

S. C. COMMISSION ON HIGHER EDUCATION

# HIGHER EDUCATION ENROLLMENT

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PROJECTIONS 2015-2023

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# EXECUTIVE SUMMARY

## **Introduction:**

This report provides an overview of enrollment trends and enrollment projections at both the undergraduate and graduate level, by sector, for public colleges and universities in South Carolina. Using institutional enrollment data from the late 1970s through 2014, statistical models were built for each sector to determine which factors influence their enrollment and help predict future enrollment.

## **Findings:**

### **Undergraduate Student Enrollment**

Enrollment in higher education has grown tremendously over the past 25 years.

- ❖ Between 1990 and 2014 total enrollment in all public undergraduate programs has grown 62.5 percent, or about 2.0 percent per year.
- ❖ Between 1990 and 2014 total enrollment in all independent undergraduate programs has grown 38.7 percent, or about 1.4 percent per year.

While enrollment growth is projected to continue to increase over the next decade, there will be significant differences in the growth patterns of each of the sectors. Between 2014 and 2023 undergraduate enrollment is projected to increase:

- ❖ 11.6 percent to slightly more than 207,000 for all public undergraduate students,
  - 16.0 percent to slightly more than 49,000 at the Research Institutions,
  - 5.8 percent to nearly 50,000 in the Comprehensive Teaching Institutions,
  - 13.1 percent to nearly 104,000 in the Technical Colleges, and
  - 0.9 percent to just under 4,500 at the Two-Year Regional Campuses of USC.

Across all public sectors, the single best predictor of enrollment in one year is the level of enrollment in the prior year. Additional economic variables had differing impacts on enrollment depending on the sector examined.

Since 1990, the level of undergraduate enrollment has become increasingly influenced by the unemployment rate.

- ❖ As the unemployment rate has risen, so too has enrollment in the state's undergraduate programs. All else equal,
  - Approximately 56 percent of the variation in enrollment at the Research Institutions could be explained by variation in the state average unemployment rate.
  - Approximately 57 percent of the variation in enrollment at the Comprehensive Teaching Institutions could be explained by variation in the state average unemployment rate.

- Approximately 56 percent of the variation in enrollment at the Technical Colleges could be explained by variation in the state average unemployment rate.
- Approximately 45 percent of the variation in enrollment at the Two-Year Regional Campuses of USC could be explained by variation in the state average unemployment rate.

Other economic variables that appear to play a role in the enrollment levels of undergraduate students include real per capita personal income and the number of seniors enrolled in the state's public high schools.

- ❖ Increases in per capita personal income tend to increase undergraduate enrollment in the Technical Colleges, Comprehensive Teaching Institutions, and Research Institutions.
- ❖ Increases in the number of public high school seniors tend to increase undergraduate enrollment in the Research Institutions.
- ❖ Increases in the level of unemployment in the counties traditionally served by the Two-Year Regional Campuses of USC typically increase undergraduate enrollment in those schools.

### **Graduate Student Enrollment**

Graduate student enrollment overall has grown at a much slower pace than undergraduate enrollment with significantly more variability.

- ❖ Between 1990 and 2014 total enrollment in all graduate programs has grown only 6.7 percent, or about 0.2 percent per year.

Enrollment growth for graduate students is projected to grow marginally over the next decade in South Carolina—consistent with national trends. However, there appear to be significantly different outlooks for the Research vs. Comprehensive Teaching Institutions. Between 2014 and 2023 graduate student enrollment is projected to:

- ❖ Increase 7.0 percent to slightly more than 21,500 for all public graduate students,
- ❖ Increase 2.7 percent to slightly more than 15,700 at the Research Institutions, and
- ❖ Increase 20.7 percent to over 5,800 in the Comprehensive Teaching Institutions.

Contrary to enrollment for the undergraduate students, increases in the unemployment rate tend to decrease enrollments in graduate programs—particularly for those in the Comprehensive Teaching Institutions.

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# HIGHER EDUCATION ENROLLMENT

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## SECTION 1: INTRODUCTION

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The National Center for Education Statistics (NCES), a part of the U.S. Department of Education, projects that total enrollment in postsecondary degree-granting institutions will increase 15 percent between the fall of 2010 and the fall of 2021 (Hussar and Bailey, 2013). While the NCES provides some summary level projections by state, there are many reasons that having reliable enrollment estimates on a more detailed level would benefit policymakers in South Carolina.

This study, conducted by staff of the South Carolina Commission on Higher Education (SCCHE) attempts to project post-secondary enrollments for both undergraduate and graduate students in South Carolina's public Colleges and Universities, by sector (i.e., Research Institutions, Comprehensive Teaching Institutions, Two-Year Regional Campuses of the University of South Carolina, and Technical Colleges), between 2015 and 2023. Information presented in this study can be compared to current capacity of facilities and faculty to help inform capital investment and hiring decisions. Enrollment information can also be beneficial for short- and medium-range budget estimates and help inform optimal strategies for resource allocation (Wing, 1974).

Section 2 of the study provides background information on current enrollment trends in South Carolina's public, post-secondary institutions. Section 3 explores some of the factors found in the academic literature that tend to be correlated and possible predictors of future higher education enrollment. Section 4 presents the statistical models used to forecast enrollment, by sector, for the state's public post-secondary institutions as well as the forecasts themselves. Section 5 concludes.

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## SECTION 2: BACKGROUND

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### UNDERGRADUATE STUDENTS

In the Fall of 2014 there were 185,618 undergraduate students enrolled<sup>1</sup> in South Carolina's 33 public post-secondary institutions.<sup>2</sup> While there was a bit of a dip in total enrollment between 2012 and 2014 (see Figure 1), there has been tremendous growth over the past 20 years. Between 1990 and 2014 enrollment increased by over 62 percent while enrollment between 2004 and 2014 increased by over 21 percent. While year to year fluctuations can be quite variable, average annualized enrollment growth between 1990 and 2014 was 2.0 percent. There was a significant increase in enrollment during

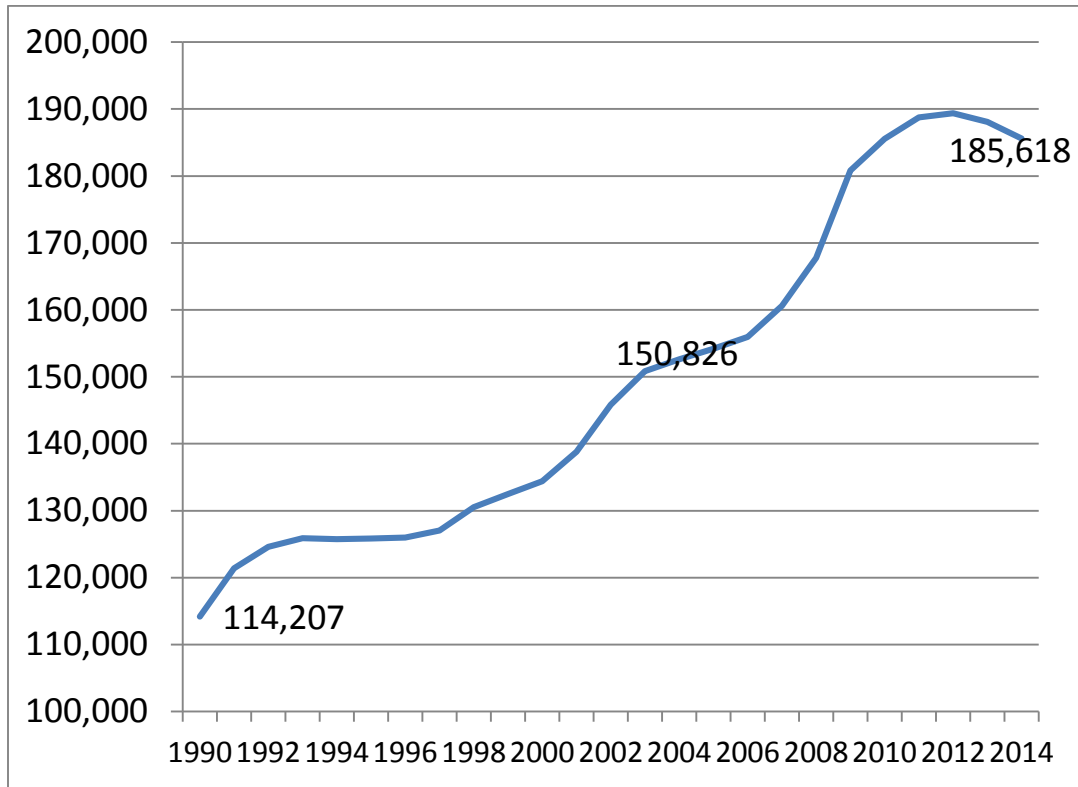
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<sup>1</sup> Opening Headcount Fall Enrollment excluding continuing education and non-degree credit.

<sup>2</sup> SC Public colleges and universities include 3 Research Institutions, 10 Comprehensive Teaching Institutions, 4 Two-Year Regional Campuses of USC, and 16 Technical Colleges. SC independent colleges and universities include 24 Senior Institutions and 1 Two-Year Institution. See Appendix A for a listing of institutions by sector and their fall enrollment at the undergraduate and graduate student levels.

the most recent recession with enrollment increasing 7.8 percent between 2008 and 2009, the largest single year increase during the period.

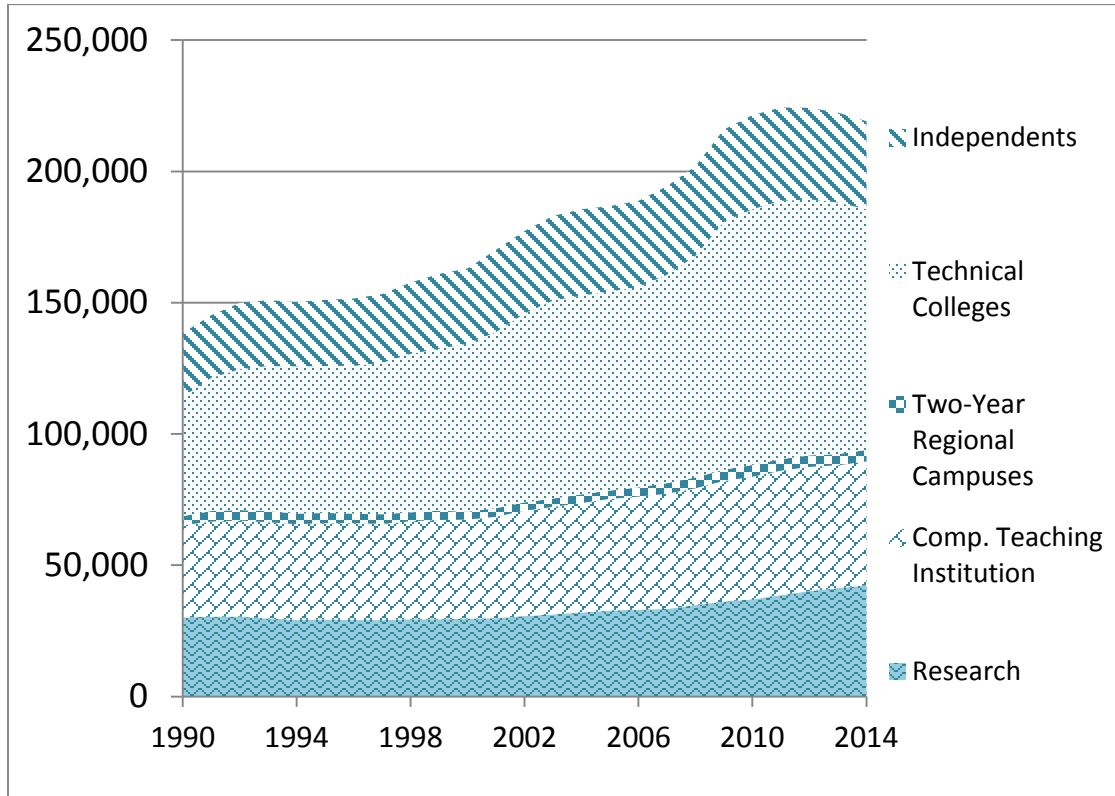
Figure 1: Total Public Undergraduate Enrollment, 1990-2014



Growth has been strongest in the Technical Colleges with average annualized growth between 1990 and 2014 of 3.0 percent. This was followed by Research Institutions (1.4 percent), Comprehensive Teaching Institutions (1.2 percent), and USC Two-Year Regional Campuses (1.0 percent).

Figure 2 shows the enrollment trends, by sector, between 1990 and 2014. In addition to the total enrollment growth, Figure 2 also captures the changing distribution of enrollment between the sectors with the Technical Colleges representing an increasing percentage of total student enrollment.

