

Four blueberries are scattered on a white, cracked surface. One is at the top left, one is in the middle right, one is at the bottom right, and a partial one is at the top right. The cracks in the surface are thin and irregular, creating a textured background.

**U.S. Highbush Blueberries:
Millions of Reasons to**

**BUY EM,
EAT EM,
LOVE EM.**

**The Economic Impact of
Blueberry Growers in
the State of Michigan**

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Executive Summary

Introduction and Purpose

In December 2019, the United States Highbush Blueberry Council (hereafter, USHBC), retained The Tootelian Company to assist it in conducting a study to assess the economic impact blueberry growers (hereafter, growers) have within the State of Michigan (hereafter, Michigan, State). This impact includes the increased business activity created by growing blueberries, the jobs created as a result of this activity throughout the various sectors of the State's economy, the increased labor income generated for those employed, and the indirect business taxes that are created.

The specific issues addressed in this study of blueberry growers in Michigan were:

- How much business activity do growers create and how is the overall impact diffused through the various sectors of Michigan's economy?
- How many jobs does this business activity create?
- How much labor income is created and how could that income be diffused within the State's economy?
- How much does this business activity generate in indirect business taxes?

Economic impact is a function of spending within a defined geographic area. Accordingly, two models were used in this analysis. A specially designed feeder model was created to help define expenditure levels by growers in an average year. Then, IMPLAN was used to compute the overall economic impact.

Findings and Conclusions

Economic impact analyses were conducted for the total expenditures of growers in Michigan. ***It is important to note that these projections are based on annual average expenditures, which means that this impact is expected to occur each year that such spending occurs.***

Based on available data, it was found that on the average blueberry growers spend more than \$283.0 million annually in Michigan for both acres in production and acres in development. This expenditure averages nearly \$775,420 per day.

Expenditure levels are based on acreage reported by the USDA, industry sources, and university and USHBC estimates of average costs per acre for acreage in production and acreage in development. Based on this data, and discounted for some possible outmigration of spending, the economic impact of blueberry growers is estimated to be more than \$530.4 million annually, or nearly \$1.5 million per day. This does not include the economic impact of handlers and other intermediaries that help bring blueberries from farm to market. Thus, the total impacts shown below are conservative in nature.

| OVERALL ECONOMIC IMPACT | TOTAL | TOTAL PER DAY |
|-------------------------|---------------|---------------|
| Output | \$530,423,669 | \$1,453,216 |
| Employment | 6,604 | n.a. |
| Labor Income | \$104,688,299 | \$286,817 |
| Indirect Business Taxes | \$10,343,861 | \$28,339 |

The findings of this study show that blueberry growers have a significant impact on Michigan's economy. Overall, the growers create:

- More than \$530.4 million in economic output, the best measure of economic impact, each year. This equates to nearly \$1.5 million each day of the year.
- More than 6,600 jobs on an annual full-time equivalent basis as a result of the business activities of growers and the multiplier effect their purchases generate in a variety of farming and non-farming economic sectors.
- Nearly \$104.7 million in labor income as a result of grower activities, or nearly \$286,820 per day. These are dollars going to wages and salaries for new employment as well as expanded incomes to those already in the labor force (e.g., overtime pay). These dollars are diffused throughout the State's economy as the funds are spent by households for an array of goods and services.
- More than \$10.3 million in indirect business taxes, not including income taxes. This equates to nearly \$28,340 per day. Depending on how these funds are used, they can help pay for some or all of the State's programs that further benefit the people residing in Michigan.

Overall, it is clear that blueberry growers play a significant role in strengthening Michigan's economic climate. Their activities are diffused throughout the economy, touching nearly every aspect of life in the State.

Summary Report of Findings

Introduction and Purpose

In December 2019, the United States Highbush Blueberry Council (hereafter, USHBC), retained The Tootelian Company to assist it in conducting a study to assess the economic impact blueberry growers (hereafter, growers) have within the State of Michigan (hereafter, Michigan, State). This impact includes the increased business activity created by growing blueberries, the jobs created as a result of this activity throughout the various sectors of Michigan's economy, the increased labor income generated for those employed, and the indirect business taxes that are created.

Issues of the Study

Economic impact is a function of spending within a defined geographic area. The specific issues addressed in this study of blueberry growers in Michigan were:

- How much business activity do growers create and how is the overall impact diffused through the various sectors of Michigan's economy?
- How many jobs does this business activity create?
- How much labor income is created and how could that income be diffused within the State's economy?
- How much does this business activity generate in indirect business taxes?

This study focused exclusively on growers. However, there are handlers and other intermediaries that also are involved in bringing the blueberries from farm to market which are important components of the entire blueberry industry. They were excluded from this analysis because insufficient financial data was available relative to their spending. Accordingly, this analysis understates the total economic impact of the blueberry industry.

The Consultant

The Tootelian Company is a Sacramento, California-based marketing and management consulting firm. It specializes in performing economic impact studies, conducting market research, and assisting its clients with their business and marketing plans.

