
**PELLISSIPPI STATE
COMMUNITY COLLEGE**

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

2006-2011

November 2011

PELLISSIPPI STATE COMMUNITY COLLEGE

A Major Partner in the Economic Vitality of the Knoxville Metropolitan Area

Acknowledgments

Special thanks go to the following Pellissippi State Community College staff for their invaluable assistance with this annual economic impact study:

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Note: This report is also available on the College's web site at
http://www.pstcc.edu/departments/institutional_research/economic/eis_2006-2011.pdf

PELLISSIPPI STATE COMMUNITY COLLEGE is one of 45 institutions in the Tennessee Board of Regents system, the sixth largest system of higher education in the nation. The Tennessee Board of Regents is the governing board for this system, which is comprised of six universities, 13 two-year colleges, and 26 area Tennessee Technology Centers. The TBR system enrolls more than 80 percent of all Tennessee students attending public institutions of higher education.

PELLISSIPPI STATE COMMUNITY COLLEGE is an Affirmative Action/Equal Employment Opportunity college. Any person having questions about services and facilities for persons with disabilities should contact the Services for Students with Disabilities office at (865) 694-6751 (Voice/TDD).

EXECUTIVE SUMMARY

Pellissippi State Community College (PSCC) has served the Knoxville metropolitan area since 1974, experiencing significant student enrollment growth as indicated in Figure 1. The enrollment for fall semester, 2011 set new records for the College, with a credit headcount of 11,260 students and a credit FTE of 7,329 students.

This twenty-fourth (24th) annual analysis of the direct economic impact of Pellissippi State Community College on Knox and Blount counties has recently been completed. It measures the College's five-year (2006-2011) economic impact on the community in terms of (1) business volume, (2) employment and (3) individual income. Not included in the study is the indirect 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 economic impact model is based on a circular cash flow model as illustrated in Figure 2. The model uses conservative income and employment multipliers, as illustrated in Figure 3, to determine economic impact.

The study reveals that more than \$294 million in "new", non-local, and state/federal revenues flowed into the area during 2006-2011 as a result of the College's presence. These external revenues represented 67.6 percent of the total college revenues for the period. The College also received a total of \$141 million in local revenues during this period, for a grand total of more than \$435 million in revenues.

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

1. Local **business volume** generated by college expenditures during 2006-2011 was **\$522 million**, with \$421 million being due to non-local revenues, as shown in Figure 4. Annual business volume generated ranged from \$75.7 million to \$137.6 million.
2. Local **full-time jobs** created and sustained during 2006-2011 as a result of the College's presence totaled **35,884 jobs**, including the College's own 2,319 jobs over that period. Of this total, 28,617 jobs were the result of non-local revenues, as shown in Figure 5. Annual full-time jobs generated ranged from 5,305 to 9,346 jobs.
3. Local **individual income** generated by college expenditures during 2006-2011 totaled **\$556million**, using the more conservative Type I multiplier, with \$456 million being due to non-local revenues, as shown in Figure 6. Annual individual income generated ranged from \$78.8 million to \$149.0 million.

In summary, the combined five-year direct economic impact on the community represents **\$1.078 billion**, or an average of **\$215.6 million** per year. Of this amount, \$877.0 million, or more than \$175 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 Pellissippi State in the area.

It is significant to note that for every \$1.00 of local revenues coming to Pellissippi State, there was \$3.70 of local business volume and from \$3.94 to \$4.21 of individual income generated, for a total return on investment (ROI) of \$7.64 to \$7.91 on the local dollar!

In addition to the above local economic impacts, there are significant individual economic benefits that accrue to students earning two-year Associate degrees. Research estimates a differential of about **\$350,000** in lifetime earnings for Associate degree graduates compared with high school diploma holders. Applying that figure to the 2011 class of Pellissippi State graduates results in an

estimate of more than **\$264 million** that this class alone could potentially earn over their high school diploma counterparts over their work lifetime, plus an increase of about **\$1.4 million** in annual local, state and federal tax payments.

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

This study continues to document the significant force Pellissippi State has become in the economic and social vitality of the Knoxville metropolitan area.

INTRODUCTION

Pellissippi State Community College (PSCC) has served the Knoxville metropolitan area since 1974, experiencing significant enrollment growth as indicated in Figure 1. The enrollment for fall semester, 2011 set new records for the College, with a credit headcount of 11,260 students and a credit FTE of 7,329 students.

This report is the twenty-fourth (24th) annual analysis of the five-year (2006-2011) economic impact of Pellissippi State on the Knoxville metropolitan area. The primary counties affected are Knox and Blount, with approximately 83 percent of the College's expenditures being made, on the average, in those two counties.

The analysis measures the direct, explicit economic impact of Pellissippi 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.¹

The model uses conservative income and employment multipliers to determine Pellissippi 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.
2. Employment--the total number of local full-time jobs generated and sustained by the College's direct and indirect expenditures.