Figure 2: Total Undergraduate Enrollment by Sector, 1990-2014



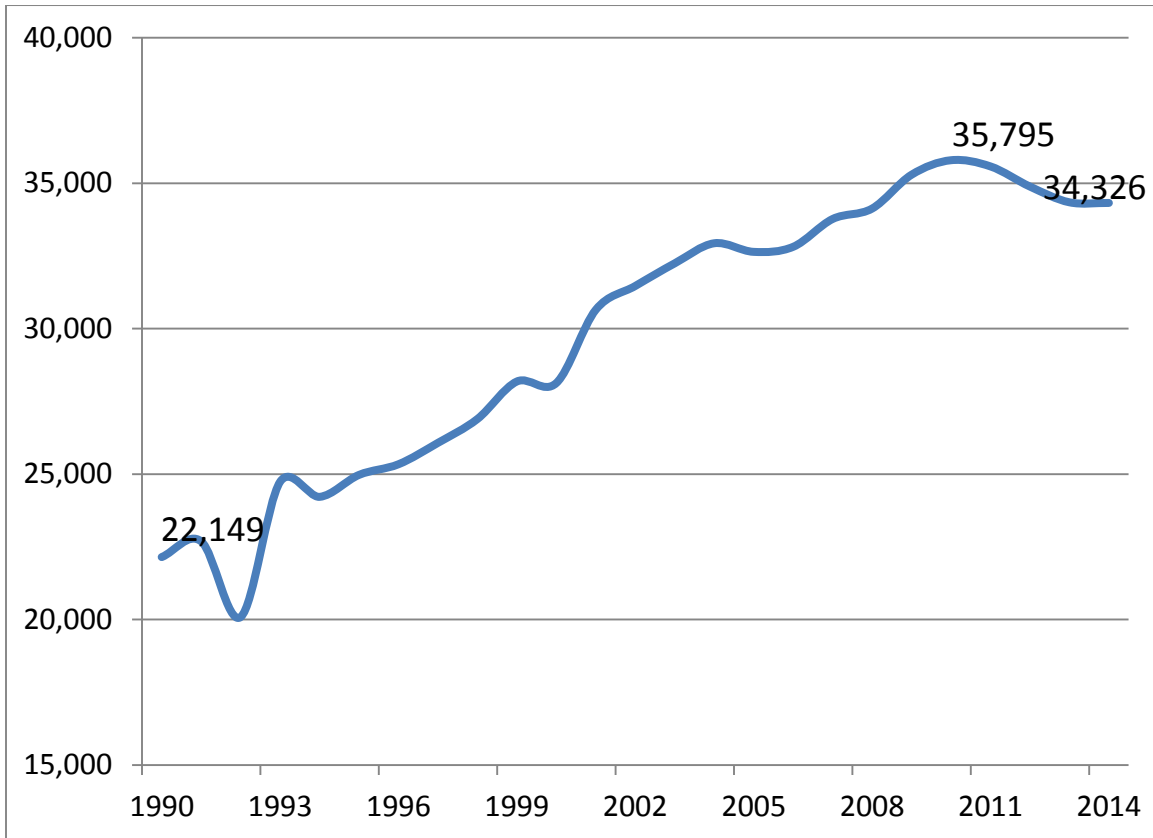
In 1990 about 33.4 percent of all undergraduates were enrolled at one of the state’s 16 Technical Colleges. By 2014, nearly 42 percent of all undergraduates were enrolled in the Technical College System. Table 1 compares the change in distribution of enrollment between 1990 and 2014 for the four sectors of South Carolina’s public colleges.

Table 1: Enrollment Distribution by Sector, 1990 vs. 2014

Sector	1990 Distribution	2014 Distribution	Change
Research Institutions	22.0%	19.3%	-2.7
Comprehensive Teaching Institutions	25.8%	21.4%	-4.4
Technical Colleges	33.4%	41.7%	+8.3
Two-Year Regional Campuses	2.5%	2.0%	-0.5
Independent Colleges and Universities	16.2%	15.6%	-0.6

Enrollment in the state's Independent colleges and universities has grown 55.0% percent between 1990 and 2014, or about 1.8 percent per year. Enrollment has declined significantly since peaking in 2010. Similarly to the public technical colleges, independent colleges and universities saw about a 4.1 percent drop in total undergraduate enrollment between 2010 and 2014.

Figure 3: Total Independent Undergraduate Student Enrollment, 1990-2014



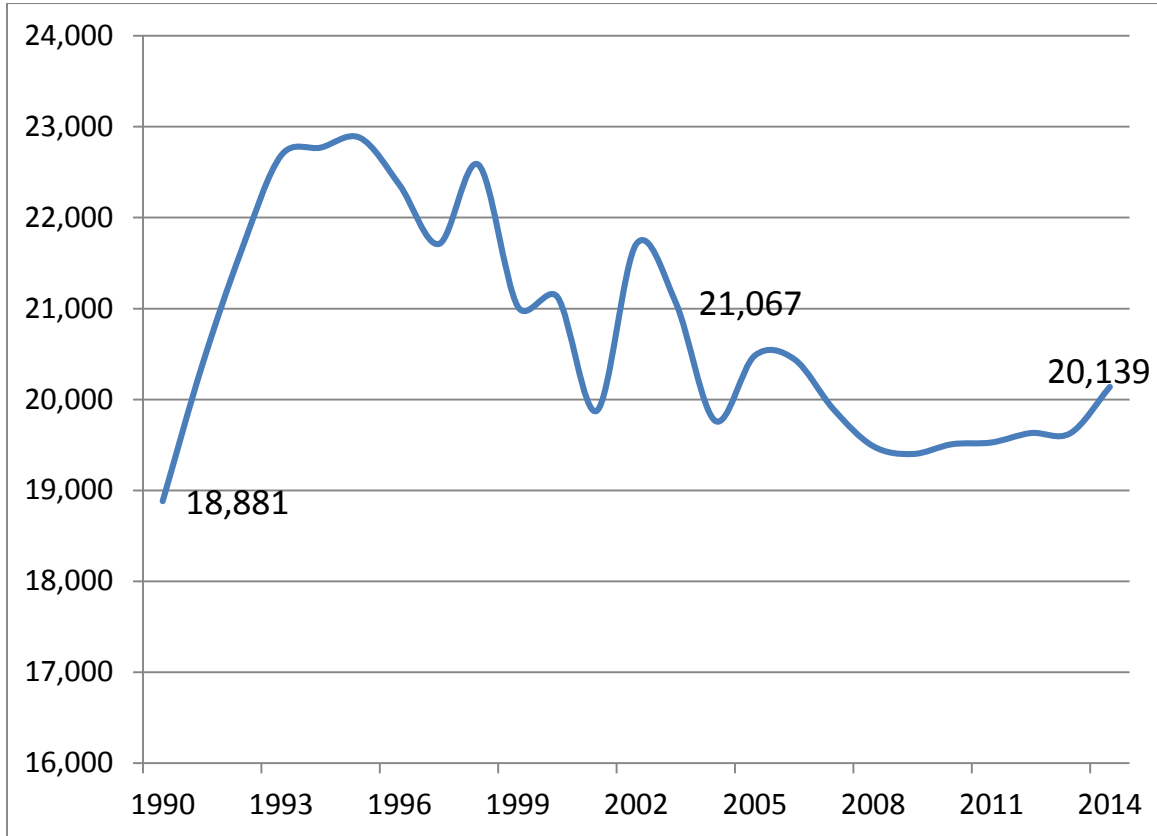
The percentage of all undergraduate students enrolled in the independent colleges and universities declined slightly over the past 24 years from about 16.2 percent in 1990 to about 15.6 percent in 2014. This percentage has been fairly consistently in the 15 to 17 percent range, thus no enrollment projections were made for the independent institutions for undergraduate students.



### GRADUATE STUDENTS<sup>3</sup>

Shifting to graduate student enrollment in public colleges and universities, the total headcounts have remained mostly flat over the past 20 years with significantly more variability across the 20-year span (See Figure 3). Since 1990, total enrollment has grown at an annualized rate of 0.3 percent. Over the previous 10 years, annualized growth was about 0.2 percent per year.

Figure 4: Total Public Graduate Student Enrollment, 1990-2014



Due to limitations in the consistency of data reporting on enrollment of graduate students at independent colleges and universities and the fact that the number of schools offering graduate programs has changed significantly during the period of study,<sup>4</sup> no analysis of independent college and university graduate students is undertaken in this study.

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### SECTION 3: POTENTIAL FACTORS INFLUENCING ENROLLMENT

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Section 2 provided an overview of enrollment in South Carolina's undergraduate and graduate in the recent past. In order to complete predictions on enrollment going forward, it was necessary to examine possible factors that could influence the number of students in the state's higher education system. Explored below are a number of economic variables that were considered when choosing the

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<sup>3</sup> Includes Master's, Unclassified Graduates, Doctor's-Professional Practice, and Doctor's-Research/Scholarship

<sup>4</sup> Anderson University, Claflin University, Coker College, Limestone College, North Greenville University, Presbyterian College, and South University all began offering graduate programs after 1990.

appropriate statistical models to make enrollment projections. Past research has found that many of these are good predictors of future enrollment in higher education.

### HIGH SCHOOL SENIORS, RACIAL COMPOSITION, AND BIRTH RATES

A logical starting point to estimate future college enrollment is to examine trends in the number of students progressing through the state’s high schools. A number of studies have found that the number of high school graduates affects college student enrollment (Chen, 2008; Claggett, 1989; Lins, 1960; Wing, 1974). The NCES provides data on public school enrollments in grades 1 through 12, as well as the number of students graduating.<sup>5</sup> More recent state-level data on headcount by grade is also available from the South Carolina Department of Education. Using historical rates of grade progression, we can estimate a potential future supply of individuals who may enroll in one of South Carolina’s public colleges or universities through the year 2023.

A projection of the number of 12<sup>th</sup> graders in the state’s public high schools is achieved by examining the number of students currently enrolled in grades 3 through 11. Those students currently in the 11<sup>th</sup> grade would be expected to begin enrolling in college in the fall term of 2016. Those students currently in the 3<sup>rd</sup> grade would be expected to begin enrolling in college in the fall term of 2024.

Changes in headcount between grades can result from grade retention and acceleration, net migration among states and schools (e.g., public vs. private), dropouts, early graduations, and mortality (Prescott and Bransberger, 2012). While none of these are modeled explicitly, cohort survival ratios do implicitly capture their influence through year-to-year trends. Using the survival rates of individuals between 3<sup>rd</sup> and 4<sup>th</sup>, 4<sup>th</sup> and 5<sup>th</sup>...etc. we have calculated the projected number of seniors through 2023. These results are shown in Table 2.

*Table 2: Projected Public High School Seniors, 2015-2024*

<b>Current Grade Level</b>	<b>2014/15 Headcount<sup>6</sup></b>	<b>Anticipated Graduation Year</b>	<b>Projected Number of Seniors<sup>7</sup></b>
12	45,626	2015	45,626
11	49,980	2016	46,285
10	56,488	2017	46,399
9	64,724	2018	47,317
8	57,044	2019	47,587
7	55,962	2020	46,781
6	55,456	2021	46,766
5	55,230	2022	47,227
4	55,749	2023	48,009
3	57,407	2024	49,739

<sup>5</sup> The enrollment at private high schools in South Carolina is not very large. In 2008-2009 the total was about 2,900 graduates or about 7% of the state’s total. The Western Institute for Higher Education (WICHE) projects that this will drop to about 5% by 2017-2018. Nonpublic high school students were not considered in these projections due to their fairly stable percentage and small numbers.

<sup>6</sup> 45-day ADM counts from South Carolina Department of Education, 2014-15. This includes enrollment at Charter Schools, Virtual Schools, School for the Deaf and the Blind, Department of Juvenile Justice, Department of Corrections, and the Governor’s Schools.

<sup>7</sup> Cohort survival analysis implicitly accounts for drop outs, out of state migration, and in migration to the state, assuming those trends are fairly consistent over time. Any deviations from long-term trends have the potential to impact the projected numbers.

Using the same cohort survival ratio methodology, it is also possible to project the number of public high school graduates during this time period to compare to other sources such as projections made by the Western Interstate Commission for Higher Education (WICHE). Table 3 provides the estimated number of public high school graduates each academic year using both the WICHE and SCCHE projections. On average, the SCCHE projections are about 2.5 percent higher than the WICHE projections.

The underlying assumptions for the SCCHE projections are that there are no significant changes in the percent of high school students graduating, that the distribution of students between public and private schools remains fairly constant, and that migration patterns into and out of the state remain consistent. Changes in any of these factors have the potential to significantly impact the prospective higher education pipeline.

*Table 3: Projected Public High School Graduates, 2015-2024*

<b>Academic Year</b>	<b>WICHE Projections</b>	<b>SCCHE Projections</b>	<b>Difference<sup>8</sup></b>
2015/16	38,678	40,856	+5.6%
2016/17	39,617	40,956	+3.4%
2017/18	40,910	41,767	+2.1%
2018/19	40,953	42,005	+2.6%
2019/20	40,005	41,294	+3.2%
2020/21	39,905	41,280	+3.4%
2021/22	40,485	41,688	+3.0%
2022/23	41,739	42,378	+1.5%
2023/24	45,032	43,904	-2.5%
Average			+2.5%

WICHE also provides projections for the number of public high school graduates broken out into racial/ethnic groups. In South Carolina, the population of White, Non-Hispanic high school graduates is projected to grow only 3.9 percent between 2014 and 2023 while the population of Hispanic graduates is expected to grow by 145.5 percent, American Indian/Alaska Native by 132.4 percent, and Asian/Pacific Islander by 127.4 percent. The number of Black, Non-Hispanic graduates are projected to grow about 6.4 percent during this time period. Table 4 provides the estimated number of graduates through the year 2022-2023.

