

STRENGTHENING
COMMUNITY COLLEGES'
INFLUENCE ON
ECONOMIC MOBILITY

BY DIANA FURCHTGOTT-ROTH, LOUIS JACOBSON, AND CHRISTINE MOKHER



By forging a broad and nonpartisan agreement on the facts, figures and trends in mobility, the Economic Mobility Project is generating an active policy debate about how best to improve economic opportunity in the United States and to ensure that the American Dream is kept alive for generations that follow.

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Diana Furchtgott-Roth is a senior fellow at the Hudson Institute, where she directs the Center for Employment Policy.

Louis Jacobson is a senior economist at CNA.

Christine G. Mokher, Ph.D. is a research analyst at CNA Education.

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All errors are the authors' own.

PEW'S ECONOMIC MOBILITY PROJECT TEAM:

John Morton, managing director

Ianna Kachoris, project manager

Scott Winship, research manager

Jeremy Ratner, communications officer

Erin Currier, senior associate

Samantha Lasky, communications manager

Colleen Allen, specialist

Lindsay Nelson, administrative assistant

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E X E C U T I V E S U M M A R Y



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As the nation enters what appears likely to be a slow and prolonged economic recovery, the central role that postsecondary education plays in contributing to upward mobility is receiving renewed attention. Indeed, since unemployment is closely correlated with level of education, policymakers are right to look to increase college enrollment and graduation rates as a way to improve Americans' economic success.¹

Past research from Pew's Economic Mobility Project (EMP) has shown that a college degree quadruples the chances that an individual born into the bottom income quintile will reach the top quintile in adulthood. For community colleges in particular, the project has shown that getting a community college degree increases earnings by an average of \$7,900 annually—an earnings increase of 29 percent over those with only a high school diploma. Further, per-credit returns to community and four-year colleges are similar: both convey an annual earnings increase of roughly four to six percent for every 30 credits (two semesters) of courses completed.

Despite this compelling evidence, until recently attention to higher education has largely overlooked the powerful role the nation's community colleges—which enroll almost half of America's undergraduates annually—play in boosting economic mobility. Using a database that includes detailed education and employment histories of 84,000 Florida students who reached the twelfth grade in 2000, this paper examines the role community colleges play in enhancing the upward economic mobility of their students. The study looks at the various pathways through which students can increase their earnings, including transferring to a four-year college and completing a terminal associate degree or certificate in a range of high-return fields. It offers the following key findings.

COMMUNITY COLLEGES ARE AN IMPORTANT PATHWAY TO UPWARD ECONOMIC MOBILITY FOR MILLIONS OF AMERICANS, INCLUDING STUDENTS WITH A RANGE OF ACADEMIC BACKGROUNDS AS WELL AS THOSE WHO ARE LOW-INCOME.

- Community colleges in Florida prepare roughly 40 percent of all students who ultimately attain bachelor's and graduate degrees.
- About 68 percent of Florida community college students had high school grade point averages (GPAs) below B, compared to 30 percent of four-year college students.

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- About 26 percent of community college students come from low-income families, compared to 15 percent of four-year college students.

WHILE COMMUNITY COLLEGES CAN BOOST EARNINGS FOR ALL STUDENTS, THE INCREASE CAN BE MUCH HIGHER IN CERTAIN FIELDS OF STUDY.

- Seven years after leaving college, community college students who concentrate in a high-return field, such as computer science or engineering, earn an average of \$12,000 more annually than those who concentrate in a low-return field, such as humanities or fine arts.²
- Those in the very-high-return field of health care earn over \$18,000 more than those in low-return fields each year.

COMMUNITY COLLEGES PROVIDE AN IMPORTANT STEPPING STONE TO TRANSFER TO FOUR-YEAR COLLEGES AND ATTAIN BACHELOR'S DEGREES, ESPECIALLY FOR LOW-INCOME, HIGH-PERFORMING STUDENTS.

- Of the 81 percent of low-income students with A/B+ high school GPAs who attend college, more than half of these enrollees attend community colleges.
- Roughly 52 percent of low-income community college students with A/B+ high school GPAs transfer to four-year colleges, and 75 percent of those who transfer attain bachelor's degrees.

ACADEMIC PERFORMANCE IN HIGH SCHOOL STRONGLY INFLUENCES POSTSECONDARY EDUCATION ATTAINMENT AND SUBSEQUENT EARNINGS, BUT COMMUNITY COLLEGE STUDENTS WITH LOW HIGH SCHOOL GPAs CAN ALSO SIGNIFICANTLY INCREASE THEIR EARNINGS BY PURSUING HIGH-RETURN FIELDS OF STUDY.