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

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 PSCC 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 Pellissippi 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.

Pellissippi 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 Pellissippi State's presence in

the economy. The following College revenues and expenditures for the five-year period 2006-2011 were incorporated into a MS Excel spreadsheet template containing the model.

REVENUES						
SOURCES	2006-07	2007-08	2008-09	2009-10	2010-11	TOTAL
GENERAL						
STATE APPROPRIATION	20,656,600	22,037,400	20,982,932	19,105,332	22,100,482	104,882,746
LOCAL PROPERTY TAX						
ENROLLMENT FEES	19,109,715	21,265,841	23,783,077	28,116,198	33,012,450	125,287,281
TOTAL	39,766,315	43,303,241	44,766,009	47,221,530	55,112,932	230,170,027
FEDERAL	109,204	69,243	61,161	73,313	79,726	392,647
OTHER STATE	0	0	345	0	12,594	12,939
COUNTY						
LOCAL	1,582,415	2,581,907	1,685,732	1,406,431	2,198,727	9,455,212
OTHER LOCAL						
SPECIAL REVENUE						
FEDERAL	2,358,862	1,699,244	1,326,504	3,473,128	1,515,833	10,373,571
STATE	822,712	19,386,001	456,471	960,049	11,022,235	32,647,468
LOCAL	436,423	400,225	256,973	174,280	208,168	1,476,069
OTHER						
STUDENT FINANCIAL AID						
FEDERAL	12,039,161	16,581,306	20,324,910	34,665,236	41,376,791	124,987,404
STATE	3,270,932	3,859,453	4,532,677	4,830,080	5,106,460	21,599,602
LOCAL	792,768	917,436	846,516	767,403	1,498,139	4,822,262
OTHER						
TOTAL REVENUE	61,178,792	88,798,056	74,257,298	93,571,450	118,131,605	435,937,201
LOCAL	21,921,321	25,165,409	26,572,298	30,464,312	36,917,484	141,040,824
NON-LOCAL	39,257,471	63,632,647	47,685,000	63,107,138	81,214,121	294,896,377
LOCAL %	35.8%	28.3%	35.8%	32.6%	31.3%	32.4%
NON-LOCAL %	64.2%	71.7%	64.2%	67.4%	68.7%	67.6%

EXPENDITURES						
DATA	2006-07	2007-08	2008-09	2009-10	2010-11	TOTAL
WAGES	23,100,279	25,148,526	26,059,102	27,217,916	28,852,799	130,378,622
NON-SAL. EXPEN.	17,015,681	19,654,104	19,200,986	20,142,375	23,402,236	99,415,382
CAPITAL EXPEN.	8,030,457	8,253,761	8,277,762	14,679,229	11,340,183	50,581,392
STU. FIN. AID	16,102,861	21,358,195	25,704,103	40,262,719	47,981,390	151,409,268
NET WAGES	17,325,209	18,861,395	19,544,327	20,413,437	21,639,599	97,783,967
NON-SALARY, LOCAL	14,037,937	16,214,636	15,840,813	16,617,459	19,306,845	82,017,690
CAPITAL, LOCAL	6,625,127	6,809,353	6,829,154	12,110,364	9,355,651	41,729,648
FTE COLLEGE JOBS	437	447	456	479	500	2,319
NON-LOCAL REVENUE %	64.2%	71.7%	64.2%	67.4%	68.7%	67.6%
TOTAL EXPENDITURES	64,249,278	74,414,586	79,241,953	102,302,239	111,576,608	431,784,664
LOCAL EXPENDITURES	54,091,134	63,243,578	67,918,397	89,403,979	98,283,485	372,940,573
LOCAL EXPENDITURES (NEW)	40,479,340	51,373,242	52,812,396	73,404,925	82,563,502	300,633,405

For the five-year period, \$294.9 million in non-local revenues was brought into the service area, along with \$141.0 million in local revenues, for a combined total of \$435.9 million in revenues. The five-year average was 67.6 percent non-local and 32.4 percent local revenues.

RESULTS

Business Volume Impact

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

BUSINESS VOLUME IMPACT						
	2006-07	2007-08	2008-09	2009-10	2010-11	TOTAL
BUSINESS VOLUME	75,727,588	88,541,009	95,085,755	125,165,571	137,596,879	522,116,802
BUSINESS VOLUME (NEW)	56,671,076	71,922,538	73,937,354	102,766,895	115,588,903	420,886,767

The annual business volume impact of total college expenditures ranged from \$75.7 million to \$137.6 million, with a five-year total of \$522.1 million. The impact of external or "new" college funds ranged from \$56.7 million to \$115.6 million, with a five-year total of \$420.9 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 Pellissippi State expenditures is shown below:

EMPLOYMENT IMPACT						
	2006-07	2007-08	2008-09	2009-10	2010-11	TOTAL
EMPLOYMENT	5,305.20	6,138.92	6,568.66	8,525.36	9,345.51	35,884
EMPLOYMENT (NEW)	3,923.56	4,943.91	5,045.94	6,929.49	7,774.46	28,617

Pellissippi State's own annual full-time-equivalent jobs ranged from 437 to 500 during this period, yet the total annual employment created and sustained by college expenditures ranged from 5,305 to 9,346 jobs, with a five year total of 35,884 jobs, including the College's own 2,319 full-time jobs over that period. The number of jobs created annually by external or "new" funds ranged from 3,924 to 7,774 jobs, with a five year total of 28,617 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 Pellissippi 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.

