Economic Impact of Marietta College

October 31, 2018

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This project was funded by Marietta College

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Executive Summary

Marietta College is a private liberal arts college located in Marietta, Ohio. The college is an important economic driver in the region (defined here as Washington County in Ohio and Wood County in West Virginia). The purpose of this report is to quantify the economic contribution of Marietta College to its surrounding region during the fiscal year ending on June 30, 2017 (FY 2017). Marietta College contributed over $55 million to the region in FY 2017.

Total Regional Economic Benefit of Marietta College, FY 2017

	Direct Impact	Total Impact
University operations	$26,203,321	$44,094,954
Student spending	$1,914,441	$2,975,176
Visitor spending	$4,422,748	$6,878,065
Construction	$736,529	$1,095,406
Total	**$33,277,039**	**$55,043,601**

Marietta College spends money on goods and services to support daily operations. University operations spending in FY 2017 was $40.7 million. Once university operations is adjusted for depreciation and interest, the amount is prorated to exclude university output purchased by households in the region. The adjusted prorated amount is the direct impact amount estimated at $26.2 million.

Local spending by students enrolled at Marietta College represents an additional economic benefit that the university is contributing to the region. Student spending contributed a direct economic benefit in the region of $1.9 million in FY 2017.

Marietta College attracted an estimated 42,677 visits to the region during FY 2017. Visitors benefit the regional economy when they purchase lodging and meals among other goods and services. Overall, the estimated total direct economic benefit of Marietta College visitor spending in FY 2017 was $4.4 million.

Spending by the College to expand and construct new physical structures provides an additional, but temporary, economic benefit to the region. Construction spending varies by year. This analysis was based on the 2017 annual construction expenditures. The total direct economic benefit of Marietta College construction activity in the region was $736,529.

Marietta College, the students, and campus visitors generated sales tax, lodging tax, and/or property tax from their spending and housing costs. A total of $2.8 million in tax revenue for state and localities throughout the region was directly associated with Marietta College in FY 2017.

The direct economic benefit of Marietta College in FY 2017 including all university operations, student spending, visitor spending, and construction activity, was an estimated $33.3 million. Through the multiplier effects of this direct spending, Marietta College likely supported an additional $21.8 million of output in all industries in the region.

1. Introduction

This analysis measures the economic value of Marietta College to the region defined here as Washington County in Ohio and Wood County in West Virginia. The college impacts the region through multiple channels: (1) operating expenses, (2) student spending, (3) visitor spending, and (4) construction expenses. In assessing the impact of these different types of expenditures, the analysis relies on established best practices for measuring the value of universities and colleges to regional economies (Ambargis et al., 2014; Swenson, 2015).

University expenses are used as a measure of university operations. Student spending reflects the actual spending pattern of full-time students nationally, as measured by the annual Current Expenditure Survey. Student spending that occurs as part of university operations (payments for on-campus residence) was excluded to ensure no double counting. Visitor spending is estimated using standard room rate and per diem reimbursement rate for Marietta, Ohio from the U.S. General Services Administration. Construction expenses was based on Marietta College's spending on a new building(s) in FY 2017.

The analysis uses IMPLAN (Impact Analysis for Planning) to provide an estimate of the overall economic impacts due to Marietta College's operations and activities. IMPLAN uses input-output methodology to track the ripple effects created in the regional economy due to every initial dollar spent. For example, when the college purchases supplies from a local vendor, that local vendor provides wages to its employees and makes purchases from other vendors. These other vendors in turn provide wages to their employees and make purchases from other vendors and so on. Additionally, when employees of the university spend their paychecks at local businesses, these local businesses provide wages to their employees, make purchases from other vendors, and so on.

As a result, the initial dollars spent by the university will be circulated throughout the local economy a number of times. The number of times that the initial dollars are circulated throughout the local economy may be estimated using economic multipliers.

Spending activity associated with Marietta College's activities generates state and local government tax revenue. University operations generate additional tax revenue for state and local entities. As the college's employees and students spend on retail purchases and housing, they generate sales and property tax revenue. In addition, visitors associated with the university generate sales tax and lodging tax.

