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**VOLUNTEER STATE  
COMMUNITY COLLEGE**

*An Analysis  
Of the College's  
Economic and Social  
Impact*

***2011-2016***

*February 2017*

**VOLUNTEER STATE COMMUNITY COLLEGE**

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*A Major Partner in the Economic Vitality of Middle Tennessee*

## EXECUTIVE SUMMARY

An analysis of the direct economic impact of Volunteer State Community College (VSCC) on its service area has recently been completed. It measures the College's five-year (2011-2016) economic impact on the community in terms of (1) business volume, (2) employment and (3) individual income. Not included in the study is the economic impact that naturally results from having a trained and educated work force available to local business and industry.

The report is based on a standard model of economic impact modified for community colleges. The model uses conservative income and employment multipliers to determine economic impact.

The study reveals that more than \$204 million in "new", non-local, and state/federal revenues flowed into the area during 2011-2016 as a result of the College's presence. These external revenues represented 68 percent of the total College revenues for the period. The College also received a total of \$94 million in local revenues during this period, for a grand total of more than \$298 million in revenues.

The following economic impact resulted from College expenditures of these revenues:

1. Local business volume generated by College expenditures during 2011-2016 was \$293 million, with \$220 million being due to non-local revenues. Annual business volume generated ranged from \$53.8 million to \$67.9 million.
2. Local full-time jobs created and sustained during 2011-2016 as a result of the College's presence totaled 20,988 jobs, including the College's own 2,127 jobs over that period. Of this total, 15,567 jobs were the result of non-local revenues. Annual full-time jobs generated ranged from 3,880 to 4,792 jobs.

3. Local **individual income** generated by College expenditures during 2011-2016 totaled **\$291 million**, using the more conservative Type I multiplier, with \$221 million being due to non-local revenues. Annual individual income generated ranged from \$52.9 million to \$68.3 million.

In summary, the combined five-year direct economic impact on the community represents **\$584 million**, or an average of **\$117 million** per year. Of this amount, \$441 million, or \$88 million per year, is due to the infusion of "new" external/non-local revenues. This impact would likely not have occurred without the presence of Volunteer State in the area.

**It is significant to note that for every \$1.00 of local revenues coming to Volunteer State, there was \$3.12 of local business volume and from \$3.09 to \$3.46 of individual income generated, for a total return on investment (ROI) of \$6.21 to \$6.58 on the local dollar!**

In addition to the above local economic impacts, there are individual economic benefits accruing to students earning two-year Associate degrees. Research indicates a differential of about **\$470,000** in lifetime earnings for Associate degree graduates compared with high school diploma holders. Applying that figure to the most recent class of 991 Volunteer State graduates results in an estimate of more than **\$465.8 million** that this class alone could potentially earn over their high school diploma counterparts over their work lifetime, plus an increase of about **\$1,882,900** in annual local, state and federal tax payments.

Finally, there are demonstrated social benefits to increased levels of education that accrue to the broader society, in addition to the more personal economic benefits.

This study documents the significant force Volunteer State has become in the economic and social vitality of its service area.

## INTRODUCTION

Volunteer State Community College (VSCC) has served Clay, Davidson, Jackson, Macon, Overton, Pickett, Putnam, Robertson, Smith, Sumner, Trousdale and Wilson counties since 1971, experiencing significant enrollment growth. This report represents an analysis of the five-year (2011-2016) economic impact of Volunteer State on its local service area. Approximately 68 percent of the College's annual expenditures are made, on the average, in those twelve counties.

VSCC is a member of the Tennessee Board of Regents, the sixth largest higher education system in the nation. The credit headcount and FTE student enrollment for the fall semesters from 2011-2016 are shown in Figure 1.

This report is an analysis of the five-year (2011-2016) economic impact of Volunteer State on its service area. The analysis measures the direct, explicit economic impact of Volunteer State on the community. It does not include the implicit, intangible economic impact that results from having a trained and educated work force available for local business/industry or from expansion and recruitment of business/industry as a result of the presence of the College.

The analysis is based on the Caffrey model of economic impact, originally developed in 1968 through the American Council of Education. The model has been adapted for application to community colleges.<sup>1</sup>

The model uses conservative income and employment multipliers to determine Volunteer State's economic impact on the following:

1. Business volume--the total amount of local business volume generated as a result of the College's direct and indirect expenditures.

