

**The Long and Winding Road:  
Student Progression to the Baccalaureate Degree in Florida**

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Southern Association of Institutional Research Annual Conference  
Myrtle Beach, South Carolina  
October 21-24, 2000

## **ACKNOWLEDGMENTS**

The authors gratefully acknowledge the contributions of Juan Copa and K.B. Melear in the preparation of this manuscript.

## INTRODUCTION

Florida's low rates of baccalaureate degree productivity have been a source of consistent concern to the state's higher education policymakers. In 1996-97, the state ranked 46<sup>th</sup> in terms of bachelor's degrees granted per 100,000 18-44 year old resident population (**Table 1**)<sup>1</sup>. Florida fares somewhat better when higher education enrollments are substituted for population figures in the denominator, but the state still fares no better than 41<sup>st</sup> in bachelor's degrees awarded per 1,000 students enrolled in higher education. Using cross-sectional data aggregated at the state level, Ewell (1998) found the structure of the state's postsecondary education delivery systems to be related to its baccalaureate degree productivity. This finding would seem of crucial importance to Florida, which relies on a "two plus two" access model with its open door community college system serving as the primary point of entry into postsecondary education.

Florida's deficiency in baccalaureate degree production is of particular concern in light of a projected 413,963 new jobs (a 27.8% increase) from 1997-2007 in occupations requiring a baccalaureate degree or higher (Florida Department of Labor and Employment Security, 2000). Projected increases in the numbers of high school graduates and state residents have the potential to place further strain on the capacity of Florida's higher education institutions. The number of public high school graduates is projected to increase from 107,000 to 139,700 between 2000 and 2011, an increase of 31% (Florida Department of Education, 1999). State policymakers are quite naturally interested in providing adequate access while allocating any increased enrollments in a manner that maximizes students' opportunity to realize their educational goals and responds to the state's workforce demands.

The Florida Legislature enacted accountability legislation in 1991 requiring community colleges and state universities to report performance data related to outcomes such as retention and graduation rates and time-to-degree. However, measures aggregated at the state level by institution type, or even by institution, do not allow for the full exploration of factors that are predictive of individuals' postsecondary academic failure or success and, ultimately, degree attainment. Therefore, the Legislature directed the Florida Postsecondary Education Planning Commission to undertake an ongoing study of the progression of public high school graduates as they enroll in, progress through, and graduate from the state's postsecondary education delivery system and enter the workforce. A longitudinal cohort study allows all enrollment patterns and outcomes to be evaluated while taking into account the following factors:

- Student Attributes and Secondary Education Experiences – college preparation indicators like high school course work and grade point average (GPA), standardized test scores, and remediation needs. Included in these experiences are dual enrollment course work and examination credits.
- Postsecondary Behaviors and Experiences – student point of entry, transfer activity, selection of and changes in academic major, full- or part-time enrollment status, employment, and receipt of financial aid.

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<sup>1</sup> All tables and figures are contained in the Appendix.

## **BRIEF REVIEW OF VARIABLES RELATED TO BACCALUAREATE COMPLETION**

The following is a cursory review of various factors related to baccalaureate degree completion, grouped into three general categories: 1) student attributes, 2) secondary education experiences, and 3) postsecondary behaviors and experiences.

### Student Attributes

Certain demographic factors may be related to degree completion and attainment. Astin (1993) found a slight advantage for women in four-year degree completion (as cited in Pascarella and Terenzini, 1991). There may also be a basis for including student race in a study of degree completion. According to Pascarella and Terenzini (1991), black students who attend predominantly white institutions may experience greater levels of social isolation, dissatisfaction, and overt racism than if they were to attend historically black institutions. A student's family income is expected to positively affect degree completion. The higher the socioeconomic status of the student's family, the more likely the student is to have the resources to enter college and persist toward bachelor's degree completion.

### Secondary Education Experiences

The degree to which a student is prepared to begin college and university level work is expected to significantly affect postsecondary completion. Student preparedness is generally measured with some combination of high school GPA, standardized test scores, and rigor of high school course work. Adelman (1999) developed an index of academic resources that included GPA, test scores and curriculum and found it to be correlated with degree completion.

### Postsecondary Behaviors and Experiences

#### *Referent Institution*

The research seems to indicate that the type of institution a student initially attends affects the likelihood of persistence and baccalaureate attainment. A review of the literature led Pascarella, Bohr, Nora, and Terenzini (1995) to estimate that, controlling for important individual background differences, students who initially enroll in two-year colleges seeking a bachelor's degree are about 15% less likely to complete that degree in the same period of time as similar students who begin in four-year institutions. Using the *National Longitudinal Study of the High School Class of 1972*, Velez (as cited in Pascarella & Terenzini, 1991) found that four-year college entrants had an 18.7% advantage over two-year college entrants in completing a bachelor's degree within seven years after graduating from high school. In a more recent longitudinal study, 57% of students seeking a bachelor's degree who began at a four-year institution had completed within five years, compared to eight percent for students who began at a two-year institutions (Berkner, Cuccaro-Alamin, and McCormick, 1996). The same study also revealed that once students from two-year institutions transferred to a four-year institution, their persistence rates were quite similar to students who started at four-year institutions.