2. Review of Economic Impact of Universities and Colleges in the Literature

To model the economic impact of universities and colleges, studies have either used use the Regional Input-Output Modeling System II (RIMS II) (Silverstein & Hansen, 2016; Blackwell, Cobb, & Weinberg, 2002) or IMPLAN (Swenson, 2015; Carroll & Smith, 2006).

When examining the various categories of spending that were analyzed for economic impact of a university or college, commonalities appeared across studies. Operational expenses of the institution and student spending appeared the most often (Silverstein & Hansen, 2016; Swenson, 2015; Duke University Economic Impact Year 2003 Report, 2003; Blackwell et al., 2002 and Carroll & Smith, 2002). Operational expenses of the higher education institution often refers to the university's expenditures, such as payroll and tuition dollars from students (Silverstein & Hansen, 2016 and Swenson, 2015).

Visitor spending is less commonly included because it can be difficult to quantify (Swenson, 2015 and Carroll & Smith, 2002). However as long as the limitations are clear, it can provide an estimate of the spending that universities attract when often holding athletic and non-athletic events (Silverstein & Hansen, 2016; Duke University Economic Impact Year 2003 Report, 2003; Carroll & Smith, 2002). Construction expenses constitute an additional type of spending often included in economic impact studies (Silverstein & Hansen, 2016; Duke University Economic Impact Year 2003 Report, 2003).

The choice of the study region is vital in economic impact analysis to insure meaningful results. The region should be large enough to capture the interdependencies among the local industries that support the university but small enough that the results are economically significant (Ambargis et al., 2014). A small liberal arts college (e.g. Marietta College) may support a large share of the college town's economic activity but a negligible share of the state's economic activity. Using a political jurisdiction as the study region often does not allow a regional I-O

model to properly account for important interrelationships between economic activities—for example, using the county where a university is located as the study region will not capture the spending of the university employees who live outside the county. Core-based statistical areas, such as the U.S. Office of Management and Budget's metropolitan statistical areas (MSAs), often serve as good choices for a study region because they consist of areas with close economic ties. Smaller regions may also serve as a good choice if they contain many of the industries that support the university. The region used here is defined as Washington County, Ohio and Wood Count, West Virginia.

3. Operating Impact

First, the contribution of university operations to the region is estimated using university expenses. University expenses are the preferred measure because they more closely align with how university output is measured for a majority of universities in the national I-O accounts (Ambargis et al., 2014). University expenses should include the cost of covering educational services, student services (student health clinics, recreational facilities, etc.), and other auxiliary operations (book stores, residence halls, and cafeterias). However university expenses should exclude research and development expenses as well as new construction and purchases of equipment and software. Those items are included under capital investments and their impact will be modeled in the corresponding section. Depreciation and interest payments are also excluded from university expenses to provide a more conservative contribution estimate.

Information on Marietta's college expenses are provided from the College following the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) financial survey layout. Since we are using a Type II university multiplier, the value of the university output is adjusted to exclude university output that is purchased by households in the region. The impact of their purchases is already captured in the Type II multiplier (Ambargis et al., 2014). This adjustment is made by prorating the appropriate measure of university output by the percentage of students that come from outside the region.

Marietta College output for FY 2017 was $40.7 million. Once we deduct depreciation and interest, the adjusted operational expenses are $35 million. Since we are using Type II multipliers, this amount is multiplied by the percent of students from outside the region (74.8%)

to exclude university output that is purchased by households in the region. Local household's purchases will be captured in total effects. The resulting value is $26.2 million which is used as the input in IMPLAN to produce an estimate of Marietta College's contribution to the region. This study employs the Impact Analysis for Planning (IMPLAN) economic modeling software, version 3.1, and the datasets created by IMPLAN Group, LLC.

The total effect on the local economy by each industrial sector can be calculated through an economic model known as a 'multiplier.' The multiplier expresses the number of additional jobs or amount of additional income created by each new job or each extra dollar earned.
The IMPLAN model generates the multipliers that are used to calculate indirect and induced effects for each industrial sector. A multiplier known as the Type Social Accounting Matrix (SAM) multiplier was used in this study. The Type SAM multiplier estimates the indirect and induced effects on each industrial sector in the local economy as well as business, household, and government transactions.

