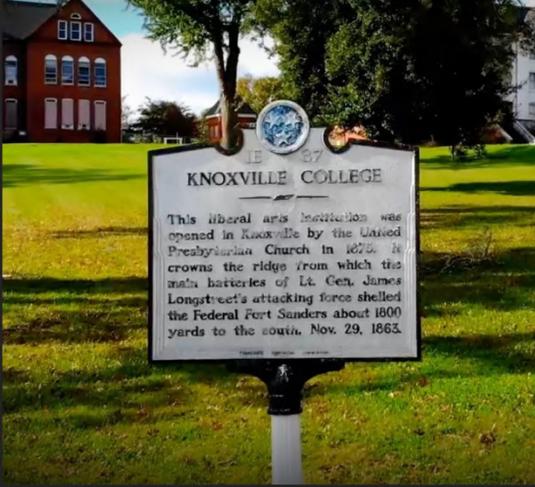


**KNOXVILLE**  
COLLEGE

KNOXVILLE COLLEGE / ECONOMIC IMPACT STUDY / OCTOBER 2021

## **A Plan to Thrive, a Pledge to Keep**

How Knoxville College Will Positively Impact Economy,  
Community, and Society as it Grows Again



**A D A M S / L U N D Y**  
A D M I N I S T R A T I O N

Prepared By:

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economics | strategy | insight

ECONOMIC DEVELOPMENT | EQUITY AND INCLUSION | GOVERNMENT AND PUBLIC POLICY | LITIGATION SUPPORT  
REAL ESTATE | THOUGHT LEADERSHIP | TRANSPORTATION AND INFRASTRUCTURE | UNIVERSITIES AND HOSPITALS

# Executive Summary

The purpose of this report is to articulate the potential economic and social impact of Knoxville College (KC) at a local, regional, and global level as it achieves its aspiration to grow to an enrollment level of 1,211 students. These impacts are produced from KC's role in educating students, engaging with its local community, and pursuing societal advancement.

Upon the fulfillment of its enrollment growth goals, KC will produce an aggregate annual \$119.6 million impact on the state of Tennessee economy, supporting 800 jobs and generating \$900,000 a year in state tax revenues (see Figure ES.1). This impact is generated through its annual operations and capital outlays, as well as through student spending attracted or retained in the area and through the added spending power of KC alumni living and working in the area.



*Figure ES.1: Aggregate Annual Economic of Knoxville College on the Local, Regional, and State Economy*

Impact Type	Operations	Capital Investments	Student/Visitor Spending	Alumni Wage Premium	Total
Knox County Economic Impact	\$63 million	\$24 million	\$7 million	\$15 million	\$107 million
11-County Region Economic Impact	\$65 million	\$26 million	\$7 million	\$17 million	\$114 million
Tennessee Economic Impact	\$66 million	\$27 million	\$7 million	\$19 million	\$120 million
Jobs Supported in Tennessee	460	160	60	120	800
Tax Revenues to State of Tennessee	\$400,000	\$200,000	\$80,000	\$220,000	\$900,000

But as significant as those economic, employment, and tax revenue impacts are, they are merely expressing the consequence of the circulation of dollars attributable to KC. This report also speaks to the broader import of KC's growth aspirations, which extends well beyond those economic metrics to include such wide-ranging impacts as creating pathways for students to access middle-class jobs, investing resources to lift the surrounding community and its members and strengthening the region's economic competitiveness by training up students who can serve in strategically important occupational categories.



Producing  
Tomorrow's  
Workforce



Aesthetically  
Enhancing the  
Community



Investing in  
Civic Strength



Pathways to  
Middle-Class Jobs

Knoxville College stands ready to offers its students an affordable high-quality education to increase their earning potential and strengthen their occupational contribution to the regionaleconomy and is committed to serving and lifting the community around it in the process. The fulfillment of its enrollment growth aspirations holds the promise for significant gain for its students, its community and region, and society.



# Table of Contents

1. Introduction.....	7
1.1. Purpose of Report .....	7
1.2. About Knoxville College .....	7
1.3. Economic and Social Impact .....	8
1.4. Geographies of Interest.....	8
1.5. Report Overview.....	9
2. Impact from Annual Operations.....	10
2.1. Section Overview.....	10
2.2. Aggregate Direct Operating Footprint .....	11
2.3. Economic Impact from Annual Operations .....	11
2.4. Industry Distribution of Economic Impact from Annual Operations .....	12
2.5. Tax Revenues Impact from Annual Operations .....	13
2.6. Impact: Investing in an Educated Workforce .....	14
3. Impact from Capital Investments.....	16
3.1. Section Overview.....	16
3.2. Aggregate Direct Capital Outlays .....	17
3.3. Economic Impact from Capital Investments .....	17
3.4. Industry Distribution of Economic Impact from Capital Investments .....	18
3.5. Tax Revenues Impact from Capital Investment .....	19
3.6. Impact: Community Anchor, Neighborhood Enhancement .....	19
4. Impact from Ancillary Spending .....	21
4.1. Section Overview.....	21
4.2. Aggregate Direct Student and Visitor Spending.....	21
4.3. Economic Impact from Ancillary Spending.....	23
4.4. Industry Distribution of Economic Impact from Ancillary Spending.....	25
4.5. Tax Revenue Impact from Ancillary Spending.....	25
4.6. Impact: Committed to and Invest in its Community as an Anchor Institution.....	26

- 5. Impact from Alumni Wage Premium ..... 28
  - 5.1. Section Overview..... 28
  - 5.2. Estimated Aggregate Direct Wage Premium ..... 29
  - 5.3. Economic Impact from Alumni Wage Premium..... 30
  - 5.4. Industry Distribution of Economic Impact from Alumni Wage Premium..... 31
  - 5.5. Tax Revenue Impact from Alumni Wage Premium..... 32
  - 5.6. Impact: Pathways to Middle Class Jobs ..... 33
- 6. Conclusion..... 35
  - 6.1. Aggregate Economic Impacts ..... 35
  - 6.2. Deeper and More Lasting Impact ..... 36
- 7. Appendix ..... 37
  - 7.1. About Econsult Solutions, Inc..... 37
  - 7.2. Economic and Tax Revenue Impact Methodology ..... 37
  - 7.3. Additional Detail on Student Spending ..... 39
  - 7.4. Additional Detail on Alumni Wage Premium Estimates ..... 41



# 1. Introduction

## 1.1. Purpose of Report

The purpose of this report is to articulate the potential economic and social impact of Knoxville College (KC) at a local, regional, and global level as it achieves its aspiration to grow to an enrollment level of 1,211 students. These impacts are produced from KC's role in educating students, engaging with its local community, and pursuing societal advancement.

Upon the fulfillment of its enrollment growth goals, KC will produce an aggregate annual \$119.6 million impact on the state of Tennessee economy, supporting 800 jobs and generating \$1 million a year in state tax revenues. This impact is generated through its annual operations and capital outlays, as well as through student and visitor spending attracted or retained in the area and through the added spending power of KC alumni living and working in the area.

But as significant as those economic, employment, and tax revenue impacts are, they are merely expressing the significance of the circulation of dollars attributable to KC. This report also speaks to the broader import of KC's growth aspirations, which extends well beyond those economic metrics to include such wide-ranging impacts as creating pathways for students to access middle-class jobs, investing resources to lift the surrounding community and its members, and strengthening the region's economic competitiveness by training up students who can serve in strategically important occupational categories.

## 1.2. About Knoxville College

Knoxville College is a private, church related coeducational liberal arts institution. The College is open to students of diverse backgrounds and cultures who seek a quality liberal arts education. Knoxville College was founded as part of the missionary effort of the United Presbyterian Church of North America to promote religious, moral, and educational leadership among the freedmen. Consisting of 58 acres of land that has six of its eighteen buildings listed on the National Historic Registry, KC is an important landmark in Knoxville's local historic district.

Knoxville College's mission today is a direct outgrowth of the purpose of its founding. Knoxville College offers a strong foundation in the liberal arts for all students and a variety of programs focused on preparing students. The college has proven itself to be an integral piece of the educational and professional life of all students who have entered and departed KC's doors.

### 1.3. Economic and Social Impact

Knoxville College maintains a program combining preparation for careers with a broad education in the arts and sciences. The Administration and faculty are committed to ensuring that students receive a high-quality education with the necessary support and resources to be successful. This is done through the employment of high-quality faculty, academic advisers and student support staff, access to excellent library and technical resources, and experiences at potential career and work locations.



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*“We are going to Educate... Empower... and Elevate the Black experience in Knoxville Tennessee. We want to be an oasis and economic driver in the Mechanicsville community”*

- Leonard Adams, Interim President

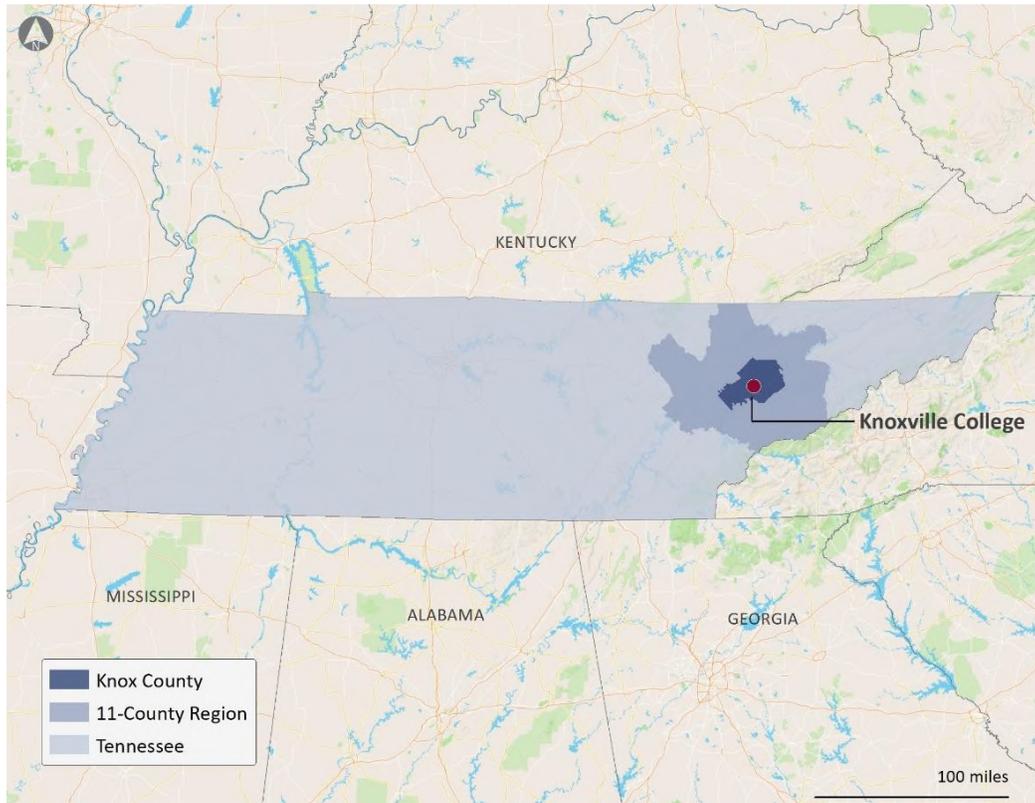
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### 1.4. Geographies of Interest

Knoxville College's social and economic impact is apparent at the local and regional levels, and accordingly, the analysis explores the impact of three concentric geographic levels (see Figure 1.1):

- Knoxville County
- The Knoxville Metropolitan Region, which is the 11-County Region, which comprises the following counties: Anderson, Blount, Campbell, Grainger, Jefferson, Knoxville, Loudon, Morgan, Roane, Sevier, and Union
- State of Tennessee

Figure 1.1: Geographies of Interest



Source: ArcMap (2021), Mapbox (2021), Econsult Solutions, Inc. (2021)

## 1.5. Report Overview

The sections of this report are organized to highlight the economic and societal impacts of Knoxville College.

