Migrant and Seasonal Farmworker Enumeration Profiles Study

Michigan Update June 2013

Michigan Migrant and Seasonal Farmworker Enumeration Profiles Study 2013

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Preface

The State of Michigan Interagency Migrant Services Committee is pleased to present this 2013 Update to the 2006 Michigan Migrant and Seasonal Farmworker Enumeration Profiles Study.

The Interagency Migrant Services Committee is a forum for statewide coordination of service delivery to migrant and seasonal farmworkers, encompassing employment, education, healthcare, public benefits, legal services, and other assistance. Membership is comprised of state and federal agencies that provide direct or indirect services to this population, nonprofits and educational institutions, research groups, and representatives of grower interests. Current members are listed on the following page.

This longstanding committee was created in 1972 in response to reports issued by the Michigan Civil Rights Commission regarding migrant farm labor in the state, and the recommendations of Governor Milliken's 1969 Task Force on Migrant Labor. Governor Milliken further institutionalized the Committee by Executive Order in 1978.

Governor Milliken also designated the Michigan Department of Human Services as the lead state agency for assessment, development, and coordination of services to migrant farmworkers in Michigan. The Department of Human Services created the Office of Migrant Affairs in response to this gubernatorial directive, and the Director of the Office of Migrant Affairs serves as the permanent Chair of the Interagency Migrant Services Committee.

As Chair, I would like to extend my thanks to all members of the Interagency Migrant Services Committee for your contributions to the 2013 Update. The 2006 study has been invaluable for informing resource allocation by our agencies, as well as for research, grant writing, and business purposes by non-profit organizations, academia and the agricultural community. The study has led to improved access to health care, benefits and services for farmworkers in Michigan, and increased higher education opportunities for this population. It also has highlighted the need for additional adequate housing, and more health and education services specifically targeted to our many farmworker children in the state. Agricultural researchers have also used the 2006 study for further research on agricultural labor needs and trends, supplying critical data for our second biggest industry in Michigan.

The uses of the 2006 study have been many. We expect that the 2013 Update will be of even greater utility, as we work together to strengthen our agricultural sector and further improve the living and working conditions of the men and women vital to this industry.

Mollie Schairer
Chair, Interagency Migrant Services Committee
Director, Office of Migrant Affairs, Michigan Department of Human Services

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U.S. Department of Homeland Security/U.S. Citizenship and Immigration Services
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This research was greatly aided by the many staff of migrant and seasonal farmworker serving programs throughout Michigan and personnel at various state agencies who provided database information and conducted special data runs which allowed a range of information from which to draw conclusions.

Those who participated in interviews, either in-person or by telephone, and others who consulted on various issues via email communication, all offered observations and details without which it would not have been possible to make informed assumptions.

The individuals who, when asked, took time to review and comment on the Draft Report helped to make the final document more accurate and usable.

In particular, the author would like to thank Mollie Schairer and Audra Fuentes of the Office of Migrant Affairs in the Michigan Department of Human Services for their continuing support and assistance throughout the study including arranging for on-site visits. Additional thanks go to all the members of the Data Task Force of the Michigan Interagency Migrant Services Committee, and in particular Lynda Meade from the Michigan Primary Care Association and Tom Thornburg of Farmworker Legal Services for their offers of assistance, resources and advice.

The author of this report would like to thank Al Flores of the Michigan Department of Civil Rights for finding the funding to make this Michigan Update happen through a grant from the United States Department of Housing and Urban Development. In addition, Don Kuchnicki of Telamon Corporation NFJP, the Community Foundation of the Holland/Zeeland Area, and Jawor Bros. Blueberries, Inc. provided additional funding for report printing and publicity. The author would also like to thank the Michigan Department of Human Services for donating the report layout and design.

Estimating migrant and seasonal farmworkers and their non-farmworking household members is an extremely challenging task. This research has attempted to develop a reasonable approach to the estimation process. The user should carefully consider the description of study parameters to understand what is included or excluded from the final figures and the limitations of the research.

It is hoped this document will be found to be helpful in meeting the need for descriptive information on the migrant and seasonal farmworker population in Michigan.

Alice C. Larson, Ph.D.
Larson Assistance Services

Document Description

Michigan Update, Migrant and Seasonal Farmworker Enumeration Profiles Study.

Background

In 2000, the Migrant Health Program of the Bureau of Primary Health Care, U.S. Department of Health and Human Services, completed a series of reports that provided estimates for migrant and seasonal farmworkers, who are the program's target group. This series covered ten initial states, with seven additional state-level reports, funded by alternative sources, completed between 2002 and 2008.

These reports, identified as the Migrant and Seasonal Farmworker Enumeration Profiles Study series, are unique as they present county-level estimates, using state-specific methods, for both workers and associated non-farm working household members. The reports have been widely circulated and reviewed and have gained general acceptance as offering a reasonable approach to estimating this population.

The Michigan Migrant and Seasonal Farmworker Enumeration Profiles Study was completed in 2006 as one of a number of state-specific studies which followed the first initial ten funded by the Office of Migrant Health. This effort was sponsored by the Michigan Civil Rights Commission and coordinated through the Michigan Interagency Migrant Services Committee (IMSC). Because there is a constant need for accurate and current estimates of the migrant and seasonal farmworker (MSFW) population in Michigan, these figures have been used by a variety of sources including: government agencies, health care providers, non-profit service organizations, researchers, agricultural producers, media representatives, advocates and many other organizations, businesses and individuals.

The 2006 Michigan Migrant and Seasonal Farmworker Enumeration Profiles Study (MI MSFW EPS) (Larson, 2006) is now seven years old, which leaves the question of whether crops, agricultural production methods, and the characteristics of MSFWs have changed. The Michigan Civil Rights Commission, in 2010, issued a Report on the Conditions of Migrant and Seasonal Farmworkers in Michigan which included the recommendation to "conduct an Enumeration Study to update the 2006 information" (Michigan Civil Rights Commission, 2013). In 2012, the Michigan Department of Civil Rights engaged Larson Assistance Services, Alice C. Larson, Ph.D. (author of the Enumeration Profiles Study series of reports) to update the study. Similar to the earlier effort, the IMSC would assist in coordinating activities, with the Office of Migrant Affairs, Michigan Department of Human Services (DHS) taking the lead role.

Study Purpose

The Michigan Update, MSFW Enumeration Profiles Study (MI Update MSFW EPS) offers a revised version of the earlier 2006 report, looking at county level estimates for the following three population sub-groups:

- Migrant farmworkers and seasonal farmworkers.
- Non-farmworkers present in the same household as migrant farmworkers and seasonal farmworkers (defined by the term “accompanied”).
- Number of people (“children and youth”) under age 20 in six age groups.

Included in the scope of study are individuals engaged in field and orchard agriculture, food processing (sorting, cleaning, packing and similar operations), horticultural specialties (nursery operations, greenhouse activities and crops grown under cover), and reforestation (tree planting). Forest gathering - including such items as ferns, mushrooms, salal, and wreath-making materials - was also examined as a separate industry, but little evidence was found that, in Michigan, individuals engaged in this work exclusive of other agricultural activities. No effort was made to determine the legal status of MSFWs or non-farmworker household members who were estimated.

Definitions

1. Migrant and Seasonal Farmworkers (MSFWs)

For consistency, the MSFW definition used in the 2006 study and all of the reports in the MSFW Enumeration Profiles series was incorporated into this work. It corresponds to that of the Migrant Health Program, in that it describes a seasonal farmworker as:

> “An individual whose principal employment is in agriculture on a seasonal basis, who has been so employed within the last twenty-four months.”

A migrant farmworker meets the same definition but “establishes for the purposes of such employment a temporary abode.” (U.S. Code, Public Health Services Act, “Migrant Health”)

2. Industries Included in the Estimates

In December 2012, the Migrant Health Program changed the agricultural industries included in the definition (U.S. Department of Health and Human Services, 2012). Regarding what had previously been used to define the population included in the MSFW EPS series of reports, some categories were dropped while others were added.

Because the MI Update MSFW EPS was begun on the premise that the definition used would be similar to the earlier 2006 MI MSFW EPS, an effort has been made to keep the categories included in the population similar to the earlier report.

In particular, Migrant Health added the category of animal agriculture while excluding reforestation and forest products gathering. Because a great deal more research needs to be conducted before a reasonable estimate of workers involved in animal agriculture “on a seasonal basis” and the characteristics of any accompanying household members can be estimated, these groups (e.g., dairy workers) have not been included in this report. The estimate for reforestation workers is provided but as a separate statewide number.

Each of the four major industry groups for which estimates were developed was defined by a specific North American Industrial Classification System (NAICS) Code, which is a means for identifying every industry and sub-industry. Such categorization was often found to be useful for extracting information from established databases.

a. Field Agriculture (Excluding Animal Agriculture)

Field agriculture is included in NAICS identification 111, “crop production,” under the general category “agriculture” (code 11). Additionally, several smaller NAICS subcategories are considered field agriculture, including: 1151 “support activities for crop production,” which includes: 115112 “soil preparation, planting and cultivating,” 115114 “postharvest crop activities,” and 115115 “farm labor contractors and crew leaders.”

b. Nursery/Greenhouse

The NAICS code 1114 defines “greenhouse and nursery production.” This falls within the broader “crop production” classification mentioned above.

c. Food Processing

“Food processing” (sorting, grading, cleaning, packing, etc.) is a regular part of crop production but has been an extremely difficult industry to define as it is all-encompassing. For example in just one crop, cucumbers, jobs defined as “food processing” range from sorting, grading and even bagging harvested cucumbers for fresh market to making pickles. Agricultural producers might do a full range of such activities in one location. During on-site interviews conducted for this study, the blending of production, food processing and even the existence of direct retail sales and restaurants could all be blended into one operational location (interviews, 2012: Kent County DHS, Kalchik and Knudson, Oceana and Ottawa DHS, Longstroth, Goldy and Shane).

In previous MSFW EPS series reports, food processing was identified with two NAICS codes because actual operations are hard to differentiate:

115114: post harvest crop activities.
3114: fruit and vegetable preserving and specialty.

Agricultural producers might be classified under NAICS 3114 (a manufacturing classification which now falls outside the Migrant Health definition), while others might be classified under NAICS 115114 (postharvest crop activities, which would be included in the definition). Many of these operators could fall under both categories.

If a worker cleans a product; as occurs with onions, cherries and a number of other crops; this activity might occur in any number of locations. The worker would be engaged in post harvest activities but might perform this work in a field, a shed or a plant. These are seasonal jobs and are considered to be part of crop production.