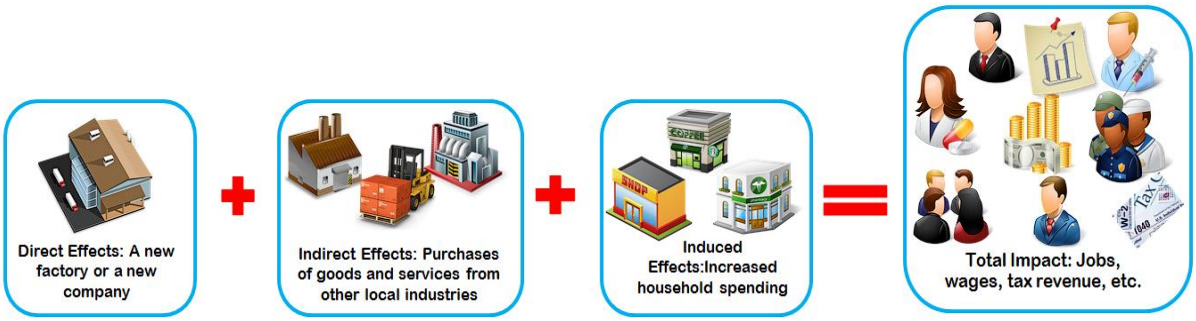
The understanding of several terms is important for interpreting economic impact analyses. These terms include:

- *Direct effect*: The series of initial changes in production.
- *Employment*: The annual average of monthly jobs in that industry (this is the same definition used by QCEW, BLS, and BEA nationally). Thus, one job lasting 12 months = two jobs lasting six months each = three jobs lasting four months each. A job can be either full-time or part-time.
- *Indirect effect*: The impact of local industries buying goods and services from other local industries.
- *Induced effect*: The response by an economy to an initial change (i.e., direct effect) that occurs through re-spending of income received by a component of value-added.
- *Labor income*: All forms of employment income, including employee compensation (i.e., wages and benefits) and proprietor income.
- *Multiplier*: Total production requirements within the study area for every unit of production sold to final demand. In this study, Type SAM (Social Accounting Matrix) multipliers are used.

- *Output*: The value of industry production. In IMPLAN, these are annual production estimates for the year of the data set and are in producer prices. For manufacturers, this would be sales plus or minus the change in inventory. For service sectors production, it is sales. For retail and wholesale trade, output is gross margin and not gross sales.
- *Value-added*: The difference between an industry's total output and the cost of its intermediate inputs. It equals gross output *(sales or receipts and other operating income, plus inventory change)* minus intermediate inputs *(consumption of goods and services purchased from other industries or imported)*. Value-added consists of compensation of employees, taxes on production and imports less subsidies (formerly indirect business taxes and nontax payments), and gross operating surplus.

All businesses have a 'direct,' 'indirect,' and 'induced' effect on the economy. Figure 1 provides an overview of how the total economic impact is a function of direct, indirect, and induced impacts.

Figure 1: Description of Total Economic Impact[1]



This section estimates the direct, indirect, and induced employment, as well as labor income impact, of Marietta College's operations on the regional economy. As shown in Table 1, every three jobs at Marietta College lead to an additional job in the regional economy. In total, Marietta College adds over $44 million to the regional economy.

[1] IMPLAN Group LLC. (2015). *Glossary*. Retrieved from http://www.implan.com/index.php?option=com_glossary&view=glossary&glossid=13&Itemid=1866

Table 1: Summary of Impact Results

Impact Type	Employment[2]	Labor Income	Value Added	Output
Direct Effect	374	$13,432,753	$13,360,581	$26,203,321
Indirect Effect	49	$1,749,913	$3,850,121	$7,150,404
Induced Effect	88	$3,385,103	$6,153,547	$10,741,230
Total Effect	511	$18,567,770	$23,364,249	$44,094,954
Multiplier	**1.37**	**1.38**	**1.75**	**1.68**

Next, Table 2 provides a detailed breakdown of the top 10 industries impacted by Marietta College's operation in the region.

