ESTIMATING THE ECONOMIC CONTRIBUTION OF MICHIGAN'S FOOD RETAIL INDUSTRY

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CONTENTS

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Associated Food and Petroleum Dealers

As the voice for the food, beverage, and petroleum industry since 1910, AFPD is a multistate trade association representing thousands of retailers operating in Michigan, Ohio, Illinois, and surrounding states. Its members include independent supermarkets, convenience stores, petroleum retailers, service stations, and specialty food markets. Its membership also includes wholesalers, distributors, and manufacturers who support the retail industry.

Michigan State University Center for Regional Food Systems

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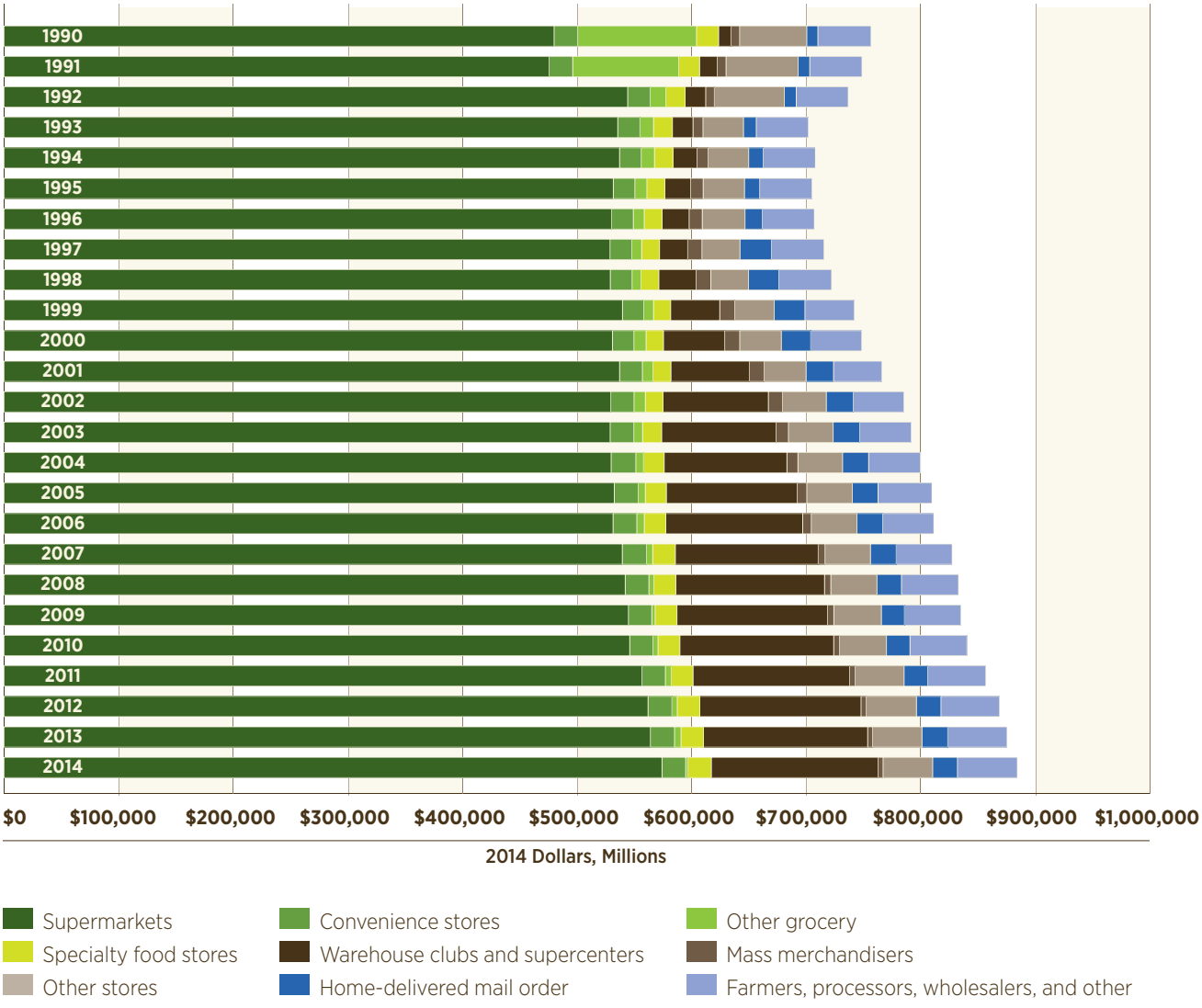
CRFS envisions a thriving economy, equity, and sustainability for Michigan, the country, and the planet through food systems rooted in local regions and centered on Good Food: food that is healthy, green, fair, and affordable. Its mission is to engage the people of Michigan, the United States, and the world in applied research, education, and outreach to develop regionally integrated, sustainable food systems. CRFS joins in Michigan State University's pioneering legacy of applied research, education, and outreach by catalyzing collaboration and fostering innovation among the diverse range of people, processes, and places involved in regional food systems. Working in local, state, national, and global spheres, CRFS' projects span from farm to fork, including production, processing, distribution, policy, and access.

INTRODUCTION

The U.S. food retail industry is a dynamic environment responding to emerging trends in food consumption shaped by changing demographics, economic growth, personal income, and consumer preferences and tastes.[1] According to the U.S. Department of Agriculture's Economic Research Service, Americans spent an estimated $884 billion on food at home in 2014—nearly $2,300 per capita. Figure 1 illustrates how spending on food at home evolved over a 25-year period.

1 Duff & Phelps. (2016). *Food retail industry insights—2016*. Retrieved from duffandphelps.com/assets/pdfs/publications/mergers-and-acquisitions/industry-insights/consumer/food-retail-industry-insights-2016.pdf

FIGURE 1: Estimated National Sales of Food at Home by Type of Outlet



Source: USDA Economic Research Service, using data from the U.S. Census Bureau and the Bureau of Labor Statistics.

Note: All dollar values are expressed in 2014 dollars, adjusted based on average annual U.S. Consumer Price Index for all goods, all cities. For more information about store classifications, see the Interpreting Retail Classifications sidebar on page 8.

With a state population approaching 10 million, Michigan's food retail environment is similarly dynamic and instrumental in facilitating access to food and other goods for its customers. Food retail stores are often the anchors of commerce in urban and rural communities across the state.