Food processing was found to be a challenging category for which to derive MSFW estimates. A variety of sources were used, some of which included data specific to NAICS 3114. An effort was made to primarily estimate workers engaged in post-harvest activities, but because operations associated with changing the form of the crop (e.g., juicing) and others where items are processed for fresh market can blend, it was not possible to differentiate completely. A further explanation of the methodologies used for food processing estimates is provided in later sections of this Report.

d. Reforestation

Reforestation falls within NAICS 1153, “support activities for forestry.”

Limitations

It is challenging to estimate the number of MSFWs at a county level as agriculture and the individuals employed in it are in constant flux. No database exists that provides a comprehensive picture of this population. The MI Update MSFW EPS is an attempt to assemble all available information concerning MSFWs into a reasonable approximation of worker and non-farmworking family member estimates.

Limited resources have prohibited primary research with farmworkers as a means to generate information for this study. Other sources which were utilized did obtain information directly from farmworkers; e.g., client records, and Unemployment Insurance numbers; with the results summarized in quantifiable databases. The duplication across these sources is unknown as is the extent of the population not included. MSFW-serving programs, from which client data were obtained, may be directed toward a particular segment of the population and as such not present a comprehensive picture.

The inclusion of secondary source material has involved taking reports and documents prepared for other purposes and adjusting them, as possible, for incorporation within the study. This has meant that the definition of “principal employment in agriculture” has been difficult to incorporate into the report. For example, demand for labor calculations based on the concept of jobs rather than individuals do not discriminate between those employed casually in agriculture versus workers who rely on this occupation for the majority of their income. An assumption was made for much of the information obtained that the individuals addressed do meet this qualification. On the other hand, utilization of client data from MSFW-serving organizations does provide a source which matches the study definition as most of these programs have similar eligibility criteria.

Utilization of a variety of sources has meant the definition of who is included as a migrant or seasonal farmworker was often tied to the generating source. Wherever possible, screens were used to take out those not covered by the study definition; e.g., exclude individuals employed in animal agriculture.

In several instances, the lack of detailed documents or other data required utilization of knowledgeable individuals to fill in blanks. A select number were chosen for interview, and it is acknowledged they do not represent all of those who might contribute such information.

The factors developed for this study which relate to the calculation of non-farmworkers in accompanied households and number of children and youth were based on available information, most of which came from direct client counts of MSFW-serving programs. These services might be geared to a particular segment of the population or only offered in certain locations, and therefore, a single database might not be all-inclusive. As much as possible, multiple sources were utilized in an effort to create a greater sense of balance. Often, however, it was a matter of using the best or only available data with attempts to make adjustments to enhance representation and inclusion as much as possible.

General process

1. Basic Investigation Techniques

This study involved the steps outlined below:

(1) Internet-based survey asking a range of individuals to identify agricultural-related changes, to seek relevant information, and to inform interested parties in Michigan the study was underway.

(2) Basic data gathering and clarification of information by several means, including travel throughout the State. Those contacted also served to verify preliminary estimation factors and identify county-specific nuances which might affect worker or household member estimates.

(3) Preparation of a Draft Report (estimates, methodology, tables).

(4) Review of the Draft Report by local knowledgeable individuals.

(5) Consideration of review comments and comparison of draft estimates to other data sources.

(6) Further research to clarify discrepancies and adjustment as necessary

(7) Preparation and issuance of Final MI Update MSFW EPS.

2. Michigan-Specific Large Scale Databases

The following three large scale sources were utilized extensively in the study.

The Census of Agriculture (COA) from the U.S. Department of Agriculture (USDA) is a direct survey of agricultural producers conducted every five years. It asks for a variety of information about the components of production including crops grown and acreage involved. The results are offered down to a county level. The questionnaire for the 2012 COA was being distributed during the primary research period for this study, and indications were data from this survey would not be available until 2014. It became necessary, therefore, to utilize the last COA, the 2007 report. This information was supplemented when possible by updates (e.g., for acreage figures).

A special data request was also made of the USDA National Agricultural Statistics Service (NASS) central office looking at hired workers by county. This information provided a break-down of those workers employed less than 150 days and those employed 150 days or more under the two broad categories: crop agriculture and livestock agriculture (USDA, NASS, Datalab, 2012).

Michigan Quarterly Census of Employment and Wages (QCEW) is a database kept by the U.S. Department of Labor from employment and wage information submitted by each state for workers covered by the state Unemployment Insurance system. These data, classed in industries and sub-industries by NAICS, are available as monthly summaries at the county level. Statistics are based on employer reports of workers they hire who fall under the requirements of the State Unemployment Insurance System.

Much of the QCEW information needed for the MI Update MSFW EPS was not publicly reported at the county level on a monthly basis through the Federal website. This occurs as a protection for respondents when three or fewer producers make up the only reporting units within a geographic area. With the assistance of the Michigan Department of Licensing and Regulatory Affairs, a special data run was made of QCEW information at the county level for the specified NAICS codes. Some figures were also found to be suppressed in this additional data run, however a great deal more information was gained through this source (Michigan Department of Licensing and Regulatory Affairs, 2012).

Client Database Demographic Data, without individual identifying information, was provided by a variety of MSFW-serving organizations in Michigan. These data allowed examination of factors, often at the county level, such as division between migrant farmworkers and seasonal farmworkers, household size, and percent of children and youth. The organizations providing this detailed information are listed in section “H. Enumeration Methods and Data Sources,” “8. Sub-Group Estimates.”

Other Michigan-specific databases and resources were utilized to develop these estimates. They are described in the sections to which they pertain.

3. Steps in Development of Estimates

a. Survey

The MI Update MSFW EPS began with a survey to (1) seek information concerning changes in agricultural production and MSFW characteristics from 2006 to 2012, (2) ask for documentation including data and reports, and (3) alert a wide audience that research to update the MI MSFW EPS had begun.

Individuals throughout Michigan with potential knowledge of agricultural production and/or MSFW characteristics were placed on the survey recipient list: including: service, education and health organizations assisting MSFWs; government agencies involved with agriculture and Hispanic issues; university and county-based Extension personnel; farm employer and crop commodity groups; migrant contacts; academic researchers; and others. All received the survey package which consisted of an introductory email and an attached explanatory letter. Both the email and the letter were sent from Mollie Schairer, Director of the Office of Migrant Affairs, DHS. The notice urged recipients to go to the survey link on the commercial site SurveyMonkey to complete the questionnaire. The communication also provided a link to a copy of the earlier 2006 Michigan MSFW Enumeration Profiles report. Two follow-up reminders were sent to those who had been non-responsive.

Approximately 300 individuals received the survey information package. The exact number of recipients is unclear as email addresses were continually updated, recipients forwarded the survey link to others, and public presentations and contacts made by IMSC members encouraged wide participation. Almost half (52) of the 111 responses were received from individuals who had not been sent the original survey invitation.

b. Site Visit

In October 2012, Dr. Larson spent two weeks in Michigan meeting with knowledgeable individuals involved with agricultural production or associated with MSFW-serving organizations. This trip served to better clarify agricultural changes and practices as well as gather useful resource material.

Dr. Larson had 38 meetings with 97 individuals in the Lansing area and Western part of Michigan. Time prohibited visits with those in eastern or northern Michigan. Besides individual and small group meetings, she attended eight multi-person formal meetings with: the IMSC and IMSC Data Task Force, the Migrant Health Network, the Migrant Child Task Force, staff of the Kent County DHS, Workforce Development Agency Agricultural Employment Specialists, Ottawa and Oceana Counties DHS staff, personnel from Van Buren County DHS, and Allegan County DHS staff.

A large variety of topics were discussed and referrals made to database information and resource personnel. Other individuals were reached via telephone or e-mail to help clarify issues or request specific pieces of information.

c. Additional Data Gathering

A thorough search of related internet sites was undertaken including those specific to: Michigan State University (MSU), the Michigan Department of Agriculture, the Michigan Department of Licensing and Regulatory Affairs, USDA-NASS - specifically information produced by the Michigan Field Office (MASS), crop associations, MSFW-serving organizations, as well as many others. Additional information was sought concerning agricultural commodities and production specifics.

d. Preparation of Draft Report

Once all state-specific information was received, worker calculations were made and factors were extracted to estimate sub-groups (migrant farmworkers, seasonal farmworkers, and children and youth). For the calculation of most demographic factors, there were numerous sources. These were compared and analyzed to account for any differences, with final results usually an average of the available information.

Draft MI Update MSFW EPS figures were compared to 2006 county-level estimates in light of information gathered around changes in agricultural production and the MSFW population. Draft estimates were completed and tables prepared along with accompanying narrative. The Draft MI Update MSFW EPS Report was developed for examination by knowledgeable individuals.

e. Review of Draft Report

The Draft MI Update MSFW EPS was reviewed by seven individuals from a variety of disciplines. All of these had previously assisted the research by directly offering data, and/or information on agricultural production or MSFW characteristics. Two others were asked to examine the Draft, but the tight time schedule for review prohibited their involvement.

Many of the reviewers were satisfied with the estimates and methodology presented in the Draft Report. Additional review comments were offered which generally covered the following topics:

- Identification of counties where estimates appeared to be under or over what the reviewer expected.

- Particular features that might lend specific counties to have a different accompanied percent or migrant/seasonal split.
- Questions concerning percent of children and youth in the lower age groups.
- Clarification of wording/editing changes.

This information helped inform additional research, and the changes suggested made the report stronger and more clear.

To help look at the reasonableness of Draft Report estimates, figures were compared to 18 other sources offering MSFW numbers at a county level in Michigan. These sources included:

- Audra Fuentes, camp statistics database.
- Baldwin Family Health Care, patient database.
- Center for Family Health, patient database.
- Cherry Street Health Services, patient database.
- Family Health Center, patient database.
- H2A Jobs in Michigan, summary of jobs available for 2010-2012 including location, positions, and type of work -- provided by Farmworker Legal Services, “Potential H2A Jobs in Michigan.”
- Hackley Community Care Center, patient database.
- Health Delivery, patient database.
- InterCare Community Health Network, patient database.
- Michigan Department of Agriculture and Rural Development, licensed labor camps – locations, number of units and capacity.
- Michigan Department of Community Health, WIC enrollment client statistics.
- Michigan Department of Education, Migrant Education Program, client database.
- Michigan Quarterly Census of Employment and Wages (QCEW), NAICS code-based monthly figures looking at the difference between the high month and low month per year for an average of five years.
- Migrant Health Promotion, MSFW Census.
- Northwest Michigan Health Services, patient database.
- Telamon Corporation, Michigan Migrant Head Start Program, client summary statistics.
- Telamon Corporation, National Farmworker Jobs Program, client database.
- USDA, 2007 Census of Agriculture, tabulation of hired labor employed under 150 days.