Table 2: Top Ten Industries Impacted

Description	Employment	Labor Income	Value Added	Output
Junior colleges, colleges, universities, and professional schools	376	$13,493,573	$13,421,074	$26,321,963
Real estate	16	$293,848	$1,538,116	$2,476,545
Full-service restaurants	8	$166,479	$184,572	$381,855
Hospitals	7	$416,688	$464,592	$934,948
Limited-service restaurants	7	$126,107	$273,215	$522,246
Other educational services	4	$71,704	$71,837	$126,605
Retail - General merchandise stores	3	$84,063	$142,340	$223,077
Employment services	3	$84,546	$125,737	$180,699
Services to buildings	3	$74,028	$84,383	$127,051
Offices of physicians	3	$323,281	$316,748	$442,500

Table 3 reports estimates of tax paid by government type. Within the state and local region, Marietta College generated a total of $2.1 million in revenue from different sources: sales tax, property tax, income tax, etc. At the federal level, Marietta College generated a total of $3.7 million in tax revenue.

Table 3: Tax Revenues

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Total State and Local Tax	$35,501	$0	$1,633,431	$397,591	$11,210
Total Federal Tax	$2,182,676	$41,308	$257,250	$991,858	$191,827

[2] Note: totals may not sum due to rounding. Employment in IMPLAN includes full-time and part-time employment.

4. Student Spending Impact

Student spending includes all spending by students that can be exclusively attributed to the presence of the University and that is not counted already in University operations. Student spending includes purchases made by students who have temporarily moved into the region to attend the university. Their spending includes expenditures for off-campus housing and groceries at local stores. Student spending does not include tuition or rent paid to the college for on campus housing (already included in university operations).

Marietta College has 1,130 enrolled students, 74.8% of which originate from counties outside our defined region of analysis.[3] These non-local students live mainly on campus: 698 students reside on-campus and 147 reside off-campus. The main difference in modeling student spending patterns for on-campus students versus off-campus students is their housing costs. The housing cost for students residing on campus is included in operational expenses. Therefore, it is not included in student spending to avoid double counting. In contrast, the housing cost for students residing off-campus is included in visitor spending and its impact on the real estate sector is included in the impact of Marietta's student spending on the regional economy.

Table 4 includes major student spending by student type (on-campus & off-campus) for six main spending categories. Tuition and fees, books & supplies expenses, and housing costs for students residing on campus are not included when modeling regional impacts. Expenses on restaurants, retail (food & beverage stores), gasoline & fuel, and housing costs for students residing off-campus are included when modeling regional impacts of student spending.

Data on tuition & fees, books & supplies, and housing costs are from Marietta College's cost of attendance webpage for the 2016-2017 school year. Students spending patterns for the remaining expenses are estimated using Bureau of Labor Statistics Current Expenditures survey data for

[3] To produce conservative estimates, the analyses focuses on non-local student spending. An argument can be made that Marietta College helps retain local student spending in the area. Otherwise, local students can leave the region seeking a postsecondary education elsewhere. Student spending for local students (106 residing on campus and 179 residing off-campus) would add $904,945 to student spending's direct effect. We do not include spending on housing for off-campus student because they are likely residing in their parents' domicile and not incurring rent.

2016.[4] The survey provides data on the buying habits of American consumers. We restricted the data to survey takers enrolled full-time in college that reported living on or off campus. The Current Expenditures survey has been used in previous university economic value reports to estimate student spending (Swenson, 2015). This is not an exhaustive list of expenses but merely a conservative estimate of student spending.[5]

Table 4: Non-local Student Spending

	Student spending: residing on-campus	**Student spending: residing off-campus**
Tuition & Fees	$35,330	$35,330
Books & Supplies	$1,208	$1,208
Housing	$6,400	$3,704
Restaurants	$1,280	$1,324
Retail-Food & Beverage Stores	$713	$1,127
Gasoline & Fuels	$595	$1,072
Number of non-local students	**698**	**147**

This section estimates the direct, indirect, and induced employment, as well as labor income impact of Marietta College's student spending on the regional economy. As shown in Table 5, every four jobs supporting student spending lead to an additional job in the regional economy. In total, Marietta College student spending contributes 40 jobs, almost $1 million in labor income, and an increase in economic output of almost $3 million.