- Section 2 describes Knoxville College’s operating footprint and translates that footprint into the economic output supported by it.
- Section 3 covers Knoxville College’s capital investment and the economic impact produced by them.
- Section 4 estimates the additional spending represented by Knoxville College’s students and visitors and their commensurate effect on the local economic output, employment supported, and tax revenue.
- Section 5 estimates the aggregate wage premium by Knoxville College alumni living and working in the region, and the consequences of a portion of that additional household earnings.
- Section 6 aggregates the economic impact of Knoxville College across all four impact categories and places that impact in the broader moment of opportunity to positively influence students, community, and society.

## 2. Impact from Annual Operations

### 2.1. Section Overview

The purpose of this section is to express the economic impact of Knoxville College from its annual operations. This is the first of four economic impact sections and speaks to the multiplier effect of KC's operations across the state economy, in the form of economic activity, employment supported, and tax revenues generated.

When Knoxville College achieves its enrollment growth aspirations, it is projected that it will have grown to an annual operating budget of \$36.4 million and directly employ 260 people. It is estimated that the direct operating footprint will support a total statewide annual economic impact of \$65.9 million, supporting 460 jobs and generating \$400,000 in state tax revenues.

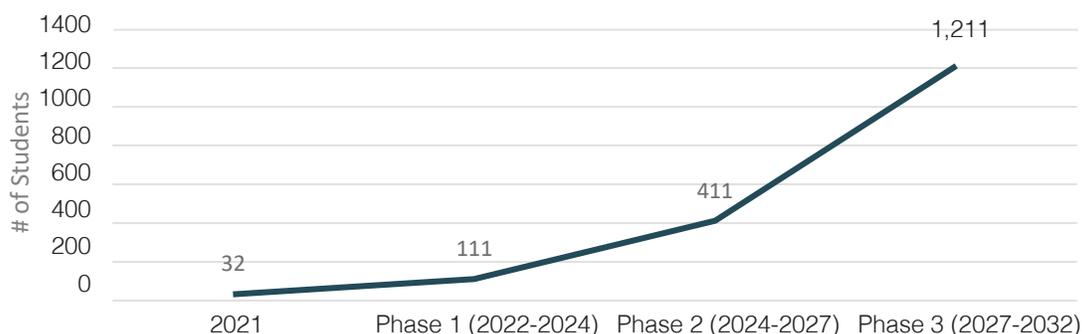
Importantly, these operations support KC's core work of educating and credentialing students. This represents a significant investment in preparing students to contribute to the regional economy through their occupations. This enhances the strength and resiliency of the regional economy and therefore its economic competitiveness.



## 2.2. Aggregate Direct Operating Footprint

As Knoxville College grows into its enrollment projections, its direct operating footprint and its economic impact will also expand. In order to estimate future operating activity, ESI extrapolated future operating budget and direct employment estimates from publicly available information from the higher education industry and individual institutions. Specifically, ratios were employed to translate KC’s aspirational enrollment levels to the commensurate new level of annual operating expenditures, direct employment, and aggregate salaries and wages (see Figure 2.1 and Figure 2.2). This yields an estimated annual operating budget of about \$36.6 million at the time KC achieves its enrollment growth goals, including \$12.2 million in salaries and wages across 260 employees.

Figure 2.1: Knoxville College Present and Anticipated Enrollment Levels



Source: The Integrated Postsecondary Education Data System (2021), Econsult Solutions, Inc. (2021)

Figure 2.2: Comparative Approach to Estimating Knoxville College Operating Footprint Upon Achievement of Aspirational Enrollment Levels

Comparable Historically Black College/University	Shaw University	Dillard University	Lane College	Knoxville College (projected)
Student Enrollment	1,170	1,125	1,267	1,211
Annual Operating Budget (\$M)	\$37.6	\$47.1	\$24.1	\$36.6
Operating Budget per Student	\$32,177	\$38,812	\$19,074	\$30,022
Annual Salaries and Wages (\$M)	\$12.1	\$15.7	\$8.6	\$12.2
Salaries/Wages as % of Budget	32%	33%	36%	34%
Number of Employees	243	286	258	260
Student-Employee Ratio	5:1	4:1	5:1	5:1

Source: The Integrated Postsecondary Education Data System (2021), Econsult Solutions, Inc. (2021)

## 2.3. Economic Impact from Annual Operations

Annual operating expenditures from KC generate significant indirect and induced impacts. The impacts occur because goods and services are procured locally, salaries are spent locally and, in both cases, local

businesses are supported. Based on the input-output model constructed for this analysis, KC's direct expenditures generated approximately:

- \$62.2 million in total output within Knox County, supporting 440 direct, indirect and induced jobs with \$19 million in earnings
- \$64.6 million in total output within the 11-County Region, supporting 450 direct, indirect, and induced jobs with \$19.3 million in earnings and;
- \$65.9 million in total output within the State of Tennessee, supporting 460 direct, indirect, and induced jobs with \$19.6 million in earnings.

*Figure 2.3: Estimated Annual Economic Impact of KC's Operations by Geography (\$M) Contingent on KC Achieving Its Enrollment Growth Goals*

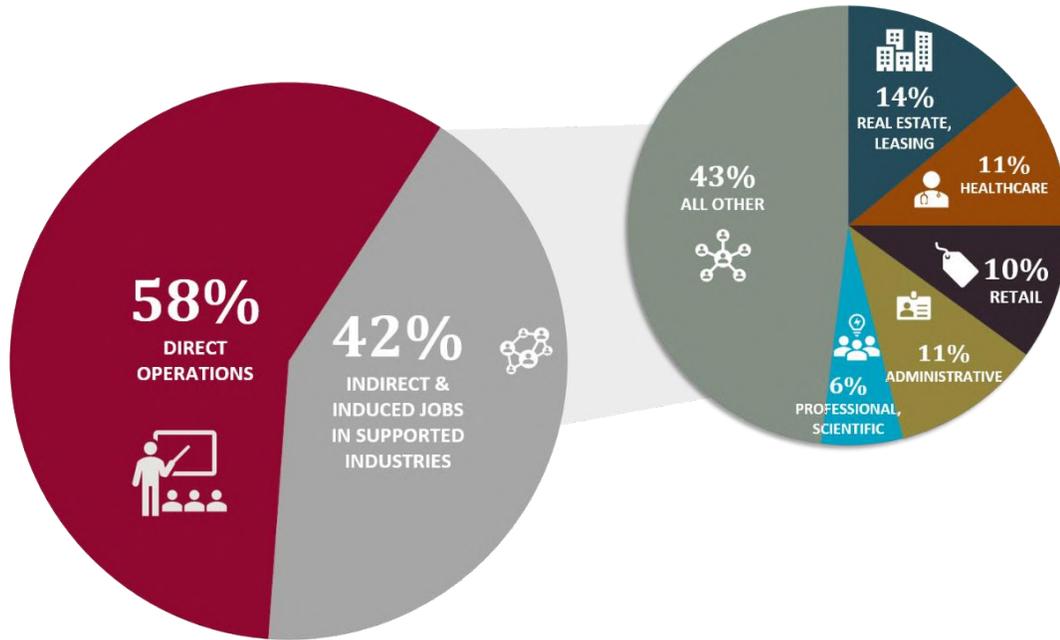
Economic Impact	Knox County	11-County Region	State of Tennessee
Direct Output (\$M)	\$36.4	\$36.4	\$36.4
Indirect and Induced Output (\$M)	\$26.3	\$28.2	\$29.5
Total Output (\$M)	\$62.6	\$64.6	\$65.9
Employment (FTE)	440	450	460
Employee Compensation (\$M)	\$19.0	\$19.3	\$19.6

Source: Knoxville College (2021), IMPLAN (2021), Econsult Solutions, Inc. (2021)

## 2.4. Industry Distribution of Economic Impact from Annual Operations

KC's day-to-day operations will affect a wide range of industries. Through the purchase of goods and services from local vendors and the spending of labor income back into the local economy, KC's activities have impacts on a wide variety of sectors throughout the local and state economy. While the direct impacts fall within the educational services industry, the indirect and induced impacts benefit many other sectors, and most significantly affect the real estate and leasing, administrative services, and health care industries. KC will also provide local economic opportunities to local vendors. Overall, industries besides education receive 42 percent of the total employment impact in the Tennessee (see Figure 2.4).

Figure 2.4: Estimated Industry Distribution of Employment Generated by KC's Operations within Tennessee Contingent on KC Achieving Its Enrollment Growth Goals



Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), IMPLAN (2021)

## 2.5. Tax Revenues Impact from Annual Operations

Although Knoxville College is a non-profit entity, the fiscal impacts generated by its operations are substantial. The College's procurement and business to business activities will spur additional spending by its vendors and their employees, thus indirectly creating additional tax revenue for the state government to utilize on critical public services throughout Tennessee.

It is estimated that KC operations generate about \$400,000 in sales and business income tax revenues for Tennessee each year. While the College does not directly generate sales tax, impacts from KC's operations also grow the state's tax base by supporting taxable economic activity through the procurement of goods and services.

