

Economic Contributions of Middle Tennessee State University (MTSU) to the Local Community: An Update



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Economic Contributions of Middle Tennessee State University (MTSU) to Local Communities: An Update

Executive Summary

Embedded in the socioeconomic fabric of their communities, modern universities are increasingly expanding their roles beyond those of education, knowledge creation, and dissemination. Understanding the roles of universities in their communities is the first step in properly evaluating their contributions. Commissioned by the Office of the President, this study updates the previous economic impact study of MTSU (2004) and gives a broader perspective of MTSU's role in both the Rutherford County and Nashville MSA economies. This analysis proceeds along two dimensions: (1) from individual to society, highlighting issues ranging from higher education's earning effect to positive externalities, and (2) from individual business to overall economy, analyzing such issues as skilled workforce supply and economic impact.

Major Study Findings

I. Region, Higher Education, and MTSU: Major Trends

Regional Socioeconomic Dynamics and MTSU

- Rutherford County and the Nashville MSA experienced a healthy growth rate in terms of population, labor force, and employment between 2000 and 2007.
- MTSU's growth rate of 22 percent in the same period is a major factor in this growth.
- MTSU continues to be a major employer in both Rutherford County (third largest) and the Nashville MSA (21st largest).
- About 17,000 undergraduate students work for local businesses in Rutherford County.

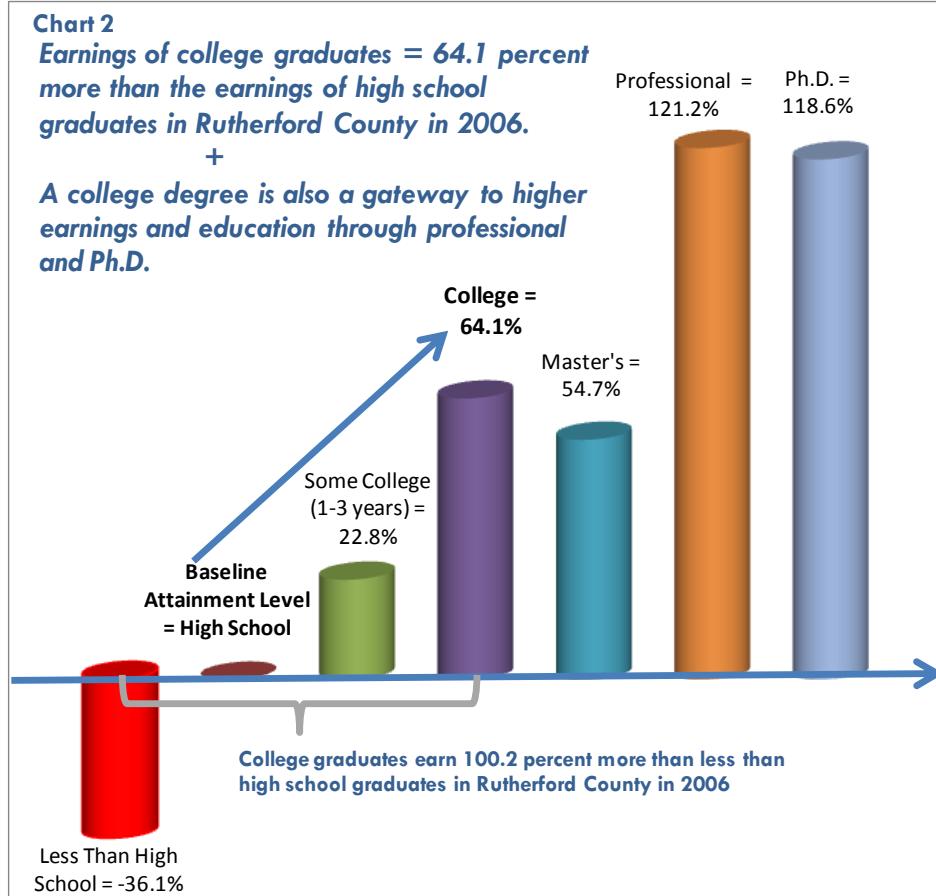
MTSU and Higher Education in Tennessee

- MTSU's growth of 22 percent between 2000 and 2007 is substantially larger than the growth of total four-year public higher education enrollment (13.3 percent) in Tennessee.
- One in every five students attending four-year public universities in Tennessee enrolled at MTSU in 2007.
- Similarly, one in every three students in the TBR System enrolled at MTSU.

II. MTSU-Local Communities: Broader Socioeconomic Contributions

Return to Higher Education

- Each additional year of schooling in Rutherford County accounts for nearly a 30 percent increase in wage and salary income.
- College education means 64 percent more earnings than high school education.
- College graduates make twice the income of those with less than a high school education.



Human Capital Formation

- One in every two MTSU alumni chooses the Nashville MSA as his/her home.
- Currently two in every five college-educated people in Rutherford County are MTSU graduates.

- One in every seven college-educated people in the Nashville MSA is an MTSU graduate.
- MTSU graduates accounted for 31 percent of the annual increase in college-educated people in Rutherford County and 13 percent in the Nashville MSA between 2006 and 2007.

Table 4: MTSU attracts and retains talent in the local community

Educational Attainment (population ages 25 and over)				
	Rutherford County		Nashville MSA	
	2000	2007	2000	2007
Total Population Ages 25 and Over	109,913	149,555	800,302	1,005,417
Bachelor's and Above Degree				
Number	25,170	37,538	215,281	287,549
Percent	22.9	25.1	26.9	28.6
Human Capital Stock				
MTSU Alumni (as of 2007)				
Number	15,503		40,692	
Percent of Total Alumni	18.9%		49.6%	
Percent of Alumni Residing in Tennessee		25.0%		65.5%
Percent of Population with BA/BS and Above Degree		41.3%		14.2%
MTSU has a total of 81,962 alumni across the world, of whom 63,220 live and work in Tennessee across 95 counties.				
Human Capital Flow				
Annual Increase in BA and Above Educational Attainment (2006-2007)	Rutherford County	Nashville MSA		
Increase in the Number of Population with BA/BS and Above	2,443	16,625		
MTSU Graduates Staying in the Region	768	2,103		
Percent of Increase due to MTSU Graduates	31.4%	12.6%		
A total of 4,271 degrees conferred in Academic Year 2006-07				
Sources: American Community Survey (ACS) (2000-2007), MTSU Alumni Office, MTSU Office of Institutional Research, and BERC estimates.				

Entrepreneurship

- College exposure increases the likelihood of entrepreneurial activity.
- More than 63 percent of self-employed people in Rutherford County have had some exposure to college.

Table 8: College exposure makes a difference

Educational Attainment by Self-Employed Labor Force in Rutherford County (Ages 25-64)			
Educational Attainment	Number of Self-Employed	Share in Total Self-Employed (%)	Average Personal Income
Less than high school	931	8.90%	\$11,472
High school	2,682	25.64%	\$61,523
Some college*	3,814	36.46%	\$76,913
College	2,491	23.81%	\$94,168
Master's	361	3.45%	\$66,900
Professional	181	1.73%	\$284,890
Total	10,460	100.00%	

Source: 5% PUMS data American Community Survey 2007 and BERC estimates

*This category includes all individuals with one to three years of college exposure but no college degree.

- College-educated entrepreneurs earn significantly more than less than college educated entrepreneurs.

III. Economic Impact of MTSU-Related Activities

On Nashville MSA

- MTSU students' expenditures account for nearly 50 percent of MTSU's economic impact.
- MTSU's affordability and the diversity of its academic programs allow many students to enjoy access to higher education in the Nashville MSA.
- MTSU-related activities in the Nashville MSA account for
 - \$896.13 million in business revenue,
 - 10,215 jobs (13,192 jobs including student workers and graduate students),
 - \$567.77 million in gross regional product,
 - \$387 million in personal income, and
 - \$61.11 million in local and state taxes.

On Rutherford County

- MTSU-related activities in Rutherford County account for
 - \$395.85 million in business revenue,
 - 5,516 jobs,
 - \$226.05 million in gross regional product,
 - \$154.75 million in personal income, and
 - \$28.57 million in local and state taxes.

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Economic Contributions of MTSU to the Local Community: An Update

I. Introduction

Imagine an institution that provides stable, high-paying employment opportunities to many individuals; that attracts, trains, and retains talent in the community; that attracts and retains a significant number of young people; that instills entrepreneurial skills in those individuals; that trains people for higher potential earnings; that is the source of education, knowledge creation, and dissemination; that closely cooperates with local businesses in helping them increase their productivity and efficiency; that improves regional quality of life dramatically, that is instrumental in attracting and retaining businesses; that helps improve cultural diversity; that is a primary export industry; and that is a primary venue for business, cultural, and athletic events. These are just some of the roles of a higher education institution in the 21st century.

Embedded in the socioeconomic fabric of their communities, universities are increasingly expanding beyond their traditional roles of education, knowledge creation, and dissemination. From a theoretical perspective, these ever-expanding roles have been directly or indirectly scrutinized across social science disciplines in such areas as macroeconomic growth theory (human capital and technological change), labor economics (return to education), and political science (social capital and civic participation).¹ Especially Richard Florida's "three Ts" (talent, technology, and tolerance) argument regarding the sources of growth in urban regions aptly summarizes the extent of the role universities play in their communities.² In addition, a growing body of university-specific empirical studies about their impact on communities further highlights and unravels the degree to which universities contribute to regional economic prosperity.

Commissioned by the Office of the President, this study first updates the previous economic impact study of MTSU (2004) and then presents a broader perspective of MTSU's role in both the Rutherford County and Nashville MSA economies. The rationale for this study and its approach is twofold:

¹ For a review of literature regarding the contributions of universities to their communities, see F. Carstensen, Stan McMillen, and M. Arik (2001), *Economic Impact of the Operations of the University of Connecticut*. Connecticut Center for Economic Analysis; M. Arik and C. Nsiah (2004), *Economic Impact of Middle Tennessee State University*, Business and Economic Research Center; and M. Arik and D. Penn (2007), *Role of Higher Education Institutions in Middle Tennessee: An In-Depth Analysis*, Business and Economic Research Center.

² R. Florida. (2004). *Cities and the Creative Class*. Routledge: New York.

