
**PELLISSIPPI STATE
COMMUNITY COLLEGE**

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

2004-2009

December 2009

PELLISSIPPI STATE COMMUNITY COLLEGE

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

Acknowledgments

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Note: This report is also available on the College's web site at www.pstcc.edu

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

The twenty-second (22nd) annual analysis of the direct economic impact of Pellissippi State Community College (PSCC) on Knox and Blount counties has recently been completed. It measures the College's five-year (2004-2009) 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 over \$227 million in "new", non-local, and state/federal revenues flowed into the area during 2004-2009 as a result of the College's presence. These external revenues represented 66.7 percent of the total college revenues for the period. The College also received a total of \$112 million in local revenues during this period, for a grand total of more than \$339 million in revenues.

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

1. Local business volume generated by college expenditures during 2004-2009 was \$388 million, with \$302 million being due to non-local revenues. Annual business volume generated ranged from \$64.4 million to \$95.1 million.
2. Local full-time jobs created and sustained during 2004-2009 as a result of the College's presence totaled 27,168 jobs, including the College's own 2,194 jobs over that period. Of this total, 20,901 jobs were the result of non-local revenues. Annual full-time jobs generated ranged from 4,565 to 6,569 jobs.

3. Local **individual income** generated by college expenditures during 2004-2009 totaled **\$405 million**, using the more conservative Type I multiplier, with \$320.9 million being due to non-local revenues. Annual individual income generated ranged from \$66.4 million to \$100.2 million.

In summary, the combined five-year direct economic impact on the community represents **\$793 million**, or an average of **\$158.6 million** per year. Of this amount, \$623 million, or over \$124.6 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 \$3.47 of local business volume and from \$3.61 to \$3.91 of individual income generated, for a total return on investment (ROI) of \$7.08 to \$7.38 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 **\$350,000** in lifetime earnings for Associate degree graduates compared with high school diploma holders. Applying that figure to the most recent class of Pellissippi State graduates results in an estimate of more than **\$233 million** that this class alone could potentially earn over their high school diploma counterparts over their work lifetime, plus an increase of about **\$1.3 million** 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 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 has served the Knoxville metropolitan area since 1974, experiencing significant enrollment growth as indicated in Figure 1. The enrollment for Fall semester, 2009 set new records for the College, with a credit headcount of 10,297 students and a credit FTE of 6,695 students (both figures represent an 18% increase over Fall 2008).

This report is the twenty-second (22nd) annual analysis of the five-year (2004-2009) 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 this year for the first time: (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 2004-2009 were incorporated into a MS Excel spreadsheet template containing the model.

REVENUES						
SOURCES	2004-05	2005-06	2006-07	2007-08	2008-09	TOTAL
GENERAL						
STATE APPROPRIATION	18,935,100	19,251,900	20,656,600	22,037,400	20,982,932	101,863,932
LOCAL PROPERTY TAX						
ENROLLMENT FEES	16,130,184	17,663,178	19,109,715	21,265,841	23,783,077	97,951,995
TOTAL	35,065,284	36,915,078	39,766,315	43,303,241	44,766,009	199,815,927
FEDERAL	120,362	89,862	109,204	69,243	61,161	449,832
OTHER STATE	7,200	23,164	0	0	345	30,709
COUNTY						
LOCAL	1,118,591	1,407,496	1,582,415	2,581,907	1,685,732	8,376,141
OTHER LOCAL						
SPECIAL REVENUE						
FEDERAL	2,233,057	2,460,754	2,358,862	1,699,244	1,326,504	10,078,421
STATE	377,869	5,432,941	822,712	19,386,001	456,471	26,475,994
LOCAL	224,170	341,650	436,423	400,225	256,973	1,659,441
OTHER						
STUDENT FINANCIAL AID						
FEDERAL	11,593,139	11,730,867	12,039,161	16,581,306	20,324,910	72,269,383
STATE	2,159,560	2,488,123	3,270,932	3,859,453	4,532,677	16,310,745
LOCAL	797,729	631,606	792,768	917,436	846,516	3,986,055
OTHER						
TOTAL REVENUE	53,696,961	61,521,541	61,178,792	88,798,056	74,257,298	339,452,648
LOCAL	18,270,674	20,043,930	21,921,321	25,165,409	26,572,298	111,973,632
NON-LOCAL	35,426,287	41,477,611	39,257,471	63,632,647	47,685,000	227,479,016
LOCAL %	34.0%	32.6%	35.8%	28.3%	35.8%	33.3%
NON-LOCAL %	66.0%	67.4%	64.2%	71.7%	64.2%	66.7%