One of the opportunities for Michigan food retail is responding to the need for increased accessibility of "good food"—food that is healthy, green, fair, and affordable for all Michiganders.[2] Healthy food incentive programs such as Double Up Food Bucks are increasing the demand for good food and increasing market opportunities for Michigan farmers.[3]

In order to help the Michigan food retail industry respond to this dynamic consumer environment, it is important to first understand the industry's contribution to the state's economy. This contribution goes beyond quantifying total industry sales and should account for linkages to other industries, including payments to other industries and the public sector, and how wages paid to grocery industry employees and suppliers circulate and generate additional economic activity. There are publicly available studies that estimate the economic impact of Michigan's entire food and agricultural system, but no recent study currently available in the public domain has attempted to explicitly define and quantify contributions of the food retail industry in the state of Michigan.[4] This analysis, funded by the Associated Food and Petroleum Dealers, uses available public data and the IMPLAN input-output economic analysis tool to estimate the Michigan food retail industry's contribution to the state's economy.

2 Colasanti, K., Cantrell, P., Cocciarelli, S., Collier, A., Edison, T., Doss, J., ... Smalley, S. (2010). *Michigan good food charter.* East Lansing, MI: C.S. Mott Group for Sustainable Food Systems at Michigan State University, Food Bank Council of Michigan, Michigan Food Policy Council. Retrieved from michiganfood.org

3 For more on the Double Up Food Bucks program, visit fairfoodnetwork.org/what-we-do/projects/double-up-food-bucks

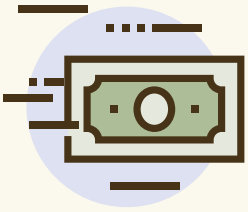
4 Knudson, W., & Peterson, H. C. (2012). *The economic impact of Michigan's food and agriculture system (Working Paper 01-0312).* East Lansing, MI: MSU Strategic Marketing Institute. Retrieved from productcenter.msu.edu/uploads/files/msuproductcenter2012economicimpactreport1.pdf

Contribution versus Economic Impact Analysis

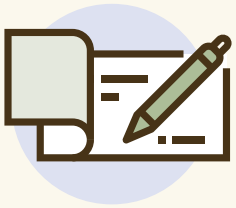
It is important to note that this study is not an economic *impact* analysis, which would project the effects of a change to the industry, but rather a *contribution* analysis, which quantifies an industry as it currently exists. Although these terms are at times used interchangeably, they have distinct meanings among economic professionals.[5] In this study, we did not introduce any change or "shock," such as a significant increase in Michigan-grown food purchased in place of food that is sourced globally, to the Michigan retail food industry and analyze its impact.

5 Watson, P., Wilson, J., Thilmany, D., & Winter, S. (2007). Determining economic contributions and impacts: What is the difference and why do we care? *The Journal of Regional Analysis & Policy, 37(2),* 140–146.

Types of Effects



DIRECT EFFECTS
contributions made by the food retail industry itself



INDIRECT EFFECTS
retailers' purchases for operating expenses from other industries

INDUCED EFFECTS
directly and indirectly supported employees' spending patterns

Industry contribution can be quantified in multiple forms; key examples include total jobs supported, compensation to employees, and total value added to the state's gross domestic product (GDP).[6] Each contribution indicator will be further broken down into three tiers of effects. The first tier, the **direct effects,** includes the contributions made by the food retail industry itself. But the full scope of the industry's contributions to the state's economy does not end there. Aside from the purchase of inventory intended for resale, which we do not count because those costs are recaptured through sales to consumers, retailers in the industry also make purchases for operating expenses from other industries such as real estate or warehousing, advertising, and utilities. These types of backward linkages produce what are known as **indirect effects,** affecting the same types of indicators—jobs, employee compensation, value added—in their suppliers' industries.[7] Finally, we take into account the directly and indirectly supported employees' spending patterns and their resulting **induced effects.** Another phrase commonly used to describe both indirect and induced effects of an industry is **multiplier effects.**

6 As defined by the Bureau of Economic Analysis, GDP by state is the market value of goods and services produced by the labor and property located in a state. It is the state counterpart of the nation's GDP, the most comprehensive measure of U.S. economic activity.

7 For retail sectors, purchases of inventory intended for resale do not contribute to indirect impacts. For more on this, see Customizing the Model section, page 9.

METHODOLOGY

Constructing the Model

This analysis was conducted using IMPLAN Pro software and 2014 data. Originally developed by the United States Forest Service, IMPLAN (IMpact analysis for PLANning) is an industry standard for input-output modeling and uses aggregated national data to estimate regional economic activity. Although IMPLAN does rely heavily on assumptions and tends to overestimate the influence of larger firms, it is highly customizable when users have access to more accurate data or other knowledge that can influence a model's components. This study is considered a multi-industry contribution analysis as we essentially defined and modeled a single unique industry made up of several sectors within IMPLAN's framework. IMPLAN provides standard protocol for conducting this type of analysis.[8] We explain how we customized and conducted our IMPLAN model in this section.

Defining the Region

For this study, our region of interest is the entire state of Michigan. Any references to regional economic activity thus concern the state's economy as a whole, not any particular portion of the state. Unless otherwise noted, analysis is based on 2014 conditions and data.

Defining the Food Retail Industry

Multiple typologies of the food retail sector exist, each assigning varying weight to a retail store's physical size, inventory, format, annual sales, ownership structure, and other features or variables. Some of the more detailed typologies have been defined by food retail trade or interest groups or by previous research projects.[9, 10] At the same time, there are similar but not necessarily matching categories in the federal industry classification systems: NAICS (North American Industry Classification System) and SIC (Standard Industrial Classification). For the purposes of this study, we reviewed existing typologies and cross-referenced industry classification systems, as well as IMPLAN's current 536-sector scheme, to develop a short list of major types of food retailers we felt most appropriate to target for our analysis.

