THE ECONOMIC IMPACT OF WEST VIRGINIA UNIVERSITY INSTITUTE OF TECHNOLOGY

WestVirginiaUniversity.
JOHN CHAMBERS COLLEGE OF
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Executive Summary

WVU Institute of Technology (WVU-IT) is a small, but growing, university with more than 1,600 students attending classes at its campus in Beckley. Part of the West Virginia University system, WVU-IT was founded as primarily an engineering-focused college, but it has evolved to offer a wide variety of bachelor's degree and pre-graduate programs. In this report, we estimate the economic contribution of WVU-IT's operational and student spending to the state and Raleigh County economies. Between the operations of the campus and spending from its student population, WVU-IT has a broad economic footprint in West Virginia and its local region.

We estimate that WVU-IT's operational and student expenditures generated an economic impact of nearly $35 million in the state's economy in the 2021-2022 academic year (Figure 1). The university supported a total of 378 jobs in the state's economy, with workers earning nearly $20 million in labor income. This spending generated about $1.3 million in tax revenue for state and local governments.

Additional findings are as follows:

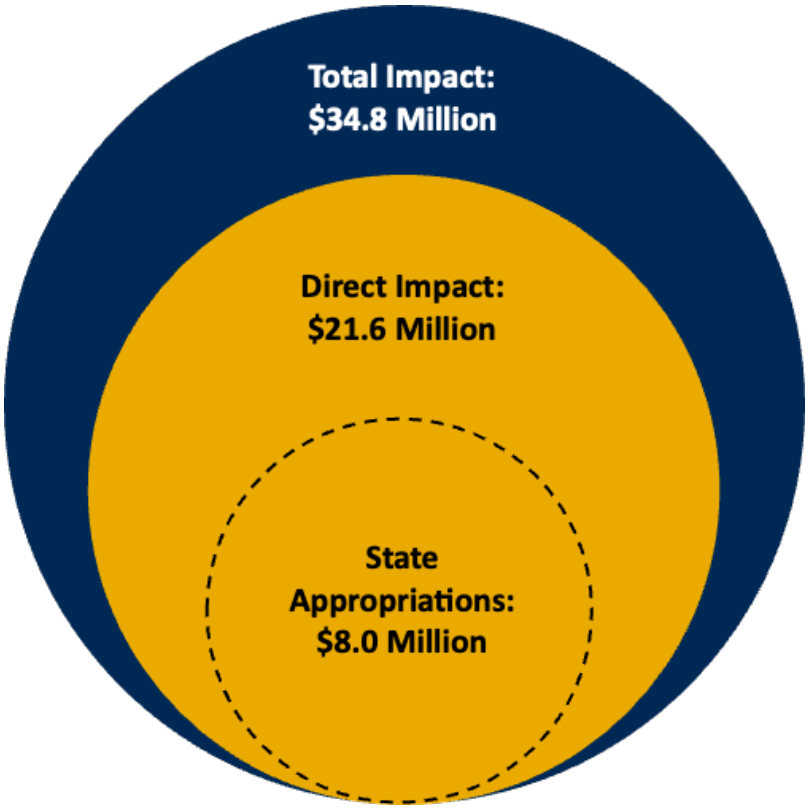
OPERATIONAL IMPACTS

- WVU-IT's operational direct impact totaled nearly $21 million in the 2021-2022 academic year. Secondary impacts brought the total impact to more than $33 million.
- WVU-IT employs 294 workers and supports another 76 workers in the state's economy.
- Workers earned a total of $19.6 million during the 2021-2022 academic year.

STUDENT IMPACTS

- Out-of-state WVU-IT students spent approximately $1.8 million in the state's economy in the 2021-2022 academic year.
- Student spending supported eight jobs with labor income of $338 thousand.

Figure 1: Economic Impact of WVU-IT on West Virginia



1: Introduction

WVU Institute of Technology (WVU-IT) is a small, but growing, university located in southeastern West Virginia. Part of the West Virginia University system, WVU-IT was founded as primarily an engineering-focused college, but it has evolved to offer a wide variety of bachelor's degree and pre-graduate programs. The university currently has more than 1,600 full- and part-time students attending classes at its campus in Beckley. Between the operations of the campus and spending from its student population, WVU-IT has a broad economic footprint in West Virginia and its local region.