*Table 4: WICHE Projected Public High School Graduates by Race/Ethnicity, 2008-2022*

<b>Academic Year</b>	<b>Native Am./Alaska</b>	<b>Asian/Pacific</b>	<b>Black</b>	<b>Hispanic</b>	<b>White, non-Hispanic</b>
2008-09	107	605	14,541	1,227	22,453
2009-10*	82	652	14,291	1,327	22,492
2010-11*	69	534	14,294	1,443	22,704

<sup>8</sup> The methodology used for the WICHE and SCCHE projections is largely similar—Cohort Survival Analysis. The main difference is that WICHE uses both current data and a five-year smoothed average while the SCCHE projections used only the most recently available survival rates. Since survival rates have been increasing in recent years, this accounts for the higher SCCHE projections compared to WICHE.

Academic Year	Native Am./Alaska	Asian/Pacific	Black	Hispanic	White, non-Hispanic
2011-12*	61	610	14,465	1,603	22,993
2012-13*	78	651	13,442	1,768	22,551
2013-14*	80	653	12,200	1,628	22,169
2014-15*	74	715	12,099	1,787	22,404
2015-16*	85	735	12,343	2,025	22,832
2016-17*	96	829	12,433	2,118	23,598
2017-18*	107	925	12,990	2,455	23,937
2018-19*	103	988	12,867	2,701	23,827
2019-20*	94	1,016	12,250	2,873	23,445
2020-21*	112	1,013	11,998	3,042	23,560
2021-22*	128	1,055	11,995	3,226	23,902
2022-23*	172	1,377	12,756	4,579	22,958

\*Projected

This will result in a change in the distribution of high school graduates with the share of White, Non-Hispanic graduates dropping from about 60.4 percent in 2014 to 53.4 percent by 2023. The share of Hispanic graduates will likely grow from 4.8 percent to 11.8 percent while the share of Black high school graduates will slip slightly from 32.6 percent to 31.2 percent.

This potential change in the distribution of high school graduates by race may have an impact on potential college enrollment immediately succeeding graduation. According to the Bureau of Labor Statistics annual review of the College Enrollment and Work Status of recent high school graduates, in 2013, 65.9 percent of all high school graduates were enrolled in a two- or four-year program by October of their graduation year. This percentage differs based on race/ethnicity as well as year as shown in Table 5.

Table 5: National<sup>9</sup> College Enrollment of Recent HS Graduates by Race/Ethnicity, 2010-2014

Academic Year	Native Am./Alaska	Asian/Pacific	Black	Hispanic	White, non-Hispanic
2010	N/A	84.0%	61.4%	59.6%	68.6%
2011	N/A	86.7%	67.5%	66.6%	67.7%
2012	N/A	82.2%	58.2%	70.3%	66.6%
2013	N/A	79.1%	59.3%	59.9%	67.1%

Source: Bureau of Labor Statistics, TED: The Economics Daily May 8, 2014

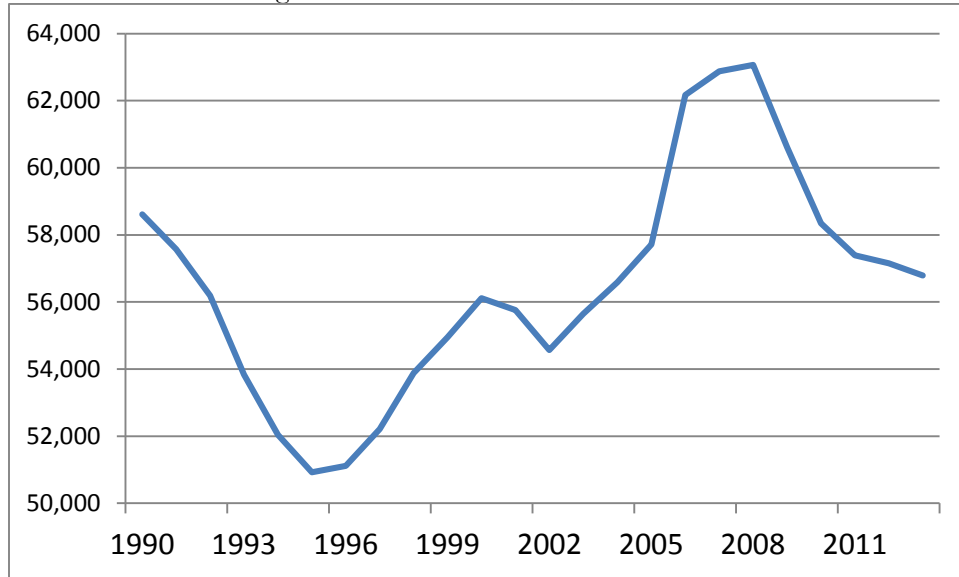
Given that Hispanic high school graduates have historically had lower rates of immediate college enrollment, combined with their projected growth rate in the state, this is likely to limit enrollment growth in SC institutions. This effect may be compensated for with efforts such as: increased out-of-

<sup>9</sup> There were no college enrollment rates by race/ethnicity available at the state level. The National Center for Higher Education Management Systems estimates that in 2010 about 68.3% of recent SC high school graduates enrolled in higher education. This is similar to the national rates.

state recruitment, increased high school graduation rates, increased high school to college progression rates, and/or attracting additional non-traditionally aged students.

While outside the scope of this study, it is important to note that there may be a decline in the number of high school seniors in the long-run as the number of births in South Carolina declined, on average, two percent per year between 2009 and 2013 as the state experienced the worst economic downturn since the Great Depression. Figure 5 shows the fluctuating pattern of births in the state between 1990 and 2013. The decline in the number of births is not anticipated to have any impact on South Carolina higher education enrollment until at least 2027.

Figure 5: South Carolina Births, 1990-2013<sup>10</sup>



Those individuals born between 2005 and 2008, who could be expected to graduate between 2023 and 2026, are the latest “bubble” that could be expected to raise higher education enrollment rates through population alone. Unless there are changes in the percentage of students graduating high school and enrolling in higher education or additional participation from non-traditional age students, it is likely that enrollments will peak in the mid-2020s.

Preliminary data from the National Vital Statistics Reports, released June 17, 2015, showed the number of births for SC to be 57,617 for 2014 which would be about a 1.4 percent increase over 2013 levels and the first increase since 2008. It is too early to tell if this will be a continuing trend or just an isolated bump. Nationally, the birth rate also increased about 1 percent between 2013 and 2014.

#### UNEMPLOYMENT RATE

In theory, higher rates of unemployment increase the attractiveness of higher education by lowering the opportunity cost of not working in a full-time job. A difficult job market also can provide incentives for individuals to retrain for occupations and careers that may be in more demand.

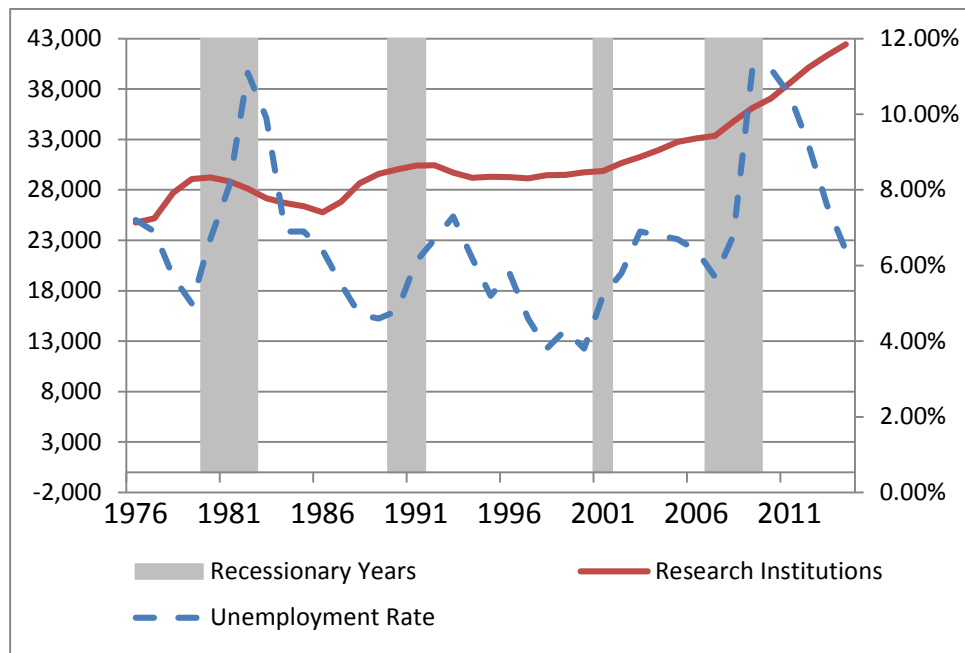
Empirically, there have been mixed results when researchers have examined the relationship between postsecondary enrollment and the unemployment rate. Craft et al. (2012), Helmelt & Marcotte, 2011, and Stanley & French, 2009 all found no relationship between unemployment and

<sup>10</sup> Centers for Disease Control: National Vital Statistics Reports

enrollment<sup>11</sup>. Kane (1995) and DeLeeuw (2012) both found a positive relationship between unemployment and enrollment in two-year public colleges. Using data from 2001-2008 from South Carolina’s and Virginia’s Technical Colleges, Rivers (2010) found a small positive relationship for South Carolina and a small negative relationship for Virginia, although both were insignificant at conventional levels.

Figures 6 through 12 plot enrollment in each of the higher education sectors against the average, annual total unemployment rate (TUR) for the state.

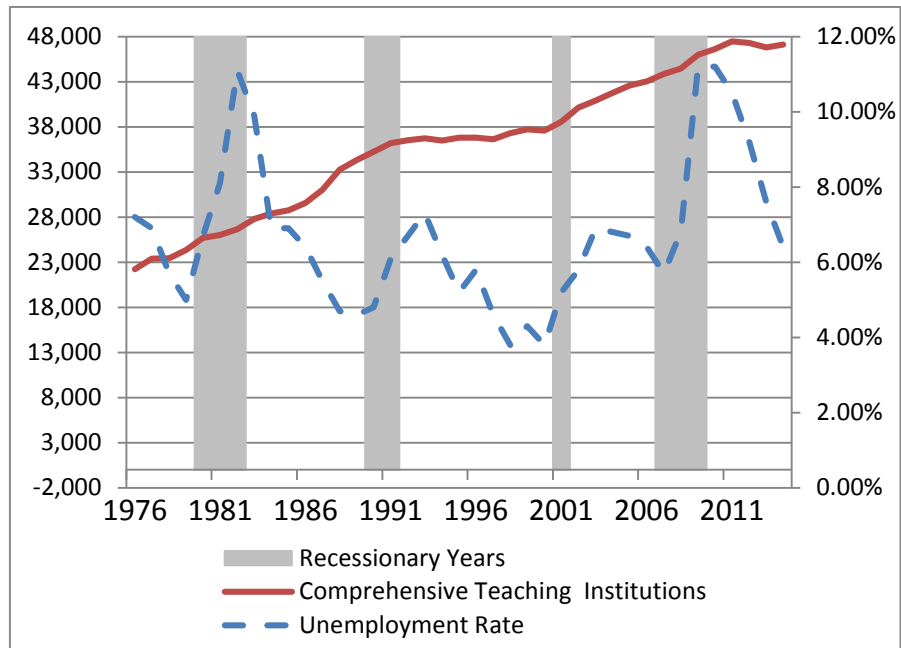
*Figure 6: Unemployment Rate and Undergraduate Enrollment at Research Institutions*



Without controlling for any additional factors, there is a statistically significant relationship between enrollment at SC’s Research Institutions and the state’s unemployment rate, although the impact is not large. Between 1976 and 2014 the variation in the unemployment rate explained approximately 15 percent of the variation in the sector’s enrollment. This influence jumps, however, if the analysis is restricted to 1990-2014. The relationship becomes quite stronger with about 56 percent of the variation in enrollment explained by the unemployment rate.

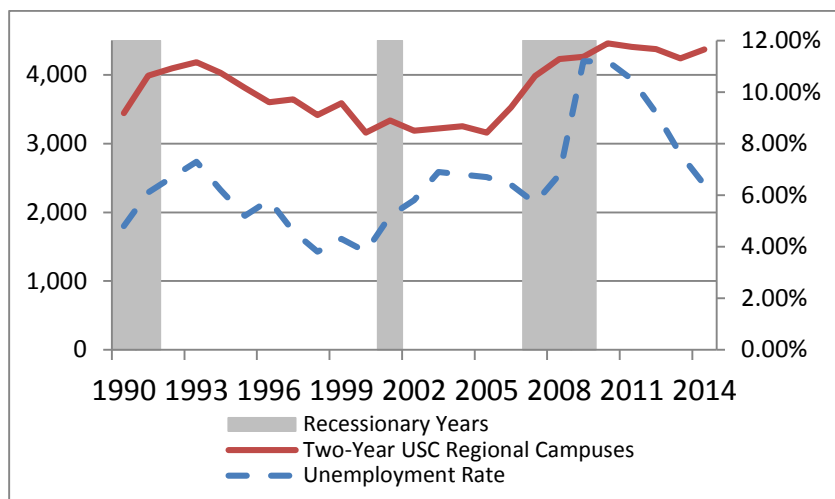
<sup>11</sup> Helmelt & Marcotte looked only at Research Institutions and other schools comparable to Comprehensive Teaching Institutions. Stanley and French and Craft et al. looked only at the impact of unemployment on freshmen enrollment.