### *Transfers Between Institutions*

Transfer behavior, regardless of the level of articulation between the institutions, is expected to negatively impact degree completion within five years. A 1985 study by Pascarella indicated that the number of colleges attended had a small but statistically significant negative effect on completion of the bachelor's degree over a nine-year period (as cited in Pascarella & Terenzini, 1991).

### *Academic Achievement*

According to Pascarella & Terenzini (1991), undergraduate grades are the best college experience predictor of degree completion and pursuit of graduate/professional education, even when controlling for other factors like pre-college characteristics, institutional characteristics and other collegiate experiences.

### *Full-Time/Part-Time Enrollment*

One important indicator of academic intensity is the full-time enrollment status of degree seekers. According to the report *High School and Beyond, Educational Attainment of 1980 High School Sophomores by 1992*, students in the cohort were more likely to have completed a bachelor's degree within the study's time frame if they enrolled full-time immediately following high school graduation.

## **DATA PROVIDERS, LIMITATIONS, AND ANALYTICAL METHODS**

### Data Providers

There were 90,079 students who graduated from Florida public high schools in 1993-94 (Florida Department of Education, 1999). The cohort for this study consisted of the 82,787 graduates who had valid social security numbers (SSNs). The College Board, ACT, and the following state agencies have provided follow-up data on the cohort through 1998-99: the Department of Education, the Florida Community College System (CCS), the State University System of Florida (SUS), the Bureau of Student Financial Assistance (BSFA), and the Department of Labor and Employment Security. This collaborative effort has yielded a rich repository of data on student demographics, high school course work, standardized test scores, student aspirations, enrollment, family income, financial aid, degree program and completion, and employment history. The data set will facilitate fairly comprehensive descriptions of the various paths taken by the cohort through postsecondary education and of their employment history, both concurrent and subsequent to college.

### Data Limitations

Although the information available for this study is considerable, the analysis is limited by the following considerations:

1. For the tracking of 1993-94 public high school graduates, the postsecondary graduation rate is tracked for five years – from Summer 1994 through Spring 1999. In Florida, even for students who initially start in the SUS, the state’s most selective system – the five-year graduation rate is about 51%. This rate increases to more than 60% by the end of the sixth year. Given that the model of postsecondary access in Florida is based upon the “two plus two” concept of transfer and articulation, any transfer activity will likely have a greater negative impact on degree completion in this analysis than it would were a longer time frame utilized.
2. Data on student employment and receipt of financial aid, which have been shown to affect degree completion (Adelman, 1999), have been made available to the Commission but were not utilized in this analysis.
3. High school or college transcript data that would have allowed us to examine the impacts of acceleration (AP, CLEP, dual enrollment) or deceleration (remedial coursework) mechanisms were not employed in this analysis.
4. The tracking of students through independent colleges and universities in Florida is very limited. Independent institutions are generally not required to submit SSN-level data to a state agency. A limited indicator of private sector enrollment was derived from Bureau of Student Financial Assistance data on students who received the Florida Resident Access Grant. Receipt of this tuition equalization grant is limited to Florida residents who attend full-time the University of Miami or one of the other four-year accredited non-profit institutions that constitute the Independent Colleges and Universities of Florida. However, information on whether and when the student earned a degree from a private institution is not available.
5. The analysis of enrollment activity by students in career education programs (i.e., those resulting in an Adult Technical Diploma or vocational certificate) is currently limited to those within the Community College System.

### Analytical Methods

First, descriptive statistics were generated for all public high school graduates as well as for those graduates that matriculated in Fall 1994 to the CCS, SUS, and independent four-year sector. Second, an overall five-year graduation rate was calculated for the cohort of Fall 1994 matriculants as a whole. Graduation rates were also calculated for subsets of the cohort on a number of variables thought to be related to degree completion. Finally, probit analysis, a statistical technique appropriate for modeling the probability of binary responses or outcomes, was conducted to derive a statistical model of factors predictive of bachelor’s degree completion within the tracking period.

## DESCRIBING POSTSECONDARY ENROLLMENT PATTERNS

### Immediate Postsecondary Enrollment of Recent High School Graduates – Fall 1994

Of the 82,787 students in the 1993-94 cohort of public high school graduates, approximately 55% were enrolled in postsecondary education in or outside of Florida in Fall 1994.<sup>2</sup> Three cohorts of 1993-94 public high school graduates were identified based upon the postsecondary sector where they were found enrolled in Fall 1994 (**Figure 1**).