The founder of the company and consultant for this study was Dennis H. Tootelian, Ph.D. Dr. Tootelian is an Emeritus Professor of Marketing and former Director of the Center for Small Business in the College of Business Administration at California State University, Sacramento. He received his Ph.D. in Marketing from Arizona State University, with minor fields in Accounting and Management.

Dr. Tootelian has conducted numerous economic impact studies for a wide variety of commodities in the agricultural sector. In addition, other clients for which economic impact studies have been conducted include the Chicago 2016 Olympic Games Committee, McDonald's Corporation, various trade and professional associations, and governmental entities.

Dr. Tootelian also has published approximately one hundred articles dealing with all facets of business, and has co-authored six texts on marketing and small business management. His academic research has appeared as peer-reviewed articles (i.e., reviewed by academicians for quality of research methodology) in such journals as the *Journal of Marketing*, *Journal of Retailing*, *Journal of Business Research*, *Journal of Food Products Marketing*, *Journal of Health Care Marketing*, and *Journal of Professional Services Marketing*. Results of some of his applied research and writing have appeared in *The Congressional Record*, *The Wall Street Journal*, *Forbes*, *The Kiplinger Report*, *USA Today*, *ABC National News* website, and even *The National Enquirer*.

In addition to conducting economic impact studies, Dr. Tootelian has worked in a consulting capacity with Fortune 500 companies (e.g., McDonald's Corporation, Merck, Johnson & Johnson, Nestles U.S.A., McKesson Corporation), not-for-profit organizations (e.g., California Pharmacists Association), and federal and State governmental agencies (e.g., Centers for Disease Control, California Department of Food and Agriculture, California Department of Parks and Recreation).

Methodology

Two models were used in this analysis. A specially designed feeder model was created to help define an average expenditure level by blueberry growers within the U.S. in an average year. Then, this data was used in IMPLAN to compute the overall economic impact created by growers.

Specialty Feeder Model

As previously indicated, economic impact is a function of expenditures within a defined area. For this study, grower expenditures were computed by multiplying the average number of acres in production by the average cost per acre to grow and harvest blueberries, plus multiplying the average number of acres in development by the average cost per acre to prepare acreage for future production. Combined, these costs constituted expenditures by blueberry growers. However, expenditures made to entities outside of Michigan create no economic impact within the country. Therefore, these computed grower costs were reduced by estimates of the extent to which grower purchases would be outside of Michigan.

To measure the level of expenditures, the analyst developed a “feeder” economic model that specifically addresses the variables and the critical issues associated with growing blueberries within Michigan. This model not only provides the data used in the IMPLAN analysis, but takes the economic value to a more understandable level to assess the impact in more detailed ways.

This model was primarily based on data from the most current years. Because agricultural expenditures can fluctuate significantly from year-to-year, an “average” year was created based on data and projections from the last three years (i.e., 2017, 2018, 2019). This process was used to compute the number of acres in production and in development, and the costs per acre. All of this helped ensure that the statistics used in this study provided a reasonable picture of grower operations.

The feeder model considered a variety of variables. These included costs associated with developing acreage for future blueberries harvesting and expenses related to growing and harvesting blueberries on producing acreage. It excluded costs that were non-cash (e.g., amortization and depreciation) and expenses which were likely to be spent outside of the U.S.

Statistics were available from the USDA for the number of acres in production and in development. However, neither USDA nor State statistics were not available for the average costs per acre to grow and harvest blueberries or for the average cost per acre to develop acreage for future blueberry productions. Accordingly, studies of grower costs made by universities and information from industry sources were used to estimate the average costs on a statewide basis. This is explained further in the Findings section of this Summary Report.

IMPLAN

The model used to compute the economic impact was IMPLAN. It provides modeling based on data and tools to assess economic impacts at the national, state, and local levels. IMPLAN is widely used, and some of its clients include federal and state governments, universities, and private sector consultants.

The benefit of using an input-output model like IMPLAN is that it helps evaluate the effects industries have on each other based on the supposition that industries use the outputs of other industries as inputs. An input-output model makes it possible to examine economic relationships between businesses and between businesses and consumers.

Each industry that produces goods and services has an influence on, and in turn is influenced by, the production of goods and services of other industries. These interrelationships are captured through a multiplier effect as the demand and supply trickle over from industry to industry and thus impact total output, employment, employee compensation, and indirect business taxes.

The full range of economic impacts includes direct, indirect, and induced benefits:

- **Direct benefits** consist of economic activity contained exclusively within the agricultural sector. This includes all expenditures made and all people employed.
- **Indirect benefits** define the creation of additional economic activity that results from linked businesses, suppliers of goods and services, and provision of operating inputs.
- **Induced benefits** measure the consumption expenditures of direct and indirect sector employees who spend their incremental income. Examples of induced benefits include employees' expenditures on items such as retail purchases, housing, banking, and medical services.

The total direct, indirect, and induced benefits arising due to the multiplier effect are presented in four ways:

- **Output** accounts for total dollar revenues including all sources of income for a given time period. This is the best overall measure of business and economic activity .
- **Employment** demonstrates the number of jobs generated, and is calculated on an annual full-time equivalent basis.
- **Labor Income** includes all forms of employee compensation paid by employers (e.g., total payroll costs including benefits, wages and salaries of workers), and proprietary income (e.g., self employment income, income received by private business owners).
- **Indirect Business Taxes** consist of property taxes, excise taxes, fees, licenses, and sales taxes paid by businesses. Taxes on profits or income are not included.