INDIVIDUAL INCOME IMPACT						
	2006-07	2007-08	2008-09	2009-10	2010-11	TOTAL
TYPE I MULTIPLIER	78,758,189	92,926,835	100,225,200	135,139,001	149,044,638	556,093,863
TYPE II MULTIPLIER	85,350,085	100,103,218	107,661,425	142,905,905	157,278,073	593,298,707
TYPE I (NEW)	60,054,838	76,575,078	79,531,764	112,762,625	127,198,943	456,123,248
TYPE II (NEW)	64,284,754	81,717,671	84,307,003	118,000,837	132,859,335	481,169,601

The total Type I impact of college expenditures on personal income, using the more conservative multiplier, ranged from \$78.8 million to \$149.0 million, with a five-year total of \$556.1 million. The impact of external or "new" funds ranged from \$60.1 million to \$127.2 million, with a five-year total of \$456.1 million. Figure 6 graphs the relationship between local revenues and both total and "new" Type I personal income generated by the College's presence.

In summary, the combined five-year direct economic impact on the community represents **\$1.078 billion**, or an average of more than **\$215.6 million** per year. Of this amount, \$877.0 million,

or \$175.4 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 Pellissippi State in the area.

It is significant to note that for every \$1.00 of local revenues coming to Pellissippi State, there was \$3.70 of local business volume and from \$3.94 to \$4.21 of individual income generated, for a total return on investment (ROI) of \$7.64 to \$7.91 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 recent 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."¹

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."²

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..."³ 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.”⁴

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.⁵ This income gap between high school and college graduates has also increased significantly over time.⁶

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 (\$37,600 for Associate degree holders vs. \$30,800 for high school diploma holders),⁷ while a more recent U. S. Census Bureau study indicates an even higher difference of \$12,000 (\$46,000 vs. \$34,000).⁸

A recent 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%.⁹

According to The College Board study, a person with an Associate degree can expect to earn about \$1,769,000 over their work lifetime compared to about \$1,419,000 for a high school diploma holder, a difference of more than **\$350,000**.¹⁰ It should be noted again that these

differences seem to apply to all genders, races, and ethnic groups.

**ECONOMIC BENEFITS APPLIED
TO PELLISSIPPI STATE GRADUATES**

During 2006-2011, Pellissippi State graduated 3,392 students with two-year Associate degrees, as seen below:

Associate Degree Graduates

2006-07	620
2007-08	644
2008-09	658
2009-10	793
2010-11	<u>755</u>
Total	3,470

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

2006	95%
2007	95%
2008	95%
2009	89%
2010	92%

An estimate of projected lifetime earnings of a class of Pellissippi State Associate degree

graduates can be gained using average national figures. The 2004 College Board study referenced earlier found a difference of about \$350,000 in lifetime earnings between Associate degree and high school diploma holders. Taking the 755 graduates making up the class of 2010-11, for example, and applying the \$350,000 excess lifetime earnings of Associate degree over high school diploma holders, one arrives at a figure of more than **\$264 million** that this class alone could potentially earn over their high school diploma counterparts.

Pellissippi State typically draws the great majority of its students from its two-county primary service area. For example, in the fall semester of 2010, 80.5% of the headcount students came from Knox and Blount County.

The University of Tennessee study referenced earlier found that those earning Associate degrees were much more likely to stay and work in Tennessee than 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.¹¹

Assuming the majority of Pellissippi 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.¹² Applying that figure just to the 755 Pellissippi State Associate degree graduates in 2010-11 would generate an estimate of **\$1,434,500** 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.

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%;¹³
2. Lower levels of unemployment as educational attainment increases;¹⁴
3. Reduced poverty rates, particularly for single mother and married couple families with children;¹⁵
4. Less dependence on social “safety-net” programs, resulting in less demand on public budgets;¹⁶
5. Improved perceptions of personal health, along with reduced smoking rates¹⁷, lower rates of alcohol abuse and health-related absenteeism, and longer life spans;¹⁸
6. Reduced levels of crime and incarceration rates, along with reductions in victim costs (It costs about \$26,000 per year to maintain a prisoner whereas it only costs the state about \$3,300 per year to educate a student at Pellissippi State);¹⁹
7. Higher cognitive skill levels and greater ability to persist at tasks for young children of mothers with more education;²⁰

8. Higher levels of participation in civic and volunteer activities, including voting and blood donation;²¹ and

9. Increased levels of home ownership.²²

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 Pellissippi State Community College continues to be a major contributor to the economic bases of Knox and Blount Counties. 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 is 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. 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 Pellissippi State continues to grow in enrollment and/or budget, its economic and social impact on the Knoxville metropolitan area will increase similarly. The College continues to be a major partner and force in the economic vitality of the Knoxville metropolitan area.