Table 5: Summary of Impact Results

Impact Type	**Employment[6]**	**Labor Income**	**Value Added**	**Output**
Direct Effect	32	$652,228	$1,037,207	$1,914,441
Indirect Effect	4	$144,777	$269,416	$492,921
Induced Effect	5	$178,886	$325,359	$567,813
Total Effect	40	$975,892	$1,631,982	$2,975,176
Multiplier	**1.25**	**1.50**	**1.57**	**1.55**

[4] When data is available in 2016 dollars, the amounts are adjusted for inflation and expressed in 2017 dollars in the impact results tables.

[5] Note that student spending is not excluded for students who work in the region. Ideally this spending should be excluded to avoid double counting since it is already accounted for in the induced impact. However, although no data was available on the number of non-local students working for an employer other than Marietta College in the region, we expect the number to be too trivial to significantly impact the results.

[6] Note: totals may not sum due to rounding.

Next, Table 6 provides a detailed breakdown of the top 10 industries impacted by Marietta College's student spending in the region.

Table 6: Top Ten Industries Impacted

Description	Employment	Labor Income	Value Added	Output
Full-service restaurants	24.4	$485,438	$538,197	$1,113,456
Real estate	4.2	$76,350	$399,648	$643,479
Retail - Food and beverage stores	3	$77,359	$123,336	$194,078
Retail - Gasoline stores	1.4	$37,041	$50,966	$88,004
Employment services	0.5	$14,467	$21,516	$30,920
Hospitals	0.4	$21,923	$24,443	$49,190
Limited-service restaurants	0.3	$6,230	$13,498	$25,801
Services to buildings	0.3	$7,331	$8,357	$12,583
Maintenance and repair construction of nonresidential structures	0.2	$13,430	$19,334	$37,732
Retail - General merchandise stores	0.2	$4,866	$8,240	$12,914

Table 7 reports estimates of tax paid by government type. Within the state and local region, Marietta College's student spending generated a total of $185,393 in revenue from different sources: sales tax, property tax, income tax, etc. At the federal level, Marietta College's student spending generated a total of $218,753 million in tax revenue.

Table 7: Tax Revenues

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Total State and Local Tax	$1,679	$0	$160,706	$21,195	$1,813
Total Federal Tax	$103,213	$6,324	$25,310	$52,874	$31,032

5. Visitor Spending Impact

Visitor spending includes purchases made by people who visit the region to attend regularly held university events. For long running or reoccurring events, this activity supports local business as

visitors stay at local hotels and eat at local restaurants. Table 8 presents the data provided by Marietta College on number of visits and events regularly held by the College.

Table 8: Number of visitors by Marietta College event type

	Athletic events	Fine Arts/ Academic/ Humanities events	Prospective students visits	Alumni events
Number of events	108	175	-	35
Average attendance	454	80	-	64
TOTAL ATTENDANCE	49,079	14,013	1,243	2,240
Student attendance	9,806	-	N/A	N/A
Local attendance	9,806	3,503	175	560
Non-local attendance	29,419	10,510	1,068	1,680

Expenditures were based on data from the U.S. General Services Administration. The amount of expenses on meals is estimated at $38.25 dollars per day. [7] The standard room rate in 2016 in Ohio was $91.[8] The estimated average length of stay for overnight visitors was 2 days (Alexander et al.,2011; Eslinger, 2016). Overnight visitors are assumed to constitute 50% of all non-local visitors, as per Marietta College's recommendation. Table 9 includes major visitor spending by spending type.

Table 9: Non-local visitor spending

	Visitor spending: Day visit	Visitor spending: Overnight visit
Restaurants	$38.25	$38.25 (X 2 days)
Hotels & Motels	N/A	$91
Number of non-local visitors	21,339	21,339

This section estimates the direct, indirect, and induced employment, as well as labor income impact of Marietta College's visitor spending on the regional economy. As shown in Table 9,

[7] The U.S. General Services Administration meals and incidentals for Ohio in 2016 is divided as follows: $11 for breakfast, $12 for lunch, and $23 for dinner. It also include $5 for incidental expenses. The amount of per diem received on the first and last day of a trip equals 75% of meals and incidentals. So in this analysis we estimate daily expenses on restaurants to equal $38.25 (75% of $51).