In this report, we estimate the economic contribution of WVU-IT to the state and Raleigh County economies. We consider the economic impact of both the university's operations and its students. Overall, we find that WVU-IT represents a significant contributor to its region, supporting $34.8 million in spending and 378 jobs in the state's economy.

2: Economic Impact Methodology

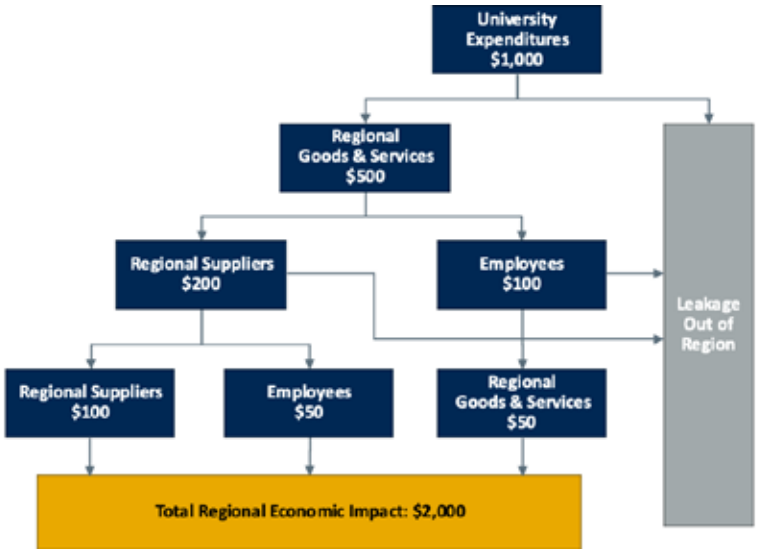
For this report, we estimate the economic impact of WVU-IT using what is known as "economic contribution analysis," which assesses the total value of WVU-IT to the state and county economies, including secondary indirect and induced impacts. For this type of analysis, we estimate the economic impact as if WVU-IT were removed from the regional economy, with the implicit assumption that the elimination of the university would not affect the broad trade relationships between suppliers.

For the purposes of this analysis, we estimate the economic impact of both the university's operating expenditures and student expenditures. These together constitute what is known as the "direct impact" of the university. However, the total economic impact of these activities is not limited to the direct impact, but also includes the secondary economic impacts accrued as those initial direct expenditures are re-spent throughout the rest of the economy.

For example, to support its operations, WVU-IT purchases items such as materials, utilities, office products, professional services, etc., from suppliers in West Virginia. Because of the demand for these inputs, local suppliers increase their production correspondingly, and their subsequent suppliers will increase production, etc. This additional economic activity is referred to as indirect impacts. In addition, the university and its suppliers employ numerous workers, part of whose income will be spent in the West Virginia economy, which generates additional output, income, and employment. This activity is referred to as induced impacts. These indirect and induced impacts together form what is known as the "multiplier effect." To estimate these secondary impacts, we apply a detailed model of the West Virginia economy that outlines how trade-flows among industries interact with key economic indicators such as employment, income, output, and tax revenue.[1]

These indirect and induced impacts together form what is known as the "multiplier effect." The original stimulus to the economy from WVU-IT's expenditures is re-spent multiple times through the rest of the state's economy. At each stage, some of the expenditures "leak" out of West Virginia as they are spent outside of the state. The combined direct impact and secondary impacts together constitute the total economic impact of the operational expenditures in the park. These multipliers and leakages are depicted in Figure 1.

Figure 2: Economic Impact Flow



1: This study was conducted using the IMPLAN modeling software, an industry-standard input-output model of the economy. More information about IMPLAN can be found at http://www.implan.com.

To conduct this analysis, we make two key assumptions: 1) permanent employees of the university live within the state or county boundaries and their expenditure patterns will follow that of the typical West Virginia resident. 2) Employment impacts for this study include all full- and part-time permanent and temporary workers involved in the economic activity. Data for this study relating to the operational and student expenditures were provided by WVU-IT and not independently audited by the WVU Bureau of Business and Economic Research.

