

# A PROFILE OF MIGRANT HEALTH:

## AN ANALYSIS OF THE UNIFORM DATA SYSTEM, 2010



A REPORT BY THE NATIONAL CENTER FOR FARMWORKER HEALTH

(c) Alan Pegue

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**ABSTRACT**

**Purpose.** This report provides the findings of an exploratory data analysis of both agricultural worker and non-agricultural worker patients of 142 Health Center Program grantees which received both Community and Migrant Health (C/MHC) funding from the U.S. Public Health Service Act, Section 330 in 2010.

**Background.** The Uniform Data System, administered by the Health Resources and Services Administration (HRSA) collects information annually on all Health Center Program Grantee patients, providing demographic, socio-economic, financial, and clinical information for approximately 20 million patients.

**Methods.** Both Universal and Grant Reports were obtained from the 2010 Uniform Data System, representing over 3.6 million non-agricultural worker patients and over 730,000 agricultural worker patients.. The Grant Reports were utilized in conjunction with the Universal Reports to generate non-agricultural worker data for the 142 C/MHCs. Health Center data was summed and percentages for demographic and clinical data for both patient groups were compared.

**Results.** This analysis finds that agricultural worker patients were largely young and Hispanic, and experienced higher rates of poverty and a lack of health insurance than non-agricultural worker patients. Agricultural worker patients had higher rates of perinatal disorders & conditions, tuberculosis, diabetes and overweight/obesity, but had lower rates of mental health disorders and substance abuse, hypertension, and heart disease as compared to non-agricultural workers.

Keywords: Migrant Health, farm worker, agricultural worker, agriculture, Health Centers, Uniform Data System, MSFW, MSAW

INTRODUCTION

This analysis is focused on agricultural worker patients of 142 Community/Migrant Health Center Program Grantees using data from the 2010 Uniform Data System (UDS) administered by the Health Resources and Services Administration. (Figure 1). The UDS collects core information including patient demographics, services provided, staffing, clinical indicators, utilization rates, costs, and revenues for health center grantees from patient medical records and organizational financial records. (For more information on the Uniform Data System see <http://1.usa.gov/QbirxM>). Agricultural worker patients were compared to non-agricultural worker patients at the same 142 Health Centers. This report, prepared by the National Center for Farmworker Health with support from the RCHN Community Health Foundation, is intended to provide baseline information on the health and socio-economic status of agricultural worker patients served by Community/Migrant Health Center Program Grantees. The primary purpose of this exploratory analysis was to determine if there were significant demographic and clinical differences between agricultural worker patients and non-agricultural worker patients in 2010, as well as to visualize how agricultural worker populations differ on a state-by-state basis. This information may be helpful to inform local-, state-, and federal-level decision-making in regard to how to best meet the health needs of agricultural workers in the U.S.

Agricultural workers are referred to by multiple terms, such as farmworker or migratory and seasonal farm worker (MSFW), but this report will refer to migratory and seasonal agricultural workers as MSAWs.

Figure 1. Locations of the 142 C/MHCs.



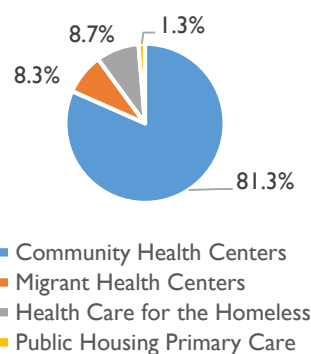
## OVERVIEW OF THE HEALTH CENTER PROGRAM

The Health Center Program was created in 1962 by President John F. Kennedy with the passing of the Migrant Health Act (PHS Section 329), which established the provision of primary care services to migrant and seasonal agricultural workers. This program later grew to include community health centers, healthcare for the homeless, and health centers for residents of public housing. Community health centers are authorized under Section 330 of the U.S. Public Health Service Act, (42 USC, 254b. Section 330), revised by President Bill Clinton under the Health Centers Consolidation Act of 1996 to reauthorize and combine migrant health centers with the other three programs.<sup>1,2</sup> The Health Center program is administered by the Bureau of Primary Health Care (BPHC) of the Health Resources and Services Administration (HRSA).

In 2010, there were 1,124 Health Center Program Grantees (henceforth referred to as Grantees), that together served over 19.4 million patients.<sup>3</sup> A total of 862,775 migrant and seasonal agricultural worker patients were served by all Grantees, 803,933 (93.2%) of whom were served by Grantees receiving Migrant Health funding, and of those, 71,885 (8.9%) were served by Grantees who received Migrant Health funding only. Health Centers that did not receive Migrant Health funding provided care to 58,842 agricultural worker patients.

Over \$1.9 billion was provided to all grantees in 2010, which including funding for Capital Improvement and Development grants (see Figure 2)<sup>4</sup>. Grantees received federal funding based on the number of patients they serve. Grantees must follow certain requirements which include serving a high-need community, providing comprehensive primary care as well as supportive services to all with fees based on ability to pay, and governance by a community board composed of a majority (51% or more) of health center patients who represent the population served. Grantees are also required to submit annual reports of activity via the Uniform Data System.

Figure 2.  
2010 Health Center funding proportion



## OVERVIEW OF THE UNIFORM DATA SYSTEM

The Uniform Data System (UDS) is a standardized reporting system that is required of all programs that receive funding for primary care under the Public Health Service Act, Sections 330(e), (g), (h), and (i), which includes Community Health Center Program Grantees, Migrant Health Center Program Grantees, Health Care for the

<sup>1</sup> National Cancer Institute. (n.d.). Public Health Service Act. Retrieved from <http://legislative.cancer.gov/history/phsa>

<sup>2</sup> The Johns Hopkins Primary Care Policy Center. (2013). Definitions. Retrieved from <http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-primary-care-policy-center/definitions.html>

<sup>3</sup> Health Resources and Services Administration. (n.d.). 2010 national data. Retrieved from <http://bphc.hrsa.gov/uds/view.aspx?year=2010>

<sup>4</sup> Health Resources and Services Administration. (n.d.). Table 9E – Other revenues. Retrieved from <http://bphc.hrsa.gov/uds/view.aspx?q=r9e&year=2010&state=>

Homeless Program Grantees, and Public Housing Primary Care Grantees.<sup>5</sup> The UDS is administered by the Bureau of Primary Health Care within the Health Resources and Services Administration.

There are two primary reporting components in the UDS: Universal Reports and Grant Reports. All grantees must submit an annual Universal Report, which includes aggregated information on patient demographics, special populations, clinic staffing, selected diagnoses and procedures, and finances for all programs. If the Grantee receives multiple types of funding from the Bureau of Primary Health Care, then it is also required to submit annual Grant Reports. The Grant Report is more limited than the Universal report, and includes only certain tables (3A, 3B, 4, 6A, and part of Table 5) from the Universal report for that portion of the program that falls within the scope funded under a particular special population funding stream. Separate Grant Reports are required for grantees of the Migrant Health Center, Health Care for the Homeless, and Public Housing Primary Care programs unless a grantee is funded under one and only one of these programs. For example, if a Grantee receives Migrant Health Center funding in addition to Community Health Center funding, their Grant Report will report information only about their migrant and seasonal agricultural worker patients, such as the income levels and insurance sources of the patients classified as agricultural workers.<sup>6</sup> Conversely, if they receive only Migrant Health Center funding, they would complete only the Universal Report.

The chart below illustrates the reporting requirements by type of Grantee funding.

Table I. Example relationship between funding and reporting requirements

EXAMPLE GRANTEE	TYPE OF FUNDING RECEIVED	UNIVERSAL REPORT	GRANT REPORTS		
			Migrant Health Center	Health Care for the Homeless	Public Housing Primary Care
<b>NORTH HEALTH CENTER</b>	CHC only	x			
<b>EAST HEALTH CENTER</b>	MHC only	x			
<b>SOUTH HEALTH CENTER</b>	CHC and MHC	x	x		
<b>WEST HEALTH CENTER</b>	CHC, MHC, and HCH	x	x	x	

Abbreviations:

CHC: Community Health Center, MHC: Migrant Health Center, HCH: Health Care for the Homeless

As can be seen in the above table, if a Grantee receives only one type of funding, it will not complete a separate Grant Report concerning the special population it serves, *even if the only funding it receives is for a special population (e.g., agricultural workers)*. If that Grantee also serves other patients, without a specific HRSA grant to do so, their Universal Report will include information for all patients they serve (including non-agricultural workers) and thus the report will not be specific to the special population they serve. Likewise, if a Grantee serves agricultural

<sup>5</sup> Health Resources and Services Administration. (n.d.). Health Center data. Retrieved from <http://bphc.hrsa.gov/healthcenterdatastatistics/>

<sup>6</sup> Bureau of Primary Health Care. (2011). 2011 UDS manual. Retrieved from <http://bphc.hrsa.gov/healthcenterdatastatistics/reporting/2011manual.PDF>

workers but does not receive funding to serve that special population, they will not complete a separate Grant Report (as is the case with the example North Health Center).

## DISCLAIMERS & LIMITATIONS

The Uniform Data System has several limitations: (1) a relatively limited set of data is collected, (2) all data is aggregated, and (3) the accuracy depends on the Grantee's skill in collecting and reporting the information. The clinical data is extremely limited, as it only reports a select few diagnoses, and for 2010, the total patients with the condition is not reported; the data captures only those for whom the designated condition was the primary diagnosis. (Note that beginning in 2012, the reporting requirement has been revised to require that ALL patients/visits with the condition be reported, irrespective of the diagnosis level.) Thus calculating true prevalence rates is not possible; only crude approximations can be obtained. Since patient-level data is not available, performing cross tabulations for multiple variables in order to control for the effects of age, race, etc. on disease prevalence is not possible.

Grant reports for Special Populations may be especially vulnerable to error. Accurately identifying and verifying that a patient is a migratory or seasonal agricultural worker takes more than a simple check box on an intake form, and interpreting the definitions of who is an agricultural worker is complex. There is also a distinction between migratory and seasonal agricultural workers made in the UDS, and this distinction, while valuable, can be difficult to ascertain in practice (see footnote for UDS definition).<sup>7</sup> For example, a patient who has a full-time job harvesting tomatoes for 10 months a year may be classified as a seasonal agricultural worker, but a patient who has a full-time, year-round employment at a tomato farm may not be classified as either a migratory or seasonal agricultural worker, since his employment is not seasonal. Staff may incorrectly assume that any immigrant is also an agricultural worker, or may believe that if the patient has insurance, they do not need to classify them as an agricultural worker. This may result in under- or over reporting.

It is also important to note while reviewing clinical and socio-economic information that although the number of agricultural worker patients analyzed in this report is large (N=732,048,) it includes only those who receive care at C/MHCs, who may have different characteristics or conditions from agricultural workers who do not receive care at Community/Migrant Health Centers. Therefore the following analyses should not be interpreted as representative of all agricultural workers in the U.S., but only of those who chose care at C/MHCs.

Despite the data limitations, this analysis of the UDS provides valuable information and is useful in gaining an understanding of agricultural worker and non-agricultural worker patients cared for in Community/Migrant Health Centers.

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<sup>7</sup> According to the UDS Manual 2010, which follows definitions from the PHS 330, a migrant agricultural worker is a worker whose "principal employment is in agriculture on a seasonal basis (as opposed to year-round employment) and who establishes a temporary abode for the purposes of such employment." A seasonal agricultural worker has a similar definition, but they differ from migrant agricultural workers in that they "do not establish a temporary home for purposes of employment."

All dependent family members of such workers are also classified as agricultural workers, even if they do not work in agriculture. Retrieved from the Bureau of Primary Health Care (<http://bphc.hrsa.gov/healthcenterdatastatistics/reporting/2010manual.pdf>).