- Among students who begin in community college, those who had A/B+ high school GPAs earn an average of \$9,600 more per year than those with lower high school GPAs.
- However, lower-performing high school students who concentrate in high-return fields in community college earn \$48,000 annually, \$4,000 *more* than A/B+ high school students who concentrate in low-return fields.
- Unfortunately, only 25 percent of C students in the Florida cohort completed concentrations in the high-return category, compared to 40 percent of A/B+ students—a gap of 15 percentage points.

COMMUNITY COLLEGES COULD BE MORE EFFECTIVE IN BOOSTING ECONOMIC MOBILITY BY HELPING STUDENTS COMPLETE HIGH-RETURN COURSES AND TRANSFER TO FOUR-YEAR COLLEGES.

The paper makes the following recommendations.

- 1** Ensure students are academically prepared to complete courses in high-return fields.

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2

Provide career counseling and assessment to ensure students understand the full range of job options open to them.

3

Provide supportive services as students progress through college, including helping with the financial aid process and with juggling school with family and work responsibilities.

4

Make more student financial aid available to students with family responsibilities and to high-performing students to help them transfer to four-year colleges.

5

Increase funding to provide more slots in high-return courses, and remove funding incentives that encourage students to enroll in low-return courses.

6

Adopt accountability systems to help community colleges raise their return on educational investments.

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INTRODUCTION

Americans' upward economic mobility, especially for those at the bottom of the income ladder, is more strongly tied to educational attainment today than at any other time in our history. Past Economic Mobility Project research shows that those born into the bottom income quintile are *four times* more likely to reach the top quintile as adults if they have a four-year college degree.³ Moreover, without a degree, nearly half (45 percent) of those born into the lowest income quintile remain there as adults.⁴ The connection between education and upward mobility is driven by the growing disparity between the earnings of college versus high school graduates. Among men the college to high school earnings differential was 43 percent in 1980. It subsequently rose sharply to 85 percent in 1997, and by a comparable amount for women.⁵ The differential rose at a modest rate thereafter. Even those with some college education have median annual earnings that are 16 percent higher than those with only a high school diploma.⁶

While there is no doubt that America's excellent system of two-year and four-year colleges has the ability to substantially raise the earnings of well-prepared high school students, many students have not responded to the increased incentives and opportunities. High school dropout rates average above 20 percent, reaching close to 50 percent in inner cities, and over half of high school graduates are not prepared to complete four-year degrees.

Thus, it is hardly surprising that efforts to increase economic mobility center around improving K-12 academic outcomes and ensuring high academic performing, low-income students attend two- and four-year colleges and attain bachelor's (BA) degrees. Up until recently, however, little attention was paid to the critical role that community colleges play in increasing economic mobility by boosting the career-oriented skills of millions of Americans at the bottom of the income ladder, especially those who did not perform well academically in high school. Because of their low cost, diverse course offerings, and easy accessibility, community colleges can open pathways to higher earnings for highly diverse groups of students. By focusing on career-oriented courses leading to high-wage

jobs, as well as the more conventional academic preparation leading to success at four-year colleges, community colleges can have an especially powerful effect on the mobility of low-income Americans regardless of their high school preparation.

This paper uses a unique database, tracking the education and work experience of over 84,000 Florida students to examine precisely how the economic returns to community college education vary by student demographic characteristics, performance in high school, and the courses taken in college.⁷ This evidence is then used to identify the most promising educational pathways to increase community college students' economic mobility, the personal and institutional impediments that prevent too many community college students from getting the most from educational opportunities, and ways those impediments can be removed.