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<sup>1</sup>Norval L. Wellsfry, "The Los Rios Community College District: A Major Partner in the Sacramento Area's Economic Vitality," 1988 (unpublished paper).

2. Employment--the total number of local full-time jobs generated and sustained by the College's direct and indirect expenditures.
3. Individual income--the total amount of personal income earned by local households as a result of the College's direct and indirect expenditures.

Two additional components of the College's impact on the community have been included: (1) an estimate of the projected increase in lifetime earning capacity of a class of VSCC graduates compared to high school graduates, and (2) a description of the broader societal benefits of increased levels of higher education.

## **METHODOLOGY**

The economic impact model is based on a circular cash flow model as illustrated in Figure 2. The community is treated as a semi-closed economic system, with money entering the system through Volunteer State from both local and external or "new" sources.

The local sources of revenue include student tuition/fees, local grants/contracts, private scholarships, gifts and other miscellaneous local revenue. External or "new" revenues include state appropriations for both operating and capital purposes, federal/state student financial aid revenues, as well as state/federal grants and contracts.

Volunteer State circulates its revenues through the local economy via expenditures for employee salaries and benefits, construction and maintenance of facilities, and local purchases of equipment and supplies. These expenditures are then re-circulated through the local economy, increasing in value and having a multiplier or secondary impact as local businesses and households make expenditures and generate jobs. Figure 3 illustrates the multiplier principle.

Economic impact on the community is measured on two levels: (1) in relationship to total expenditures from all revenue sources and (2) in relationship to expenditures from only those external or "new" revenues that would likely not have occurred without Volunteer State's presence in the economy.

The following College revenues and expenditures for the five-year period 2011-2016 were incorporated into a MS Excel spreadsheet template containing the model.

SOURCES	REVENUES					TOTAL
	FISCAL YEAR					
	2011-12	2012-13	2013-14	2014-15	2015-16	
GENERAL						
STATE APPROPRIATIONS	16,430,329	22,046,286	19,607,281	19,353,096	35,785,553	113,222,545
LOCAL PROPERTY TAX						
ENROLLMENT FEES	15,068,617	15,918,340	16,623,142	16,690,838	14,307,211	78,608,148
TOTAL	31,498,946	37,964,626	36,230,423	36,043,934	50,092,764	191,830,693
FEDERAL	59,618	57,036	77,738	83,216	69,257	346,865
OTHER STATE						
COUNTY						
LOCAL	1,069,180	935,819	988,199	6,693,327	850,924	10,537,449
OTHER LOCAL						
SPECIAL REVENUE						
FEDERAL	412,509	389,879	828,379	1,223,874	1,088,874	3,943,515
STATE	164,018	161,530	329,386	167,185	301,509	1,123,628
LOCAL	0	1,530,000	899,191	568,555	462,252	3,459,998
OTHER						
STUDENT FINANCIAL AID						
FEDERAL	14,042,022	12,524,701	11,792,640	11,169,343	11,860,273	61,388,979
STATE	3,803,780	4,026,968	4,069,947	4,231,896	8,375,084	24,507,675
LOCAL	370,874	302,491	289,833	250,574	329,409	1,543,181
OTHER						
TOTAL REVENUE	51,420,947	57,893,050	55,505,736	60,431,904	73,430,346	298,681,983
LOCAL	16,508,671	18,686,650	18,800,365	24,203,294	15,949,796	94,148,776
NON-LOCAL	34,912,276	39,206,400	36,705,371	36,228,610	57,480,550	204,533,207
LOCAL %	32.1%	32.3%	33.9%	40.1%	21.7%	32.0%
NON-LOCAL %	67.9%	67.7%	66.1%	59.9%	78.3%	68.0%

**EXPENDITURES****FISCAL YEAR**

<b>DATA</b>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>	<b>TOTAL</b>
WAGES	23,222,845	23,360,546	24,500,573	24,216,037	25,845,266	121,145,267
NON-SALARY EXPENDITURES	19,408,819	20,493,312	19,830,094	18,575,069	19,505,657	97,812,951
CAPITAL EXPENDITURES	2,366,687	7,851,514	5,042,325	13,017,228	19,034,728	47,312,482
STUDENT FINANCIAL AID	9,695,574	8,897,746	7,872,434	7,697,808	9,077,093	43,240,655
NET WAGES	17,417,134	17,520,410	18,375,430	18,162,028	19,383,950	90,858,950
NON-SALARY, LOCAL	10,092,586	10,656,522	10,311,649	9,659,036	10,142,942	50,862,735
CAPITAL, LOCAL	1,230,677	4,082,787	2,622,009	6,768,959	9,898,059	24,602,491
FTE COLLEGE JOBS	421	424	426	429	427	2,127
NON-LOCAL REVENUE %	67.9%	67.7%	66.1%	59.9%	78.3%	68.0%
TOTAL EXPENDITURES	54,693,925	60,603,118	57,245,426	63,506,142	73,462,744	309,511,355
LOCAL EXPENDITURES	38,435,971	41,157,465	39,181,522	42,287,830	48,502,043	209,564,830
LOCAL EXPENDITURES (NEW)	29,208,880	30,744,711	28,576,811	28,434,345	39,938,554	156,903,302