3: Direct Expenditures

OPERATIONAL EXPENDITURES

To estimate the economic contribution of WVU-IT's operational spending, we start with the university's annual financial statements from the 2021-2022 academic year. These operating expenditures represent the total amount of economic activity the university contributed to the regional economy in that year. However, many categories of expenditures do not have direct impacts on the local economy. In particular, we have excluded the following from the direct impact calculations:

- Scholarship expenditures: These expenditures return to the university in the form of tuition and fees. As such, they are already counted among the rest of the institution's expenditures, and thus do not constitute additional local economic impact.

- Transfers between units within the college or university: These transfers become revenue to other university entities, and thus are not actively spent in the local economy.[2]

- Depreciation and loan cancellation expenses: Even though depreciation and loan write-offs are appropriately counted as expenses in accounting records, they do not represent actual impacts in the local economy.

- Student wages: We eliminate wages paid to student workers from the university's operational impacts as these expenditures are considered part of the student economic impact.

WVU-IT's operational impact is shown in Table 1. The university had a total of $27.7 million in operating expenditures during the 2021-2022 academic year. Subtracting scholarships, transfers, depreciation, and student wages yielded a direct impact of $20.6 million, of which $15.8 million went to salaries and benefits for the university's 294 employees. The rest of the spending—$4.8 million—went toward all other operational expenses.

Table 1: WVU-IT Operational Expenditures (FY 2021-2022)

Category	Operational Spending ($, thousands)
Total Operational Expenses	**27,729.8**
Subtractions	
Scholarships	-3,784.0
Transfers	-2,229.8
Depreciation and Loan Write-offs	-965.7
Student Wages	-89.4
Total Direct Impact	**20,661.0**
Salaries and Benefits	15,840.5
All Other Expenditures	4,820.5

STUDENT SPENDING

WVU-IT's primary role is the education of its students, and while those students are attending college in West Virginia, they provide a significant economic impact within the state. To estimate the economic impact of the student population, we use estimates of student spending in several categories, including room and board, books, supplies, transportation, and other expenditures.[3] We then multiply these average expenditures by the number of applicable students to get the total household spending in the economy. To avoid double-counting expenditures in the state's economy, we exclude the following categories of student spending:

- In-state residents: Expenditures from students who reside within the state are a transfer of economic activity from one part of the state to another. If these outlays were not spent in Raleigh County, they would likely be made somewhere else in the state, and thus do not represent additional economic impact to the state. Instead, we limit the student impact to expenditures from students who moved to West Virginia from outside of the state, which

2: These expenses are not considered when estimating secondary economic impacts. However, we do add these expenses back in to WVU's value added measure, which includes compensation and capital expenditures, and thus they are included in the university's total economic impact.

3: Student counts and expenditure data is taken from the WVU-IT Common Data Set for the 2018-2019 academic year, which is the most recent available.

do represent new spending to the state. This assumption likely undercounts the impact from in-state students who attend WVU but would have attended college out of state if WVU were not an option for them.

- On-campus expenditures for room and board: Expenditures for room and board for students living on campus are returned to the university as revenue. Thus, outlays for dormitory and food expenses for these students are already counted among the university's expenses. Other expenses, such as books, transportation, and other living expenses are included in the analysis for on-campus students.

WVU-IT enrollment totaled 1,619 students in the 2021-2022 academic year, of which 1,038 students were full time and the remaining 581 were part-time. For the purposes of this report, we exclude part-time students, as they are more likely to be local community members and thus do not represent out-of-state economic impact.

To calculate the number of out-of-state students, we refer to the in-state and out-of-state residency for first-time undergraduates reported by the university to the Integrated Postsecondary Education Data System (IPEDS) from 2021-2022. Though this number may change from year-to-year, we believe it closely represents the ratio of out-of-state students for all classes. Of the first-time undergraduates, approximately 17.2 percent were from outside West Virginia—either from other US states or from foreign countries. Multiplying this percentage by 1,038 students gives us 178 students from outside West Virginia.