COMMUNITY COLLEGES PLAY A SPECIAL ROLE IN BOOSTING ECONOMIC MOBILITY

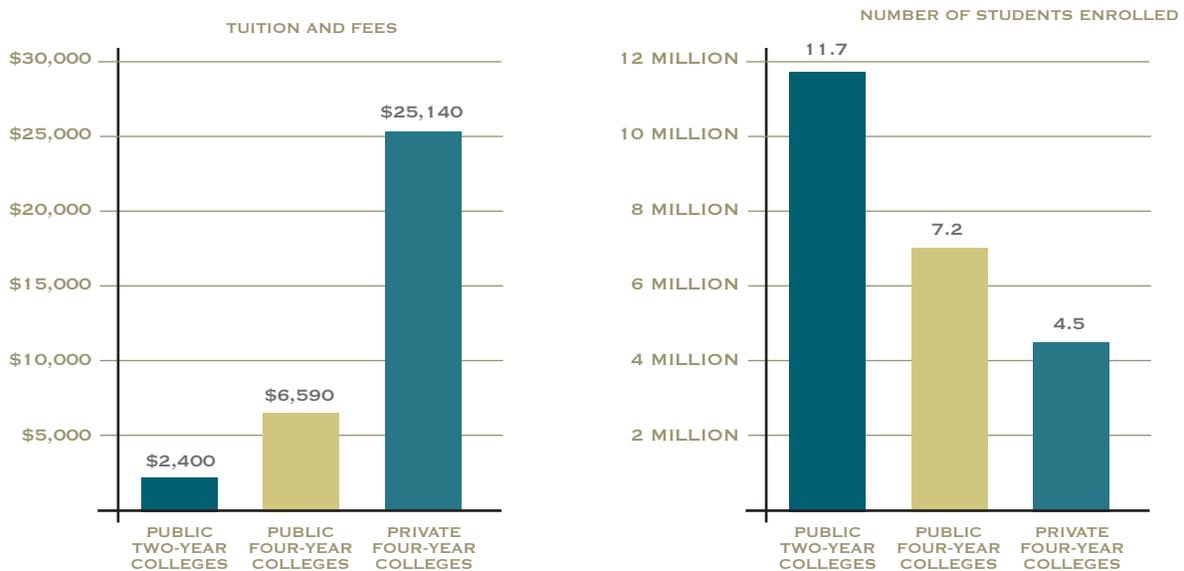
Community colleges have four main functions: preparing students for transfer to another institution, providing career and technical training, remediation, and enrichment. The transfer function helps students gain at low cost the knowledge and skills needed to transfer to four-year institutions. The career and technical education (CTE) function gives students the knowledge they need to enter a wide range of careers, including those that offer high pay and steady employment. The remediation function allows students with weak academic fundamentals to develop basic education skills, especially in math, writing, and English as a second language. The enrichment, or avocational, function offers students the opportunity to pursue personal interests in diverse fields.

This paper focuses on the transfer and CTE functions, which are especially valuable to low-income students who have been most adversely affected by recent economic trends and may need assistance in identifying and pursuing high-return fields.

Four key characteristics of community colleges make them particularly attractive to low-income students. First, they offer a broad range of high-quality courses at a low tuition cost of about \$2,400 annually—an amount equal to 40 percent of the cost of attending a public four-year college, and 10 percent of private four-year college expenses.⁸ (See Figure 1.)

Second, community colleges are widely dispersed throughout the United States and offer classes at convenient times and locations, making it possible for students to live at home while working or meeting family responsibilities. Overall, the nation's 1,200 community colleges enroll 11.7 million students, nearly half of all U.S. undergraduates.⁹

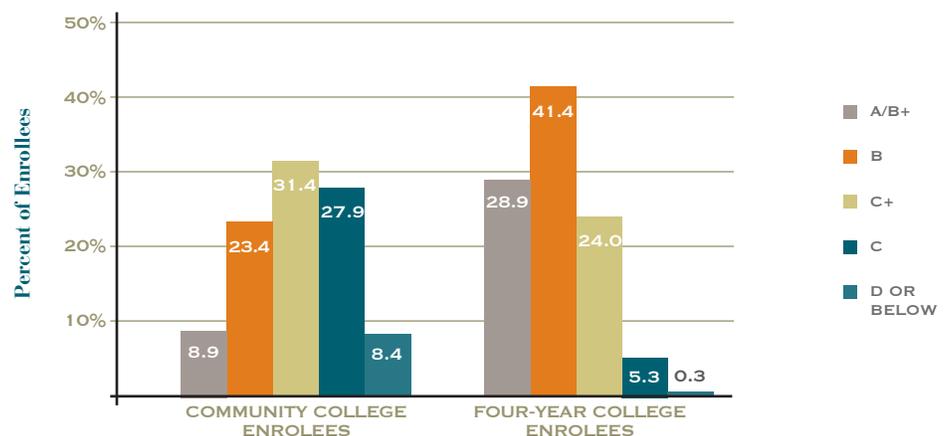
FIGURE 1

**Cost and Enrollment at Various Types of Colleges,
2008–2009 Academic Year**


Sources: American Association of Community Colleges and US Department of Education.