1. SUS Cohort. There were 12,383 high school graduates who either enrolled in the SUS in Fall 1994 or began in the Summer and continued into the Fall term. This cohort accounted for 15% of the prior year's public high school graduates.
2. CCS Cohort.<sup>3</sup> There were 22,794 high school graduates who either enrolled in a public two-year institution in Fall 1994 or began in the Summer and continued into the Fall term. The CCS Cohort accounted for 27.5% of the prior year's high school graduates.
3. ICUF Cohort.<sup>4</sup> There were 2,580 high school graduates found enrolled in Fall 1994 at the University of Miami or one of the institutions that constitute the Independent Colleges and Universities of Florida, accounting for 3.1% of the prior year's high school graduates.

By focusing on high school graduates who enrolled immediately in Florida colleges and universities in Fall 1994, we lose sight of students that delay entry into postsecondary education. To what extent? As **Figure 2** indicates, individuals who were reported as first-time-in-college (FTIC) students in 1994-95 accounted for about 85% of students who enrolled as FTIC students at some point in the tracking period. Delayed entry was more likely to occur in the CCS than the SUS. Of the 12,704 high school graduates who enrolled at some point as FTIC students in the SUS, 12,353 (97.2%) did so in 1994-95. Comparatively, only 21,519 (79.8%) of the eventual 26,956 community college FTIC enrollments occurred in 1994-95.

### Selected Demographic Information

#### *Gender and Race*

The high school graduating cohort was 52.5% female and 47.5% male. Compared to their representation among high school graduates, females increased their enrollment share in Fall 1994 across all postsecondary sectors. This increase was greatest in the independent sector, where women's enrollment share was ten percentage points higher than it had been among the public high school graduates (**Table 2**).

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<sup>2</sup> This figure assumes that 10% of high school graduates enroll in out of state institutions and excludes enrollments in adult postsecondary vocational programs.

<sup>3</sup> A student must have been enrolled in credit hour courses in Fall 1994 term to be included in the CCS cohort.

<sup>4</sup> The ICUF Cohort consists of students who received the Florida Resident Access Grant, a tuition equalization grant available to Florida residents enrolled full-time at the University of Miami and institutions constituting the Independent Colleges and Universities of Florida.

White students accounted for 60.5% of public high school graduates, black students 18.9%, Hispanic students 12.8%, and Asian students 2.7% (**Table 2**). Among Fall 1994 matriculants to postsecondary education, the relative representation of white students increased in the CCS and SUS. Conversely, black students' enrollment share decreased among CCS and SUS matriculants but increased among students who matriculated to the independent sector. Hispanic students represented a lower share of SUS and ICUF matriculants than they did among public high school graduates, but their enrollment share among CCS matriculants increased by three percentage points.

### *Family Income*

The family income data were estimated ranges from optional questionnaire items completed by students who registered for the ACT and SAT examinations. A recent cross-validation of these data by the Postsecondary Education Planning Commission showed most students' estimates of family income to be fairly reliable, within +/- one income band. Only the data provided by SAT test-takers are reported here because the ACT questionnaire uses different ranges and there were more SAT records available. Income estimates existed for 31,584 (38.2%) of the high school graduating cohort (**Table 3**). Data existed for 74% and 81% of the ICUF and SUS matriculants, respectively. The fact that estimates of family income existed for only 45% of the CCS matriculants probably reflects the fact that these entry level tests are not required for community college admission.

Even with these caveats, the data seem to suggest that SUS matriculants are more heavily represented in the upper income bands, where 30.3% of students reported annual family incomes of \$60,000 or more. This compares to 20.8% and 17.9% for the ICUF and CCS cohorts, respectively. Conversely, only 29.7% of SUS matriculants reported a family income of less than \$30,000, a data range that accounts for about nine of every ten awards from the state's primary need-based financial aid program. The SUS figure of 29.7% compares to about 40% for both the ICUF and CCS cohorts.

### *Mean Performance Indicators*

On average, the cumulative high school grade point average and standardized test scores for the SUS cohort were higher than those of the CCS and ICUF cohorts (**Table 4**).

### *Full-Time/Part-Time Attendance*

Students in the SUS Cohort were much more likely to enroll for 12 or more semester credit hours than were students in the CCS Cohort. The percentage of the CCS Cohort with full-time attendance in the Fall 1994 term was 68.0%, compared to 95.2% for the SUS Cohort (**Table 5**). The 32% part-time enrollment rate of our CCS Cohort is considerably lower than the 42% part-time enrollment reported for Fall 1999 FTIC students in the most recent Florida Community College System Fact Book. However, given community college students' propensity for delayed entry (demonstrated in Figure 2), it was expected that our CCS Cohort of immediate entrants would tend to look more "traditional" in terms of age and credit hour load than would community college FTIC students in general.