- Since the last MTSU economic impact study, significant shifts have occurred in the major MTSU-related indicators. For example, MTSU enrollment increased nearly seven percent between 2003 and 2007, and a significant number of new student housing units were constructed between 2002 and 2007, which may have an effect on students' spending patterns. In addition, both university employment and operating expenditures have increased over the years as a response to the increase in enrollment.
- Many of the aforementioned roles of universities have often gone unnoticed or been taken for granted. University-specific empirical studies traditionally dwell primarily on the measurable direct and indirect impact of spending for activities roughly associated with university operations. This study aims at painting a different picture of MTSU with its updated economic impact statement and inclusion of broader socioeconomic contributions.

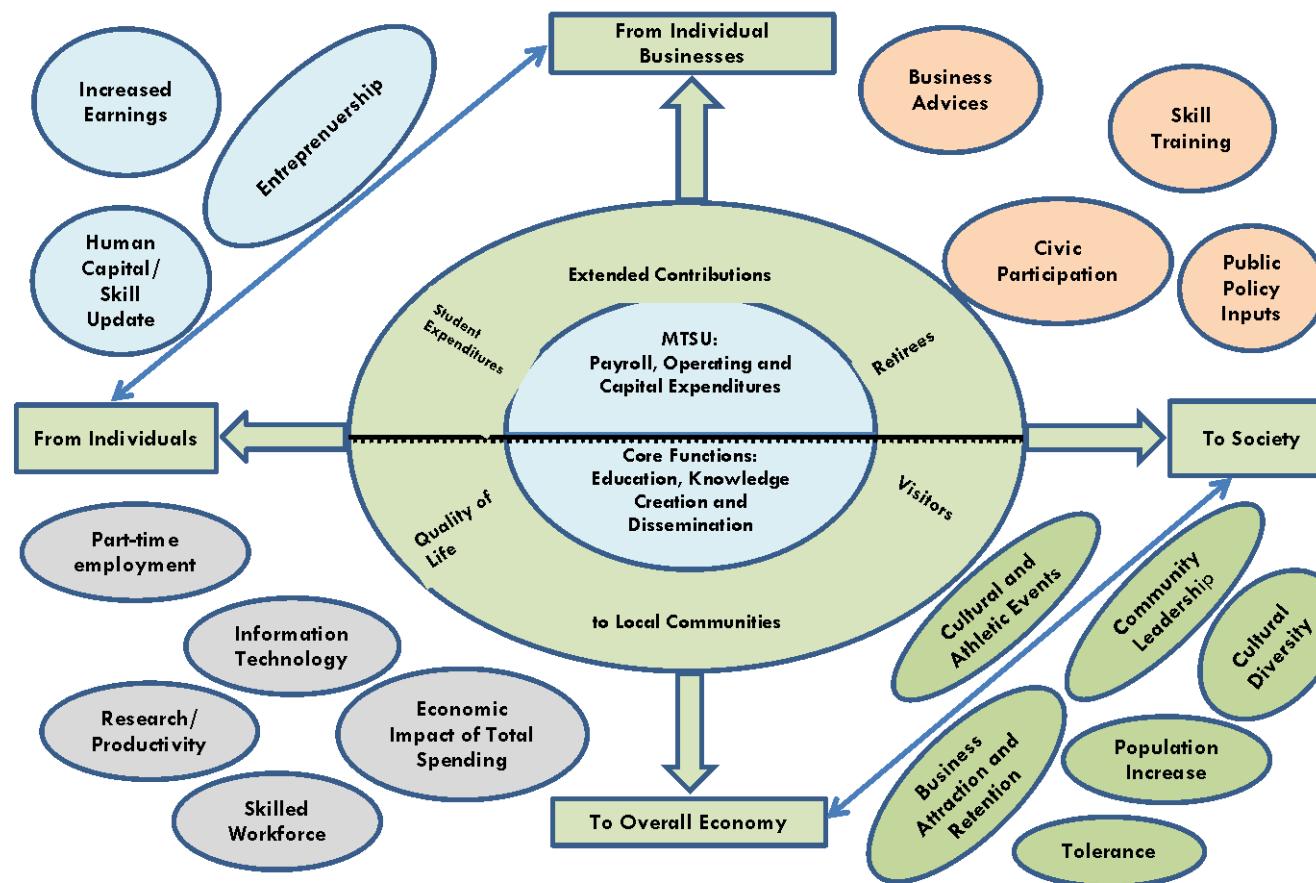
The rest of the study is organized as follows. The second section provides a conceptual framework for understanding the role of MTSU in the local community. The third section briefly deals with MTSU's place in the region's socioeconomic development and in Tennessee higher education. The fourth section summarizes methodologies and study assumptions. The fifth provides an inquiry into the broader socioeconomic contributions of MTSU to the Rutherford County and Nashville MSA economies. The sixth section details the estimates of MTSU's economic impact. The seventh section concludes the study.

II. Understanding the Role of MTSU in the Local Community

Understanding the roles of universities in their communities is the first necessary step in properly evaluating their contributions. This section provides a summary framework as a guide for the study. A literature review regarding university-community interaction was provided elsewhere for interested readers and is not repeated here.³ Chart 1 describes MTSU's contributions to the local community along two dimensions:

- From individual to society, and
- From individual business to overall economy.

³ See Arik and Penn (2007).

Chart 1: Understanding MTSU's Contributions to the Local Community: A Conceptual Framework

From individuals to society and from individual businesses to overall economy: this chart summarizes the extend of MTSU's contributions to the local community. The chart also highlights the nature of contributions along the "individual - society" and "individual businesses - overall economy" dimensions.

Individual to Society. This dimension includes but is not limited to the income effect of an additional year of schooling in general and a higher education degree in particular, human capital formation and the supply of skilled workforce, cultural and athletic events, community leadership, and amenities and other positive externalities.

Individual Business to Overall Economy. Similarly, this dimension includes but is not limited to acting as a source of employees for local businesses; attracting, training, and retaining future entrepreneurs; and providing extensive support to local businesses ranging from business advice to technology support.

These two dimensions do not operate independently but interact in everyday life, and MTSU-associated activities significantly affect the nature of the outcome. This effect is somewhat more visible in small geographic areas such as Rutherford County than in larger areas such as the Nashville MSA, where other similar players enter the arena.

III. Region, Higher Education, and MTSU: Recent Trends

Before further analysis of MTSU's contributions, let's briefly look at the socioeconomic trends in the host communities as well as MTSU's place in Tennessee higher education. Primarily Rutherford County and the Nashville MSA, which includes Rutherford County, will be highlighted as host communities in this section and throughout the study.

Regional Socioeconomic Dynamics and MTSU. Between 2000 and 2007, Rutherford County experienced a significantly higher growth rate than the Nashville MSA in terms of population, labor force, and employment. For example, population in Rutherford County increased nearly 32 percent as opposed to about 16 percent in the Nashville MSA. Similar dynamics were also at work in terms of labor force and employment: labor force grew 24 percent in Rutherford County versus 10 percent in the Nashville MSA and employment grew 23 percent in the former versus nine percent in the latter. The unemployment rate showed a slight uptick in both regions in the same period (Table 1).

MTSU continues to be the major employer in the City of Murfreesboro (second largest), Rutherford County (third largest), and the Nashville MSA (21st largest). While MTSU itself employs more than 2,000 people, its student population is a major boon to local businesses: an estimated 20,000 students work for local businesses, nearly 95 percent of which are in Rutherford County.

Table 1: Socioeconomic Dynamics and MTSU (2000-2007)

Population and Employment Dynamics	Rutherford County		Nashville MSA				
	2000	2007	2000	2007			
Population							
Number	183,570	241,462	1,317,592	1,521,437			
Change from 2000 (%)		31.54%		15.47%			
Labor Force							
Number	103,339	128,210	717,210	789,989			
Change from 2000 (%)		24.07%		10.15%			
Employment							
Number	100,114	123,433	694,222	758,956			
Change from 2000 (%)		23.29%		9.32%			
Unemployment Rate							
Rate (%)	3.10%	3.70%	3.20%	3.90%			
Change in Rate from 2000 (percentage point)		0.60%		0.70%			
MTSU as One of the Largest Employers							
Murfreesboro City	2nd	After Rutherford County Government					
Rutherford County	3rd	After Nissan North America and Rutherford County Government					
Nashville MSA	21st						
Local Businesses							
About 20,000 students work either part-time or full-time for local businesses, including MTSU.							
Nearly 95 percent of these students work for local businesses in the Nashville MSA area while studying at MTSU.							
Sources: Census Bureau, BLS, BEA, American Community Survey (2007), websites of the Rutherford County and Nashville MSA Area Chambers of Commerce, and BERC estimates							

MTSU and Higher Education in Tennessee. While the host communities grew significantly, so did MTSU. As Table 2 shows, MTSU's enrollment increased nearly 22 percent to 23,246 between 2000 and 2007. This growth partially explains the growth differential between Rutherford County and the Nashville MSA between 2000 and 2007.

Higher education enrollment growth in Tennessee by system for the same period is nowhere close to MTSU's enrollment growth. For example, total enrollment in Tennessee four-year public institutions increased about 13 percent, total Tennessee Board of Regents (TBR) system enrollment grew about 15 percent, and University of Tennessee system enrollment grew about 11 percent between 2000 and 2007.

Table 2: Role of MTSU in Higher Education in Tennessee

MTSU Enrollment (Fall Term)	2000	2007
Number	19,121	23,246
Change from 2000 (%)		21.6%
Tennessee Public Institutions (4-Year)		
Total Enrollment		
Number	116,500	131,979
Change from 2000 (%)		13.3%
TBR System Enrollment		
Number	74,340	85,210
Change from 2000 (%)		14.6%
UT System Enrollment		
Number	42,160	46,769
Change from 2000 (%)		10.9%
Share of MTSU in Total Enrollment	16.4%	17.6%
Share of MTSU in TBR System Enrollment	25.7%	27.3%

Sources: IPEDS, THEC and BERC estimates

As a result of a significant increase in its enrollment, MTSU's share in total enrollment in Tennessee increased 1.2 percentage points and in the TBR System increased 1.6 percentage points. In 2007, nearly one in every five students attending a four-year public university in Tennessee and nearly one in every three students attending a four-year university in the TBR System enrolled at MTSU. These figures alone illustrate the considerable presence of MTSU in both the local community and the state's higher education system.

IV. Methodology and Assumptions

Return to education. This study uses a variety of tools to address MTSU's role in Rutherford County and the Nashville MSA. For returns on an additional year of schooling in general and college education in particular, BERC employs standard Mincerian population-weighted least square regression analysis. The underlying data for this part of analysis is from American Community Survey (2007) 5 percent PUMS data for Rutherford County. The basic equation is in the following form:

$$(1) \ln Y = \alpha + \beta_1 S + \beta_2 EX + \beta_3 EX^2 + \beta_4 WH + \varepsilon,$$

where $\ln(Y)$ = natural log of salary and wage income for population between ages 25 and 64; S = year of schooling; EX = experience (age – years of schooling); EX^2 = experience squared; and WH = number of hours worked per week.