The **multiplier effect** for sales and employment reflect the increased economic activity that comes from sales being generated, and expenses being incurred, by growers. For example, when a grower plants, cultivates, and harvests blueberries, it must spend money to purchase a variety of goods and other services and hire people through the cultivating and harvesting processes. Purchases made by the grower represent sales to other firms who must then also purchase goods and services and hire people to meet their new demand. The additional hiring to meet demand means more people will have income which they will use to purchase goods and services for their households. All of this brings added sales to firms across most economic sectors in the U.S. The net effect is that sales dollars are recycled in the U.S. through this process of sales requiring additional purchases and employment, which result in sales for other firms who must use that money to make their own purchases and hire people.

DATA SOURCES

Industry statistics were used to determine average numbers of acres and expenses per acre, as well as some other operating data for this study. However, to ensure that this information was appropriate, the USHBC was asked to verify that the statistics being used were reasonable for U.S. growers. Based on the information received from the USHBC, industry statistics were modified as deemed appropriate. Information from economic impact studies conducted by the analyst for other specialty crop organizations also was used in some instances.

Information about the industry and data used to assess the economic impact came from such sources as:

- United States Government Sources:
 - United States Bureau of the Census.
 - United States Bureau of Labor Statistics.
 - United States Department of Agriculture, National Agricultural Statistics Service.
 - United States Department of Agriculture, Census of Agriculture.
 - United States Department of Agriculture, County Agricultural Commissioners' Reports.
 - United States Department of Agriculture, National Institute of Food and Agriculture.
 - United States' official website, "2018-19 State Budget, Enacted Budget Detail."
- University Extension and Private Sector Sources:
 - Michigan State University: <https://jhawkins54.typepad.com/files/michigan-blueberry-production-and-marketing---longstroth.pdf>
 - USHBC: <https://www.blueberrycouncil.org/growing-blueberries/where-blueberries-grow/>

CAVEATS

The results of any research should be used with caution and at the reader's own discretion. Every study, no matter how well constructed, contains the possibility of some degree of error. Accordingly, the reader assumes sole responsibility for the use of this information.

Findings of the Analyses

The findings of this study are presented in four sections: Computation of Expenditures Used in the Analyses, Economic Impact of Growers, Possible Diffusion of Labor Income Spending, and Possible Uses for Indirect Business Taxes Generated. Tabled data is presented at the end of this Summary Report.

COMPUTATION OF EXPENDITURES USED IN THE ANALYSES

Expenditure estimates for growers were based on average costs per acre multiplied by the average number of acres. Total grower expenditures were the combined costs of growing and harvesting blueberries for acreage in production and the costs of developing land for future production.

An “average” year was created by using acreage and expenditure estimates for 2017, 2018, and 2019. This process was preferred to using just a single year because it eliminated the possibility of using one year which might have had abnormally large or small expenditures. Using a three-year average gave a better representation of what might occur each year.

Number of Acres

The numbers of acres in production and acres in development were obtained from the USDA. Two sets of USDA numbers could be used for acreage. One was from the National Agricultural Statistics Service (NASS), which provides “acres harvested” for years up to and including 2018. The advantage of this source was that it had actual numbers for 2018 and prior years, and it would only be necessary to project 2019 by extrapolating past acreage numbers. The disadvantage of this source was that it did not provide data on acres not harvested nor acres in development

The other source was the USDA Census of Agriculture (Census) which provided “bearing age acres” and “nonbearing age acres” for 2017 and 2012 only. The advantage of this source was that the “bearing age acres” included acres not harvested. And, the Census had data on acres in development. The disadvantage of this source was that it only had data for 2017 and 2012, so it was necessary to estimate the other years based on extrapolations.

After consultations with the USHBC and some of its industry sources, it was decided to use an average of the NASS and Census data to estimate the total number of acres in production and in development. The three-year average number of acres used for this study are shown below.

| GEOGRAPHIC AREA | AVERAGE ACRES IN PRODUCTION | AVERAGE ACRES IN DEVELOPMENT |
|------------------------|------------------------------------|-------------------------------------|
| Michigan | 20,173 | 2,769 |

Costs per Acre

As previously indicated, USDA statistics were not available for the average cost per acre for acreage in production and for acreage in development. Therefore, costs were estimated from industry sources and university studies of blueberries. Since university studies were made in different years, they were brought up to date using adjustments by the U.S. Bureau of Labor Statistics' Producer Price Index.

It is recognized that grower costs per acre can vary widely based on geographic area, the methods of growing employed, whether the blueberries are for fresh or processed markets, prevailing wage rates, and other factors. However, these estimates of the costs per acre for acreage in production and for acreage under development represent averages that span the range in grower expenditures.