## The Long and Winding Road – How Winding?

As has been mentioned, Florida's access model is founded on the "two plus two" articulation concept. As an open door system, Florida's 28 public community colleges serve as the primary point of initial access to postsecondary education in the state. Students who complete the Associate in Arts degree are then guaranteed admission as upper division students to the State University System. We employed two methods to examine the postsecondary paths that students actually take.

The first view of the winding road to the bachelor's degree comes from tracking we employed to determine the disposition of CCS and SUS starters term-by-term, using the following outcomes: still enrolled within the same system, enrolled in some other system, awarded a bachelor's degree in the SUS, or no longer found enrolled. Our findings, displayed in **Figures 3 and 4** and again in more detail in **Table 6**, would seem to indicate that the two plus two model is far from all-encompassing. There is a small amount of early transfer activity by CCS starters, a greater amount of "reverse transfer" by SUS starters, and an even greater amount of stopping or dropping out, especially by CCS starters. **Figure 3** shows that over one-fourth of the students who started at a community college in Fall 1994 were no longer found enrolled in *any* system by Fall 1995. Over 40% were no longer enrolled by Fall 1996, and the figure had climbed to 50% by Fall 1997. We expect that by Fall 1997 the "not found" count reflects to a certain extent the earning of an associate's degree, at which point some of the CCS Cohort may have "stopped out" for a time.

Aside from the obvious fact that SUS starters far outpaced community college starters in compiling bachelor's degrees within the five-year tracking period, a secondary story is told by **Figure 4**. It is that transfer works both ways – about ten percent of the Fall 1994 SUS Cohort was found enrolled in the CCS, and this figure has remained fairly constant to date.

A second view of the winding road was derived by taking all 8,551 students (10.3% of the 1993-94 high school graduates) who had received a bachelor's degree from a public four-year institution by Spring 1999 and looking backward at the paths they took to get there. As demonstrated by **Figure 5**, the most prevalent path, taken by 72% of degree-earners, was that of the native state university student who never transferred out of the SUS. The classic two plus two model was a distant second, with community college A.A. degree earners accounting for 12.5% of all bachelor's degree earners. SUS starters who at some point were "reverse transfers" to the CCS accounted for 2.1% of degree earners, and "early" transfers from the CCS to the SUS accounted for 1.5%. Other, as yet undefined, paths were taken by the remaining 11.9% of cohort members who earned a bachelor's degree within the five-year tracking period.

## **DESCRIBING DEGREE COMPLETION**

### The Long and Winding Road – How Long?

Data from Florida higher education fact books and accountability reports suggest that a five-year tracking period is insufficient to adequately define the *length* of the road to the

bachelor's degree. Among students who begin in the State University System, a five-year systemwide graduation rate of around 50% is the norm and the six-year rate averages 65%. The independent four-year institutions report a six-year graduation rate of only 48% for the sector (ICUF, July 2000). Furthermore, the Community College System reports that many of their students take as long as six years to earn the "two year" A.A. degree. It is understandable then that completers from our cohort took an average of 11.7 terms to earn the bachelors degree, regardless of the route taken from the degree paths specified above. As the period for which we have follow-up data increases to eight years, differences should begin to emerge in the average time-to-degree for the various paths.

### Graduation Rates

As we have said, five years is a somewhat compressed time frame within which to look at bachelor's degree completion. This is particularly true of students who initially enroll at a community college. Even so, the State University System Fact Book reports that, among students who initially enrolled in that system, about three-fourths of students who will complete a bachelor's degree will do so within five years. Therefore, it is not too early to *begin* looking at graduation rates in an attempt to determine what makes a difference. To calculate the bachelor's degree attainment rates reported here, the cohorts defined earlier were further restricted by:

- Including only students who enrolled at a community college or state university in Fall 1994. This means that any of the 1993-94 high school graduates who delayed entry or started at an independent or out-of-state institution are not considered here.
- Excluding any CCS starters who were not coded as A.A. degree-seeking or General Freshman in Fall 1994.

Following this methodology, we found 7,668 bachelor's degree completers by the end of the Spring 1999 semester from an original Fall 1994 cohort of 30,242 students, for an overall graduation rate of 25.4% (**Table 7**). Further subsetting of the cohort allowed us to calculate five-year graduation rates on several variables we had at our disposal. For example:

- The rate was 29.2% for females, 20.3% for males.
- The rate was 29.2% for Asian and white students, and about 16% for Hispanic and black students.
- The bachelor's degree attainment rate was 45.3% for students whose initial enrollment was in the SUS; for students who began at a community college, the rate was 9.5%.
- The Fall 1994 starters who were still enrolled in Spring 1995 graduated at a rate of 28.1%; the rate for students who were not retained after one semester was less than one percent.
- There was a slow but steady increase in graduation rate for each successively higher band of self-reported family income, ranging from a low of 21.9% for students whose families earned

less than \$10,000 per year, to a high of 45.8% for students whose families earned \$70,000 or more annually.