IMPLAN's industry classification system includes a sector called "food and beverage stores," but it does not encompass such retail types as gas stations, pharmacies, or general merchandise stores, all of which we assume to be part of the food retail industry in Michigan. Therefore, we elected to obtain what we believed to be more reliable estimates of food retail output data for the state. The Michigan Department of Treasury provided data reported on business taxpayers' annual returns. This return, known as Form 165, reconciles the amount of taxes collected and allows businesses to deduct the total sales of "grocery-type foods," excluding tobacco, alcoholic beverages, and prepared foods, from the total amount on which tax due is calculated. Treasury provided data on the industries it characterized as "involved in either collecting tax on food-related sales or [claiming] significant deductions for sales of food."[11] Of these industries, whose total reported food sales represented 86% of all food sales for the state in 2014, we selected 16 SIC codes reporting food sales for inclusion in our model. Table 1 displays these industries, their SIC codes, and the IMPLAN sectors to which we assigned them. Together, these industries accounted for a total of 85% of all food sales for the state in 2014, so our model accounts for nearly all of what Treasury provided but focuses strictly on the relevant retail channels. We see this as a conservative approach to modeling food retail contributions in Michigan.

8 IMPLAN's standard protocol: support.implan.com/index.php?option=com_content&view=article&id=366

9 Willard Bishop. (2016). *The future of food retailing.* Retrieved from foodinstitute.com/reports/FFR2016.pdf

10 Pinard, C., Bardenhagen, C., & Pirog, R. (2015). *Characterizing food retail in rural northeast Michigan: Opportunities to improve healthy food access.* East Lansing, MI: Michigan State University Center for Regional Food Systems & Gretchen Swanson Center for Nutrition. Retrieved from foodsystems.msu.edu/resources/characterizing_food_retail_in_rural_ne_michigan

11 Office of Revenue and Tax Analysis, Michigan Department of Treasury, personal communication, April 28, 2016.

TABLE 1: SIC Codes Mapped to IMPLAN Sectors for Industries Included in Comprehensive Model

IMPLAN SECTOR NUMBER	IMPLAN SECTOR DESCRIPTION
SIC code	**Description**
400	**FOOD & BEVERAGE STORES**
541	Grocery stores and delicatessens
542	Meat, fish, seafood markets
543	Fruit and vegetable stores
544	Candy, nuts, and confectionery
545	Dairy products
546	Retail bakeries
547	Retail milk route
549	Health food, pop, misc.
*	Other food retail
592	Party and liquor stores
401	**HEALTH & PERSONAL CARE STORES**
591	Retail pharmacies
402	**GAS STATIONS**
554	Gas stations
405	**GENERAL RETAIL**
531	Major department stores
532	Other department stores & mail order
533	Variety stores
534	General stores

* Unassigned due to reporting issue.

INTERPRETING RETAIL CLASSIFICATIONS

Without accessing proprietary data, we can't confirm how a particular store is classified, and multiple overlapping typologies exist. But to assist in contextualizing these results, we provide some assumed examples of typical stores matched with potential classifications and definitions used by the U.S. Department of Agriculture (also shown in Figure 1).

FOOD & BEVERAGE STORES
(e.g., Meijer, Kroger, Aldi, Whole Foods, corner stores)

Supermarkets: Stores offering a full line of groceries, meats, and produce with at least $2 million in annual sales.

Convenience Stores (could also fall under Gas Stations or General Retail): Small stores that stock a range of everyday items such as groceries, toiletries, and newspapers.

Other Grocery: Smaller grocery stores that sell a range of groceries, meats, and produce.

Specialty Food Stores: Stores that sell a small range of specific foods, such as bakeries or meat markets.

HEALTH & PERSONAL CARE STORES
(e.g., Walgreens, CVS)

Other Stores (could also fall under General Retail): Stores that sell a large variety of merchandise, with less than 50% of their sales from food.

GAS STATIONS
(e.g., gas stations with convenience stores)

GENERAL RETAIL
(e.g., Walmart, Target, Family Dollar)

Warehouse Clubs and Supercenters: Large stores that primarily sell a general line of grocery products and merchandise. Warehouse clubs offer customers a wide selection of merchandise at discounted prices in exchange for customer membership fees. Supercenters are large discount stores that also sell groceries and have no customer membership requirements.

Mass Merchandisers: Large stores selling primarily hardware, clothing, electronics, and sporting goods but also groceries.

SSource: USDA Economic Research Service, ers.usda.gov/data-products/food-expenditures.aspx

Treasury is prohibited from disclosing any identifying information about individual business taxpayers, so we cannot know for sure how specific businesses are classified. Many classifications are fairly straightforward but some are more ambiguous. In particular, one might wonder about a store like Meijer, a regional chain of superstores headquartered in Michigan. Though these stores do stock an expansive inventory of general merchandise in addition to food, we assume these would fall under the grocery store sector. A retailer like Target, on the other hand, is assumed to fall under one of the general retail categories, though many of these stores have more recently rolled out full grocery departments.[12]

In addition to providing its reported sales of food for human consumption (FHC), Treasury provided the total gross sales for each of these industries, which in aggregate are the basis of our study. Table 2 provides further detail on the breakdown of food sales by sector, as a proportion of each sector's total sales and as a proportion of Michigan's total food sales in 2014.

12 This study did not involve the purchase of proprietary data beyond the IMPLAN 2014 State of Michigan package. However, we reviewed the Michigan retail listings in Esri's 2015 Business Analyst for ArcGIS, which include data sourced from Infogroup, and the industry classification codes provided for these types of stores align with the assumptions listed here. For Esri's data documentation, see esri.com/library/fliers/pdfs/esri-data-fact-sheet.pdf

TABLE 2: Breaking Down Food Sales by Sector

		FOOD AS A PROPORTION OF ...		
IMPLAN SECTOR	TOTAL GROSS SALES	TOTAL FHC DEDUCTION	THIS SECTOR'S SALES	STATE'S FOOD SALES
400—Food & Beverage Stores	$25,442,961,725	$13,238,532,976	52%	69%
401—Health & Personal Care Stores	$7,074,293,058	$101,815,978	1%	1%
402—Gas Stations	$8,415,719,807	$679,568,440	8%	4%
405—General Retail	$14,855,905,409	$2,294,914,209	15%	12%
Subtotal these industries	$55,788,879,999	$16,314,831,603		
These sectors' share of state total	16%	85%		
All other sectors	$303,632,375,630	$2,908,917,374		15%
All taxpayers, all codes	$359,421,255,629	$19,223,748,977		

Source: Michigan Department of Treasury, 2014 data.