In addition, Draft 2013 estimates were compared to the 2006 MI MSFW EPS noting differences.

f. County Adjustments from Draft to Final Estimates

Those counties pinpointed by either reviewers and/or two other sources as questionably higher or lower than might be expected were highlighted for further research. Counties where there was reason to believe estimates might be too low were grouped. The same was done for counties where estimates might be too high. The crops grown in each of these grouped counties were examined to look for patterns; e.g., if a group of counties all produced a specific crop, perhaps the factors used to develop jobs/worker estimates for that crop should be revised.

Two crops were identified with potential issues: sugar beets and cucumbers. Factors used to calculate DFL for the former were re-examined and a change made based on factors found relative to Idaho and Iowa which might be more relevant to Michigan production than what had been used in the Draft. The change in DFL calculations was small, but it covered most of the counties pinpointed as potentially having estimates which were too high.

Cucumber packing/processing operations were included in one of the four methods used to calculate food processing workers. The factors used for this operation were re-examined, and those related specifically to Michigan were used. Because these figures were part of a complex calculation involving multiple methodologies, the resulting changes to food processing worker estimates were minimal but felt to be more accurate.

A final adjustment was made to worker numbers based on comparison of QCEW and COA figures with Draft MI Update MSFW EPS estimates for crop and food processing workers. QCEW figures were not expected to contain all MSFWs included in this study due to exclusions allowed under reporting requirements. COA figures only included workers employed less than 150 days and so might exclude others who could be working for a longer period but less than full-time. Additionally, both QCEW and COA numbers contain a large amount of duplicate counts as they are reports by individual employers rather than direct worker counts. Given all of the reasons why these sources might report numbers below MSFW EPS estimates, it was determined that If either of these sources had figures higher than MI Update MSFW EPS estimates, further investigation was needed.

Eleven counties had QCEW calculated temporary worker figures greater than Draft estimates. For nine of these, the exact opposite was found with COA data; i.e., COA numbers were less than Draft estimates. Because it was not possible to know what this contradictory finding might indicate, nothing was changed in these counties. The remaining two counties (Genesee and Tuscola) showed both QCEW and COA figures higher than Draft estimates which was felt to be an indication of an undercount in the estimates. Tuscola had also been identified by a Draft reviewer as potentially having an estimate that was too high. Averages of QCEW and COA figures for these two counties were calculated and the results considered an estimate of crop and food processing workers before the duplication rate was applied.

g. Other Adjustments from Draft to Final Report

Other concerns raised by reviewers were addressed within the Final Report, including , a question raised about one of the methods used for reforestation worker estimates, the addition of clarification language, and editing suggestions.

The data sources used to develop estimates for non-farmworkers were re-examined to determine if there was sufficient evidence to develop separate migrant and seasonal factors. This was found to be the case allowing for different percent accompanied households and accompanied household size for migrants and for seasonals. Additionally, all sources were

weighted to equalize different size databases when calculating the factors to determine non-farmworker estimates.

Reviewers raised questions over the migrant/seasonal percent split in the thumb and eastern counties of Michigan. There was evidence of fewer migrants (e.g., migrant oriented services closing), but no database covered those counties. A request was made to Health Delivery, a health center serving patients from the counties in question, for recent client demographics. It was found that the percent of migrants was indeed lower for this group of counties than for all MSFW patients seen by this center. Accordingly, the migrant/seasonal percent was adjusted for this group of 17 counties.

4. Presentation of Estimate Results

The MI Update MSFW EPS summarizes MSFW estimates and presents data used within three Tables.

- Michigan Update MSFW Enumeration Profiles Estimates, Final.
- Michigan Update Field Agriculture Methods, Final.
- Percent Migrant, Percent Seasonal, Percent Accompanied and Accompanied Household Size, Final.

Changes From 2006 To 2013

1. Survey Results

A total of 111 individuals responded to the survey. They represented 36 counties across Michigan. The greatest single county responses were from Kent and Oceana (9% each). Those from Lansing (Eaton/Ingham Counties) represented 18% of respondents.

Almost one-third (31%) of respondents were associated with education. This category included those employed with Migrant Head Start, Great Start and Migrant Education. Almost a fifth of respondents (17%) were involved with employment. Many of these were Agricultural Employment Specialists with the Workforce Development Agency. Health made up 14% of respondents representing migrant health centers, WIC, and other programs. Twelve percent came from the agricultural industry and were almost exclusively extension agents or others associated with MSU. Eleven percent was from multi-service agencies, primarily DHS. The remaining respondents represented a variety of service types including: advocacy, law, religion and research.

Over half of respondents (52%) were administrators, including Directors, CEOs and other managers. Those associated with outreach made up 32% of respondents, and 10% could be classified as educators. Other position types represented within respondents consisted of lawyers, regulators and support staff.

Agricultural Changes: Respondents were asked if they felt there had been changes within the following agricultural areas over the past six years: crops, agricultural production, nursery/ greenhouse, food processing and reforestation.

A much greater proportion of those answering indicated they were aware of changes in crops than was true for any of the other agricultural industries. In fact, close to half of respondents saw little change. It should also be noted that between 29% and 48% of those replying to these questions indicated they did not know if there had been changes. This was also the case for almost two-thirds of respondents in regard to their knowledge of maple production.

The following were pinpointed as agricultural changes in the last ten years by those responding to the question:

- There was an indication of increasing mechanization for previous hand labor activities although only a certain proportion of the crop might be machine harvested. This was noted in cucumbers and for some of the blueberry crop. At the same time, workers were still employed in cucumber processing and on the increasing blueberry acreage, much of which continued to employ hand harvesters.
- There may be more crops grown for the fresh market (e.g., sweet cherries and apples) indicating a need for more workers.
- Both the nursery/greenhouse and food processing industries appear to be increasing.
- Weather has been a factor affecting crop production in areas throughout Michigan over the past three years.
- While some respondents suggested there have been fewer crop-related jobs, some concern was expressed over a perceived labor shortage around certain crops or skilled tasks. One individual suggested this shortage may also apply to the nursery/ greenhouse industry.

MSFW Characteristics: Respondents were asked to verify the MSFW demographic factors used in the 2006 MI MSFW EPS report. Half indicated they did not know if these were accurate, but of those who hazarded a guess, only one-fifth believed any of these factors had changed. The exception was the question of migrant/seasonal split for the farmworker population, where

respondents felt this varied per county, however, they had a general sense there may be more seasonal workers and fewer migrants.

When asked to propose reasons for their sense of a change in demographic factors, particularly the migrant/seasonal split, those responding suggested this could be due to immigration issues which might cause people to travel less and settle out of the migrant stream with their families around them. As a consequence, some felt fewer migrants were being seen as jobs were going first to local workers. Another major reason offered for a potential decline in employment opportunities was adverse weather conditions, for example the early bloom and then freeze in 2012 that destroyed a large percentage of the tree fruit crop in some areas. On the other hand, two respondents suggested there had been labor shortages in some areas. Other comments suggested there were more accompanied than single households.

2. Changes Noted Through Documentation and by Knowledgeable Experts

a. Weather-Related Effects on Crop Production

Agricultural producers, MSFW service providers and others pointed to a pattern of weather effects on crops which has made it difficult for both growers and farmworkers. Michigan agriculture has characteristically depended on a large migrant workforce to appear as needed for harvest and other hand labor tasks on quick turn-around crops (e.g., asparagus, blueberries, and apples). Migrants working an agricultural season follow a path through what becomes their normal crop activities, which can include only intrastate tasks or interstate travel through a combination of states. When a specific crop is delayed or jobs are not available, this breaks their pattern forcing them to seek work elsewhere or face unexpected periods of unemployment.

Weather conditions affecting Michigan agriculture are summarized by the Michigan Migrant Head Start Program in a 2010-11 Community Assessment (Telamon Corporation, 2012). According to this report, in 2008 frost and hail caused a decrease in apples, while 2009 showed abundance in both this crop and cherries. The year 2010 had spring frosts which affected all the fruit crops causing loss of hand labor jobs. In 2011, the asparagus harvest was later than usual resulting in a delay for migrant workers arriving in Michigan. This caused some growers to fear workers might not appear to work other crops, although it is not clear such a situation occurred (interviews, 2012: Anderson, IMSC Meeting, Ezop; email: Thornburg, 2013).

In 2012, adverse weather conditions had such a large affect on crops that 45 Michigan counties were declared natural disaster areas (Michigan Government, 2012). Unusual seasonal warmth in March encouraged early tree blooms which were subsequently devastated by normal April frosts. The result affected from 50% to 90% of apple, cherry and other tree fruits. It was reported that some apple growers called their usual migrant workers advising them not to bother coming as there was little apple harvest work. Because those employed in this crop may also work as blueberry harvesters, loss of apples meant blueberry growers experienced a scarcity of workers in some locations (interviews, 2012: Schwallier, Oceana and Ottawa DHS). Some service providers closed seasonal programs early, a few growers did not open their migrant camps, and funds set aside for emergency assistance went underutilized as workers either left Michigan early or did not appear at all (interviews, 2012: Migrant Child Task Force; telephone conversation: Schairer, 2012).

b. Changes in Crop Production

Michigan growers are reacting to the up and down crop-affecting weather conditions and their uncertainty about the continued availability of hand-harvest labor by considering changes to crop production methods. The following were described as either now occurring or "might take place":

- Changing the crops produced to those less reliant on hand labor (interviews, 2012: Agricultural Employment Specialists, Ayala and Rendon-Murray, Kent County DHS Longstroth, Van Buren DHS).
- Looking more at mechanization and other means to reduce labor needs, where possible; for example in cucumber and blueberry harvesting for processing, and in applying a spray which eliminates the need for detassling seed corn (interviews, 2012: Agricultural Employment Specialists, Alvaro and Castillo, Dudek, Garcia Salazar).
- Considering bringing in more foreign agricultural "guest workers" on temporary H2A visas (interviews, 2012: Alvaro and Castillo, Ayala and Rendon-Murray, Lack,)
- Diversifying crops that are produced in order to keep seasonal workers employed for a longer period of time (interviews, 2012: Agricultural Employment Specialists, Kent County DHS, Oceana and Ottawa DHS).

Other factors in addition to weather conditions were also mentioned as encouraging some of these changes:

- Consolidation of smaller farms into larger operations (interviews, 2012: Goldy and Shane, Hartmann, Zylstra).
- Generational shifts with older farmers retiring and their children no longer interested in this occupation (interviews, 2012: Smith, Van Buren DHS, Zylstra).
- The sense of being squeezed by regulations and regulators (interviews, 2012: Agricultural Employment Specialists, Anderson, Dudek, Garcia Salazar, Zylstra).
- Concern over immigration issues: potential for raids by immigration control agents and worker fears (interviews, 2012: Alvaro and Castillo, Ayala and Rendon-Murray, Lack,) (this issue is discussed in more detail below).
- Closing of some processing plants, loss of fresh market buyers, or a switch in local operations by a national food manufacturing operator (interviews, 2012: Anderson, Kent County DHS).

