

Migrant and Seasonal Farmworker Enumeration Profiles Study



MICHIGAN

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MIGRANT AND SEASONAL FARMWORKER ENUMERATION PROFILES STUDY

MICHIGAN

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Preface

It is the mission of the State of Michigan Interagency Migrant Service Committee (IMSC) to improve the quality of life of migrant and seasonal farmworkers and their family members in Michigan. The IMSC operates under the authority of the Director of the Michigan Department of Human Services and is led by the Director of the Office of Migrant Affairs at MDHS for the express purpose of resolving issues related to migrant agricultural labor.

In February 2004, a Data Task Force of the IMSC began strategizing how to best link data obtained from various federal and state departments, and private organizations, to arrive at a comprehensive and accurate determination of the number of migrant and seasonal farmworkers (“MSFW’s”) and their dependents who reside in Michigan during the peak demand for agricultural labor. The community of farmworker service agencies had been operating on assumptions and extrapolations of data last compiled in the early 1990’s in conjunction with a national effort to identify “demand-for-labor” data for the purpose of configuring national programs addressing health, job training and legal services needs of migrant and seasonal farmworkers.

Following a review of the member agencies’ respective needs for updated information concerning the number and locations of MSFW’s – and after interviewing researchers concerning comparative study methodologies – the Data Task Force obtained a principal grant for the enumeration project from the United States Department of Housing and Urban Development through an IMSC member agency, the Michigan Department of Civil Rights. Through this commitment, the IMSC was able to secure the services of the author of this Report. Additional financial support was provided by the Michigan Department of Education to facilitate the author’s in-state research in March of 2006, as well as other expenses of producing, disseminating and presenting the Final Report.

The agencies of the IMSC are pleased to provide this comprehensive update of county-specific data enumerating the types, numbers and locations of farmworkers and their non-worker household members. The 2006 roster of member agencies of the IMSC follows the Executive Summary of this report, together with a list of individual members of the IMSC Data Task Force.

It is our hope that this updated information will assist member agencies in appropriately targeting their services in a more effective manner. It is also our intention that this study will serve as a baseline for continued research and further identification of the characteristics of this important segment of Michigan’s workforce and their needs for suitable housing, health care, education, employment and training, advocacy and other social services.

Martha Gonzalez Cortes

Chair, Interagency Migrant Services Committee

Director, Office of Migrant Affairs, Michigan Department of Human Services

September 2006

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- DeAnna Warren, Michigan Primary Care Association
- Thomas K. Thornburg, Farmworker Legal Services of Michigan
- All the members of the Michigan Interagency Migrant Services Committee's Data Task Force

In particular, this study would not have been possible without the financial support of grants from the United States Department of Housing and Urban Development, through the Michigan Department of Civil Rights, and the Michigan Department of Education.

I would like to thank the Julian Samora Research Institute at Michigan State University for generously agreeing to publish and disseminate this report. I would also like to express my gratitude to Nancy McCraney for preparing the maps presented in the report.

In addition, this study has been greatly aided by the many individuals throughout the state of Michigan who offered their time and assistance in providing information as well as reviewing, commenting, advising, guiding and referring the researcher in her pursuit of data.

Estimating migrant and seasonal farmworkers and their non-farmworker 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 the study methodology and 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

Credits

Photographs for this publication were provided by Linda Postmus — whose photography is influenced by her experience as a portrait painter and her compassion and appreciation for her subjects — and by Dr. Refugio I. Rochin and Danny Layne of the Julian Samora Research Institute at Michigan State University.

Layout and design services, and pre-press preparations, for the publication were provided by Danny Layne of JSRI.

September 2006

Executive Summary

This report presents the results of the first comprehensive effort in over 15 years to estimate the population of migrant and seasonal farmworkers (“MSFWs”) in Michigan. The *Michigan MSFW Enumeration Profiles Study* (“MI-MSFW EPS”) combines national, state and local reports and existing databases to calculate estimates for three sub-groups of the Michigan farmworker population: (1) migrant farmworkers; (2) seasonal farmworkers; and (3) non-farmworkers in farmworker households. The report also estimates the percentage of “children and youth under 20 years of age” in farmworker households.

This MI-MSFW EPS report is designed to be comparable to twelve other state EPS reports published by the author since 2000. The scope of the study includes four specific agricultural groups: (1) field agriculture; (2) nursery/greenhouse; (3) food processing; and (4) reforestation. Excluded from this study are employees working with livestock, poultry, dairy, fisheries, ranching, and those solely operating equipment associated with farming or transporting agricultural products.

A different methodology was used to estimate each agricultural group. For field agricultural, the largest industry group, a “demand-for-labor” model was applied to calculate jobs requiring hand labor which were then converted into “workers.”

The MI-MSFW EPS summarizes resulting estimates in three tables. Table One reports estimates of the combined number of MSFWs employed in each Michigan county in the three primary agricultural classifications studied. Reforestation workers are estimated at the state level only. This table also contains county level breakdowns for “Migrant” and “Seasonal,” as well as “non-farmworker” members of such households. Table Two contains “demand for labor” factors utilized in calculating hand labor estimates for 45 crops grown in Michigan. A breakdown by county of the percentage of “Migrant” versus “Seasonal” farmworkers is provided in Table Three.

As noted in Table One, the estimated total of all MSFWs in Michigan is 45,800. Of these, 35,148 are estimated to be “Migrant” and 10,652 are “Seasonal” farmworkers. The total statewide number of “Non-Farmworkers in Migrant Households” is 33,671, while the total estimate of “Non-Farmworkers in Seasonal Households” is 11,245. The total of all “MSFW Farmworkers and Non-Farmworkers” in Michigan is 90,716.

Of particular interest to departments and agencies serving children of Michigan farmworkers, Table One also delineates “Children and Youth by Age Groups (Statewide).” Of a total of 41,038 children and youth less than 20 years of age, 30,764 are estimated to be “Migrants,” and 10,274 are attributed to “Seasonal” households.

These updated estimates offer a wealth of possibilities for examining trends in the changing Michigan farmworker population – on a county-by-county basis. The report provides a baseline for further research in agricultural sectors not included within the scope of this study. It also provides new opportunities for agencies addressing the needs of farmworker families to reassess the effectiveness of their service delivery efforts.

State of Michigan
Interagency Migrant Services Committee
2006 Member Agencies

Michigan Department of Human Services/Office of Migrant Affairs (Lead Agency)
Michigan Department of Agriculture/Environmental Stewardship Division
Michigan Department of Agriculture/Pesticide & Plant Pest Management
Michigan Department of Civil Rights • Commission on Spanish Speaking Affairs
Michigan Department of Community Health/Division of Family and Community Health
Michigan Department of Community Health/Women, Infants & Children Division
Cristo Rey Community Center • Michigan Department of Education/Migrant Education
Farmworker Legal Services • Internal Revenue Service • Julian Samora Research Institute/MSU
Michigan Department of Labor & Economic Growth/Bureau of Workforce Programs
Michigan Farm Bureau • Michigan Migrant Legal Assistance Project
Michigan Primary Care Association • Migrant Health Promotion
Michigan OSHA/General Industry Safety and Health Division
MSU/Department of Agricultural Economics
MSU/College Assistance Migrant Program
Social Security Administration
Telamon Corporation/Michigan Migrant Head Start
Telamon Corporation/National Farmworker Jobs Program
U.S. Department of Agriculture/Rural Development
U.S. Department of Labor/Wage and Hour Division

State of Michigan • Interagency Migrant Services Committee
Data Task Force Members 2004-2006

Co-Chairs: Linda Forward, Office of School Improvement, Michigan Department of Education, and Thomas Thornburg, Co-Managing Attorney, Farmworker Legal Services. **Members:** Vera Bitsch, Associate Professor, MSU Department of Agricultural Economics; Alberto Flores, Director, Community Relations Division, MDCR; Samuel Garcia, State NFJP Director (past), Telamon Corporation; Martha Gonzalez Cortes, Director, Office of Migrant Affairs, MDHS; Joel Gorch, Manager, Migrant Labor Housing Section, MDA; Juan Martinez, MSU Extension Faculty; Rachael Moreno, Migrant Education, Michigan Department of Education; Richard Olivarez, Monitor Advocate, Bureau of Workforce Programs, DLEG; Marylou Olivarez-Mason, Executive Director, Commission on Spanish Speaking Affairs; Patricia Raymond, State Head Start Director, Telamon Corporation; Karla Stratton, Project FRESH Coordinator, WIC Division, MDCH; Aileen Waldron, Rural Development, USDA; and DeAnna Warren, Michigan Primary Care Association.

