* can develop latent or active tuberculosis. Though the passage of tuberculosis from cattle to humans has mainly been studied in the context of consumption of unpasteurized dairy products, new research is beginning to show that dairy workers are also at risk. A 2013 study conducted in Mexico tested 311 dairy workers and their household members for TB and found a prevalence of 58.5 percent (Torres-Gonzalez et al., 1). Adjusting for relevant variable such as socioeconomic status and the prevalence of TB in Mexico overall, this rate was still much higher than anticipated, indicating that dairy workers are at elevated risk for TB. Further, of the two study participants who were eventually diagnosed with active TB, sputum smears indicated that both infections were caused by *Mycobacterium bovis*. The prevalence of occupational TB among dairy workers in the US has not yet been studied, but it is likely that those migrant and seasonal farmworkers who come into regular contact with cattle are more likely to develop latent or active TB.

Malnutrition, diabetes, and HIV each have a strong positive correlation with the risk of latent TB progressing to active disease, and, as outlined in this thesis, farmworkers have a much greater prevalence of each than the US population as a whole (Ortega, 2016, 6). Further, the socioeconomic, occupational, legal, and investment barriers to healthcare access for migrant and seasonal farmworkers described in the previous section also contribute to their elevated TB risk. Those farmworkers without healthcare access may be unable to find care to manage TB-

correlated conditions like diabetes and HIV, and if they do contract TB, care to diagnose and treat it.

Additionally, for those who can gain access to health services, other barriers to high-quality TB care may exist. Early on in my research on TB among migrant and seasonal farmworkers, I encountered an article published in 2007 in the peer-reviewed Online Journal of Issues in Nursing, which is managed by the American Nurses Association. The article's stated aim is to examine TB among migrant and seasonal farmworkers in the Midwestern US, and the factors "of migrant culture and lifestyle, economic, and health challenges that may impact screening, diagnosis, and adherence with complex medication regimens associated with TB" (Wyss and Alderman, 2007). The "cultural and lifestyle" factors that Wyss and Alderman identify, though, are steeped in egregiously racist assumptions, particularly about Mexican-Americans. In a subsection titled "Characteristics of the Migrant Culture," they write that "many Mexican Americans, especially from lower socioeconomic groups are present-oriented. They do not consider a steady income important and do not try to plan for the future." To support this statement, they cite the textbook *Community and Public Health Nursing*, published in 2004. They go on to claim that to Mexican-Americans, "if a person becomes ill, 'it's the way things are' or 'God's will,'" suggesting that Mexican-Americans and "migrants," to use the subsection's umbrella term, are resigned to poor health. Obviously, neither of these assumptions is based in reality. Ultimately, two of the "most significant" conclusions they draw from their work is that migrant and seasonal farmworkers have a fatalistic worldview and low sense of self-efficacy which is one of the major reasons that completing TB treatment is challenging for them. Their support for this conclusion is based on two quotes from interviews they conducted which apparently demonstrate low levels of self-efficacy:

1. “I haven’t gone for the medication, because I haven’t gotten my x-ray or blood work. I was supposed to catch a ride with the crew leader, but I didn’t get off work in time. I didn’t feel like I could ask again. I had no control over the disease or treatment.”
2. “I felt out of control, when they took my blood. They took a lot and I was scared. They explained to me what they were doing, but I was still scared.”

My interpretation of these quotes is very different- 1, a farmworker was unable to access treatment because of long hours and a lack of access to transportation and 2, a farmworker was unused to their blood was being drawn and felt afraid. However, it seems clear that Wyss and Alderman had pre-existing biases regarding “the migrant culture” that they sought to confirm. Though this is only one example of paternalism and racism in the treatment of migrant and seasonal farmworkers with TB, the fact of its publication in a peer-reviewed nursing journal and its citing of a prominent nursing textbook indicate that this kind of prejudice may be widespread. Certainly, racist assumptions by and treatment from medical providers would present yet another barrier to TB prevention and management efforts among migrant and seasonal farmworker populations.