Secondly, we calculate the number of students living off-campus. As mentioned above, to avoid double-counting we exclude on-campus students' room and board from the direct impact as it is paid to the university, which is included in the university's operating expenses. According to WVU-IT's Common Data Set (CDS), approximately 77 percent of all students live off-campus. Multiplying this percentage by the number of out-of-state students results in 41 out-of-state students living on-campus and 137 out-of-state students living off-campus.

Finally, we multiply these student numbers by amounts of student spending reported in the CDS for room, board, books, transportation, and other expenses. The student spending amounts are shown in Table 2. In total, we estimate WVU-IT's out-of-state student population spent approximately $1.8 million in the state economy in the 2021-2022 academic year.

Table 2: Student Expenditures

Category	Student Spending ($, thousands)
Room	799.7
Board	377.2
Books	169.2
Transportation/Other	489.9
Total	**1,836.0**

4: Economic Impacts

Using the direct impact calculations from the previous section, we now estimate the total economic impact of WVU-IT on West Virginia and Raleigh County. In subsection 4.1, we estimate the impact of WVU-IT's operational expenditures, followed by student expenditure impacts in subsection 4.2. Finally, we show the combined economic impacts in subsection 4.3.

4.1: Economic Impact of WVU-IT Operations

We estimate that WVU-IT's operational expenditures in the 2021-2022 academic year generated an economic impact of more than $33 million in the state's economy (Table 3). Of this total, nearly $21 million came from direct spending by the university, and another $12.5 million was generated from indirect and induced economic impacts.

University expenditures supported 294 jobs in the state's economy directly, and another 76 jobs in secondary supplier industries, for a total employment impact of 370 jobs. These employees earned $19.6 million in labor income—nearly $16 million directly and another $3.7 million from secondary impacts.

Table 3: Economic Impact of WVU-IT Operations, West Virginia

Impact Type	Direct Impact	Indirect & Induced Impact	Total Economic Impact
Output ($, millions)	20.7	12.5	33.1
Employment (jobs)	294	76	370
Labor Income ($, millions)	15.8	3.7	19.6
Selected Tax Revenue ($, millions)	0.9	0.4	1.2

Notes: Output, labor income, and tax revenue are in 2023 dollars. Tax revenue impact includes sales, personal income, corporation net income, and property taxes.

As a state agency, the university does not pay taxes directly; however, its employees do pay taxes on their income and sales taxes on purchases. We estimate this employee spending generated a little over $860 thousand in tax revenue for state and local governments. Another $374 thousand was paid by secondary industries, for a total tax impact of over $1.2 million.

RALEIGH COUNTY

In this section, we show the economic impact of WVU-IT's operational spending on Raleigh County only. These results are lower than the state impact because some of the supplier spending goes to companies and employees outside the county, and thus is considered leakage in the county-level context.

As shown in Table 4, the direct impact remained the same as before at $20.7 million; however, the secondary impacts were lower, at $9.8 million, for a total economic impact of $30.4 million. We estimate the employment impact to be 359 workers, which included 65 secondary jobs in addition to the university's 294 employees. These workers earned a total of $18.7 million in labor income, of which $2.9 million came from secondary impacts. The total tax impact was $1.2 million.

Table 4: Economic Impact of WVU-IT Operations, Raleigh County

Impact Type	Direct Impact	Indirect & Induced Impact	Total Economic Impact
Output ($, millions)	20.7	9.8	30.4
Employment (jobs)	294	65	359
Labor Income ($, millions)	15.8	2.9	18.7
Selected Tax Revenue ($, millions)	0.9	0.3	1.2

Notes: Output, labor income, and tax revenue are in 2023 dollars. Tax revenue impact includes sales, personal income, corporation net income, and property taxes.

4.2 Economic Impact of Student Spending

Now we turn to the impact of student expenditures in the West Virginia and Raleigh County economies for the 2021-2022 academic year. We estimate that student expenditures provided an economic impact of more than $1.6 million in the state's economy (Table 5). Of this total, $965 thousand came from direct spending,[4] with another nearly $684 thousand from secondary impacts.