Figure 2.5: Estimated Annual Tax Revenue Impact from KC Annual Operations to Tennessee Contingent on KC Achieving Its Enrollment Growth Goals

Tax Type	Tennessee (\$M)
Sales Tax	\$0.2
Business Tax	\$0.2
Total Tax Revenue	\$0.4

Source: Knoxville College (2021), Econsult Solutions, Inc. (2021)

## 2.6. Impact: Investing in an Educated Workforce

The economic impact estimates in this section speak to the multiplier effect of the dollars spent by Knoxville College for its annual operations. Spending on goods and services circulates through the area economy, creating additional economic opportunities and supporting jobs across a wide range of

industry sectors. And salaries and wages paid out to KC employees get spent back into the area economy, supporting area merchants and the local and state tax base.

But there is greater economic impact in the core work of the operations of Knoxville College, which is to educate students and prepare them for life after college. KC's recently published strategic plan lays out an aggressive proposal to strengthen the caliber of its staff and board, and to raise funds towards greater financial solvency. The stability and quality that will result from these efforts will yield an institution that can sustain the important work of providing high-quality academic experiences for its students.

The resulting contribution those students will make in enhancing the area's workforce, particularly in the fields of education and economics, is of utmost strategic importance to the region's future economic competitiveness. In today's knowledge-based economy, regions compete based on access to a skilled workforce, which is precisely what KC provides to its region in the form of the students it graduates into the workforce each year. This will be particularly vital in strategically important fields where the region anticipates growing demand for workers in the very fields of study KC intends to prioritize going forward (see Figure 2.6).

*Figure 2.6: Job Categories Related to Knoxville College Fields of Study That Are Expected to Grow in Demand in the State of Tennessee from 2018 to 2028*



Source: Jobs4TN.Gov (2021)

In addition to strengthening area labor markets and building up the regional economy, KC graduates will contribute in civic and social ways as well, building from KC's long legacy in developing young women and men who are not only prepared for their occupations but also to serve as leaders in elected office, in the not-for-profit sector, and in communities throughout the state. In all these ways, a stronger Knoxville College makes for stronger graduates, which in turn makes for a stronger region, economically and civically.



#### **Alumni Spotlight: Tennessee State Representative Attica Scott ('94)**

When Knoxville College Alumnus Attica Scott was sworn into Tennessee State Legislature in 2016, she was the first African American woman to serve in Kentucky's State Legislature in over 20 years. Scott earned an undergraduate degree in Political Science from Knoxville College and a graduate degree in Communications from the University of Tennessee-Knoxville. She is also a certified anti-racism trainer and known for community organizing around racial equality and criminal justice.



## 3. Impact from Capital Investments

### 3.1. Section Overview

The purpose of this section is to express the economic impact of Knoxville College from its capital investments. This is the second of four economic impact sections and speaks to the multiplier effect that KC’s capital outlays will have on the state economy as it invests on campus to prepare for and sustain enrollment growth.

It is projected that KC will spend about \$14.1 million a year on new construction, major renovations, and large-scale maintenance projects on campus to support its higher enrollment levels. That amount of annual capital investment stimulates the region’s construction sector and adjacent industries, yielding a total statewide annual economic impact of \$27.4 million, supporting 160 jobs and generating approximately \$200,000 in state tax revenues.

In addition to the one-time economic boosts they provide, these capital outlays are a long-term investment in the physical space where KC does its important work of educating and credentialing students. They also create an opportunity for KC to elevate its immediate community by adding publicly accessible amenities, investing in aesthetic enhancement, and strengthening physical and psychological connections between town and gown.



#### Knoxville College Leadership Pavilion

The new Leadership Pavilion will not only house the offices of KC’s executive leadership and their new board room, but also serve as a hub for student collaboration and engagement. The new building will have a grand plaza, student lounge, classrooms, multi-purpose rooms, offices, and a terrace.

### 3.2. Aggregate Direct Capital Outlays

In addition to its own spending on various operating expenditures, Knoxville College will make significant capital investments every year in the form of new construction, major renovations. Because capital spending is lumpy in nature, it is helpful to analyze several years' worth of activity. As Knoxville College continues to grow, it is expected to spend about \$14.1 million per year in capital investments.

*Figure 3.1: Capital Investments Made by Knoxville College from 2022 to 2032*

	Anticipated Spending (\$M)
Phase 1 (2022-2024)	\$33.1
Phase 2 (2024-2027)	\$50.2
Phase 3 (2027-2032)	\$58.2
<b>Total</b>	<b>\$141.5</b>
<b>Annual Average</b>	<b>\$14.1</b>

Source: Knoxville College (2021), Econsult Solutions, Inc. (2021)

### 3.3. Economic Impact from Capital Investments

Knoxville College's capital spending will infuse millions of dollars directly into the region's economy, with attendant ripple effects to a variety of vendors and industries throughout the state. The construction expenditures will touch a wide base of wholesalers, manufacturers, and professional service providers in addition to construction companies within the state. Each year, KC's capital investments will generate approximately:

- \$23.9 million in total output within Knox County, supporting 140 direct, indirect, and induced jobs with \$5.3 million in earnings;
- \$25.7 million in total output within the 11-County Region, supporting 150 direct, indirect, and induced jobs with \$5.7 million in earnings; and
- \$27.4 million in total output within the State of Tennessee, supporting 160 direct, indirect, and induced jobs with \$6.1 million in earnings.

*Figure 3.2: Estimated Annual Economic Impact of KC's Capital Investments Contingent on KCAchieving Its Enrollment Growth Goals*

Economic Impact	Knox County	11-County Region	Tennessee
Direct Output (\$M)	\$14.1	\$14.1	\$14.1
Indirect and Induced Output (\$M)	\$9.7	\$11.6	\$13.3
Total Output (\$M)	\$23.9	\$25.7	\$27.4
Employment (FTE)	140	150	160
Employee Compensation (\$M)	\$5.3	\$5.7	\$6.1

Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), IMPLAN (2021)

Figure 3.3: Estimated 2022-2032 Economic Impact of KC's Capital Investments Contingent on KCAchieving Its Enrollment Growth Goals

Economic Impact	Knox County	11-County Region	Tennessee
Direct Output (\$M)	\$141.5	\$141.5	\$141.5
Indirect and Induced Output (\$M)	\$97.2	\$116.0	\$132.6
Total Output (\$M)	\$238.7	\$257.5	\$274.1
Employment (FTE)	1,400	1,500	1,600
Employee Compensation (\$M)	\$52.7	\$57.0	\$60.7

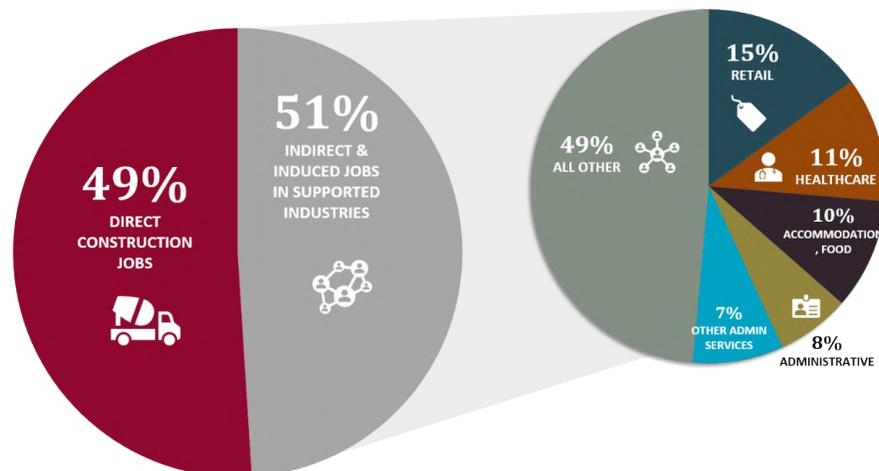
Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), IMPLAN (2021)

### 3.4. Industry Distribution of Economic Impact from Capital Investments

The economic impact associated with the upfront capital investment affects a wide range of industries far beyond the construction sector. While the construction industry is the largest individual beneficiary from these investments, other industries including retail, healthcare, and administrative services also see significant benefits from the indirect (supply chain) and induced (employee compensation) impacts of the capital activity. In other words, various industries such as retail are supported when a general contractor purchases paint and other materials, supporting a hardware store.

Figure 3.4 shows the proportion of the total employment associated with KC's future capital investments that accrue in and beyond the construction industry within the city. In Tennessee, approximately 51 percent of the employment is supported by capital investments and is widely distributed across different sectors outside of construction.

Figure 3.4: Estimated Industry Distribution of Employment Generated by KC's Future Capital Investments within Tennessee Contingent on KC Achieving Its Enrollment Growth Goals



Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), IMPLAN (2021)

### 3.5. Tax Revenues Impact from Capital Investment

Knoxville College’s future capital investments also see a significant contributor of tax revenues to the state government. Direct capital investments help create construction jobs and support local construction companies and their suppliers, all of which generate sales and business taxes to Tennessee. In aggregate, direct capital investments that will be made by KC will generate about \$200,000 in tax revenues.

*Figure 3.5: Estimated Annual Tax Revenue Impact from KC’s Capital Investments to the State of Tennessee Contingent on KC Achieving Its Enrollment Growth Goals*

Tax Type	2022-2032	Annualized
Sales Tax	\$1.0	\$0.1
Business Tax	\$1.0	\$0.1
<b>Total Tax Revenue (\$M)</b>	<b>\$2.0</b>	<b>\$0.2</b>

Source: Knoxville College (2021), Econsult Solutions, Inc. (2021)

### 3.6. Impact: Community Anchor, Neighborhood Enhancement

These impacts speak to the reach of KC’s anticipated spending on new construction and major renovation, first creating economic opportunity for the construction sector and extending from there to adjacent industries and to the common places that salaries and wages are spent back into the area economy. But beyond the temporary effect of this construction activity is the lasting impact of these efforts in supporting Knoxville College’s operating aspirations.

The capital outlays KC will take on in the years to come will enable the sort of high-quality learning environment KC aspires to provide its students and faculty. They will also enable KC to fulfill its objective to be accessible to and supportive of lower-income students who may otherwise struggle to find suitable housing options while striving towards a college degree.

Importantly, these capital outlays also benefit the community around KC. In addition to creating economic opportunities for businesses and residents through the construction activity itself, the resulting effect of on-campus enhancements will be an improved aesthetic experience for community members. Furthermore, many communities with college campuses use and enjoy that space as a publicly accessible space for recreation and social engagement, something that is anticipated by KC and is an important part of its aim to be more connected to and beneficial to the area around it. This has been a long-standing priority for KC, which it is eager to return to as it grows its enrollment, and along with it its engagement with and benefit to the community around it.