## COMPARATIVE ANALYSIS

### AN ANALYSIS OF AGRICULTURAL WORKER AND NON-AGRICULTURAL WORKER PATIENTS AT 142 COMMUNITY/MIGRANT GRANTEES

#### METHODOLOGY

The comparative section examines data from the 2010 Migrant Health Grant reports and Universal reports for 142 Community/Migrant Grantees. The MSAW population (N = 732,048) is compared to non-MSAW patients (N = 3,618,131) served by the same 142 Grantees.

The UDS does not collect patient-level or clinic-site level data; the smallest unit of analysis is at the Grantee level. Since the UDS does not specifically require separate reports for non-special populations, for the purposes of this project, the Universal and Grant reports were linked for each Grantee based on the Grantee identification number and data for non-agricultural workers was extracted from the two reports in order to generate comparable information for the agricultural worker population. For example, if Grantee X's Universal report stated that they had 100 patients with diabetes, and their Grant report stated that they had 5 agricultural worker patients with diabetes, it can be concluded that they had 95 non-agricultural worker patients with diabetes. The data was then analyzed in Microsoft Excel and SPSS, and was aggregated to calculate percentages of demographic distributions, the crude prevalence of selected clinical diagnoses, and the utilization of selected clinical services.

It is important to note that while a total of 862,775 MSAWs were served by program Grantees in 2010, this analysis has reported on a migrant/ seasonal population of 732,048 patients only. The remaining 130,727 agricultural worker patients were excluded from this analysis because there were not separate Grant Reports completed on this group of patients. Of the 130,727 excluded, 71,885 were served by Grantees who receive only Migrant Health funding, and 58,842 were served by Grantees who received no Migrant Health funding. Universal reports for the Grantees that received no Migrant Health funding or only Migrant Health funding also included information on non-agricultural workers and thus could not be reliably disaggregated. While some of the Universal reports from Migrant Health-only Grantees did not include any non-agricultural worker patients and thus could have been included in the analysis, their inclusion might have led to the introduction of confounding factors based on their unique function as largely case-management and referral programs, also known as Migrant Health voucher programs.

#### DEMOGRAPHIC DATA

The demographic analysis includes information from UDS Table 3A (Patients by age and gender), Table 3B (Patients by Hispanic/Latino identity and race; patients best served in a language other than English), and Table 4 (Selected patient characteristics).

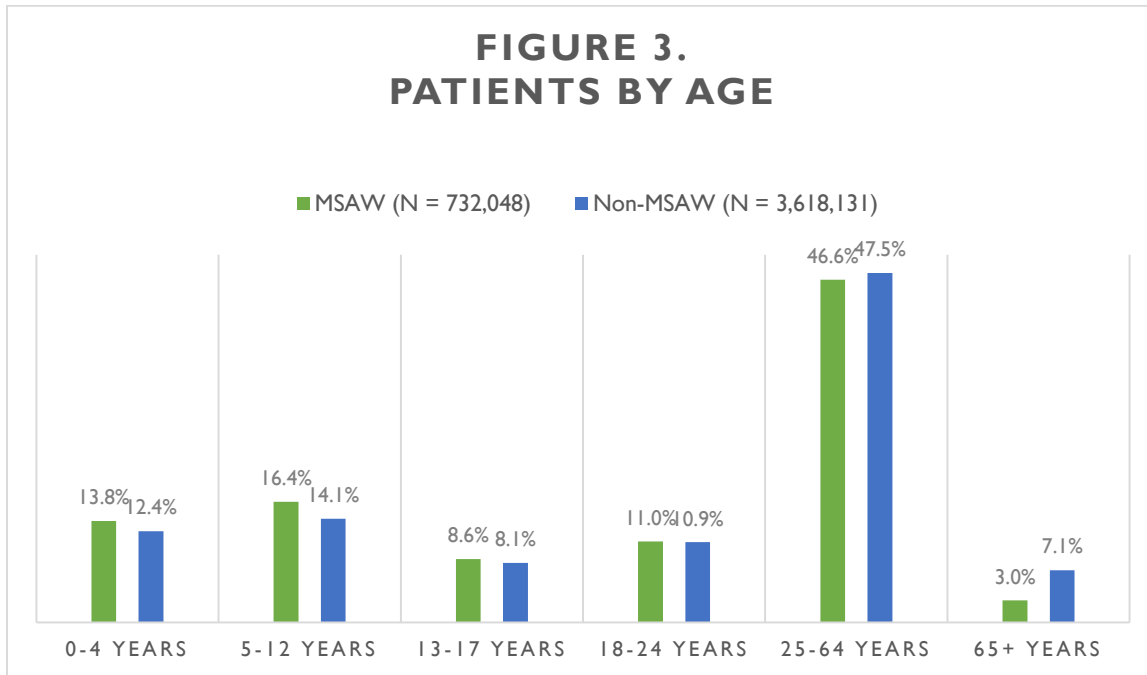
This section examines the following for patients of 142 C/MHCs:

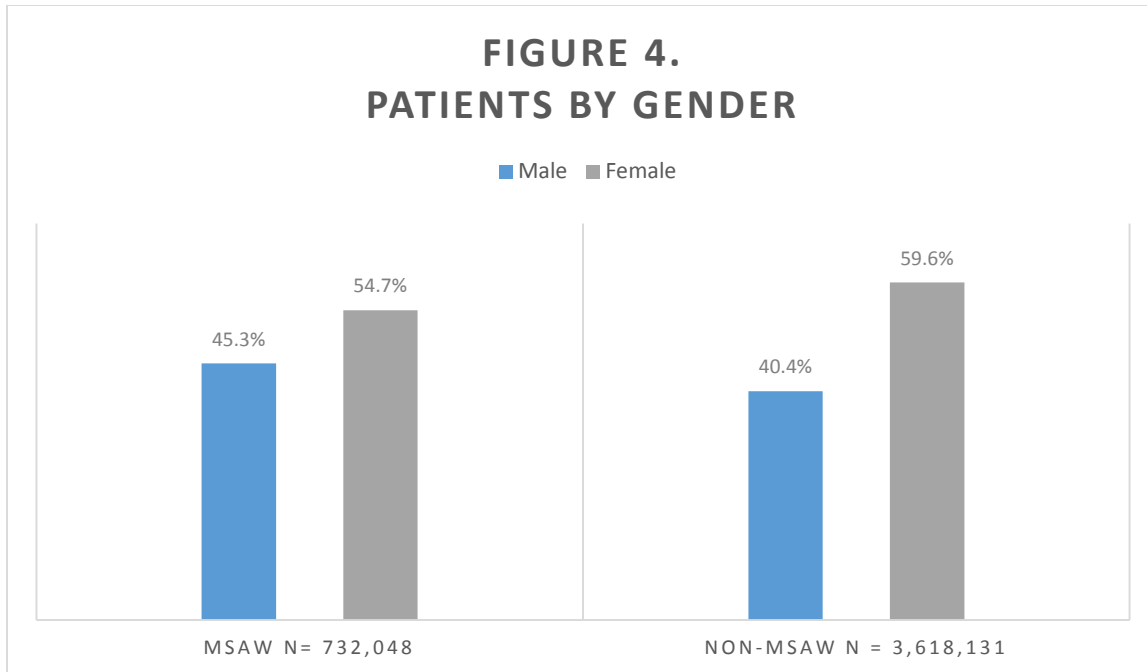
- The age, gender, race/ethnicity, and language of MSAW versus non-MSAW;
- The income and health insurance sources of MSAW versus non-MSAW;
- The special population status of MSAW versus non-MSAW patients.

(For a state-specific analysis of agricultural worker patient demographics, see maps in Appendix.)

AGE AND GENDER

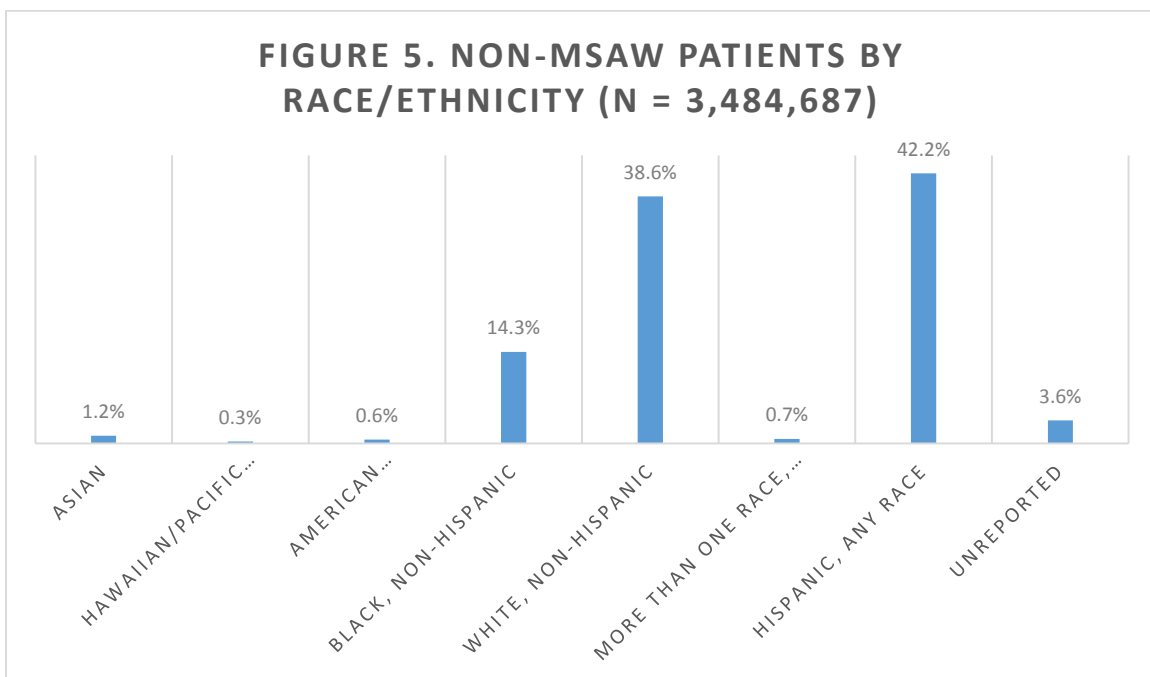
Migrant and seasonal agricultural worker patients and non-agricultural worker patients differ in regard to age and gender primarily in the proportion of patients who are 65 years or older. Approximately 4.2% more MSAW patients are children, and there is a higher percentage (4.1%) of non-MSAWs who are 65 years of age and older (see Figure 3; [Appendix, Map 1](#)). The proportion of working-age adults in both groups is similar. While more female than male patients were served for both groups, the gender gap was narrower in agricultural worker patients (see Figure 4; [Appendix, Map 2](#)).