Since the economic impact of growing blueberries on Michigan's economy is a function of spending within the State, it was not considered appropriate to include depreciation and amortization nor expenditures that were likely to be made to entities outside of Michigan. By eliminating depreciation and amortization costs, this study excludes future investments that growers will be making to replace depreciable assets such as equipment and facilities. Eventually, growers have to make capital purchases, but the timing of those expenditures is unknown. The net effect of eliminating these costs is to make the analysis considerably more conservative than it might be in terms of estimating the economic impact on the Michigan economy.

Expenditures per acre also were adjusted downward to reflect the possible out-migration of some dollars for purchases of goods and services made outside of the State. In effect, it was assumed that not all grower expenditures would necessarily be made to entities within Michigan. Making this adjustment also results in the net total expenditures for growers being more conservative.

After these reductions, the three-year average cost per acre for acreage in production and cost per acre for acreage in development used for this study are shown below:

| GEOGRAPHIC AREA | AVERAGE COST/ACRE IN PRODUCTION | AVERAGE COST/ACRE IN DEVELOPMENT |
|------------------------|--|---|
| Michigan | \$13,441 | \$4,288 |

Net Grower Expenditures

Net total expenditures by growers was a function of the average costs per acre multiplied by the number of acres. Based on these computations, the net total expenditures for Michigan growers were computed to be more than \$283.0 million in an average year, or nearly \$775,420 per day. Average annual expenditures for acres in production are nearly \$271.2 million and nearly \$11.9 million for acres in development. This is shown below and also presented in Table One.

| NET GROWER EXPENDITURES | ACRES | COST/ACRE | TOTAL EXPENDITURES |
|---------------------------|--------|-----------|--------------------|
| Acres in Production | 20,173 | \$13,441 | \$271,153,574 |
| Acres in Development | 2,769 | \$4,288 | \$11,874,086 |
| Total Grower Expenditures | 22,942 | n.a. | \$283,027,661 |

It is again important to note that these expenditures are for growers only. This analysis does not include expenditures by handlers and other intermediaries who are part of the process of bringing blueberries from farm to market. The result is that the expenditures included in this analysis are conservative as a result of this omission.

ECONOMIC IMPACT OF GROWERS

Economic impact analyses were conducted based on the average net total expenditures of blueberry growers in Michigan. ***It is important to note that these projections are based on average annual expenditures, which means that this impact is expected to occur each year that such spending occurs.***

Overall Economic Impact

The Output, Employment, Labor Income, and Indirect Business Taxes for growers of Michigan blueberries are presented in Table Two in total and Table Three on a per-day basis and summarized below. As previously indicated, on the average, growers spend more than \$283.0 million annually in Michigan. This averages nearly \$775,420 per day (i.e., \$283.0 million divided by 365 days).

| OVERALL ECONOMIC IMPACT | TOTAL | TOTAL PER DAY |
|-------------------------|---------------|---------------|
| Output | \$530,423,669 | \$1,453,216 |
| Employment | 6,604 | n.a. |
| Labor Income | \$104,688,299 | \$286,817 |
| Indirect Business Taxes | \$10,343,861 | \$28,339 |

The Output, or the amount of overall business activity created, is projected to total more than \$530.4 million, equating to nearly \$1.5 million each day of the year. This includes the direct spending by growers (“Direct”), the amount of additional business activity created by that spending (“Indirect”), and the amount of additional business activity created by people’s spending caused by the incremental labor income (“Induced”). Nearly half of this impact (53.4%) is caused by grower spending, and the remainder (46.6%) is the result of increased business activity.

About 6,600 additional jobs are expected to be created as a result of the spending by these growers. This is computed on an annual full-time equivalent basis. About 70.1% of this is the result of grower operations and the rest (29.9%) is due to the increased business activity caused by the ripple effect of grower spending and the spending of others.

Labor Income resulting from the additional people employed and current employees earning more is projected to be nearly \$104.7 million, equating to more than \$306,800 each day of the year. About 12.9% of this income is the direct result of spending by growers, while 87.1% is due to the increased business activity. How these funds are likely to be spent across various sectors of the State's economy is based on consumer purchasing patterns described later in this Summary Report.

Finally, more than \$10.3 million in additional indirect business taxes is created from the increased business activity caused by growers, equating to nearly \$28,340 each day of the year. These tax dollars are generated from businesses benefiting from the heightened economic activity and the increased employment. About 1.2% of these indirect business taxes is the direct result of spending by growers, while 98.8% is due to the increased business activity. As is described later in this Summary Report, these tax dollars can be used for programs that further serve residents of communities within the State.

POSSIBLE DIFFUSION OF LABOR INCOME SPENDING

The labor income that is created will be diffused throughout the various sectors of the State's economy. As people spend this added income, those funds will be used to purchase a wide array of goods and services.