Note: Total sales and total food for human consumption (FHC) sales are reported here in prices paid by consumers. These figures were translated to marginal values upon entry into the IMPLAN model.

We acknowledge that this definition is rather inclusive and could be considered skewed by the influence of "nontraditional" grocery segments such as supercenters, mass merchandisers, or pharmacies, whose revenues of nonfood merchandise dominate their balance sheets. For an initial topline analysis, however, we elected to retain them, from both a food access perspective and in keeping with industry trends. Walmart was the top U.S. grocery retailer of the 2000s, and more recent years have seen chains like Target and Walgreens as well as Family Dollar roll out expanded grocery departments.[13] Meanwhile, public awareness of inequitable healthy food access has grown, with the U.S. Department of Agriculture launching its Food Environment Atlas in addition to numerous studies and programs emerging on the topic across the country. Though nontraditional stores may have many fundamental differences in operations and values from more traditional grocers, it is hard to ignore them as pieces of the food access puzzle and, therefore, the food retail environment. In some Michigan rural communities as well as urban neighborhoods, a pharmacy, gas station, liquor store, or small convenience store may be the most accessible location to buy food.

Additionally, as Table 2 details, all of these sectors reported significant sales of nonfood items; in fact, reported sales of FHC accounted for just 52% of overall sales for the food and beverage sector, arguably the most closely aligned with a "traditional" grocery definition.

Nonetheless, for context, in addition to estimated economic contributions attributable to the food retail industry using our inclusive definition, this report also highlights contributions proportionate to just the food and beverage sector. This segment accounted for 69% of Michigan's reported food sales in 2014.[14]

Customizing the Model

In IMPLAN, retail sectors are analyzed on the margin; that is, the difference between their costs of production and their sales to consumers, or what is often referred to as "the markup." This is important so that we do not double-count the production data, which is already accounted for within the individual industries actually producing the inputs. In other words, when analyzing the food retail industry, we are interested in the industry's explicit value added to the economy—not necessarily the values of the inventory for which it serves as an intermediate conveyance. Each of the four IMPLAN sectors selected has a unique margin expressed as a percentage. After identifying the relevant IMPLAN sectors and margins, we customized our study area data by entering the margined total output (i.e., margined gross sales) values we calculated from the Michigan Department of Treasury's data.

IMPLAN modeling and multipliers are based on administrative reports of labor and employment data, such as the Quarterly Census of Employment and Wages, so we have high confidence in accepting and applying those to our updated output data.

When conducting a multi-industry contribution analysis, we must also constrain the model from allowing our selected sectors to purchase from each other. Although, in reality, we would expect that there are indirect and especially induced linkages between our selected sectors (e.g., food retail employees also purchase groceries and gas), this is a necessary limitation of IMPLAN for a conservative model that avoids double-counting of retail jobs—a common error in this type of analysis.[15]

For our complementary analysis isolating the food and beverage store sector, we updated the margined total output values as described above, but we allowed for potential indirect or induced relationships with the other three sectors as part of the overall economy.

For tax calculations, we generated the ratio of total state and local taxes collected to total personal income using fiscal year 2013 figures (the most recent available) from the Census of Governments and the Bureau of Economic Analysis, respectively.[16] We applied this ratio to our 2014 estimated direct, indirect, and induced contributions for labor compensation to generate a conservative estimate for total state and local taxes attributable to the food retail industry.

13 United States Department of Agriculture Economic Research Service. (2015). *Retail Trends*. Retrieved from: ers.usda.gov/topics/food-markets-prices/retailing-wholesaling/retail-trends

14 We considered isolating just the contributions of food sales across all four sectors of the food retail industry as the basis of our complementary analysis, but we determined this to be too artificial a construct because, in reality, nonfood sales are a significant part of all these stores' operations.

15 This is done by customizing trade flows and setting the local use ratio (or Regional Supply Coefficient) to zero for each of the four sectors. With this approach, the economic contributions of food retail employees are only accounted for in direct effects; essentially, they create part of their own jobs.

16 Census of Governments data for calendar years 2012 and 2013 were averaged to generate a fiscal year 2013 value.

FINDINGS: MICHIGAN FOOD RETAIL INDUSTRY CONTRIBUTIONS

Contribution to Michigan's Gross Domestic Product (GDP)

In IMPLAN, the term *value added* refers to the difference between an industry's total output and the cost of its intermediate inputs. It includes employee compensation and proprietor income, taxes and production income less subsidies, and other property type income (e.g., corporate profits) and is synonymous with *gross domestic product*.[17] Determining the total value added by Michigan's food retail industry is, therefore, the primary goal of this study. As previously mentioned, this can be broken down into three tiers of effects (see Table 3).

17 IMPLAN glossary, retrieved from support.implan.com/index.php?option=com_glossary&letter=V&id=121 As a regional science tool, IMPLAN also uses the term *gross regional product*. Recall that our region of interest is the state of Michigan; thus, the gross regional product is also the state's GDP.

TABLE 3: Value Added Contributions and Multipliers for Michigan's Food Retail Industry, 2014

		FOOD RETAIL INDUSTRY		FOOD & BEVERAGE SECTOR	
		TOTAL VALUE ADDED	MULTIPLIER	TOTAL VALUE ADDED	MULTIPLIER
	Direct effect	$9,408,694,342	1.00	$4,768,315,576	1.00
	Indirect effect	$2,710,643,445	0.29	$1,308,248,478	0.27
	Induced effect	$3,310,417,343	0.35	$1,745,471,230	0.37
	Total effect	**$15,429,755,130**	**1.64**	**$7,822,035,284**	**1.64**

According to the Bureau of Economic Analysis, Michigan's 2014 GDP was estimated at approximately $447 billion. For that same year, the food retail industry directly contributed an estimated $9.4 billion to Michigan's GDP. Accounting for its multiplier effects, the food retail industry contributed an estimated total of $15.4 billion, the equivalent of approximately 3% of the state's 2014 GDP. With a total effect multiplier estimated at 1.64, this means that for every directly generated dollar of value added, approximately 64 additional cents cycled through the state's economy in 2014.