Conclusion

Migrant and Seasonal Farmworkers and COVID-19

Today, we are seeing once again just how vulnerable the nation’s migrant and seasonal farmworkers are to significant health threats in the form of another respiratory disease like TB. The COVID-19 pandemic has devastated counties where there is a heavy agricultural, and thus farmworker, presence. In California, six of the seven counties with the highest rates of COVID-19 infection are in the Central Valley, which produces the most fruits and vegetables of any region in the country (Evich et al., 2020). In Arizona, Yuma county, which is a major leafy-green producer, has the second highest rate of coronavirus in the state despite containing no major

cities or metropolitan areas. This trend can be observed across the country, as many agricultural counties and the migrant and seasonal farmworkers who live there bear the brunt of the pandemic's impact. So far, the only existing nationwide report of COVID-19 cases among agricultural workers estimates that 145,000 of them may have contracted the disease, but this report excluded "contracted and temporary labor"- a category which includes almost all migrant and seasonal farmworkers (NCFH c, 2020). Thus, little is known about how exactly they have been affected, which presents barriers to advocacy and prevention work. Mass layoffs of farmworkers have been reported on several large and small farms where a worker has tested positive for COVID-19, causing many to hide their symptoms and avoid being tested for fear of losing their jobs.

Overcrowded housing conditions and a lack of distance between workers in crop fields have both been cited as major potential sources of COVID-19 transmission among migrant and seasonal farmworkers if precautionary measures are not taken (NCFH c, 2020). Further, some employers have been reluctant to issue basic PPE to farmworkers or to offer assistance in seeking COVID-19 testing. Following months of pressure from advocacy groups, the CDC finally issued its first set of safety recommendations for farmworkers- who had been working consistently since the onset of the pandemic- in June of 2020 (Evich et al., 2020). However, the Department of Labor chose not to make these very basic recommendations, which included six-foot distancing during work and daily temperature screenings, mandatory for agricultural employers. Once again, the health of migrant and seasonal farmworkers is being neglected by their employers and by the federal government just as they have become uniquely vulnerable to a major respiratory health threat, and as their work continues to be essential to the functioning of the nation.

Final Remarks

Migrant and seasonal farmworkers have a long history as essential workers- to use a term which has become omnipresent recently- in the US agricultural industry. Yet, they have been left vulnerable to a range of significant health threats. Farmworkers face both chronic and infectious disease at higher rates than their peers, as well as major oral and mental health concerns. Occupational hazards from chemical poisoning, to heat stress, to musculoskeletal injury add to these threats, leaving migrant farmworkers uniquely vulnerable to a cycle of chronically poor health. Socioeconomic stress, unsafe housing conditions, and precarious legal status multiply this vulnerability exponentially. Yet, an almost total lack of investment in basic research on migrant and farmworker health means that our understanding of how to address this population's health needs is rudimentary at best. As anthropologist Peter Benson correctly identifies it, these processes build on each other to reproduce structural violence toward farmworkers (Benson, 2008, 591). Indeed, the massive agricultural output that the US celebrates today is built upon this structural violence toward those who make it possible- migrant and seasonal farmworkers.

The high prevalence of TB among migrant and seasonal farmworkers is a prime case study of how all of these forces can come together to make farmworkers particularly vulnerable to a devastating disease. The geography of blame for TB in the popular imagination of the US is centered on the developing world, which facilitates its neglect among vulnerable populations here. Migrant and seasonal farmworkers, because of the structural violence they face in the US, are at a dangerous nexus of vulnerability to TB. Migration from high TB burden nations; overcrowded and unsanitary housing; exposure to potentially infected cattle; elevated risk of malnutrition, diabetes, and HIV; and racism from medical providers intersect in an already

legally and economically marginalized population to compound TB risk. If the US truly hopes to meet its decades-old commitment to eliminating TB within its borders, it must be dedicated also to promoting the well-being of migrant and seasonal farmworkers. That means further research into TB burden and mortality in farmworker communities, work to mitigate the risk factors outlined in this thesis on both policy and grassroots levels, and collaboration with medical providers to ensure high-quality and equitable care. The lives of our nation's farmworkers depend on it.

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