Controlled by experience, experience squared, and number of hours worked per week, this equation allows us to estimate the effect of an additional year of schooling (S) on wages and salaries.

To estimate the income effect of college education, we defined six dummy variables for each of the following educational attainment levels: less than high school, some college (1-3 years), college, master's, professional, and Ph.D. (High school degree is excluded from analysis and used as a baseline to interpret the findings.) These dummy variables are then included in the standard equation (1).

MTSU/Business Community Relations. BERC prepared an extensive survey aimed at measuring MTSU-business relationships in Rutherford County, the Nashville MSA, and middle Tennessee. BERC sent surveys to 60 administrative and academic units/centers across campus with a 47-percent response rate (28). Information provided in this study is based on the responses of 28 administrative and academic units/centers.

Economic Impact. Short-term economic impact estimates of MTSU are obtained using industry-standard IMPLANpro software (www.implan.com). Detailed information regarding IMPLAN and the modeling approach is treated elsewhere (Arik and Penn, 2007). Box 1 presents some general assumptions guiding the economic impact component of the study. More detailed assumptions regarding each type of economic activity will be treated in the appropriate subsection.

Data. Data for MTSU activities is from various administrative departments, IPEDS, and university audit documents. For regional-level data, BERC consulted the Census Bureau (www.census.gov), American Community Survey (2007) (www.census.gov), Bureau of Labor Statistics (www.bls.gov), and Bureau of Economic Analysis (www.bea.gov).

Box 1: Study Assumptions for Economic Impact Analysis

To estimate MTSU's economic impact on the local economy, BERC used the following major assumptions:

(1) Study region: The study region is defined as the Nashville MSA, comprising 13 middle Tennessee counties. BERC also provides a summary of economic impact estimates for Rutherford County.

(2) Counterfactual approach: This study counterfactually removes MTSU and its associated activities to determine the level of short-term contraction in the local economy.

(3) Short-term economic impact: The study results regarding the economic impact should be construed as short-term economic impact.

(4) Physical buildings: Although it is counterfactual, this study assumes that physical buildings remain intact.

(5) Local versus out-of-region: However imprecise, BERC uses a variety of sources to estimate out-of-state leakages of the spending associated with MTSU's operations and capital expenditures.

(6) Residency adjustment: Although BERC's calculation of employment impact is based on "place of work," in calculating the impact of employee spending, BERC makes a necessary residency adjustment that takes into account the employee spending occurring only in the study region.

(7) Student expenditures: This study treats all MTSU students as new to the region. BERC assumes that in the absence of MTSU, students from the study region would have moved out of the study region to get their degree. Expenditures of these students are "recaptured" due to the presence of MTSU. Further assumptions regarding this aspect of the study are provided in the economic impact section.

(8) Student expenditure estimates: BERC used a variety of sources to get as accurate a picture of student expenditures as possible. American Community Survey (ACS) (2007) 5 percent PUMS data is used to estimate how many college students are residing in Rutherford County and how much they are earning from part-time work. These estimates along with data from MTSU's Office of Financial Aid, a 2006 BERC survey of higher education institutions in middle Tennessee, and IPEDS data helped BERC establish a minimum level of spending in the study region.

(9) Visitor expenditure: An accurate estimate of the number of visitors and their spending constitutes one of this study's big challenges. BERC surveyed MTSU departments and centers to estimate the number of visitors on campus for the purpose of participating in academic, business, and cultural events/activities. For major sport events, BERC used previous studies, number of home games, and other published data through event websites to arrive at a minimum number of visitors.

V. MTSU and the Local Community: Broader Socioeconomic Contributions

In this section, we look briefly at several contributions of MTSU to individuals, businesses, society, and the overall economy. Extensive literature deals with universities' positive contributions in each of these areas. Some are direct contributions stemming from the core functions of universities. However, many contributions ranging from low crime rates to numerous health benefits are indirect, or *positive externalities* that a community receives from the existence of universities and a college-educated workforce.

V.1. From Individual to Society

V.1.a. Returns on Higher Education

Using the Mincer wage equation, BERC estimated return per an additional year of schooling in Rutherford County. As presented in Table 3 (model 1), **each additional year of schooling in Rutherford County accounts for a nearly 30 percent increase in wage and salary income.**

Table 3: Weighted Least Square Regression Analysis: Mincerean Earning Equation

Model 1: Income effect of additional year of schooling

Model 2: Marginal contribution of educational attainment levels compared to high school degree***

Universe: Ages 25-64

Geography: Rutherford County

Weight: Population

Dependent variable: natural log of wages and salaries (ln(wages))

Independent Variables	Model 1			Model 2		
	Coefficient*	Std. Error	t-stat	Coefficient**	Std. Error	t-stat
Constant	6.54	0.021	308.18	7.94	0.037	212.08
Schooling	0.29	0.001	110.69	-0.01	0.003	-3.81
Experience	0.62	0.001	44.87	0.05	0.001	45.99
Experience (square)	-0.41	0.000	-30.22	0.00	0.000	-30.87
Number of work hours per week	0.43	0.000	163.56	0.03	0.000	161.59
Less than high school (dummy=1)				-0.36	0.011	-31.44
Some College (dummy=1)				0.23	0.008	28.08
College (dummy=1)				0.64	0.013	49.75
Master's (dummy=1)				0.55	0.020	27.15
Professional (dummy=1)				1.21	0.043	28.41
Ph.D. (dummy=1)				1.19	0.032	37.62
Adj. R ²	0.32			0.34		
N	102,220			102,220		

*Standardized coefficients

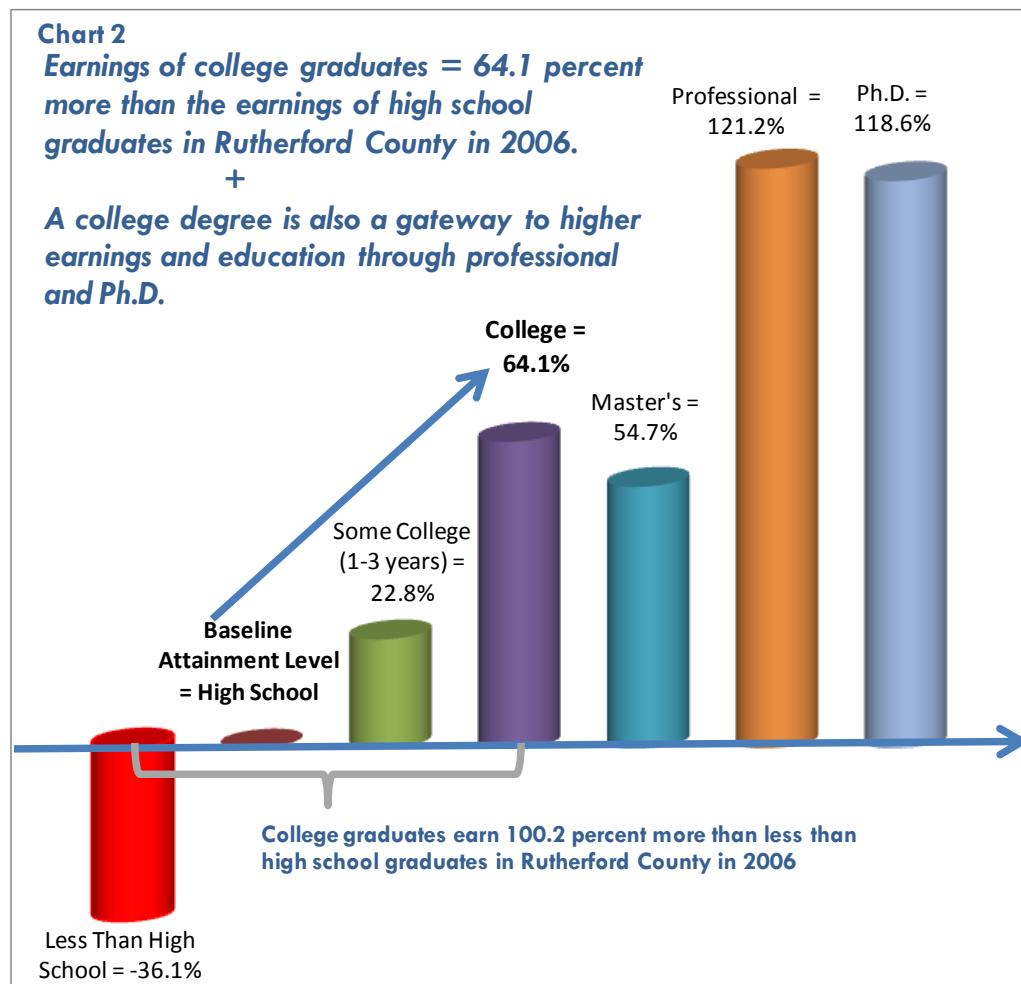
**Unstandardized coefficients due to the use of dummy variable

***"High School Attainment" is left out of Model 2 and used as a reference educational attainment level

Sources: American Community Survey (ACS) (2007)-5% PUMS data and BERC estimates

As the host county for MTSU, Rutherford County is the beneficiary of a steady supply of highly educated workers with significantly high earning potential.

Although this general contribution of an additional year of schooling to earned income shows the importance of a college education, BERC further looked at the marginal contribution of each educational attainment level to earned income in Rutherford County. As presented in Table 3 (model 2) and Chart 2, **college education means 64 percent more earnings than high school education**. This earning potential dramatically increases to more than 121 percent with a professional degree and 119 percent with a Ph.D. Furthermore, college graduates earn twice as much as those with less than a high school education in Rutherford County. This clearly suggests the presence of MTSU is a boon to the local community.



V.I.b. Human Capital Formation: Skilled Workforce

Perhaps the most important contribution of MTSU to the local community is its role in human capital formation. While closely related to the discussion regarding returns per year of education human capital formation goes far beyond earnings. Having a skilled workforce creates significant positive externalities throughout the community: the benefits to society of having an educated workforce far exceed the benefits of education to the individual. The often-cited example is that a beekeeper collects honey from hives but bees also help surrounding farmers by pollinating their fields.