Figure 7: Unemployment Rate and Undergraduate Enrollment at Comprehensive Teaching Institutions



Between 1976 and 2014, there is no statistically significant relationship between enrollment at the Comprehensive Teaching Institutions and the state unemployment rate. However, if the time period is restricted to post-1990, there is a much stronger, positive and statistically significant relationship. The variation in the unemployment rate explains approximately 57 percent of the variation in enrollment during that time period.

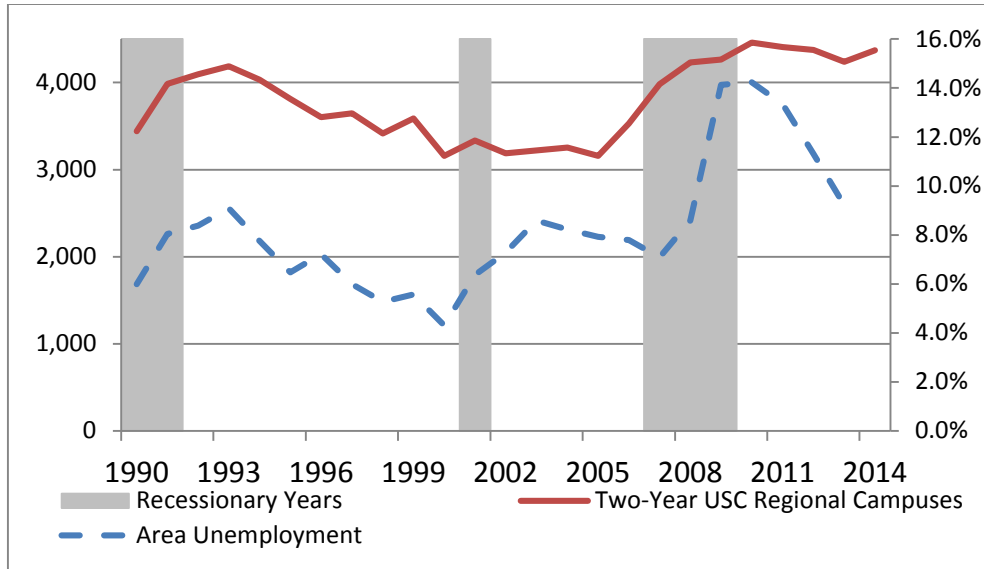
Figure 8: Unemployment Rate and Undergraduate Enrollment at USC's Two-Year Regional Campuses



As the unemployment rate increases, so, too, does enrollment at USC's Two-Year Regional Campuses. The relationship is statistically significant at conventional levels. Approximately 45 percent of the variation in the sector's enrollment can be explained by variations in the state unemployment rate.

From Figure 8, it appears that the state unemployment rate has some predictive power for enrollment at USC's Two-Year Regional campuses, however, if the unemployment rate is more narrowly focused to the counties traditionally served by these campuses, there is a slightly stronger relationship. Figure 9 provides a comparison of the headcount at USC's Regional Two-Year campuses from 1990 through 2014 to the area<sup>12</sup> unemployment rate.

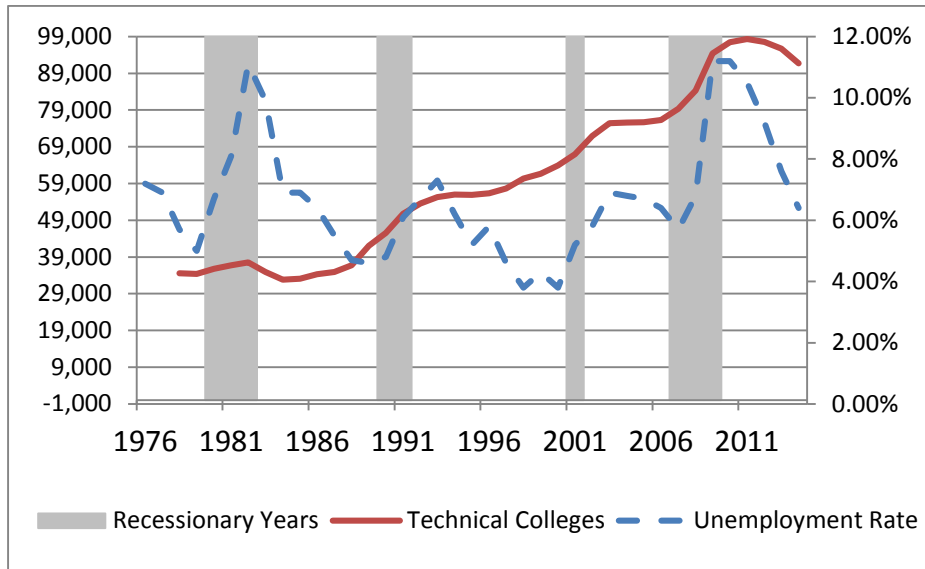
Figure 9: Unemployment Rate Selected Counties vs. USC's Two-Year Regional Campus Enrollment, 1990-2014



<sup>12</sup> The area includes the following counties: Allendale, Bamberg, Barnwell, Cherokee, Chester, Chesterfield, Clarendon, Colleton, Fairfield, Hampton, Kershaw, Lancaster, Laurens, Lee, Newberry, Sumter, Union, Williamsburg, and York.

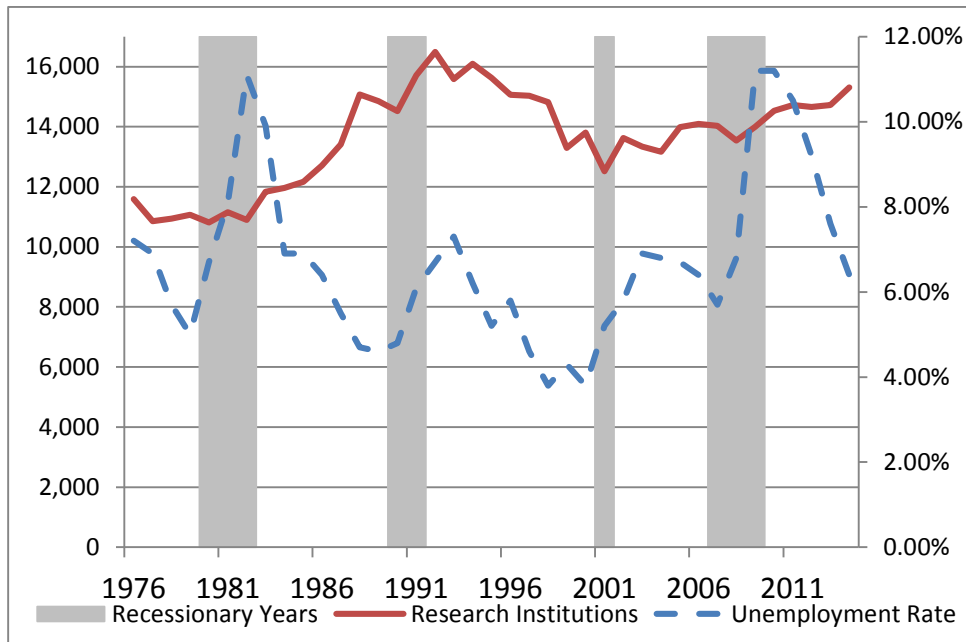


Figure 10: Unemployment Rate and Undergraduate Enrollment at Technical Colleges



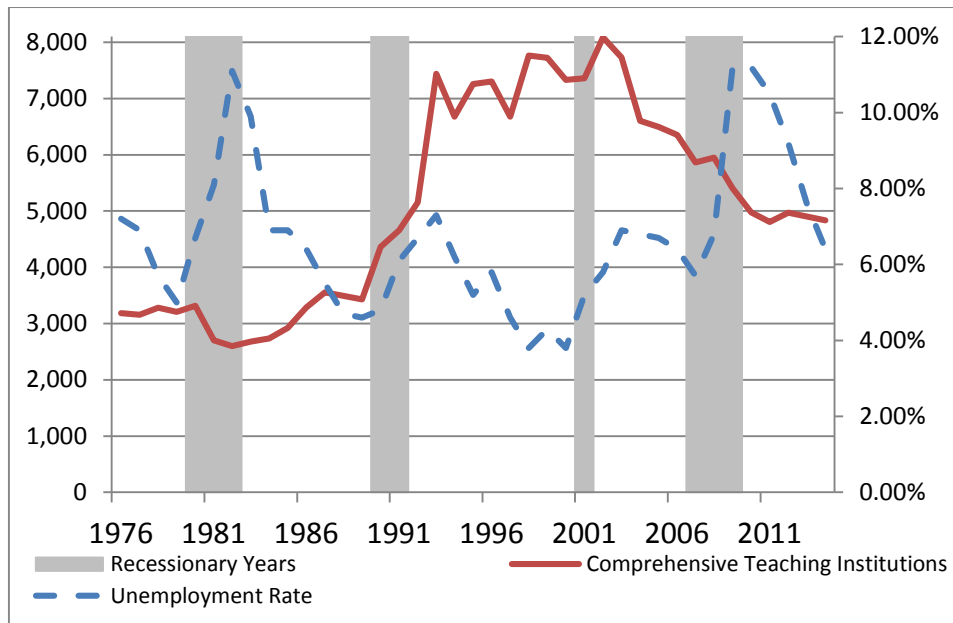
Similar to the Research Institutions, there is a large difference in the relationship between the unemployment rate and enrollment in the Technical College system pre and post-1990. Examining the relationship throughout the entire period, the variation in the unemployment rate only explains about 10 percent of the variation in enrollment. This jumps to about 56 percent if the analysis is restricted to 1990-2014.

Figure 11: Unemployment Rate and Graduate Student Enrollment at Research Institutions



Across the entire time period, the relationship between graduate student enrollment and the unemployment rate, at the Research Institutions, was not statistically significant. This finding also held when limiting the time period to 1990-2014.

Figure 12: Unemployment Rate and Graduate Student Enrollment at Comprehensive Teaching Institutions



Between 1976 and 2014 and between 1990 and 2014, there was a statistically significant relationship between the unemployment rate and the enrollment at South Carolina's Comprehensive Teaching Institutions for graduate students. Unlike all other sectors studies, the relationship was negative

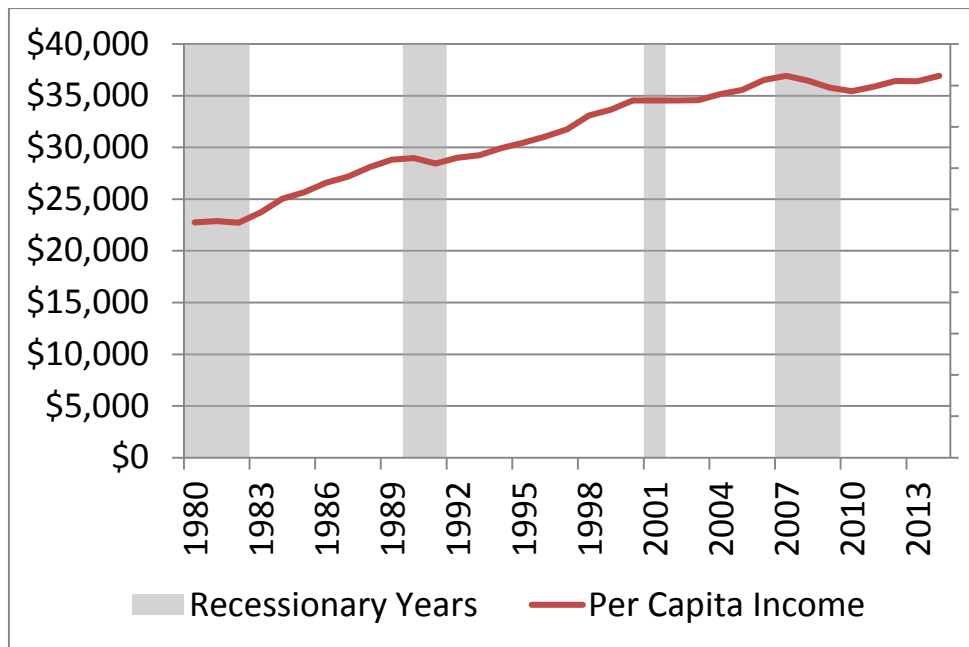
meaning that as unemployment rose, enrollment of graduate students in this sector declined. One possible explanation for this finding is that during economic downturns, it may be necessary to put additional graduate education on hold to join or return to the labor market.