Blueberries, may illustrate how these issues can play out. Most of those interviewed felt there had been more mechanization with this crop, however, this change may be limited (interviews, 2012: Hartmann, Schwallier). A Workforce Development Agency Agricultural Employment Specialist summarized the producer's dilemma by describing their continuing search for "the magic machine that will harvest the perfect crop to sell to market." She noted such equipment does not now exist as currently the quality of the berries that can be obtained by mechanization is less than desirable, and there is a certain amount of waste from crushed berries. However, growers have said if they could only overcome these shortcomings it would "avoid the headaches of dealing with regulators and [fear over] shortage of workers" (interview: Agricultural Employment Specialists - Rangel, 2012).

On the other hand, some of those interviewed contended not much had changed in agriculture. They felt mechanization had not increased dramatically, the vegetable industry was about the same, and blueberry acreage and high density/larger quantity apple orchards were increasing (interviews, 2012: Agricultural Employment Specialists, Allegan DHS, Beteta, Johnson, Kent County DHS, Oceana and Ottawa DHS, Smith).

c. Demographic Changes

There was a sense from those who were interviewed that although migrants are still plentiful, the population is switching more toward seasonal workers who live in the state. It was reported that some former migrants are beginning to homebase in Michigan and from there travel to other states for agricultural work. Some reasons given for this change included: people tired of migrating and wanting to settle, deciding to stay in one place to provide more educational opportunities for their children who might then not have to do farm work, a desire to get out of the big cities, and greater difficulty in traveling between the United States and Mexico (interviews, 2012: Beteta, Ezop, Farmworker Legal Services, Fitzgerald and Sanchez, Oceana and Ottawa DHS, Van Buren DHS). However, the major reasons offered for an increase in those settling out were associated with immigration concerns (discussed below).

Whether there were more or less accompanied farmworkers appeared to be a matter of debate. Some of those interviewed indicated growers have made it clear they want only single workers, not families, while others said they found just the opposite. Some individuals pointed to the closing of family-oriented services in specific areas while others said they saw more families with younger children. A few of those interviewed indicated that besides the usual families who have been coming to Michigan to work for years, they are seeing new families or new single workers. Others felt they were seeing fewer overall workers. (Interviews, 2012: Alvaro and Castillo, Anderson, Ayala and Rendon-Murray, Beteta, Ezop, Fitzgerald and Sanchez, Van Buren DHS, Whyte; telephone conversation: Schairer, 2012). No clear consensus emerged around this issue, and one interviewee may have summarized the situation by noting "it depends on the area" (interview: Beteta, 2012).

d. Immigration-Related Fears

A primary motivation expressed by both growers and those who work with MSFWs and their family members was a concern over immigration enforcement. Producers fear workplace raids resulting in their not having the labor they need; MSFWs are afraid to move around or apply for services as they are concerned about possible apprehension and deportation for themselves or their family members (interviews, 2012: Alvaro and Castillo, Anderson, Ayala and Rendon-Murray, Janson, Migrant Health Network, Oceana and Ottawa DHS). For example, interviewees noted that some long-time Florida-based migrants were now fearful to travel through Alabama and Georgia on their way to work in Michigan due to enforcement

of anti-immigrant laws in those states (interviews, 2012: Oceana and Ottawa DHS, Smith). Immigration-based fear was indicated as a major motivator for families settling out of the migrant stream as they found Michigan to be more hospitable than other states where authorities and laws are hostile to immigrants (interviews, 2012: Agricultural Employment Specialists, Fitzgerald and Sanchez, Martinez, Van Buren DHS).

Several of those interviewed pointed to a 2008 change in Michigan's driver's license law now requiring proof of legal residence in the United States which was causing people without documentation to be fearful of driving, thus limiting their work and mobility options. This was also said to influence migrant families' decisions to travel to or settle in Michigan (interviews 2012: Alvaro and Castillo, Beteta, Migrant Health Network, Oceana and Ottawa DHS, Smith; telephone conversation: Schairer 2012).

e. Farmworker Numbers

For all of the reasons noted above, there was no clear sense among those interviewed for this study whether farmworker numbers have increased or decreased in the last seven years and, in fact, worker presence might have varied from year to year.

Indigenous Workers

At a meeting of the IMSC in October 2012, interest was expressed in whether or not indigenous MSFWs were part of the farmworker population in Michigan. Some of this concern arose over the fear that because indigenous peoples may not speak either English or Spanish but a variety of languages, their receipt of assistance services might be hampered. Informal inquiries and some examination of client database information were undertaken to determine a sense of whether or not this population group was present in the state.

Information from eight health centers serving MSFWs was received which detailed the primary language spoken by each patient who was served. None of these indicated indigenous languages, although some showed an "other" category which may be indicative. The other MSFW-serving organizations, such as Migrant Education, were not asked for similar information. On the other hand, many of those interviewed said they see a number of indigenous migrant groups primarily employed in the blueberry crop in Western Michigan. Some felt these were actually blueberry specialists who worked the crop in Michigan and other states along the east coast. Most were said to be Guatemalans homebased in Florida who had been following this pattern for several years (interviews, 2012: Agricultural Employment Specialists, Beteta, IMSC, Kent County DHS, Oceana and Ottawa DHS). This group of workers was said to be composed of families, including children, under the guidance of a farm labor contractor who generally spoke Spanish and made work arrangements for the group, serving as their interpreter. A few other interviewees indicated they see another group of indigenous workers who are from Oaxaca and or Chiapas Mexico. This latter group was said to work other crops in addition to blueberries (interviews, 2012: Allegan DHS, Van Buren DHS, Farmworker Legal Services, Oceana and Ottawa DHS).

Those interviewed indicated indigenous workers and their family members kept to themselves and did not interact with MSFW service providers unless necessary; e.g., in an emergency. They indicated language barriers could be an issue if the individual in the group who is multi-lingual is not available.

Enumeration Methodology And Data Sources

Different methods were used to estimate workers in the four separate industry classifications within the study (field agriculture, nursery/greenhouse -- crops grown under cover, food processing and reforestation). Adjustments were made to worker estimates to account for duplicate counts within and across jobs per employer. Finally, population sub-groups and the number of children and youth in specific age categories were calculated. The legal status of those performing agricultural activities was not a factor considered for this study.

1. Field Agriculture

a. General Methodology

The field agriculture estimate primarily used a “demand for labor” (DFL) process that examined the number of workers needed to perform seasonal agricultural tasks where extensive hand labor is involved: harvesting, planting, pruning, weeding and thinning operations. Sometimes sorting, grading, packing and boxing operations were included in these estimates because DFL techniques were used in their estimation.

DFL results estimate the number of full-time equivalent (FTE) hand labor “jobs” available during the period of peak labor demand for crop production. These calculations, which were prepared for each crop in each county, were derived through a formula using four elements:

$$DFL = \frac{A \times H}{W \times S}$$

Where:

A = crop acreage.

H = hours needed to perform a specific task (e.g., harvest on one acre of the crop).

W = work hours per farmworker per day during maximum activity.

S = season length for peak work period.

Because of the difficulty of obtaining factors in the DFL formula for every crop and task, information was sought from agricultural producers, university-associated extension personnel and others knowledgeable of crop production to develop field agriculture estimates for a specific task utilizing a “rule of thumb” method. This involved an expert sharing a standard around so many workers per acre of crop needed to perform a specific task, or an actual producer indicating they hire a specific number of workers to perform a task on a set number of acres.

When field agriculture estimates for specific crops and tasks could be made using these two methods, DFL and rule of thumb, the results were averaged to derive one figure for each county crop task. Table Two, “Michigan Update Field Agriculture Methods, Final,” offers information by crop and task for DFL, rule-of-thumb or other estimation methods.

Additionally, there were other variables that relate to accurate estimation techniques for specific commodities. For example, sometimes there was a difference in harvest methods depending on whether the final usage is for fresh market or process. Table Two also notes where such variables were considered in the calculations.

The last step in development of field agriculture estimates involved summarizing calculated job figures by county and translating these into worker counts. As discussed in the section on Duplication Rate, factors were applied in consideration of activity in more than one crop-related task by a single worker.

b. Data Sources/Calculations

Data were gathered from the sources listed below for DFL factors and rule-of-thumb methods. Refer to Table Two for crop specific details.

Crops Requiring Temporary Hand Laborers: The 2006 MI MSFW EPS identified crops grown in Michigan that usually require hand labor. This list was updated through data in the 2007 COA and also by discussion with knowledgeable experts to determine current production methods.

Acreage: The 2007 COA was the base source for acreage numbers in identified hand labor crops by county in Michigan. Updates from MASS publications were used when possible. These statistics were often developed in conjunction with the Michigan Department of Agriculture, MSU, and crop/industry-specific associations.

- *Michigan Fruit Inventory 2011-2012.*
- *Michigan Agricultural Statistics, 2010-2011.*
- *Michigan Vegetable Inventory 2005-2006.*
- Nursery and Christmas Trees 2004-2005.

Previous work on the *MSFW Enumeration Profiles Study* series found, through discussion with agricultural experts, that crops of less than ten acres are more likely to have harvest tasks performed by family members than by hired workers. Accordingly, any crop within a specific county noting such small acreage was dropped. Work on the 2002 *Oregon MSFW Enumeration Profiles Study* included consultation with Diane Coffman of Oregon State University, North Willamette Research and Extension Center who indicated this ten acres rule is less likely to apply in berry crops. Accordingly, production of five or more berry acres was included in estimates. A more recent Michigan interview with an apple producer and MSU Extension Agent suggested that around the state, apple acreage of three acres or more usually requires hired hand labor (interview: Schwallier, 2012). This adjustment was made for inclusion of Michigan apple acreage.

Some of the county acreage data for the target crops were not reported in COA information although the number of farms in the county producing the crop was indicated. This suppression occurs for figures “withheld to avoid disclosing data for individual farms” (USDA, 2009). The following steps were used to calculate county-level acreage based on the figures which were disclosed for a specific crop:

- Add the number of crop acres accounted for in counties where such information is available.
- Subtract the result from the state total number of acres to derive acres unaccounted for within the state.
- Add the number of farms in the counties where acreage is unaccounted.
- Divide unaccounted acres by the number of unaccounted farms to derive an average for acres per farm.
- Multiply this acreage average by the number of unaccounted farms in each county.