Third, community colleges offer enrollment to students with diverse high school backgrounds. Half of community college students lack the credentials to attend selective four-year colleges, and many are recent immigrants with limited English-language skills or schooling. In Florida, for instance, less than a third (32 percent) of community college students had a high school GPA of B or higher, compared to more than two-thirds (70 percent) of four-year college students. Yet, community colleges also enroll top high school students who cannot afford to attend four-year colleges. (See Figure 2.)

FIGURE 2

**Florida Enrollee Distribution by High School GPA
for Community and Four-Year Colleges**


Note: Data reflect high school GPA distributions of Florida students in the ninth grade 1996 cohort who reached grade 12 and attended a public college in Florida.

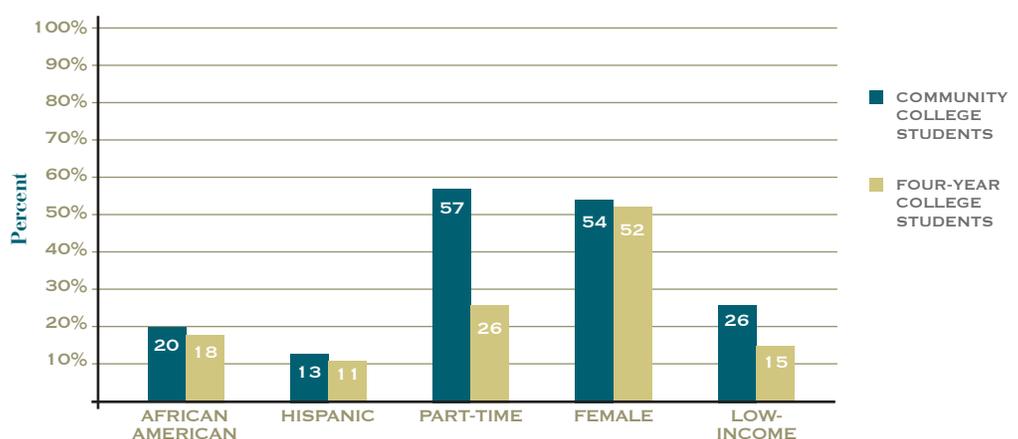
About a third of Florida's community college students take credit courses with the intent of obtaining the academic preparation needed to attain associate (AA) degrees and transfer to four-year institutions. Another third take credit courses with the intent to boost their career prospects, often by obtaining a certificate or a terminal two-year degree in a career and technical field such as nursing. The remaining third take non-credit courses to either make up for education deficits, such as poor English or weak academic skills, or to pursue personal interests such as photography and foreign travel.

Fourth, and perhaps most notably, the per credit economic returns to community colleges and four-year colleges are similar: both convey an annual earnings increase of roughly four to six percent for every thirty credits (two semesters) of courses completed.¹⁰ Thus, attendance at community colleges is an especially good investment, given their low cost.

Community colleges attract a different student body than do four-year institutions because of their easy accessibility, lower admission requirements, potentially high economic returns, and low cost. Taking the Florida cohort as an example, community college students are slightly more likely to be from minority backgrounds and to be women. (See Figure 3.) They are also much more likely to be low-income, and because they often have work and family responsibilities outside of school, more than half enroll part-time. Trends in the demographic differences between Florida's community college and four-year college students reflect national demographic differences between students in two-year and four-year colleges.¹¹ As found in past Economic Mobility Project studies, women, African Americans, and individuals from low-income families—those most likely to attend community colleges—are least likely to experience upward mobility over generations. Increasing the effectiveness of community colleges, therefore, is a highly promising way to increase the upward mobility of those needing help the most.

FIGURE 3

Florida's Community Colleges Attract a Different Demographic of Students Than Do Its Four-Year Colleges



Note: Data reflect demographic characteristics at each type of college for Florida students in the ninth grade 1996 cohort who reached grade 12 and attended a public college in Florida.