Table 4 below highlights MTSU's contributions to human capital formation in Rutherford County and the Nashville MSA. The more than 15,000 MTSU graduates living in Rutherford County represent 19 percent of total MTSU alumni and 25 percent of MTSU alumni living in Tennessee. One in every five MTSU alumni lives in Rutherford County, and nearly one in every two lives in the Nashville MSA.

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	Educational Attainment (population ages 25 and over)			
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Human Capital Flow	Rutherford County		Nashville MSA	
	Annual Increase in BA and Above Educational Attainment (2006-2007)			
	Increase in the Number of Population with BA/BS and Above	2,443	16,625	
	MTSU Graduates Staying in the Region	768	2,103	
Percent of Increase due to MTSU Graduates	31.4%	12.6%		

A total of 4,271 degrees conferred in Academic Year 2006-07

Sources: American Community Survey (ACS) (2000-2007), MTSU Alumni Office, MTSU Office of Institutional Research, and BERC estimates.

When we compare the number of MTSU alumni with the number of people over 25 with a college education in Rutherford County, MTSU's influence is apparent: more than 40 percent of those with a bachelor's degree or above are MTSU alumni. In other words, two in every five college-educated people in Rutherford County are MTSU graduates. In the greater Nashville MSA area, 14 percent of college-educated people are MTSU graduates.

Analyzing human capital flow shows a similar MTSU effect on both Rutherford County and the Nashville MSA. Between 2006 and 2007, the number of people with college and above education increased to 2,443 in Rutherford County and 16,625 in the Nashville MSA. MTSU's contribution to this growth was estimated at more than 31 percent in Rutherford County and 13 percent in the Nashville MSA. Both human capital stock and flow indicators suggest MTSU is critically important in the economic prosperity of Rutherford County and the Nashville MSA.

V.1.c. Cultural and Athletic Events

MTSU is a hub of a diverse array of cultural and athletic events in middle Tennessee. By promoting events at the Tennessee Livestock Center, Miller Coliseum, and School of Music as well as numerous student cultural activities, MTSU plays an important role in cultivating **tolerance** through cultural diversity. For example, the School of Music presents more than 200 concerts and events each year, at which the estimated number of attendees is over 15,000. These cultural events play an important role in attracting to the region and retaining new businesses and talent.

As shown in Table 5, even conservative estimates of MTSU visitors by event type demonstrate the extent of MTSU's cultural contributions to the local community. Having visitors in the region also creates jobs and income through their spending in the region (section VI).

Table 5: MTSU Visitors by Event Type

	Daytrippers	Hotel Nights	Total Visitor Day
Families of New Students	3,023	3,802	6,825
Customs	4,103	1,807	5,910
Sports Camps	360	0	360
TSSA Basketball	25,000	56,301	81,301
Other Sports Events (Recreation)	16,000	0	16,000
Home Games (Athletic)	10,285	11,518	21,803
Spring Fling	4,875	1,596	6,471
Tennessee Livestock/Miller	30,000	58,000	88,000
Other Cultural Events	37,300	325	37,625
Other Business Events	31,305	9,129	40,434
Conferences	34,025	7,114	41,139
Departmental Guest Visitors	7,677	2,768	10,445
Total	203,953	152,360	356,313

Sources: BERC survey of MTSU departments and centers, websites of MTSU departments, and BERC estimates

V.1.d. Community Leadership

MTSU faculty and staff have been engaged in community affairs through public policy input, business advice, volunteering, and charitable contributions. Table 6 provides a partial summary of the extent of such involvement. In addition to the information in the table, many departments and centers have been engaged in K-12 training programs. For example, MTSU's Middle East Center sponsors workshops for middle and high school teachers annually. The Business and Economic Research Center monitors, analyzes, and disseminates information about local socioeconomic activities.

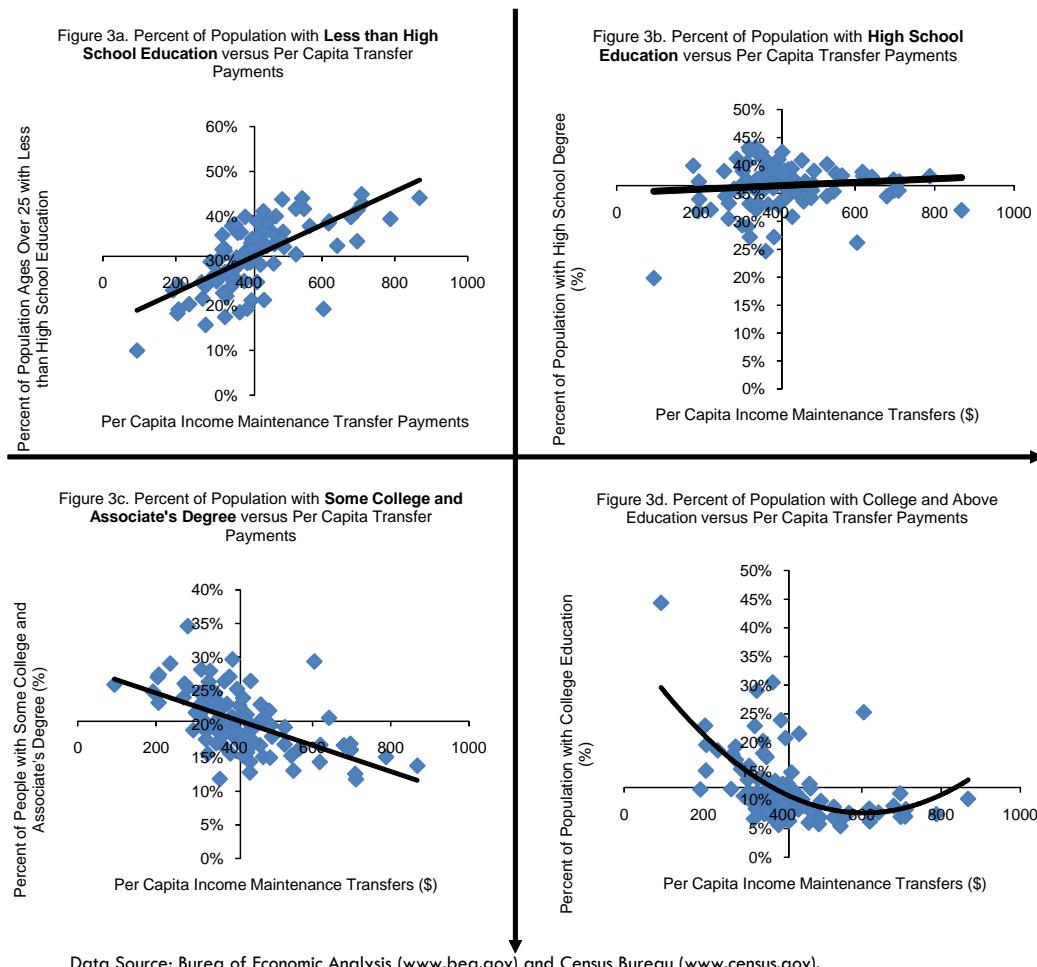
	Number/ Amount (\$)	Numbers of Departments
Table 6: Community Involvement/Leadership		
Public Policy Input		
Number of staff members advising businesses and policymakers	6	4
Average hours involved	900 Hours	4
Monetary value	\$64,000	2
Publications		
Number of articles published in a year	72	9
Charitable Contributions		
Volunteering (time)	771 Hours	4
Monetary (\$)	\$27,900	3
BERC Survey of MTSU Academic Departments and Centers, 2007		
Administrative and Academic Departments and Centers Contacted: 60		
Number of Responses: 28		
Response Rate: 47%		

V.1.e. Amenities and Other Positive Externalities

Amenities are critically important for a community to attract and retain businesses. The presence of MTSU and its associated activities contribute greatly to the quality of life in the local community. Also significant are MTSU's state-of-the-art campus recreation services and public-access library. MTSU's amenities attract and retain not only businesses but also retirees: many faculty and staff choose Rutherford County and the Nashville MSA as their post-retirement home. Currently, 578 MTSU retirees live in Rutherford County (649 in the Nashville MSA).

In addition to such amenities, the literature on the impact of higher education suggests significant positive externalities attributable to a university's presence in a community, ranging from a low unemployment rate to a low crime rate. To give an example, Chart 3 presents the relationship between per capita welfare payments and percent of population with varying levels of education: less than high school (3a), high school (3b), some college and associate degree (3c), and college and above (3d). It is clear that as the percent of the population with college and above educational attainment increases in a community, the amount of per capita welfare payments declines considerably.

Chart 3. Per Capita Income Maintenance Transfer Payments versus Educational Attainment



Data Source: Bureau of Economic Analysis (www.bea.gov) and Census Bureau (www.census.gov).

V.2. From Individual Businesses to the Overall Economy

On the business front, MTSU's effect is even more visible. First, MTSU acts like an export industry, bringing more than 23,000 people and their spending to the region as well as a significant amount of federal and state funding through student financial aid and grants.

The second important contribution critical for local businesses is that MTSU students represent a large pool of part-time labor as well as customers for local businesses. Nearly 20,000 students currently work part-time for local businesses in the Nashville MSA.

MTSU's third contribution to the local economy is that it helps create the next generation of entrepreneurs. Exposing students to a college environment, whether they graduate or not, makes a big difference in terms of developing entrepreneurial skills.

Furthermore, various classes and centers at MTSU help students learn how to start their own business.

Last but not least, various MTSU centers are fully engaged in activities involving businesses across industries. This close cooperation with industries is likely to continue and generate new dynamism in the local economy.

V.2.a. MTSU as a Source of Employees for Local Businesses

In 2007, total enrollment was 23,246 full- and part-time students. In addition, a sizable number of working professionals enrolled in professional development courses through the School of Continuing Education. Many MTSU students work for local businesses. According to BERC estimates, in Rutherford County alone, more than 20,000 college students work for local businesses. As reflected in Table 7, over 80 percent of these working college enrollees work more than 20 hours per week. MTSU students are indeed an important source of labor for local businesses.

**Table 7: College and Above Enrollment by Number of Hours Worked per Week and Average Wage:
Rutherford County (2006)**

College Enrollment	Total Working Students	Less than 20 Hours per Week	More than 20 Hours per Week	Average Wage	Upper Bound	Lower Bound
College Undergraduate	16,952	3,895	13,057	\$9,073	\$10,284	\$7,862
Graduate or Professional School	2,652	0	2,652	\$35,099	\$46,233	\$23,963

Sources: American Community Survey (ACS) (2007) and BERC estimates

V.2.b. Entrepreneurship

MTSU is a major source of the next generation of entrepreneurs. The Tennessee Small Business Development Center and an increasing number of professional development courses at MTSU help a significant number of students and working professionals start their own businesses. Further, college exposure increases the chances that individuals will start a business in the community. Table 8 below presents the number of small businesses by educational attainment and average personal income. As this table indicates, college exposure makes a big difference: more than 63 percent of self-employed people in Rutherford County have some college exposure. Those who are self-employed who have a college education also earn substantially more than those who do not.