Isolating just the food and beverage stores sector of the food retail industry produces similar results in terms of multipliers and industry linkages. Table 3 also includes the estimated values of those contributions, which amount to about half of the corresponding values provided for the entire industry.

Table 4 illustrates the industries most closely linked to the food retail industry's value-added contributions. Real estate ranks high for both indirect and induced effects; other key intermediate inputs include warehousing, management services, advertising, and utilities, whereas induced effects also include costs related to health care. Although none of these relationships is particularly counterintuitive, estimating their strengths and actual monetary value, as well as understanding their nature (i.e., indirect versus induced effects), are part of the utility of this type of study.

TABLE 4: Top Industries Linked to Value Added Contributions of Michigan's Food Retail Industry, 2014

INDIRECT INDUSTRIES AFFECTED	SHARE OF TOTAL INDIRECT EFFECT	INDUCED INDUSTRIES AFFECTED	SHARE OF TOTAL INDUCED EFFECT
Real estate	24%	Owner-occupied dwellings	15%
Warehousing and storage	9%	Real estate	8%
Management of companies and enterprises	7%	Hospitals	7%
Advertising, public relations, and related services	5%	Wholesale trade	5%
Electric power transmission and distribution	4%	Offices of physicians	4%

Contribution to Employment and Compensation

The food retail industry is estimated to have directly supported approximately 198,000 full- and part-time jobs in 2014. Through multiplier effects, it supported approximately 75,000 additional jobs for an estimated full contribution of more than 273,000 full- and part-time jobs that same year. In total, this represents about 5% of the state's total employment for 2014, as estimated by our IMPLAN model.

IMPLAN defines a job as the annual average of monthly jobs in that industry. Jobs are assumed to be either full- or part-time, and one job lasting 12 months would equate to two jobs lasting six months.[18] Because these are not based on full-time equivalents, the multipliers provided in Table 5 are more easily understood when scaled by a factor of 100: for example, for every 100 full- or part-time jobs directly within the food retail industry, an additional 38 full- or part-time jobs are supported in the industries to which it is linked or supported by household spending.

18 IMPLAN glossary, retrieved from: support.implan.com/index.php?option=com_glossary&letter=J&id=231 This is the same definition used by the Quarterly Census of Employment and Wages, the Bureau of Labor Statistics, and the Bureau of Economic Analysis.

TABLE 5: Job Contributions and Multipliers for Michigan's Food Retail Industry, 2014

	FOOD RETAIL INDUSTRY		FOOD & BEVERAGE SECTOR	
	JOBS	MULTIPLIER	JOBS	MULTIPLIER
Direct effect	197,977	1.00	106,129	1.00
Indirect effect	31,004	0.16	15,266	0.14
Induced effect	44,234	0.22	23,527	0.22
Total effect	**273,215**	**1.38**	**144,922**	**1.36**

Additional detail about those linked industries is provided in Table 6. Real estate and warehousing have important indirect employment linkages. Once again, health care is supported by employees of the food retail supply chain. We also note the induced effect on restaurant employment; this effect does not show up as a component of value added because industry wages tend to be low.

Once again, when we isolate the job contributions of the food and beverage stores in 2014, the multipliers align closely, as do the linked industries.

TABLE 6: Top Industries Linked to Job Contributions of Michigan's Food Retail Industry, 2014

INDIRECT INDUSTRIES AFFECTED	SHARE OF TOTAL INDIRECT EFFECT	INDUCED INDUSTRIES AFFECTED	SHARE OF TOTAL INDUCED EFFECT
Real estate	16%	Hospitals	7%
Warehousing and storage	12%	Limited-service restaurants	5%
Employment services	6%	Full-service restaurants	5%
Management of companies and enterprises	4%	Real estate	4%
Truck transportation	4%	Offices of physicians	3%

Our model also estimates total labor income contributions: all forms of employment income, including employee wages and benefits as well as proprietor income. Labor contributions are a component of the value-added contributions already described, but they are of interest because they more closely approximate benefits to Michigan's residents. As listed in Table 7, those amounted to approximately $5.8 billion in direct food retail industry contributions in 2014 and an additional $3.4 billion in multiplier effects. This means that for every dollar of employee or proprietor income generated by the food retail industry in 2014, an additional estimated 59 cents of labor income in the rest of Michigan's economy was generated through multiplier effects. The total labor income effect represents about 2% of the Bureau of Economic Analysis' estimate for the state's total personal income in 2014.

Considering both the total job effects and the total labor income effects, we can further estimate that the average 2014 income impact per job directly or indirectly supported by the food retail industry was approximately $34,000.

TABLE 7: Labor Income Contributions and Multipliers for Michigan's Food Retail Industry, 2014

	FOOD RETAIL INDUSTRY		FOOD & BEVERAGE SECTOR	
	LABOR INCOME	MULTIPLIER	LABOR INCOME	MULTIPLIER
Direct effect	$5,839,152,969	1.00	$3,043,392,475	1.00
Indirect effect	$1,563,296,965	0.27	$733,384,862	0.24
Induced effect	$1,881,464,537	0.32	$993,425,003	0.33
Total effect	**$9,283,914,471**	**1.59**	**$4,770,202,340**	**1.57**

For comparison, Table 8 provides current information from the U.S. Bureau of Labor Statistics' Occupational Employment Statistics, which maps industrial employment to NAICS codes. The most common type of job within the food retail industry falls under the Bureau of Labor Statistics' broad category of Sales and Related Occupations. As of 2015, the median hourly wage in Michigan for this occupational category was $12.15, which translates to a median annual salary of $25,272 for workers working 2,080 hours a year; the corresponding mean hourly wage was $18.29. This occupational category spans more industries and sectors than food retail, though grocery stores, gasoline stations, and "other general merchandise" stores are among the top five employers for the state. As an additional comparison, we include national estimates of wages across all occupations in each of our food retail sectors. While sales and related occupations dominate employment in all of these sectors, the significantly higher values attributed to employment at health and personal care stores are skewed by the inclusion of pharmacists and similar occupations; their retail-specific data much more closely resembles the other three sectors.