Background

There is a constant need for accurate and current estimates of the migrant and seasonal farmworker (MSFW) population in Michigan. Many organizations and government agencies who work with this target group use such information in provision of services, planning, policy setting, health care support, regulatory assistance, identification of unserved areas, agricultural production, determining if resources are appropriate to the need and many other areas.

Estimating MSFWs is extremely difficult and no current source provides reliable information, particularly for population figures at the county level. Several special studies have been conducted by researchers throughout the state but these have been targeted to single or several regions or counties and none have specifically attempted to estimate the MSFW work force. The last comprehensive effort which included county-level figures was *An Atlas of State Profiles Which Estimate Number of Migrant and Seasonal Farmworkers and Members of Their Families*, developed by the Migrant Health Program of the Bureau of Primary Health Care, U.S. Department of Health and Human Services in 1990. This document is over fifteen years old, and there is some sense conditions may have changed in Michigan since it was developed.

The Migrant Health Program completed a limited update of their earlier work in September 2000 covering counties in only ten states. The *Migrant and Seasonal Farmworker Enumeration Profiles Study* reports have been widely circulated, reviewed and gained general acceptance as offering a reasonable approach to estimating this population. In 2002 and 2005, a coalition of organizations in Oregon and Idaho, respectively, funded similar studies for those states.

In 2005, the Michigan Interagency Migrant Services Committee (IMSC) engaged Larson Assistance Services, Alice C. Larson, Ph.D., author of the 2000 *Enumeration Profiles Study* series of reports to conduct a similar effort in their state. The Michigan study is designed to be comparable to the other twelve *Enumeration Profiles Study* reports. An Advisory Group composed of members of the Data Task Force of the IMSC has been involved in the study and has assisted in data gathering.



Study Purpose

The *Michigan MSFW Enumeration Profiles Study* (MI-MSFW EPS) offers state-based information at the county level 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; packing and sorting procedures in food processing; horticultural specialties (including nursery operations, greenhouse activities and crops grown under cover); and reforestation (tree planting). Excluded from study are those working with livestock, poultry, dairy, fisheries, ranching activities, operating equipment associated with farming or driving trucks transporting agricultural products.

Definitions

Migrant and Seasonal Farmworkers (MSFWs)

The MSFW definition used for this study is that of the Migrant Health Program. It describes a seasonal farmworker as:

“An individual whose principal employment [51% of time] 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”*).

Industries Included in the Estimates

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



Field 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: 115112 “soil preparation, planting and cultivating.”

Nursery and Greenhouse

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

Food Processing

Food processing is defined by two NAICS coded industries:

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

Reforestation

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

Demand for Labor Method

One of the primary techniques used looked at the jobs that employ MSFWs. These “job” figures were then converted into employed “individuals.” This methodology is labeled “demand-for-labor” (DFL) and is more fully described in “Enumeration Methodology.”

Limitations

This study is limited in scope in that only secondary source material, including existing database information, and knowledgeable individuals, have been utilized to generate information. This has meant taking reports and databases prepared for other purposes and adjusting them, as possible, for the MI-MSFW EPS. Limited resources and time have prohibited primary research directly with farmworkers.

In addition, by employing only secondary source information, the definition of who is included as a migrant or seasonal farmworker is often tied to the limitations of the generating source. Wherever possible, screens were used to exclude those not covered by the study definition.



General Process

Basic Investigation Techniques

This study involves six major steps:

1. Mass mailing seeking relevant information and sources;
2. Basic data gathering and clarification of information;
3. Preparation of Draft One (estimates, methodology, tables);
4. Review of Draft One by local knowledgeable individuals;

After the information in this document has been reviewed, the following steps will be taken to conclude the report:

5. Revision of Draft One as necessary including conducting additional research;
6. Issuance of the Final MI-MSFW EPS report.

National Databases

Information in one national database was analyzed specifically for this study. It represents the largest continuous direct surveys of MSFWs in the country.

The *National Agricultural Workers Survey* (NAWS) of the U.S. Department of Labor (coordinated by Aguirre International) is a survey conducted three times annually gathering similar information through random selection of targeted counties, employers and subjects. Data gathered includes basic demographics, family characteristics, and work history. This survey has been conducted continuously since 1989.

Data from a five-year period (1996-2000) were examined for the MI-MSFW EPS, as found in the NAWS Public Access Database. This included over 13,000 respondents with data weighted for sampling disparities. Both national and Midwest region information were reviewed. This Region includes the twelve states of Michigan, Illinois, Indiana, Ohio, Iowa, Missouri, Kansas, Nebraska, North Dakota, South Dakota, Minnesota, and Wisconsin.

Although coverage is extensive, this source has its limitations with results appearing weaker the further the information is pared down; i.e., less reliable at the regional than the national level. In regard for use in the MI-MSFW EPS, it is not clear how much grouping Michigan data with 11 other states skews the findings.

Two other national data bases were examined and utilized where possible to provide additional information.

The *Census of Agriculture* (COA) from the U.S. Department of Agriculture (past COAs were developed by the Bureau of the Census) is a direct survey of agricultural producers conducted every five years. It asks a variety of information about the components of production including crops grown and acreage involved. The results are offered down to a county level. Primarily, information from the 2002 COA was used in the MI-MSFW EPS, although 1997 data were also examined to assess agricultural production trends.

ES 202 (information for “covered employment”) is a database kept by the U.S. Department of Labor from employment and wage information submitted through 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.

It was found that much of the ES 202 information needed for the MI-MSFW EPS was not publicly reported at the county monthly level. 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 Labor and Economic Growth (DLEG), a special data run was made of ES 202 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 (described in this document as the ES 202 Special Data Run).



Specific Steps in Development of Estimates

Work began with a mass mailing to identified service organizations assisting MSFWs, government agencies involved with agriculture, farm employer and crop commodity groups, members of a special interagency MSFW committee and others. IMSC members assisted with distribution, which also included mailing to all county extension personnel.

Each participant was given an introductory letter and questionnaire listing study factors for which information was sought. They were asked to provide anything they might have directly or list other resource documents or personnel.

Contacts were made with individuals mentioned by survey respondents as well as with many others known to the researchers. This involved a variety of programs and agencies who were asked for specific information such as client-related demographics, enrollment data, crop production figures and acreage statistics. Individuals offered many research studies and other special reports related in some way to Michigan agricultural production or characteristics of its work force.

In March, 2006, Dr. Larson spent seven days in Michigan meeting with over 30 knowledgeable individuals associated with all aspects of agriculture, and government or non-profit MSFW service provision. This also included presentations before the IMSC and a meeting of Migrant Education local program directors from across the state.

Additional individuals were reached via telephone or e-mail to help clarify issues of agricultural production or further assess sources of information. Although many different individuals, agencies, organizations and businesses were contacted, the list is in no way exhaustive of all of those involved with agriculture and MSFWs in Michigan.

A thorough search of related internet sites was undertaken including those specific to the Michigan Department of Agriculture, DLEG, Michigan Agricultural Statistics Service, and Michigan State University. Other data were sought from various sites including those of specific organizations or concerning agricultural commodities.