Hours for Task: The number of hand-labor hours needed to perform specific tasks on each crop was derived from crop budgets and other production reports prepared by University Extension programs throughout the country. The 2006 MI MSFW EPS served as a base supplemented by other state-specific MSFW Enumeration Profiles Studies in the series of reports completed since 2000. Hours for task calculations were updated through a web search for more recent information developed by university-based Extension programs. Often the resulting figure became an average of factors found in various sources. The publications used included:

- University of Wisconsin, Crop Budgets, 2012.
- Clemson University, Crop Budgets, 2010-2012.
- University of California, Davis, Crop Budgets, 2007-2011.
- Oklahoma State University, Crop Budgets, 2012.
- North Carolina State University, Crop Budgets, 2012.
- *MSFW Enumeration Profiles Study* reports for: Oregon Update (2013), Washington Update (2009), Georgia (2006), Idaho (2006), Maine (2004), New York (2002), and California (2000).

The following additional sources also provided information:

- Various “Crop Profiles” produced by Washington State University.
- Knowledgeable experts (Branson, 2012; Gempler, 2008; McGrath and McCulley, 2012; Renquist, 2012; Schreiber, 2008; Smith, 2008).

Work Hours: The U.S. Department of Agriculture “Farm Labor Report” provides quarterly data for agricultural work hours per week. These are reported by region with the Lake Region comprised of Michigan, Minnesota and Wisconsin figures. Quarterly data were averaged to obtain an annual statistic and similar information for the five year period 2008-2012 were averaged to derive a final hours per week number. This figure was divided by an estimated five work days per week to calculate daily work hours of 7.3.

Season Length: The primary source for season length data was the 2006 MI MSFW EPS. This was revised through information in the unpublished Washington Update, MSFW Enumeration Profiles Study (Larson, 2009) crop profile reports from Washington State University, the University of California, the University of Idaho and various experts (Branson, 2012; Gempler, 2008; Mayer, 2008; Renquist, 2012; Roy, 2008; Smith, 2008; Waters, 2008).

Any information reported in calendar days was converted to work days by dividing the total number by seven to derive number of weeks and then multiplying by five for number of average MSFW work days per week.

Rule of Thumb Factors: Production formulas based on workers per acre are identified as “rule of thumb” factors. These were offered by a variety of individuals who were familiar with or producing a specific crop and are judged to be based on practical experience. Many of these were obtained during Michigan site visit interviews of local experts (interviews, 2012: Anderson, Dietrich, Garcia Salazar, Goldy and Shane, Hartmann, Jones, Schwallier). Additionally, information obtained during research for the Oregon Update MSFW EPS (Larson, 2013) and the Washington Update, MSFW Enumeration Profiles Study (Larson, 2009) also provided some rule of thumb factors from knowledgeable experts in those states (Branson, 2012; Gempler, 2008; McGrath, 2012; Renquist, 2012; Roy, 2008; Schreiber, 2008; Smith, 2008; Waters, 2008).

The estimate of workers employed in the Christmas tree industry was derived through a DFL approach, utilizing factors developed for the 2006 MI MSFW EPS.

2. Nursery/Greenhouse and Crops Grown Under Cover

a. General Methodology

Nursery/greenhouse workers and those employed in crops grown under cover involve many different categories. These include: bedding plants, cut flowers, evergreen nurseries, florist greens, floriculture, flower seed crops, foliage plants, greenhouse vegetables, mushroom production, potted flowering plants, sod and vegetable seed crops. Some products are grown in covered structures while others are raised in open acreage. Tasks differ with commodity type and production needs.

b. Data Sources/Calculations

Four sources of information offered an opportunity to develop different methods to estimate worker figures. This included:

Method One: Michigan QCEW monthly figures for workers employed in NAICS 1114 were examined by county and the low monthly figure was subtracted from the high monthly number to derive a rough estimate of temporary workers. This process was performed by county for each year 2007-2011. The resulting temporary worker figures for each of the five years were averaged per county then added to calculate a state five year average total. Information was not available from all counties (Michigan Department of Labor and Regulatory Affairs, 2012).

Method Two: The USDA Census of Horticultural Specialties (2009) offered a statewide figure for nursery and greenhouse workers hired less than 150 days. This figure might exclude some workers who are less than full-time but are employed more than 150 days.

Method Three: In consideration that some of those listed in the Census of Horticultural Specialties classified as working more than 150 days may be considered MSFWs for this study, an effort was made to apply a temporary worker percentage to the figure for all hired workers. This percentage was derived by dividing the number of temporary workers noted in Method One by the total of workers noted in the QCEW employed during the highest employment month. The result suggested that 65.4% of nursery/greenhouse workers are less than full-time. This percentage was applied to the total number of hired workers provided by the Census of Horticultural Specialties.

Method Four: Another data source offered a different way to develop a temporary worker percentage. The Nursery and Christmas Trees publication of MASS (2005) listed permanent, part-time and seasonal statewide employment for 2004-05. Amy Frankmann of the Michigan Nursery and Landscape Association (interview, 2012) offered advice on interpreting the meaning of these terms in regard to the MSFW definition of who might be included in this study. Based on these employment figures, a percent of the total nursery/greenhouse workforce who would be considered temporary was determined. This figure of 63% was applied to the more recent total workforce figure in the Census of Horticultural Specialties.

The final figure used in this Report was an average of the statewide worker estimates derived from each of these four methods. This was allocated per county using each county's percent share of the statewide figure from QCEW information as developed in Method One using (Michigan Department of Labor and Regulatory Affairs, 2012).

3. Food Processing

a. General Methodology

As noted earlier, food processing encompasses a very broad category ranging from field sorting and packing to changing the form of the commodity. Other state-level reports in the MSFW Enumeration Profiles Study series used a variety of methods to estimate the number of temporary workers involved. Many different means for obtaining reasonable food processing worker estimates were explored for Michigan.

b. Data Sources/Calculations

Similar to the process for calculating nursery/greenhouse workers, food processing estimates were developed through the use of four different methodologies.

Method One: Similar to nursery/greenhouse workers, QCEW data were available at the county level for NAICS 3114. This is a manufacturing code but, as noted earlier, for Michigan it was believed there was potential for a wide overlap with post-harvest activities. The high minus low calculation was made for workers over a five year period; however, data were reported for only ten counties. The NAICS for post-harvest activities, 115114, was also examined, but no county data were available. The high minus low month was applied to the state level figures, resulting in a very low number. The results for each of these NAICS were added to form one statewide figure.

Method Two: A report prepared by the MSU Strategic Marketing Institute, “The Economic Impact of Michigan’s Food and Agriculture System” (Knudson and Peterson, 2012) offered a statewide figure for employment in frozen food manufacturing and fruit and vegetable canning/pickling/drying. This information was obtained through the USDA 2007 Economic Census (interview: Kalchik and Knudson, 2012). Similar to the method performed for nursery/greenhouse workers, the extent of the workforce that might be considered temporary was developed by calculating the percent of temporary workers represented of the total high month employment from QCEW food processing data.

Method Three: DFL factors were obtained for some crops around sorting/grading/ packing activities. Some of this was incorporated into the field worker harvest estimates (e.g., sweet cherries). Four crops in particular stood out as those either mentioned during interviews or as work activities qualifying clients for services provided by the; Migrant Education Program and the National Farmworker Jobs Program (NFJP) (Michigan Department of Education, 2012; Telamon, NFJP, 2012). These were blueberries, carrots, cucumbers and sweet corn. DFL worker estimate calculations were made for post-harvest tasks associated with these crops. This information was available at a county level related to acres grown for these commodities.

Method Four: Those who were interviewed were asked to estimate the number of temporary workers employed in food processing jobs in their area. These knowledgeable experts offered input often related to specific businesses and locations. This informally gathered list was cleaned for duplication related to specific facilities. An average was used where different worker estimates were given. The results were then tabulated by county.

The final statewide food processing figure was an average of the results of each of these methods. This information was allocated based on combined county data available from the QCEW, DFL crop acres and interview reports.

4. Reforestation

a. General Methodology

Reforestation activity is different from work in the other industry classifications as stands of trees are left to grow from five to forty-five years or longer. This means only a proportion of timberland in a state is engaged by tree planters each year. As the exact location of this labor differs annually, a worker estimate can only be provided on a statewide basis.

Three methods were employed to estimate reforestation workers. Two used a DFL approach with differing factors incorporated. The third method related to a rule-of-thumb. QCEW information for NAICS 1153 (support activities for forestry) was examined but found to be minimal; therefore not useful.

b. Data Sources/Calculations

Each of the DFL approaches required a figure for statewide reforested acres. This was obtained from Scott Pugh of the USDA Forest Service Northern Michigan Research Station (email: 2013). Another DFL factor, work hours for reforestation, was generally agreed to be eight per day.

Method One: The first DFL approach used a figure to plant fir, cedar, hemlock and other similar trees grown in Michigan of 3.8 hours for task, calculated at an average 2.105 acres per day planted per worker in an 8 hour day (Sargent, 2000). A season length factor of an average 22.14 days was used, calculated on a 45 day peak season working 40 hours per week, minus 10 days for weather-related reasons (Sargent, 2000).

Method Two: The second DFL methodology used factors based on a publication of the South Eastern Forestry Contractors Association (Economopoulos, 1999). It suggested the task hours to be 2.67 and season length at 40 days.

Method Three: A rule-of-thumb offered by Monte Bell of the U.S. Forest Service (Bell, telephone conversation, 2002) suggested one worker takes one day to replant an acre of land, with a season length of 22.14 days.

An average from the results of each of these three methods was used for the estimate of statewide reforestation workers.

5. Duplication Rate

a. General Methodology

The DFL and rule of thumb methods used to estimate field agriculture calculate “FTE jobs” rather than workers. An adjustment was made to account for those employed in more than one agricultural “FTE job.” For example, a single individual might work in both blueberry and apple operations. If the estimates for workers employed in single crops or tasks were simply added, the results would overestimate the number of individuals employed. The same is true of those working in the other agricultural industries included in this study: nursery/greenhouse, food processing, and reforestation. Consideration was given to whether there was a different duplication rate within each of these industries.

The best way to develop such a factor is to look at actual employment work history. Two sources were found which could provide this type of information: the National Agricultural Workers Survey and client work history as reported in Telamon NFJP data (U.S. Department of Labor, 2013; Telamon NFJP, 2012). Several of those interviewed also offered information on this subject.

b. Data Sources/Calculations

Information from the National Agricultural Workers Survey was both dated (latest available 2009) and regional rather than Michigan-specific. It was therefore discarded. The Telamon data offered a listing of jobs noted by clients qualifying for services under the NFJP from 2007-12. This information provided a sufficiently large database to calculate a jobs/worker duplication rate that applied primarily to field agriculture. Many tasks also included postharvest jobs such as sorting, grading and packing. This rate was calculated to be 1.896 jobs per worker which is greater than the duplication rate used in the original 2006 MI MSFW EPS report. The factor also corresponded to a sense of more jobs performed by a single worker then was true six years ago, something that was noted by many survey respondents and interview subjects (interviews, 2012: Agricultural Employment Specialists, Allegan County DHS, Anderson, Farmworker Legal Services, Fitzgerald and Sanchez, Fuentes, Kent County DHS, Oceana and Ottawa Counties DHS, Van Buren County DHS,). Because many of these comments also related to food processing workers, similar to what was found in Telamon client data, this duplication rate was also applied to food processing workers.