TABLE 8: Occupational Employment Statistics Related to the Food Retail Industry, May 2015

	HOURLY MEDIAN WAGE	HOURLY MEAN WAGE*	ANNUAL MEDIAN WAGE*
	STATE ESTIMATES		
Sales and Related Occupations, all industries in Michigan	$12.15	$18.29	$25,272
INDUSTRY (NAICS CODE),‡ ALL OCCUPATIONS	NATIONAL ESTIMATES		
Gasoline Stations (447000)	$9.38	$11.14	$19,510
Food and Beverage Stores (445000)	$10.52	$12.96	$21,890
General Merchandise Stores (452000)	$10.54	$12.91	$21,930
Health and Personal Care Stores (446000)	$13.24	$20.44	$27,540

Source: Bureau of Labor Statistics

* Annual wages have been calculated by multiplying the hourly mean wage by 2,080 hours.

‡ For more on NAICS codes, see bls.gov/bls/naics.htm

Key labor income linkages, listed in Table 9, are consistent with many of our previous observations. Warehousing and storage industries and management industries benefit the most among suppliers in terms of overall labor compensation; hospitals and physicians' offices realize important induced effects.

TABLE 9: Top Industries Linked to Employee Compensation Contributions of Michigan's Food Retail Industry, 2014

INDIRECT INDUSTRIES AFFECTED	SHARE OF TOTAL INDIRECT EFFECT	INDUCED INDUSTRIES AFFECTED	SHARE OF TOTAL INDUCED EFFECT
Warehousing and storage	12%	Hospitals	11%
Management of companies and enterprises	10%	Offices of physicians	7%
Real estate	6%	Wholesale trade	5%
Truck transportation	4%	Nursing and community care facilities	3%
Advertising, public relations, and related services	4%	Monetary authorities and depository credit intermediation	2%

Tax Contributions

Taxes, such as sales and excise taxes, customs duties, property taxes, motor vehicle licenses, severance taxes, or special assessments, are an additional component of the value-added contributions. When estimating the tax contributions of the food retail industry (or any retail industry), we are principally interested in the contributions generated by the employment and incomes supported—directly and through multiplier effects—by the industry, not any sales and use taxes that pass through the industry as a component of store sales. Conservatively, we estimate that employment and incomes supported by the food retail industry generated approximately $895 million in state and local taxes in 2014. Employment and incomes supported by the food and beverage sector alone are estimated to have contributed $460 million.

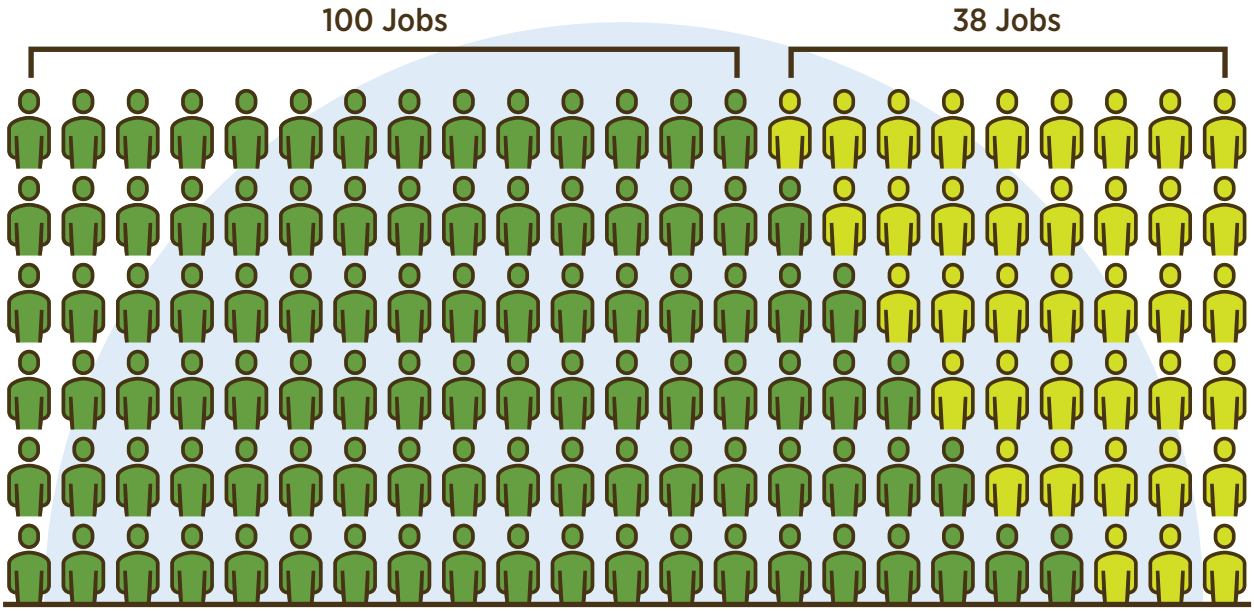
SUMMARY

Table 10 summarizes key direct, indirect, and induced contributions estimated by this study. In addition, Figures 2 and 3 illustrate total multiplier effects related to the state's job market, GDP, and labor income. It is important to keep in mind that these estimates are generalized. They are useful as a guide when considering industry linkages but would not suggest precise expectations when applied to an individual firm or business.