Once all state specific information was received, factor information was extracted to estimate sub-groups (migrant farmworkers, seasonal farmworkers, children and youth). For each demographic factor used to develop the estimates, there were numerous sources. These were compared and analyzed to account for any differences. Results were contrasted against national and other MSFW EPS state-specific report information and conclusions drawn regarding the best factor, data range or average to use.

Working draft MI-MSFW EPS estimates were compared to other sources presenting data relevant to the MSFW population in Michigan to assess whether the results were within the range of these actual individual counts or population projections developed by other researchers. MI-MSFW EPS Draft One estimates were completed and tables prepared for review by knowledgeable individuals.

Local Review of Draft Estimates

The Draft MI-MSFW EPS, including preliminary estimates, was sent to 26 potential reviewers representing a wide range of individuals who interact with MSFWs in Michigan, are involved in agricultural production, or had provided information utilized to develop the MSFWs estimates. One of these individuals forwarded the Draft report on to association member agencies for their comments. A cover letter sent with the document asked for general review as well as particular attention to specific issues or factors used to make calculations.

Eleven responded with a variety of comments. These individuals represented government agencies, non-profit organizations and academic institutions. Five reviewers generally indicated they were satisfied with the Draft document and estimates as presented. The remaining six reviewers requested clarification on specific issues, suggested changes or corrections to wording, or discussed calculation methodologies. Some of the suggestions made were determined to be beyond the scope of this current study.

Three reviewers noted a need to estimate workers pruning juice grapes, and two individuals urged estimates be made of corn detasseling workers. Both of these additions were made in the final estimates. Comments received also resulted in a recheck of data relative to specific counties felt to be either too high or too low in the draft estimates. No changes were made as a result of this review.

Remarks received from each reviewer were acknowledged point by point after additional research was conducted to clarify issues. Many suggestions were incorporated into the document. Issues raised and comments made by all of the reviewers were very helpful in revising and strengthening the final MI-MSFW EPS report, particularly in regard to narrative clarity.

Presentation of Estimate Results

Three summary tables and two maps are used to summarize MI-MSFW EPS results.

- Michigan MSFW Enumeration Profiles Estimates
- Michigan Demand for Labor Factors
- Michigan Percent Migrant Farmworkers, Percent Seasonal Farmworkers
- Map: Michigan Estimates for MSFW Workers Only by County
- Map: Michigan Estimates for MSFW Workers and Non-Workers by County

Enumeration Methodology

The four separate industry classifications within the study MSFW definition (field agriculture, nursery/greenhouse — crops grown under cover, food processing and reforestation) were each addressed differently. Adjustments were made to worker estimates to account for duplicate counts within and across counties. Finally, population sub-groups and the number of children and youth in specific age categories were calculated.

Field Agriculture

The field agriculture estimate used a “demand for labor” (DFL) process that examines the number of workers needed to perform temporary agricultural tasks, primarily harvesting although other activities were also considered including planting, pruning, weeding and thinning operations where extensive hand labor is involved.

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

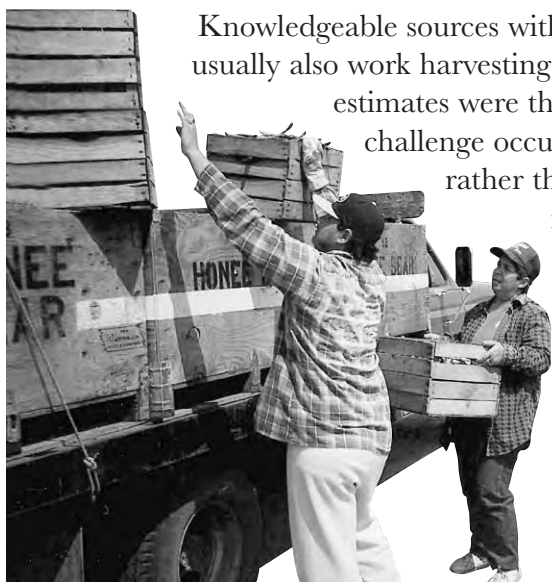
$$\text{DFL} = \frac{A \times H}{W \times S}$$

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 activity



Knowledgeable sources within Michigan stated that individuals engaged in pre-harvest activities usually also work harvesting tasks (Brown, 2006; Goldy, 2006). For that reason, harvest worker estimates were thought to include those in other seasonal labor tasks. An additional challenge occurred around determining what percentage of some crops were hand rather than machine harvested (e.g., blueberries, peppers). This often involved knowing whether a crop was harvested for the fresh market or for processing.

Factors used in calculations for crop, hand labor task, hours to perform that task, season length and relevant notes on hand versus mechanical operations (where relevant) are included in Table Two.

Nursery/Greenhouse and Crops Grown Under Cover

Nursery/greenhouse workers and those employed in crops grown under cover involve many different categories. These include: bedding plants, cut flowers, 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 product type and production needs.

Two sources of data noting temporary nursery/greenhouse workers at a county level were located. Although both report workers in many counties, each provided figures for counties not included in the other.

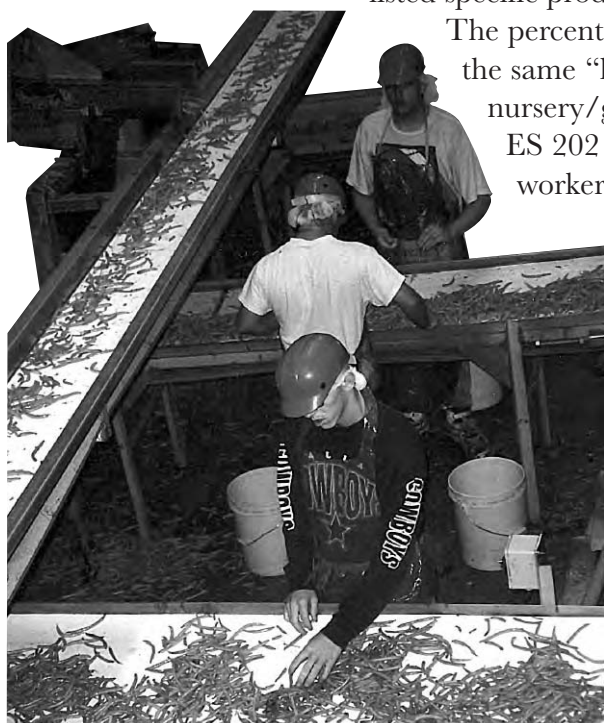
The first source of information offered number of hired workers reported in the ES 202 Special Data Run on a monthly basis. A crude measurement of the number of temporary workers was obtained by subtracting the lowest employment month (assumed to be permanent workers) from the highest employment month. Where figures were available for up to a four year period (2001-2004), this calculation was made for each year and then averaged.

The second source of direct worker numbers was obtained from a database kept of industry employers by Tom Dudek, Michigan State University Extension (Dudek, "Greenhouse, 2006"). The data provide full-time and part-time nursery and greenhouse workers for most counties. In discussions, Dr. Dudek indicated that the definition of "part-time employees" covers those working under 40 hours/week or less than year-around. He thought some of those listed as "full-time workers" would meet the definition of migrant or seasonal farmworkers in this study, but did not know what percent that might cover (Dudek, Interview, 2006).

The final nursery and greenhouse worker estimates used a combination of these two sources.

Food Processing

Two sources were used to identify food processors and estimate the temporary workers they employ. One listed specific producers and gave an employee figure for individual establishments. The percent of all employees who were temporary was then calculated using the same "high minus low month" technique employed for nursery/greenhouse workers. The second source involved figures from the ES 202 Special Data Run which were used to estimate temporary workers in each county where food processing was reported.



In several instances, only one of these two sources offered information for a specific county. Where the sources both specified food processing employment in a single county, the largest of the reported figures was used, under the assumption that each source might have reason to miss food processing operations.