Research conducted for past studies in the MSFW EPS series indicated that nursery/greenhouse workers mostly work in this single industry. This was verified through comments made by some of those interviewed (interviews, 2012: Anderson, Fitzgerald and Sanchez, Oceana and Ottawa DHS). Therefore, the duplication rate was not applied to nursery/greenhouse estimates. The same was true for reforestation workers.

6. Sub-Group Estimates

a. General Methodology

Sub-groups estimated for the study are migrant farmworkers, seasonal farmworkers, non-farmworker family members accompanying farmworkers, and children and youth in specific age groups. Migrant farmworkers include both individuals who meet the definition of a migrant but only travel within the State of Michigan (intrastate migrants) and others who come from outside the state to work in Michigan (interstate migrants).

Both “non-farmworkers” and “children and youth” are estimated but contain overlapping individuals. The first group includes anyone of any age in the household who is not employed in farm work. The latter group covers anyone in the household from ages less than one through nineteen. Although the category “children and youth” involves those of a young age who are non-farmworkers, it also includes youths who may be farmworkers. This is why the estimates for “non-farmworkers” and for “children and youth” are different.

Sub-group calculations were made, at a county level, as follows:

- Apply the percent identified as migrant workers and the percent identified as seasonal workers to estimates for all MSFWs.
- Determine the percent of each sub-group (migrant workers and seasonal workers) who are accompanied by non-farmworkers. This is as opposed to workers who represent single person households; for example, six unrelated men living in one household would be labeled as six single-person households.
- Divide the group of accompanied workers by the average number of farmworkers per household to determine the number of accompanied households.
- Multiply the number of accompanied households by the average of “other members per household” to derive the estimate for “non-farmworkers.”

The age groupings considered for “children and youth” are: less than 1 year, 1-4 years, 5-12, 13-14, 15-18, and 19 years. A factor was found for the number of individuals in each accompanied household who are less than 20 years old. This was multiplied by the estimate of accompanied migrant and seasonal households to find total number of migrant and seasonal children and youth.

Sixteen sources were identified that contained demographic information useful for calculation of factors necessary to estimate non-farmworkers in accompanied households. Most of these were client databases. All, with the exception of regional data provided by the U.S. Department of Labor, National Agricultural Workers Survey, were specific to Michigan. Included in this source list are the following (complete references are provided in the Bibliography):

- Baldwin Family Health Care, patient database, 2009-2012.
- Center for Family Health, patient database, 2008-2012.
- Cherry Street Health Services, patient database, 2010-2012.
- Family Health Center, patient database, 2010-2012.
- Audra Fuentes, Camp Statistics Database, 2009-2012.
- Hackley Community Care Center, patient database, 2011-2012.
- InterCare Community Health Network, patient database, 2011-2012.
- Michigan Department of Community Health, WIC Division, client statistics, 2009-2012.
- Michigan Department of Human Services, MSFW data, 2011-12.
- Michigan Department of Education, Migrant Education Program, client database, 2008-09 – 2010-11 school years.
- Migrant Health Promotion, MSFW Census, 2011.
- Muskegon Family Care, patient database, 2008-2012.
- Northwest Migrant Health Services, patient database, 2008-2012.
- Telamon, Michigan Migrant Head Start Program, client statistics, 2008-September 2012.
- Telamon, NFJP, client database, 2007-12.
- U.S. Department of Labor National Agricultural Workers Survey, Public Access Data.

b. Sub-Group Estimate Factors

The discussion below pertaining to each subgroup indicates which of these sources provided data useful for developing the specific statewide factor. Table Three, “Percent Migrant, Percent Seasonal, Percent Accompanied and Accompanied Household Size, Final” summarizes this information. Also included are factors used to make estimates for a few specific counties where additional data were available for what was viewed to be a large enough representative sample sufficient to show the factor to be different from the statewide average.

Migrant/Seasonal: Ten sources reported the migrant percent and seasonal percent for MSFWs in Michigan. They included: Baldwin Family Health, Cherry Street Health Services, Family Health Center, Hackley Community Care Center, Health Delivery, InterCare Community

Health Network, Migrant Education Program, Migrant Health Promotion, Northwest Migrant Health Services, and Telamon NFJP. Information from Hackley was not used as number of MSFWs seen was very low. Migrant Education data were also excluded in the calculations as this program is aimed primarily at migrants, and the resulting migrant/seasonal percent was outside the range of the other estimates. In addition, the number of students included in this database was extremely large and so would bias the resulting estimate. The estimates from the remaining eight sources ranged from 77.3% - 54.7% for migrants and 45.3% - 22.7% for seasonals. The number of individuals reported by each source was noted and the sources weighted to equalize information. The results found a statewide average of 68.4% migrants and 31.6% seasonals. This factor was used for most counties.

Database information was examined at the county level using the following criteria: (1) more than one source, (2) total number of MSFWs included in all sources for that county must be greater than 450, (3) each individual source must include more than 100 MSFWs, and (4) each source must be within the migrant/seasonal percent split range for all MSFW data sources. Only information available for two counties, Kent and Newaygo, fit these criteria. A migrant/seasonal percent split different from the statewide average was calculated from weighted information for these two counties.

Additionally, comments from Draft report reviewers and other indicators (e.g., closing of migrant-oriented services) highlighted counties in the thumb area and eastern Michigan where there appeared to be fewer migrants than are seen in the rest of the state. Only one data source, Health Delivery, could be located which provided any direct figures. Although the migrant/seasonal split for all patients in this source's database was similar to the statewide average at 75.3% migrant/34.7% seasonal, when the thumb/eastern counties alone were examined the split changed to 57.9% migrant/42.1% seasonal. In light of the other indicators, this adjusted percentage was used for the following 17 counties: Arenac, Bay, Genesee, Huron, Lapeer, Lenawee, Livingston, Macomb, Monroe, Oakland, Saginaw, Sanilac, Shiawassee, St. Clair, Tuscola, Washtenaw, and Wayne.

A complete listing of county factors used for migrant/seasonal split is included on Table Three.

Accompanied: Sufficient data sources were available to develop separate migrant and seasonal estimates for percent of accompanied households for each group. Five sources offered information on the percent of the migrant work force that was accompanied as opposed to solo workers traveling without family members. These were: Baldwin Family Health, Center for Family Health, Cherry Street Health Services, InterCare Community Health Network, and Telamon NFJP. Information from the Center for Family Health was not used to make calculations as the percent accompanied from this source fell outside the range of the other estimates of 86.1% - 81.3%. A process similar to that used for migrant/seasonal percent calculations was applied. The statewide weighted average factor for migrant percent accompanied was determined to be 84.1%.

Information was available from four sources from which to draw percent accompanied for seasonal households. This included the same sources used to calculate migrant percent accompanied with the exception of Center for Family Health (which only provided information relative to migrants). These estimates ranged from 92.1% - 75.7%. The weighted average for all sources was calculated to derive the factor of 84.9% seasonal accompanied households.

Only one county noted more than a single source with household “N” greater than 100 for both migrants and for seasonals. Calculations for this county, Kent, found 74.3% accompanied migrant and 86.3% accompanied seasonal households.

Farmworkers per Household: Only two sources were found which contained information on the number of farmworkers per accompanied household: the National Agricultural Workers Survey and Fuentes Camp Statistics. The National Agricultural Workers Survey reported regional information encompassing twelve states while Fuentes data were specific to Michigan. The range for the sources was 2.26 - 1.88. The final calculation weighted these sources to determine an average of 2.05 farmworkers per accompanied household. This was used for both migrant and seasonal farmworkers.

Non-Farmworkers per Household: Calculations for non-farmworkers per household began with determination of household size for accompanied workers. Sufficient source data were available to draw separate conclusions for migrant and seasonal households. Information from five sources was found concerning migrant households. These included the same sources used to derive the percent of migrant accompanied households. Similar to those calculations, figures from the Center for Family Health were excluded. The range of household size from all sources was 4.5 - 4.0. The weighted average for migrant accompanied household size was found to be 4.27.

The same four sources supplying data for seasonal accompanied percent calculations were found to have data on seasonal household size. Information from Baldwin Family Health was excluded as the results were outside the range (4.63 – 4.02) of the other sources. The resulting accompanied seasonal household size was found to be 4.32. The two data sources available to calculate separate migrant and seasonal accompanied percent for Kent County were utilized to determine this county’s household size. The results found a weighted 4.17 average migrant household size and 4.31 average seasonal household size in Kent County.

The number of farmworkers per accompanied household (noted above) was subtracted from the MSFW household size to calculate non-farmworkers. The results found 2.22 migrant and 2.27 seasonal non-farmworkers in accompanied households. For Kent County, the results showed 2.12 migrant non-farmworkers and 2.26 seasonal non-farmworkers in accompanied households.

7. Children and Youth by Age Groups

"Children and youth," as defined in the study, are those ages less than one year through 19 years of age. Whether or not these individuals perform farm work does not matter for estimation purposes. This means the group "non-farmworkers in MSFW households" and the group "children and youth" are not mutually exclusive.

Four sources offered information on the number of children and youth per MSFW household: Fuentes Camp Statistics, Michigan Department of Human Services, Migrant Health Promotion, and Telamon Michigan Migrant Head Start. The range for these data ran from 2.43 to 1.76, with the average, 2.12 used as the factor for children and youth per MSFW accompanied household.

This factor was multiplied by the number of migrant and number of seasonal farmworker households calculated in the MI Update MSFW EPS to determine estimates for children and youth. The results found 27,965 migrant and 14,764 seasonal children and youth in Michigan.

Three sources provided age category breakdowns for MSFW children and youth: Michigan Department of Human Services, Migrant Education Program, and Migrant Health Promotion. These data were weighted and averaged to derive the following for percent of children and youth in each age group.

Age	MSFW
Under 1	4.6%
Ages 1-4	23.0%
Ages 5-12	37.9%
Ages 13-14	10.4%
Ages 15-18	18.6%
Age 19	5.5%

8. Final Estimates

The final Draft statewide estimate for all MSFW workers was determined to be 49,135. The estimate for MSFW workers and accompanying non-farmworkers was 94,167. These are broken down by county and for migrant workers, seasonal workers and non-farmworkers in accompanied households (see Table One, "Michigan Update MSFW Enumeration Profiles Estimates, Final"). Also included is a table of statewide numbers for children and youth in each age group for migrants and for seasonals.