[8] When data is available in 2016 dollars, the amounts are adjusted for inflation and expressed in 2017 dollars in the impact results tables.

every four jobs supporting visitor spending lead to an additional job in the regional economy. In total, Marietta College visitor spending contributes 93 jobs, almost $2.4 million in labor income, and an increase in economic output of about $7 million.[9]

Table 9: Summary of Impact Results

Impact Type	Employment[10]	Labor Income	Value Added	Output
Direct Effect	74	$1,634,725	$2,295,267	$4,422,748
Indirect Effect	8	$323,017	$569,494	$1,062,510
Induced Effect	11	$438,826	$798,052	$1,392,807
Total Effect	93	$2,396,567	$3,662,814	$6,878,065
Multiplier	1.26	1.47	1.60	1.56

Next, Table 10 provides a detailed breakdown of the top 10 industries impacted by Marietta College's visitor spending in the region.

Table 10: Top Ten Industries Impacted

Description	Employment	Labor Income	Value Added	Output
Full-service restaurants	54.8	$1,093,089	$1,211,888	$2,507,233
Hotels and motels, including casino hotels	19.9	$559,693	$1,103,754	$1,957,429
Real estate	1.1	$20,741	$108,569	$174,808
Hospitals	0.9	$53,827	$60,015	$120,775
Limited-service restaurants	0.8	$15,508	$33,598	$64,222
All other food and drinking places	0.7	$17,838	$15,744	$28,306
Employment services	0.5	$16,389	$24,373	$35,027
Services to buildings	0.5	$13,599	$15,501	$23,339
Retail - General merchandise stores	0.5	$13,115	$22,207	$34,804
Management of companies and enterprises	0.4	$33,555	$42,935	$81,157

[9] We note that the University of Denver, home to 11,500 students, attracted 32,700 visitors in 2015. Visitor spending was estimated at $4.3 million (Development Research Partners, 2016). Southern Oregon University, home to 4,352 students, had an estimated visitor spending of $5.7 million in 2014 (Byles et al. 2015). So while we recognize that a $4.4 million estimated visitor spending impact for Marietta College, home to 1,130 students, is a large impact, we note that the estimated impact is based on the number of visits provided by Marietta College.

[10] Note: totals may not sum due to rounding.

Table 11 reports estimates of tax paid by government type. Within the state and local region, Marietta College's visitor spending generated a total of $480,118 in revenue from different sources: sales tax, property tax, income tax, etc. At the federal level, Marietta College's visitor spending generated a total of $519,827 million in tax revenue.

Table 11: Tax Revenues

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Total State and Local Tax	$4,215	$0	$420,995	$51,903	$3,005
Total Federal Tax	$259,137	$13,483	$66,303	$129,481	$51,423

6. Construction Impact

New construction expenses are not treated as part of operating expenses in an I-O model since their impact on the regional economy needs to be calculated separately.

This section estimates the direct, indirect, and induced employment, as well as labor income impact, of Marietta College's construction on the regional economy. As shown in Table 12, every two jobs constructing new buildings at Marietta College lead to an additional job in the regional economy. In total, Marietta College contributed seven jobs, $327,742 in labor income, and an increase in economic output of about $1.1 million.

Table 12: Summary of Impact Results

Impact Type	Employment[11]	Labor Income	Value Added	Output
Direct Effect	4	$216,929	$324,837	$736,529
Indirect Effect	1	$50,423	$83,182	$167,128
Induced Effect	2	$60,390	$109,893	$191,748
Total Effect	7	$327,742	$517,913	$1,095,406
Multiplier	**1.67**	**1.51**	**1.59**	**1.49**

[11] Note: totals may not sum due to rounding.

Next, Table 13 provides a detailed breakdown of the top 10 industries impacted by Marietta College's construction in the region.