Table 8: College exposure makes a difference

Educational Attainment by Self-Employed Labor Force in Rutherford County (Ages 25-64)

Educational Attainment	Number of Self-Employed	Share in Total Self-Employed (%)	Average Personal Income
Less than high school	931	8.90%	\$11,472
High school	2,682	25.64%	\$61,523
Some college*	3,814	36.46%	\$76,913
College	2,491	23.81%	\$94,168
Master's	361	3.45%	\$66,900
Professional	181	1.73%	\$284,890
Total	10,460	100.00%	

Source: 5% PUMS data American Community Survey 2007 and BERC estimates

*This category includes all individuals with one to three years of college exposure but no college degree.

V.2.c. Cooperation with Local Businesses

This section is based entirely on responses from academic departments/centers regarding their involvement in the local community. BERC asked academic departments/centers how they perceive their contributions to and interactions with local businesses. Although the response rate to this part of the survey was low, it is still worthwhile to highlight the endeavors of certain departments/centers to help the business community.

Contribution to economic development. The BERC survey highlighted 11 areas key to regional economic development (see Table 9) and asked departments/centers to indicate the areas of their greatest contribution to local businesses. According to BERC survey results, several academic departments/centers help the local economy by

- (1) providing support for community development,
- (2) developing local partnerships,
- (3) collaborating on research with industry, and
- (4) meeting skill needs in the local economy.

A few academic departments/centers indicated that they

- (1) support small and mid-sized enterprises,
- (2) attract investment into the region,
- (3) attract nonlocal students to the region, and
- (4) provide management development support.

Academic departments/centers who responded to this survey include:

- Tennessee Small Business Development Center,
- Center for Health and Human Services,
- Department of Criminal Justice Administration,
- Engineering Technology and Industrial Studies,
- Russell Chair of Manufacturing,
- School of Music,
- Department of Art,
- Continuing Education, and
- Middle East Center.

Of the major areas important for regional economic development, technology transfer, spin-off activities, and strategic analysis of the regional economy play a prominent role. The BERC survey received one response in each of these three areas. Major contributors in these areas are

- Department of Criminal Justice Administration,
- Department of Math,
- Engineering Technology and Industrial Studies,
- Russell Chair of Manufacturing, and
- Business and Economic Research Center.

Table 9: In what areas does your department/center make the greatest contribution to economic development?

(Please mark all that apply)	County	Rest of Nashville MSA	Rest of Middle Tennessee
Support for community development	8	6	8
Developing local partnerships	8	8	10
Meeting skill needs	6	6	8
Research collaboration with industry	4	4	5
Supporting small and medium size enterprises	3	3	4
Attracting inward investment to region	2	2	2
Attracting non-local students to the region	2	1	2
Management development	2	2	2
Technology transfer	1	1	2
Spin-off activity	1	1	1
Strategic analysis of regional economy	1	1	1

BERC Survey of MTSU Academic Departments and Centers, 2007

Administrative and Academic Departments and Centers Contacted: 60

Number of Responses: 28

Response Rate: 47%

Close business interactions.
 As Table 10 reveals, MTSU academic departments and centers work closely with businesses in the following sectors: government and related enterprises; health care and social services; not-for-profit organizations; arts, entertainment, and recreation; electrical equipment and appliances; and transportation equipment. Moreover, even though few departments responded, MTSU academic departments and centers interact with businesses across a broad spectrum of industries ranging from computer and electronic products, chemicals, machinery, and plastics and rubber products to sectors such as

finance and real estate and repair, maintenance, and personal services. These responses indicate that MTSU is fully engaged in the local economy helping businesses and the community prosper.

Why do these academic departments/centers interact with local businesses? MTSU units who responded overwhelmingly indicated their expertise in the sectors in which the businesses are involved. “Responding to demands from business” ranks second among reasons for MTSU units’ involvement in local sectors, showing that local businesses consider MTSU an important support institution for their growth in the local economy. Institutional specialization ranks third. Finally, two MTSU units indicated they are guided by regional and national economic trends in the sectors.

Table 10: Does your department/center work closely with particular businesses in the following sectors?

(Please mark all that apply)	County	Nashville MSA	Rest of Middle Tennessee
Manufacturing			
Computer and Electronic Products	1	1	1
Electrical Equipment and Appliances	3	2	1
Transportation Equipment	3	1	2
Chemicals	1	1	2
Plastics and Rubber Products	1	1	1
Machinery	1	1	2
Finance and Real Estate	1	1	1
Health Care and Social Assistance	4	6	4
Arts, Entertainment, and Recreation	3	5	4
Accommodation and Food Services	2	1	2
Repair, Maintenance and Personal Services	1	1	1
Not-for-profit Organizations	3	6	6
Government and Related Enterprises	5	7	6
Other (Please Specify) _____	1	3	3

If you specified any sectors above, what are the reasons for your department/center's involvement in those sectors?

- | | |
|--|---|
| 1. Our institution is specialized in those areas | 5 |
| 2. Our institution responds to demands from businesses in those areas | 8 |
| 3. Our institution has expertise in those areas | 9 |
| 4. No other institution in the region is addressing the needs of businesses in those sectors | |
| 5. Our institution is guided by regional and national trends in those sectors | 2 |

BERC Survey of MTSU Academic Departments and Centers, 2007

Administrative and Academic Departments and Centers Contacted: 60

Number of Responses: 28

Response Rate: 47%

Specific relations with local businesses. Given the scope of involvement in local businesses, BERC asked MTSU academic departments /centers about their specific dealings with those businesses. (Table 11 highlights the results.)

In FY 2006-07, responding MTSU units signed 10 contracts with seven local businesses worth \$200,000 involving 15 students. One unit provided testing and measurement services involving two businesses, and one unit provided business consulting services involving 477 businesses worth \$100,000.

It is important to emphasize that numbers in Table 11 reflect the extent of business dealings of only those MTSU academic departments/centers who responded to our survey.

Furthermore, these numbers do not represent federal and out-of-state grants and contracts.

Table 11: Departmental Interaction with Business Community

How many teaching and research related contracts were signed with businesses in the past fiscal year in middle Tennessee?	
Fiscal Year: FY 2006-2007	
1. Number of Contracts	10
2. Value of Contracts	\$200,000
3. Number of Students Involved	15
4. Number of Businesses Involved	7
Does your department/center provide analysis, measurement and testing services for businesses?	
1. Yes	1
2. No	10
<i>If yes, what is the amount of income and number of businesses involved for the past fiscal year?</i>	
1. Income from Services	0
2. Number of Businesses Involved	2
Does your department/center have a central unit that provides business consulting?	
1. Yes	1
2. No	11
<i>If yes, how many businesses were assisted through your institution's consulting services?</i>	
1. Number of Businesses	477
2. Income Involved (if known)	\$102,059

BERC Survey of MTSU Academic Departments and Centers, 2007
Administrative and Academic Departments and Centers Contacted: 60
Number of Responses: 28
Response Rate: 47%

New business formation, flexible learning, and active engagement in local development efforts. The BERC survey asked several questions regarding business formation and flexible learning. Few MTSU units responded. One unit reported spin-off activity. One unit indicated the presence of spin-off activity by current or former MTSU staff members. Six units indicated their graduates started new businesses in the local economy. Only one unit reported that it provided “entrepreneurship training” and “business advice” for new businesses.

According to the survey, the greatest impact on local businesses takes place through distance-learning professional development courses. According to Table 12, two MTSU units provided distance learning for businesses involving nearly 3,000 individuals and \$605,352 in revenue. These units also provided continuous work-based learning for 25 individuals. One unit provided short courses for businesses involving nearly 2,000

individuals that generated about \$50,000 in revenue. Three units indicated they have “active engagement with local and regional development efforts.”

Table 12: Does your department/center provide any of the following?

	Yes	Number of Individuals	Total Revenue
<i>Distance-learning for businesses</i>	2	2,834	\$605,352
Continuous work-based learning	2	25	
<i>On- or off-campus short courses for businesses</i>	1	1,718	\$46,095

To what extent is your department/center involved in partnership with local and regional economic development agencies?

1. No engagement with local and regional economic development organizations	4
2. Some representation of our institution on local and regional development efforts at senior management level	
3. Active engagement with local and regional development efforts	3

BERC Survey of MTSU Academic Departments and Centers, 2007

Administrative and Academic Departments and Centers Contacted: 60

Number of Responses: 28

Response Rate: 47%

However limited, these results show that MTSU academic departments and centers have been active partners in the local economic development process. Both MTSU and local businesses understand the necessity of close relationships with each other to further regional business interests and economic prosperity. The next section highlights the tangible impact of MTSU-related economic activities on the overall regional economy.

VI. Economic Impact of MTSU on the Local Economy

What is the economic impact of MTSU on the local economy? In this study, we are measuring the short-term impact on the local economy (the Nashville MSA or Rutherford County) if MTSU-related activities ceased to exist. The socioeconomic contributions of MTSU-related activities to the local economy include both economic impact and other contributions highlighted so far in this study.

VI.1. Assumptions

This section provides specific assumptions related to each economic impact category: student income and revenue expenditures, MTSU operating and capital expenditures, MTSU employee payroll spending, MTSU visitors, MTSU retirees, and state appropriations.

Student income and expenditure. Student expenditure in the local economy represents the largest component of MTSU's economic impact. The critical issue here is how much students really spend in the local economy. Although BERC has information about the minimum amount of expected student spending through financial aid offices of area universities, these figures do not reflect the true extent of student spending.