- Similarly, there was a positive relationship between high school GPA and the five-year bachelor's attainment rate. Students whose high school GPA was 2.0-2.49 graduated at a rate of 6.0%. For a GPA of 3.0-3.49 the rate was 31.8%. Nearly 70% of students with a high school GPA of 4.0 or higher graduated within a bachelor's degree within five years, regardless of whether their initial enrollment was in the State University or Community College Systems.
- Conversely, the total number of institutions attended was negatively related to degree attainment. For students who attended only one institution throughout the tracking period the rate was 25.2%. For students who attended three different institutions, the rate was 21.6%; students who attended four institutions graduated at a rate of 13.8%.

## **PREDICTING BACHELOR'S DEGREE COMPLETION**

### The Probit Model

The above cohort was used to develop a multivariate model of five-year degree completion. With the dichotomous dependent variable, a probit regression model was used to analyze the effect of certain factors on degree completion.

$$\text{BAEARNED} = \text{CONSTANT} + \text{RACENUM} + \text{SEXNUM} + \text{HSGPA} + \text{TOPSATEQ} + \text{SUSTART} + \text{TERMGPA} + \text{RETAINED} + \text{INSTS} + \text{ALTERMS} + \text{PTTERMS}$$

Where

BAEARNED: Completion of the bachelor's degree by Spring 1999 (Y=0)

RACENUM: Dichotomous variable indicating if student was white (X=1).

SEXNUM: Dichotomous variable indicating if student was female (X=1).

HSGPA: High school grade point average for 1993-94 public high school graduates.

TOPSATEQ: SAT combined score or equivalent.<sup>5</sup>

SUSTART: Dichotomous variable for students who began postsecondary enrollment in a state university in Fall 1994.<sup>6</sup>

TERMGPA: Fall 1994 term grade point average (GPA) for students enrolled at the community college or state university.<sup>7</sup>

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<sup>5</sup> SAT equivalency was calculated in the following manner: SAT combined scores were recentered, ACT composite scores were converted to the SAT recentered scale, and the higher of the two computed scores was kept.

<sup>6</sup> If the student was enrolled in both sectors, the State University System was credited with the student's enrollment.

<sup>7</sup> If the student was enrolled in both sectors, the Fall 1994 GPA from the state university was utilized.

RETAINED: Dichotomous variable for students who continued their postsecondary enrollment in Spring 1995 in either sector.

INSTS: Number of unique institutions student attended from Fall 1994 to Spring 1999.

ALTERMS: Total number of terms (Summer, Fall and Spring) in the tracking period in which the student was enrolled.

PTTERMS: Number of Fall and Spring terms in the tracking period in which the student was enrolled part-time.

**Table 8** provides the mean values for variables used in the final probit model. The probit procedure in the statistical software used (SAS v8.0) models the lower outcome option. Therefore, earning a bachelor's degree within the tracking period was coded as 0, and not earning the degree was coded 1. The parameter estimates of the model are displayed in **Table 9**. All independent variables were statistically significant at least at the .05 level. The classification table in **Table 10** provides a way of looking post hoc at the performance of the probit model in correctly predicting degree completion. The model correctly predicts degree completion for 83.9% of the cases. A simple model based on the percentage of cases in the analysis with bachelor's degree completion would predict 72% correctly.

**Table 11** presents the predicted probability of degree completion given a particular value on an independent variable, while holding all other independent variables at their mean or modal values. This table demonstrates the relative impact of an independent variable at different values. Among student demographic and secondary performance factors, high school grade point average had the strongest effect. Students with a 2.5 GPA had a degree completion probability of 0.09, while the probabilities for students with 3.5 and 4.0 GPAs were 0.16 and 0.20, respectively. The effect of one's SAT combined score was marginal – the estimated degree completion probability of 0.12 for a student with a score of 970 increased only to 0.16 for an individual with a score of 1370. The predicted probability increased by only an additional .02 for an SAT score of 1570.

Among the postsecondary enrollment factors, starting at a state university, part-time enrollment, and first-term grade point average appeared to have the strongest effect on the likelihood of earning the degree within five years. The probability of degree completion increased dramatically for students who started at university (0.28) compared to those who started at a community college (0.13). As the number of part-time terms enrolled increased, the probability of degree completion decreased considerably, from 0.26 for students with no part-time terms to 0.07 for students with four part-time terms. When term grade point average increased from 2.0 to 4.0, the probability of degree completion increased from 0.09 to 0.27.

**Table 12** illustrates how the probit model predicted the probability of degree success, given specific student attributes. Even for students with larger high school grade point averages and test scores, the positive effect of starting at a state university remained. Students with a 3.5 high school GPA who started at a university had a degree completion probability of 0.33, compared to 0.16 for students with the same GPA who did not. A similar relationship occurred for students with high test scores. The probability of success with a 1270 SAT equivalent was 0.40 if the student started at a state university and 0.20 for students who did not.