HIGH SCHOOL PERFORMANCE, FAMILY INCOME, AND COURSE SELECTION ARE LINKED TO POSTSECONDARY ACHIEVEMENT AND EARNINGS GROWTH

This section draws from a longitudinal database tracking virtually all Florida public high school students who entered ninth grade in 1996 and reached grade 12. It examines their high school outcomes, post-high school transitions, college course taking, postsecondary credentials attainment, and post-school earnings. (For more information about the data, see the Appendix.) Among this cohort of Florida students, less than 20 percent received a postsecondary credential within six years of leaving high school, and postsecondary entry, persistence, and credential attainment were strongly associated with having a high grade point average (GPA) in high school and coming from a family with high income.¹² Nevertheless, many students who did not perform well in high school found pathways at community colleges that led to high earnings. Upward mobility can be achieved through the widely-recognized path of attaining the academic skills needed to successfully transfer to four-year colleges as well as through the less widely-recognized path of completing course work in high-return fields with or without attaining certificates and terminal AA degrees.

POSTSECONDARY EDUCATION IS STRONGLY INFLUENCED BY HIGH SCHOOL GPA.¹³

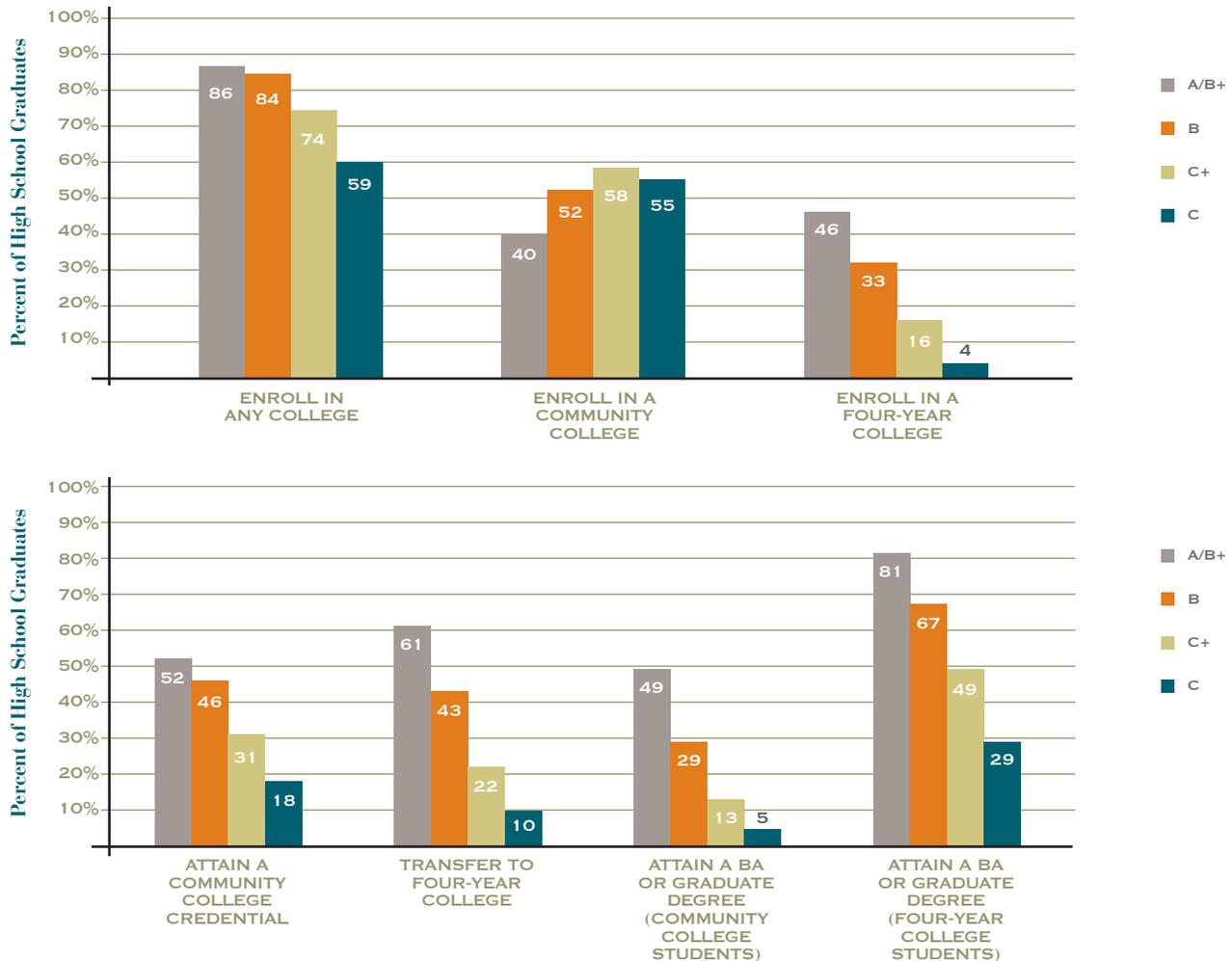
Compared to C students, A/B+ students in the Florida cohort were 27 percentage points more likely to enroll in college (either two-year or four-year) after high school. These enrollment differences by GPA are much more pronounced among those who enroll in four-year colleges; A/B+ students are more than ten times more likely to enroll than C students. However, students with B, C+, and C GPAs attend community colleges in nearly equal numbers. (See Figure 4.)