The recently restored McMillan - Reese Chapel at Knoxville College has long served as an important gathering space for the greater community, with notable speakers such as George Washington Carver, W.E.B. DuBois, and Dr. Martin Luther King Jr. The walls of the McMillan Chapel serve as critical grounding place, providing a space for worship, arts, entertainment, and fellowship. Its designation in the National Register of Historic Places is a testament to its significance to Knoxville and the nation.

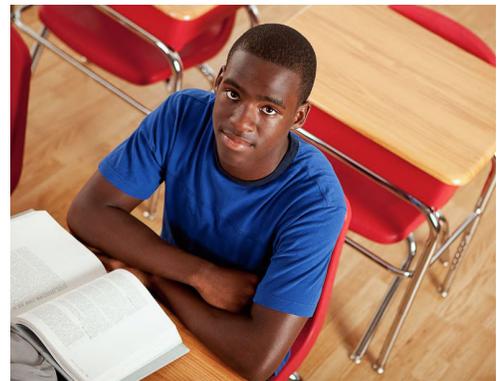
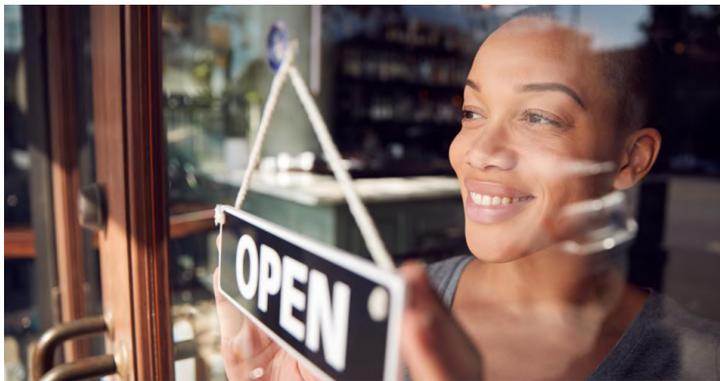
## 4. Impact from Ancillary Spending

### 4.1. Section Overview

The purpose of this section is to express the economic impact produced by Knoxville College through student and visitor spending attracted to or retained in the area. This is the third of four economic impact sections, which captures the consequence of KC drawing spending dollars into the area to support local merchants.

It is projected that at full enrollment, KC students will represent an aggregate \$5.5 million in spending within the state of Tennessee, and various visitors to campus will represent an additional \$0.4 million in spending within the state. This creates economic opportunity for a wide range of vendors, supporting jobs in multiple sectors and building up local supply chains. It is estimated that KC student and visitor spending at full enrollment will create a \$6.8 million annual impact on the state economy, supporting 60 jobs and generating \$230,000 in state tax revenues.

As it grows, KC will represent a vibrant base of spending power that enhances the region commercially. Community and region will also benefit from KC's commitment to being a source of volunteer community service activity, a civically engaged institution, and a proud bearer of cherished cultural assets. In these ways, KC will be living up to its legacy as an anchor institution that strengthens and lifts the community around it.



### 4.2. Aggregate Direct Student and Visitor Spending

#### Estimated Aggregate Annual Student Spending

Students at KC not only pay tuition, but they also spend on categories like transportation, housing, groceries, supplies and books, and entertainment. Spending that takes place off-campus is considered “ancillary” for the purpose of this analysis, and from an impact standpoint must be accounted for above and beyond student spending on tuition and other categories that accrue directly to KC (described in Section 3). A large proportion of this ancillary spending takes place within the Knox County. This spending is either:

- New to Knox County, in the case of students from outside this geography, or
- Retained spending, in that local students may well have attended a university outside those geographies (taking their spending power with them) in the absence of KC

Base spending data comes from comparable colleges within Tennessee, which lists an approximate student budget for room, board, expenses, and transportation costs. Conservative estimates were then made for the proportion of ancillary spending not directly captured by KC. This model captures the rent paid by students who live “off-campus” within Knox County but does not include the rent paid by commuter students. Commuting students would likely be paying the same rent or living in the same location regardless of their enrollment at KC. Therefore, the rent paid by commuting students and distance learners cannot be attributed to KC and is excluded from the calculation (see Figure 5.1).

More students on campus means more spending drawn into and retained in the area from student spending and from visitor spending. Based on KC’s projections for enrollment levels and composition in 2032, and using industry data to estimate spending patterns for different student types, an estimate of student spending in the area (i.e., excluding spending that goes to KC itself or spending that is with out-of-area vendors or is online) can be derived. This calculation is shown in Figure 4.1 and Figure 4.2.

*Figure 4.1: Estimated Ancillary Spending of KC's Students by Student Type using Projected Enrollment by 2032 Contingent on KC Achieving Its Enrollment Growth Goals*

Student Type	Ancillary Spending per Student Type	# of Students	Aggregate Ancillary Spending (\$M)
On-Campus	\$2,600	411	\$1.1
Off-Campus	\$13,300	180	\$2.4
Commuters	\$5,000	180	\$0.9
Distance Learners	\$2,400	440	\$1.1
Total Aggregate Student Spending (\$M)			\$5.5

Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), National Center for Education Statistics (2021)

### Estimated Aggregate Annual Visitor Spending

There is additional spending associated with the visitors to campus. Throughout the academic year and over the summer, KC anticipates attracting thousands of visitors to its campus. These visitors come from all over the region and spend a significant amount within Knox County each year, which helps support employment and generate tax revenues for Tennessee.

To accurately estimate visitor spending, it is necessary to develop spending profiles for the various types of visitors, recognizing that not all visitors have the same economic footprint. Based on the reason for the visit, the duration of the trip, distance traveled, event type, and visitor age, unique spending pattern behaviors were created. This visitor spending analysis accounts for the following visitor types:

- Commencement visitors include all family members, friends, and other students who attend the commencement ceremony.
- Conference attendees include all visitors who come to KC for various conferences.
- Homecoming attendees includes existing and future alumni who will come to Knoxville College for homecoming related events.
- Visitors of Students include other students, who may come from out-of-town to spend a weekend in Knoxville.
- College tours include prospective students of KC.
- Cultural event attendees include all visitors who will come to KC for cultural events.

Projected spending within each category was detailed by industry, and conservative estimates were made for spending by the visitor type. As with the calculation of student spending, estimates reflect only ancillary spending not captured within KC's expected operating budget, and only the portion estimated to be captured within Knox County. In addition, not all visitors are considered new to the region; this model conservatively estimates that a portion of these visitors will be coming from outside of Knox County, which is considered new spending to Knox County.

In total, it is anticipated approximately 13,150 visits will be made annually to KC's campus after 2032 and it is estimated that these visitors will spend \$402,000 in Knox County.

*Figure 4.2: Estimated Aggregate Annual Spending by KC Visitors Contingent on KC Achieving Its Enrollment Growth Goals*

Visitor Type	Attendees	Travel Party	% Considered Net New to Knox County	Spend per Visitor	Total Spend
Commencement	440	2.5	30%	\$99	\$13,000
Conferences	200	1	40%	\$128	\$10,000
Homecoming	5,000	1	30%	\$113	\$169,000
Visitors of Students	910	1	30%	\$83	\$23,000
College Tours	100	1	30%	\$94	\$3,000
Cultural Events	6,500	1	30%	\$94	\$184,000
<b>Total Aggregate Visitor Spending</b>	<b>13,150</b>				<b>\$402,000</b>

Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), US General Social Services Administration (2021)

### 4.3. Economic Impact from Ancillary Spending

Combined ancillary spending by students and visitors, therefore, yields \$5.9 million in spending within Knox County. However, an adjustment needs to be made to account for the fact that some of that spending immediately leaves the region and therefore does not have a multiplier effect within the local economy. For example, a large proportion of retail spending goes to manufacturers and wholesalers,

most of which are outside of the region, and so the modeling approach used in this report conservatively includes only the retail margin (i.e. the difference between the purchase price for the retailer and the sales price for the customer). Based on this adjustment, the amount of spending included in this analysis is \$3.7 million within Knox County (see Figure 4.3).

*Figure 4.3: Estimated Aggregate Estimated Ancillary Spending by KC Students and Visitors Contingent on KC Achieving Its Enrollment Growth Goals*

<u>Type</u>	<u>Aggregate Spending (\$M)</u>
Students	\$5.5
Visitors	\$0.4
Total	\$5.9
Minus Non-Modeled Amount	\$2.2
Modeled Amount	\$3.7

Source: Econsult Solutions, Inc. (2021), US General Social Services Administration (2021)

This influx of ancillary spending by students and visitors has a multiplier effect throughout the region, producing the following annual economic impacts (see Figure 4.4):

- \$6.6 million in total output within Knox County, supporting 60 direct, indirect, and induced jobs and \$1.8 million in employee compensation;
- \$6.7 million in total output within the 11-County Region, supporting 60 direct, indirect, and induced jobs and \$1.8 million in employee compensation; and
- \$6.8 million in total output within the State of Tennessee, supporting 60 direct, indirect, and induced jobs and \$1.8 million in employee compensation.

*Figure 4.4: Estimated Annual Economic Impact from KC Student and Visitor Spending Contingent on KC Achieving Its Enrollment Growth Goals*

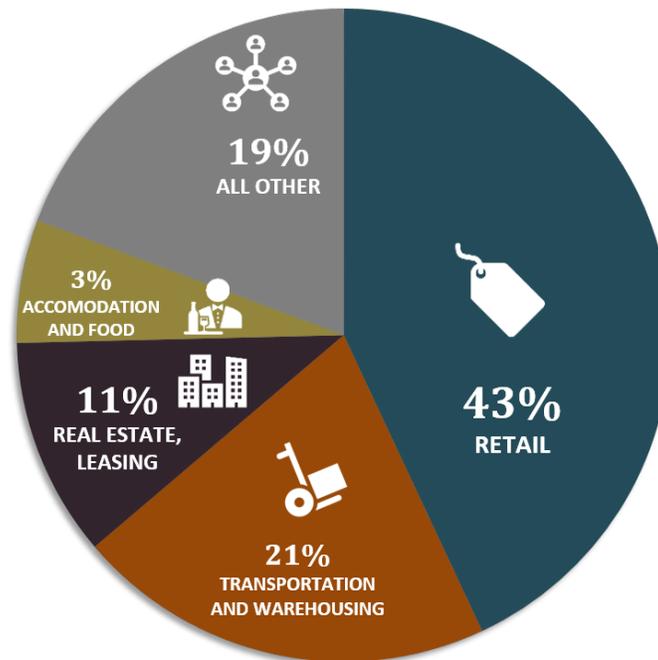
<u>Economic Impact</u>	<u>Knox County</u>	<u>11-County Region</u>	<u>Tennessee</u>
Direct Output (\$M)	\$3.7	\$3.7	\$3.7
Indirect and Induced Output (\$M)	\$2.9	\$3.1	\$3.2
Total Output (\$M)	\$6.6	\$6.7	\$6.8
Employment (FTE)	60	60	60
Employee Compensation (\$M)	\$1.8	\$1.8	\$1.8

Source: Econsult Solutions, Inc. (2021), US General Social Services Administration (2021), IMPLAN (2021)

#### 4.4. Industry Distribution of Economic Impact from Ancillary Spending

The spending by students and visitors directly impacts several industries, and in turn creates a multiplier effect that reaches additional industries. This influx of spending into Tennessee supports jobs in a wide range of sectors, particularly Retail, Transportation and Warehousing, and Real Estate (see Figure 4.5).