## **FUTURE RESEARCH QUESTIONS TO BE ADDRESSED USING THESE DATA**

This paper represents the authors' first use of these data to examine just one outcome, albeit an important one -- bachelor's degree completion. Admittedly, important variables that are likely predictive of baccalaureate completion are yet to be considered (e.g., financial aid, student employment, and detailed aspects of the high school or college transcript data). Furthermore, introductory and intermediate steps in the postsecondary completion process (continuation from high school to college, earning the A.A. degree) have yet to be considered as outcomes in their own right. Questions to be addressed in follow-up studies utilizing these data include:

1. What factors are important predictors of whether high school graduates continue or not into postsecondary education?
2. Among students who began at a community college, what is the relative contribution of factors that are predictive of earning the A.A. degree?
3. To what extent is time to degree affected by acceleration mechanisms such as dual enrollment, Advanced Placement, and CLEP credit) and factors such as remedial coursework that tend to lengthen the time required to earn a degree?
4. How do the various forms of financial aid contribute toward degree completion? How does the type and amount of student employment concurrent with postsecondary enrollment affect the likelihood of degree completion?
5. What are the long-term impacts on job placement and earnings of any of the factors discussed in the model?

## **SUMMARY**

### Findings

At this early stage and given the considerable limitations of this analysis, the data seem to indicate that:

1. Students who matriculate at a community college are less likely to complete a bachelor's degree within the five year tracking period defined for this analysis.
2. Although where a student initially enrolls may be dictated by academic, financial, or geographical considerations, there are things students can do to enhance the likelihood of completing the bachelor's degree – for instance, maintaining continuous, full-time enrollment with attendance at as few institutions as possible.
3. High school academic preparation and achievement matter. Even accounting for other factors in the model, community college starters with better high school GPAs closed the gap on SUS starters in terms of the predicted probability of degree completion.

It should be noted that a five-year tracking period likely biases the analysis against students who a) enter postsecondary education under-prepared and are required to take remedial courses, b) enroll part-time, and c) transfer between institutions. Such students are more likely to be found in the Community College System given its demographic profile, its open door, and the transfer aspect of its mission. It is likely that the negative effect of these variables will be somewhat mitigated as the tracking period is extended to six, seven, and eight years.

### Policy Responses

To date, Florida's policy responses to improving bachelor's degree productivity have fallen into two categories: efforts to improve students' high school preparation and efforts to improve students' proximity and access to baccalaureate degree opportunities. With regard to academic preparation at the high school level, it was only in the mid-1990s that the Florida Legislature increased the cumulative GPA requirement for a standard high school diploma from 1.5 to 2.0 and included Algebra I among the course distribution requirements. More recently, the Legislature established a generous merit-based statewide scholarship that covers at least \_ tuition for students with a minimum 970 SAT and 3.0 weighted GPA on the 15 core college preparatory credits required for SUS admission. There is circumstantial evidence that the scholarship is encouraging more Florida resident high school graduates to enroll within the state; the evidence is less clear regarding the scholarship's desired impact on rigorous course-taking activity at the high school level.

Florida's second set of policy responses represents the State's exploration of options for increasing access to the bachelor's degree. For over twenty years Florida has provided a tuition subsidy to state residents who attend selected private institutions and has contracted with private institutions to provide, at state tuition rates, educational programs that meet needs unfulfilled by the public system. Legislation from the mid-1990s sought to improve the two plus two system of articulation by capping general education requirements at 36 credit hours, limiting the Associate in Arts degree to 60 hours and most bachelor's degrees to 120 hours, leveling commonly-numbered courses, and establishing common prerequisite courses for academic majors. More recently, the State has sought to enhance access through two-year/four-year joint use arrangements and is currently studying the feasibility of a new system of public four-year teaching colleges. Finally, legislation enacted in 1999 calling for site-determined baccalaureate degrees opens the possibility that certain community colleges might offer four-year degrees themselves.

State legislatures, armed with data on the value of a baccalaureate degree and a sense that the populace must be better-educated in order to meet the workforce demands of the knowledge-based economy of the new century, will likely continue to display an interest in increasing educational attainment. Accountability has been demanded, beginning in the early 1990s and continuing to the present time. In Florida, the approach has at times been punitive, penalizing students who fail much-needed remedial courses or penalizing institutions for the "excess hours" students accumulate. It is hoped that ongoing studies such as the one presented here will provide policymakers with student-centered information on ways to improve students' opportunity for earning a bachelor's degree.