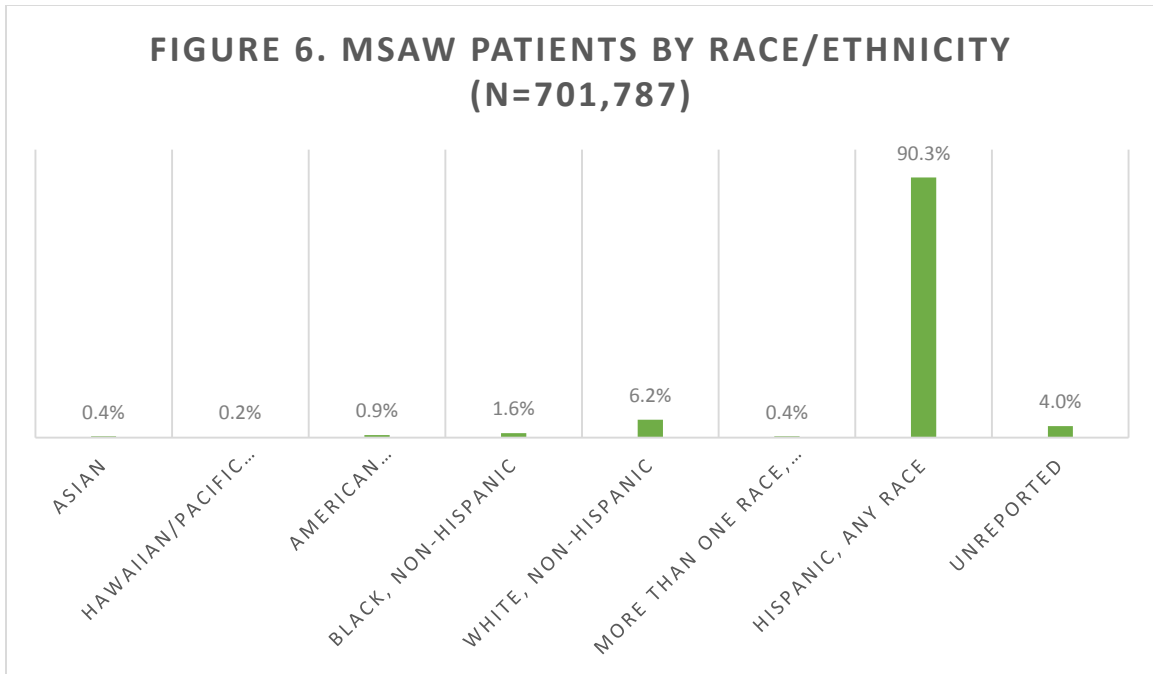




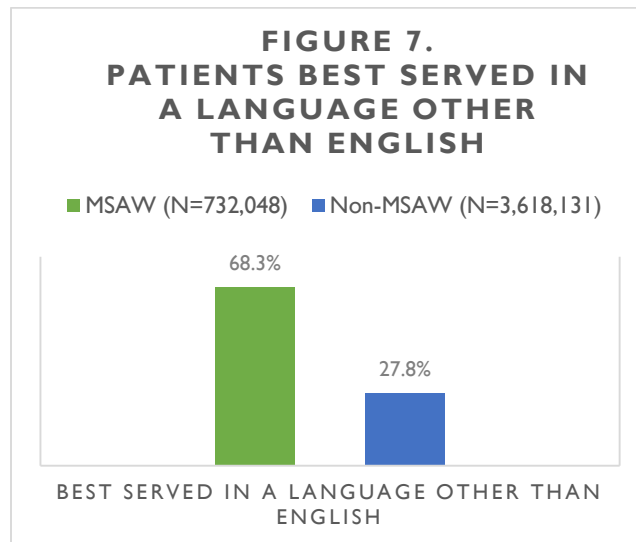
#### RACE, ETHNICITY, AND LANGUAGE

The racial and ethnic composition of MSAW and non-MSAW patients differs dramatically. Non-MSAW patients were fairly equally split between Hispanics of any race and non-Hispanic Whites, but non-Hispanic Blacks also comprised a substantial proportion of the population (see Figure 5). Very few MSAW patients were reported as non-Hispanic Black (1.6%). While the overwhelming majority of MSAW patients were Hispanic (90.3%), not even half of non-MSAW patients identified themselves as Hispanic (42.2%; see Figures 5, 6; [Appendix, Map 3](#)). Both rates of unreported race/ethnicity were nearly the same for both groups.





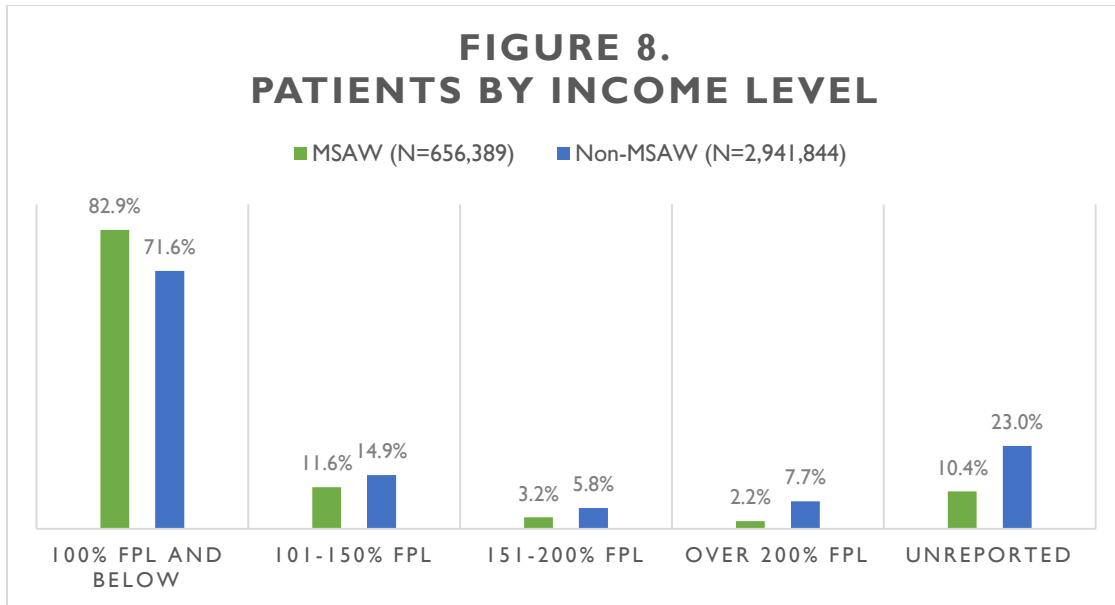
The percentage of MSAWs who were best served in a language other than English is more than double that of non-MSAW patients, suggesting differences in both national origin and acculturation. (see Figure 7; [Appendix, Map 4](#)).



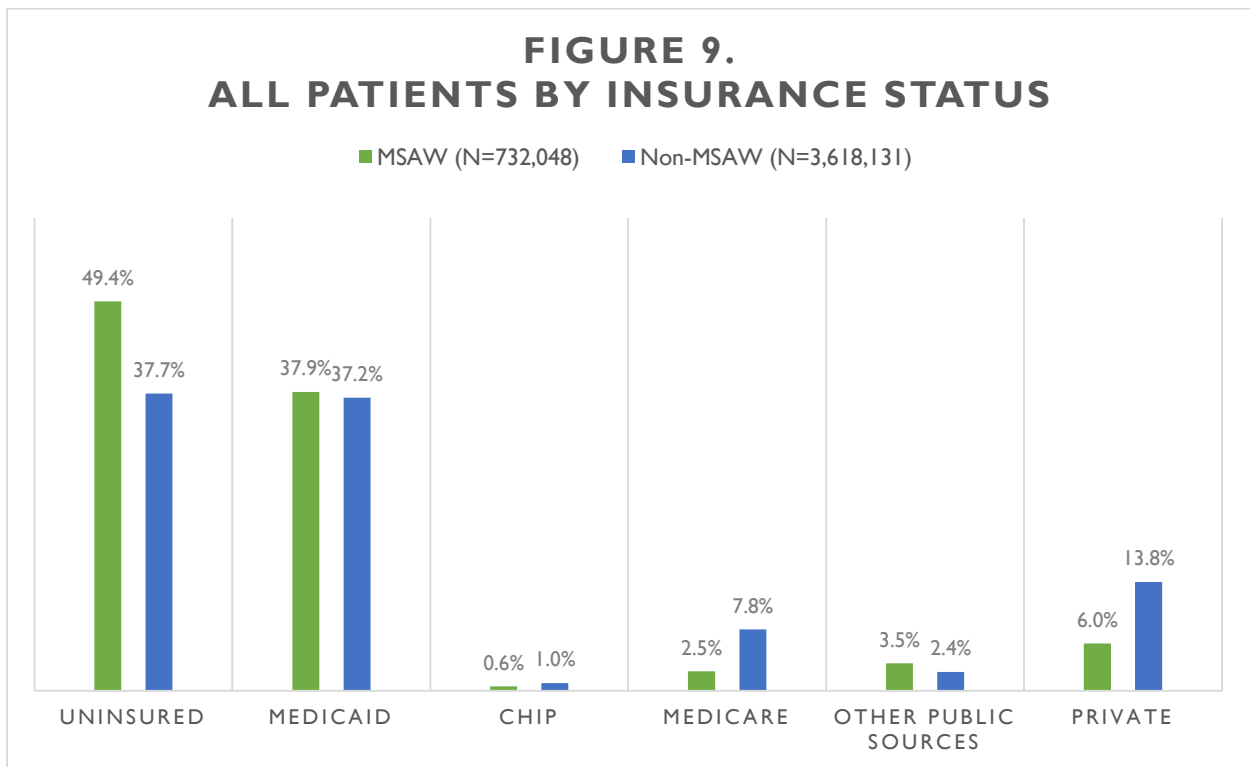
**SELECTED PATIENT CHARACTERISTICS**

This UDS table includes information on patient income, sources of health insurance, and the number of patients who belong to a special population (MSAW, homeless, school-based, or veteran).

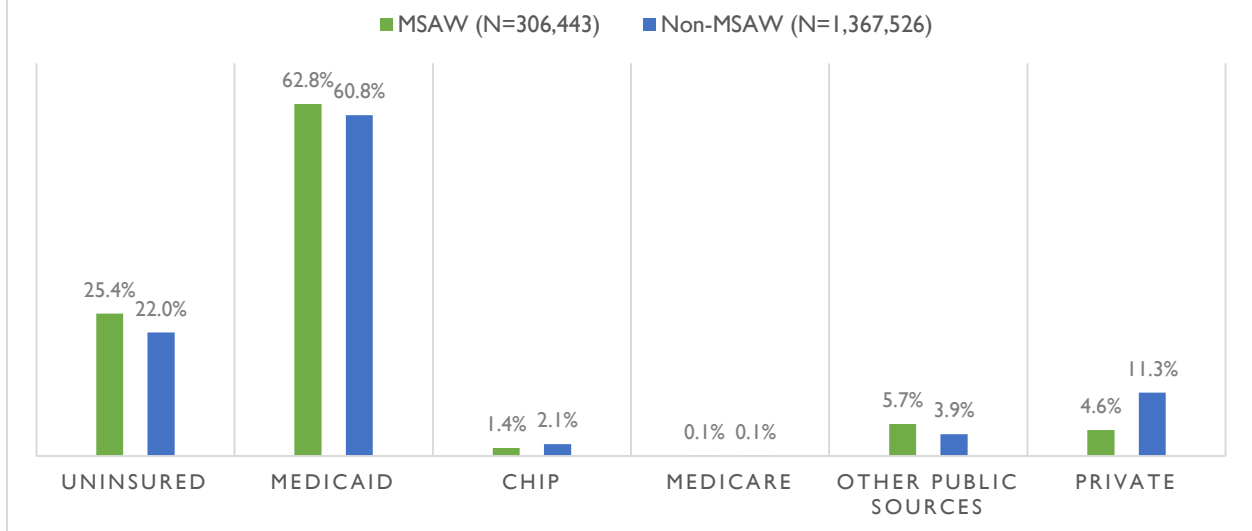
While poverty was pervasive for all patients served by Community/Migrant Health Center Program Grantees, income disparities between MSAW and non-MSAW patients are evident. Agricultural worker patients were more likely to earn wages at or below the federal poverty level (FPL), and fewer earned incomes over 200% FPL when compared to non-agricultural worker patients (see Figure 8; [Appendix, Map 5](#)).