To illustrate how those funds could be distributed to various economic sectors in Michigan, consumer expenditures across various categories were obtained from the U.S. Bureau of Labor Statistics for the Midwest. Assuming that those funds will be spent in the same proportion as consumers currently spend their incomes, the dollars that are generated for selected sectors are shown below and in more detail in Table Four.

| ITEM | ANNUAL EXPENDITURES | EXPENDITURES PER DAY |
|------------------------------------|----------------------|----------------------|
| Average Annual Expenditures | \$104,688,299 | \$286,817 |
| Food | \$13,501,036 | \$36,989 |
| Food at home | \$7,648,370 | \$20,954 |
| Food away from home | \$5,852,666 | \$16,035 |
| Housing | \$32,085,406 | \$87,905 |
| Apparel and services | \$3,364,923 | \$9,219 |
| Transportation | \$16,679,019 | \$45,696 |
| Healthcare | \$9,431,492 | \$25,840 |
| Entertainment | \$6,524,931 | \$17,877 |
| Reading | \$226,485 | \$621 |
| Education | \$2,137,230 | \$5,855 |
| Miscellaneous | \$19,407,626 | \$53,172 |

As shown above, it is expected that incremental purchases of food items for home use will be more than \$7.6 million annually. This represents a substantial increase in potential sales for supermarkets and other retail outlets selling food items.

POSSIBLE USES FOR INDIRECT BUSINESS TAXES GENERATED

To illustrate how the indirect business tax dollars could be used to help fund some of Michigan's operations, the State Funds budgets of a variety of agencies were obtained from the State's official website. Some caution should be exercised in using these numbers since budgets are adjusted over the course of the fiscal year. Accordingly, these only are presented as illustrations of general amounts spent by State agencies.

Presented below is the percent of various State agency's state funds budget that could be covered by the indirect business tax dollars generated by growers' business activities within Michigan. It is important to recognize that the total business tax dollars generated was applied to *each* State agency. A sample of agencies' budgets is listed below and a larger list is presented in Table Five.

| MICHIGAN | BUDGET 2019 | % OF BUDGET COULD PAY* |
|---------------------------------|---------------|------------------------|
| Agriculture & Rural Development | \$58,585,200 | 17.66% |
| Education | \$86,183,700 | 12.00% |
| Environmental Quality | \$73,746,500 | 14.03% |
| Military & Veterans Affairs | \$68,837,400 | 15.03% |
| Natural Resources | \$49,081,800 | 21.07% |
| State Police | \$459,047,800 | 2.25% |
| Talent & Economic Development | \$141,095,800 | 7.33% |

*Percent is total of Indirect Business Taxes applied to each Department budget. If percent exceeds 100.0%, it indicates the indirect business taxes would pay more than the State Funds budget.

Summary and Conclusions

Economic impact analyses were conducted for the total expenditures of growers in Michigan. ***It is important to note that these projections are based on annual average expenditures, which means that this impact is expected to occur each year that such spending occurs.***

Based on available data, it was found that on the average blueberry growers spend more than \$283.0 million annually in Michigan for both acres in production and acres in development. This expenditure averages nearly \$775,420 per day.

Expenditure levels are based on acreage reported by the USDA, industry sources, and university and USHBC estimates of average costs per acre for acreage in production and acreage in development. Based on this data, and discounted for some possible outmigration of spending, the economic impact of blueberry growers is estimated to be more than \$530.4 million annually, or nearly \$1.5 million per day. This does not include the economic impact of handlers and other intermediaries that help bring blueberries from farm to market. Thus, the total impacts shown below are conservative in nature.

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The findings of this study show that blueberry growers have a significant impact on Michigan's economy. Overall, the growers create:

- More than \$530.4 million in economic output, the best measure of economic impact, each year. This equates to nearly \$1.5 million each day of the year.
- More than 6,600 jobs on an annual full-time equivalent basis as a result of the business activities of growers and the multiplier effect their purchases generate in a variety of farming and non-farming economic sectors.
- Nearly \$104.7 million in labor income as a result of grower activities, or nearly \$286,820 per day. These are dollars going to wages and salaries for new employment as well as expanded incomes to those already in the labor force (e.g., overtime pay). These dollars are diffused throughout the State's economy as the funds are spent by households for an array of goods and services.
- More than \$10.3 million in indirect business taxes, not including income taxes. This equates to nearly \$28,340 per day. Depending on how these funds are used, they can help pay for some or all of the State's programs that further benefit the people residing in Michigan.

Overall, it is clear that blueberry growers play a significant role in strengthening Michigan's economic climate. Their activities are diffused throughout the economy, touching nearly every aspect of life in the State.

Table One: Average Annual Grower Expenditures within the State

| ACREAGE SPENDING | NUMBER OF ACRES | AVERAGE SPENDING/ ACRE | TOTAL COST |
|--------------------|-----------------|------------------------|----------------------|
| Bearing Acreage | 20,173 | \$13,441 | \$271,153,574 |
| Developing Acreage | 2,769 | \$4,288 | \$11,874,086 |
| Total | 22,942 | n.a. | \$283,027,661 |