## REFERENCES

- Adelman, Clifford. 1999. *Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment*, Washington, D.C.: U.S. Department of Education.
- Berkner, Lutz K., Cuccaro-Alamin, Stephanie, and McCormick, Alexander C. 1996. *Descriptive Summary of 1989-90 Beginning Postsecondary Students: Five Years Later*. Washington, D.C.: National Center for Education Statistics.
- Berkner, Lutz K., Horn, Laura, and Clune, Michael. 2000. *Descriptive Summary of 1995-96 Beginning Postsecondary Students: Three Years Later*. Washington, D.C.: National Center for Education Statistics.
- Ewell, Peter. 1998. *A Brief Analysis of Baccalaureate Degree Production in Florida*. Boulder, Colorado: National Center for Higher Education Management Systems.
- Florida Community College System. February 2000. *The Fact Book: Report for the Florida Community College System*. Tallahassee, Florida.
- Florida Department of Education. 1999. *Projected Florida High School Graduates, 1999-2000 to 2020-2021*. Tallahassee, Florida: Office of Strategy Planning.
- Florida Department of Labor and Employment Security. 2000. *Florida Industry and Occupational Employment Projections to 2007*. Tallahassee, Florida: Office of Labor Market Statistics.
- Florida Postsecondary Education Planning Commission. 1998. *Student Progression Toward the Baccalaureate Degree: Longitudinal Cohort Studies of High School Graduates*. Tallahassee, Florida.
- Independent Colleges and Universities of Florida. July 2000. *Accountability Report 1999*. Tallahassee, Florida.
- Pascarella, E.T., Bohr, L., Nora, A., and Terenzini, P.T. 1995. Cognitive effects of 2-year and 4-year colleges: New evidence. *Educational Evaluation and Policy Analysis*, 17 (1), 83-96.
- Pascarella, Ernest T. and Terenzini, Patrick T. 1991. *How College Affects Students*. San Francisco: Jossey Bass.
- State University System of Florida. April 2000. *Fact Book 1998-99*. Tallahassee, Florida.

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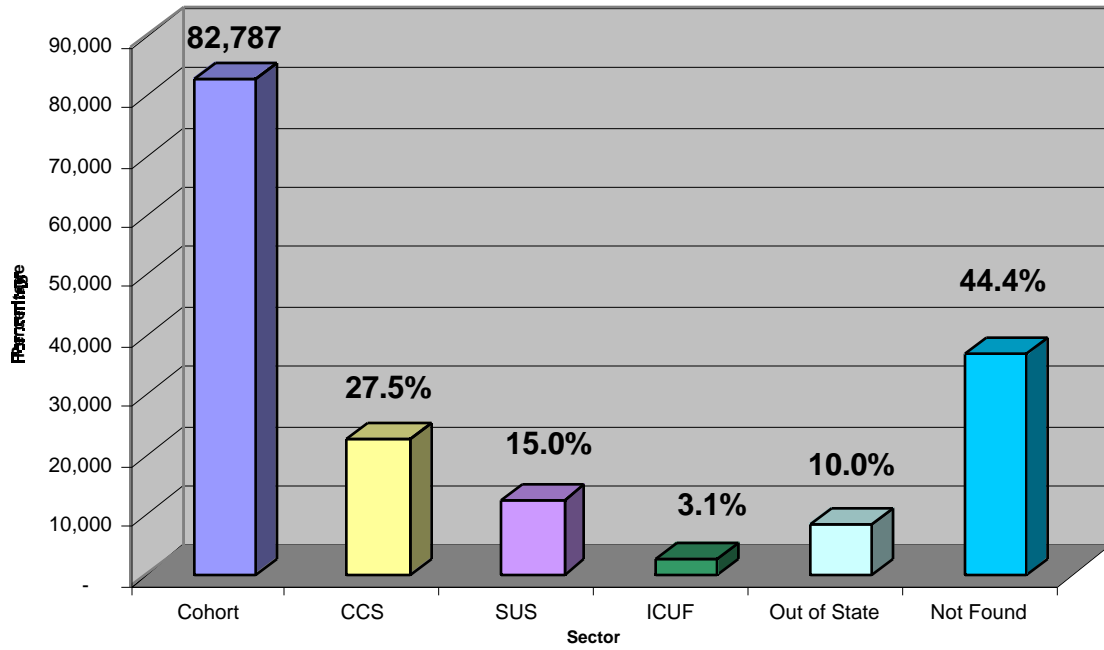
## APPENDIX