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Figure 1

Student Headcount

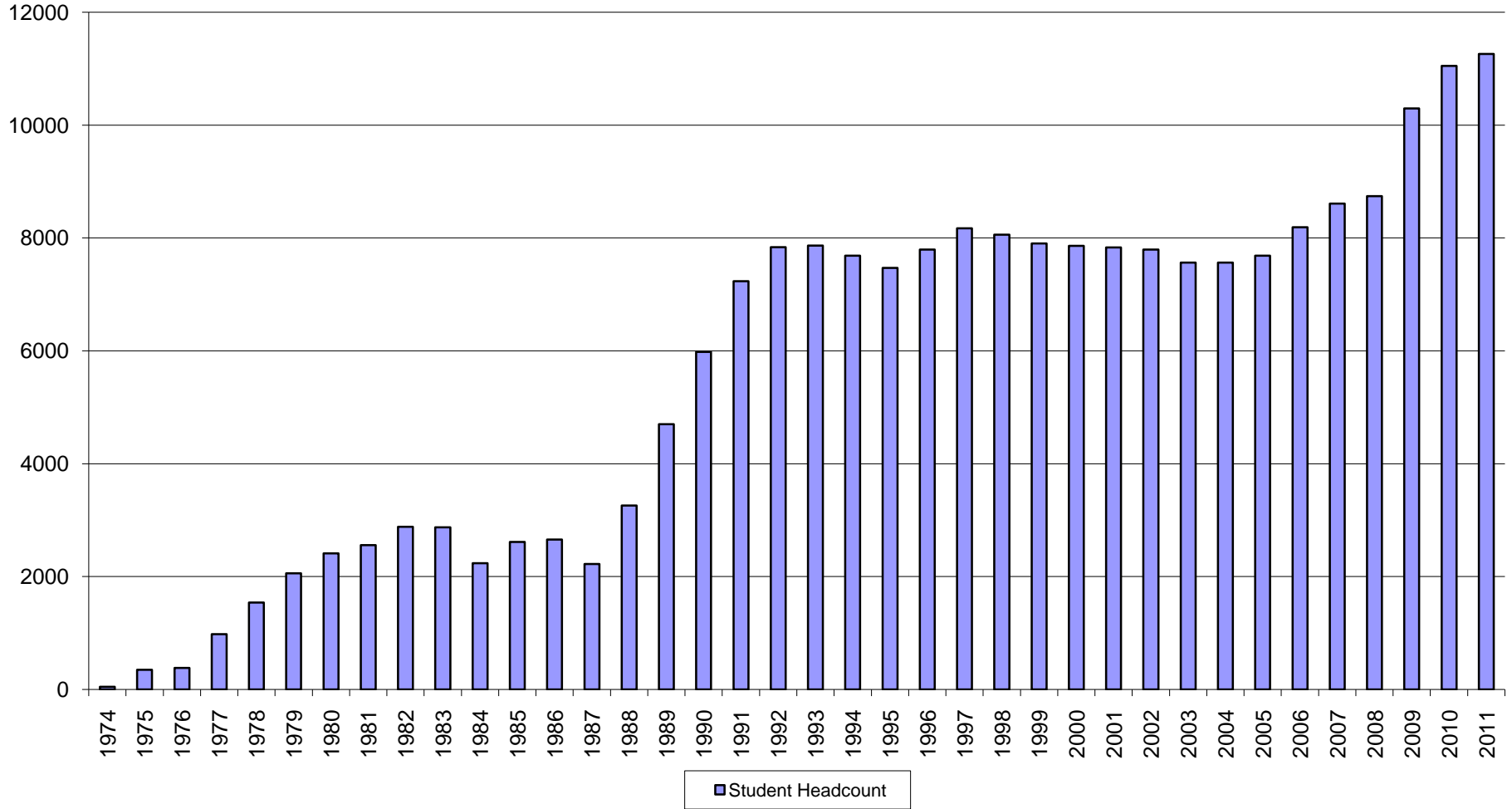