TABLE 10: Summary of Michigan's Food Retail Industry Contributions, 2014

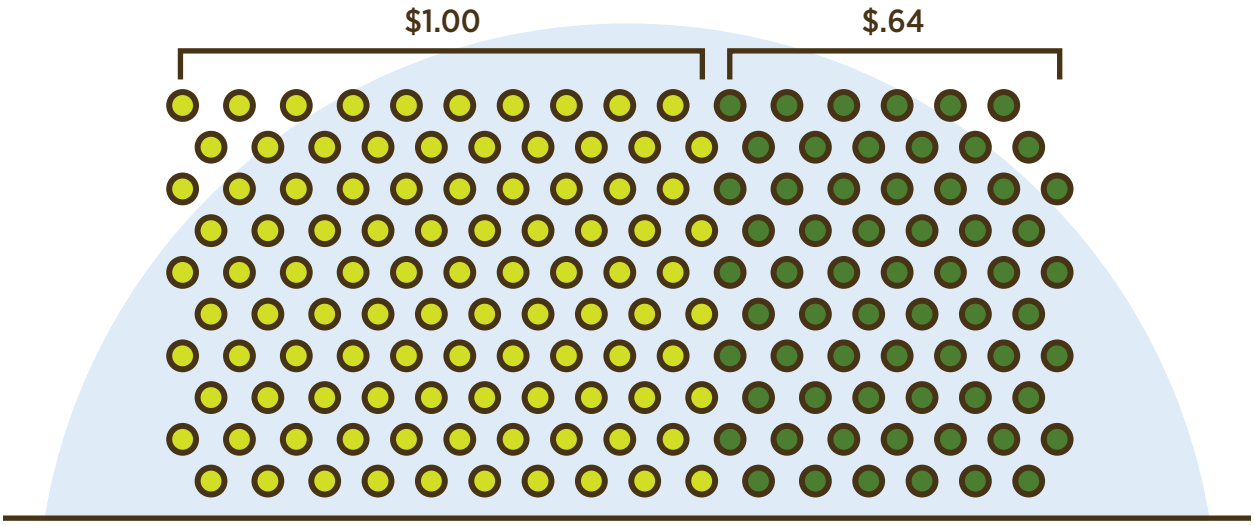
	EMPLOYMENT	LABOR INCOME	TOTAL VALUE ADDED
Direct effect	197,977	$5,839,152,969	$9,408,694,342
Indirect effect	31,004	$1,563,296,965	$2,710,643,445
Induced effect	44,234	$1,881,464,537	$3,310,417,343
Total effect	**273,215**	**$9,283,914,470**	**$15,429,755,130**

FIGURE 2: Food Retail Industry Job Market Multiplier Effects

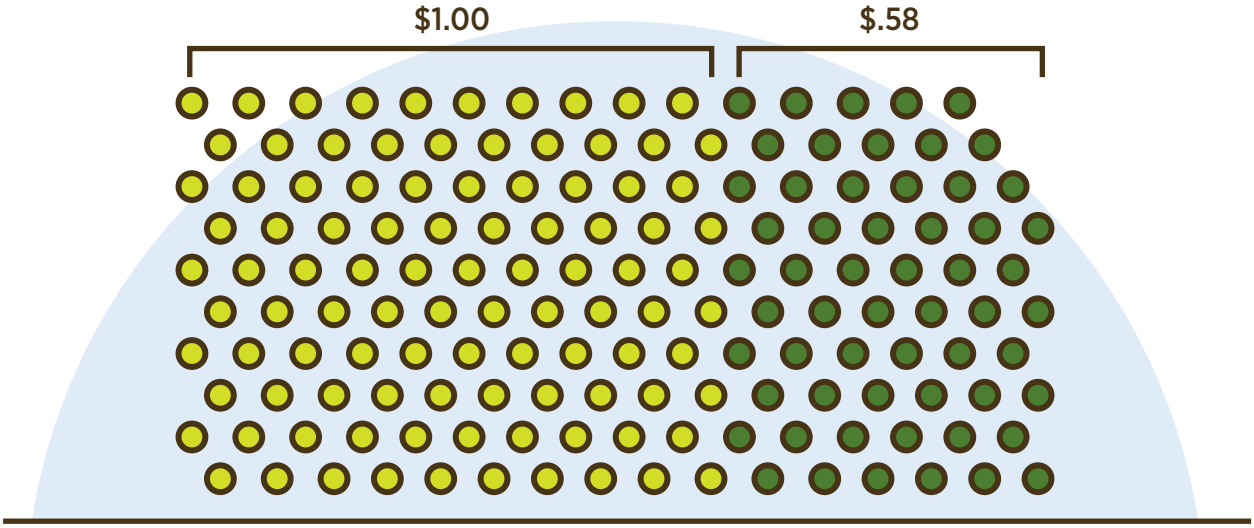


For every 100 full- or part-time jobs directly supported within the food retail industry in 2014, an additional 38 full- or part-time jobs were supported in the industries to which it is linked.

FIGURE 3: Food Retail Industry GDP, Labor Income Multiplier Effects



For every dollar directly contributed by the food retail industry to Michigan's GDP in 2014, approximately 64 additional cents circulated through the state's economy.



For every dollar of employee or proprietor income generated by the food retail industry in 2014, an additional estimated 59 cents of labor income in the rest of Michigan's economy was generated through multiplier effects.

This study defined the food retail industry to include four major sectors: food and beverage stores, health and personal care stores, gasoline stores, and general merchandise stores. Table 11 breaks down each sector's share of the direct industry contributions. For context, we did compare these results to an analysis of just the food and beverage stores sector's contributions. It is interesting that the "nontraditional" food retailers seem to follow similar patterns. At this level of analysis, whether they are excluded or not generally determines the overall level of contribution, but this does not seem to significantly influence how a type of contribution is dispersed across industries or tier of effect.