Figure 4.5: Estimated Industry Distribution of Employment Impact of Estimated Ancillary Spending within Tennessee Contingent on KC Achieving Its Enrollment Growth Goals



Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), IMPLAN (2021)

#### 4.5. Tax Revenue Impact from Ancillary Spending

Student and visitor spending will also boost various local and state tax bases, generating tax revenues for the Tennessee each year. It is estimated that the economic impact from KC student and visitor spending produces about \$230,000 in tax revenue for the Tennessee government each year (see Figure 4.6). Ancillary spending also generates additional revenue to other tax revenue categories, such as hotel and parking taxes.

Figure 4.6: Estimated Annual Tax Revenue Impact from KC Ancillary Spending to the State of Tennessee Contingent on KC Achieving Its Enrollment Growth Goals

<u>Tax Type</u>	<u>State of Tennessee</u>
Sales Tax	\$0.19
<u>Business Tax</u>	<u>\$0.04</u>
Total Tax Revenue (\$M)	\$0.23

Source: Econsult Solutions, Inc. (2020), IMPLAN (2021), State of Tennessee CAFR (2020)

#### **4.6. Impact: Committed to and Invest in its Community as an Anchor Institution**

The amount of consumer spending potential represented by Knoxville College creates economic vibrancy in the area, so as KC grows in enrollment and size, that will support a growing footprint of merchants and vendors in the area. But KC’s presence does more than just create commercial vibrancy. KC is deeply committed to being an anchor institution and good neighbor in its area, which means many other forms of engagement beyond spending money at grocery stores and gas stations.

To begin with, KC envisions multiple engagement strategies for the purpose of community service and social justice. These build on the long legacy of the institution as a community-serving entity and one that has been a strong voice on civic and cultural matters. Knoxville College was founded on the premise of educational justice – to educate the city’s freed African Americans in 1864, when Black people were otherwise denied a quality education. This commitment to justice continued for over a century and a half – with students leading sit-ins to desegregate businesses in downtown Knoxville in the 1960s, to hosting “Pandemic relief Seminars” discussing finance, affordability, budgeting, and mental health amid the COVID-19 Pandemic.

Secondly, as an educational institution, it is appropriate and impactful that KC is partnering with local K-12 schools, to serve those critical institutions and to create a pipeline for local youth to be exposed to and access a college education. Serving K-12 education is deeply engrained in KC’s history. Before 1931, the College also taught elementary and high school. There were a range of teacher training courses as well as classes in agriculture, industrial art, and medicine. KC plans to continue to strengthen its relationship to local K-12 Schools. This includes supporting rich career and educational paths for students at Maynard elementary school and co-enrollment programs for students at Austin East High School.

Finally, KC is building strong partnerships with civic institutions throughout the area, to mutually serve the community it is a part of and to build local organizational capacity. For example, Knoxville College is partnering with the Tennessee College of Applied Technology and the University of Tennessee to create robust job readiness programs. The College plans to continue to collaborate with partners across government, business, philanthropy, and non-profits to achieve significant and lasting social change.

In all of these ways, KC is a beneficial presence and engaged partner in its community and aspires for its growth trajectory to include an expansion of these efforts. The result is a surrounding community that is civically stronger and commercially more vibrant. KC boasts a long legacy of having this symbolically and practically important role within its surrounding community, a role it is eager to grow into as it works towards its enrollment level aspirations. A return to these connections will strengthen the learning experience it is able to provide its students and the positive impact it is able to produce for the community around it.



## 5. Impact from Alumni Wage Premium

### 5.1. Section Overview

The purpose of this section is to express the economic impact produced by Knoxville College through the enhanced earning potential of its graduates retained in the area. This is the fourth of four economic impact sections, which speaks to KC's primary function as an educating and credentialing entity.



This role in turn yields increased household earnings for KC alumni that can then get spent back into the area economy and support jobs and economic activity.

It is projected by the time it achieves its enrollment growth aspirations, KC will have approximately 1,800 alumni living and working within the state of Tennessee, and that they will be earning an additional \$17.5 million because of the education and credential they received at KC. This higher household earning power reflects KC's role in creating accessible pathways for its students to earn a college degree and obtain a middle-class job. This is a critically important role at a time when higher education is both more necessary to participate in the modern economy yet prohibitively unaffordable to many students.

This section frames the educating and credentialing role of KC in "return on investment" terms, in that it expresses how attending KC is of great financial benefit to students. It also speaks to the return KC produces for the state of Tennessee, which benefits from the occupational contributions and intellectual capital represented by KC graduates, and which also sees an economic boost from the portion of the added household earnings that is spent back into the state economy. This economic boost is estimated to represent an additional \$19.4 million in economic activity throughout the state, supporting 120 jobs and generating \$200,000 in state tax revenues.

## 5.2. Estimated Aggregate Direct Wage Premium

Knoxville College's growth aspirations increase the aggregate wage premium in the area, both by increasing the number of alumni who graduate into the area workforce and by increasing the earning potential of each graduate through a higher quality educational experience on campus. This has profound implications on the area economy as well as on each individual student.

Using data from KC on the projected enrollment over the next ten years, ESI estimated the number of alumni KC will achieve after these students graduate. After accounting for the retention and graduation rate, an estimate can be made of the aggregate number of alumni living and working in Tennessee. This calculation is shown in Figure 5.1.

*Figure 5.1: Estimated KC Alumni after 10 Years of Projected Enrollment*

Projected Enrollment after 10 Years (2032)	7,510
Retention Rate	77%
Graduation Rate	64%
<hr/> Estimated Number of Alumni	<hr/> 3,650
Share of Alumni Who Remain in TN	70%
Estimated Alumni who Remain in TN	2,560
Employment Population Ratio <sup>1</sup>	70.1%
Estimated Working Alumni Who Remain in TN	1,800

Source: Knoxville College (2021), Econsult Solutions (2021), National Center for Education Statistics (2020), Bureau of Labor Statistics (2021)

After estimating the number of working alumni who remain in Tennessee, estimates provided by KC determined that the future alumni base will comprise of 60 percent of alumni with an Associate's degree and 40 percent of alumni with a Bachelor's degree. ESI then further estimated where these alumni will remain in Knox County, the 11-County Region, and Tennessee. It is estimated that approximately 1,080 alumni will live in Knox County, 540 will live in the 11-County Region but outside of Knox County, and 180 will live in Tennessee but outside of the 11-County Region.

*Figure 5.2: Estimated Geographic Distribution of KC Alumni in the Workforce Contingent on KC Achieving Its Enrollment Growth Goals*

	Est. Total Employed Alumni	Knox County	11-County Region (non- Knox County)	Tennessee (minus 11- County Region)
Working Alumni with Associate's degree	1,080	650	320	110
Working Alumni with Bachelor's degree	720	430	220	70
<hr/> Total Working Alumni	<hr/> 1,800	<hr/> 1,080	<hr/> 540	<hr/> 180

<sup>1</sup> This assumption is based on the employment to population ratio reported by the U.S. Bureau of Labor Statistics for adults 25 or older with a college degree, which is 70.1 percent as of August 2021. Source: Knoxville College (2021), Econsult Solutions (2021), National Center for Education Statistics (2020), Bureau of Labor Statistics (2021)

An aggregate increase in earning potential within each geography can be estimated as a function of the increases in the educational attainment of the workforce and the premium associated with that educational attainment level, as well as the premium associated with a KC degree. Based on a combination of federal data sources, the average annual wage premium attributable to the increased educational attainment for KC alumni is estimated to be \$5,200 for an Associate of Arts degree holders and \$16,600 higher for bachelor's degree holders within Tennessee. <sup>2</sup>

These premiums are applied to the volume of KC degree holders estimated to be working within each geography by degree level. The resulting aggregate annual wage premium represents the additional household income generated by KC alumni on account of the education and credential they received from KC. This aggregate annual wage premium is estimated to sum to approximately \$10.5 million within Knox County, \$15.8 million within the 11-County Region, and \$17.5 million within the Washington Metropolitan Area.

*Figure 5.3: Estimated Aggregate Annual Wage Premium Associated with KC Alumni in the Workforce Contingent on KC Achieving Its Enrollment Growth Goals*

Degree Level	Knox County	11-County Region	Tennessee
<b>Associate's Degree</b>			
Volume of Working Alumni	650	320	110
Wage Premium	\$5,200	\$5,200	\$5,200
Total Working Alumni (\$M)	\$3.4	\$1.7	\$0.6
<b>Bachelor's Degree</b>			
Volume of Working Alumni	430	220	70
Wage Premium	\$16,600	\$16,600	\$16,600
Total Working Alumni (\$M)	\$7.1	\$3.6	\$1.2
Grand Total - Regionally Exclusive (\$M)	\$10.5	\$5.3	\$1.8
Grand Total - Regionally Inclusive (\$M)	\$10.5	\$15.8	\$17.5

Source: Knoxville College (2021), Econsult Solutions (2021), National Center for Education Statistics (2020), Bureau of Labor Statistics (2021)

### 5.3. Economic Impact from Alumni Wage Premium

This additional earning potential has both direct and consequential impacts to KC alumni. The wage premium produced by KC alumni produces a spillover impact to the local economies they participate in; both because alumni can contribute to these economies at a higher level and partly because alumni have more disposable income to spend within these economies. Accounting for savings rates, tax withholdings, and spending outside the respective geography, there is still a meaningful amount of additional spending by KC alumni. Since the spending and saving patterns of a household earning

<sup>2</sup> See Appendix 7.4 for additional detail on how wage premium by degree type was calculated.

\$40,000 per year is not the same as a household earning \$100,000, it is relevant to know how much in aggregate household income is being added to KC and what household income levels are represented. However, it is important to note that while households have different spending patterns based on their level of earnings, all households help to bolster the local economy.