For the five-year period, \$204.5 million in non-local revenues was brought into the service area, along with \$94.1 million in local revenues, for a combined total of \$298.7 million in revenues.

The five-year average was 68.0 percent non-local and 32.0 percent local revenues.

**RESULTS**Business Volume Impact

The local business volume impact generated by Volunteer State expenditures is shown below:

**BUSINESS VOLUME IMPACT**

	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>	<b>TOTAL</b>
BUSINESS VOLUME	53,810,359	57,620,451	54,854,130	59,202,962	67,902,860	293,390,763
BUSINESS VOLUME (NEW)	40,892,432	43,042,596	40,007,535	39,808,083	55,913,976	219,664,622

The annual business volume impact of total College expenditures ranged from \$53.8 million to \$67.9 million, with a five-year total of \$293.4 million. The annual impact of external or "new" college funds ranged from \$39.8 million to \$55.9 million, with a five-year total of \$219.7 million.

Figure 4 graphs the relationship between local revenues and both total and "new" business volume generated by the College's presence.

Employment Impact

The local employment impact in terms of full-time jobs created and sustained by Volunteer State expenditures is shown below:

<b>EMPLOYMENT IMPACT</b>						
	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>	<b>TOTAL</b>
EMPLOYMENT	3,880.24	4,128.17	3,952.34	4,234.90	4,792.18	20,988
EMPLOYMENT (NEW)	2,914.64	3,054.17	2,853.62	2,816.27	3,928.72	15,567

Volunteer State's own annual full-time-equivalent jobs ranged from 421 to 429 during this period, yet the total annual employment created and sustained by College expenditures ranged from 3,880 to 4,792 jobs, with a five year total of 20,988 jobs, including the College's own 2,127 full-time jobs over that period.

The number of jobs created annually by external or "new" funds ranged from 2,816 to 3,929 jobs, with a five year total of 15,567 jobs. Figure 5 graphs the relationship between the College's full-time jobs and both total and "new" full-time jobs generated and sustained by the College's presence.

Individual Income Impact

The local impact of Volunteer State's expenditures on personal income is calculated using two different multipliers to produce a range of impact, shown below as Type I and Type II. The Type I multiplier is the more conservative measure.

<b>INCOME IMPACT</b>						
	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>	<b>TOTAL</b>
TYPE I MULTIPLIER	52,880,906	57,307,412	53,532,044	58,784,464	68,296,501	290,801,327
TYPE II MULTIPLIER	59,507,777	63,973,577	60,523,528	65,694,752	75,671,706	325,371,341
TYPE I MULTIPLIER (NEW)	41,037,733	43,546,905	39,798,299	40,326,130	56,713,860	221,422,926
TYPE II MULTIPLIER (NEW)	45,537,050	48,061,374	44,421,695	44,468,812	62,487,098	244,976,028



The total impact of College expenditures on personal income, using the more conservative multiplier, ranged from \$52.9 million to \$68.3 million, with a five-year total of \$290.8 million. The annual impact of external or "new" funds ranged from \$39.8 million to \$56.7 million, with a five-year total of \$221.4 million. Figure 6 graphs the relationship between local revenues and both total and "new" personal income generated by the College's presence.

In summary, the combined five-year direct economic impact (business volume plus individual income) on the community represents \$584.2 million, or an average of \$116.8 million per year plus the creation of 20,988 jobs. Of this amount, \$441.1 million, or \$88.2 million per year, was due to the infusion of "new", external/non-local revenues. This impact would likely not have occurred without the presence of Volunteer State in the area.