Reforestation

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*.

There are no sources known that provide the number of tree planters or reforestation workers in Michigan. As a result, five separate methods were used to estimate the number of workers in this industry category.

Three of these used a DFL approach with factors developed for previous MSFW EPS studies in different parts of the country. The fourth method incorporated a “rule of thumb” suggested by Monte Bell of the U.S. Forest Service in Oregon, related to the time it takes workers to replant one acre of land. Acreage information used in these calculations was specific to Michigan.

The fifth method involved statewide ES 202 information for the specific reforestation NAICS code. The process used in nursery/greenhouse and food processing estimates was applied to calculate “temporary workers” from monthly employment reports.

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

Duplication Rate

The DFL method used for field agriculture, as described above, estimates “FTE jobs” not workers. The assumption is one “job” equals one worker; however, this may not be the case. An adjustment was made to account for those employed in more than one agricultural “FTE job” calculated through the DFL process. This “duplication rate” refers to the concept that one worker can be employed in more than one “job.” For example, a single individual might work in both potato and onion operations. If the estimates for workers employed in each of these crops were simply added, the results would overestimate the number of individuals within any one county or statewide.

The average number of jobs per MSFW was found from a database of regional farmworker survey information. This became the “duplication rate” for the MI-MSFW EPS. The factor was used on estimates of workers in field agriculture as well as those in food processing. This rate was not applied to reforestation workers.

Reviewers of the MI-MSFW EPS Draft report questioned whether or not this rate should be used with nursery/greenhouse workers. Anecdotal and observational instances were presented, but no hard data could be located. As MSFW EPS studies conducted in other states indicated most nursery/ greenhouse workers do not hold jobs in other industries included in the study, and no conclusive evidence was found to refute this for Michigan, a duplication rate was not applied to the estimate of nursery/greenhouse workers in the MI-MSFW EPS.

Sub-Group Estimates

Sub-groups estimated for the study included migrant farmworkers, seasonal farmworkers, non-farmworker family members accompanying farmworkers, and children and youth in specified age groups. “Migrant farmworkers” covered individuals who met the definition of a migrant but only traveled within the state of Michigan (intrastate migrants) and others who came from outside the state to work in Michigan (interstate migrants).

Both “non-farmworkers” and “children and youth” were estimated. The first group included anyone of any age in the household who was not employed in farm work. The latter group covered 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 percent identified as migrant workers and percent identified as seasonal workers to estimates for all workers (identified as “MSFW Farmworkers”).*
- *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 represent 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 number of “non-farmworkers.”*

The following age groupings were determined to be the most useful descriptors (given the needs of funding sources and health care programs) for the population considered “children and youth”: under 1 year, 1-4 years, 5-12, 13-14, 15-18, and 19 years. Factors were found for the number of individuals in each accompanied household who were less than 20 years old. These were multiplied by the estimate of accompanied migrant and seasonal households to find total number of migrant and seasonal children and youth. A variety of sources were then examined to derive percent of the population in each age group.



Comparative Estimates

To help consider the reasonableness of the results of MI-MSFW EPS estimates, figures were compared to other sources offering MSFW numbers at a county level in Michigan. These came from direct client data, capacity calculations, or special studies. These sources included:

- Michigan Department of Agriculture, Environmental Stewardship Division, “2005 Licensed Migrant Labor Housing Sites,” Lansing, Michigan, 2006.
- Michigan Department of Community Health, WIC Division, “WIC Program Data by County, 2003,” program statistics obtained from Karla Stratton, Lansing, Michigan, 2006.
- Michigan Department of Education, Migrant Education Program, “Program Statistics, 2004-2005, program year, Lansing, Michigan.
- Michigan Department of Labor and Economic Growth, Bureau of Workforce Programs, “Farming Prevailing Practice and Prevailing Wage Survey,” Lansing, Michigan, 2006.
- Michigan Department of Labor and Economic Growth, Bureau of Workforce Programs, “H-2A Orders for 2005,” Lansing, Michigan, 2006.
- Northwestern Michigan Migrant Projects, “Migrant Study Demographics,” participant statistics obtained from Jean Franco, Traverse City, Michigan, 2006.

Some of these sources only covered particular segments of the total population estimated in the MI-MSFW EPS. Additionally, in a small number of cases, the MI-MSFW EPS did not offer information that allowed for direct comparisons.

In the few instances where these sources noted numbers greater than the Draft MI-MSFW EPS for a specific county, additional research was conducted and/or inquiries made of the source to clarify such discrepancies. In conclusion, no evidence could be found indicating changes should be made to MSFW EPS county estimates based on these comparisons.

Resources Utilized for Michigan Estimates

Factor information was gathered from the primary sources listed below. Where available, local information was utilized primarily or as a check for broader regional or national data.

Field Agriculture

Crops Requiring Temporary Hand Laborers

Past MSFW EPS reports have identified crops that often require hand labor. This offered a starting place for developing a list of crops relevant to Michigan. Other sources also provided such information including the “Profile of Michigan’s Migrant Agriculture Labor Force” (Michigan Department of Human Services). The results were presented to many knowledgeable individuals during the time spent on-site in Michigan to help clarify a final inventory.

A wide search was made for any documents that could provide data on the percent of crops which are fresh versus processed, often a measure of hand versus mechanized harvesting (U.S. Department of Agriculture, *2002 Census of Agriculture*; Kleweno and Matthews, *Michigan Rotational Survey, Vegetable Inventory*; Garcia-Salazar, 2002; Aguilar, 2003). Site visit interviews also helped provide the information necessary to make these calculations (Anderson, Brown, Goldy, Longstroth, Poindexter, Rendon-Murray, Shane, and Thornburg – all 2006).

Acreage

The *2002 Census of Agriculture* (COA) was the primary source for acreage numbers in identified hand labor crops by county in Michigan. This included Christmas trees.

Previous work (Larson, *MSFW Enumeration Profile Study* reports; Larson and Plascencia, *Migrant Enumeration Project*) 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 hired workers. Accordingly, any crop within a specific county noting such small acreage was dropped. Work on the *MSFW Enumeration Profiles* Study for Oregon included consultation with Diane Coffman of Oregon State University, North Willamette Research and Extension Center who indicated this ten acre rule was less likely to apply in berry crops. Accordingly, production of five or more berry acres were included in estimates.

A great deal of the crop by county acreage data for the target crops was not reported in the COA data although the number of farms in the county producing the crop was indicated. This suppression occurs for information “withheld to avoid disclosing data for individual farms” (*2002 Census of Agriculture*). For a couple of these crops, the total acreage statewide was under ten. It was, therefore, assumed that each non-reporting county producing the crop would similarly have less than ten acres.

Statewide totals were also suppressed in the COA. For some crops, no data were available from any source noting statewide or county acreage. In these instances, it was necessary to consult with Michigan State University Extension personnel interviewed for this study and familiar with the crop (Bitsch, Brown, Goldy, Longstroth, Martinez, Myers, Poindexter, Shane – all 2006) to determine the relative size of the crop and whether sufficient acreage might exist in any one county; e.g., more than nine acres, to be included in the DFL calculations. These crops included: brussels sprouts, currants, and dill.

For several other crops; e.g., asparagus and cucumbers, it was necessary to calculate the expected acreage based on the information available for the same crop in other counties across the state. The following steps were followed to derive these calculations for a specific crop:

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



In some instances, the “average acreage” calculation resulted in a large number leading to the possibility that a particular county or counties with suppressed acreage might account for a larger than average proportion. On these occasions, the results were reviewed by the MSU Extension personnel interviewed for the study (as noted above) who assisted with identifying larger producing counties or adjusting averages.