The effects of this additional household spending are estimated to generate on an annual basis (See Figure 5.4):

- \$13.6 million in total output within Knox County, supporting 90 induced jobs and \$3.8 million in earnings;
- \$17.4 million in total out within the 11-County Region, supporting 110 induced jobs and \$5.0 million in earnings, and;
- \$19.4 million in total output within the State of Tennessee, supporting 120 induced jobs and \$5.6 million in earnings.

*Figure 5.4: Estimated Annual Economic Impact Attributable to KC Wage Premium Effects Contingent on KC Achieving Its Enrollment Growth Goals*

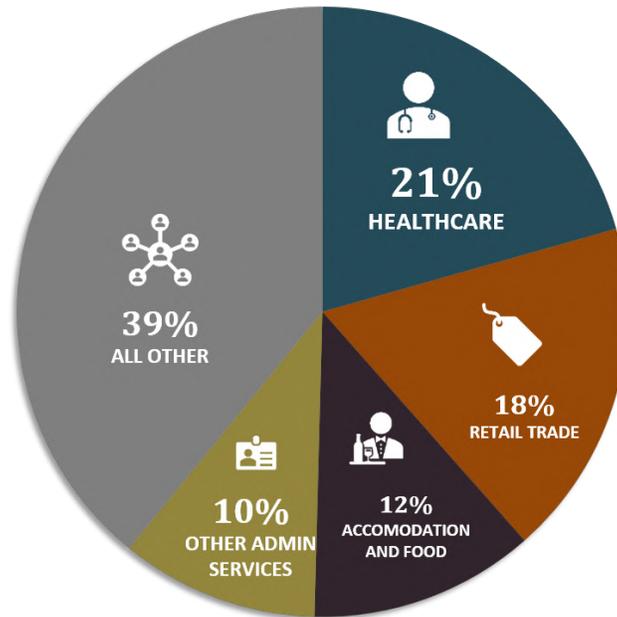
Impact Type	Knox County	11-County Region	Tennessee
Direct Wage Premium (\$M)	\$10.5	\$15.8	\$17.5
Total Impact (\$M)	\$13.6	\$17.4	\$19.4
Employment Supported (FTE)	90	110	120
Employee Compensation (\$M)	\$3.8	\$5.0	\$5.6

Source: Econsult Solutions (2021), National Center for Education Statistics (2020), Bureau of Labor Statistics (2021), IMPLAN (2021)

## 5.4. Industry Distribution of Economic Impact from Alumni Wage Premium

The portion of KC alumni's additional household income that is spent in the regional economy supports a number of industries, befitting the types of expenditures that are typically made by a household from its earned income. Hence, a large number of jobs in sectors such as health care, retail, and food are anticipated to be supported by the higher aggregate household income enjoyed by KC alumni (see Figure 5.5).

Figure 5.5: Estimated Industry Distribution of Employment Impact of Estimated KC Wage Premium within Tennessee Contingent on KC Achieving Its Enrollment Growth Goals



Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), IMPLAN (2021)

### 5.5. Tax Revenue Impact from Alumni Wage Premium

In addition to economic impacts, Tennessee will benefit from additional tax revenues, that will be generated directly and indirectly from the wage premium associated with KC graduates. The higher wage premium paid to KC alumni represents sales and business taxes that are indirectly generated by graduate spending. In Tennessee, approximately \$100,000 in sales will be generated and \$100,000 will be generated in business taxes.

Figure 5.6: Estimated Annual Tax Revenue Impact from KC Aggregate Wage Premium in the State of Tennessee Contingent on KC Achieving Its Enrollment Growth Goals

<u>Tax Type</u>	<u>Tennessee</u>
Sales Tax	\$0.1
<u>Business Tax</u>	<u>\$0.1</u>
Total Tax Revenue (\$M)	\$0.2

Source: Econsult Solutions, Inc. (2020), IMPLAN (2021), State of Tennessee CAFR (2020)

## **5.6. Impact: Pathways to Middle Class Jobs**

The calculations above speak to the economic impact of KC educating and credentialing students, who in turn can make more money and therefore spend more money back into the area economy. As KC grows in enrollment, it will graduate more students and these impacts will grow over time, which benefits the area economy.

It is important to take this opportunity to talk about this topic from the perspective of the students themselves rather than the area economy. For it is of critical importance to students and their families that higher education creates pathways to middle class jobs. For far too many students and families, this is not happening: tuition levels are making college inaccessible, students struggle to convert the opportunity to attend college into receiving a college diploma, or graduates have trouble parlaying their degree into a well-paying job.

KC's strategic plan is assertive in its commitment to providing a clear value proposition to its students and families. On the front end, it has numerous affordability initiatives to ensure that a college degree is accessible to the students it serves. For example, Knoxville College plans to utilize student work to provide tuition support and experiential learning opportunities. As Knoxville College gains accreditation through the Transnational Association of Christian Colleges and Schools, the institution will make additional need-based aid available to its students. Beyond making need-based aid available to students, Knoxville College plans to target additional scholarships and mentoring supports through the Tennessee Reconnect Grant and Tennessee Promise Program.

During a student's time at KC, she or he receives numerous levels of academic, social and cultural, and financial support, to ensure a high-quality education and a supportive environment in which to thrive. The curriculum prioritizes cultural awareness, with emphasis on the contributions of African American's and the peoples of the African Diaspora. And as students leave the confines of the classroom, they engage with regional celebrations such as the Annual Juneteenth rally, featuring music, speakers, dancing, and local vendors.

KC is also being thoughtful in the content of its course offerings as well as how those course offerings connect to other educational opportunities and to real-world job experiences and job opportunities.

This is an important direction that the marketplace is trending, and that KC is trending alongside, to connect students' aspirations more strongly towards a middle-class job into the curricular experiences while pursuing their degrees. Knoxville College recently secured \$200,000 in grant funding to support its Workforce Development Program, which will help rapidly employ its students and create jobs and business opportunities in Mechanicsville and the city of Knoxville.

These efforts are what secure the above-described wage premium for KC graduates, for they are what ensure that the education and credential KC offers its students is valued in the marketplace, as reflected in higher salaries and wages to fulfill the roles students are being trained for. Hence, the twin notions that KC is helping graduates generate a wage premium (Section 5) and strengthening the region's competitiveness by contributing to a stronger labor force (Section 2) are one and the same. Which means that the broader impact of KC's work in educating, and credentialing students goes beyond the

fact that graduates can earn more money and therefore spend a portion of their earnings back into the local economy, as important as that is for supporting jobs and building the local tax base. Rather, the broader impact lies in creating pathways to middle-class jobs so that students can achieve a return on investment in their college degree in the form of higher earning potential and contribute more value to the communities and economies they participate in after graduation.

In all these ways, KC is generating a wage premium that benefits the area economy as enhanced earning potential translates to increased spending power and supports industries throughout the area.

Therefore, KC is generating a meaningful return to each student in their investment in obtaining a college degree, making that degree affordable, providing supports throughout the process of earning that degree, and establishing connections during and after studies that facilitate students securing a good job.



## 6. Conclusion

### 6.1. Aggregate Economic Impacts

This report has quantified the future wide range of economic and community impacts associated with the Knoxville College on an annual basis.

- Annual operations, including the broad base of employment, procurement, and administration activities that comprise the daily activities of the institution. These impacts are estimate at \$65.9 million annually within Tennessee.
- Capital investments, including large-scale construction and renovation of academic facilities. These impacts are estimated at \$27.4 million annually within Tennessee.
- Ancillary spending attributable to KC, reflecting off-campus expenditures by students and visitors drawn to the area by KC that support the local hospitality, food, and retail industries. These impacts are estimated at nearly \$6.8 million annually within Tennessee.
- Wage Premium, reflecting the incremental earning and spending power of the local workforce attributable to the educational activities of KC. These impacts are estimated at \$19.4 million annually within Tennessee.

In aggregate, KC will generate an annual economic impact of \$119.6 million within Tennessee, supporting 800 jobs and \$33 million in employee compensation, and will generate \$1 million in statetax revenues (see Figure 8.3).

*Figure 6.1: Estimated Aggregate Annual Economic Impact of KC on the Knoxville County Economy Contingent on KC Achieving Its Enrollment Growth Goals*

Impact Type	Operations	Capital Investments	Student/Visitor Spending	Alumni Wage Premium	Total
Output (\$M)	\$62.6	\$23.9	\$6.6	\$13.6	\$106.7
Employment Supported (FTE)	440	140	60	90	730
Employee Compensation (\$M)	\$19.0	\$5.3	\$1.8	\$3.8	\$29.8

*Figure 6.2: Estimated Aggregate Annual Economic Impact of KC on the 11-County Region Economy Contingent on KC Achieving Its Enrollment Growth Goals*

Impact Type	Operations	Capital Investments	Student/Visitor Spending	Alumni Wage Premium	Total
Output (\$M)	\$64.6	\$25.7	\$6.7	\$17.4	\$114.4
Employment Supported (FTE)	450	150	60	110	770
Employee Compensation (\$M)	\$19.3	\$5.7	\$1.8	\$5.0	\$31.8



*Figure 6.3: Estimated Aggregate Annual Economic Impact of KC on the Tennessee Economy Contingent on KC Achieving Its Enrollment Growth Goals*

Impact Type	Operations	Capital Investments	Student/Visitor Spending	Alumni Wage Premium	Total
Output (\$M)	\$65.9	\$27.4	\$6.8	\$19.4	\$119.6
Employment Supported (FTE)	460	160	60	120	800
Employee Compensation (\$M)	\$19.6	\$6.1	\$1.8	\$5.6	\$33.0
Tax Revenue (\$M)	\$0.4	\$0.2	\$0.2	\$0.2	\$1.0

## 6.2. Deeper and More Lasting Impact

The fulfillment of Knoxville College’s enrollment growth goals will result in a significant boost to the state economy, as described above, as increases in operating footprint, capital investment, student spending, and alumni wage premium translate into more jobs supported and more tax revenues generated. But KC’s enrollment growth means much more to the state than just these expansions in economic activity, employment, and tax base.

The broader and lasting impact of KC’s growth will be the more educated workforce that KC produces for key sectors in the regional economy, and the pathway to middle class jobs that it helps its graduates secure through the education and credential they receive at KC. An expanded KC also yields benefits to the local community in the form of an enhanced aesthetic experience on and around campus, and increased investments in and engagement with neighborhood-serving initiatives.

This is the hallmark of the university of the future: that it offers its students an affordable high-quality education to increase their earning potential and strengthen their occupational contribution to the regional economy, and that it is committed to serving and lifting the community around it in the process. Knoxville College stands ready to be that institution, and the fulfillment of its enrollment growth aspirations holds the promise for significant gain for its students, its community and region, and society.



