Economic Impact of Ohio Foundation of Independent Colleges (OFIC)

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Executive Summary

The Ohio Foundation of Independent Colleges (OFIC) is a non-profit organization that represents 33 member institutions that enroll over 80,000 students in the state of Ohio. Each of these colleges and universities generate economic value communities. The purpose of this paper is to estimate the economic impact of OFIC's 33 member institutions on the state of Ohio in fiscal year 2019. As show in Table 1, institution operations, construction, and students spending for OFIC member institutions represented close to $2 billion in economic output to the state of Ohio in fiscal year 2019.

Table 1: Total Economic Impact of OFIC Institutions on the State of Ohio, FY 2019

	Direct Impact	Output
Institution Operations	$772,426,838	$1,450,079,400
Construction	$177,322,630	$340,820,329
Student Spending	$95,935,776	$193,656,076
Total	**$1,045,685,244**	**$1,984,555,805**

Note: Estimates for student spending only include estimates for students from outside of Ohio. Hence, Student Spending and Total Values are conservatively estimated in this table. Explanations for this methodology are explained further in later sections.

This study provides a detailed description of the methodology used to generate the economic impact of OFIC's member institutions on the state of Ohio. Further, estimates of the economic impact of each OFIC member institution on their community are provided.

I. Introduction

This study estimates the aggregate impact of all 33 OFIC member institutions on the economic activity of the state of Ohio. Following, we provide impact results for each OFIC member on their respective impact region. We analyze three different channels through which colleges and universities can impact their surrounding region's economy: (1) operating expenses, (2) construction expenses, and (3) student spending. In analyzing the impact of each of these expenditures, we rely on best practices for measuring the value that colleges and universities generate towards their regional economy.

Operating expenses are estimated using annual institution expenses, which is available through the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS). Construction expenses were estimated by an institution's "spending on new buildings" line, also available through IPEDS. Student spending is estimated using national averages of student spending patterns in the United States according to annual Current Expenditures surveys.

This paper leverages IMPLAN (Impact Analysis for Planning) to estimate the economic impact of each OFIC member institution on the State of Ohio. This software uses an input-output methodology to track the ripple effects of each dollar spent within a regional economy. For example, when a member institution buys good and services from a local firm, that firm pays its employees in wages and also makes subsequent purchases to other firms. These firms in turn make purchases of goods and services from other firms, and so on. Additionally, employees of colleges and universities in Ohio spend their wages on other industries in the state of Ohio which also creates ripple effects on the state economy.

As a result, each initial dollar spent on activities supporting the operations, construction, and student spending of an institution may be circulated several times within the state. The number of times each dollar circulates within a regional economy is referred to as a multiplier effect. For example, if an institution's multiplier is 1.50, then every two dollars' worth of spending to support the institution will generate an additional dollar's worth of economic activity within the regional economy.

II. Literature Review

Previous studies have evaluated the economic impact of colleges and universities using either the Regional Input-Output Modeling System II (RIMS II) (Blackwell, Cobb, & Weinberg, 2002) or IMPLAN (Swenson, 2015; Carroll & Smith, 2006). Among these studies, several impact types appeared most often. The most common of these were operational expenses and student spending (Swenson, 2015; Duke University Economic Impact Year 2003 Report, 2003; Blackwell et al., 2002 and Carroll & Smith, 2006). Operational expenses refer to the institution's expenditures, such as tuition paid by students and payroll towards employees. Construction expenses are an additional commonly included impact type (Silverstein & Hansen, 2016; Duke University Economic Impact Year 2003 Report, 2003).

Visitor Spending is also included in some analyses but is less common since it is more difficult to estimate (Swenson, 2015; Carroll & Smith, 2006). If limitations are clear, however, it can estimate spending that universities attract through athletic events, campus tours, conferences and so on (Baade, Baumann & Matheson, 2011; Baade, Baumann & Matheson, 2008; Carroll & Smith, 2006; Duke University Economic Impact Year 2003, 2003). This paper does not include analysis of visitor spending, as it would necessitate primary survey data from each member institution, which is not currently available.

We estimate the impact that each OFIC member institution has on the state of Ohio for our aggregate analysis. An important decision when assessing the impact of an individual institution is the impact region of interest. While the region should be large enough to include the interactions between local industries that support the institution, too large of a region may produce results that are not economically significant (Ambargis et al., 2014). For example, a small liberal arts college such as Marietta College may support a large share of economic activity in the town of Marietta but supports a negligible share of economic activity in Cleveland, Ohio, which is over 150 miles away.