Table 13: Top Ten Industries Impacted

Description	Employment	Labor Income	Value Added	Output
Construction of new educational and vocational structures	3.9	$216,929	$324,837	$736,529
Wholesale trade	0.1	$9,186	$18,515	$30,023
Hospitals	0.1	$7,370	$8,217	$16,536
Full-service restaurants	0.1	$2,185	$2,423	$5,012
Limited-service restaurants	0.1	$1,966	$4,260	$8,144
Truck transportation	0.1	$7,111	$8,615	$18,052
Real estate	0.1	$1,597	$8,362	$13,463
Architectural, engineering, and related services	0.1	$4,833	$4,785	$10,219
Retail - General merchandise stores	0.1	$1,542	$2,610	$4,091
Retail - Miscellaneous store retailers	0.1	$971	$1,207	$2,052

Table 14 reports estimates of tax paid by government type. Within the state and local region, Marietta College's construction expenses generated a total of $28,642 in revenue from different sources: sales tax, property tax, income tax, etc. At the federal level, Marietta College's construction expenses generated a total of $66,611 million in tax revenue.

Table 14: Tax Revenues

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Total State and Local Tax	$503	$0	$20,282	$7,214	$643
Total Federal Tax	$30,953	$3,463	$3,194	$17,997	$11,004

7. Discussion

Marietta College's operations in FY 2017 was $40.7 million. University operations is adjusted for depreciation and interest. It is recommended that depreciation and interest payments are excluded from the measure of university output because of the special way these measures are calculated in the national I-O accounts (Ambargis et al., 2014). Excluding these two measures

results in more conservative contribution estimates. The amount is additionally prorated to exclude university output purchased by households in the region. The adjusted prorated amount is the direct impact amount estimated at $26.2 million.

Local spending by students enrolled at the university contributed a direct economic benefit in the region of $1.9 million in FY 2017. Only the spending of non-local students is included. The expenses tallied are not an exhaustive list of all goods and services consumed by students.[12] The conservative estimate provided focuses on main expenses that do not overlap with operational expenses.

Marietta College attracted 42,677 visits to the region. The total estimated direct economic benefit of the university's visitor spending in FY 2017 was $4.4 million. The expenses modeled do not include all possible spending in the region during a visit.[13] The focus was on major spending categories: food and lodging. The number of visits and the portion of overnight visits were provided by Marietta College. We note that the amount spent by visitors varies tremendously by the type of activity attended (Swenson, 2015), therefore the estimated visitor spending impact should be interpreted with caution.

The total direct economic benefit of Marietta College construction activity in the region was $736,529. Construction spending varies by year. Construction expenses included in the analysis were based on the 2017 annual construction expenditures for Marietta College.

Marietta College, the students, and campus visitors generated sales tax, lodging tax, and property tax from their spending and housing costs. A total of $2.9 million in tax revenue for state and localities throughout the region was directly associated with the university in FY 2017. Note that the estimated taxes through IMPLAN should be interpreted with caution. No matter what tax is increased (sales, income, luxury, etc), the estimated taxes follow the same distribution as in the base-year data base. No matter what tax is effectively changed, IMPLAN distributes X% of the

[12] An exhaustive tally of student spending would require a survey.
[13] An exhaustive tally of visitor spending would require a survey.

change to the sales tax, Y% to the income tax, Z% to the motor vehicle tax, and so forth, where X%, Y% and Z% are the shares from the year the model was calibrated (Carney & Vest, 2003).

The direct economic benefit of Marietta College in FY 2017 including all university operations, student spending, visitor spending, and construction activity, was an estimated $33.3 million. Through the multiplier effects of this direct spending, Marietta College likely supported an additional $22.2 million of output in all industries in the region. Marietta College contributed over $55 million to the region in FY 2017.

Table 15: Total Regional Economic Benefit of Marietta College, FY 2017

	Direct Impact	Total Impact
University operations	$26,203,321	$44,094,954
Student spending	$1,914,441	$2,975,176
Visitor spending	$4,422,748	$6,878,065
Construction	$736,529	$1,095,406
Total	**$33,277,039**	**$55,043,601**

The estimated impact is a conservative look at Marietta College's contribution to the region. The college has other economic development benefits that are not quantified here. For example, Marietta College's presence provides educational opportunities and attracts talent to the region. There is an economic benefit to raising the income of local residents through educational advancement and increasing the future income stream of graduates who stay to work in the area (Beck et al., 2001). Additional benefits not quantified here include academic entrepreneurship – spin off activities of the college contributing to firm formation (Bagchi-Sen and Smith, 2012), and university-industry collaboration – local and regional spillover effects on local innovation, production, and other aspects of the value-chain (Bagchi-Sen and Smith, 2012).

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