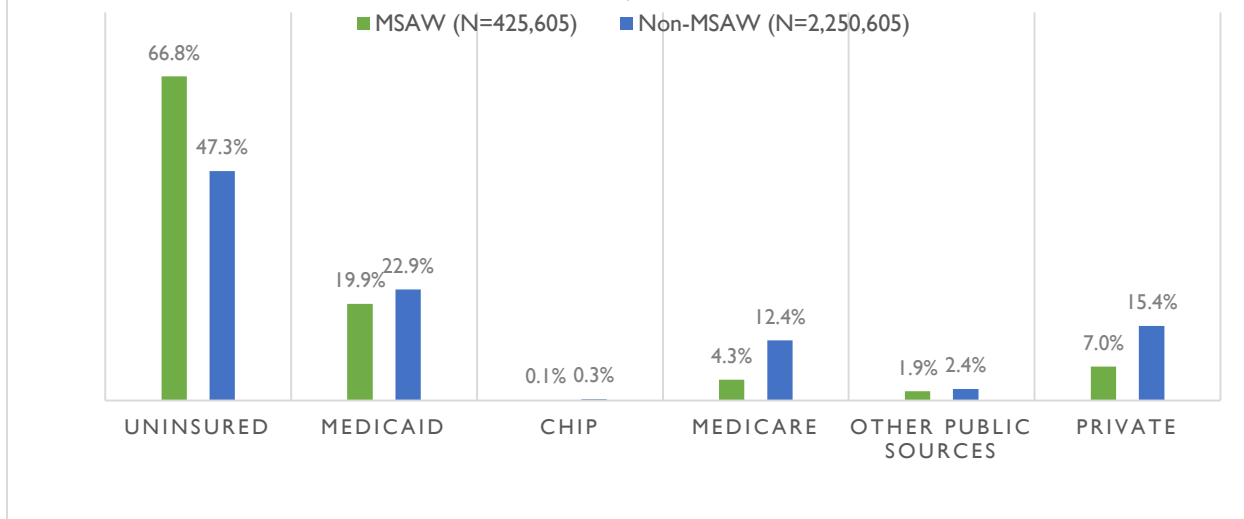
The source of health insurance are reported in the UDS for two categories: children (0-19 years) and adults (20+ years). The categories were added together to compare overall rates of insurance coverage for the population as a whole. Both child and adult agricultural worker patients experienced higher rates of being uninsured than non-MSAW patients, and the proportion of MSAW patients covered by private insurance was half that of non-agricultural workers (see Figures 9-11). The proportion of uninsured MSAW patients varies greatly throughout the UDS by state (see Map 6 in [Appendix](#)).



**FIGURE 10.  
INSURANCE STATUS, CHILDREN 0-19 YEARS**

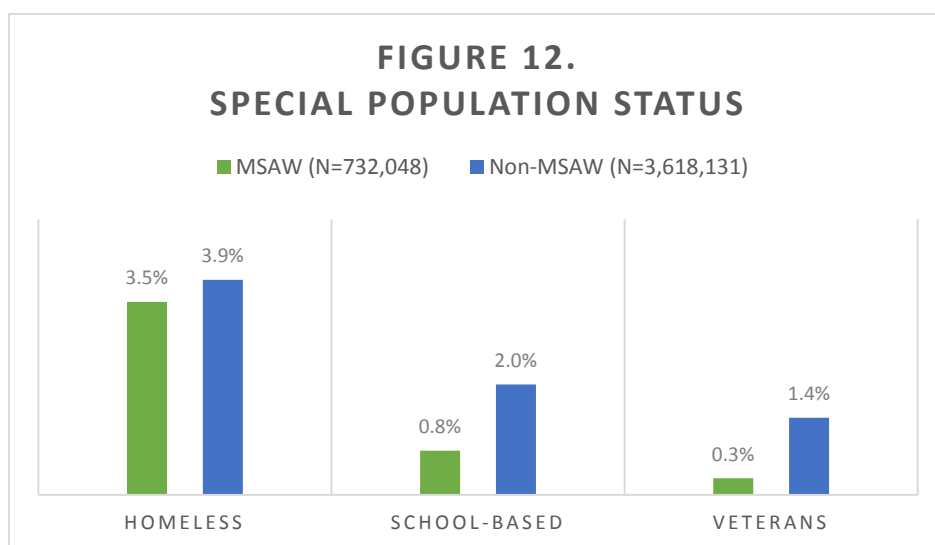


**FIGURE 11.  
INSURANCE STATUS, ADULTS 20+ YEARS**



Lastly, the proportion of patients classified as MSAW, homeless, school-based, or veteran is examined. Both MSAW and non-MSAW patients are reported as homeless at approximately the same proportion. Higher percentages of non-MSAW patients were also classified as school-based patients or as veterans (see Figure 12). Overall, 17% of the patients in this dataset of 142 C/MHCs were agricultural workers in 2010. The Grant Reports analyzed in this section exclude the 14 programs that received only Migrant Health funding because they did not file separate Migrant Health Grant Reports. These Migrant Health-only programs are frequently made up of largely male migratory populations, so the exclusion of this group of patients results in a higher figure of patients designated as seasonal workers. Fifty-nine percent of agricultural worker patients in this data subset were

classified as seasonal, and 41% as migratory, as compared to HRSA's publicly available data which reports 57% of agricultural workers as seasonal and 43% as migratory (see [Appendix, Maps 7 & 8](#)).<sup>8</sup>



## CLINICAL DATA

The clinical data analysis follows the format of UDS Table 6A, Selected Diagnoses and Services, for easier cross-referencing with the 2010 UDS Manual. This table captures information on diseases and conditions which are significant, reportable conditions from a public health perspective, and/or are considered sentinel indicators of access to primary care or are of special interest to HRSA. Consistent with that table, the number of cases reported is based on the “Number of patients with primary diagnosis”, which includes the total number of patients served by the Grantee with a primary diagnosis of the given condition during 2010. Agricultural worker patients were compared to non-agricultural worker patients. Both the prevalence percentage and number of cases are provided in the tables below. The size of the data set implies statistical significance for differences found between the two groups, but it is imperative that the differences be examined with an emphasis on potential clinical implications and significance.

This section examines the following of patients of 142 C/MHCs:

- The number and percentage of MSAW and non-MSAW patients with a selected primary diagnosis;
- The number and percentage of MSAW and non-MSAW patients who received a certain service.

<sup>8</sup> Health Resources and Services Administration. (n.d.). Table 4 – Selected patient characteristics. Retrieved from <http://bphc.hrsa.gov/uds/view.aspx?q=r4&year=2010&state=&fd=mh>

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**SELECTED INFECTIOUS AND PARASITIC DISEASES**

Lower proportions of MSAW patients were diagnosed with HIV/AIDS, hepatitis B & C than non-MSAW patients. MSAW patients were diagnosed with tuberculosis, syphilis and sexually transmitted diseases at slightly higher proportions.

Table 2.

<b>PRIMARY DIAGNOSIS</b>	<b>MSAW PATIENTS N = 732,048</b>	<b>NON-MSAW PATIENTS N = 3,618,131</b>
<b>HIV/AIDS</b>	0.16% (1,134)	0.31% (11,293)
<b>TUBERCULOSIS</b>	0.05% (352)	0.03% (968)
<b>SYPHILIS AND STDS</b>	0.19% (1,372)	0.18% (6,457)
<b>HEPATITIS B</b>	0.01% (73)	0.02% (717)
<b>HEPATITIS C</b>	0.08% (582)	0.22% (7,813)

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**SELECTED DISEASES OF THE RESPIRATORY SYSTEM**

Both asthma and chronic bronchitis & emphysema were reported in this category. Asthma prevalence for MSAWs and non-MSAWs were the same for both groups, and non-MSAW patients had a higher percentage of patients with chronic bronchitis or emphysema.

Table 3.

<b>PRIMARY DIAGNOSIS</b>	<b>MSAW PATIENTS N = 732,048</b>	<b>NON-MSAW PATIENTS N = 3,618,131</b>
<b>ASTHMA</b>	2.6% (18,991)	2.6% (95,502)
<b>CHRONIC BRONCHITIS &amp; EMPHYSEMA</b>	0.7% (5,413)	1.1% (40,431)

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**SELECTED OTHER MEDICAL CONDITIONS**

Of the nine health conditions in this section of Table 6A, five are related to chronic conditions and the effects of a non-nutritious diet and a sedentary lifestyle. Despite the fact that MSAWs were more likely to be classified as overweight/obese, they had lower levels of heart disease and hypertension as compared to non-MSAWs. Considering that many agricultural worker patients are Hispanic and immigrants, this data may provide evidence that MSAWs reflect the “Hispanic paradox”, which finds that despite poorer socioeconomic status, Hispanic immigrants may enjoy longer lifespans and better health than their U.S. born counterparts, potentially because of lower rates of tobacco usage among other factors.<sup>9</sup> It may also be due to the younger average age of MSAW patients.

While a higher proportion of MSAW patients received a primary diagnosis of overweight or obesity, this data field is not reliable as a true indicator of the actual prevalence of overweight/obesity, as it includes only the primary diagnosis (not the secondary or tertiary diagnoses). Overweight/obesity is only likely to be a patient’s primary diagnosis if there are no other more serious diagnoses, such as hypertension or diabetes. Thus, while the true

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<sup>9</sup> Blue, L. (6 October 2011). The ethnic health advantage. *Scientific American*. Retrieved from <http://www.scientificamerican.com/article.cfm?id=the-ethnic-health-advantage>



prevalence rates of overweight/obesity for MSAW patients are unknown, this data may indicate that many MSAW patients who are overweight may otherwise be healthy. Alternatively, it could indicate higher levels of overweight/obesity in patients who have not yet developed chronic diseases.

Overall, MSAWs had slightly higher proportions of diagnoses of diabetes, contact dermatitis/other eczema, and overweight/obesity, and lower proportions of heart disease, hypertension, and exposure to heat and cold than non-MSAWs. Both groups had equal proportions of abnormal breast and cervical findings and dehydration diagnoses.

Table 4.

PRIMARY DIAGNOSIS	MSAW PATIENTS N = 732,048	NON-MSAW PATIENTS N = 3,618,131
ABNORMAL BREAST FINDINGS, FEMALE	0.2% of female MSAWs (752; n=400,764)	0.2% of non-MSAW females (5,336; n=2,157,196)
ABNORMAL CERVICAL FINDINGS	1.0% of female MSAWs (3,867; n=400,764)	1.0% of female non-MSAWs (22,424; n=2,157,796)
DIABETES MELLITUS	6.8% (50,013)	6.7% (243,878)
HEART DISEASE	0.7% (4,905)	1.2% (45,206)
HYPERTENSION	7.7% (56,322)	9.5% (344,068)
CONTACT DERMATITIS & OTHER ECZEMA	1.6% (11,461)	1.5% (53,020)
DEHYDRATION	0.1% (871)	0.1% (3,442)
EXPOSURE TO HEAT OR COLD	0.1% (889)	0.3% (9,229)
OVERWEIGHT/OBESITY	2.1% (15,345)	1.6% (56,807)

## SELECTED CHILDHOOD CONDITIONS

The data on Selected Childhood Conditions captures primary diagnosis in three categories: Otitis media, selected perinatal medical conditions, and lack of expected normal physiological development. Accurate data capture in this category is challenging due to the nature of the UDS and the lack of age parameters for some of the diagnosis codes. For example, “lack of expected normal physiological development” can include diagnoses of malnourishment or other disorders that can occur at any age. “Selected perinatal medical conditions” applies to fetuses and infants up to 30 days old, but the smallest unit of analysis for age available is the number of children less than one year of age. Overall, a higher percentage of agricultural worker patients were diagnosed with otitis media and other Eustachian tube disorders, but due to the lack of age parameters, this category was not adjusted for age, and the difference is likely due to a higher proportion of children in the MSAW patient group. The most clinically significant finding in this category is the higher percentage of agricultural worker infants experiencing perinatal medical conditions (11.4%) compared to non-agricultural worker infants (8.9%). Numerous research studies have found that pesticides are linked to pregnancy and birth complications, and this data may provide important related evidence that the birth outcomes in the MSAW population are linked to pesticide exposure.<sup>10</sup> Other potential contributing factors could include late entrance into prenatal care and long travel times to care at the onset of labor.