These expenditures supported eight jobs in the state economy, split evenly between direct impacts and secondary impacts. These employees earned $338 thousand in labor income, with $122 thousand coming directly and another $216 thousand in secondary industries. These expenditures created $48 thousand in tax revenue for state and local governments.

Table 5: Economic Impact of WVU-IT Student Spending, West Virginia

Impact Type	Direct Impact	Indirect & Induced Impact	Total Economic Impact
Output ($, thousands)	965.2	683.6	1,648.8
Employment (jobs)	4	4	8
Labor Income ($, thousands)	122.2	216.0	338.2
Selected Tax Revenue ($, thousands)	26.9	21.3	48.1

Notes: Output, labor income, and tax revenue are in 2023 dollars. Tax revenue impact includes sales, personal income, corporation net income, and property taxes.

RALEIGH COUNTY

On the county level, student expenditures provided an economic impact of about $1.5 million (Table 6). Of this total, $965 thousand came from direct spending, with $564 thousand in secondary impacts.[5] As in the state case, these expenditures

Table 6: Economic Impact of WVU-IT Student Spending, Raleigh County

Impact Type	Direct Impact	Indirect & Induced Impact	Total Economic Impact
Output ($, thousands)	965.2	564.1	1,529.3
Employment (jobs)	4	4	8
Labor Income ($, thousands)	122.2	181.8	304.1
Selected Tax Revenue ($, thousands)	26.9	17.9	44.7

Notes: Output, labor income, and tax revenue are in 2023 dollars. Tax revenue impact includes sales, personal income, corporation net income, and property taxes.

4: Direct impacts do not equal spending calculated above because of adjustments for retail margins.

5: Raleigh County impacts are lower than the state impacts because of greater economic leakages in the smaller geographic area.

supported eight jobs in the county's economy, with four jobs each in direct and secondary impacts. These employees earned $304 thousand in labor income, with $182 thousand in secondary industries. Student spending supports $44 thousand in tax revenue for state and local governments within Raleigh County.

Table 7: Total Impact of WVU-IT, West Virginia

Impact Type	Direct Impact	Indirect & Induced Impact	Total Economic Impact
Output ($, millions)	21.6	13.1	34.8
Employment (jobs)	298	80	378
Labor Income ($, millions)	16.0	3.9	19.9
Selected Tax Revenue ($, millions)	0.9	0.4	1.3

Notes: Output, labor income, and tax revenue are in 2023 dollars. Tax revenue impact includes sales, personal income, corporation net income, and property taxes.

4.3 Total Economic Impacts

Together we estimate that WVU-IT's operational and student expenditures generated an economic impact of nearly $35 million in the state's economy (Table 7), including nearly $22 million in direct spending and $13 million in secondary impacts. University and student expenditures supported a total of 378 jobs in the state's economy—298 from direct impacts and another 80 in secondary industries. These workers earned nearly $20 million in labor income, which includes $16 million in direct impacts and $3.9 million in secondary industries. Direct spending generated about $887 thousand in tax revenue for state and local governments, with another $395 thousand in secondary impacts for a total tax impact of $1.3 million.

Table 8: Total Impact of WVU-IT, Raleigh County

Impact Type	Direct Impact	Indirect & Induced Impact	Total Economic Impact
Output ($, millions)	21.6	10.3	32.0
Employment (jobs)	298	69	367
Labor Income ($, millions)	16.0	3.1	19.0
Selected Tax Revenue ($, millions)	0.9	0.3	1.2

Notes: Output, labor income, and tax revenue are in 2023 dollars. Tax revenue impact includes sales, personal income, corporation net income, and property taxes.

In Raleigh County, WVU-IT and its students generated an economic impact of nearly $32 million (Table 8), including nearly $22 million in direct spending and $10 million in secondary impacts. University and student expenditures supported a total of 267 jobs in the Raleigh County economy—298 directly, and 69 in secondary industries. These workers earned $19 million in labor income, which includes $16 million in direct spending and $3.1 million in secondary industries. Direct spending generated about $887 thousand in tax revenue for state and local governments, with another $310 thousand in secondary impacts for a total tax impact of $1.2 million.

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