## 7. Appendix

### 7.1. About Econsult Solutions, Inc.

This report was produced by Econsult Solutions, Inc. (“ESI”). ESI is a Philadelphia-based economic consulting firm that provides businesses and public policy makers with economic consulting services in urban economics, real estate economics, transportation, public infrastructure, development, public policy and finance, community and neighborhood development, planning, as well as expert witness services for litigation support. Its principals are nationally recognized experts in urban development, real estate, government and public policy, planning, transportation, non-profit management, business strategy and administration, as well as litigation and commercial damages. Staff members have outstanding professional and academic credentials, including active positions at the university level, wide experience at the highest levels of the public policy process and extensive consulting experience.

### 7.2. Economic and Tax Revenue Impact Methodology

#### Overview

Economic impact estimates are generated by utilizing input-output models to translate an initial amount of direct economic activity into the total amount of economic activity that it supports, which includes multiple waves of spillover impacts generated by spending on goods and services and by spending of labor income by employees. This section summarizes the methodologies and tools used to construct, use, and interpret the input-output models needed to estimate this project’s economic impact.

#### Input-Output Model Theory

In an inter-connected economy, every dollar (“direct effect”) spent generates two spillover impacts:

- First, some amount of the proportion of that direct expenditure that goes to the purchase of goods and services gets circulated back into an economy when those goods and services are purchased from local vendors. This represents what is called the “indirect effect,” and reflects the fact that local purchases of goods and services support local vendors, who in turn require additional purchasing with their own set of vendors.
- Second, some amount of the proportion of that direct expenditure that goes to labor income gets circulated back into an economy when those employees spend some of their earnings on various goods and services. This represents what is called the “induced effect,” and reflects the fact that some of those goods and services will be purchased from local vendors, further stimulating a local economy.

The role of input-output models is to determine the linkages across industries to model out the magnitude and composition of spillover impact to all industries of a dollar spent in any one industry. Thus, the total economic impact is the sum of its own direct economic footprint plus the indirect and induced effects generated by that direct footprint.

## **Input-Output Model Mechanics**

To model the impacts resulting from the direct expenditures, Econsult Solutions, Inc. developed a customized economic impact model using the IMPLAN input/output modeling system. IMPLAN represents an industry standard approach to assess the economic and job creation impacts of economic development projects, the creation of new businesses, and public policy changes within its surrounding area. IMPLAN has developed a social accounting matrix (SAM) that accounts for the flow of commodities through economics. From this matrix, IMPLAN also determines the regional purchase coefficient (RPC), the proportion of local supply that satisfies local demand. These values not only establish the types of goods and services supported by an industry or institution, but also the level in which they are acquired locally. This assessment determines the multiplier basis for the local and regional models created in the IMPLAN modeling system. IMPLAN takes the multipliers and divides them into 536 industry categories in accordance to the North American Industrial Classification System (NAICS) codes.

The IMPLAN modeling system also allows for customization of its inputs which alters multiplier outputs. Where necessary, certain institutions may have different levels of demand for commodities. When this occurs, an “analysis-by-parts” (ABP) approach is taken. This allows the user to model the impacts of direct economic activity related to an institution or industry with greater accuracy. Where inputs are unknown, IMPLAN can estimate other inputs based on the level of employment, earnings, or output by an industry or institution.

## **Employment and Wages Supported**

IMPLAN generates job estimates based on the term “job-years”, or how many jobs will be supported each year. For instance, if a construction project takes two years, and IMPLAN estimates there are 100 employees, or more correctly “job-years” supported, over two years, that represents 50 annual jobs. Additionally, these can be a mix of a full and part-time employment. Consequently, job creation could feature more part-time jobs than full-time jobs. To account for this, IMPLAN has a multiplier to convert annual jobs to full-time equivalent jobs.

Income to direct, indirect, and induced jobs is calculated as employee compensation. This includes wage and salary, all benefits (e.g., health, retirement) and payroll taxes (both sides of social security, unemployment taxes, etc.). Therefore, IMPLAN’s measure of income estimates gross pay opposed to just strictly wages.

## **Tax Revenue Impact**

The economic impacts in turn produce one-time or ongoing increases in various tax bases, which yield temporary or permanent increases in various tax revenues. To estimate these increases, Econsult Solutions, Inc. created a tax revenue impact model to translate total economic impacts into their commensurate tax revenue gains. These tax revenue gains only account for a subset of the total tax revenue generation that an institution or industry may have on the economy. Furthermore, where institutions are tax exempt, only the tax revenue generation from supported indirect and induced industries is accounted for. ESI a custom fiscal model that relies on the known relationships between

various types of economic activity and tax collections (i.e. effective tax rates) to translate the increases in activity estimates by IMPLAN into attendant tax revenue results for the State of Tennessee.

### 7.3. Additional Detail on Student Spending

Calculating ancillary visitor spending requires an estimation of the volume and type of visitors that come to KC for various reasons, and the application of spending profiles to each of those visitor types. As detailed in Section 4, data provided by KC provided the volume of visitors, which can then be sorted by visitor category using attendance and industry estimates: 1) students/local, 2) regional (day trip), and 3) overnight (see Figure 7.1). For students, spending profiles were developed by 1) on-campus, 2) off-campus, 3) commuter, and 4) commuter – distance learner.

*Figure 7.1: Estimated Volume of Students/Visitors by Category Contingent on KC Achieving Its Enrollment Growth Goals*

	On-Campus	Off-Campus	Commuter	Commuter - Distance Learner
KC Students	411	180	180	440
	Local/Resident	Regional (day trip)	Overnight	
Visitors to KC				
Commencement	310	110	20	
Conference	120	60	20	
Homecoming	3,500	1,250	250	
Visitors of Students	640	250	20	
College Tours	70	30	0	
Cultural Events	4,550	1,820	130	

Source: Knoxville College (2021)

Spending profiles were developed by visit type to reflect that visitor spending patterns vary based on point of origin (local vs. out of town), reason for visit, and other factors. Unique spending patterns were estimated for each visitor category using available data on national travel trends and local hotel rates.

Figure 7.2 shows the spending profiles of each visitor type by expenditure category. After developing the spending profile for each visitor category and event category, Figure 7.3 shows the total spending estimates by spending category. Students who are residents or visitors who are considered local are not included in the ancillary spending model, as they already live within Knoxville and their spending is already accounted for within the local economy, and not considered new to the region.

*Figure 7.2: Estimated Spending Profile per Student/Visitor Type Contingent on KC Achieving Its Enrollment Growth Goals*

	Housing/ Lodging	Food	Retail	Transportation	Spend per Student/Visitor
<b>Students<sup>3</sup></b>					
On-Campus	\$0	\$435	\$1,598	\$615	\$2,648
Off-Campus	\$6,756	\$4,348	\$1,598	\$615	\$13,317
Commuter	\$0	\$2,174	\$1,598	\$1,230	\$5,002
Commuter-Distance Learner	\$0	\$544	\$1,598	\$308	\$2,449
<b>Visitors to KC</b>					
	Housing / Lodging	Food	Retail	Transportation	Spend per Student/Visitor
<b>Commencement</b>					
Local	-	-	-	-	-
Regional	\$0	\$41	\$23	\$18	\$82
Overnight	\$85	\$56	\$23	\$18	\$182
<b>Conference</b>					
Local	-	-	-	-	-
Regional	\$0	\$41	\$23	\$18	\$82
Overnight	\$170	\$56	\$23	\$18	\$267
<b>Homecoming</b>					
Local	-	-	-	-	-
Regional	\$0	\$41	\$23	\$18	\$82
Overnight	\$170	\$56	\$23	\$18	\$267
<b>Visitors of Students</b>					
Local	-	-	-	-	-
Regional	\$0	\$41	\$23	\$18	\$82
Overnight	\$0	\$56	\$23	\$18	\$97
<b>College Tours</b>					
Local	-	-	-	-	-
Regional	\$0	\$41	\$23	\$18	\$82
Overnight	\$170	\$56	\$23	\$18	\$267
<b>Cultural Events</b>					
Local	-	-	-	-	-
Regional	\$0	\$41	\$23	\$18	\$82
Overnight	\$170	\$56	\$23	\$18	\$267

Source: Knoxville College (2021), Econsult Solutions, Inc. (2021), General Social Services Administration (2021), Kayak.com (2021), IPEDS (2021)

*Figure 7.3: Estimated Total Annual Ancillary Spending Contingent on KC Achieving Its Enrollment Growth Goals*

	Total Ancillary Spending
<u>(\$M)</u>	
Housing/Lodging	
Students	\$1.22
Visitors to KC	\$0.07
Food and Beverage	
Students	\$1.59
Visitors to KC	\$0.17
Local Transportation	
Students	\$0.72
Visitors to KC	\$0.07
Retail and Entertainment	
Students	\$1.94
Visitors to KC	\$0.09
<hr/>	
SUM	
Students	\$5.46
Visitors to KC	\$0.40
Total (\$M)	\$5.86
Retail margin deduction) (\$M)	(\$2.21)
Modeled Ancillary Spending	\$3.65

Source: Knoxville College (2021), Econsult Solutions, Inc. (2021)

## 7.4. Additional Detail on Alumni Wage Premium Estimates

While KC will impact the local and regional economy through its direct expenditures and through students and visitors it draws in the local economy, it is important to recognize the core mission of the institution in educating students. This primary function, in addition to helping foster a more enlightened society, has a significant economic component as well, increasing the productivity and earning power of the local workforce.

The link between educational attainment and earnings is well-established, and a “wage premium” associated with additional education is often associated with various educational (or non-educational) options with the expected return. This analysis utilizes this framework to estimate the gain not to the student, but rather to the local geographies (Knox County, 11-County Region, and Tennessee) in which KC alumni are located. The additional earnings attributable to KC within these geographies are

<sup>3</sup> The spending profile for students was developed from the cost of attendance from a college with a comparable cost of living in Knoxville.

estimated, and translated into additional spending within the local economy, which supports local employment and earnings.

### **Modeled Increased Earnings Attributable to Education**

Academic research and government data demonstrate a clear return to educational attainment in the form of advanced earnings potential. Census data documents a linear relationship between median wages and educational attainment, with each additional level of schooling yielding increased average earnings. Returns to education are also impacted by the specific university that a student attends, due to variance in both institutional quality and fields of study. Institutions of higher education vary widely in selectivity, curricular rigor, and reputation. These qualitative factors are also reflected in the earnings potential of graduates above and beyond the level of degree they obtain.