**It is significant to note that for every \$1.00 of local revenues coming to Volunteer State, there was \$3.12 of local business volume and from \$3.09 to \$3.46 of individual income generated, for a total return on investment (ROI) of \$6.21 to \$6.58 on the local dollar!**

## **ECONOMIC BENEFITS OF HIGHER EDUCATION**

Many national and state research studies have demonstrated the economic value of increased levels of education. There is a clear relationship established between increased levels of education and increased annual incomes and lifetime earnings.

As a 2007 study of the impact of Middle Tennessee higher education institutions states, "It appears that knowledge, either in the form of human capital or technological advancement, has become the common denominator in much economic growth and regional competitiveness

literature.”<sup>1</sup>

Several national research studies have been completed that specifically focus on the economic benefits of two-year Associate degree programs conferred by community colleges. As one such study says, “While community colleges serve many goals and missions, their occupational purposes are central, and virtually all their students enroll in order to enhance their employment, either directly or by later transferring to 4-year colleges.”<sup>2</sup>

This same compilation of a dozen national studies of the effect of Associate degrees on employment outcomes concluded that “completing Associate degrees generally enhances wages, employment, and earnings by significant amounts...”<sup>3</sup> Another such study entitled “Education Pays: The Benefits of Higher Education for Individuals and Society” conducted by The College Board, further concludes that “there is a correlation between higher levels of education and higher earnings for all racial/ethnic groups and for both men and women.”<sup>4</sup>

Most studies of this nature contrast the annual and lifetime earnings potential of Associate degree graduates compared with high school diploma holders. Lifetime earnings generally mean the cumulative earnings over a 40 year work life from about age 25-64.

The literature indicates a range of lifetime earnings ratios between Associate degree graduates and high school diploma holders, generally in the range of 20-30% higher, at a minimum, for Associate degree graduates.<sup>5</sup> This income gap between high school and college graduates has also increased significantly over time.<sup>6</sup>

In terms of average annual earnings by Associate degree and high school diploma holders, the literature also contains a range of findings. The College Board study referenced earlier cites an average annual earnings differential of \$6,800<sup>7</sup> while a more recent U. S. Census Bureau

study indicates an even higher difference of \$11,033 (\$32,602 vs. \$21,569).<sup>8</sup>

A 2007 study conducted by the University of Tennessee Center for Business and Economic Research found that, over the seven year period from 1997 to 2005, Associate degree graduates in Tennessee earned \$33,326 on average one year after graduation, growing to \$38,952 four years later, and to \$42,921 after seven years, for an average annual growth rate of 4.3%.<sup>9</sup>

A 2013 study revealed even higher first year earnings (\$38,945) for Tennessee Associate degree completers. Also significant was the finding that Tennessee Associate degree completers even had higher first year earnings than did Bachelor's degree completers.<sup>10</sup>

A 2012 study by the American Association of Community Colleges (AACC) found that the average Associate degree graduate in the U. S. should earn about \$10,700 per year more than someone with a high school diploma. <sup>11</sup> Over a 40 year work lifetime, that amounts to about **\$470,000** in increased lifetime earnings potential.

### **ECONOMIC BENEFITS APPLIED TO VOLUNTEER STATE GRADUATES**

During 2011-2016, Volunteer State graduated 4,192 students with two-year Associate degrees, as seen below:

#### Associate Degree Awards

2011-12	763
2012-13	787
2013-14	766
2014-15	885
2015-16	<u>991</u>
Total	4,192

Graduates typically either transfer on to four year institutions to continue their education

or they seek immediate employment. The job placement rates for those career/technical graduates who seek employment have been tracked as follows:

Job Placement Rates

2011-12	91%
2012-13	86%
2013-14	86%
2014-15	86%
2015-16	<u>84%</u>
Average	87%

An estimate of projected lifetime earnings of a class of Volunteer State Associate degree graduates can be gained using average national figures. The 2012 AACC study referenced earlier found a difference of about \$470,000 in lifetime earnings between Associate degree and high school diploma holders. Taking the 991 graduates making up the class of 2015-16, for example, and applying the \$470,000 excess lifetime earnings of Associate degree over high school diploma holders, one arrives at a figure of **\$465.8 million** that this class alone could potentially earn over their high school diploma counterparts over their work lifetime.

Volunteer State typically draws the great majority of its students from its primary service area. The University of Tennessee study referenced earlier found that those earning Associate degrees were much more likely to work in Tennessee than were other degree-earners. In fact, after one year, 73.3% of Associate-degree earners were working in Tennessee, compared with 62.4% of bachelor's degree earners and 40.0% of doctoral degree earners.<sup>12</sup>

Assuming the majority of Volunteer State's graduates have remained in the area, the economic impact of each succeeding graduating class over their earnings lifetime has been and will continue to be an enormous contributor to local economic activity.