Regardless of whether students begin their postsecondary careers at two- or four-year colleges, those with A/B+ GPAs are consistently the most likely to attain a credential or degree.¹⁴

In most states, less than 40 percent of 12th graders have B or higher GPAs—high enough to gain admission to selective four-year colleges and indicative of a reasonably high probability of attaining BA degrees. In Florida, for example, only about 12 percent of twelfth graders achieve high school GPAs of A or B+, and about 26 percent receive high school GPAs of B; the remaining 62 percent have GPAs of C or lower.

FIGURE 4

High School GPA Strongly Influences Postsecondary Enrollment and Completion



Note: Both figures reflect the percent of students in the Florida cohort who enrolled in a public two-year or four-year college and reached each educational milestone by 2006. Students who earned a GPA of D and below are omitted from this figure; while 11 percent attended community college, so few reached an additional milestone that including them in the figure would not add additional useful information.

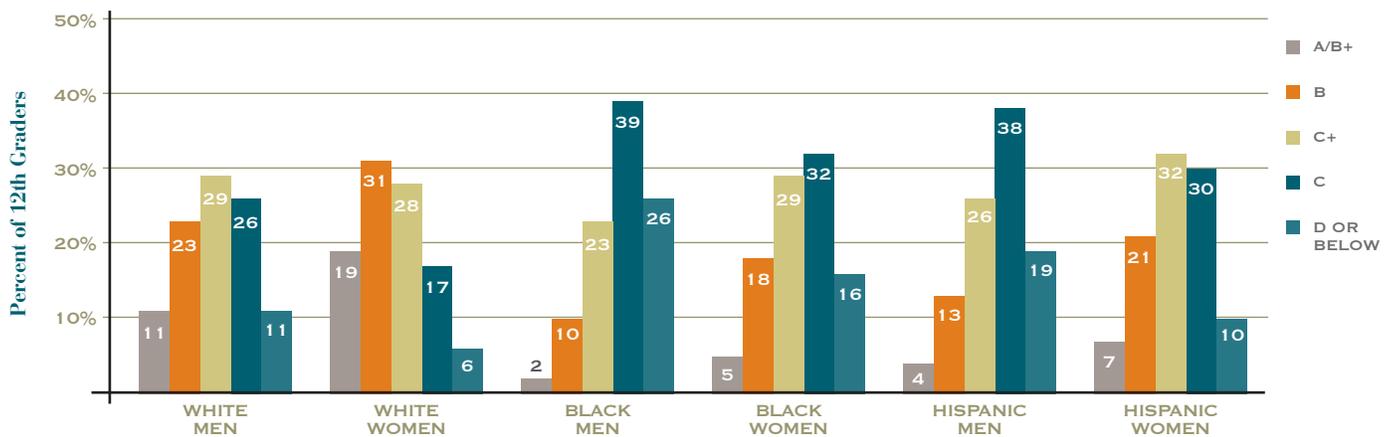
As a result, for many high school graduates with less than a B GPA, community colleges offer the best chance for attaining a postsecondary degree. Not only do community colleges in Florida bear the responsibility of enrolling the vast majority of lower-performing high school graduates, but they also are responsible for preparing roughly 40 percent of all students who ultimately attain BA degrees to complete programs at four-year colleges.

HIGH SCHOOL GPA ALSO EXPLAINS MUCH OF THE OBSERVED DIFFERENCES IN COLLEGE ENROLLMENT ACROSS ETHNIC GROUPS AND BETWEEN WOMEN AND MEN.

About 50 percent of white female students in the Florida cohort have a B or higher GPA, compared to 34 percent for white males, 28 percent for Hispanic females, 23 percent for black females, 17 percent for Hispanic males, and 12 percent for black males. (See Figure 5.)