### PERSONAL INCOME

Lehr and Newton (1978) find that increases in average per capita income are positively associated with enrollment demand. Their findings indicate that students in Oregon are less sensitive to the current prices of education (tuition) than they are to their ability to pay for it (personal income). They find that, especially for community colleges, enrollment is more sensitive to parental income than other types of schools.

Real per capita income in South Carolina has grown at about 1 percent per year between 1990 and 2014 with moderate dips in 1991 and 2008-2010. This upward trend is likely to have a positive impact on enrollment in higher education in South Carolina according to Lehr and Newton’s findings.

Figure 13: Real Per Capita Income South Carolina, 1980-2014




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### SECTION 4: FORECAST MODELS AND RESULTS

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A system-wide, aggregate forecast for public undergraduate enrollment is obtained by summing the individual forecasts of the four major sectors of public colleges and universities: Research Institutions, Comprehensive Teaching Institutions, Two-Year Regional Campuses of USC, and Technical Colleges. Several different types of models are used to forecast enrollment at the various institutional sectors depending on best fit. While some sectors have enrollments that are best predicted by their own past enrollment values, others are more strongly influenced by structural factors such as the number of high school seniors in the prior year, the unemployment rate, or per capita income. Standard econometric diagnostic tests and analyses of fit were used to produce the best model for each sector.

**UNDERGRADUATE—TWO YEAR REGIONAL CAMPUSES OF USC**

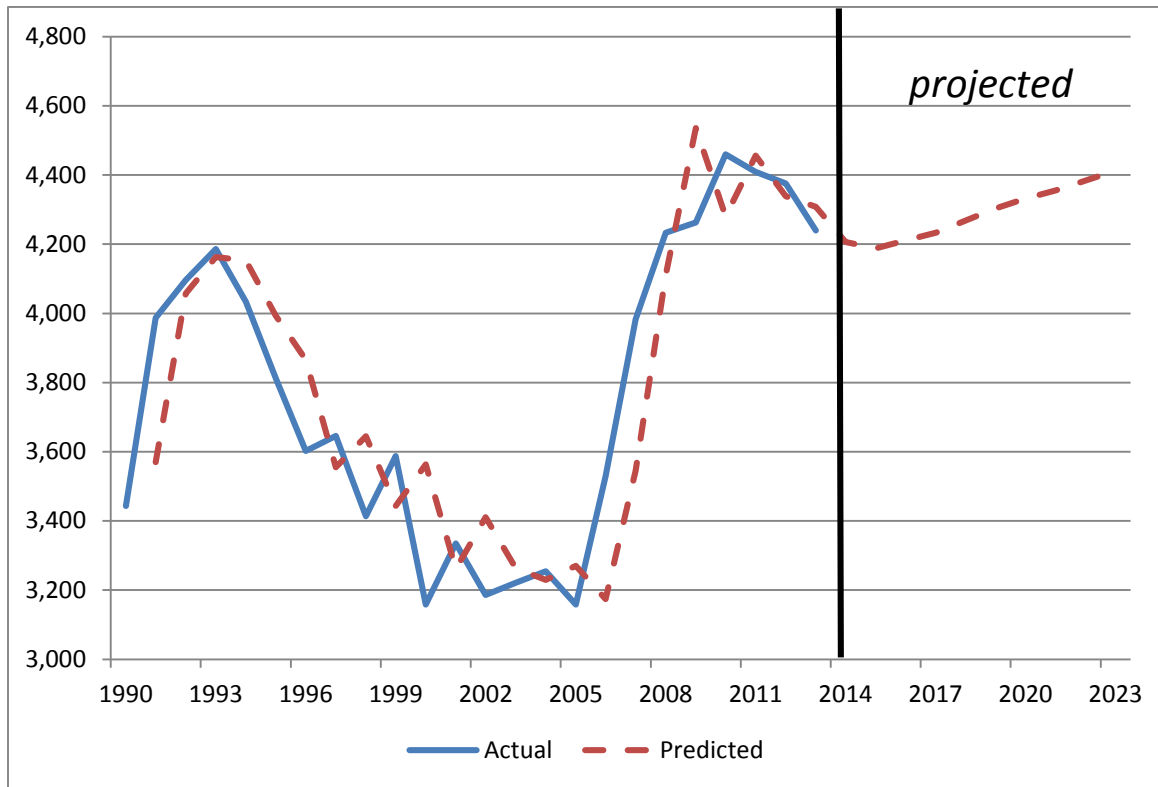
The best predictor of total enrollment at the four Two-Year campuses of USC is the enrollment at those institutions the prior year. Approximately 82 percent of the variation in annual enrollment can be explained by enrollment in the prior year. With these facts in mind, a projection for future enrollment was carried out using a time series model with one additional independent variable, the area unemployment rate.<sup>13</sup> The actual and projected enrollments are shown in Table 6 and Figure 14.

*Table 6: Two-Year Reg. Campuses of USC Actual and Projected Undergraduate Student Enrollment, 1990-2023*

<b>Year</b>	<b>Actual Enrollment</b>	<b>Projected Enrollment</b>
1990	3,443	
1991	3,987	
1992	4,096	
1993	4,186	
1994	4,033	
1995	3,813	
1996	3,602	
1997	3,646	
1998	3,414	
1999	3,587	
2000	3,158	
2001	3,335	
2002	3,186	
2003	3,221	
2004	3,254	
2005	3,158	
2006	3,529	
2007	3,983	
2008	4,233	
2009	4,263	
2010	4,460	
2011	4,409	
2012	4,376	
2013	4,240	
2014	4,372	4,207
2015		4,188
2016		4,211
2017		4,233
2018		4,268
2019		4,303
2020		4,332
2021		4,355
2022		4,384
2023		4,413

<sup>13</sup> Forecasts for the total unemployment rate statewide and regionally were based on the historic relationship between the South Carolina unemployment rate and the US unemployment rate as well as the regional unemployment rate and the state rate. See Appendix C for actual and forecasted values.

Figure 14: Two-Year Reg. Campuses of USC Actual and Projected Undergraduate Student Enrollment, 1990-2023



While the actual future values are likely to be more volatile, the average growth is expected to be about 0.7 percent per year through 2023. The model does anticipate a slight drop in enrollment for 2015 of about 0.5 percent as the unemployment rate continues to decline. The model under-predicted enrollment in 2014 by about 3.8 percent.

#### UNDERGRADUATE—TECHNICAL COLLEGES

There have been a number of studies linking economic conditions to the enrollment at technical or community colleges—particularly the unemployment rate (Pennigton, McGinty & Williams, 2002; Dellas and Sakellaris, 2003). Betts & McFarland (1995) found that newly unemployed persons often register for classes at community college to retrain for more stable or high-demand occupations, which may be less susceptible to unemployment. Past research has also predicted that there may be a positive link between community or technical college enrollment and personal income (Frederick, 2010). Another factor that will impact the enrollment in South Carolina’s Technical Colleges from year to year is also the level of enrollment in the school the prior year. A linear model was used to predict future enrollment in the Technical College system using the state unemployment rate, the state average per capita income<sup>14</sup> (in constant dollars), and the level of enrollment the prior year as independent, explanatory variables.

All explanatory variables were positively correlated with enrollment although the unemployment rate was not statistically significant at the standard levels when controlling for the other factors. This is similar to findings from Rivers (2010) that found no significant statistical relationship between the unemployment rate and Technical College enrollment in South Carolina. Berger and Kostal (2002) also

<sup>14</sup> See Appendix A for details on the historical values used and the method used to forecast per capita income through 2023.

failed to find a statistically significant relationship between community college enrollment and the unemployment rate.

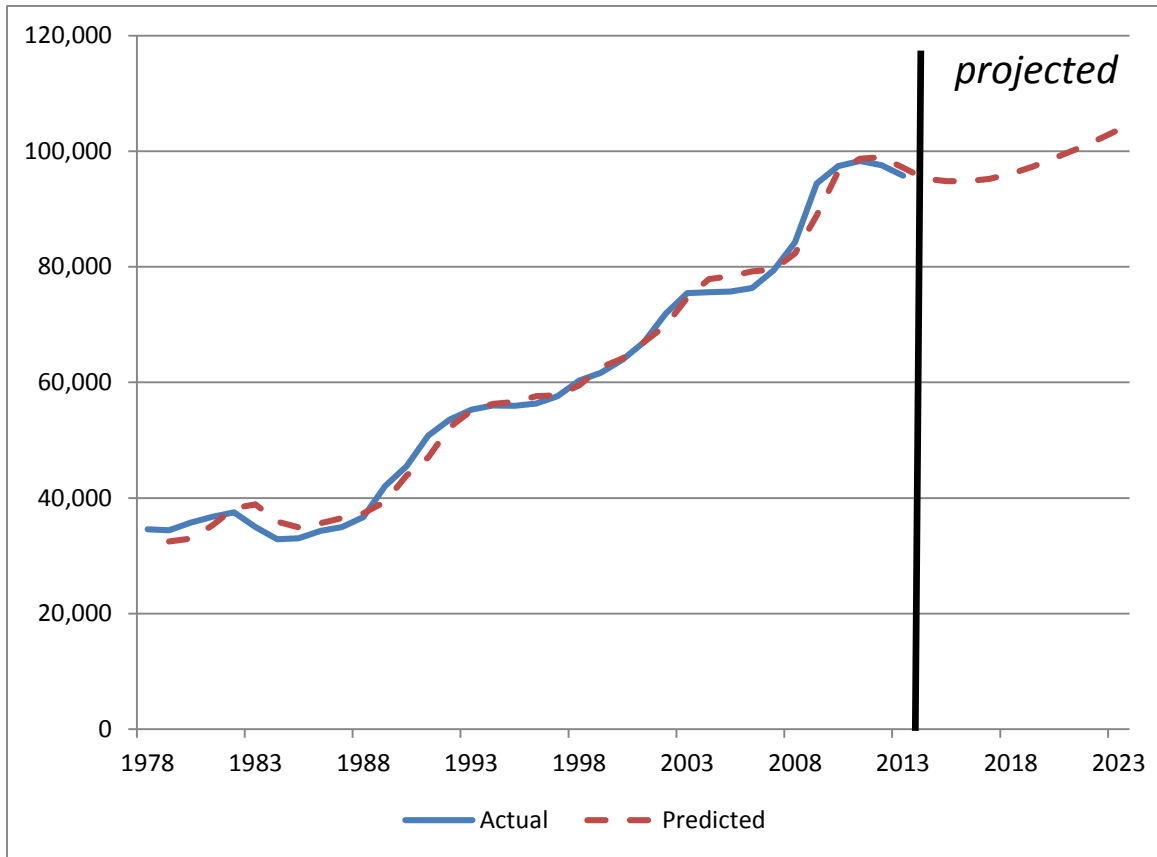
All else equal, enrollment in the Technical College system tends to rise as per capita income rises, and the enrollment in the prior year positively impacts enrollment in the present period. The full regression results are shown in Appendix B.

*Table 7: Technical College System Actual and Projected Undergraduate Student Enrollment, 1978-2023*

<b>Year</b>	<b>Actual Enrollment</b>	<b>Projected Enrollment</b>
1978	34,582	
1979	34,441	
1980	35,753	
1981	36,742	
1982	37,506	
1983	34,965	
1984	32,863	
1985	33,061	
1986	34,306	
1987	34,962	
1988	36,713	
1989	42,035	
1990	45,509	
1991	50,787	
1992	53,549	
1993	55,293	
1994	56,016	
1995	55,933	
1996	56,362	
1997	57,621	
1998	60,343	
1999	61,665	
2000	63,918	
2001	66,991	
2002	71,895	
2003	75,424	
2004	75,628	
2005	75,725	
2006	76,309	
2007	79,383	
2008	84,270	
2009	94,434	
2010	97,420	
2011	98,318	
2012	97,584	
2013	95,744	
2014	91,726	95,287
2015		94,810
2016		94,822
2017		95,217

Year	Actual Enrollment	Projected Enrollment
2018		96,091
2019		97,342
2020		98,795
2021		100,318
2022		101,984
2023		103,764

Figure 15: Technical College System Actual and Projected Undergraduate Student Enrollment, 1978-2023



While the actual future values are likely to be more volatile, the average growth is expected to be about 1.0 percent per year for the Technical College system through 2023. The model does anticipate a slight drop in enrollment for 2015 of about 0.5 percent as the unemployment rate continues to decline and the impact of the enrollment drop the prior year persists. The model over-predicted 2014 enrollment by about 3.9 percent.

#### UNDERGRADUATE—PUBLIC COMPREHENSIVE TEACHING INSTITUTIONS

For the public Comprehensive Teaching Institutions (CTI) the single best predictor of next year's enrollment is this year's enrollment. There is also some predictive power in the real per capita personal income (PCI) in the state as well as the state unemployment rate. Ordinary Least Squares regression was used to forecast enrollment for the CTIs using the enrollment from the prior year, the state unemployment rate, and the per capita personal income.

Once again, the unemployment rate became an insignificant predictor of enrollment after controlling for prior year enrollment and the state per capita personal income. Both prior year enrollment and per capita income were positively related to enrollment in Comprehensive Teaching Institutions. Full regression results are shown in Appendix B, Table 2.