Along with the individual economic benefits associated with greater wages and earnings,

there are also corresponding societal economic benefits that come from increased levels of local, state, and federal tax payments. The College Board study indicates, for example, average annual tax payments of \$8,600 for Associate degree holders vs. \$6,700 for high school degree holders, a difference of \$1,900 per year.<sup>13</sup>

Applying that figure just to the 991 Volunteer State Associate degree graduates in 2015-16 would generate an estimate of **\$1,882,900** in increased annual tax payments to local, state, and federal governments, plus the “multiplier effect” of these taxes as they are circulated in the local, state and national economy.

Yet another indicator of the economic impact of education can be seen by comparing data on unemployment rates on the following page. A 2012 study of unemployment rates shows the following:



Source: BLS, FactSet, J. P. Morgan Asset Management, 2012

A consistent trend is seen since 1992, with highest unemployment rates for people with less than a high school degree, followed by people with a high school degree but no college, then those with some college, and lowest for those with a college degree.

## **SOCIAL BENEFITS**

Many studies of the value of higher education identify broader benefits to society at large, in addition to the considerable economic benefits to the individual. Some of these societal benefits of increased levels of higher education include:

1. Increased likelihood of attending a 4-year college. Students who enroll in public two-year colleges increase their likelihood of attending a four-year institution by 5-10%;<sup>14</sup>
2. Lower levels of unemployment as educational attainment increases;<sup>15</sup>
3. Reduced poverty rates, particularly for single mother and married couple families with children;<sup>16</sup>
4. Less dependence on social “safety-net” programs, resulting in less demand on public budgets;<sup>17</sup>
5. Improved perceptions of personal health, along with reduced smoking rates<sup>18</sup>, lower rates of alcohol abuse and health-related absenteeism, and longer life spans;<sup>19</sup>
6. Reduced levels of crime and incarceration rates, along with reductions in victim costs (*It costs about \$24,352 per year to maintain a prisoner in Tennessee whereas it only costs the state about \$3,300 per year to educate a student at Volunteer State*);<sup>20</sup>
7. Higher cognitive skill levels and greater ability to persist at tasks for young children of mothers with more education;<sup>21</sup>

8. Higher levels of participation in civic and volunteer activities, including voting and blood donation;<sup>22</sup> and

9. Increased levels of home ownership.<sup>23</sup>

These broader societal benefits tend to apply similarly across all gender, racial and ethnic student groups, as did the economic benefits.

## CONCLUSIONS

The results of this economic and social impact study clearly demonstrate that Volunteer State Community College is a major contributor to the economic bases of its service area. In addition to the more implicit impact of a community college on the improved productivity and quality of life achieved through increased education, the explicit economic impact noted here is significant. This economic impact has been expressed here in terms of jobs created, business volume generated and personal income earned.

Additionally, it has been demonstrated that a two-year graduate can expect to earn significantly more over their work lifetime than a high school diploma holder, as well as to pay considerably more local, state and federal taxes as a result. Also, research indicates lower unemployment rates for people with college degrees than with high school degrees. Finally, there are demonstrated social benefits to increased levels of education that accrue to the broader society, in addition to the more personal economic benefits.

As Volunteer State continues to grow in enrollment and/or budget, its economic and social impact on its community will increase similarly. The College clearly continues to be a major partner and force in the economic vitality of Middle Tennessee.