Table 13: Estimating Student Income and Expenditure (Rutherford County)

<i>Income through Work in Rutherford County</i>				
	Number	Average Wage	Upper Bound	Lower Bound
College Undergraduate	16,952	\$9,073	\$10,284	\$7,862
Graduate or Professional School	2,652	\$35,099	\$46,233	\$23,963
Earnings through Work	Average Earnings	Upper Bound	Lower Bound	
College Undergraduate	\$153,805,496	\$174,334,368	\$133,276,624	
Graduate or Professional School	\$93,082,548	\$122,609,916	\$63,549,876	
Subtotal (A)	\$246,888,044	\$296,944,284	\$196,826,500	
Percent of Students Counted	84.27%			
Income Earned Outside the County or Family (B)	\$33,207,180	\$37,639,440	\$28,774,920	
Total Earnings from Work (A+B)	\$280,095,224	\$334,583,724	\$225,601,420	
<i>Income through Loans/ Scholarship</i>				
Grants, Loans, Lottery, External Funds, & Other Scholarships (C)	\$126,824,324	\$126,824,324	\$126,824,324	
Total Student Income (A+B+C)	\$406,919,548	\$461,408,048	\$352,425,744	
Less Tuition and Fees	-\$106,476,620	-\$106,476,620	-\$106,476,620	
Estimating Student Spending in Local Economy	\$300,442,928	\$354,931,428	\$245,949,124	

Sources: American Community Survey (ACS) (2007) 5% PUMS Data and BERC estimates

In this study, BERC used several sources of information in estimating a range of student spending in the local economy. According to our estimates from the American Community Survey public-use micro data, students earn somewhere between \$226 and \$335 million by working for local businesses. These students bring an additional \$126 million from outside the local economy through loans and scholarships (Table 13). According to our estimates, students are responsible for a cash infusion into the local economy of between \$352 and \$461 million, spending \$107 million of that on tuition and fees. On average, students account for nearly \$407 million in direct economic activity in the region. Excluding tuition and fees, their average spending is estimated at around \$300 million. This estimate is conservative given the fact that this study develops no assumption regarding how much additional money families spend on students' college expenses. Based on these estimates, this study utilized an expenditure figure of \$292 million for the Nashville MSA and \$201 million for Rutherford County. The figure for the Nashville MSA falls between lower-bound and average student income estimates.

Substitutability of MTSU in the Nashville MSA in the Short Run. When estimating student expenditures in the study area, a critical concern is what happens to MTSU students if MTSU is removed counterfactually. It is important to look at several issues concurrently concerning MTSU programs, student characteristics, and affordability. As Table 14 shows, among major universities in the study area, MTSU has the highest percentage of students (95 percent) receiving some sort of aid. Combined with its high percentage of nontraditional student enrollment, affordability is an important reason MTSU is the first or only choice for many students. Absent MTSU, many of these students would have either chosen a university outside the region or been unable to go to college: the former represents a total loss for the region, while the latter is the suboptimal choice given the income effect of higher education. Because of the issues covered in Table 13, this study treats all MTSU students net new to the study area. (Out of 23,264 MTSU students, nearly 39 percent are from outside the region and net new to the study area. The remaining 61 percent, who are from the study region, are retained in the region due to MTSU and may be called "recaptured" students.)

Table 14: Criteria to Evaluate Substitutability of MTSU Programs in the Nashville MSA area

	Total Cost Before Aid (2006-07)*	Aid Recipient (%) (2006-07)	Family Income			Total Applications (Fall 2007)	Total Enrollment (Fall 2007)	Programs/Majors			Non-Traditional Students (%) (2006-07)
			Total for College (%)**	Total Applications (Fall 2007)	Awarding at Least One BA/BS Degree (2006-07)			Total BA/BS Degrees (2006-07)			
Vanderbilt University	\$49,834	63	166	12,911	11,847			61	1,468	0	
Belmont University	\$34,472	90	109	2,760	4,742			43	794	12	
Tennessee State University	\$19,286	52	62	4,119	9,065			40	982	27	
Middle Tennessee State University	\$16,448	95	51	14,182	23,246			61	3,635	20	
University of Tennessee-Knoxville	\$17,792	92	56	12,606	29,937			85	3,670	10	
University of Memphis	\$16,662	85	52	6,025	20,379			56	2,442	31	

Sources: National Center for Education Statistics (<http://nces.ed.gov>), National Report Card on Higher Education (<http://measuringup.highereducation.org>), and BERC

*Off-campus for TSU and MTSU and on-campus for Belmont and Vanderbilt

**State averages for tuition and room and board are readjusted to reflect individual school's actual cost. We use state averages for financial aid to calculate net cost (<http://measuringup.highereducation.org>).

MTSU operating and capital expenditures. Although MTSU purchased goods and services from more than 2,000 businesses, not all are located within the study region. Using a variety of sources including the 2007 BERC survey of middle Tennessee universities, MTSU units, and IMPLAN higher education expenditure functions, BERC estimated that 69 percent of MTSU's \$88 million in operating expenditures remain in the Nashville MSA and 35 percent in Rutherford County (Table 15). In terms of MTSU's capital expenditures, out of about \$38 million, 84 percent remain in the Nashville MSA and 68 percent in Rutherford County. A significant percent of capital expenditures (83 percent) represents construction-related spending.

Table 15: MTSU Operating and Capital Expenditure

	Rutherford County: Amount (\$)(%)	Nashville MSA: Amount (\$)(%)
Total Operating Expenditures with Component Unit (FY 2006-07)		
Operating Expenditures with Component Unit	\$87,886,308	\$30,760,207 (35)
Capital Expenditures (FY 2006-07)		
Total Capital Expenditures	\$37,746,117	\$25,652,456
		\$31,582,501

*Based on a survey of higher education expenditures in middle Tennessee (BERC, 2006)

MTSU employee payroll spending. MTSU is a major employer in the study area. Table 16 presents assumptions regarding MTSU employee payroll spending. About 92 percent of MTSU employees live in the Nashville MSA and 35 percent in Rutherford County. Out of MTSU's nearly \$136 million payroll, \$119 million remains in the Nashville MSA, of which \$99 million represents disposable income, and \$51 million in Rutherford County (\$43 million in disposable income).

Table 16: MTSU Employees and Payroll by Place of Residence (FY 2006-2007)

<u>Employees</u>		Number	Full Time Equivalent (FTE)	Number (Percent) Residing in Rutherford County	Number (Percent) Residing in Nashville MSA	Number (Percent) Residing Outside Nashville MSA
Full-Time	2,130	2,130		847 (40%)	1,960 (92%)	170 (8%)
Part-Time	469	156		55 (35%)	143 (92%)	13 (8%)
Student Workers	2,337	Treated in Student Expenditure Section				
Graduate Students	640	Treated in Student Expenditure Section				
Total	5,576	2,286		902 (FTE)	2,103 (FTE)	183 (FTE)
<u>Payroll</u>						
By Income Category	Total Amount	Amount in Rutherford County	Amount in Nashville MSA	Disposable Income (Rutherford)	Disposable Income (Nashville MSA)	
\$25,000-\$35,000	\$6,291,202	\$2,239,570	\$5,729,143	\$1,883,478	\$4,749,460	
\$35,000-\$50,000	\$21,909,589	\$6,840,219	\$21,102,301	\$4,957,624	\$16,638,808	
\$50,000-\$75,000	\$51,666,235	\$20,573,049	\$45,888,358	\$17,778,934	\$38,554,449	
\$75,000 and Over	\$49,923,102	\$21,648,472	\$46,568,485	\$18,524,365	\$38,947,274	
Student Workers	\$2,686,076	Treated in Student Expenditure Section				
Graduate Students	\$3,369,793	Treated in Student Expenditure Section				
Total	\$135,846,027	\$51,301,310	\$119,288,287	\$43,144,402	\$98,889,990	

Disposable Income: 82.9 percent in Nashville MSA and 84.1 percent in Rutherford County

Source: MTSU Human Resource Department and BERC estimates

MTSU visitors. Every year, MTSU activities attract a significant number of visitors. In order to estimate the number, BERC used survey responses from academic departments/centers and websites of various departments hosting academic, business, and cultural events. For visitor expenditures, BERC relied on previous visitor expenditure surveys conducted by BERC and other studies. Table 17 provides total visitor expenditures by category. According to BERC estimates, MTSU visitors spent nearly \$31 million in the local economy in FY 2006-07.

Table 17: MTSU Visitor Spending

Events	Average Spending Per Hotel Day	Average Daytripper Spending	Total Spending of Overnight Visitors	Total Daytripper Spending	Total Visitor Spending
Motel, hotel, cabin, or B&B	\$72.15	\$0.00	\$10,992,622	\$0	\$10,992,622
Restaurants and bars	\$30.67	\$18.94	\$4,673,211	\$3,863,326	\$8,536,537
Groceries, take-out food/drinks	\$5.38	\$7.73	\$819,120	\$1,576,043	\$2,395,163
Gas and oil	\$12.35	\$12.27	\$1,881,231	\$2,502,343	\$4,383,574
Clothing	\$7.89	\$1.75	\$1,202,429	\$356,795	\$1,559,224
Sporting goods	\$0.92	\$0.85	\$140,283	\$174,374	\$314,657
Souvenirs and other expenses	\$11.26	\$5.08	\$1,715,465	\$1,035,510	\$2,750,975
Total	\$140.62	\$46.62	\$21,424,361	\$9,508,391	\$30,932,751

Source: Visitor expenditure data for nonuniversity-related events in Tennessee are used in this study. A modified version of the BERC survey of Bonnaroo music festival attendees is used for this purpose.

MTSU retirees. New in this study is that BERC included MTSU retirees. The rationale is straightforward: the presence of MTSU retirees and their choice of the study region as their post-retirement home are due to the presence of MTSU in the region. BERC received information about retirees from the MTSU department of human resources and estimated their disposable retirement income of \$23 million in the Nashville MSA and \$21 million in Rutherford County from survey responses from MTSU academic departments and centers.

State appropriations. Another addition to this study is the treatment of state appropriations. State appropriations of nearly \$87 million in FY 2006-07 were critically important for MTSU to maintain the level of affordability MTSU students enjoyed in accessing higher education. However, when this study counterfactually removes MTSU's operations, this state funding will also disappear. BERC assumes that this state funding goes back to communities as sales tax refunds. For simplicity, BERC redistributes this amount to communities based on population. Only a fraction of this amount remains in the study region: \$21.7 million in the Nashville MSA and \$3.5 million in Rutherford County. BERC assumes that this money is spent by households in the local economy.

VI.2. Business Revenue

Before we introduce the results of this study of MTSU's economic impact, we would like to clarify certain concepts. In the sections that follow, we'll introduce business revenue, gross regional product (value-added), personal income, employment and taxes as economic impact categories. It is important to emphasize that figures associated with these categories cannot be added together: each represents a different aspect of economic impact. For example, business revenue represents total sales plus change in inventory. Business revenue already includes gross regional product (value-added), which is estimated as total sales minus cost of intermediate input, and both business revenue and gross regional product include labor income, which covers all forms of employment income. Adding any two of these constructs together means counting the total impact twice.