- FIGURE 1. 1993-94 Public High School Graduates' Fall 1994 Enrollment in Postsecondary Education, by Sector
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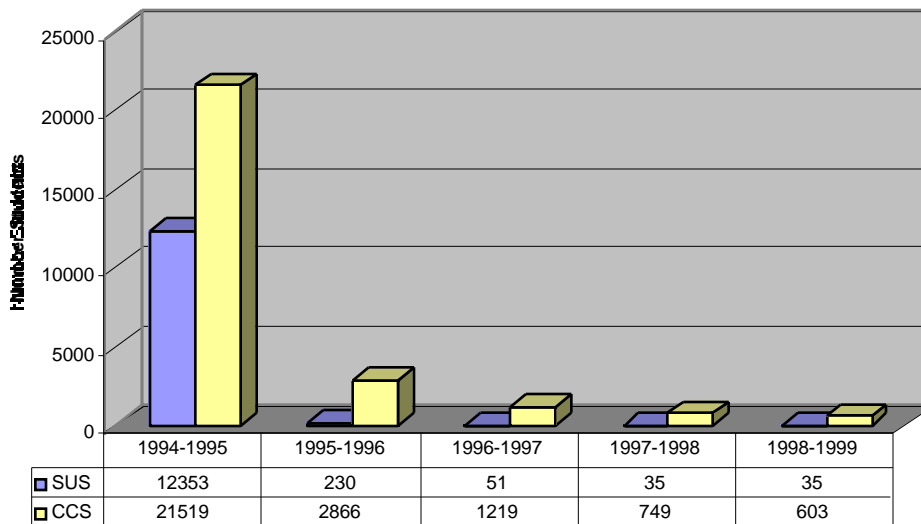
**FIGURE 1.**

**1993-94 Public High School Graduates' Fall 1994 Enrollment in Postsecondary Education, by Sector**



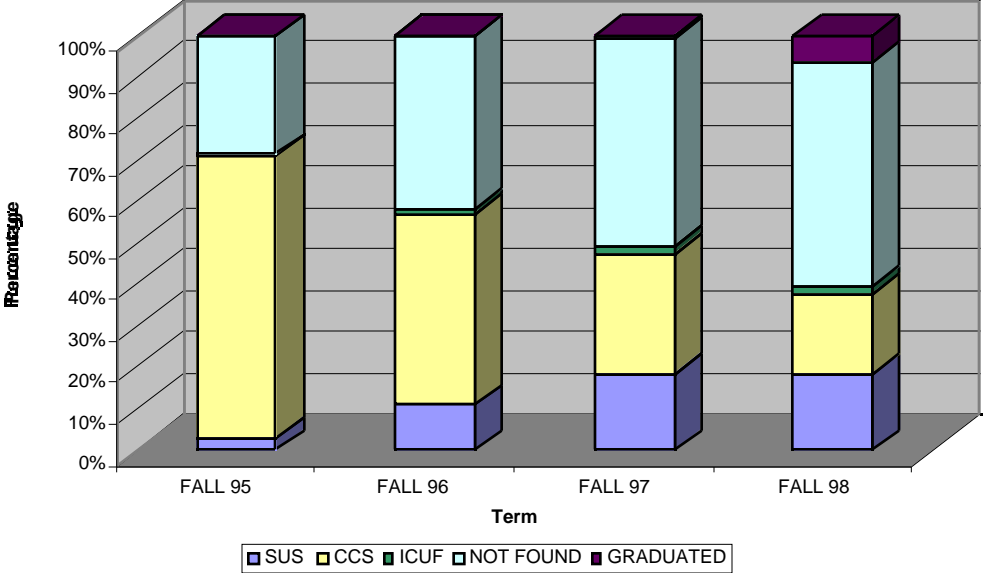
**FIGURE 2.**

**1993-94 Public High School Graduates, by Year and Sector of Postsecondary Matriculation**



**FIGURE 3.**

**Percentage of 1994 Community College System Cohort in Various Sectors, Fall 1995 to Fall 1998**



**FIGURE 4.**

**Percentage of the 1994 State University System Cohort in Various Sectors, Fall 1995 to Fall 1998**

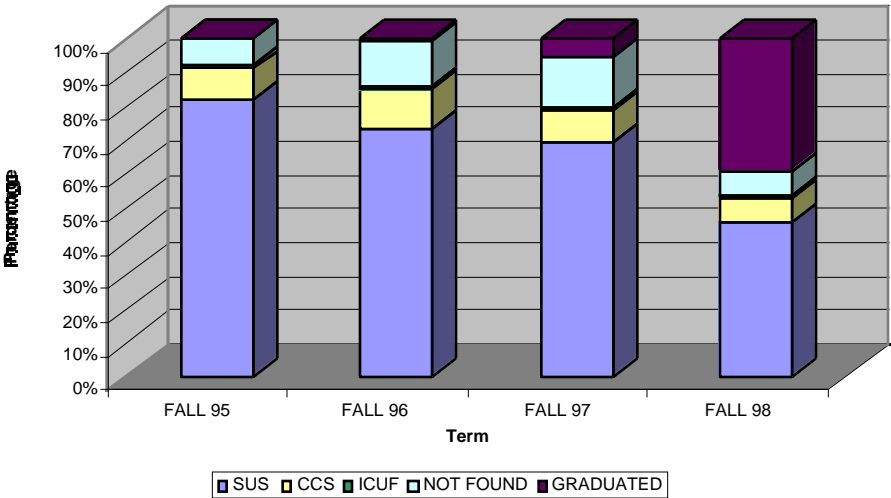


FIGURE 5.

**Path to First Baccalaureate Degree Earned,  
1994-95 to 1998-99**