FIGURE 5

High School GPA of Florida 12th Graders by Gender and Ethnicity

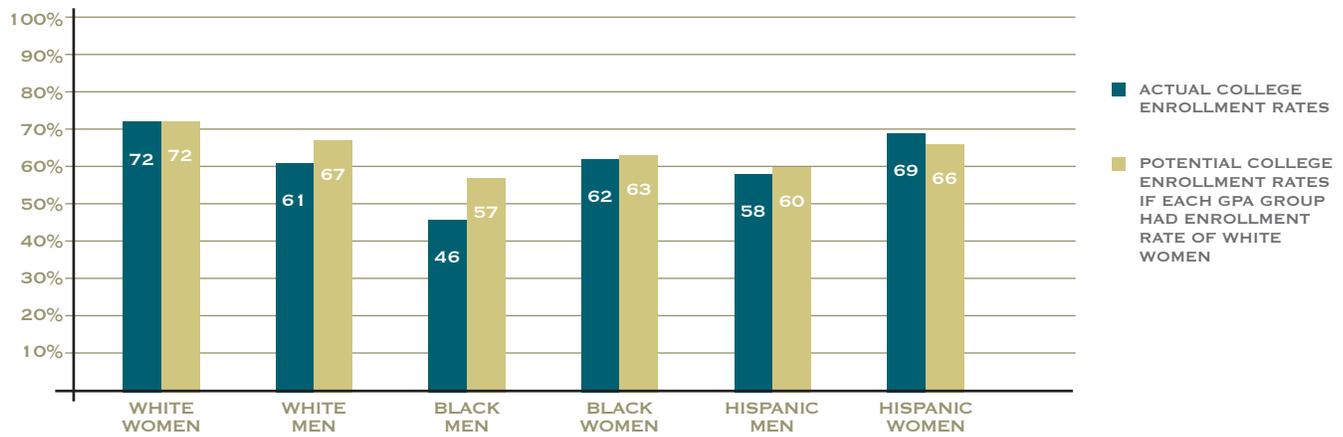


Note: Data reflect high school GPA distribution by gender and ethnicity for Florida students in the ninth grade 1996 cohort who reached grade 12 in 2000.

These gaps in GPA contribute to dramatic differences in postsecondary outcomes across the demographic groups. For example, white women are the most likely group to graduate high school with a B or better GPA and they also are the most likely to enroll in college. If the enrollment rate for each GPA level across demographic groups was identical to that of the GPA-enrollment rate for white women, in most cases, college enrollment rates would rise slightly across the groups. (See Figure 6.) These numbers indicate that white women usually have slightly higher rates of college attendance than do other groups with comparable GPAs. Interestingly, the potential college enrollment rate for Hispanic women is three points lower than their actual enrollment rate, suggesting that Hispanic women have slightly higher rates of college attendance than white women with similar GPAs. The difference in potential and actual college enrollment is especially pronounced for black men, whose college enrollment rate would increase from 46 percent to 57 percent, if they had the same GPA-specific enrollment rate as white women. Because white men also have a relatively large difference in potential and actual college enrollment some of the potential/actual difference for black men may relate to male/female differences in interest and the need to work full time. However, most of the difference for black men probably relates to the far greater impediments this group faces beyond not performing well academically in high school.

FIGURE 6

College Enrollment Rates for Different Demographic Groups Would Increase if GPAs Rose