<sup>10</sup> McCauley, L., Anger, W., Keifer, M., Langley, R., Robson, M., & Rohlman, D. (2006). Studying health outcomes in farmworker populations exposed to pesticides. *Environmental Health Perspectives*, 114(6). Doi: [10.1289/ehp.8526](https://doi.org/10.1289/ehp.8526)

Table 5.

<b>PRIMARY DIAGNOSIS</b>	<b>MSAW PATIENTS N = 732,048</b>	<b>NON-MSAW PATIENTS N = 3,618,131</b>
<b>OTITIS MEDIA AND EUSTACHIAN TUBE DISORDERS</b>	5.0% of all ages (36,472)	3.5% of all ages (126,528)
<b>SELECTED PERINATAL MEDICAL CONDITIONS<sup>11</sup></b>	11.4% of patients less than 1 year of age (2,892)	8.9% of patients less than 1 year (11,725)
<b>LACK OF EXPECTED NORMAL PHYSIOLOGICAL DEVELOPMENT<sup>12</sup></b>	0.6% of all ages (4,149)	0.5% of all ages (18,164)

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#### SELECTED MENTAL HEALTH AND SUBSTANCE ABUSE CONDITIONS

Seven categories are reported as selected mental health and substance abuse conditions. In comparison to non-agricultural worker patients, agricultural worker patients had lower prevalence rates of all mental health and substance abuse conditions. While linguistic and cultural barriers that could impede an accurate diagnosis might explain some of the variation, the large difference in some of the categories are notable. Non-agricultural workers were diagnosed with a tobacco use disorder at three times the rate of agricultural workers, and were diagnosed at twice the rate for depression and other mood disorders. Literature has repeatedly found that less-acclimated Latino immigrants use tobacco less frequently, and those who do use it with less frequency than their more acculturated counterparts; the C/MHC data for tobacco use and substance related disorders seem to bear this out.<sup>13</sup> Although findings have been mixed on the prevalence of depression in immigrants, research does point to an increased risk of mental health issues with increased time spent in the U.S. and acculturation.<sup>14,15</sup>

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<sup>11</sup> The ICD-9 codes in this category include fetal and neonatal respiratory conditions, hemorrhage, hemolytic disease, jaundice, endocrine and metabolic disturbances, hematological disorders, digestive system disorders, integument and temperature regulation conditions, and other perinatal conditions.

<sup>12</sup> This category includes diagnoses such as delayed milestone, failure to thrive, and failure to gain weight, and nutritional deficiencies.

<sup>13</sup> Abraído-Lanza, A., Chao, M., & Flórez, K. (2005). Do healthy behaviors decline with greater acculturation? Implications for the Latino mortality paradox. *Social Science and Medicine*, 61(6), 1243-1255. Doi: 10.1016/j.socscimed.2005.01.016

<sup>14</sup> Cook, B., Alegría, M., Lin, J., Guo, J. (2009). Pathways and correlates connecting Latinos' mental health with exposure to the United States. *American Journal of Public Health*, 99(12), 2247-54. Doi: 10.2105/AJPH.2008.137091

<sup>15</sup> Ornelas, I., & Perreira, K. (2011). The role of migration in the development of depressive symptoms among Latino immigrant parents in the USA. *Social Science and Medicine*, 73(8), 1169-77. Doi: 10.1016/j.socscimed.2011.07.002

Table 6.

<b>PRIMARY DIAGNOSIS</b>	<b>MSAW PATIENTS N = 732,048</b>	<b>NON-MSAW PATIENTS N = 3,618,131</b>
<b>ALCOHOL RELATED DISORDERS<sup>16</sup></b>	0.2% (1,421)	0.3% (10,841)
<b>OTHER SUBSTANCE RELATED DISORDERS<sup>17</sup></b>	0.1% (981)	0.3% (11,024)
<b>TOBACCO USE DISORDER</b>	0.1% (648)	0.4% (12,905)
<b>DEPRESSION AND OTHER MOOD DISORDERS<sup>18</sup></b>	1.8% (13,453)	3.9% (141,465)
<b>ANXIETY DISORDERS INCLUDING PTSD<sup>19</sup></b>	1.4% (10,094)	2.2% (78,379)
<b>ATTENTION DEFICIT AND DISRUPTIVE BEHAVIOR DISORDERS</b>	0.5% (3,397)	1.2% (42,289)
<b>OTHER MENTAL DISORDERS<sup>20</sup></b>	1.2% (8,708)	2.1% (76,778)

#### SELECTED DIAGNOSTIC TESTS/SCREENINGS/PREVENTIVE SERVICES

Thirteen indicators are reported for diagnostic tests, screening, and preventive services. MSAW patients had higher proportions of screenings and services in several categories, including mammograms, pap tests, all immunizations, contraceptive management, child health supervision, and eye exams. MSAW patients were screened in lower proportions for hepatitis B and C testing, childhood lead screenings, screening/brief intervention/referral/treatment (SBIRT), and smoke & tobacco use cessation counseling. Considering that the prevalence of smoke and tobacco use counseling match the prevalence of those diagnosed with tobacco use disorders, it is possible that no true disparity in counseling exists between the two groups.

Table 7.

<b>SERVICE</b>	<b>MSAW PATIENTS N = 732,048</b>	<b>NON-MSAW PATIENTS N = 3,618,131</b>
<b>HIV TEST</b>	2.9% of all ages (20,979)	2.9% of all ages (106,073)

<sup>16</sup> The ICD-9 codes for this category include alcohol-induced mental disorders, alcohol dependence syndrome, alcohol abuse, and alcoholic polyneuropathy.

<sup>17</sup> The ICD-9 codes for this category include drug-induced psychotic and mental disorders, drug dependence, non-dependent drug abuse, polyneuropathy due to drugs, and drug dependence complicating pregnancy, childbirth, or the puerperium.

<sup>18</sup> The ICD-9 codes specified for this category, "other mood disorders" include bipolar disorders, manic affective and depressive affective disorders, dysthymic disorder and cyclothymic disorder.

<sup>19</sup> The ICD-9 codes specified for this category include diagnoses of generalized anxiety and panic disorders, phobias, obsessive-compulsive disorders, acute reaction to stress, and post-traumatic stress disorder.

<sup>20</sup> This broad category includes diagnoses of dementias, schizophrenia, personality disorders, sexuality and gender disorders, and intellectual disabilities among others.

	6.1% of agricultural workers aged 15-44	7.0% of patients aged 15-44
<b>HEPATITIS B TEST</b>	0.5% (3,386)	0.9% (32,966)
<b>HEPATITIS C TEST</b>	0.3% (2,449)	0.5% (17,044)
<b>MAMMOGRAM</b>	11.3% of females aged 50-74 (5,820)	8.9% of females aged 50-74 (37,198)
<b>PAP TEST</b>	34.5% of females aged 21-64 (77,758)	27.1% of females aged 21-64 (338,534)
<b>SELECTED IMMUNIZATIONS</b>	17.0% (124,438)	14.2% (512,868)
<b>SEASONAL FLU VACCINE</b>	12.9% (94,276)	10.5% (381,512)
<b>HINI VACCINE</b>	3.9% (28,291)	2.6% (94,749)
<b>CONTRACEPTIVE MANAGEMENT</b>	25.0% of females aged 15-44 (50,365)	20.4% of females aged 15-44 (203,996)
<b>HEALTH SUPERVISION OF INFANT OR CHILD</b>	53.3% of children aged 0-11 (111,562)	51.6% of children aged 0-11 years (465,081)
<b>CHILDHOOD LEAD TEST SCREENING (9-72 MONTHS)</b>	5.9% of children aged 1-6 (6,604)	8.6% of children aged 1-6 years (45,554)
<b>SBIRT</b>	0.1% (689)	0.2% (7,680)
<b>SMOKE AND TOBACCO USE CESSATION COUNSELING</b>	0.1% (646)	0.3% (10,605)
<b>COMPREHENSIVE AND INTERMEDIATE EYE EXAM</b>	1.5% (10,724)	0.8% (29,656)

## SELECTED DENTAL SERVICES

Dental services are reported for those who have had at least one visit with a dental professional during the reporting period. Agricultural workers had consistently higher proportions of dental care in all eight categories except for emergency oral services; this is likely to be indicative of oral health and/ or insurance status rather than provider capacity, considering both groups of patients are served by the same Grantees.

Table 8.

<b>SERVICE</b>	<b>MSAW PATIENTS N = 732,048</b>	<b>NON-MSAW PATIENTS N = 3,618,131</b>
<b>EMERGENCY SERVICES</b>	0.5% (3,800)	1.0% (34,737)
<b>ORAL EXAMS</b>	17.3% (126,887)	16.8% (608,314)
<b>PROPHYLAXIS</b>	10.4% (76,282)	8.9% (322,578)
<b>SEALANTS</b>	2.6% (18,678)	1.8% (65,742)
<b>FLUORIDE TREATMENT</b>	8.3% (60,740)	6.7% (243,337)
<b>RESTORATIVE SERVICES</b>	8.2% (60,011)	6.1% (222,461)
<b>ORAL SURGERY</b>	4.2% (30,887)	4.8% (172,060)
<b>REHABILITATIVE SERVICES</b>	2.9% (21,402)	2.4% (87,748)

## DISCUSSION & CONCLUSION

The purpose of the comparative analysis was to provide baseline information for MSAW patients and to compare the demographic, socioeconomic, and health status characteristics of agricultural workers and non-agricultural workers who chose care at the same 142 Community/Migrant Health Center Program Grantees in 2010. Both of the groups hold much in common: both live largely in rural areas and both groups must deal with high rates of poverty and a lack of health insurance. However key differences remain. Agricultural worker patients struggle with higher poverty rates and a lack of health insurance coverage more often than other patients at C/MHCs. Agricultural worker patients face linguistic and cultural barriers in receiving care, and considering that more than two thirds of agricultural workers speak a language other than English, extra resources and funding for bilingual and culturally-competent staff is an imperative for C/MHCs that serve high proportions of agricultural workers. With respect to reported health conditions, multiple disparities were seen between agricultural worker and non-agricultural worker patients, many of which underscore the health advantages immigrant populations often have over more-acclimated or U.S.-native peers. Physically active lifestyles, an avoidance of tobacco usage, and strong family support may have a role in creating the lower rates of hypertension, heart disease, and substance abuse seen in this population of agricultural workers. Similar factors have previously been identified in the longer lifespans of Hispanic immigrants, known as the “Hispanic paradox”, which attributes the better health outcomes of Hispanic immigrants to a host of sources, such as the healthy migrant effect, social resources, religious beliefs, dietary habits, and low tobacco usage.<sup>21,22</sup> MSAWs also had substantially lower rates of mental health conditions, but the reliability of this data as a true indicator of the prevalence of mental health conditions is dubious. Linguistic and cultural barriers to receiving mental health care may interfere with the diagnosis and treatment of MSAW patients, and a shortage of mental health care providers (particularly bicultural providers) in rural areas may impede access and timely diagnosis. Further investigation into the mental health status of agricultural workers and subpopulations of agricultural workers is encouraged. Likewise, further investigation is warranted into verifying the health advantages observed for MSAWs with respect to reported chronic diseases, and there is a need for translational research in order to educate and train community health workers and agricultural workers on how to maintain true health advantages.