When relevant, core-based statistical areas such as metropolitan statistical areas (MSAs) serve as good choices, as they consist of clusters of counties that shares close economic ties. For example, John Carroll University is located within the Cuyahoga County, a member county of the Cleveland-Elyria MSA. Economic activity within Cuyahoga County will significantly impact other counties within this MSA, including Geauga, Lake, Lorain, and Medina Counties. Therefore, if an institution is in an MSA, this paper estimates the impact of that institution on the entire MSA. Otherwise, we estimate the impact of the institution on the single county where the institution is located. Because we only have data for Ohio counties, we do not estimate the impacts of an institution on counties in other states. This blunts the reported economic impacts of universities located in border counties.

III. Operating Impact

The operating impact of each OFIC member institution is estimated using institution expenses. Expenses that should be included in operating impact analysis include educational services, student services (health clinics, recreational facilities, etc.), and auxiliary operations. However, they should exclude research and development and capital investments, such as construction, equipment, and software. This avoids double counting as they are measured in the following section. Depreciation and interest are also excluded to isolate operational expenditures to the year of interest, FY 2019.

Prorated expenses were entered into IMPLAN, which uses Type II multipliers to calculate the economic impact of institution operations on the region of interest. Data for operational expenses were obtained from the IPEDS financial survey layout. Once depreciation and interest expenses are subtracted, net operations are prorated by the percentage of students from within the region to avoid double counting of household expenditures within the region. These activities are already accounted for when using a Type II multiplier. Table 2 illustrates the operating impact of all 33 OFIC member institutions.

Table 2: OFIC Operating Impact

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	10,509	$ 408,207,374	$ 556,162,729	$ 772,426,838
Indirect Effect	1,223	$ 52,356,698	$ 106,412,538	$ 226,723,313
Induced Effect	2,919	$ 141,583,849	$ 259,765,656	$ 450,929,249
Total Effect	14,651	$ 602,147,920	$ 922,340,922	$ 1,450,079,400
Multiplier	**1.39**	**1.48**	**1.66**	**1.88**

These results imply that while $772 million was spent in 2019 on operations among all OFIC schools, a total of $1.45 billion was generated for the state of Ohio. Additionally, an employment multiplier of 1.39 implies that every three jobs at an OFIC institute generates an additional job in the state of Ohio. Table 3 shows the top ten Ohio industries impacted by OFIC operations.

Table 3: Top Ten Industries Impacted

Description	Employment	Labor Income	Value Added	Output
Junior colleges, colleges, universities, and professional schools	10,608	$ 422,571,623	$ 575,733,321	$ 801,851,550
Other real estate	528	$ 9,846,726	$ 38,157,741	$ 101,438,463
Full-service restaurants	205	$ 4,991,966	$ 7,353,148	$ 13,299,601
Hospitals	194	$ 15,126,569	$ 17,984,925	$ 35,574,840

Limited-service restaurants	151	$ 3,154,187	$ 5,146,277	$ 11,679,055
Employment services	109	$ 4,012,006	$ 5,799,981	$ 9,093,133
Offices of physicians	103	$ 11,471,980	$ 12,118,188	$ 16,868,031
All other food and drinking places	86	$ 2,460,426	$ 3,283,984	$ 5,309,376
Retail - General merchandise stores	75	$ 2,187,074	$ 3,523,897	$ 5,743,951
Retail - Food and beverage stores	74	$ 2,148,898	$ 3,103,711	$ 5,253,209

Table 4 shows estimates of taxes paid, by type, among all OFIC institutions. These institutions generated over $61 million in tax revenue for the state of Ohio and localities. At the federal level, these institutions generated over $122 million in tax revenue.

Table 4: Tax Revenues

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations	Total
Total State and Local Tax	$ 2,454,523	$ 0	$ 41,750,529	$16,664,079	$ 577,305	$ 61,446,436
Total Federal Tax	$ 64,681,377	$ 2,308,168	$ 6,093,507	$40,182,099	$ 8,817,651	$122,082,802

IV. Construction Impact

Construction impacts need to be estimated separately in an I-O model since they represent temporary impacts to the regional economy. Depreciation and interest payments were deducted from operating impacts to avoid double counting with construction impacts. Estimates for construction activity were taken from IPEDS financial datasets under the line "Construction in Progress". Table 5 shows that every two jobs towards constructing new buildings at OFIC member institutions leads to an additional job in the State of Ohio. In total, OFIC construction activities generated 2,377 new jobs, almost $143 million in labor income, and an increase in economic output by almost $341 million.