Using the regression results and the forecasts for the unemployment rate and PCI<sup>15</sup>, Table 8 presents the actual and projected enrollment in the Comprehensive Teaching Institutions through 2023.

*Table 8: Comp. Teaching Institutions Actual and Projected Undergraduate Student Enrollment, 1979-2023*

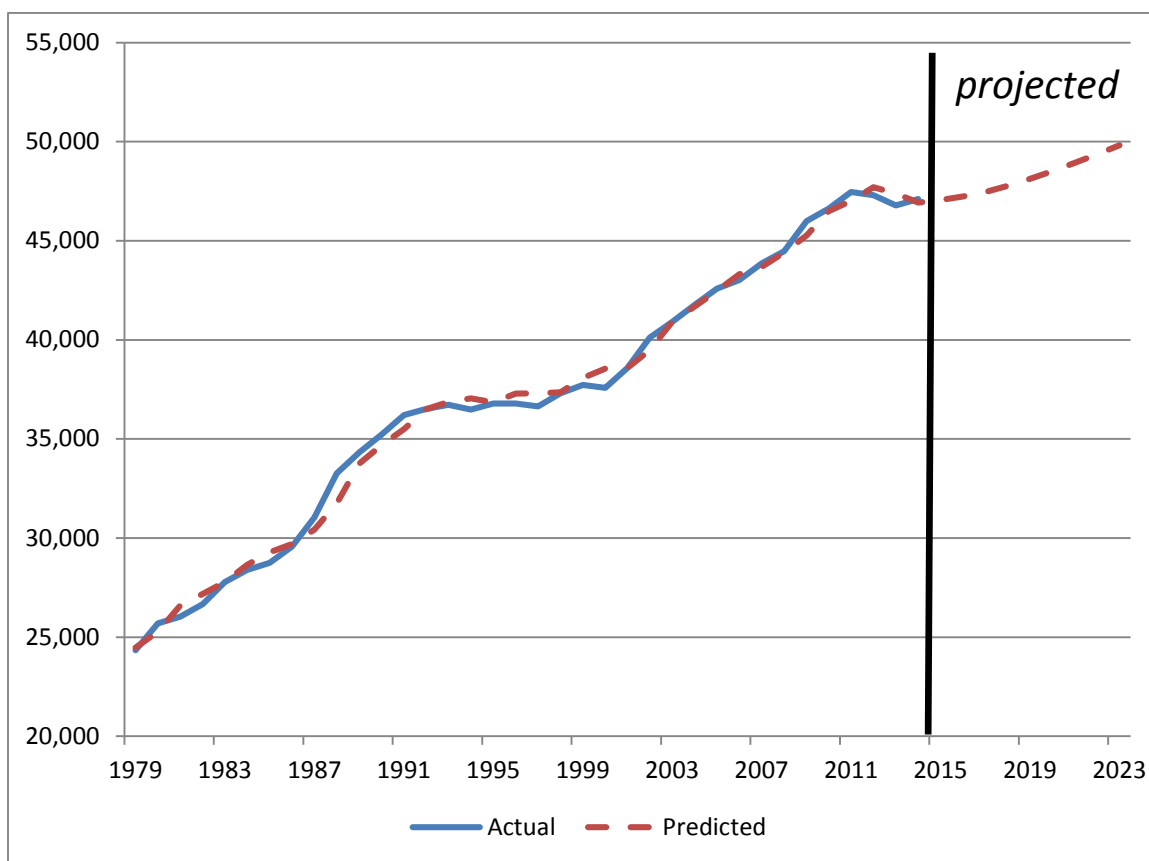
<b>Year</b>	<b>Actual Enrollment</b>	<b>Projected Enrollment</b>
1979	24,339	
1980	25,702	
1981	26,032	
1982	26,672	
1983	27,781	
1984	28,389	
1985	28,742	
1986	29,572	
1987	31,034	
1988	33,270	
1989	34,313	
1990	35,225	
1991	36,200	
1992	36,517	
1993	36,719	
1994	36,487	
1995	36,784	
1996	36,786	
1997	36,640	
1998	37,310	
1999	37,724	
2000	37,575	
2001	38,578	
2002	40,118	
2003	40,914	
2004	41,762	
2005	42,578	
2006	43,025	
2007	43,856	
2008	44,469	
2009	45,999	
2010	46,615	
2011	47,458	
2012	47,303	
2013	46,788	
2014	47,101	46,926

<sup>15</sup> Forecasts are detailed in Appendix A.



<b>Year</b>	<b>Actual Enrollment</b>	<b>Projected Enrollment</b>
2015		47,051
2016		47,235
2017		47,468
2018		47,769
2019		48,126
2020		48,517
2021		48,926
2022		49,361
2023		49,818

Figure 16: *Comp. Teaching Institutions Actual and Projected Undergraduate Student Enrollment, 1979-2023*



While the actual future values are likely to be more volatile, the average growth is expected to be about 0.7 percent per year for the Comprehensive Teaching Institutions through 2023. The model anticipates an increase in headcount for 2015 of about 0.3 percent as per capita income recovers and the steady upward trend in enrollment resumes. The model under-predicted enrollment in 2014 by about 0.4 percent.

#### UNDERGRADUATE—PUBLIC RESEARCH INSTITUTIONS

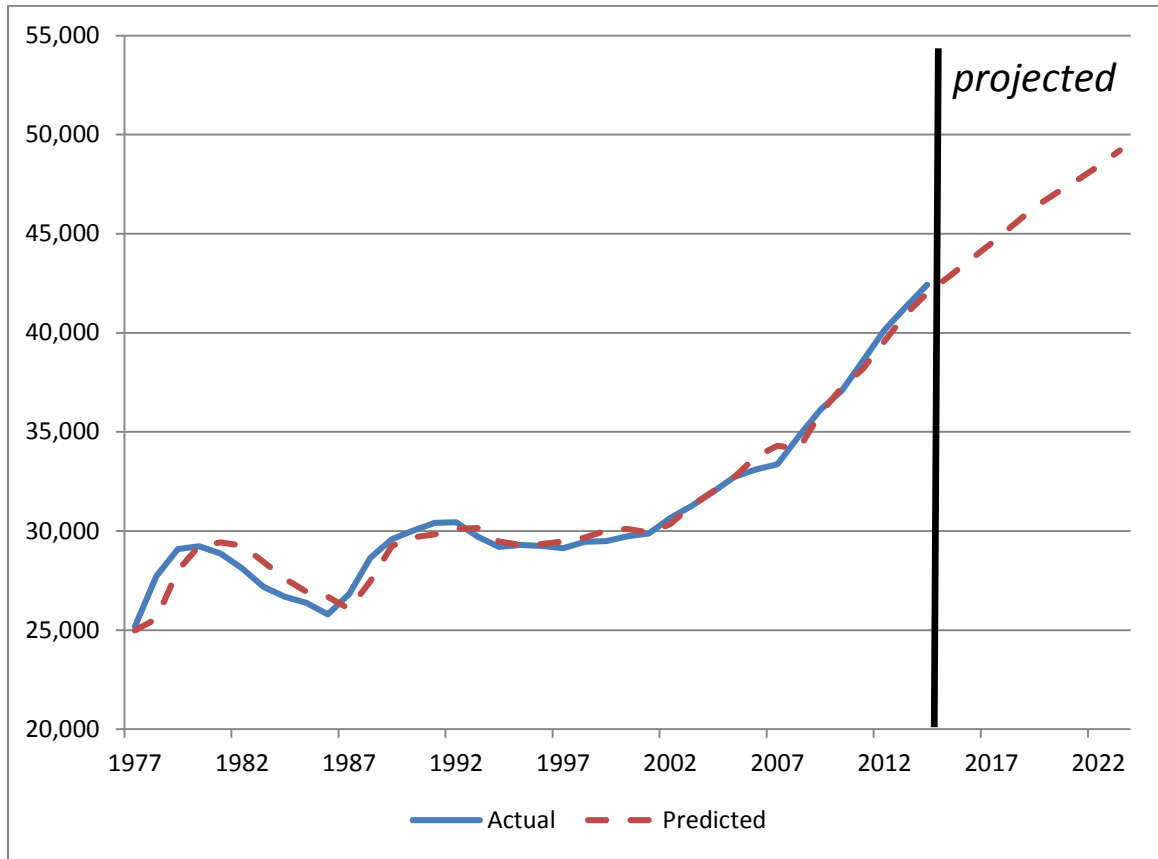
As mentioned previously, there is mixed evidence on whether the unemployment rate plays a significant role in the enrollment at public four-year colleges and research institutions. This holds true for South Carolina’s public Research Institutions as well with the unemployment rate only explaining about 15 percent of the variation in enrollment during the time period 1976-2014. Three factors that do appear to have a strong impact on the enrollment at Research Institutions are: 1) the number of students enrolled in the prior year, 2) statewide per capita personal income, and 3) the number of seniors in public high schools in the prior academic year. Full regression results are available in Appendix B, Table 3.

Using the regression results and the forecasts for the PCI and number of high school seniors, Table 9 presents the actual and projected enrollment in the Research Institutions through 2023.

Table 9: Research Institutions Actual and Projected Undergraduate Student Enrollment, 1977-2023

Year	Actual Enrollment	Projected Enrollment
1977	25,188	
1978	27,720	
1979	29,090	
1980	29,235	
1981	28,857	
1982	28,125	
1983	27,176	
1984	26,682	
1985	26,384	
1986	25,788	
1987	26,836	
1988	28,656	
1989	29,590	
1990	30,030	
1991	30,416	
1992	30,442	
1993	29,713	
1994	29,206	
1995	29,296	
1996	29,251	
1997	29,134	
1998	29,466	
1999	29,499	
2000	29,738	
2001	29,881	
2002	30,653	
2003	31,267	
2004	31,977	
2005	32,743	
2006	33,107	
2007	33,366	
2008	34,794	
2009	36,108	
2010	37,077	
2011	38,590	
2012	40,129	
2013	41,316	
2014	42,419	42,006
2015		42,824
2016		43,692
2017		44,521
2018		45,437
2019		46,331
2020		47,043
2021		47,713
2022		48,420
2023		49,207

Figure 17: Research Institutions Actual and Projected Undergraduate Student Enrollment, 1977-2023

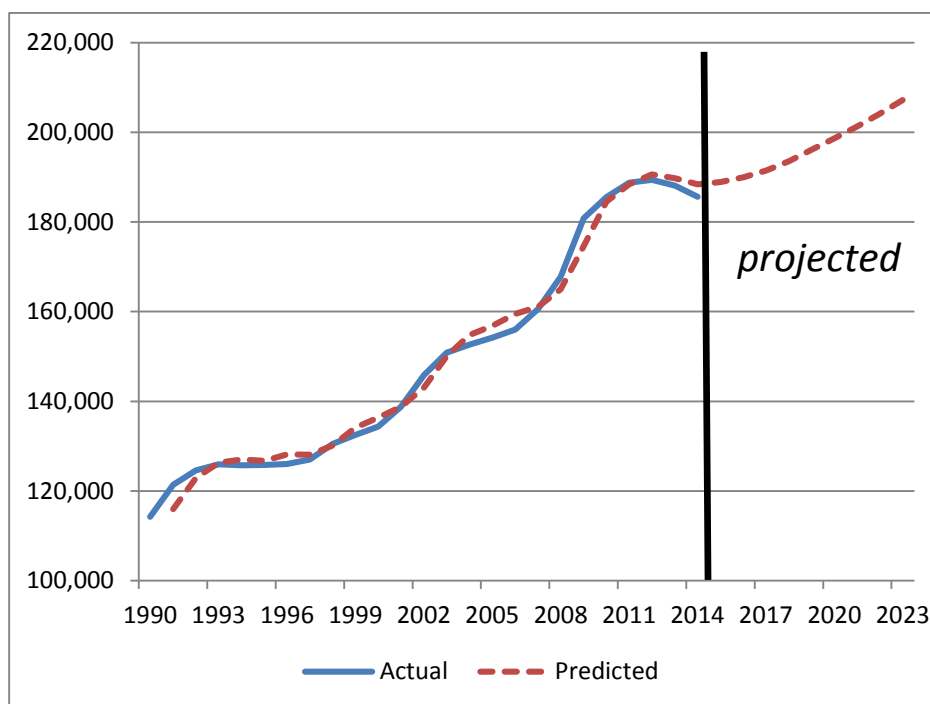


The model projects that headcount at Research Institutions in South Carolina will continue to experience aggressive growth over the next several years. Between 2015 and 2023, annual growth is expected to average 1.8 percent per year with both personal income and the number of SC high school seniors expected to continue to grow over the medium-term. The model slightly under-predicts enrollment in 2014 by 1 percent.

#### UNDERGRADUATE STUDENTS—TOTAL ENROLLMENT

Using the information in the four sections above, it is possible to aggregate the enrollment forecasts across all four sectors for a final undergraduate projection. Figure 18 provides that aggregate enrollment information.