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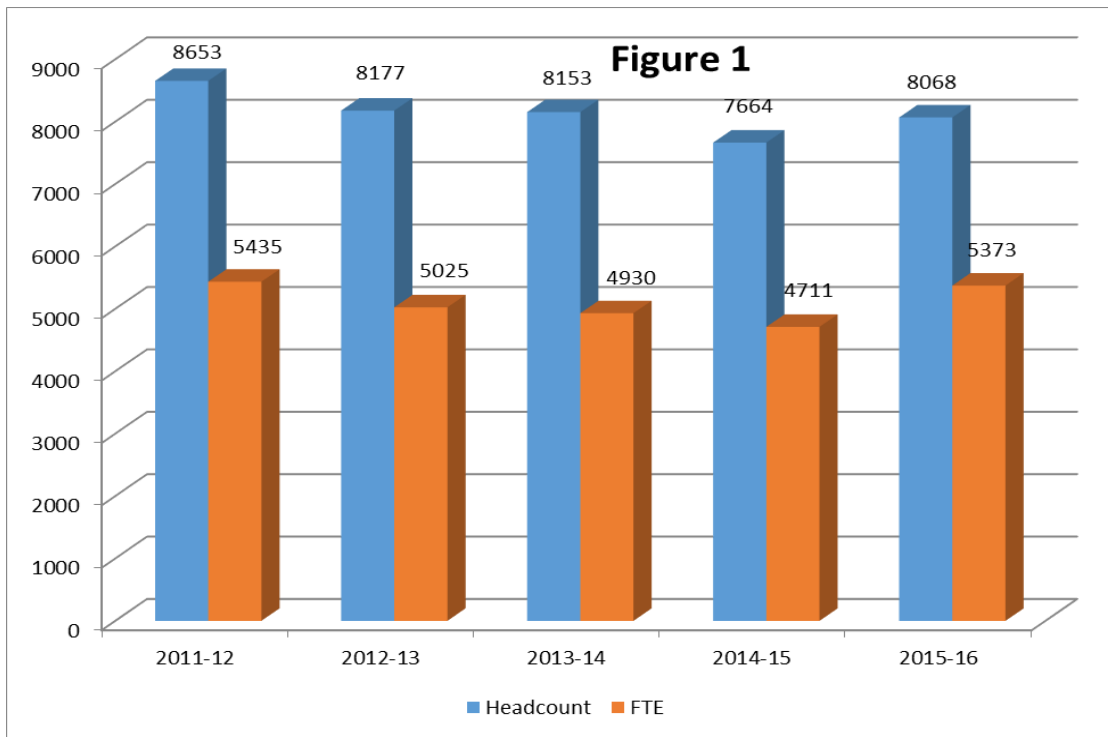