Table 5: OFIC Construction Impact

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	1,422	$ 91,946,120	$ 113,610,675	$ 177,322,630
Indirect Effect	259	$ 17,326,964	$ 27,854,583	$ 56,246,095
Induced Effect	695	$ 33,700,361	$ 61,776,015	$ 107,251,604

Total Effect	2,377	$ 142,973,445	$ 203,241,274	$ 340,820,329
Multiplier	**1.67**	**1.55**	**1.79**	**1.92**

Next, Table 6 shows the top ten industries within Ohio impacted by construction by OFIC member institutions.

Table 6: Top Ten Industries Impacted

Description	Employment	Labor Income	Value Added	Output
Construction of new educational and vocational structures	1,422	$ 91,946,120	$ 113,610,675	$ 177,322,630
Hospitals	46	$ 3,523,751	$ 4,189,608	$ 8,319,875
Full-service restaurants	39	$ 915,736	$ 1,348,876	$ 2,400,588
Other real estate	34	$ 624,836	$ 2,421,345	$ 6,461,595
Limited-service restaurants	34	$ 692,264	$ 1,129,478	$ 2,522,159
Employment services	29	$ 1,035,499	$ 1,496,975	$ 2,339,054
Offices of physicians	24	$ 2,658,679	$ 2,808,441	$ 3,922,726
Truck transportation	24	$ 1,586,736	$ 1,912,750	$ 3,731,004
Wholesale - Other durable goods merchant wholesalers	19	$ 1,436,885	$ 2,384,825	$ 4,636,124
Retail - General merchandise stores	18	$ 511,695	$ 824,463	$ 1,353,183

Table 7 shows estimates of tax revenues paid towards construction expenses. At the state level, OFIC member institution construction activities generated a total of $12 million in tax revenues from the listed sources. At the federal level, these activities generated a total of $26 million in tax revenues.

Table 7: Tax Revenues (Footnote: Additional for total and state)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations	Total
Total State and Local Tax	$ 489,996	$ 0	$ 7,535,542	$ 3,901,972	$ 106,255	$12,033,765
Total Federal Tax	$ 12,912,328	$1,233,784	$ 1,099,815	$ 9,408,828	$ 1,622,921	$26,277,676

V. Student Spending

Student spending includes all spending by students attending an institution in-person that can exclusively be attributed to the presence of that institution. This analysis should not include spending that was already accounted for in institution operations, for example, tuition and fees. Spending in this analysis includes money spent on restaurants, food and beverage retail, fuel and gasoline, and off-campus housing.

An ideal analysis of student spending should include only purchases by students that have enrolled from outside of the region of the school that they are attending. This will isolate spending by students who have moved to a region specifically to attend school. For the aggregate analysis of all OFIC member institutes, we can simply adjust student spending to only include out-of-state students. However, for individual schools, this would require knowledge of each student's county of origin, data for which is not publicly available. Therefore, when analyzing student spending at the individual institution level, we form an upper- and lower-bound by analyzing the impact of all in-person enrolled students, and then analyzing the impact only of in-person students who have enrolled from out-of-state.

Estimates for off-campus housing were obtained from IPEDS financial data, while the remaining categories were estimated using the most recent release of the Bureau of Labor Statistics Current Expenditures Survey for 2018, which was adjusted for inflation to 2019. We restricted the survey to only include spending for on and off-campus students receiving a higher education full-time. Table 8 shows aggregate estimates for out-of-state students attending OFIC member institutions. This is not an exhaustive list of all student spending, but merely a conservative estimate.

Table 8: Out-of-State Student Spending

	On-Campus	Off-Campus
Tuition and Fees	$ 540,494,441	$ 162,547,438
Books & Supplies	$ 23,873,793	$ 8,644,197
Housing	$ 189,579,355	$ 52,205,235
Restaurants	$ 23,495,019	$ 9,322,305
Retail-Food & Beverages Stores	$ 13,083,433	$ 7,933,877
Gasoline & Fuels	$ 10,359,873	$ 7,550,406
Number of out-of-state Students	17,238	6,612

Table 9 shows the estimates of student spending impact. Every two jobs supporting student spending among student's enrolled at OFIC member institutions contributes an additional job in

the State of Ohio. In total, student spending contributes 1,517 jobs, $50.5 million in labor income, and almost $194 million in economic output to the State of Ohio's economy.