Tables

Michigan Update MSFW Enumeration Profiles Estimates, Final

Michigan Update Field Agriculture Methods, Final

Percent Migrant, Percent Seasonal, Percent Accompanied and Accompanied Household Size, Final

Table One: Michigan Update MSFW Enumeration Profiles Estimates, Final

Field Agriculture, Nursery/Greenhouse And Food Processing

County	MSFW Worker Estimates	Migrant Workers	Seasonal Workers	Non-Farmworkers In Migrant Households	Non-Farmworkers In Seasonal Households	Total MSFW Workers and Non-Farmworkers
Alcona	16	11	5	10	5	30
Alger	14	9	4	9	4	27
Allegan	2,646	1,810	836	1,648	786	5,081
Alpena	87	59	27	54	26	167
Antrim	626	428	198	390	186	1,202
Arenac	81	47	34	43	32	157
Baraga	12	8	4	7	4	23
Barry	213	146	67	133	63	409
Bay	427	248	180	225	169	822
Benzie	321	219	101	200	95	616
Berrien	3,440	2,353	1,087	2,143	1,022	6,605
Branch	342	234	108	213	102	657
Calhoun	144	98	45	90	43	276
Cass	374	256	118	233	111	718
Charlevoix	177	121	56	110	53	340
Cheboygan	63	43	20	40	19	122
Chippewa	48	33	15	30	14	92
Clare	46	32	15	29	14	88
Clinton	254	174	80	158	76	488
Crawford	5	3	2	3	1	9
Delta	110	75	35	69	33	212
Dickinson	7	5	2	4	2	13
Eaton	101	69	32	63	30	193
Emmet	74	51	23	46	22	142
Genesee	330	191	139	174	131	634
Gladwin	66	45	21	41	20	127
Gogebic	3	2	1	2	1	6
Gr. Traverse	866	592	274	539	257	1,663
Gratiot	223	152	70	139	66	427
Hillsdale	87	59	27	54	26	167
Houghton	110	75	35	68	33	211
Huron	348	201	146	183	138	669
Ingham	286	196	90	178	85	549
Ionia	306	209	97	191	91	588
Iosco	45	31	14	28	13	86
Iron	12	8	4	8	4	24
Isabella	126	86	40	79	38	243
Jackson	167	115	53	104	50	322
Kalamazoo	1,503	1,028	475	937	447	2,887
Kalkaska	69	47	22	43	20	132
Kent	2,685	1,568	1,117	1,205	1,063	4,953
Keweenaw	0	0	0	0	0	0
Lake	13	9	4	8	4	25
Lapeer	459	266	193	242	182	883
Leelanau	1,585	1,084	501	987	471	3,042
Lenawee	701	406	295	370	278	1,348
Livingston	253	147	107	134	100	487
Luce	15	10	5	9	4	28
Mackinac	15	10	5	9	4	29
Macomb	987	572	416	520	391	1,898
Manistee	476	325	150	296	141	913

Continued on next page.

Table One: Michigan Update MSFW Enumeration Profiles Estimates, Final

Field Agriculture, Nursery/Greenhouse And Food Processing

County	MSFW Worker Estimates	Migrant Workers	Seasonal Workers	Non-Farmworkers In Migrant Households	Non-Farmworkers In Seasonal Households	Total MSFW Workers and Non-Farmworkers
Marquette	25	17	8	16	8	49
Mason	974	666	308	607	289	1,869
Mecosta	108	74	34	67	32	207
Menominee	75	51	24	47	22	144
Manistee	476	325	150	296	141	913
Marquette	25	17	8	16	8	49
Mason	974	666	308	607	289	1,869
Mecosta	108	74	34	67	32	207
Menominee	75	51	24	47	22	144
Midland	81	55	26	50	24	155
Missaukee	326	223	103	203	97	626
Monroe	977	566	411	515	387	1,880
Montcalm	459	314	145	286	136	881
Montmorency	15	10	5	9	4	29
Muskegon	1,402	959	443	874	417	2,692
Newaygo	1,082	615	467	560	439	2,081
Oakland	865	501	364	456	342	1,664
Oceana	3,625	2,480	1,146	2,258	1,077	6,960
Ogemaw	22	15	7	13	6	41
Ontonagon	4	3	1	3	1	8
Osceola	64	44	20	40	19	122
Oscoda	46	31	14	28	14	88
Otsego	43	29	14	27	13	82
Ottawa	6,951	4,754	2,196	4,330	2,065	13,345
Presque Isle	58	39	18	36	17	110
Roscommon	16	11	5	10	5	31
Saginaw	516	298	217	272	204	991
Sanilac	265	153	111	140	105	509
Schoolcraft	23	15	7	14	7	43
Shiawassee	181	105	76	95	72	348
St. Clair	472	273	199	249	187	907
St. Joseph	318	217	100	198	94	610
Tuscola	421	244	177	222	167	810
Van Buren	6,524	4,463	2,062	4,064	1,938	12,527
Washtenaw	487	282	205	257	193	936
Wayne	585	339	246	309	232	1,126
Wexford	138	94	43	86	41	264
Total State	**48,510**	**31,909**	**16,601**	**28,838**	**15,619**	**92,967**
Reforestation	625	428	198	389	186	1,200
Grand Total State	**49,135**	**32,337**	**16,798**	**29,227**	**15,805**	**94,167**

Note: County numbers have been rounded and, therefore, may not exactly add to totals.

Table One: Michigan Update MSFW Enumeration Profiles Estimates, Final

Children & Youth By Age Groups (Statewide)

Age	Migrant	# of Migrant	Seasonal	# of Seasonal
< 1	4.6%	1,286	4.6%	679
1-4	23.0%	6,432	23.0%	3,396
5-12	37.9%	10,599	37.9%	5,596
13-14	10.4%	2,908	10.4%	1,535
15-18	18.6%	5,201	18.6%	2,746
19	5.5%	1,538	5.5%	812
Total	**100.0%**	**27,965**	**100.0%**	**14,764**

Note: "Children & Youth" are defined as those under 20 years of age. Some may be farmworkers.

Table Two: Michigan Update Field Agriculture Methods, Final

Demand For Labor Factors And Rule-Of-Thumb

Crop	Task	Hours For Task	Peak Season Length (Work Days)	Method Notes	General Notes
Apples	harvest	90.00	38.57		
Apricots	harvest	96.00	16.20		
Asparagus	harvest	77.50	32.86	average two methods	
	harvest	80.00	32.86	average two methods	
Beets	harvest	54.00	34.29		
Blackberries	harvest	137.30	48.57		
Blueberries - Tame	hand harvest	648.00	51.00	average three methods	hand harvested acres (55%)
		90.00	30.71	average three methods	hand harvested acres (55%)
		2 workers/acre		average three methods	hand harvested acres (55%)
	mechanized harvest	18.00	30.71	average three methods	mechanically harvested acres (45%)
		.06 workers/acre		average three methods	mechanically harvested acres (45%)
		.08 workers/acre		average three methods	mechanically harvested acres (45%)
				add hand and mechanized harvest estimates	
Blueberries - Wild	harvest rakers	.1075 workers/acre			
Broccoli	harvest	89.46	165.00		
Brussels Sprouts	harvest	426.00	46.00		
Cabbage - Chinese	harvest	96.00	27.86		
Cabbage - Head	harvest	56.00	34.29	average two methods	
	harvest	40.00	34.29		
Cantaloups	harvest	60.00	32.86		
Carrots	wash/grade/ size/pack	7.88	21.43		
Cauliflower	harvest	85.00	120.00		
Celery	harvest	125.70	9.29		
Cherries - Sweet	harvest for process	28.66	10.00	average two methods	process acres (96.4%)
	harvest for process	.33 workers/acre		average two methods	process acres (96.4%)
	harvest for fresh	185.63	43.57	average two methods	fresh acres (3.6%)
	harvest for fresh	232.10	25.71	average two methods	fresh acres (3.6%)
				add process and fresh harvest estimates	
Cherries - Tart	preharvest	13.00	43.57		
Chestnuts	all activities	45.00	17.86		
Christmas Trees	harvest	10.00	39.00	add five task estimates	
	plant	0.60	24.00	add five task estimates	
	prune	0.50	132.00	add five task estimates	
	cone	0.02	14.00	add five task estimates	
	paint	0.40	21.00	add five task estimates	
Collards	harvest	93.41	56.93	add five task estimates	
Cranberries	harvest-wet	12.00	14.29		
Cucumbers	harvest/sort /pack	120.00	71.43	average two methods	fresh acres
		64.00	71.43		
Eggplant	harvest	32.00	38.57		
Grapes - Table/Wine	harvest for table	117.00	22.70	add table/wine estimates	hand harvested (1.7% all grapes)
	harvest for wine	66.78	28.81		hand harvested (17.7% all grapes)
Hazelnuts	all activities	1.46	7.86		
Herbs	harvest	293.00	64.29		
Lettuce	harvest	96.00	59.29		

Table Two: Michigan Update Field Agriculture Methods, Final

Demand For Labor Factors And Rule-Of-Thumb

Crop	Task	Hours For Task	Peak Season Length (Work Days)	Method Notes	General Notes
Maple Syrup	harvest	1722.22 taps/ person			
Mint	pre-harvest	3.68	39.68		
Mustard Greens	harvest	178.50	77.15		
Nectarines	harvest	50.00	25.71		
Onions - Dry	weed	12.50	45.97		fresh acres
Onions - Green	harvest/bundle	256.67	54.29		
Parsley	harvest	293.00	64.29		
Peaches	harvest	50.00	25.71		
Pears - All	harvest	57.00	17.00		
Peppers - All	harvest	112.35	38.57		
Plums and Prunes	harvest	50.00	25.71		
Potatoes	pre-harvest	6.50	99.29		
Pumpkins	harvest	70.00	20.71		
Radishes	harvest/bundle/tie	367.00	152.86		fresh acres
Raspberries	harvest	76.50	18.57		
Rhubarb	harvest	120.00	77.86		
Spinach	harvest	150.00	9.29		
Squash - Summer/ Winter	harvest	89.77	42.86	average two methods	
		65.00	42.86		
Strawberries	harvest	556.00	21.43		
Sugar beets	thin/hoe/weed	2.03	25.71		
Sweet corn	pack	7.88	66.43	average two methods	fresh acres
		.175 workers/ acre			
Sweet corn - seed	detassle	71.6 acres/ worker			
Sweet Potatoes	harvest	67.20	59.29		
Tomatoes	harvest	80.00	22.14		fresh acres. no estimates Monroe Co as all process acres
Turnips and Turnip Greens	harvest	178.50	77.15		
Walnuts	harvest-related	6.49	22.86		
Watermelon	harvest	76.50	28.54	average two methods	
		90.00	28.54		
Other berries	harvest	228.04	26.57	average harvest for all berries	
Other crops	various activities	293.00	64.29	average factors for herbs, mint, sweet corn	
Other nuts	various activities	86.49	28.22	average factors for all nuts	

Explanation of Table Columns:

Demand for Labor Factors: The first factor, acres, are specific to crop/county and are not provided on this table.