Table 18 presents our estimate of total business revenue attributable to MTSU-related activities in the Nashville MSA. According to BERC estimates, the total business revenue impact of MTSU-related activities is \$896 million in FY 2006-07. This impact reflects the adjustment made to the state appropriation MTSU receives. Nearly 50 percent of this economic impact is due to student expenditures in the study region. A breakdown of business revenue impact by MTSU-related activities shows that, out of \$896 million in business revenue impact,

- student expenditure accounts for \$447 million;
- MTSU employee payroll and payroll spending \$257 million;
- MTSU operating and capital expenditures \$148 million;
- MTSU visitor expenditures \$46 million; and
- spending of MTSU retirees \$33 million.

Table 18: MTSU and the Nashville MSA Economy: Business Revenue (FY 2006-07) (in Million \$)

Components of Economic Contribution	Direct	Indirect and Induced	Multiplier	Total
MTSU Operating and Capital Expenditures*	\$84.70	\$63.10	1.74	\$147.80
MTSU Employee Payroll and Payroll Spending**	\$119.29	\$138.06	2.16	\$257.35
MTSU Student Expenditures	\$280.15	\$166.30	1.59	\$446.45
MTSU Visitor Expenditures	\$30.38	\$15.39	1.51	\$45.77
Spending of MTSU Retirees	\$19.94	\$12.53	1.63	\$32.47
Returning State Appropriations***	-\$21.73	-\$11.98	1.55	-\$33.71
Total	\$512.73	\$383.40	1.75	\$896.13

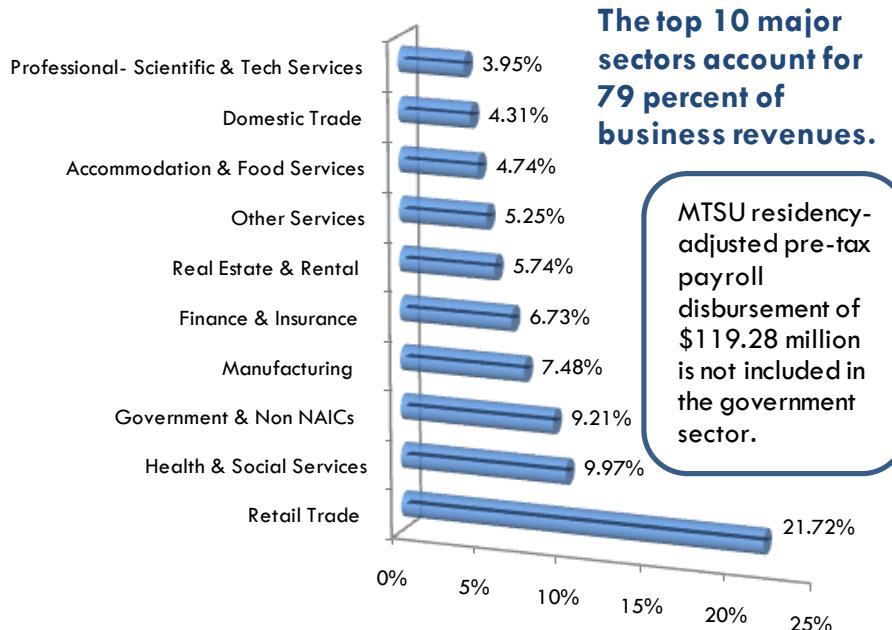
*Represents operating and capital expenditures excluding employee payroll, employee benefits, and out-of-region leakages.

**Employee payroll spending represents residency-adjusted disposable income. Direct business revenue includes residency-adjusted gross income disbursed by MTSU.

***By counterfactually removing MTSU, we modeled the population-adjusted portion of state appropriation as income to the study area (Nashville MSA) residents.

By looking at business revenue impact by sector, retail trade is the largest beneficiary followed by health and social services, government, manufacturing, finance and insurance, real estate and rental, and other services. Accommodation and food services, domestic trade, and professional-scientific and technical services complete the top 10 sectors benefiting from the business revenue impact of MTSU-related activities.

**Chart 4: MTSU's Contribution to Region's Economy:
Distribution of Business Revenue by Top 10 Major Sectors (FY
2006-07)**



VI.3. Employment Impact of MTSU

As mentioned throughout this study, MTSU itself is one of the major employers in the Nashville MSA. Cumulative employment impact of MTSU-related activities is estimated at around 10,215 jobs. Including student workers and graduate students at MTSU puts the employment impact 13,192 jobs (Table 19). A breakdown by MTSU-related activity shows the employment impact of each. Out of 10,215 jobs,

- student expenditures account for 4,495 jobs;
- MTSU employee payroll and payroll expenditures 3,564 jobs;
- MTSU operating and capital expenditures 1,583 jobs;
- MTSU visitor expenditures 566 jobs; and
- spending of MTSU retirees 267 jobs.

Table 19: MTSU and the Nashville MSA Economy: Employment (FY 2006-07)

Components of Economic Contribution	Direct	Indirect and Induced	Multiplier	Total
MTSU Operating and Capital Expenditures*	1,028	555	1.54	1,583
MTSU Employee Payroll and Payroll Spending**	2,392	1,172	1.49	3,564
MTSU Student Expenditures	3,067	1,428	1.47	4,495
MTSU Visitor Expenditures	434	132	1.30	566
Spending of MTSU Retirees	160	107	1.67	267
Returning State Appropriations****	-157	-103	1.66	-260
Total***	6,924	3,291	1.48	10,215

*Represents operating expenditures excluding employee payroll, employee benefits, and out-of-region leakages.

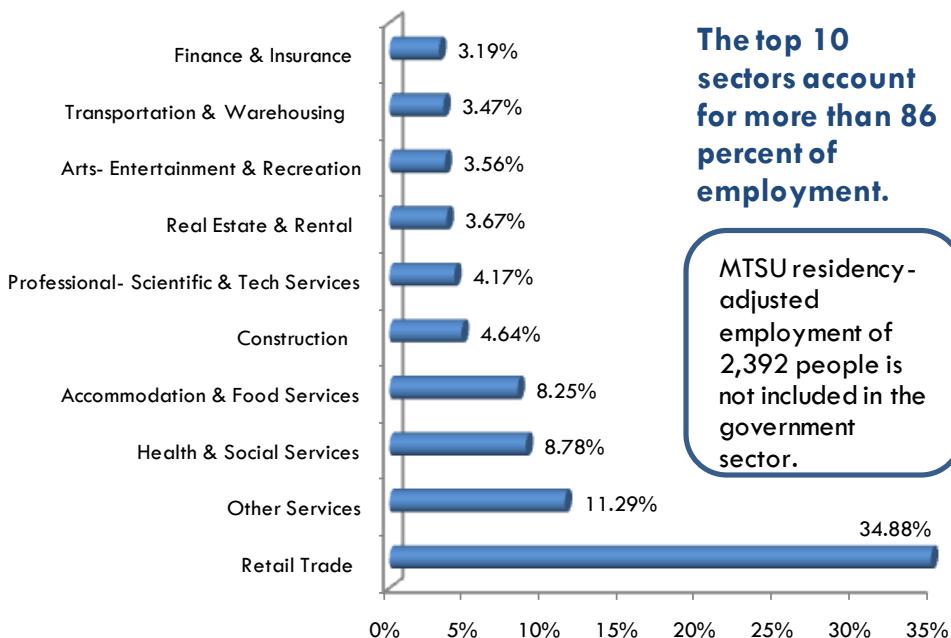
**Only includes full-time and part-time residency-adjusted employees, excluding student workers and graduate assistants.

***When student workers and graduate assistants of 2,977 are included, total employment attributable to the presence of MTSU is 13,192.

****By counterfactually removing MTSU, we modeled the population-adjusted portion of state appropriation as income to the study area (Nashville MSA) residents.

Chart 5 presents the top 10 sectors with the largest employment impact. Retail trade, other services, health and social services, and accommodation and food services top the list, while construction, professional services, real estate and rental, arts and entertainment, transportation, and finance and insurance represent the second tier of sectors producing the largest number of jobs due to MTSU-related activities.

Chart 5: MTSU's Contribution to Region's Economy: Distribution of Employment by Top 10 Major Sectors (FY 2006-07)



VI. Gross Regional Product (Value-Added) Impact of MTSU

The marginal impact of MTSU-related activities on the gross regional product of the Nashville MSA is estimated at around \$568 million. According to Table 20, a breakdown of gross regional product impact by MTSU-related activities shows that

- student expenditures are responsible for \$265 million in value added;
- MTSU employee payroll and payroll spending \$183 million;
- MTSU operating and capital expenditures \$88 million;
- MTSU visitor expenditures \$31 million; and
- spending of MTSU retirees \$19 million.

Table 20: MTSU and the Nashville MSA Economy: Gross Regional Product (Value Added) (FY 2006-07) (in Million \$)

Components of Economic Contribution	Direct	Indirect and Induced	Multiplier	Total
MTSU Operating and Capital Expenditures*	\$48.50	\$39.49	1.81	\$87.99
MTSU Employee Payroll and Payroll Spending**	\$98.89	\$83.93	1.85	\$182.82
MTSU Student Expenditures	\$161.71	\$103.52	1.64	\$265.23
MTSU Visitor Expenditures	\$21.10	\$9.74	1.46	\$30.84
Spending of MTSU Retirees	\$11.69	\$7.71	1.66	\$19.40
Returning State Appropriations***	-\$11.11	-\$7.40	1.67	-\$18.51
Total	\$330.78	\$236.99	1.72	\$567.77

*Represents operating expenditures excluding employee payroll, employee benefits, and out-of-region leakages.