Other sources were also utilized to change and update county-specific acreage information as available. These included a series of reports from the “Michigan Rotational Survey” (Kleweno; Michigan Department of Agriculture) for fruit (2003-2004), nursery and Christmas trees (2004-2005), and vegetables (2001-2002). The “Michigan Apple Committee Winter 2003 Grower Survey” also provided helpful information.

Hours for Task

“Crop budgets” and other special reports prepared by agricultural economists and extension specialists as a guide to crop production were utilized to determine hours needed to perform major hand labor tasks on each crop. This included budgets prepared by Michigan State University, Pennsylvania State University, Cornell University, Rutgers University and the Ontario (Canada) Ministry of Agriculture Food and Rural Affairs. Additional information came from interviews with knowledgeable experts on agricultural production.

If specific information was not available for a particular crop, factors from the *Enumeration of Vegetable and Orchard Temporary Worker and Work Hours in New York* (Larson, 2002) were utilized.

Work Hours

Only one source was found to have information specific to the Midwest Region, of which Michigan is a part, for hours per week and days per week worked by MSFWs. NAWS survey data averaged from 1996-2000 showed MSFWs worked 41.9 hours in a 5.57 day week. Using these figures, it was determined that MSFWs are employed 7.5 hours per day, and this factor was used in calculations for all crop activities.

Season Length

Information for peak hand labor season dates specific to crops in Michigan was found in a few published sources (Macial, Ortiz, 1990; Garcia-Salazar, 2002; Ontario Ministry of Agriculture Food and Rural Affairs, 1998). Site visit interviews with MSU personnel offered activity dates in addition to such documentation (Brown, Goldy, Longstroth, Myers, Poindexter, Shane – all 2006). The New York study (*Enumeration of Vegetable and Orchard Temporary Worker and Work Hours in New York*, 2002) helped to complete what was needed. Much of the information reported calendar days which were 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. This calculation maintained consistency with all other MSFW EPS state reports.

Maple

Previous work with knowledgeable experts, found that the DFL formula would not be appropriate for estimating hand labor needed for harvesting maple sap (Smallidge, 2001; Hopkins, 2005). This crop is focused on tree taps and the best method for determining harvest labor was found to be calculating workers per tap. The *Enumeration of Vegetable and Orchard Temporary Worker and Work Hours in New York* (Larson, 2002) offered a methodology for New York that was also deemed appropriate for Michigan.

Factors for taps per worker were calculated for two Cornell University Experimental Stations in separate counties where data on number of taps and seasonal workers needed for harvest were available (Smallidge, 2001). This was averaged resulting in a formula of 1722.22 taps/worker. Discussion with Kathy Hopkins at the Cooperative Extension in the University of Maine (2005) indicated that if the worker estimates resulted in a figure of five or less, it could be assumed to be a family operation and, therefore, should not be included in harvest labor estimates.

To apply this formula in the MI-MSFW EPS, information on number of taps per county was found in the COA (U.S. Department of Agriculture, 2004). The formula of 1722.22 taps/worker was then utilized to estimate workers.

Nursery/Greenhouse and Crops Grown Under Cover

The first source used to estimate Michigan nursery and greenhouse workers, the ES 202 Special Data Run (2006), resulted in a statewide total of 6,394. The second source, Dr. Dudek's database of workers hired by industry employers (Dudek, "Greenhouse, 2006"), listed a total of 5,793 part-time employees in these industries.

Two references were located that gave a number similar to what was indicated in both these sources, although each covers an earlier period of time. The *Michigan Rotational Survey, Nursery and Christmas Trees, 1996-97*, (Kleweno, 1997) notes a total of 9,100 nursery workers in the state, including 1,200 "permanent part-time" and 5,900 "Seasonal" workers. This report indicates that only 20% of nursery workers are employed on a permanent full-time basis. It should be considered that this survey did not cover greenhouse workers unless there is a greenhouse associated with a nursery (Dudek, Interview, 2006).

The second verification was found in "Nursery Crops, Number of Hired Workers" (USDA, NASS) which indicated 7,507 nursery workers were hired in Michigan in the year 2000. If only 20% of these individuals were full-time permanent workers, the estimate of temporary employees would be 6,006.

The nursery/greenhouse worker county estimates used in the MI-MSFW EPS were a combination of information from both data sets (ES 202 Special Data Run and Dudek, "Greenhouse, 2006"). Because of the potential weaknesses discussed for each of these sources, the one reporting the greatest number of "calculated temporary" (ES 202 Special Data Run) or "part-time employees" (Dudek) was determined to be the county estimate. If data for a specific county were only offered by one source, this information was used.

Food Processing

The first method for estimating food processing workers used the ES202 Special Data Run reported monthly employment for NAICS codes 3114 and 115114. These data determined the percent of total number of employees in each county who could be considered temporary workers by subtracting the highest month of employment from the lowest month of employment ("temporary workers") for each of the years 2001-2004 and averaging the results..

The second method for estimating temporary food processing workers used the *Directory of Canning, Freezing, Preserving Industries, 2002* (Edward E. Judge and Sons). This source lists businesses by the old industry coding system, Standard Industrial Classification (SIC), with comparable codes being SIC 2033 and 2037. Three other SIC codes were also noted as relevant to Michigan: 2032 (production involving blueberries, beans or fruit and vegetable baby foods), 2034 (involving dried blueberries or cherries), 2035 (production of pickles). The Directory notes such operations by location and offers a coded range for total employment at each site (e.g., code 1 = 1-19 employees). The mid-point of this range was chosen to represent exact number of employees.

Figures from the ES 202 Special Data Run were used to define the percent of all employees noted in Directory listings who are temporary. This was achieved by calculating the percent the temporary worker number represented of the total of year-round (the lowest employment month in each county's ES 202 Special Data Run figures) plus temporary workers.

Reforestation

Acreage information utilized in four of the five reforestation methods was obtained from USDA, Forest Service published and unpublished data. (*Tree Planting in the United States*, 1998; "Unpublished Data, Tree Planting Acres" 2005). Information from five years was averaged. As data for the year 2002 appeared to be incomplete (within the unpublished estimates), figures from 1998-2001 and 2003 were used.

The first DFL estimate included factors developed for the Oregon MSFW EPS and later used in the Washington and Idaho reports:

Work Hours were generally agreed to be eight per day as reported by various forestry experts.

Hours for Task to plant fir, cedar, hemlock and other similar trees grown in Oregon is thought to be 3.8, calculated at an average 2.105 acres per day planted per worker in an 8 hour day (Sargent, 2000).

Season Length averages 22.14 days, calculated on a 45 day peak season working 40 hours per week minus 10 days for weather-related reasons (Sargent, 2000).

The second and third DFL estimates incorporated two sets of factors used for MSFW EPS studies in Mississippi, Maryland, Florida and other states in the south and southwest. The "work hours" factor was the same throughout all the DFL estimates (8 hours/day).

The two other DFL factors "hours for task" and "season length" differed for each estimate and came from the following two sources.

- (1) *Number and Characteristics of Migrants in Mississippi* (Larson, 1992), presented tree planting DFL characteristics from field research discussion with knowledgeable experts. This source reported: 1.5 acres of seedlings planted per 8 hour day or 5.33 hours/acre; 73 days peak season length, calculated at 13 weeks working an average 6 days/week minus 5 days during the season in which weather conditions would prohibit work.
- (2) Conversation with Michael Economopoulos, South Eastern Forestry Contractors Association (1998), reported the following factor information for the southeastern region: 3 acres planted per 8 hour day or 2.67 hours/acre; 40 days season length, calculated at 8 weeks for an average of 5 days/week.

The fourth estimation method for reforestation workers, also first utilized for the Oregon MSFW EPS, was built around a “rule of thumb” practiced at Mr. Bell’s federal agency: it generally takes one worker one day to replant one acre of land (Bell, 2002). As this method was developed for the Oregon MSFW EPS, a season length of 22.14 days (Sargent, 2000) was used along with Michigan specific acres.