Figure 18: Total Undergraduate Student Actual and Projected Enrollment, 1990-2023



Total enrollment for undergraduate students is projected to grow 11.6 percent between 2014 and 2023, or about 1.2 percent per year. It is estimated that enrollment will top 207,000 students by 2024.

#### GRADUATE STUDENTS—COMPREHENSIVE TEACHING INSTITUTIONS

There has been significantly less research on the forecasting of graduate student enrollment levels. While there has been some work on factors that increase the likelihood of an individual’s probability of enrollment in a graduate program, as a system, there has been less attention. It is likely that the number of graduate students in a given year may be correlated with the number of individuals receiving degrees in the prior year as this is a likely supply of enrollees. There is also evidence that the health of the economy plays a role in the enrollment rates for graduate programs.

The factors that best predict enrollment in graduate programs at the state’s Comprehensive Teaching Institutions are the lagged graduate student enrollment at those institutions and the state unemployment rate. An ordinary least squares regression was used to make projections and the results are shown in Appendix B, Table 4. Both variables were significant at standard levels. As the unemployment rate rises, graduate student enrollment at these institutions tends to decrease.

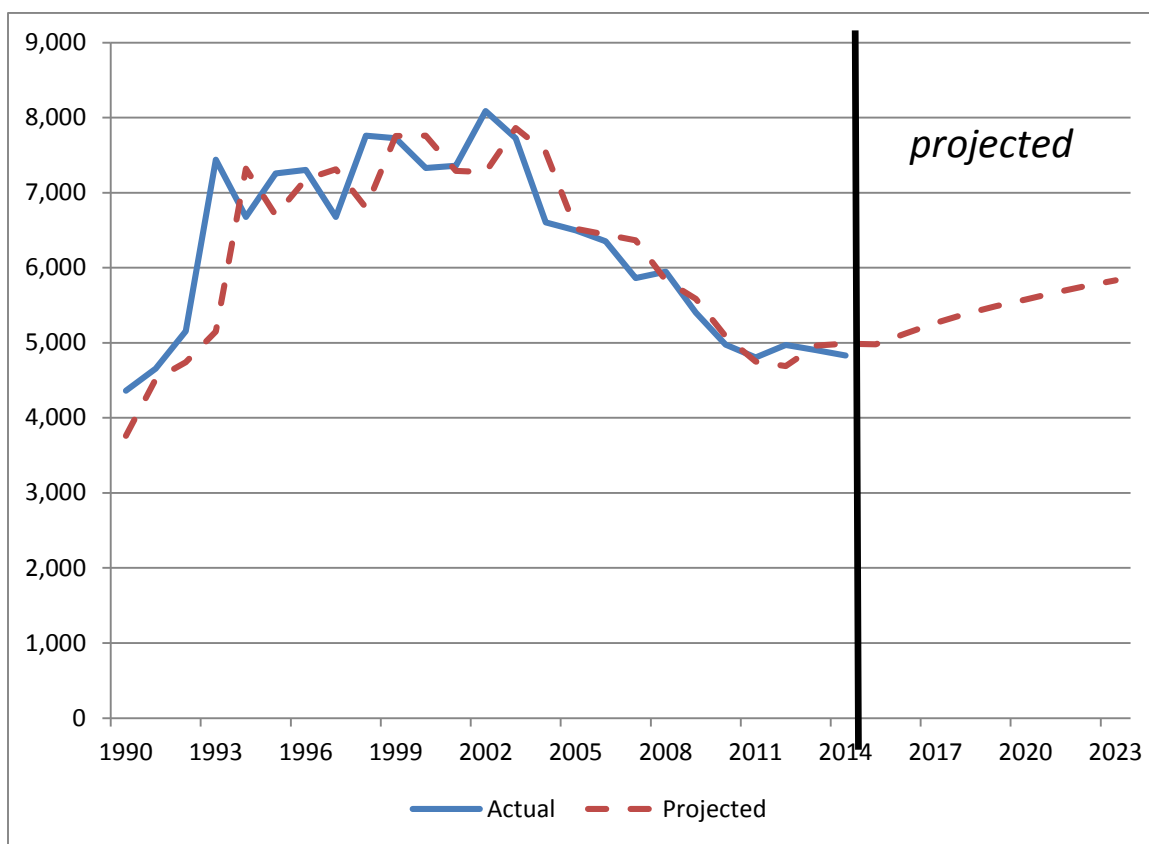
Using the regression results and the forecasts for the unemployment rate, Table 10 presents the actual and projected enrollment in the Comprehensive Teaching Institutions through 2023.

Table 10: Comprehensive Teaching Institutions Actual and Projected Graduate Student Enrollment, 1976-2023

Year	Actual Enrollment	Projected Enrollment
1976	3,182	
1977	3,159	
1978	3,282	
1979	3,205	

Year	Actual Enrollment	Projected Enrollment
1980	3,314	
1981	2,704	
1982	2,601	
1983	2,676	
1984	2,737	
1985	2,925	
1986	3,285	
1987	3,554	
1988	3,492	
1989	3,431	
1990	4,364	
1991	4,658	
1992	5,153	
1993	7,441	
1994	6,678	
1995	7,256	
1996	7,302	
1997	6,677	
1998	7,762	
1999	7,725	
2000	7,329	
2001	7,359	
2002	8,088	
2003	7,727	
2004	6,603	
2005	6,496	
2006	6,355	
2007	5,863	
2008	5,948	
2009	5,402	
2010	4,977	
2011	4,804	
2012	4,973	
2013	4,903	
2014	4,832	4,987
2015		4,981
2016		5,125
2017		5,264
2018		5,384
2019		5,486
2020		5,579
2021		5,671
2022		5,756
2023		5,833

Figure 19: Comprehensive Teaching Institutions Actual and Projected Graduate Student Enrollment, 1990-2023



The model projects that graduate student headcount at Comprehensive Teaching Institutions in South Carolina will continue to experience moderate growth over the next several years. Between 2015 and 2023, annual growth is expected to average 2.0 percent per year with the unemployment rate continuing to decline over the medium-term. The model over-projected enrollment in 2014 by about 3.2 percent.

#### GRADUATE STUDENTS—RESEARCH INSTITUTIONS

The best predictor of enrollment at Research Institution graduate programs is the level of enrollment in the prior year. A time-series model<sup>16</sup> was used to forecast graduate student enrollment.

Using the regression results, Table 11 presents the actual and projected enrollment in the Comprehensive Teaching Institutions through 2023.

Table 11: Research Institutions Actual and Projected Enrollment, 1976-2023

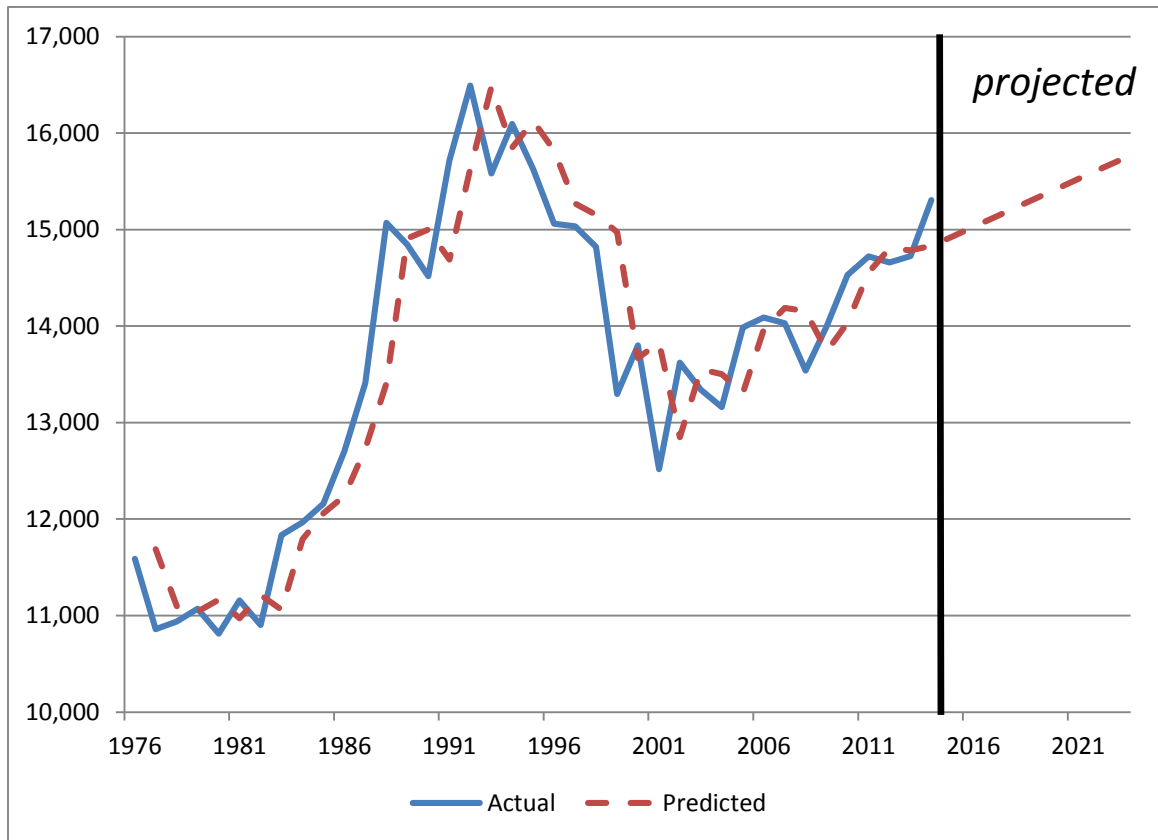
Year	Actual Enrollment	Projected Enrollment
1976	11,589	
1977	10,860	
1978	10,938	
1979	11,071	

<sup>16</sup> ARIMA(1,1,0)

<b>Year</b>	<b>Actual Enrollment</b>	<b>Projected Enrollment</b>
1980	10,812	
1981	11,158	
1982	10,902	
1983	11,833	
1984	11,967	
1985	12,160	
1986	12,707	
1987	13,410	
1988	15,072	
1989	14,846	
1990	14,517	
1991	15,717	
1992	16,492	
1993	15,581	
1994	16,094	
1995	15,624	
1996	15,060	
1997	15,035	
1998	14,822	
1999	13,296	
2000	13,801	
2001	12,517	
2002	13,623	
2003	13,340	
2004	13,162	
2005	13,986	
2006	14,090	
2007	14,028	
2008	13,539	
2009	13,998	
2010	14,531	
2011	14,723	
2012	14,658	
2013	14,726	
2014	15,307	14,830
2015		14,929
2016		15,028
2017		15,127
2018		15,226
2019		15,325
2020		15,425
2021		15,524
2022		15,623
2023		15,722



Figure 20: Research Institutions Actual and Projected Graduate Student Enrollment, 1976-2023

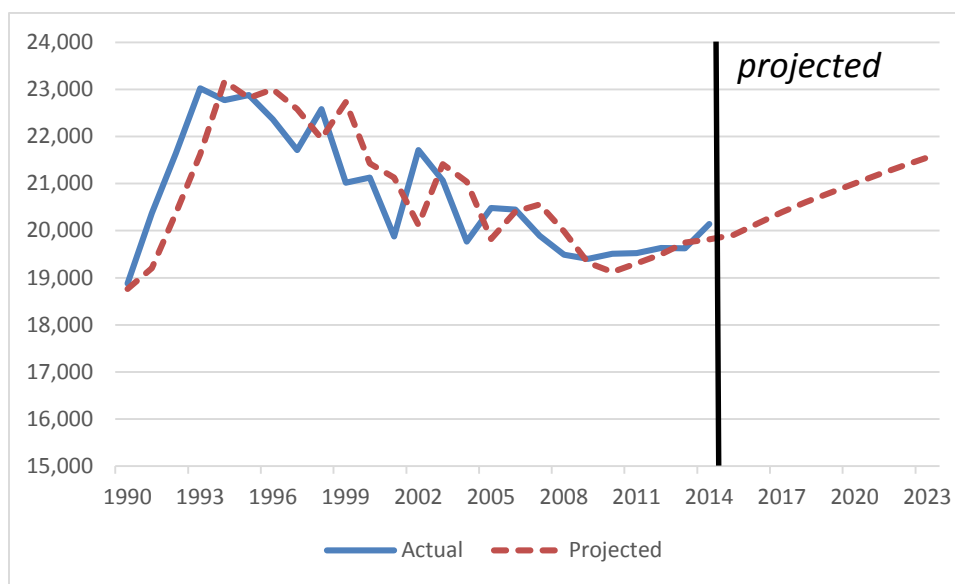


The model projects that graduate student headcount at Research Institutions in South Carolina will continue to experience slow growth over the next several years. Between 2015 and 2023, annual growth is expected to average 0.3 percent per year. The model under-projects 2014 enrollment by about 3.1 percent.

#### GRADUATE STUDENTS—TOTAL ENROLLMENT

Combining the projections for the Research Institutions and the Comprehensive Teaching Institutions, we can get the final, total projection of the number of graduate students likely to be enrolled over the next several years.