Table 9: OFIC Student Spending Impact

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	941	$ 21,718,491	$ 44,337,725	$ 95,935,776
Indirect Effect	331	$ 16,897,161	$ 30,652,260	$ 59,871,754
Induced Effect	245	$ 11,887,655	$ 21,802,064	$ 37,848,546
Total Effect	1,517	$ 50,503,307	$ 96,792,049	$ 193,656,076
Multiplier	**1.61**	**2.33**	**2.18**	**2.02**

Next, table 10 breaks down the top ten industries impacted most by student spending within the State of Ohio.

Table 10: Top Ten Industries Impacted

Description	Employment	Labor Income	Value Added	Output
Full-service restaurants	559	$ 13,277,894	$ 19,558,292	$ 34,807,783
Other real estate	342	$ 6,222,361	$ 24,112,710	$ 64,347,122
Retail - Food and beverage stores	107	$ 3,036,090	$ 4,385,106	$ 7,464,648
Retail - Gasoline stores	36	$ 1,377,163	$ 2,344,345	$ 4,126,233
Services to buildings	30	$ 898,688	$ 1,267,412	$ 2,398,084
Employment services	26	$ 969,931	$ 1,402,186	$ 2,190,945
Limited-service restaurants	17	$ 355,447	$ 579,937	$ 1,295,017
Management of companies and enterprises	16	$ 2,186,590	$ 2,522,479	$ 4,033,229
Hospitals	16	$ 1,240,407	$ 1,474,797	$ 2,928,706
Maintenance and repair construction of nonresidential structures	16	$ 1,015,594	$ 1,446,502	$ 3,335,978

Table 11 details tax revenues generated by student activity by type. Student spending among students enrolled at OFIC institutions generated the state of Ohio almost $9.5 million in tax revenue. At the federal level, these activities generated almost $11 million in tax revenue.

Table 11: Tax Impact

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations	Total
Total State and Local Tax	$ 188,713	$ 0	$ 7,792,933	$ 1,369,564	$ 76,880	$ 9,428,090
Total Federal Tax	$ 4,972,940	$ 296,192	$ 1,137,382	$ 3,302,430	$ 1,174,257	$10,883,201

VI. Discussion

The results in this paper provide a conservative estimate of the impact that OFIC member institutions have on their surrounding region. Members contribute other economic benefits not listed here. For example, the presence of an institution in a region provides educational opportunities and attracts talent. An institution's presence can contribute to the region by increasing aggregate levels of human capital, which is difficult to quantify in an economic impact analysis. Notably absent from this paper is an analysis of visitor spending. Analyses including visitor spending impact would require primary survey data from the member institutions.

We find that operations supporting OFIC member institutions operations generate almost $1.5 billion in economic activity within the State of Ohio. Similarly, spending on construction generates about $341 million in economic activity for the State of Ohio, although this impact is more transitory. By attracting students that enroll from outside of the state, these institutions also generate $193 million in economic activity towards the state economy. These activities sum up to almost $2 billion in total economic impact. Additionally, these activities generate state and federal tax revenues to the sum of $81 and $156 million, respectively.

There are two limitations to our impact analysis. First, data on county-of-origin for enrolled students is not available. This limited our analysis of student spending for individual institutions to bounded estimates, since it is not possible to declare that every enrolled student would not live in a specific region independent of the existence of an institution. Further, some institutions exist in MSA's that contain counties from out of state, which are not included in our analysis. Notably, however, these limitations do not affect the aggregate impact of all OFIC member institutions on the state of Ohio.

Table 13: Sum of OFIC Operations, Construction, and Student Spending on the State of Ohio

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	12,872	$ 521,871,984	$ 714,111,129	$ 1,045,685,244
Indirect Effect	1,813	$ 86,580,823	$ 164,919,381	$ 342,841,162
Induced Effect	3,859	$ 187,171,865	$ 343,343,735	$ 596,029,399
Total Effect	18,544	$ 795,624,672	$1,222,374,245	$ 1,984,555,805

Multiplier	**1.44**	**1.52**	**1.71**	**1.90**

Table 14: Aggregate Tax Impact:

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations	Total
Total State and Local Tax	$ 3,072,085	$ 0	$ 56,038,916	$21,520,479	$ 746,059	$ 81,377,539
Total Federal Tax	$ 80,955,304	$ 3,780,642	$ 8,178,903	$51,892,344	$11,395,165	$156,202,358

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