The fifth method calculated “temporary” reforestation workers as those reported in ES 202 data statewide when the lowest employment month was subtracted from the highest employment month. This was averaged over five years.

The results of these five methods ranged from 99 – 253 reforestation workers. The average of 246 was used as the statewide MSFW reforestation estimate.

Duplication Rate

No data on the number of temporary farm jobs per county or per state could be located related to Michigan. The only information found was national and regional level reports from NAWS (1996-2000) for average jobs/worker in a twelve-month period. The Midwest regional estimate of 1.59 was used as the factor for jobs/worker – the “duplication rate.”

Sub-Groups

“Migrant/Seasonal”

Sixteen sources were found to report the migrant and seasonal percent for MSFWs in Michigan: Documents: Michigan Department of Education, 2004-2005; Millard, *Hispanic Migrant Farm Worker Health Survey in Ottawa County*, 2002; Rosenbaum, “The 1997 Migrant and Seasonal Farmworker Workforce and Non-Workforce Population,” 2002; Telamon, Michigan Migrant Head Start, 2005; Telamon Corporation, “Customer Characteristics for the State of Michigan,” 2006; U.S. Department of Health and Human Services, *Uniform Data System*, 2004; U.S. Department of Labor, National Agricultural Workers Survey, Public Access Data, 2002. Interviews: Arangure, Gonzalez-Cortes, Myers, Page, Perez, Rangel, Rodriguez, Siles, Vela — all 2006.

Some noted information for one region or one county. Each of these state geographic subsets had three or more sources of data. Where county-specific migrant/seasonal percentage split could be determined, the sources noting such information were averaged and that percent used. For all other counties, an average of sources only reporting information for the state was used. Table Three provides a list of the percent for migrant/seasonal farmworkers applied to each county.



“Accompanied”

Eighteen sources offered information on the percent of the MSFW work force that is accompanied as opposed to solo workers (traveling without family members). There was sufficient information to support separate estimates for migrant accompanied and seasonal accompanied. The results of all of the sources were averaged to determine 76.5% (range: 58% - 95%) migrant and 84.3% (range: 50% - 90%) seasonal accompanied workers.

The following sources contributed information for these calculations: Documents: NMHSI, 2006; Roeder and Millard, 2000; Rosenbaum, *The Direct Economic Impact of Migrant Farmworkers on Southeastern Michigan*, 2001; Telamon, 1998. Interviews: Anderson, Arangure, Bitsch, Dudek, Gonzalez-Cortes, Gorch, Martinez, Myers, Perez, Rangel, Rendon-Murray, Rodriguez, Siles — all 2006. Additionally, information was taken from a meeting with the IMSC Data Task Force and in a gathering of experts from Intercare Community Health Network, Van Buren Intermediate School District Migrant Education Program and Farmworker Legal Services.

“Farmworkers Per Household”

Information on the number of farmworkers per accompanied household was contributed by five sources: Documents: Rosenbaum, *The Direct Economic Impact of Migrant Farmworkers on Southeastern Michigan*, 2001; Rosenbaum, “The 1997 Migrant and Seasonal Farmworker Workforce and Non-Workforce Population,” 2002; Telamon, Michigan Migrant Head Start, 2005. Interviews: Gorch, 2006. A meeting with the Michigan DLEG Agricultural Employment Specialists (Martinez, Rangel, Arangure, Rendon-Murray, Rodriguez - 2006) also offered information.

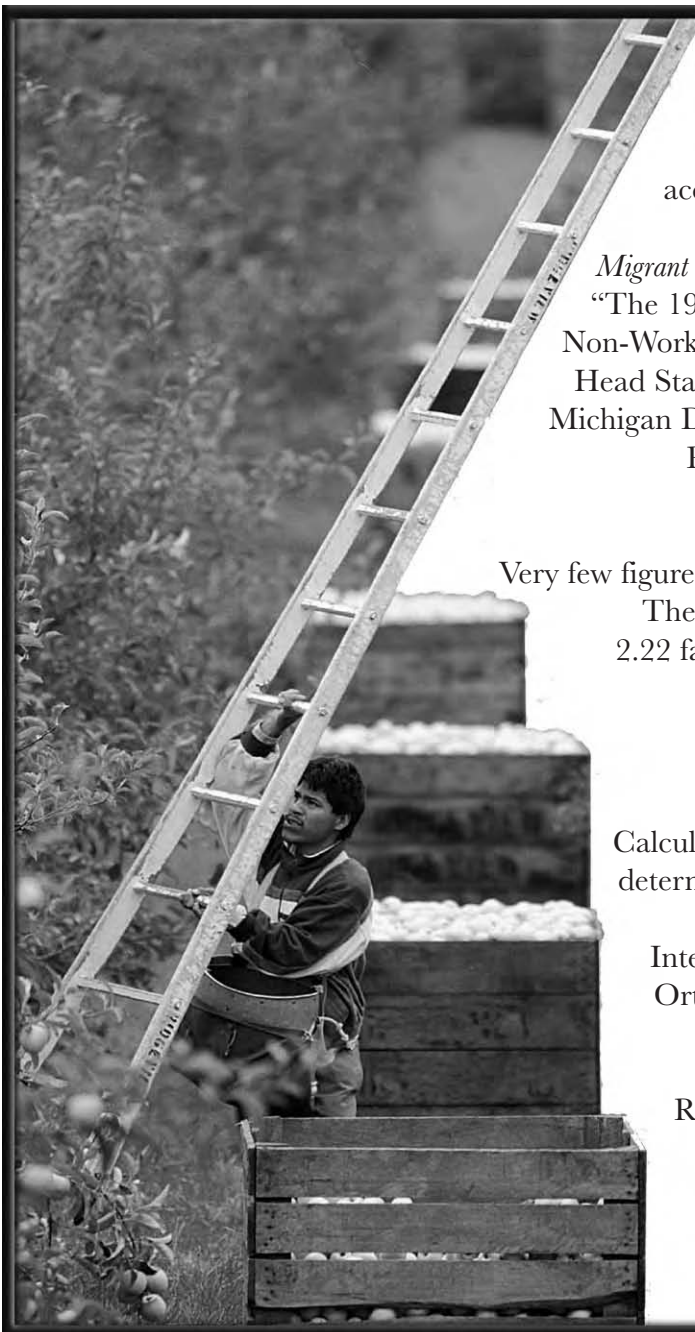
Very few figures were provided separately for migrants and seasonals. The overall average from all sources resulted in a factor of 2.22 farmworkers per household (range: 1.84 -2.84) for both migrant and seasonal farmworkers.

“Non-Farmworkers Per Household”

Calculations for non-farmworkers per household began with determination of household size (for accompanied workers).

Eleven sources provided such information: Documents: Intercare Community Health Network, 2006; Maciel and Ortiz, 1991; Michigan Department of Agriculture, 2006; Michigan Department of Education, 2006; Northwestern Michigan Migrant Projects, 2006; Rosenbaum, *Migrant and Seasonal Farmworkers in Michigan: From Dialogue to Action*, as repeated in Michigan Department of Human Services; Rosenbaum, “The 1997 Migrant and Seasonal Farmworker Workforce and Non-Workforce Population,” 2002;

Continued on Next Page



Telamon, 1998; Telamon, 2005; U.S. Department of Labor, *National Agricultural Workers Survey*, 2002. *Interviews*: the DLEG Agricultural Employment Specialists, 2006. The results found a MSFW average family size of 5.00 persons (range: 4.02–5.84).

The number of farmworkers per accompanied household (noted above) was subtracted from the household size of each group to calculate non-farmworkers. The results showed 2.78 non-farmworkers per MSFW accompanied family. This factor was applied equally to migrant and seasonal worker households.

Children and Youth by Age Groups

“Children and youth,” as defined in the MI-MSFW EPS are those ages infant through 19. Whether or not these individuals perform farm work does not matter for purposes of this calculation, and therefore, the group “non-farmworkers in MSFW households” and the group “children and youth” are not mutually exclusive.