Figure 21: Total Graduate Student Actual and Projected Enrollment, 1990-2023



The total number of graduate students expected to be enrolled by 2023 is approximately 21,500. This corresponds to about 7.0 percent growth between 2014 and 2023 or about 0.8 percent per year.

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## SECTION 5: CONCLUSION

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Over the next nine years, it is anticipated that undergraduate student headcount will continue to increase by about 11.6 percent overall in the public colleges and universities. There are significant differences in the projected growth by sector with the Research Institutions predicted to grow the most at 16.0 percent followed by the Technical College System (+13.1 percent), the Comprehensive Teaching Institutions (+5.8 percent), and finally a small amount of growth (+0.9 percent) for the Two-Year Regional Campuses of USC.

Economic factors tending to increase enrollment include growth in per capita personal income and a growth in the number of potential students coming out of the state's public school system.

While enrollment in the institution the prior year is the most highly correlated statistic with current enrollment, there appears to be a strengthening relationship over the past 20 years between enrollment and the unemployment rate in all of the undergraduate higher education sectors. Economic cycles will likely continue to have a large impact on enrollment going forward as students balance the rising cost of higher education against the job opportunities and other personal and financial benefits from increased education.

Changes in technology and the delivery of service are also likely to have a major impact over the next decade although the most significant change will likely be the composition of students and not necessarily the total number of students being served.

In the "out" years it is important to take note of the significant dip in the birth rate that occurred during the most recent recession. This will tend to have a negative impact on higher education enrollment unless there are corresponding increases in graduation rates or the types of students enrolling in higher education. Also the changing racial/ethnic composition of high school graduates is

likely to limit enrollment growth unless additional minority students are attracted to college programs at higher rates than have been experienced historically.

For graduate student enrollment, the projected increase by 2023 is about 7.0 percent. This disguises the dramatic differences between the Research and Comprehensive Teaching Institutions. While the headcount in Research Institution graduate programs is forecasted to grow only 2.7 percent by 2023, enrollment at the Comprehensive Teaching Institutions is expected to increase by nearly 21 percent. These dynamics will shift the distribution of graduate students to about 73 percent in Research and 27 percent in Comprehensive Teaching Institutions.

Unlike undergraduate enrollment, headcount in graduate programs does not tend to increase during economic downturns. Instead, it appears that graduate students, particularly in the Comprehensive Teaching Institutions, tend to put their additional education on hold during times of higher unemployment. This could be an important factor for administrators to consider when balancing the anticipated increase in demand of undergraduate programs during a recession with a decrease in the demand for graduate programs.

Finally, it is important to track whether there are significant changes in the high school graduation rates and the percent of students who pursue higher education after the typical age range of 18-29. Since the birth rate declined precipitously during the most recent recession, increases in the percentage of traditional high school graduates enrolling in higher education and increases in the numbers of non-traditional students will need to make up for potential shortfalls from the lower birth rates. It is also useful for each institution to closely examine their own enrollment trends to determine how future economic and demographic shifts may impact the demand on their resources.

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**APPENDIX A: PUBLIC AND INDEPENDENT ENROLLMENT**

Tables A.1 and A.2 are the Fall 2014 headcount enrollment, by institution, by sector, and by level for South Carolina’s public and independent colleges and universities studied in this report.

*Table A.1: Headcount Enrollment by Sector and Level Public, Fall 2014*

<b>Institution</b>	<b>Undergraduate Students</b>	<b>Graduate Students</b>
<b>PUBLIC INSTITUTIONS</b>		
<b>Research Institutions</b>		
Clemson	17,260	4,597
USC Columbia	24,866	8,105
MUSC	293	2,605
<b>Comprehensive Teaching Institutions</b>		
The Citadel	2,763	829
Coastal Carolina	9,364	612
College of Charleston	10,440	1,016
Francis Marion	3,605	339
Lander	2,717	70
SC State	2,791	540
USC Aiken	3,256	188
USC Beaufort	1,794	
USC Upstate	5,397	188
Winthrop	4,974	1,050
<b>Two-Year Regional Campuses of USC</b>		
USC Lancaster	1,738	
USC Salkehatchie	1,076	
USC Sumter	879	
USC Union	679	
<b>Technical Colleges</b>		
Aiken	2,351	
Central Carolina	3,963	
Denmark	1,678	
Florence-Darlington	6,215	
Greenville	12,592	
Horry-Georgetown	7,335	
Midlands	11,424	
Northeastern	1,090	
Orangeburg-Calhoun	3,060	
Piedmont	5,694	
Spartanburg CC	5,495	
TC of the Lowcountry	2,529	
Tri-County	6,386	
Trident	16,136	
Williamsburg	717	
York	5,061	
<b>Public Total</b>	<b>185,618</b>	<b>20,139</b>

Institution	Undergraduate Students	Graduate Students
<b>INDEPENDENT INSTITUTIONS</b>		
Senior Institutions		
Allen University	660	
Anderson University	2,780	332
Benedict College	2,444	
Bob Jones University	2,725	383
Charleston Southern University	2,967	400
Clafin University	1,803	63
Coker College	1,165	54
Columbia College	1,120	101
Columbia International University	560	543
Converse College	827	567
Erskine College	591	162
Furman University	2,810	163
Limestone College	3,137	77
Lutheran Theological Seminary		92
Morris College	780	
Newberry College	1,093	
North Greenville University	2,359	210
Presbyterian College	1,146	314
Sherman College of Straight Chiro.		346
South University***	1,022	442
Southern Methodist College		
Southern Wesleyan University	1,418	360
Voorhees College	468	
Wofford College	1,658	
<b>Two-Year Institutions</b>		
Spartanburg Methodist College	793	
<b>Independent Total</b>	34,326	4,609
<b>STATE TOTAL</b>	219,944	24,748

\*\*\*For-profit, degree-granting institution

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**APPENDIX B: REGRESSION RESULTS**

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*Table B.1: OLS Regression Results for Technical Colleges Undergraduate*

Variable	Coefficient (Standard Error)
Constant	-22,519.08* (12499.84)
Lagged Headcount	<b>0.782***</b> (0.107)
Unemployment Rate	78,281.44 (61,653.39)
Per Capita Income	<b>1.026 **</b> (0.481)
R <sup>2</sup>	0.9911
Adjusted R <sup>2</sup>	0.9902
n	35
***p<0.01, **p<0.05, *p<0.10 Jack knife standard errors used to reduce bias.	

*Table B.2: OLS Regression Results for Comprehensive Teaching Institutions Undergraduate*

Variable	Coefficient (Standard Error)
Constant	-412.308 (1,026.822)
Lagged Headcount	<b>0.841***</b> (0.059)
Unemployment Rate	10,884.74 (6,916.795)
Per Capita Income	<b>0.198**</b> (0.085)
R <sup>2</sup>	0.9944
Adjusted R <sup>2</sup>	0.9938
n	35
***p<0.01, **p<0.05, *p<0.10 Jack knife standard errors used to correct for bias.	



Table B.3: OLS Regression Results for Research Institutions Undergraduate

Variable	Coefficient (Standard Error)
Constant	<b>-4,820.34***</b> (1,184.792)
Lagged Headcount	<b>0.883***</b> (0.085)
Seniors Prior Year	<b>0.153**</b> (0.060)
Per Capita Income	<b>0.096**</b> (0.041)
R <sup>2</sup>	0.9679
Adjusted R <sup>2</sup>	0.9650
n	37
***p<0.01, **p<0.05, *p<0.10 Jack knife standard errors used to correct for bias.	

Table B.4: OLS Regression Results for Comprehensive Teaching Institutions Graduate Students

Variable	Coefficient (Standard Error)
Constant	<b>-981.601***</b> (324.825)
Lagged Headcount	<b>0.914***</b> (0.041)
Unemployment Rate	<b>-7,422.509**</b> (3297.235)
R <sup>2</sup>	0.9077
Adjusted R <sup>2</sup>	0.9024
n	38
***p<0.01, **p<0.05, *p<0.10 Jack knife standard errors used to correct for bias.	

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**APPENDIX C: METHODOLOGY COHORT SURVIVAL AND ECONOMIC PROJECTIONS**

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**SURVIVAL RATES**

NCES enrollment by grade level for 2011/12 and 2012/13 was used to calculate the cohort survival ratios (CSR) necessary to calculate the projected number of high school seniors presented in Table 2. The number of students in the 3<sup>rd</sup> grade in 2011/12 can be expected to move to the 4<sup>th</sup> grade in 2012/13. Each grade CSR was calculated using the headcount data found in Table C.1.

*Table C.1: Cohort Survival Ratios based on Enrollments 3<sup>rd</sup>-12<sup>th</sup> Grades<sup>17</sup>*

Grade	2011/12	2012/13	Cohort Survival Ratio
3	53,730	53,354	
4	54,157	54,058	1.0061
5	55,713	54,541	1.0071
6	56,312	56,493	1.0140
7	55,250	56,807	1.0088
8	54,243	55,365	1.0021
9	60,710	61,897	1.1411
10	54,075	54,033	0.8900
11	48,328	47,963	0.8870
12	44,684	44,755	0.9261

In general, these rates have been fairly consistent since 2006/07 with some minor increases in the survival ratio between 9<sup>th</sup> / 10<sup>th</sup>, 10<sup>th</sup> / 11<sup>th</sup>, and 11<sup>th</sup> / 12<sup>th</sup> grades. These data only reflect enrollment in the state’s public schools although it is apparent that many students that were enrolled in private schools during their elementary and middle school years move into the public system when they reach the 9<sup>th</sup> grade (i.e., CSR between 8<sup>th</sup> and 9<sup>th</sup> grades is significantly greater than 1). Another implicit assumption made in the models is that the trends in numbers of students in private schools and transferring between public and private schools remains consistent throughout the forecast period.

**FORECASTED REAL PERSONAL INCOME PER CAPITA**

Data from 1976 through 2014 was obtained from the Bureau of Economic Analysis regional account for per capita personal income in South Carolina. Using the Bureau of Labor Statistics’ Consumer Price Index, All Urban Consumers, US City Average, All Items, Non-Seasonally Adjusted, Annual data, these measures were transformed into “constant” 2014 dollars. To project future values of per capita personal income, the Holt-Winters non-seasonal exponential smoothing technique was used to forecast out nine periods (2015-2023). The actual and forecasted values for real personal income per capita are shown in Table C.2.

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<sup>17</sup> National Center for Education Statistics: Enrollment in public elementary or secondary schools by level, grade, and state or jurisdiction

Table C.2: Real Personal Income per Capita, 1976-2023<sup>18</sup>

Year	Per Capita Personal Income (constant 2014 \$s)	Forecasted Per Capita Personal Income (constant 2014 \$s)
1976	22,663	21,706
1977	22,881	23,127
1978	23,616	23,345
1979	23,412	24,079
1980	22,745	23,876
1981	22,876	23,209
1982	22,708	23,339
1983	23,718	23,172
1984	25,037	24,181
1985	25,656	25,500
1986	26,592	26,120
1987	27,196	27,056
1988	28,120	27,659
1989	28,816	28,583
1990	28,982	29,280
1991	28,444	29,445
1992	29,020	28,908
1993	29,269	29,483
1994	29,931	29,732
1995	30,453	30,394
1996	31,053	30,916
1997	31,772	31,517
1998	33,094	32,236
1999	33,664	33,558
2000	34,535	34,127
2001	34,536	34,998
2002	34,535	35,000
2003	34,580	34,999
2004	35,163	35,044
2005	35,585	35,626
2006	36,535	36,049
2007	36,946	36,998
2008	36,459	37,410
2009	35,772	36,923
2010	35,455	36,236
2011	35,867	35,919
2012	36,440	36,301
2013	36,400	36,904
2014	36,934	36,864
2015		37,398

<sup>18</sup> 1976-2014 data from BEA with adjustments from BLS CPI.

Year	Per Capita Personal Income (constant 2014 \$s)	Forecasted Per Capita Personal Income (constant 2014 \$s)
2016		37,861
2017		38,325
2018		38,788
2019		39,252
2020		39,715
2021		40,179
2022		40,642
2023		41,106

### UNEMPLOYMENT RATES

The forecasts for the US unemployment rate came from the Congressional Budget Office’s Economic projections 2015-2025, Table F-2. The SC unemployment rate forecasts were estimated from those rates based on the historic relationship between the national and state rates. The unemployment rates for the counties served by the 2-year regional campuses have traditionally been about 25 percent higher than the statewide average. The actual unemployment rate projections used for model estimation are shown in Table C.3.

*Table C.3: Projected Unemployment Rates Nationally and Statewide, 2015-2023*

Year	US Unemployment Rate	SC Unemployment Rate	Area Unemployment Rate
2014	6.2% (actual)	6.4% (actual)	8.0%
2015	5.5%	5.6%	7.0%
2016	5.4%	5.5%	6.9%
2017	5.3%	5.4%	6.8%
2018	5.4%	5.5%	6.9%
2019	5.5%	5.6%	7.0%
2020	5.5%	5.6%	7.0%
2021	5.4%	5.5%	6.9%
2022	5.4%	5.5%	6.9%
2023	5.4%	5.5%	6.9%