EXPENDITURES						
DATA	2004-05	2005-06	2006-07	2007-08	2008-09	TOTAL
WAGES	20,890,784	21,844,228	23,100,279	25,148,526	26,059,102	117,042,919
NON-SAL. EXPEN.	15,127,127	16,255,056	17,015,681	19,654,104	19,200,986	87,252,954
CAPITAL EXPEN.	4,009,121	1,924,824	8,030,457	8,253,761	8,277,762	30,495,925
STU. FIN. AID	14,550,428	14,850,596	16,102,861	21,358,195	25,704,103	92,566,183
NET WAGES	15,668,088	16,383,171	17,325,209	18,861,395	19,544,327	87,782,189
NON-SALARY, LOCAL	12,479,880	13,410,421	14,037,937	16,214,636	15,840,813	71,983,687
CAPITAL, LOCAL	3,307,525	1,587,980	6,625,127	6,809,353	6,829,154	25,159,138
FTE COLLEGE JOBS	425	429	437	447	456	2,194
NON-LOCAL REVENUE %	66.0%	67.4%	64.2%	71.7%	64.2%	66.7%
TOTAL EXPENDITURES	54,577,460	54,874,704	64,249,278	74,414,586	79,241,953	327,357,981
LOCAL EXPENDITURES	46,005,921	46,232,168	54,091,134	63,243,578	67,918,397	277,491,197
LOCAL EXPENDITURES (NEW)	35,303,023	36,007,944	40,479,340	51,373,242	52,812,396	215,975,945

For the five-year period, \$227.5 million in non-local revenues was brought into the service area, along with \$112.0 million in local revenues, for a combined total of \$339.5

million in revenues. The five-year average was 66.7 percent non-local and 33.3 percent local revenues.

RESULTS

Business Volume Impact

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

BUSINESS VOLUME IMPACT						
	2004-05	2005-06	2006-07	2007-08	2008-09	TOTAL
BUSINESS VOLUME	64,408,289	64,725,035	75,727,588	88,541,009	95,085,755	388,487,676
BUSINESS VOLUME (NEW)	49,424,233	50,411,121	56,671,076	71,922,538	73,937,354	302,366,323

The annual business volume impact of total college expenditures ranged from \$64.4 million to \$95.1 million, with a five-year total of \$388.5 million. The impact of external or "new" college funds ranged from \$49.4 million to \$73.9 million, with a five-year total of \$302.4 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 on the next page:

EMPLOYMENT IMPACT

	2004-05	2005-06	2006-07	2007-08	2008-09	TOTAL
EMPLOYMENT	4,565.53	4,589.90	5,305.20	6,138.92	6,568.66	27,168
EMPLOYMENT (NEW)	3,457.66	3,529.95	3,923.56	4,943.91	5,045.94	20,901

Pellissippi State's own annual full-time-equivalent jobs ranged from 425 to 458 during this period, yet the total annual employment created and sustained by college expenditures ranged from 4,565 to 6,569 jobs, with a five year total of 27,168 jobs, including the College's own 2,194 full-time jobs over that period. The number of jobs created annually by external or "new" funds ranged from 3,458 to 5,046 jobs, with a five year total of 20,901 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

	2004-05	2005-06	2006-07	2007-08	2008-09	TOTAL
TYPE I MULTIPLIER	66,422,861	66,364,297	78,758,189	92,926,835	100,225,200	404,697,381
TYPE II MULTIPLIER	72,384,255	72,597,766	85,350,085	100,103,218	107,661,425	438,096,749
TYPE I (NEW)	51,988,130	52,723,045	60,054,838	76,575,078	79,531,764	320,872,855
TYPE II (NEW)	55,921,128	56,925,628	64,284,754	81,717,671	84,307,003	343,156,185

The total impact of college expenditures on personal income, using the more conservative multiplier, ranged from \$66.4 million to \$100.2 million, with a five-year total of \$404.7 million. The impact of external or "new" funds ranged from \$52.0 million to \$79.5 million, with a five-year

total of \$320.9 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 on the community represents \$793.2 million, or an average of \$158.6 million per year. Of this amount, \$623.2 million, or over \$124.6 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 \$3.47 of local business volume and from \$3.61 to \$3.91 of individual income generated, for a total return on investment (ROI) of \$7.08 to \$7.38 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 2004-2009, Pellissippi State graduated 3,270 students with two-year Associate degrees, as seen below:

Associate Degree Awards

2004-05	672
2005-06	645
2006-07	635
2007-08	652
2008-09	<u>666</u>
Total	3,270

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

2004	95%
2005	96%
2006	95%
2007	95%
2008	95%

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 666 graduates making up the class of 2008-09, 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 **\$233 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 2009, 80% of the headcount students came from the Knox and Blount county area.

The University of Tennessee study referenced earlier found that those earning Associate degrees were much more likely to 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 666 Pellissippi State Associate degree graduates in 2008-09 would generate an estimate of **\$1,265,400** 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 \$4,000 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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