Four documentary sources had information on the number of children and youth per household. They included: Millard, 2002; Telamon, 1998; Telamon, 2005; U.S. Department of Labor, *National Agricultural Workers Survey*, 2004. The group involved in the meeting of personnel from Intercare Health Care Network, the Van Buren County Migrant Education Program and Farmworker Legal Services also suggested a figure, offering a fifth information source. The average of all information gathered was 2.54 (range: 2.02 – 3.17) children per MSFW family.

This figure was multiplied by the number of migrant and number of seasonal farmworker households to determine individuals in each group under 20 years of age. The results found 30,764 migrant and 10,274 seasonal children and youth.

Only three sources provided a breakdown of percentage in age categories for MSFW children and youth, and two of these were past MSFW EPS reports. Telamon, in developing its Migrant Head Start Needs Assessment (2005), put forth the argument that the percent of those in each age group listed in the Florida MSFW EPS would be relevant to Michigan because the migrant stream between the two states is very strong. Using that same reasoning, it could be implied that the same would be true of percentages noted in the Texas MSFW EPS. The third source that offered similar percentages specific to Michigan was the Northwestern Michigan Migrant Projects (2006). Information from these three documents were averaged and the results applied to both migrant and seasonal family members. The following summarizes the percentage utilized.

Under 1 =	3.7%
Ages 1-4 =	21.8%
Ages 5-12 =	44.1%
Ages 13-14 =	11.0%
Ages 15-18 =	17.8%
Age 19 =	1.6%

Final Michigan MSFW Estimates

The MI-MSFW EPS statewide estimate for MSFWs (workers only) is 45,800. the estimate for MSFWs and non-farmworkers is 90,716. These are broken down by County in Table One.



Table 1. Michigan MSFW Enumeration Profiles Estimates

Field Agriculture, Nursery/Greenhouse and Food Processing													
COUNTY	MSFW ESTIMATES	MIGRANT FW	SEASONAL FW	NON-FW IN MIGRANT HOUSEHOLDS	NON-FW IN SEASONAL HOUSEHOLDS	MSFW NON-FW	COUNTY	MSFW ESTIMATES	MIGRANT FW	SEASONAL FW	NON-FW IN MIGRANT HOUSEHOLDS	NON-FW IN SEASONAL HOUSEHOLDS	MSFW NON-FW
Alcona	27	20	7	20	7	54	Livingston	186	158	28	152	29	367
Alger	67	51	17	49	18	134	Luce	13	10	3	9	3	26
Allegan	1,827	1,407	420	1,348	444	3,618	Mackinac	7	5	2	5	2	13
Alpena	81	61	20	58	21	160	Macomb	1,323	1,125	199	1,078	210	2,611
Antrim	455	342	112	328	119	902	Manistee	790	595	195	570	206	1,566
Arenac	136	102	34	98	35	269	Marquette	24	18	6	17	6	48
Baraga	8	6	2	6	2	15	Mason	1,285	968	317	927	335	2,547
Barry	237	185	52	177	54	469	Mecosta	140	105	35	101	36	277
Bay	466	351	115	336	121	923	Menominee	97	73	24	70	25	192
Benzie	277	208	68	200	72	549	Midland	90	68	22	65	23	178
Berrien	3,365	2,591	774	2,482	817	6,664	Missaukee	305	230	75	220	79	604
Branch	445	348	97	333	102	881	Monroe	890	757	134	725	141	1,756
Calhoun	263	206	57	197	61	521	Montcalm	641	483	158	463	167	1,271
Cass	659	507	151	486	160	1,304	Montmorency	10	7	2	7	3	19
Charlevoix	167	126	41	120	44	331	Muskegon	1,051	791	260	758	274	2,083
Cheboygan	67	50	16	48	17	132	Newaygo	882	664	218	636	230	1,748
Chippewa	77	58	19	55	20	152	Oakland	526	447	79	428	83	1,037
Clare	188	142	46	136	49	373	Oceana	4,855	3,321	1,534	3,182	1,620	9,657
Clinton	242	190	53	182	56	480	Ogemaw	60	45	15	43	16	119
Crawford	10	8	2	7	3	20	Ontonagon	3	2	1	2	1	5
Delta	126	95	31	91	33	249	Osceola	129	97	32	93	34	256
Dickinson	28	21	7	20	7	55	Oscoda	13	10	3	9	3	25
Eaton	128	100	28	96	29	253	Otsego	36	27	9	26	9	72
Emmet	135	102	33	97	35	268	Ottawa	6,030	4,643	1,387	4,448	1,464	11,942
Genesee	294	250	44	239	47	580	Presque Isle	34	26	8	24	9	67
Gladwin	151	114	37	109	39	299	Roscommon	3	2	1	2	1	6
Gogebic	3	2	1	2	1	6	Saginaw	431	325	107	311	112	855
Gr. Traverse	574	432	142	414	150	1,138	Sanilac	316	238	78	228	82	626
Gratiot	242	182	60	174	63	479	Schoolcraft	52	39	13	37	14	103
Hillsdale	168	131	37	126	39	333	Shiawassee	129	101	28	96	30	254
Houghton	178	134	44	128	46	353	St. Clair	303	257	45	246	48	597
Huron	122	92	30	88	32	241	St. Joseph	492	385	107	369	113	974
Ingham	267	209	58	200	62	529	Tuscola	167	126	41	121	44	332
Ionia	559	437	122	418	129	1,106	Van Buren	3,898	3,002	897	2,876	947	7,720
Iosco	56	42	14	40	14	110	Washtenaw	470	400	71	383	74	928
Iron	13	10	3	9	3	25	Wayne	602	512	90	490	95	1,188
Isabella	163	123	40	117	42	323	Wexford	305	230	75	220	79	604
Jackson	311	243	68	233	72	615							
Kalamazoo	1,021	786	235	753	248	2,022	Total State	45,554	34,962	10,592	33,493	11,181	90,228
Kalkaska	58	43	14	42	15	114	Reforestation	246	185	61	178	64	488
Kent	3,280	2,526	754	2,420	796	6,496							
Keweenaw	1	1	0	1	0	2	Grand Total						
Lake	20	15	5	15	5	40	State	45,800	35,148	10,652	33,671	11,245	90,716
Lapeer	719	611	108	585	114	1,418							
Leelanau	830	625	205	599	216	1,645	Children & Youth by Age Groups (Statewide)						
Lenawee	459	390	69	374	73	906	AGE	MIGRANT	# OF MIGRANT	SEASONAL	# OF SEASONAL		
Notes: County numbers have been rounded and, therefore, may not exactly add to the totals. To save space in this table, the terms "Farmworkers" and "Migrant/Seasonal Farmworkers" have been abbreviated as "FW" and "MSFW," respectively.							< 1	3.7%	1,138	3.7%	380		
							1-4	21.8%	6,707	21.8%	2,240		
							5-12	44.1%	13,567	44.1%	4,531		
							13-14	11.0%	3,384	11.0%	1,130		
							15-18	17.8%	5,476	17.8%	1,829		
							19	1.6%	492	1.6%	164		
							Total	100.0%	30,764	100.0%	10,274		
Note: "Children & Youth" are defined as those under 20 years of age. Some may be farmworkers.													