The modeling approach undertaken in this calculation conforms to the gross impact approach set forth in Section 2 and utilized throughout the report. Since a gross analysis does not include a counterfactual in which impacts are replaced through market forces in the absence of the institution, the increases in education are additive to national earnings, reflecting a market-based valuation of enhanced productivity. However, within this framework, the population and level of benefit to the economy is not the fully salary of KC alumni in the workforce, but rather the incremental wages associated with their educational attainment and skills/knowledge wage premium from their KC degrees. A portion of these additional earnings – after accounting for taxes, savings, etc. – results in additional household spending which circulates throughout the economy, generating indirect and induced impact and supporting employment and earnings.

*Modeling is undertaken in a three-step approach in the sections that follow:*

- 1) Estimating the volume of KC alumni in the workforce by educational attainment after it fulfills its 2032 enrollment goals.
- 2) Estimated the annual wage premium associated with KC for each of those attainment levels.
- 3) Combining the two calculations, multiplying the volume of alumni at each attainment level by the wage premium for that level to yield an estimate of the aggregate annual wage premium associated with KC.

This calculation relies on national government data as KC seeks to fulfill its 2032 enrollment goal. As noted, these are the future potential impacts from wage premium if KC achieves these goals.

### **Estimating KC Alumni Within the Workforce**

The presence of KC will have a significant impact on the composition, educational attainment, and skill level of the local workforce. Post-graduation location decisions are impacted by educational experience, with a clear correlation between locations during and after schooling. From a regional workforce standpoint, KC alumni living and working within Knox County, the 11-County Region, and Tennessee either come from geographies all over the nation and world or are retained within those geographies.

Graduates retained within the local workforce enhance local earnings potential in multiple ways. First, academic research and governmental data indicate a clear return to educational attainment in the form

of advanced earnings potential. Census Bureau data documents a linear relationship between median wages and educational attainment, with each additional level yielding increased average earnings.

Academic students have explored this phenomenon from the perspective of an individual student evaluating the returns to investment in additional schooling in terms of their expected lifetime financial position. However, these educational attainment gains accrue not only to the student, but to the region in which they are employed. Increased earnings as a result of schooling are a market-based representation of the additional productivity associated with those workers, and ultimately result in additional household spending within the local economy on other goods and services.

ESI estimated the future alumni living in each designated geography. It is necessary to estimate the proportion of alumni within each geography who are actively employed (And therefore generate an annual wage premium). National data from the Bureau of Labor Statistics indicates the national employment to population ratio for degree holders ages 25 and older is 70.1 percent as of July 2021.

Applying these proportions across degree levels yields an estimate of nearly 1,800 employed KC alumni.

*Figure 7.4: Estimated KC Alumni within the Workforce by Geography Contingent on KC Achieving Its Enrollment Growth Goals*

Category	Knox County	11-County Region minus Knox County	Tennessee minus 11- County Region
Associates Alumni	930	460	160
Bachelor's Alumni	610	310	100
Workforce Participation Rate	70.1%		
Associates Alumni in Workforce	650	320	110
Bachelor's Alumni in Workforce	430	220	70
Total Alumni in Workforce	1,080	540	180

Source: University of the District of Columbia (2020), Econsult Solutions, Inc. (2020), Bureau of Labor Statistics (2020)

## Alumni Earnings by Residential Location

Next, it is necessary to estimate the impact of this educational attainment on annual earnings for the KC alumni estimated to be within the workforce.

Median earnings by educational level in Tennessee can be derived from the American Community Survey, which illustrates the progression in median income by highest level of educational attainment from approximately \$30,596 per year for a high graduate to approximately \$62,832 for an advanced degree holder. However, the calculation must account for potential differences in earnings between KC degree holders and the average degree holder in Tennessee. To do so, longitudinal data from the federal Department of Education for KC is compared to all four-year institutions in TN. This data source, part of the “College Scorecard” released publicly by the Department of Education, reports earnings by institution based on unique tracking of tax filings of students who applied for student loans ten years

after they enter school.<sup>4</sup> The average of the median ten-year earnings for all HBCUs in Tennessee is \$33,450 or 103 percent of the median ten-year earnings for all public four-year institutions of \$32,500. Therefore, within this analysis, median earnings for KC graduates at the educational attainment level of bachelor’s degree holders are scaled to 103 percent of median TN-wide earnings for that degree level.

*Figure 7.5: Estimated Earnings by Educational Attainment Contingent on KC Achieving Its Enrollment Growth Goals*

Highest Education Level	TN Median Earnings	KC Estimated Premium	KC Rescaled Earnings
High School Graduate/GED	\$30,596	-	
Associate Degree	\$35,518	-	
Bachelor’s Degree	\$50,633	103%	\$52,113
Advanced Degree	\$62,832	-	

Source: University of the District of Columbia (2020), Econsult Solutions, Inc. (2020), American Community Survey Five-Year Estimates (2018), College Scorecard Data (2020)

Importantly, the gains to the regional economy from the wage premium conferred by a selective institution like KC are not necessarily equivalent to the gains that individual students might experience. In general, it is difficult to disentangle the extent to which earnings gains are driven by an institution attracting talented students (who might achieve some or all of that premium at an alternative institution) from the “value-add” that the institution itself provides to alumni earnings relative to its peers.

From the perspective of the regional economy, both gains attributable to retaining and attracting talented students to the region and gains from the “value-add” provided by the institution contribute to higher productivity and earnings for regional workers. Therefore, no precise allocation of “credit” between institutions and students is required to assess the household earnings impact. However, it is important for the analysis to recognize that alumni earnings are not purely additive to the regional economy, since alternative potential employees exist for any particular job within a given geography.

In keeping with the “gross impact” modeling approach utilized throughout this report, this analysis assumes that the overall level of employment within each geography of interest is fixed with or without the presence of KC. The impact accruing to the economy is therefore not the full salary earned by KC alumni, but the incremental portion of that salary attributable to a) the level of their degree and b) the “value-add” for that degree level conferred by KC. This approach in effect assumes that the absence of KC would result in a substantial loss in the educational attainment level, and accordingly the productivity, of the regional workforce. In order to absorb this loss (while maintaining a fixed

<sup>4</sup> This comparison is a proxy for earnings differentials between alumni of KC and non-KC alumni. Notably, it tracks only those students who applied for federal loans, it includes earnings for graduates and non-graduates, and it tracks earnings only at a single point in time (10 years after graduation) rather than throughout a career cycle. However, it is a federal data source that is comprehensive in its coverage of institutions, and its basis in IRS records is far sounder than data sources based on self-reported data. Further this analysis does not use this source to define median earnings (which would be problematic due to the caveats listed above) but rather to estimate the proportional differences between KC and non-KC alumni. Since data weaknesses apply to both groups, the comparison is “apples to apples” and represents a reasonable proxy for this purpose.

employment level) jobs held by KC alumni are assumed to “filter down” to workers with a lower education level, with jobs held by alumni with bachelor’s degrees absorbed by workers with Associate degrees, and jobs held by alumni with advanced degrees absorbed by workers with bachelor’s degrees.<sup>5</sup>

This framework is implemented by comparing estimated earnings for KC graduates by degree level to average earnings for workers of one lower degree level. Estimated earnings for KC bachelor’s degree holders in Tennessee are therefore compared to Associate degree earnings in Tennessee to calculate a wage premium for a KC bachelor’s degree (see Figure 7.6).

Earnings for associates degree holders are calculated using the difference between the median earnings for an Associate degree holder and the median earnings of a High School Graduate/GED holder. This difference is \$5,200, which is used as the wage premium for KC Associate degree holders.

*Figure 7.6: Estimated KC Wage Premium by Educational Attainment Contingent on KC Achieving Its Enrollment Growth Goals*

Category	Degree Level	Premium by Degree Level
<b>KC Associate degree</b>		
Without KC - Earnings	High School/GED	\$30,596
With KC - Earnings	Associates	\$35,518
Wage Premium - Associates		\$5,200
<b>KC Bachelor's Degree</b>		
Without KC - Earnings	Associates	\$35,518
With KC - Earnings (rescaled)	Bachelor's	\$52,113
Wage Premium - Bachelor's Degree		\$16,600

Source: Econsult Solutions, Inc. (2021), American Community Survey Five-Year Estimates (2019), College Scorecard Data (2020)

### Aggregate Earnings from KC Wage Premium

The aggregate alumni earnings impact from the alumni wage premium in each geography can be derived by combining the estimated volume of alumni in the workforce in each geography with the estimated per alumni premiums. Calculations are undertaken first for alumni in Knox County, and then are applied in sequence for each larger geography. These results are then summed to represent the total impact in the larger geography (see Figure 7.7).

<sup>5</sup> Note that this calculation is from the perspective of the national economy, not from the perspective of any individual alumnus. Absent KC, it is likely that most KC alumni would have attained the same level of degree from an alternate institution. However, in doing so, they would have replaced a different student currently at that institution. Ultimately, given a fixed supply of alternative institutions, the reduction of educational attainment applies to the economy (and society) broadly, rather than for any particular student.

*Figure 7.7: Estimated Aggregate Annual Wage Premium Associate with KC Alumni in the Workforce Contingent on KC Achieving Its Enrollment Growth Goals*

Degree Level	Knox County	11-County Region	Tennessee
<b>Associate degree</b>			
Volume of Working Alumni	650	320	110
Wage Premium	\$5,200	\$5,200	\$5,200
Total Working Alumni (\$M)	\$3.4	\$1.7	\$0.6
<b>Bachelor's Degree</b>			
Volume of Working Alumni	430	220	70
Wage Premium	\$16,600	\$16,600	\$16,600
Total Working Alumni (\$M)	\$7.1	\$3.6	\$1.2
Grand Total - Regionally Exclusive (\$M)	\$10.5	\$5.3	\$1.8
Grand Total - Regionally Inclusive (\$M)	\$10.5	\$15.8	\$17.5

Source: Econsult Solutions, Inc. (2021), American Community Survey Five-Year Estimates (2019), College Scorecard Data (2020)

Importantly, while the alumni who achieve these additional earnings are spread across graduation classes from several decades, the earnings premium is a “snapshot in time” that captures incremental earnings for a given year. This premium will be repeated in subsequent years (modified for an additional class of graduates, alumni dropping out of the workforce, changes in earning power, etc.). This annualized impact can therefore be aggregated with the other impact categories capture in this report.

The increase in household earnings is translated into household spending to model its impact on the economy within each geography. As described in Section 5, this process deducts a portion of earnings that do not result in additional spending (such as taxes, savings, etc.) and then estimates the total impacts of the remaining incremental household spending on economic output, employment, and wages.





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