Figure 2

Circular Cash Flow Model

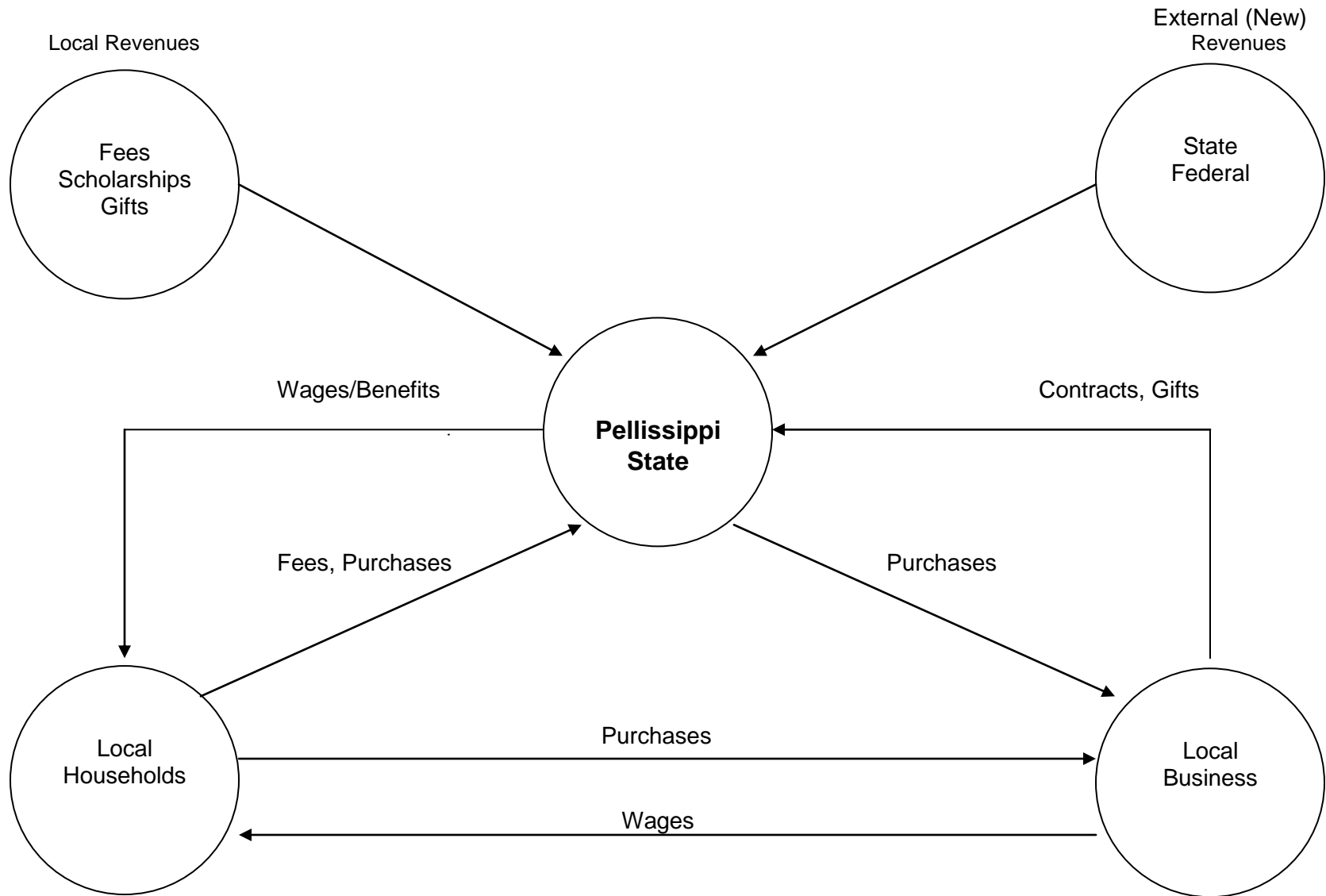


Figure 3