Figure 2

Circular Cash Flow Model

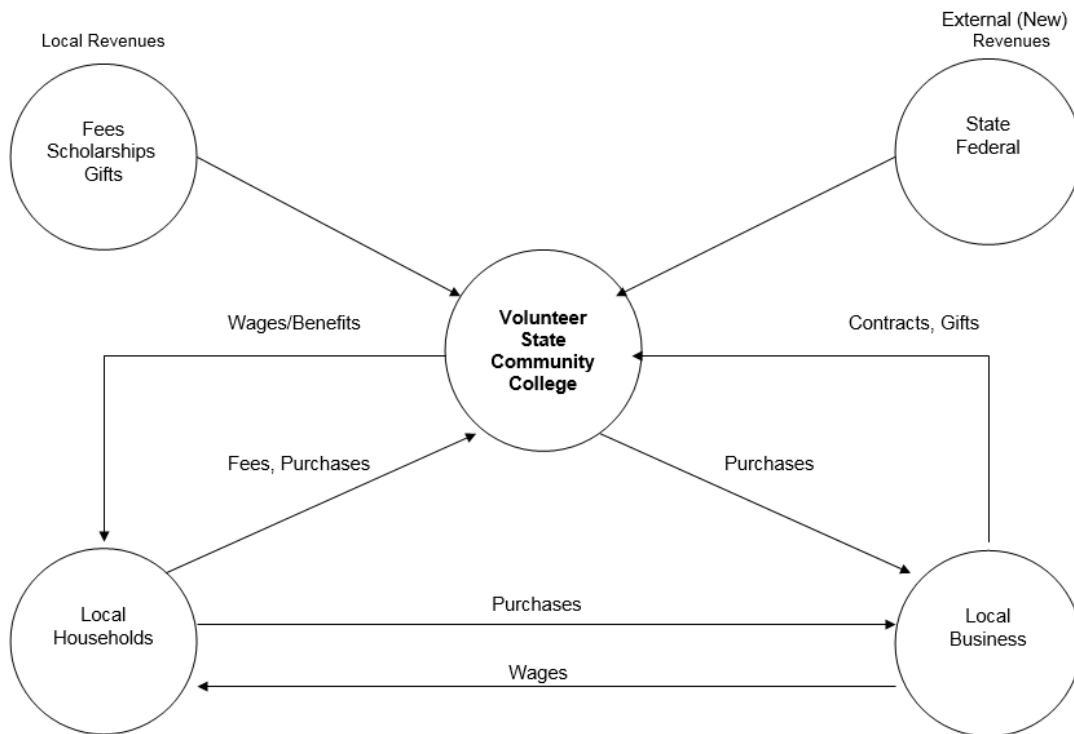
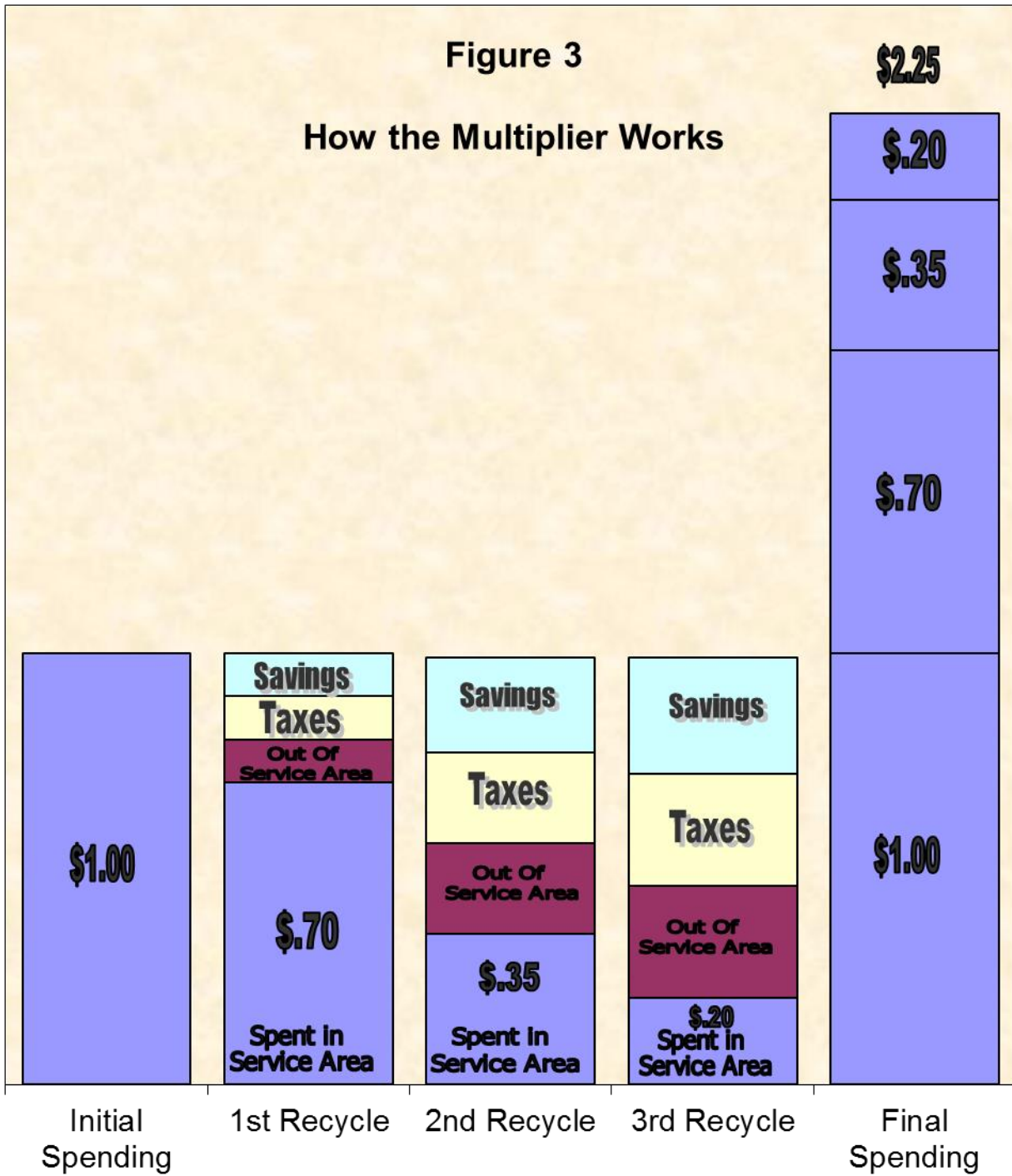