Table Two: Average Annual Economic Impact of Growers

TOTAL IMPACT

| | OUTPUT DIRECT | OUTPUT INDIRECT | OUTPUT INDUCED | OUTPUT TOTAL |
|---------------------------------|----------------------|----------------------|---------------------|----------------------|
| Manufacturing | n.a. | \$29,620,539 | \$2,504,395 | \$32,124,933 |
| Wholesaling | n.a. | \$21,004,318 | \$3,193,498 | \$24,197,815 |
| Retailing | n.a. | \$6,543,434 | \$11,812,309 | \$18,355,743 |
| Real Estate | n.a. | \$24,938,696 | \$17,499,486 | \$42,438,182 |
| Professional Services | n.a. | \$33,219,585 | \$17,808,691 | \$51,028,277 |
| Administrative | n.a. | \$1,266,305 | \$1,069,610 | \$2,335,915 |
| Education | n.a. | \$35,692 | \$832,006 | \$867,697 |
| Health | n.a. | \$501 | \$11,555,660 | \$11,556,162 |
| Arts, entertainment, recreation | n.a. | \$1,643,732 | \$2,926,356 | \$4,570,088 |
| Accommodations, food services | n.a. | \$8,953 | \$30,648 | \$39,601 |
| Other | n.a. | \$8,186,140 | \$3,131,946 | \$11,318,086 |
| Farming | \$283,027,667 | \$44,672,471 | \$278,711 | \$327,978,849 |
| Federal | n.a. | \$274,251 | \$158,232 | \$432,482 |
| State and local | n.a. | \$2,529,674 | \$650,163 | \$3,179,837 |
| Total | \$283,027,667 | \$173,944,291 | \$73,451,711 | \$530,423,669 |

EMPLOYMENT

| | EMPLOYMENT DIRECT | EMPLOYMENT INDIRECT | EMPLOYMENT INDUCED | EMPLOYMENT TOTAL |
|---------------------------------------|----------------------|------------------------|-----------------------|---------------------|
| Manufacturing | n.a. | 35 | 5 | 41 |
| Wholesaling | n.a. | 72 | 9 | 81 |
| Retailing | n.a. | 46 | 140 | 186 |
| Real Estate | n.a. | 175 | 60 | 235 |
| Professional Services | n.a. | 134 | 119 | 253 |
| Administrative | n.a. | 7 | 8 | 15 |
| Education | n.a. | 1 | 14 | 15 |
| Health | n.a. | 0 | 89 | 89 |
| Arts, entertainment, recreation | n.a. | 8 | 19 | 27 |
| Accommodations, food services | n.a. | 0 | 0 | 0 |
| Other | n.a. | 14 | 18 | 32 |
| Farming | 4,631 | 980 | 3 | 5,614 |
| Federal | n.a. | 3 | 2 | 4 |
| State and local | n.a. | 9 | 3 | 11 |
| Total | 4,631 | 1,484 | 489 | 6,604 |

INDIRECT LABOR INCOME

| | LABOR INCOME DIRECT | LABOR INCOME INDIRECT | LABOR INCOME INDUCED | LABOR INCOME TOTAL |
|---------------------------------|---------------------------|-----------------------------|----------------------------|--------------------------|
| Manufacturing | n.a. | \$3,192,122 | \$377,554 | \$3,569,676 |
| Wholesaling | n.a. | \$6,069,637 | \$895,063 | \$6,964,701 |
| Retailing | n.a. | \$2,129,299 | \$4,319,443 | \$6,448,742 |
| Real Estate | n.a. | \$7,527,588 | \$2,757,849 | \$10,285,437 |
| Professional Services | n.a. | \$10,098,889 | \$6,541,327 | \$16,640,216 |
| Administrative | n.a. | \$553,989 | \$387,341 | \$941,329 |
| Education | n.a. | \$17,653 | \$506,265 | \$523,919 |
| Health | n.a. | \$257 | \$6,147,457 | \$6,147,714 |
| Arts, entertainment, recreation | n.a. | \$318,668 | \$673,974 | \$992,642 |
| Accommodations, food services | n.a. | \$2,923 | \$11,248 | \$14,170 |
| Other | n.a. | \$1,349,320 | \$913,977 | \$2,263,298 |
| Farming | \$13,497,331 | \$35,232,828 | \$37,220 | \$48,767,380 |
| Federal | n.a. | \$245,395 | \$142,139 | \$387,533 |
| State and local | n.a. | \$569,869 | \$171,674 | \$741,542 |
| Total | \$13,497,331 | \$67,308,437 | \$23,882,530 | \$104,688,299 |

INDIRECT BUSINESS TAXES

| | BUSINESS TAXES DIRECT | BUSINESS TAXES INDIRECT | BUSINESS TAXES INDUCED | BUSINESS TAXES TOTAL |
|---------------------------------|-----------------------------|-------------------------------|------------------------------|----------------------------|
| Manufacturing | n.a. | \$364,535 | \$24,702 | \$389,237 |
| Wholesaling | n.a. | \$2,484,250 | \$375,290 | \$2,859,540 |
| Retailing | n.a. | \$547,188 | \$1,184,149 | \$1,731,338 |
| Real Estate | n.a. | \$505,451 | \$1,308,200 | \$1,813,651 |
| Professional Services | n.a. | \$689,974 | \$561,183 | \$1,251,157 |
| Administrative | n.a. | \$36,453 | \$36,122 | \$72,575 |
| Education | n.a. | \$736 | \$16,421 | \$17,156 |
| Health | n.a. | \$3 | \$102,461 | \$102,464 |
| Arts, entertainment, recreation | n.a. | \$64,840 | \$154,749 | \$219,590 |
| Accommodations, food services | n.a. | \$1,378 | \$4,284 | \$5,662 |
| Other | n.a. | \$515,140 | \$137,282 | \$652,423 |
| Farming | \$138,820 | \$1,263,150 | \$3,979 | \$1,405,950 |
| Federal | n.a. | -\$11,102 | -\$13,386 | -\$24,487 |
| State and local | n.a. | -\$122,714 | -\$29,681 | -\$152,395 |
| Total | \$138,820 | \$6,339,283 | \$3,865,757 | \$10,343,861 |