Areas of concern do persist for the health of agricultural worker patients. The proportion of perinatal conditions seen in agricultural worker patients in 2010 was 11.4% and was 8.9% in non-agricultural workers. Grantees are not required to report prenatal care measures by Special Population status, so it is not possible to determine from UDS data if late entrance to prenatal care or a lack thereof is the cause of this disparity. Diabetes and tuberculosis were also diagnosed at a slightly higher rate in agricultural worker patients, but more research is needed to determine the reliability and clinical significance of this data.

Screenings, tests, and dental services were all provided to agricultural workers and non-agricultural workers at approximately the same rate. Agricultural worker patients had fewer hepatitis B and C tests performed, but also had lower diagnosis rates of the viruses. Agricultural worker children had half the rate of lead screening as non-agricultural worker children, but it is unknown if agricultural worker children were being screened by other

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<sup>21</sup> Gallo, L., Penedo, F., Espinosa de los Monteros, K., & Arquelles, W. (2009). Resiliency in the face of disadvantage: do Hispanic cultural characteristics protect health outcomes? *Journal of Personality*, 77(6). doi: 10.1111/j.1467-6494.2009.00598.x

<sup>22</sup> Blue, L. (2011). The ethnic health advantage. *Scientific American*. Retrieved from <http://www.scientificamerican.com/article.cfm?id=the-ethnic-health-advantage>

providers, such as local health departments which may compensate for this disparity. Female agricultural workers received a significantly higher proportion of mammogram screenings compared to non-agricultural workers, as well as pap tests and contraceptive management services, indicating a high demand for women's health services in this population.

Agricultural worker patients continue to struggle with poverty, language barriers, and a lack of health insurance, but are receiving a wide range of services at C/MHCs at the same rate as non-agricultural worker patients and enjoy better health outcomes in multiple clinical measures. This report has provided a starting point for continued analysis of the Uniform Data System and the information on agricultural worker patients that can be identified with the UDS.

## RECOMMENDATIONS

Based on this analysis, multiple areas for further investigation and improvement have been identified, primarily in terms of the data reporting system and the health disparities and health assets experienced by agricultural worker patients at C/MHCs.

### I. Data Collection and Reporting

- *Identifying agricultural workers should be streamlined.*  
With the ever-expanding use of smartphones and tablets in the clinic setting, technology should be developed to facilitate the identification of agricultural workers. A simple, interactive app could be created to help patients self-identify themselves as agricultural workers. The app could be integrated with a cloud-based, centralized master patient index (MPI) of agricultural worker patients, which could also facilitate the identification of migratory patients. Such a MPI could alleviate the burden on Grantees and on patients to repeatedly verify their agricultural worker status.
- *Reporting on clinical diagnoses should include all levels of diagnoses, not just primary diagnoses.*  
Considering the dearth of data available on the overall health status of agricultural workers in the U.S., the Uniform Data System could become an extremely important dataset for determining the health needs and assets of this population, particularly if more robust data was collected on clinical diagnoses. Limiting the collection of data to only patients who received a primary diagnosis does not allow for accurate estimates of prevalence, especially for conditions often associated with co-morbidities, such as hypertension and overweight/obesity. The collection of data on all patients who receive a reportable diagnosis would allow for more accurate estimates of disease burden in agricultural workers.
- *Building a Grantee health information exchange should be considered.*  
Aggregating data and reporting is both time-consuming for grantees and results in a very restricted data set. As more and more grantees implement electronic health record systems, the Health Center Program should consider developing a more modern and ultimately useful system of collecting and analyzing grantee data. Building the infrastructure for a national migrant Health Information Exchange would be an alternative way of collecting more comprehensive data on the agricultural worker population.

### 2. Health and Socioeconomic Disparities of MSAW Patients

Further research and potential policy changes are needed in the areas where MSAW patients appear to be experiencing health and socioeconomic disparities:

- *Higher proportion of uninsured MSAW patients.*  
Overall, MSAW patients experienced a lack of health insurance far more often than non-MSAW patients. States that had lower rates of uninsured MSAWs included Washington and California,

both states that have public insurance programs that provide health insurance to undocumented children. The expansion of health insurance coverage where available, and the investigation of potential solutions for those who lack coverage, should be key goals for MSAW health advocates.

- *Higher proportion of perinatal conditions and disorders.*  
Agricultural worker patients experienced a higher rate of perinatal conditions and disorders compared to non-agricultural worker patients, after adjusting for the number of infants aged one year or less. Whether this is due to a true inequity, such as limited access to early prenatal care or extended pesticide exposure, or whether it is simply due to a potentially higher pregnancy rate is unknown and cannot be determined from this dataset. The potential connection between a higher proportion of perinatal conditions and disorders and a higher utilization of contraceptive services among MSAW patients is intriguing. Further investigation into this disparity is warranted.

### 3. Health Assets of MSAWs

Both **exploratory** and **translational research** is needed to identify predisposing, enabling, and reinforcing factors that explain the health advantages enjoyed by MSAW and ensure that those factors are maintained and expanded. The low rates of hypertension, heart disease, and mental health conditions despite high rates of poverty and a lack of health insurance may indicate that MSAW patients employ positive social and lifestyle habits, and these habits could be adapted for and taught to other patient populations which experience high rates of chronic disease.

### 4. Potential future analysis of the Uniform Data System

NCFH is currently exploring how the Uniform Data System can be analyzed and utilized for multiple purposes, which could further advance and increase public knowledge on the health and socio-economic status of agricultural workers in the U.S. Potential future analyses of the UDS by NCFH could include:

- *Temporal & future trend analyses*  
Since the UDS was introduced in 2004, ten years of data are now available. Historical data could be analyzed to determine trends in the numbers of agricultural worker patients, as well as the trends in demographic and clinical outcomes. Annual reporting requirement changes and changes in definitions would limit the amount of data that could be analyzed over time, but such an analysis could help focus efforts in the areas of outreach, policy development, program evaluation, and patient education by determining areas of progression or regression over time. Baseline data provided in this report can be used to monitor changes over time. For example, information from the UDS could be used to monitor changes in the rates of health insurance coverage among MSAWs after the implementation of the Affordable Care Act.
- *Regional/geographic trend analyses*  
While some limited geographically-based analysis was conducted in this report, a closer examination of regional differences in the health outcomes of agricultural worker patients could provide important implications for federal, state, and local policies. For example, a comparison of the health outcomes MSAW patients in states with very low levels of uninsured MSAW patients compared to states with very high levels of uninsured MSAW patients could shed light on the impact of health insurance (or lack thereof) on this population.
- *Intra-Migrant Health analyses*  
In order to control for the effects of differing health care providers and clinic policies, Grantees receiving only Migrant Health funding were excluded from this analysis, as these programs function largely as case-management programs and ensure care for MSAWs by contracting with a variety of public and private providers. The excluded Grantees serve a highly mobile, largely male population of MSAWs, and a separate analysis of this group is warranted. A separate report comparing the demographic characteristics and the clinical outcomes of MSAW patients at these

Migrant Health-only programs to programs that receive both Community and Migrant Health Funding will be released in the fall of 2014 by NCFH.

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## APPENDIX: DEMOGRAPHIC DATA MAPS

Maps were created in Microsoft MapPoint. All values in maps are a proportion (value range from 0.0 to 1.0).