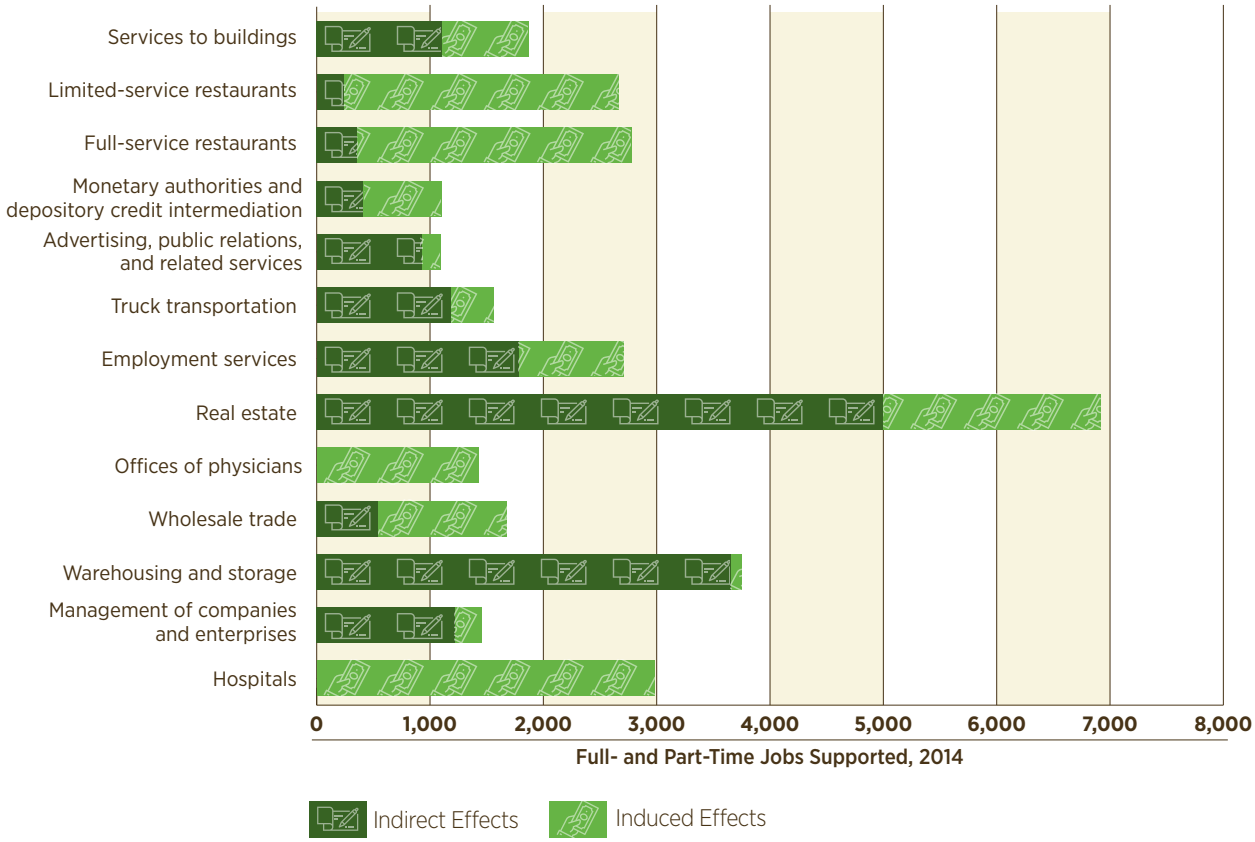
TABLE 11: Share of Michigan Food Retail Industry Contributions by Sector, 2014

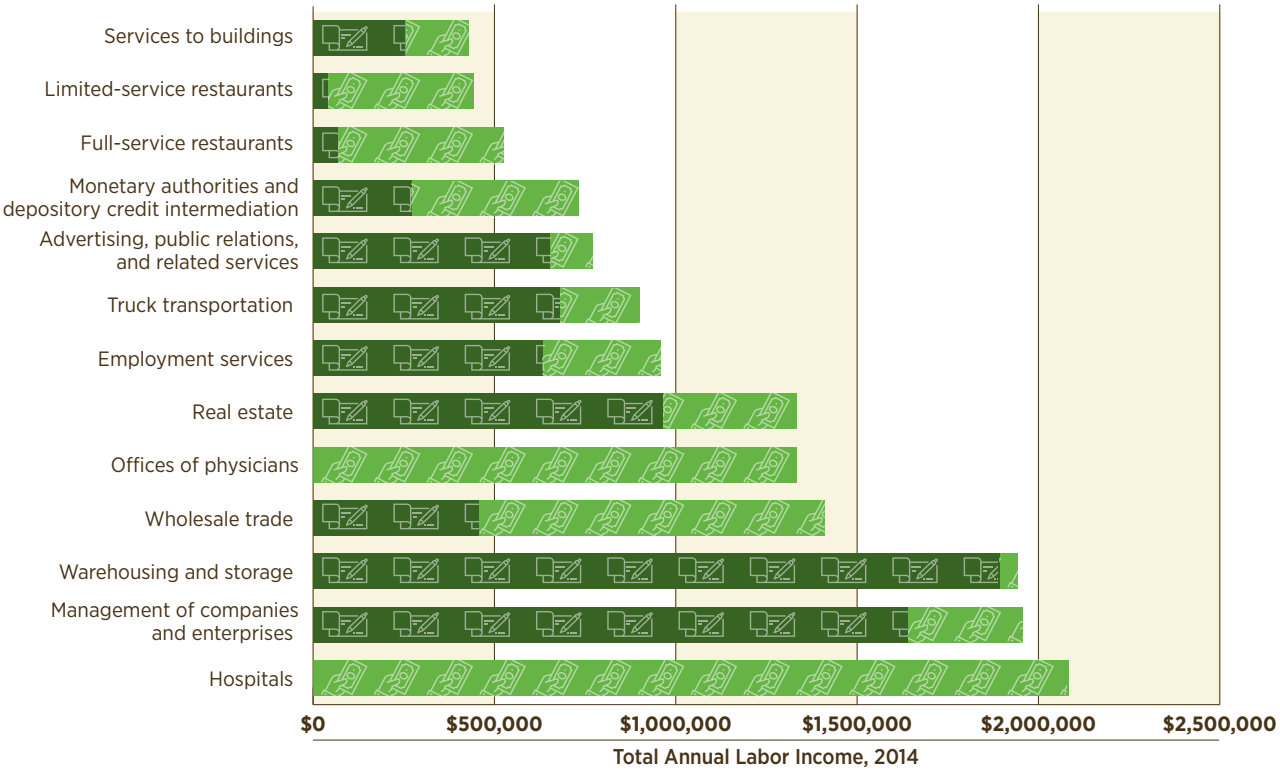
SECTOR	SHARE OF DIRECT EMPLOYMENT	SHARE OF DIRECT LABOR INCOME	SHARE OF DIRECT VALUE ADDED
400—Food and beverage stores	54%	52%	51%
401—Health and personal care stores	12%	17%	15%
402—Gasoline stores	7%	6%	6%
405—General merchandise stores	27%	24%	28%

In addition to being the primary source of healthy food access, the food retail industry is an important contributor to Michigan's economy—as a direct contributor of jobs, of labor income, and to the state's GDP as well as through linkages to other key industries such as real estate, transportation, health care, insurance, utilities, and advertising. Although these inter-industry relationships are not necessarily surprising, estimating their strengths and actual monetary value, as well as understanding their nature (i.e., indirect versus induced) as visualized in Figure 4, are part of the utility of this type of study.

This first effort to quantify Michigan's food retail industry contributions, based on 2014 data, serves as a benchmarking opportunity; repeating this methodology in subsequent years will allow for the tracking of industry trends.

FIGURE 4: Top Industries Linked to Food Retail by Jobs and Labor Income





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