Table Three: Average Daily Economic Impact of Growers

TOTAL IMPACT—PER DAY

| | OUTPUT DIRECT | OUTPUT INDIRECT | OUTPUT INDUCED | OUTPUT TOTAL |
|---------------------------------|------------------|--------------------|-------------------|--------------------|
| Manufacturing | n.a. | \$81,152 | \$6,861 | \$88,014 |
| Wholesaling | n.a. | \$57,546 | \$8,749 | \$66,295 |
| Retailing | n.a. | \$17,927 | \$32,362 | \$50,290 |
| Real Estate | n.a. | \$68,325 | \$47,944 | \$116,269 |
| Professional Services | n.a. | \$91,013 | \$48,791 | \$139,803 |
| Administrative | n.a. | \$3,469 | \$2,930 | \$6,400 |
| Education | n.a. | \$98 | \$2,279 | \$2,377 |
| Health | n.a. | \$1 | \$31,659 | \$31,661 |
| Arts, entertainment, recreation | n.a. | \$4,503 | \$8,017 | \$12,521 |
| Accommodations, food services | n.a. | \$25 | \$84 | \$108 |
| Other | n.a. | \$22,428 | \$8,581 | \$31,008 |
| Farming | \$775,418 | \$122,390 | \$764 | \$898,572 |
| Federal | n.a. | \$751 | \$434 | \$1,185 |
| State and local | n.a. | \$6,931 | \$1,781 | \$8,712 |
| Total | \$775,418 | \$476,560 | \$201,238 | \$1,453,216 |

EMPLOYMENT—PER DAY (NOT APPLICABLE)

| | EMPLOYMENT DIRECT | EMPLOYMENT INDIRECT | EMPLOYMENT INDUCED | EMPLOYMENT TOTAL |
|---------------------------------------|----------------------|------------------------|-----------------------|---------------------|
| Manufacturing | n.a. | n.a. | n.a. | n.a. |
| Wholesaling | n.a. | n.a. | n.a. | n.a. |
| Retailing | n.a. | n.a. | n.a. | n.a. |
| Real Estate | n.a. | n.a. | n.a. | n.a. |
| Professional Services | n.a. | n.a. | n.a. | n.a. |
| Administrative | n.a. | n.a. | n.a. | n.a. |
| Education | n.a. | n.a. | n.a. | n.a. |
| Health | n.a. | n.a. | n.a. | n.a. |
| Arts, entertainment, recreation | n.a. | n.a. | n.a. | n.a. |
| Accommodations, food services | n.a. | n.a. | n.a. | n.a. |
| Other | n.a. | n.a. | n.a. | n.a. |
| Farming | n.a. | n.a. | n.a. | n.a. |
| Federal | n.a. | n.a. | n.a. | n.a. |
| State and local | n.a. | n.a. | n.a. | n.a. |
| Total | n.a. | n.a. | n.a. | n.a. |

INDIRECT LABOR INCOME—PER DAY

| | LABOR INCOME DIRECT | LABOR INCOME INDIRECT | LABOR INCOME INDUCED | LABOR INCOME TOTAL |
|---------------------------------|---------------------|-----------------------|----------------------|--------------------|
| Manufacturing | n.a. | \$8,746 | \$1,034 | \$9,780 |
| Wholesaling | n.a. | \$16,629 | \$2,452 | \$19,081 |
| Retailing | n.a. | \$5,834 | \$11,834 | \$17,668 |
| Real Estate | n.a. | \$20,624 | \$7,556 | \$28,179 |
| Professional Services | n.a. | \$27,668 | \$17,921 | \$45,590 |
| Administrative | n.a. | \$1,518 | \$1,061 | \$2,579 |
| Education | n.a. | \$48 | \$1,387 | \$1,435 |
| Health | n.a. | \$1 | \$16,842 | \$16,843 |
| Arts, entertainment, recreation | n.a. | \$873 | \$1,847 | \$2,720 |
| Accommodations, food services | n.a. | \$8 | \$31 | \$39 |
| Other | n.a. | \$3,697 | \$2,504 | \$6,201 |
| Farming | \$36,979 | \$96,528 | \$102 | \$133,609 |
| Federal | n.a. | \$672 | \$389 | \$1,062 |
| State and local | n.a. | \$1,561 | \$470 | \$2,032 |
| Total | \$36,979 | \$184,407 | \$65,432 | \$286,817 |