Figure 1. Agricultural worker patients reported as 65 years and older

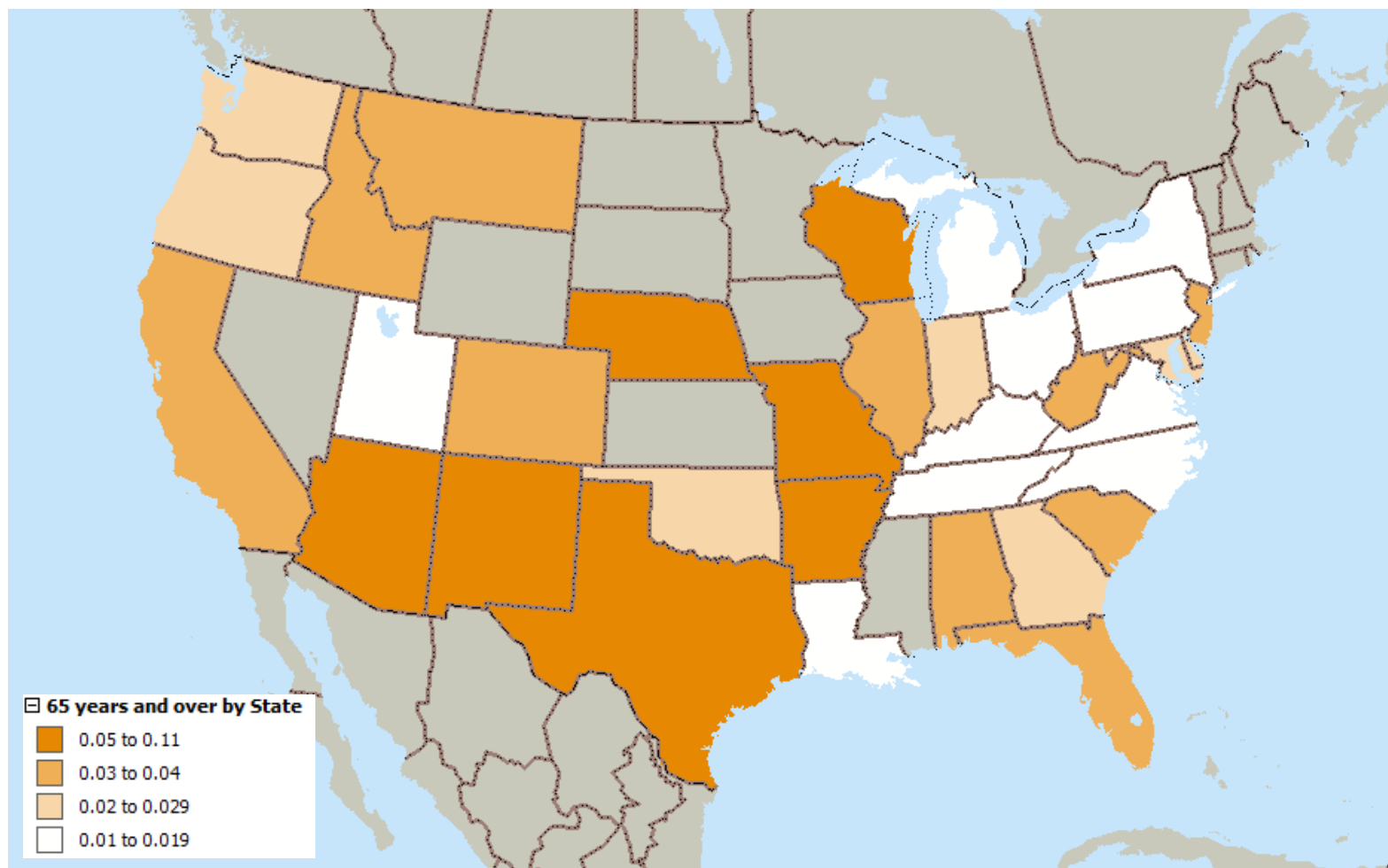


Figure 2. Agricultural worker patients reported as male

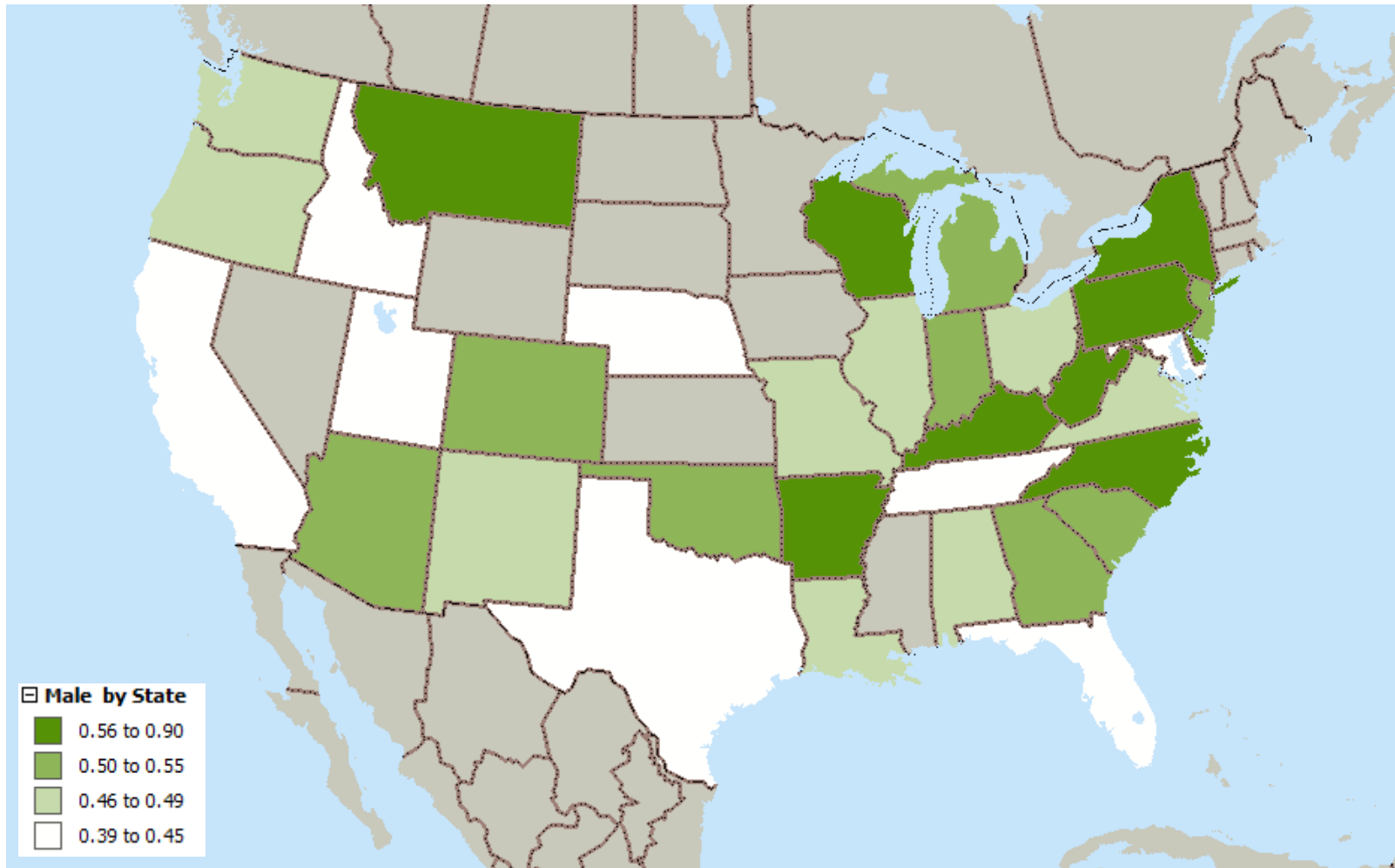


Figure 3. Agricultural worker patients classified as Hispanic of any race

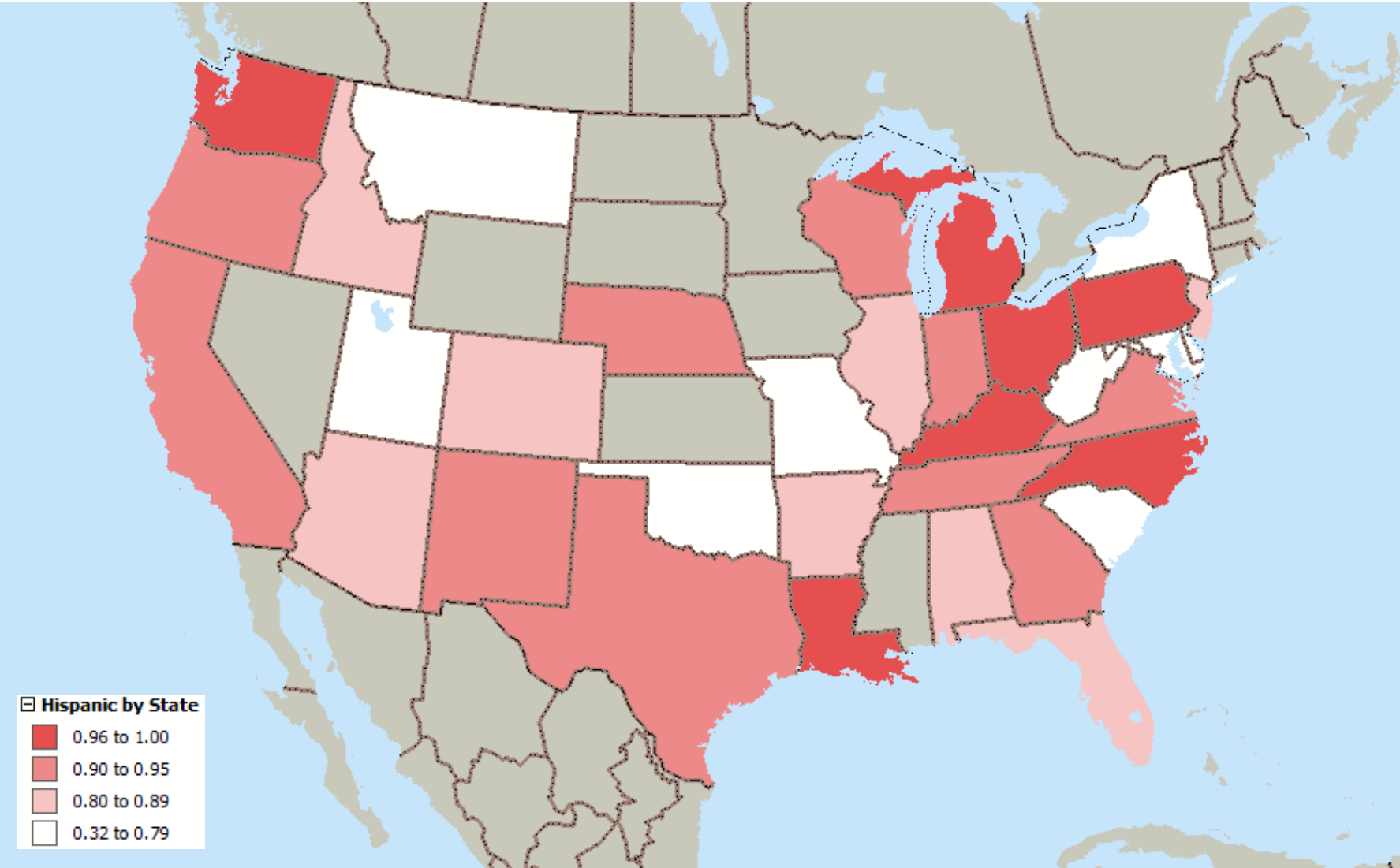


Figure 4. Agricultural worker patients best served in a language other than English

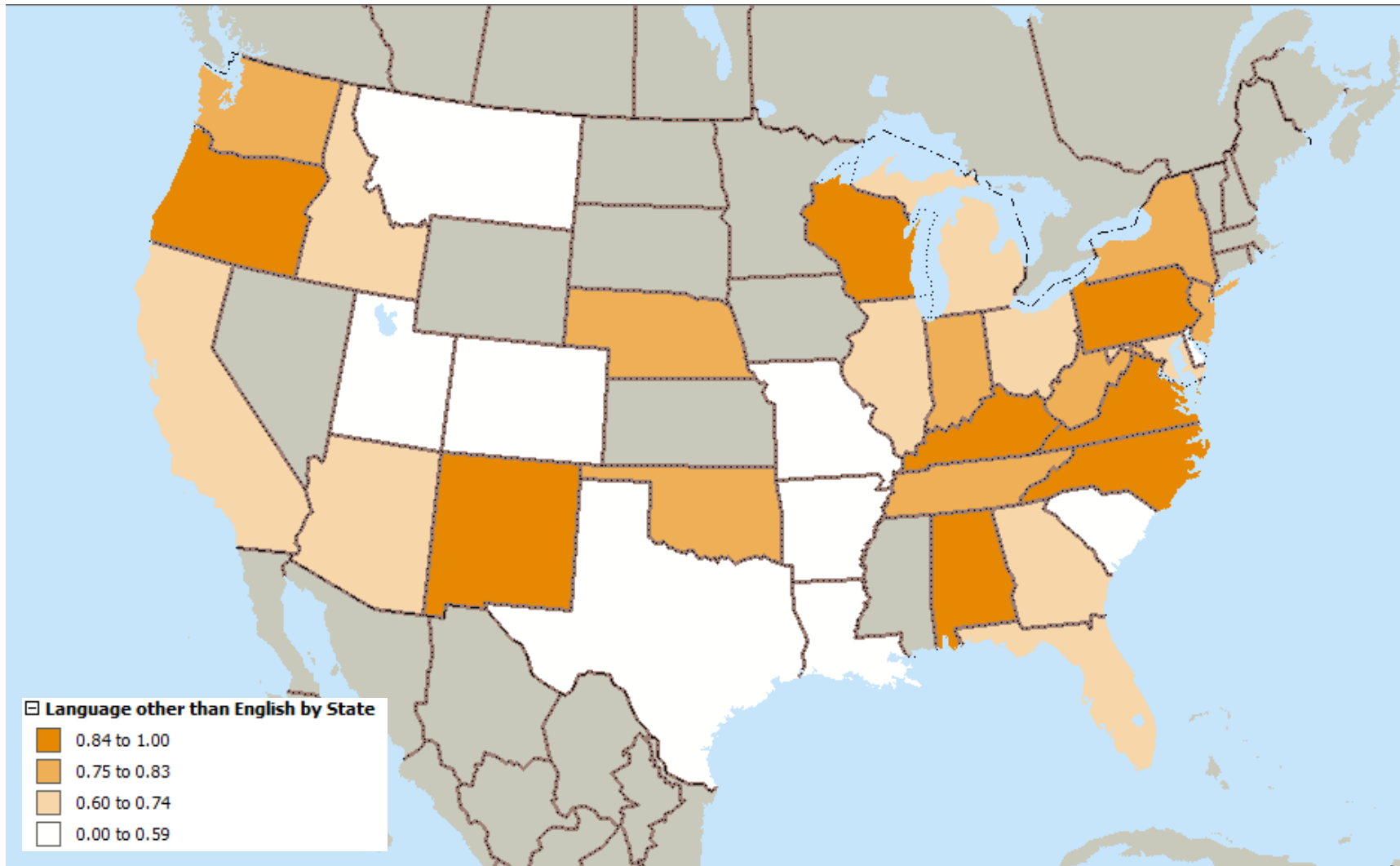


Figure 5. Agricultural worker patients reported with income levels at or below 100% federal poverty level