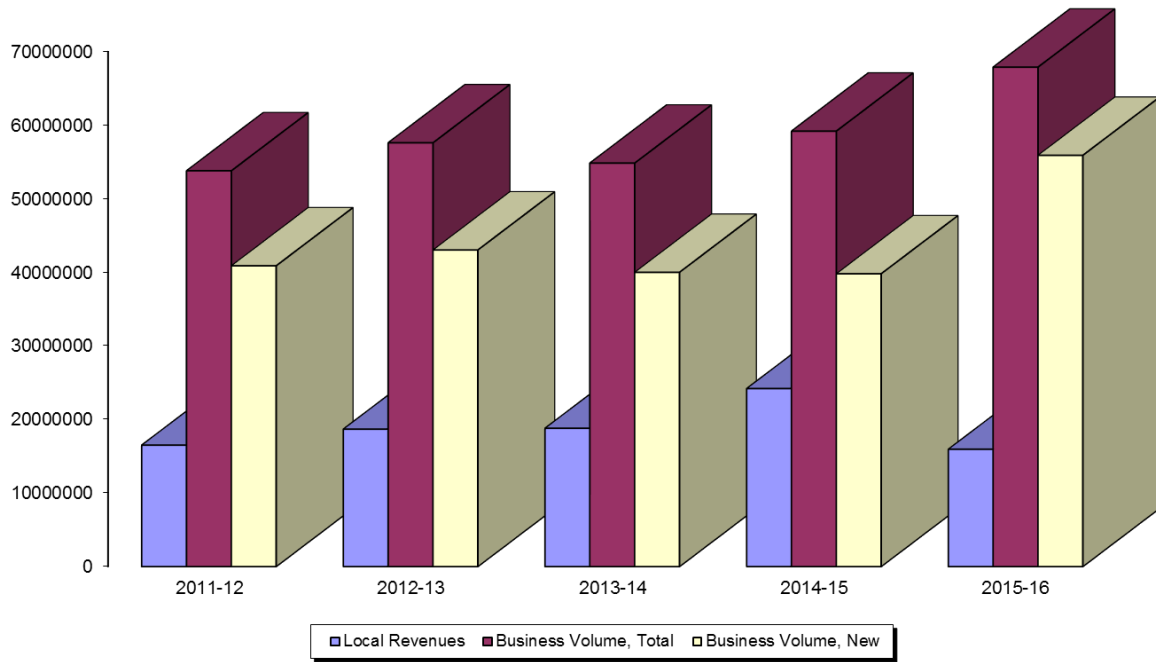


Figure 3

How the Multiplier Works

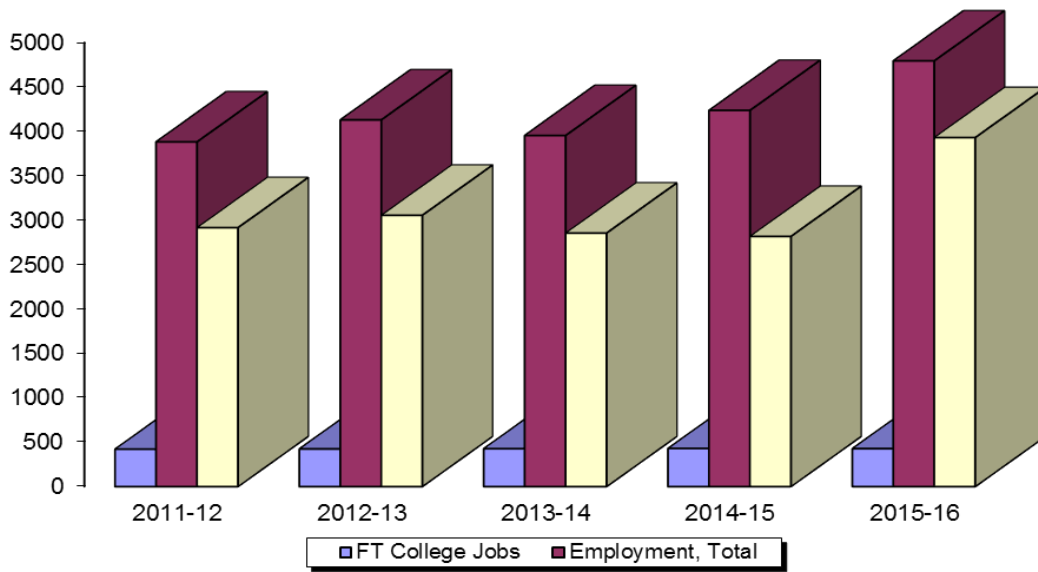


**Figure 4**  
**Business Volume Impact**



**Figure 5**

**Employment Impact**



**Figure 6**

**Individual Income Impact**