INDIRECT BUSINESS TAXES—PER DAY

| | BUSINESS TAXES DIRECT | BUSINESS TAXES INDIRECT | BUSINESS TAXES INDUCED | BUSINESS TAXES TOTAL |
|---------------------------------|-----------------------------|-------------------------------|------------------------------|----------------------------|
| Manufacturing | n.a. | \$999 | \$68 | \$1,066 |
| Wholesaling | n.a. | \$6,806 | \$1,028 | \$7,834 |
| Retailing | n.a. | \$1,499 | \$3,244 | \$4,743 |
| Real Estate | n.a. | \$1,385 | \$3,584 | \$4,969 |
| Professional Services | n.a. | \$1,890 | \$1,537 | \$3,428 |
| Administrative | n.a. | \$100 | \$99 | \$199 |
| Education | n.a. | \$2 | \$45 | \$47 |
| Health | n.a. | \$0 | \$281 | \$281 |
| Arts, entertainment, recreation | n.a. | \$178 | \$424 | \$602 |
| Accommodations, food services | n.a. | \$4 | \$12 | \$16 |
| Other | n.a. | \$1,411 | \$376 | \$1,787 |
| Farming | \$380 | \$3,461 | \$11 | \$3,852 |
| Federal | n.a. | -\$30 | -\$37 | -\$67 |
| State and local | n.a. | -\$336 | -\$81 | -\$418 |
| Total | \$380 | \$17,368 | \$10,591 | \$28,339 |

Table Four: Possible Difussion of Annual Incremental Labor Income

| ITEM | ANNUAL EXPENDITURES | EXPENDITURES PER DAY |
|---|----------------------|----------------------|
| Average annual expenditures | \$104,688,299 | \$286,817 |
| Food | \$13,501,036 | \$36,989 |
| Food at home | \$7,648,370 | \$20,954 |
| Food away from home | \$5,852,666 | \$16,035 |
| Housing | \$32,085,406 | \$87,905 |
| Shelter | \$17,858,180 | \$48,927 |
| Utilities, fuels, and public services | \$7,074,967 | \$19,383 |
| Household operations | \$2,424,830 | \$6,643 |
| Housekeeping supplies | \$1,256,454 | \$3,442 |
| Household furnishings and equipment | \$3,470,976 | \$9,510 |
| Apparel and services | \$3,364,923 | \$9,219 |
| Men and boys | \$724,393 | \$1,985 |
| Women and girls | \$1,427,216 | \$3,910 |
| Children under 2 | \$133,015 | \$364 |
| Footwear and other apparel products and services | \$1,082,096 | \$2,965 |
| Transportation | \$16,679,019 | \$45,696 |
| Vehicle purchases (net outlay) | \$6,602,224 | \$18,088 |
| Gasoline, other fuels, and motor oil | \$3,686,676 | \$10,100 |
| Other vehicle expenses | \$5,067,157 | \$13,883 |
| Public and other transportation | \$1,324,759 | \$3,629 |
| Healthcare | \$9,431,492 | \$25,840 |
| Health insurance | \$6,302,041 | \$17,266 |
| Medical services | \$1,779,527 | \$4,875 |
| Drugs | \$972,448 | \$2,664 |
| Medical supplies | \$379,273 | \$1,039 |
| Entertainment | \$6,524,931 | \$17,877 |
| Fees and admissions | \$1,272,631 | \$3,487 |
| Audio and visual equipment and services | \$1,853,224 | \$5,077 |
| Pets, toys, hobbies, and playground equipment | \$1,662,689 | \$4,555 |
| Other entertainment supplies, equipment, and services | \$1,736,387 | \$4,757 |
| Reading | \$226,485 | \$621 |
| Education | \$2,137,230 | \$5,855 |
| Miscellaneous | \$19,407,626 | \$53,172 |
| Personal taxes (contains some imputed values) | \$18,120,615 | \$49,646 |
| Federal income taxes | \$13,865,928 | \$37,989 |
| State and local income taxes | \$3,952,706 | \$10,829 |
| Other taxes | \$301,980 | \$827 |

Table Five: Possible Coverage of State Budgets with Incremental Indirect Business Taxes

| MICHIGAN | BUDGET 2019 | % OF BUDGET COULD PAY* |
|---------------------------------|-----------------|---------------------------|
| Agriculture & Rural Development | \$58,585,200 | 17.66% |
| Education | \$86,183,700 | 12.00% |
| Environmental Quality | \$73,746,500 | 14.03% |
| Health & Human Services | \$4,460,087,300 | 0.23% |
| Military & Veterans Affairs | \$68,837,400 | 15.03% |
| Natural Resources | \$49,081,800 | 21.07% |
| State Police | \$459,047,800 | 2.25% |
| Talent & Economic Development | \$141,095,800 | 7.33% |
| Technology, Management & Budget | \$449,836,700 | 2.30% |
| Transportation | \$300,000,000 | 3.45% |

*Percent is total of Indirect Business Taxes applied to each Department budget. If percent exceeds 100.0%, it indicates the indirect business taxes would pay more than the State Funds budget.