Task: The specific crop work activity for which demand-for-labor estimates were made.

Hours Per Task: The hours required to perform the specified task on one acre of the crop.

Season Length: The number of work days required to perform the specified crop task during peak season.

Work Hours: The average number of hours worked daily (the last demand for labor factor) is 7.3 for all tasks.

Rule of Thumb Factors: Represent a formula as noted, usually so many workers per acre.

Notes: Indicates when all the crop acres are not included (e.g., only the crop designated for process or fresh market has been used to make the estimates), or other factors related to the estimate calculations.

Table Three: Percent Migrant, Percent Seasonal, Percent Accompanied and Accompanied Household Size, Final

Percent Migrant, Percent Seasonal

State/County	Migrant Percent	Seasonal Percent
Statewide	**68.4%**	**31.6%**
Arenac Co	57.9%	42.1%
Bay Co	57.9%	42.1%
Genesee Co	57.9%	42.1%
Huron Co	57.9%	42.1%
Kent Co	58.4%	41.6%
Lapeer Co	57.9%	42.1%
Lenawee Co	57.9%	42.1%
Livingston Co	57.9%	42.1%
Macomb Co	57.9%	42.1%
Monroe Co	57.9%	42.1%
Newaygo Co	56.8%	43.2%
Oakland Co	57.9%	42.1%
Saginaw Co	57.9%	42.1%
Sanilac Co	57.9%	42.1%
Shiawassee Co	57.9%	42.1%
St. Clair Co	57.9%	42.1%
Tuscola Co	57.9%	42.1%
Washtenaw Co	57.9%	42.1%
Wayne Co	57.9%	42.1%

Percent Accompanied

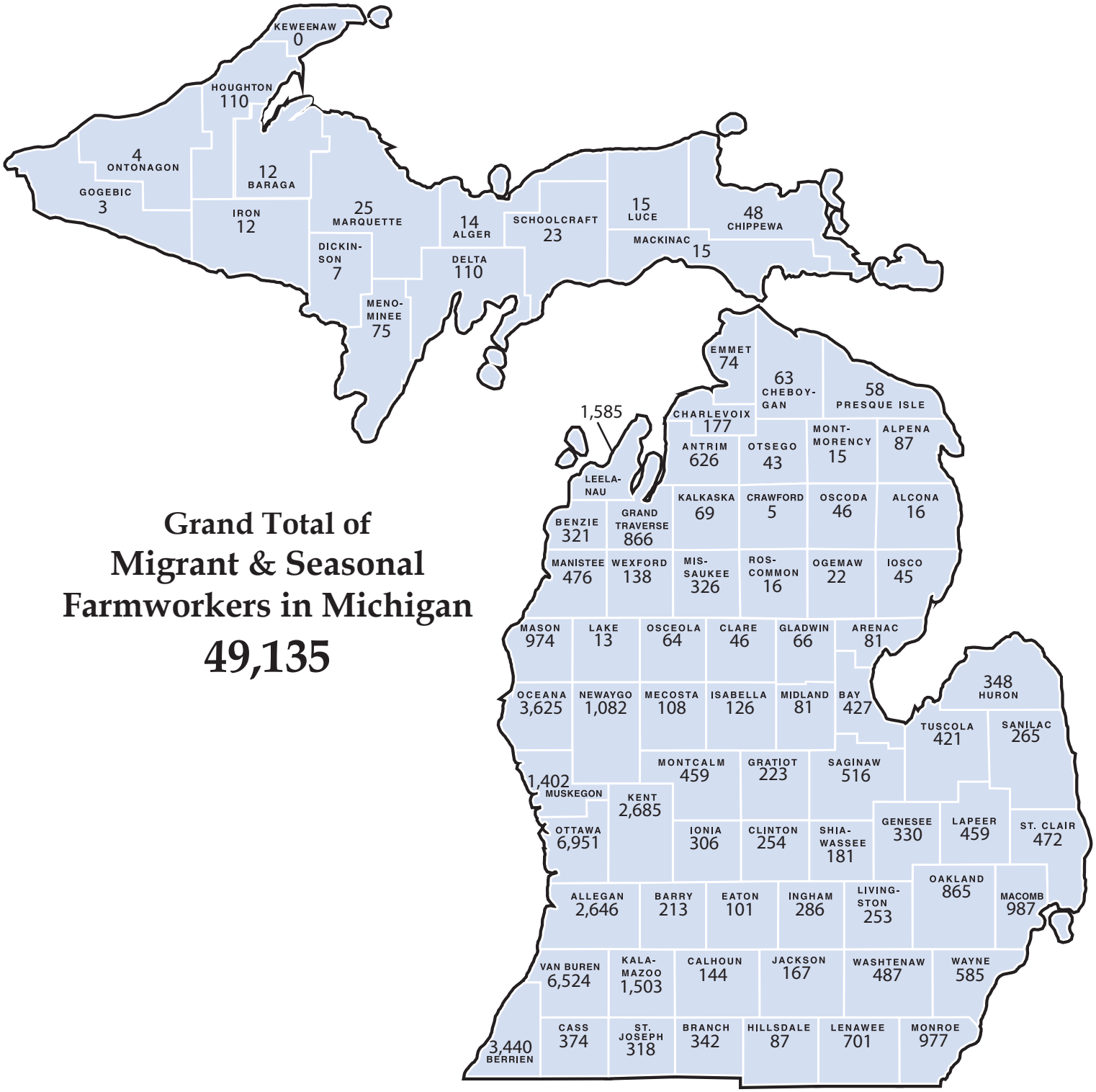
State/County	Migrant Accompanied Household Percent	Seasonal Accompanied Household Percent
Statewide	**84.1%**	**84.9%**
Kent Co	74.3%	86.3%

Accompanied Household Size

State/County	Migrant Average Accompanied Household Size	Seasonal Average Accompanied Household Size
Statewide	**4.27**	**4.32**
Kent Co	4.17	4.31

NOTE: statewide factor used unless county specific data provided.

Map One: Michigan Estimates For MSFW Workers Only by County

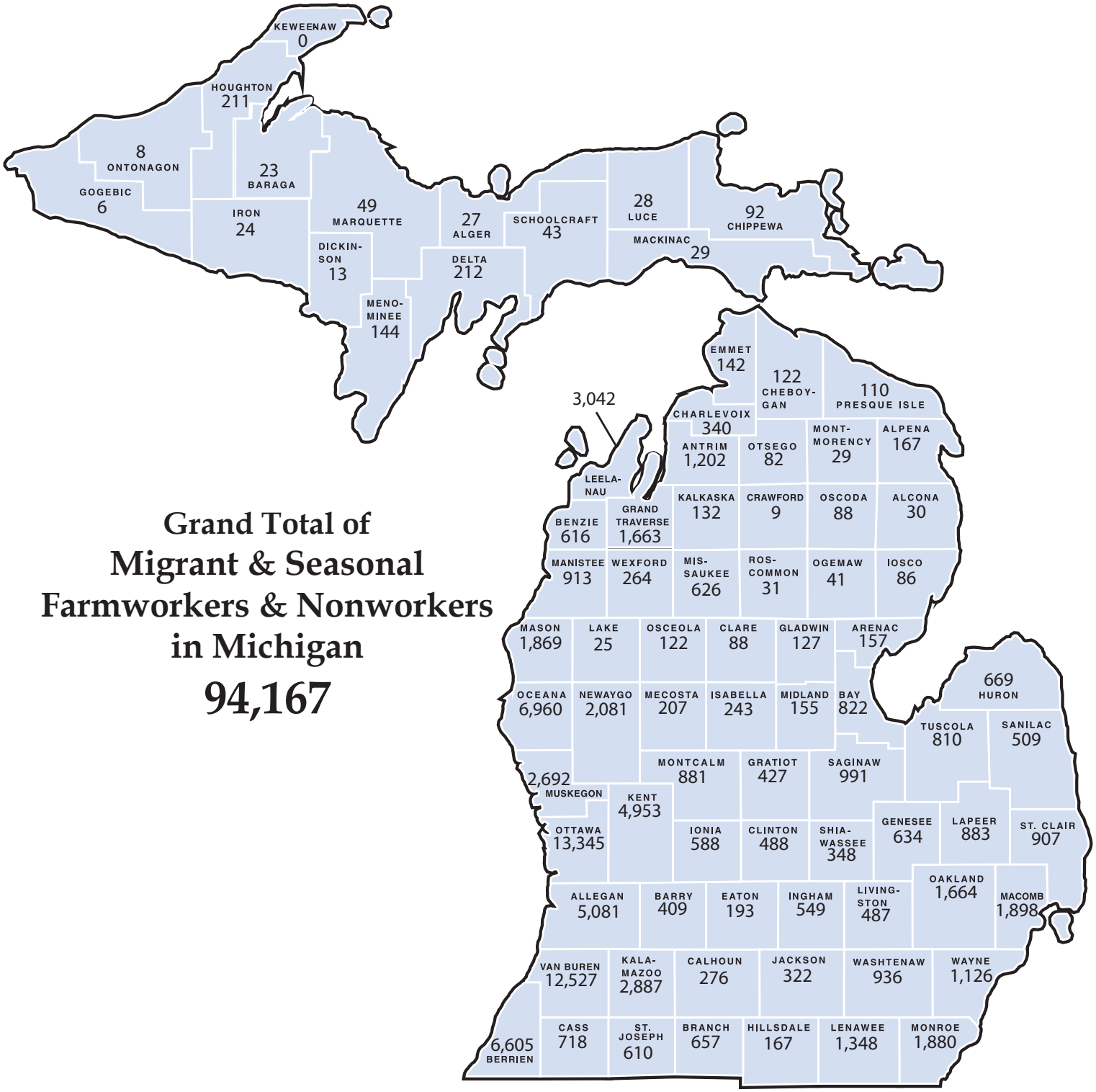


Grand Total of
Migrant & Seasonal
Farmworkers in Michigan
49,135

NOTE: The grand total includes reforestation workers statewide = 625.

Source: MI-MSFW Enumeration Profiles Study, June 2013.

Map Two: Michigan Estimates For MSFW Workers & Nonworkers by County



Grand Total of Migrant & Seasonal Farmworkers & Nonworkers in Michigan

94,167

NOTE: The grand total includes reforestation workers and nonworkers statewide = 1,200.

Source: MI-MSFW Enumeration Profiles Study, June 2013.

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