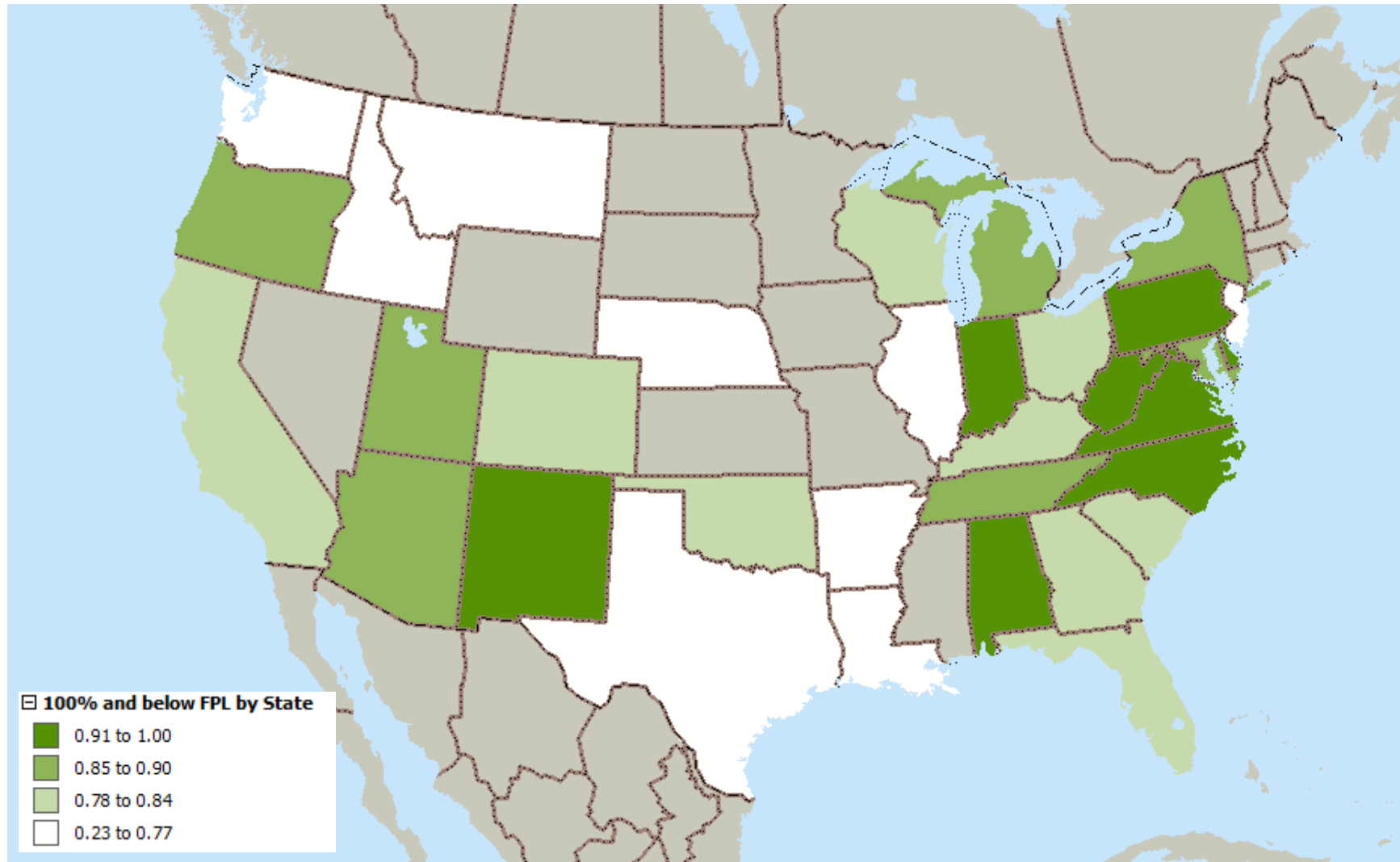


Figure 6. Agricultural worker patients of all ages reported as uninsured

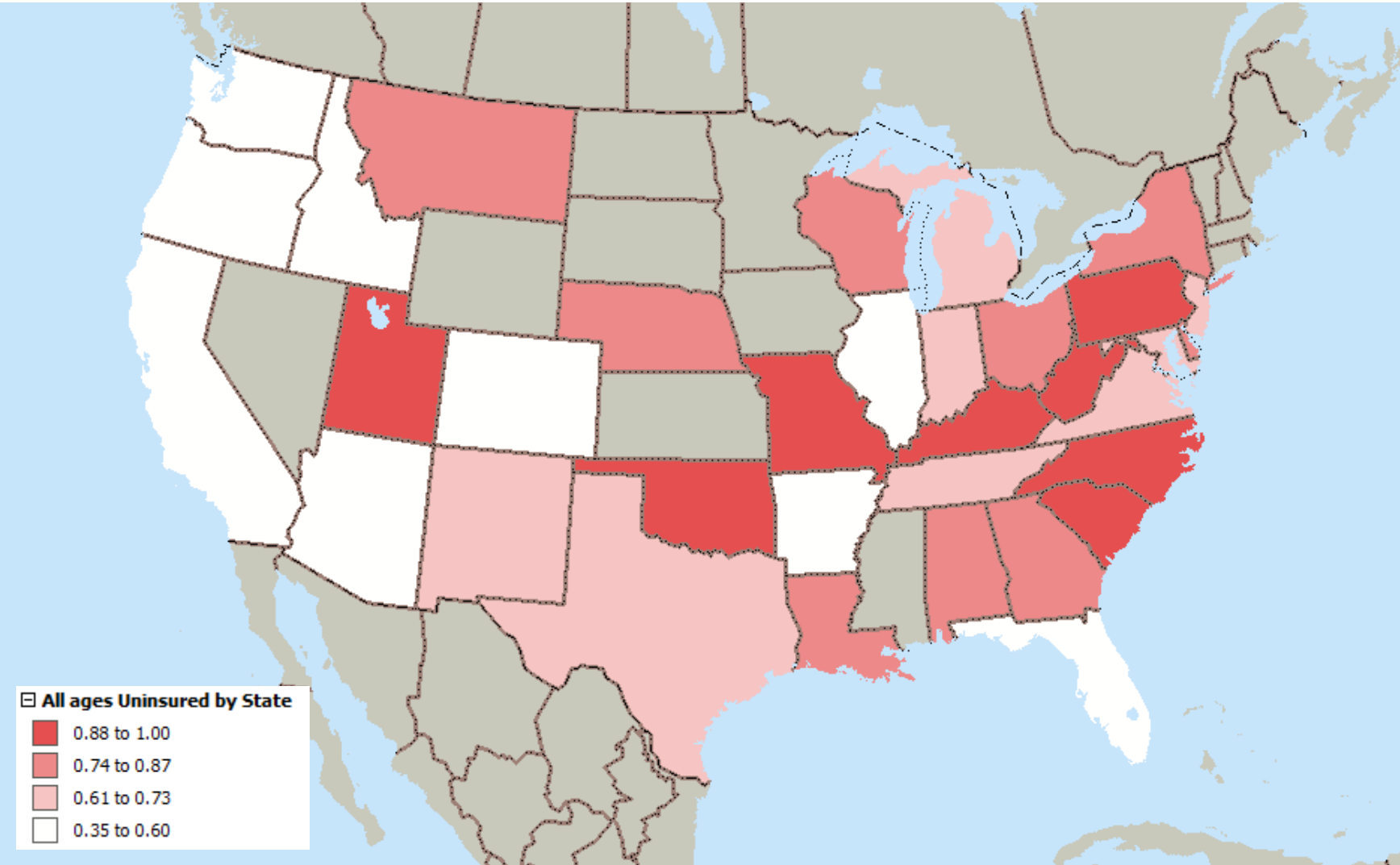


Figure 7. Agricultural worker patients classified as migratory

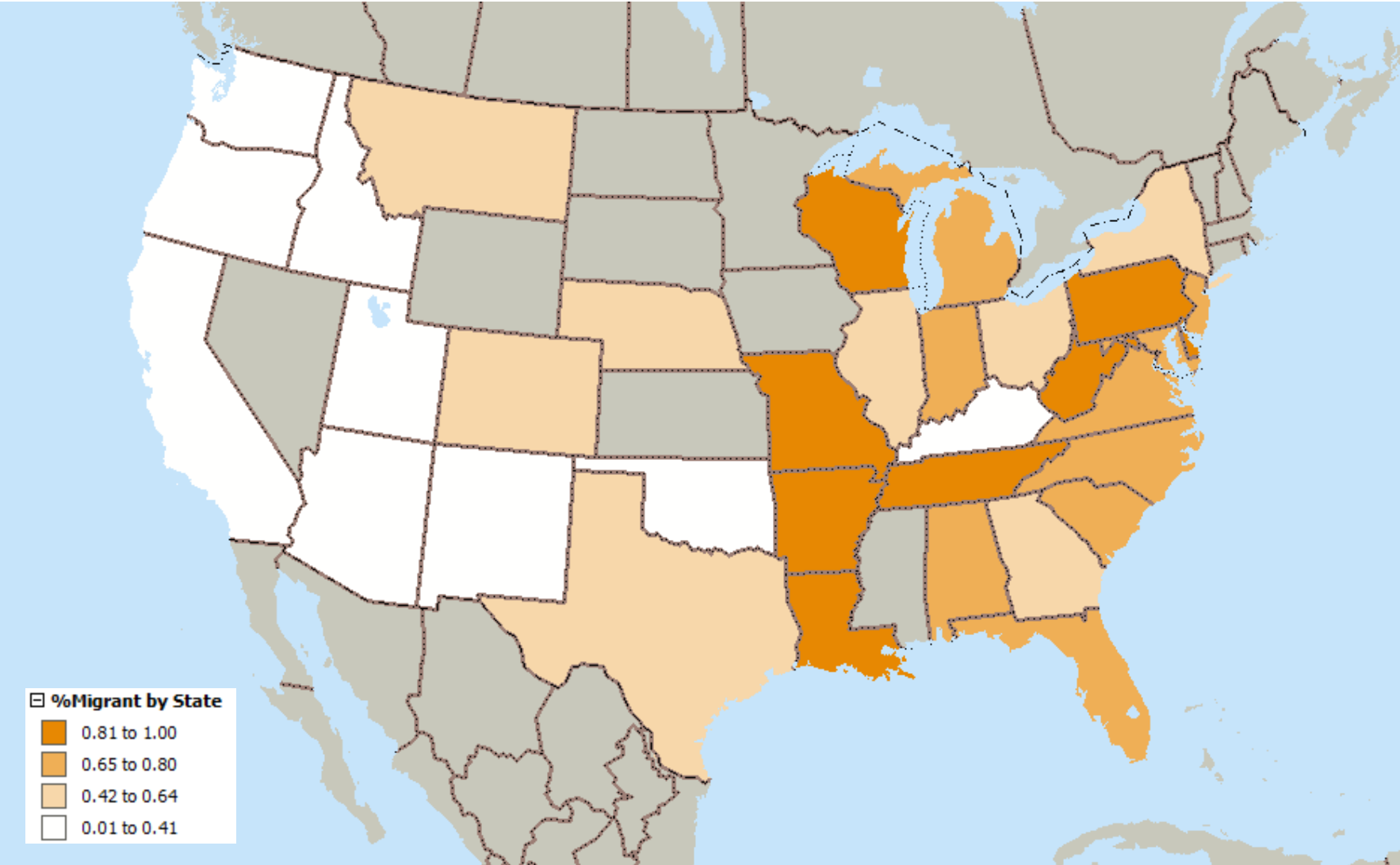


Figure 8. Agricultural worker patients classified as seasonal