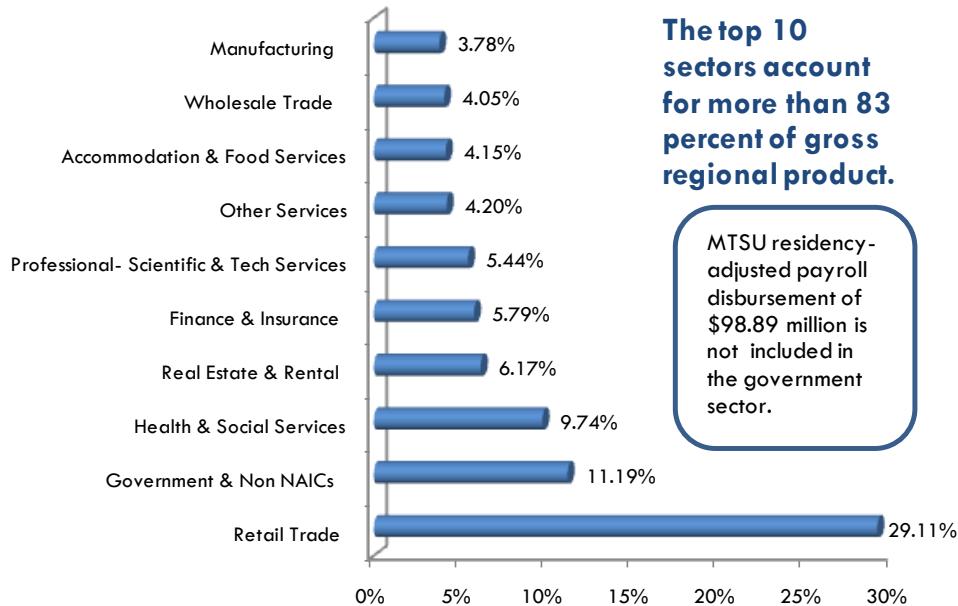
**Employee payroll spending represents residency-adjusted-disposable income.

***By counterfactually removing MTSU, we modeled the population-adjusted portion of state appropriation as income to the study area (Nashville MSA) residents.

Chart 6 shows the gross regional product impact of MTSU-related activities by the top 10 sectors in the Nashville MSA. Retail trade, government, and health and social services are three major sectors accounting for nearly 50 percent of gross regional product impact.

Real estate and rental, finance and insurance, and professional and technical services constitute the second tier, each of which accounts for somewhere between five and six percent. Finally, the other services, accommodation and food services, wholesale trade, and manufacturing represent the third tier of major sectors, each accounting for about four percent of the gross regional product impact of MTSU-related activities.

Chart 6: MTSU's Contribution to Region's Economy: Distribution of Gross Regional Product by Top 10 Major Sectors (FY 2006-07)



VI.5. Personal Income Impact of MTSU-Related Activities

According to Table 21, households in the Nashville MSA take home \$387 million in personal income due to MTSU-related activities. Breaking that down by category, we learn how much each contributes to personal income:

- student expenditures account for \$162 million in personal income;
- MTSU employee payroll and payroll expenditures \$147 million;
- MTSU operating and capital expenditures \$61 million;
- MTSU visitor expenditures \$17 million; and
- spending of MTSU retirees \$11 million.

Table 21: MTSU and the Nashville MSA Economy: Personal Income (FY 2006-07) (in Million \$)

Components of Economic Contribution	Direct	Indirect and Induced	Multiplier	Total
MTSU Operating and Capital Expenditures*	\$37.46	\$23.45	1.63	\$60.91
MTSU Employee Payroll and Payroll Spending**	\$98.89	\$47.65	1.48	\$146.54
MTSU Student Expenditures	\$101.95	\$59.91	1.59	\$161.86
MTSU Visitor Expenditures	\$11.84	\$5.56	1.47	\$17.40
Spending of MTSU Retirees	\$6.48	\$4.49	1.69	\$10.97
Returning State Appropriations***	-\$6.38	-\$4.30	1.67	-\$10.68
Total	\$250.24	\$136.76	1.55	\$387.00

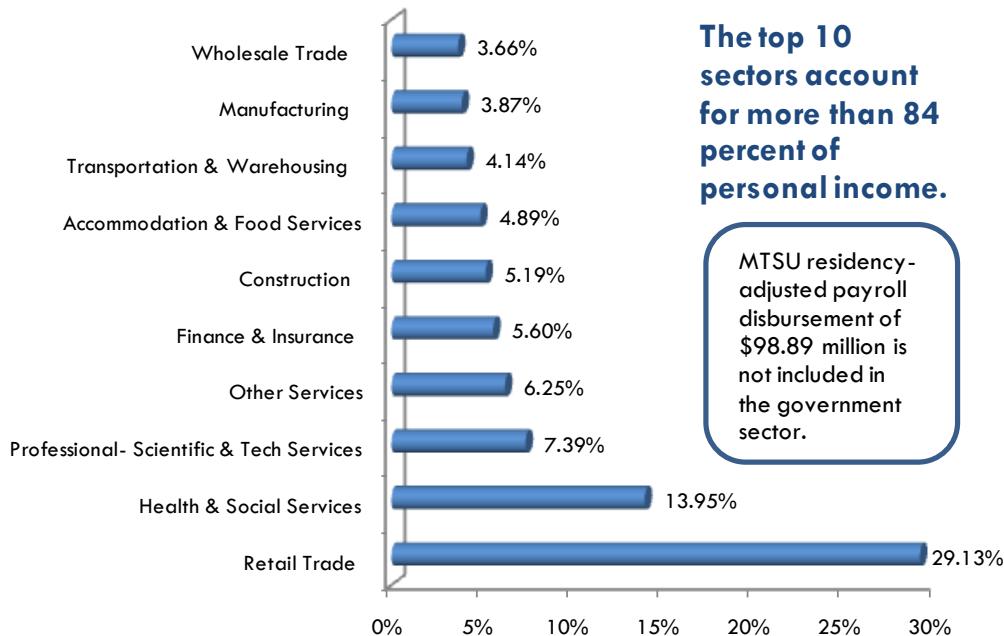
*Represents operating expenditures excluding employee payroll, employee benefits, and out-of-region leakages.

**Employee payroll spending represents residency-adjusted disposable income.

***By counterfactually removing MTSU, we modeled the population-adjusted portion of state appropriation as income to the study area (Nashville MSA) residents.

Chart 7 presents a sectoral breakdown of personal income impact. The top three sectors include retail trade, health and social services, and professional and technical services. Other services, finance and insurance, construction, and accommodation and food services constitute the second tier, each of which accounts for somewhere between five and six percent. Transportation, manufacturing, and wholesale trade complete the top 10, each accounting for about four percent.

Chart 7: MTSU's Contribution to Region's Economy: Distribution of Personal Income by Top 10 Major Sectors (FY 2006-07)



VI.6. Tax Impact

Although MTSU receives public money to operate, MTSU-related activities create nearly as much tax revenue as the public assistance it receives. As presented in Table 22, even our highly conservative estimates suggest the fiscal impact of MTSU-related activities is \$61.11 million. It is no surprise that student expenditure is the largest contributor to the fiscal health of local government, adding an estimated \$33.81 million in taxes.

Table 22: MTSU and the Nashville MSA Economy: Fiscal Impact (FY 2006-07) (in Million \$)

Components of Economic Contribution	State and Local Taxes***
MTSU Operating and Capital Expenditures*	\$5.40
MTSU Employee Payroll and Payroll Spending**	\$15.72
MTSU Student Expenditures	\$33.81
MTSU Visitor Expenditures	\$4.04
Spending of MTSU Retirees	\$3.66
Returning State Appropriations****	-\$1.52
Total	\$61.11

*Represents operating expenditures excluding employee payroll, employee benefits, and out-of-region leakages.

**Employee payroll spending represents residency-adjusted disposable income.

***A uniform tax rate for food items of 8.75% is applied to payroll and retiree spending.

For visitors and student expenditures, a uniform tax rate of 9.75% is applied to the taxable expenditure categories.

****By counterfactually removing MTSU, we modeled the population-adjusted portion of state appropriation as income to the study area (Nashville MSA) residents.

Moreover, in the past six years, major economic activities took place in Rutherford County, altering business dynamics by changing the way students spend money in the region. For example, more than 3,500 new student housing units were built with a construction value of nearly \$200 million (Table 23).

Table 23: Building Permits and Construction Values for Multi-Family Units (Five and More Units) in Rutherford County (2002-2007)

Year	Total Units	Construction Value (in Nominal \$)
2002	165	\$9,469,023
2003	167	\$8,550,522
2004	1,661	\$88,012,862
2005	1,001	\$63,824,745
2006	336	\$15,501,000
2007	206	\$8,480,050
Total	3,536	\$193,838,202

Source: Census Bureau and BERC estimates

These activities have further fiscal impact on the local governments in the study region.

VI.7. Summary of Economic Impact of MTSU-Related Activities on Rutherford County

In this section, we narrow the economic geography and briefly look at the economic impact of MTSU-related activities on Rutherford County. As a host county, Rutherford County benefits from the presence of MTSU to a great extent (summarized in Table 24).

Table 24: MTSU and Rutherford County: Economic Impact (FY 2006-07)

Components of Economic Contribution	Business Revenue (in Million \$)	Gross Regional Product (in Million \$)	Personal Income (in Million \$)	Number of Jobs (in Thousands)	Local Taxes (in Million \$)
MTSU Operating and Capital Expenditures*	\$83.31	\$46.99	\$33.25	807	\$3.09
MTSU Employee Payroll and Payroll Spending**	\$95.30	\$72.50	\$58.90	2,741	\$6.55
MTSU Student Expenditures	\$157.89	\$71.82	\$43.26	1,310	\$13.74
MTSU Visitor Expenditures	\$39.06	\$22.99	\$13.09	481	\$3.22
Spending of MTSU Retirees	\$24.95	\$14.13	\$7.56	214	\$2.18
Returning State Appropriations***	-\$4.66	-\$2.38	-\$1.31	-37	-\$0.21
Total	\$395.85	\$226.05	\$154.75	5,516	\$28.57

*Represents operating expenditures excluding employee payroll, employee benefits, and out-of-region leakages.

**Employee payroll spending represents residency-adjusted disposable income. Direct business revenue includes residency-adjusted income disbursed by MTSU. A total MTSU employment of 2,286 (FTE) is included in calculations.

***By counterfactually removing MTSU, we modeled the population-adjusted portion of state appropriation as income to the study area (Rutherford County) residents.

As shown in Table 24, in Rutherford County, MTSU-related activities account for

- \$395.85 million in business revenues,
- \$226.05 million in gross regional product,
- \$154.75 million in personal income,
- 5,516 jobs, and
- \$28.57 million in local taxes.

VII. Conclusion

As a higher education institution, MTSU and its associated activities make sizable contributions to economic prosperity in the Nashville MSA and Rutherford County. From the individual to society and from individual businesses to the overall economy, MTSU's contributions resonate across the regional economy. As this study clearly highlights, MTSU has become an organic part of the Nashville MSA and Rutherford County economies. As evidence, a growing number of alumni are living in Rutherford County and the Nashville MSA. Considering this fact, an impact of more than \$897 million in business revenue is just the tip of the iceberg.

VIII. References

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