How the Multiplier Works

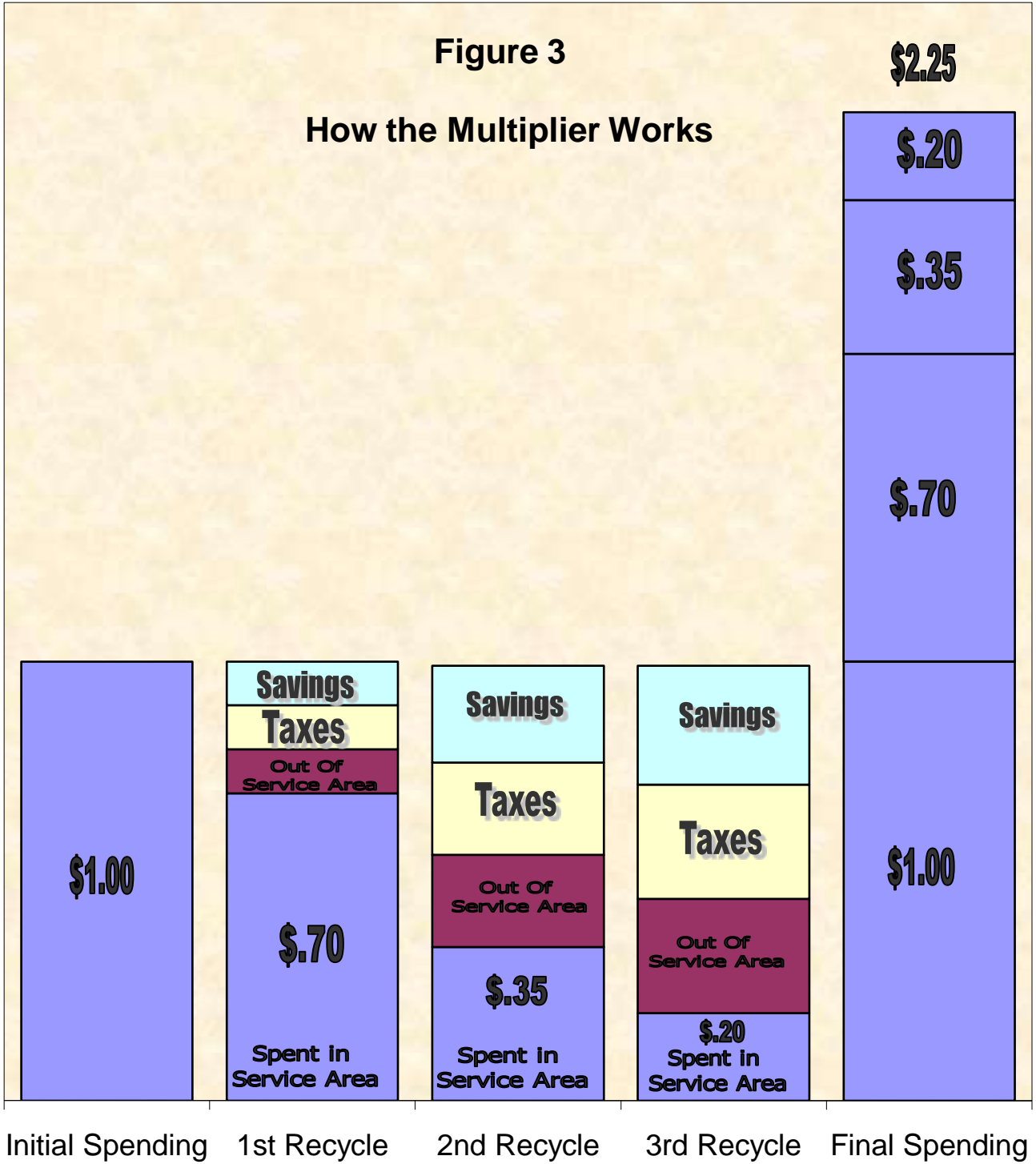


Figure 4

Business Volume Impact

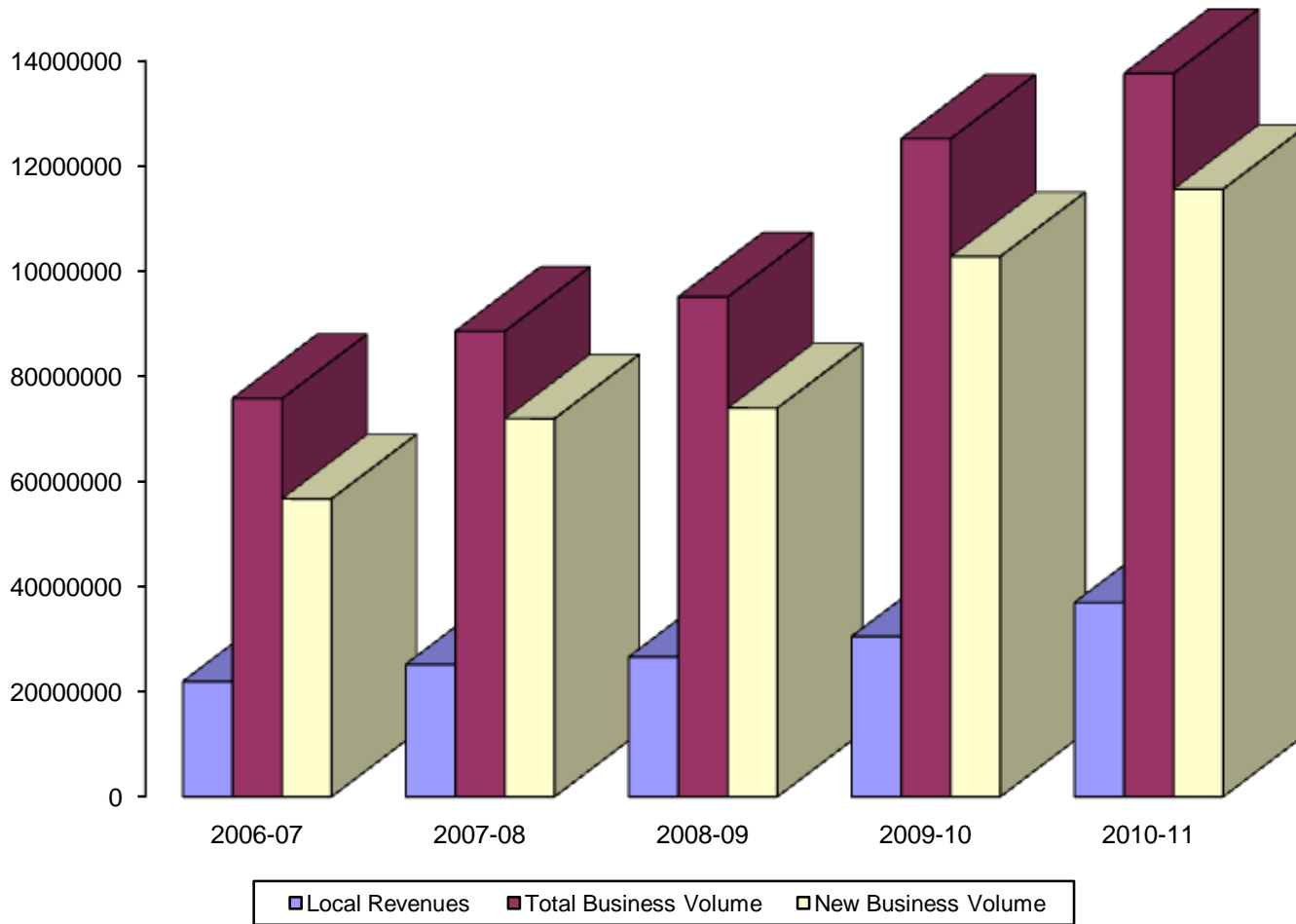