Table 2. Michigan Demand for Labor Factors

CROP	TASK	HOURS PER TASK	SEASON LENGTH	NOTES
apples	harvest	90	38.57	
apricots	harvest	96	16.20	
asparagus	harvest	80	32.86	
beets	tend	3.12	34.29	
"blueberries, tame"	harvest	90	30.71	Fresh Only
	harvest	18	30.71	Process Only
broccoli	harvest	89.46	165.00	
cantaloups	harvest	60	32.86	
cauliflower	harvest	85	120.00	
celery	harvest	125.7	9.29	32.5% of All Acres = Hand; Mason Co = 100%
"cherries, sweet"	harvest	232.1	25.71	Fresh Only
	prune	11	43.57	Process Only
chinese cabbage	harvest	96	27.86	
Christmas Trees	harvest	10	39.00	
	plant	0.6	24.00	
	prune	0.5	132.00	
	cone	0.02	14.00	
	paint	0.4	21.00	
collards	harvest	93.41	56.93	
"corn, seed "	detasseling			71.6 Acres/Worker
cranberries	harvest	12	14.29	Wet Harvest
cucumbers and pickles	harvest/pack/sort	64	71.43	Fresh Only
eggplant	harvest	32	38.57	
grapes - juice	prune	4	107.14	
grapes - wine	harvest	30	55.71	
green onions	harvest/bundle	256.67	54.29	
head cabbage	harvest	40	34.29	
herbs	harvest	293	64.29	
maple syrup	harvest			1722.22 Taps/Person
mint	pre-harvest (prune)	3.68	39.68	
mustard greens	harvest	178.5	77.15	
nectarines	harvest	50	25.71	
peaches	harvest	50	25.71	
pears	harvest	57	17.00	
peppers - all	harvest	112.35	38.57	Fresh Only
	tend	32	87.86	Process Only
plums and prunes	harvest	50	25.71	
potatoes	preharvest	6.5	99.29	
pumpkins	harvest	70	20.71	
radishes	harvest/bundle/tie	367	152.86	Fresh Only
raspberries	harvest	76.5	18.57	
rhubarb	harvest	120	77.86	
squash - summer	harvest	89.77	42.86	
strawberries	harvest	556	7.86	
sugarbeets	"thin, hoe, weed"	2.5	25.71	
sweet corn	pack	7.88	66.43	Fresh Only
tomatoes	harvest	80	22.14	Fresh Only
turnip greens	harvest	178.5	77.15	
walnuts	harvest-related	6.49		
watermelons	harvest	76.5		
other berries	harvest	316.25	13.22	Average Berries
other fruits and nuts	harvest	56.6	28.98	Average Fruits and Nuts
"vegetables, mixed or other"	harvest	91.68	58.74	Average Vegetables

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.

Notes: Indicates when all the crop activity is 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."

The last piece of the demand-for-labor equation is "'work hours'" - the average number of hours worked" per day by an average worker during peak season of the specified crop and task. The study used 7.5 hours for every crop and task.

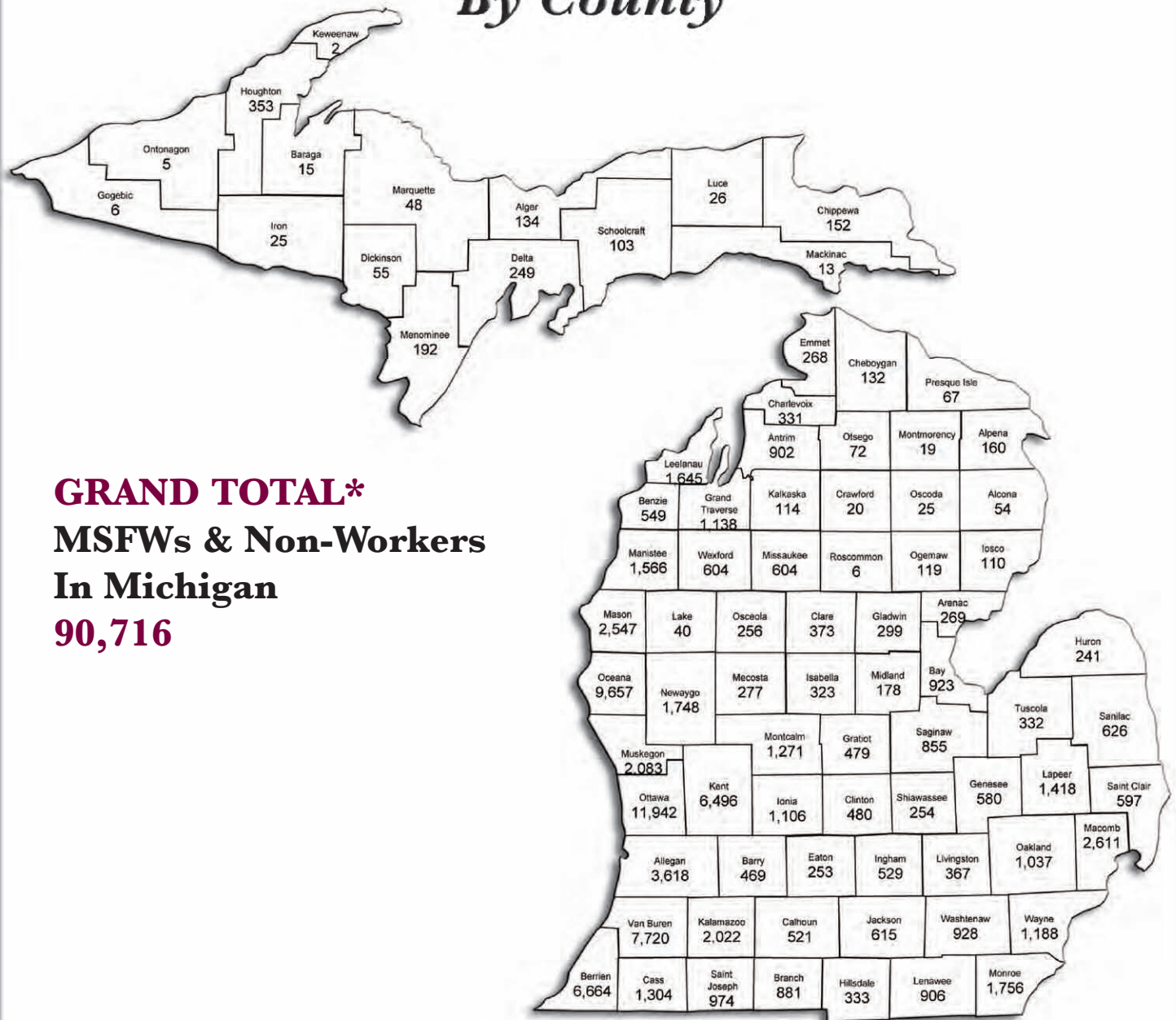
Table 3. Michigan Percent Migrant Farmworker, Percent Seasonal Farmworker

COUNTY	MIGRANT PERCENT	SEASONAL PERCENT
Allegan	77.0%	23.0%
Berrien	77.0%	23.0%
Cass	77.0%	23.0%
Kalamazoo	77.0%	23.0%
Kent	77.0%	23.0%
Ottawa	77.0%	23.0%
Van Buren	77.0%	23.0%
Genesee	85.0%	15.0%
Lapeer	85.0%	15.0%
Lenawee	85.0%	15.0%
Livingston	85.0%	15.0%
Macomb	85.0%	15.0%
Monroe	85.0%	15.0%
Oakland	85.0%	15.0%
St. Clair	85.0%	15.0%
Wayne	85.0%	15.0%
Washtenaw	85.0%	15.0%
Oceana	68.4%	31.6%
Barry	78.2%	21.8%
Branch	78.2%	21.8%
Calhoun	78.2%	21.8%
Clinton	78.2%	21.8%
Eaton	78.2%	21.8%
Jackson	78.2%	21.8%
Hillsdale	78.2%	21.8%
Ingham	78.2%	21.8%
Ionia	78.2%	21.8%
Shiawassee	78.2%	21.8%
St. Joseph	78.2%	21.8%
Other Counties	75.3%	24.7%



Map 1

GRAND TOTAL*
MSFWs & Non-Workers
In Michigan
90,716



Source: MI-MSFW Enumeration Profiles Study, September 2006

Map 2

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