Figure 5

Employment Impact

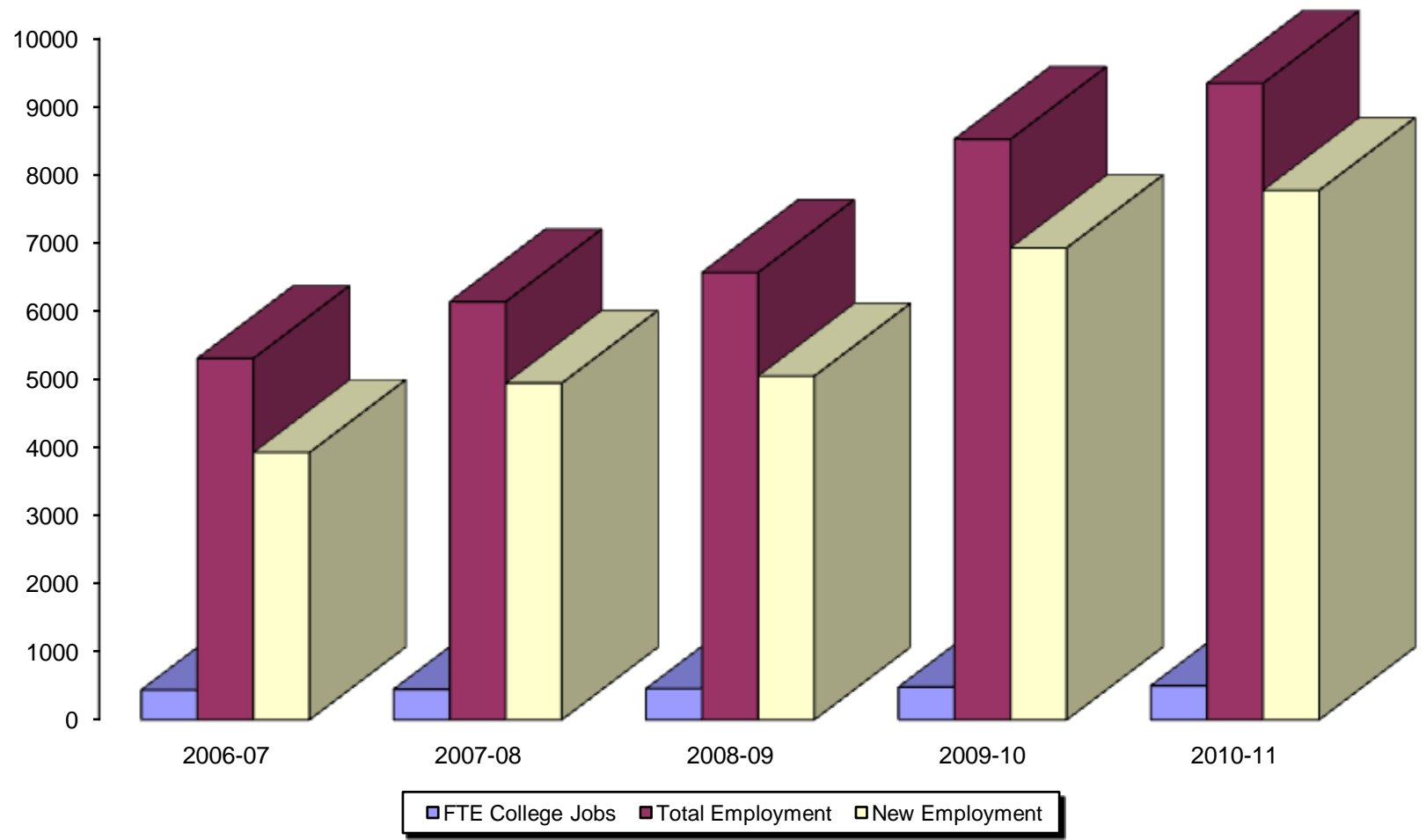
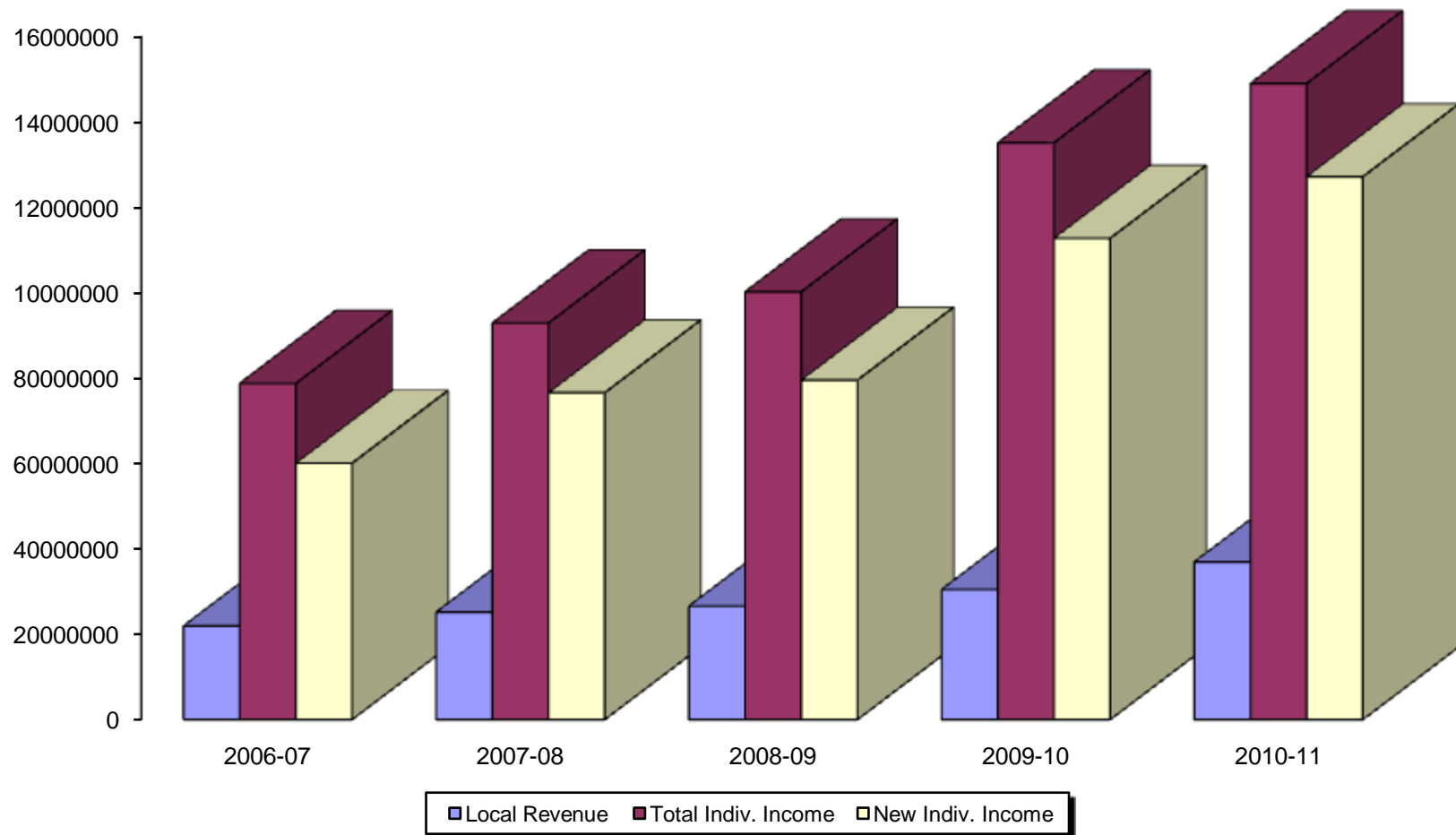


Figure 6

Individual Income Impact



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