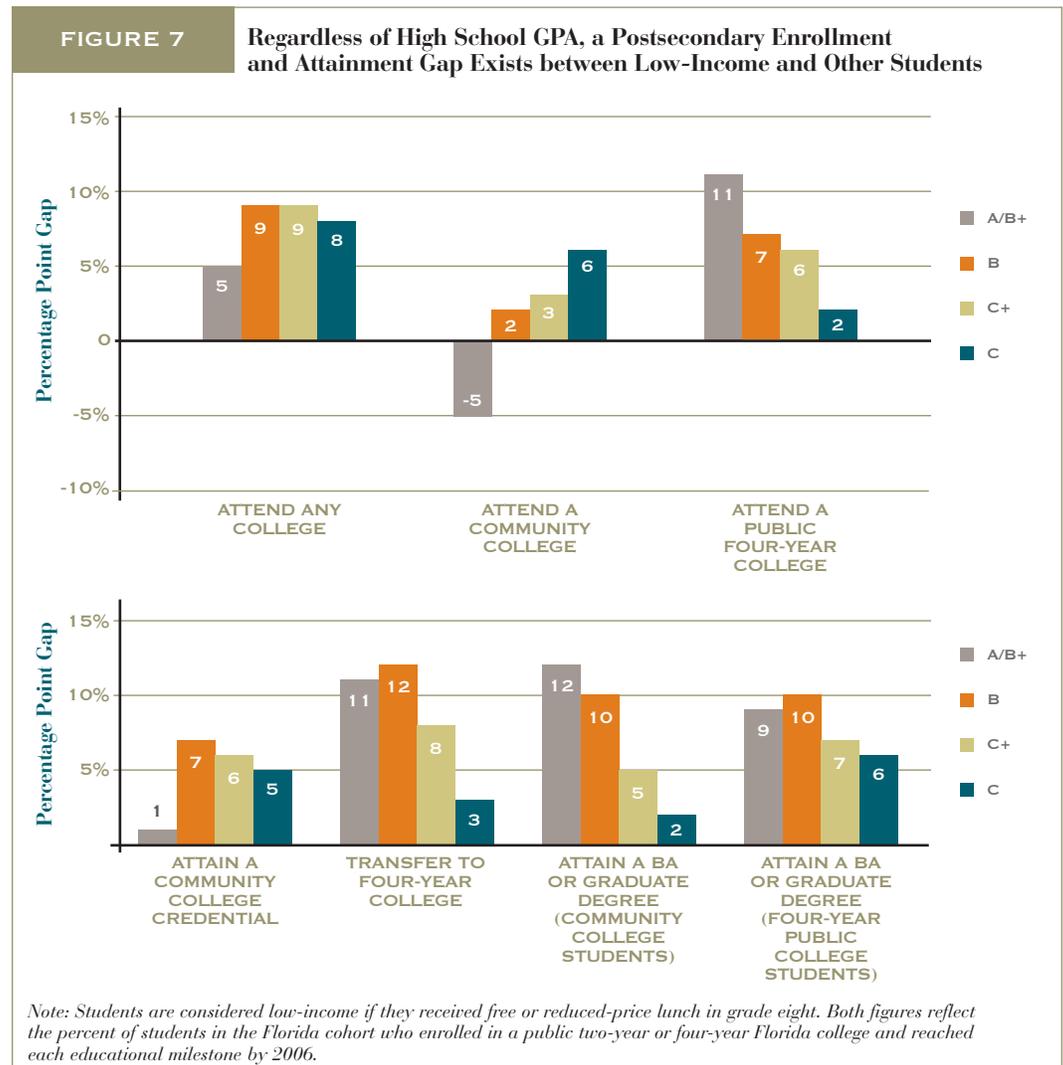
Note: The figure reflects the actual and potential college enrollment rates for Florida students in the ninth grade 1996 cohort who reached grade 12. Potential college enrollment rates are calculated by multiplying the percent of students in each high school GPA category for a particular gender/ethnic group by the college enrollment rate for the corresponding GPA category among white women, and summing the total.

THE GAP BETWEEN LOW-INCOME AND OTHER STUDENTS IN REACHING POSTSECONDARY MILESTONES IS SUBSTANTIAL, EVEN WHEN COMPARISONS ARE MADE AMONG STUDENTS WITH IDENTICAL HIGH SCHOOL GPAs. For example, among all Florida public school students who entered the ninth grade in 1996, about 25 percent of low-income students attended college within two years of high school, compared to 39 percent of higher-income students—a gap of 14 percentage points. However, even among low-income students with the same high school GPA as higher-income students, the gap in enrollment was still about 9 percentage points.¹⁵ (See Figure 7.)

The income gap is smaller among students enrolling in community colleges than four-year colleges, most likely because low-income students are much more likely to attend community colleges. Among Florida high schoolers with A/B+ GPAs, low-income students are 5 percent more likely than their middle- and upper-income peers to enroll in community colleges, but 11 percent less likely to enroll in four-year colleges.

Among Florida students with A/B+ GPAs, the gaps between low-income and other students exist across each of the postsecondary milestones. The largest income-based gaps (more than 10 percentage points) are for A/B+ and B community college students transferring to four-year colleges and obtaining BA or graduate degrees. Because the low-income students best prepared to obtain four-year degrees do not transfer, the gaps with respect to attaining two-year credentials are relatively small (1 point for A/B+ students and 7 points for B students). Similarly, the gaps in four-year degree attainment are relatively small for C+ and C students (fewer than 7 points) because relatively few

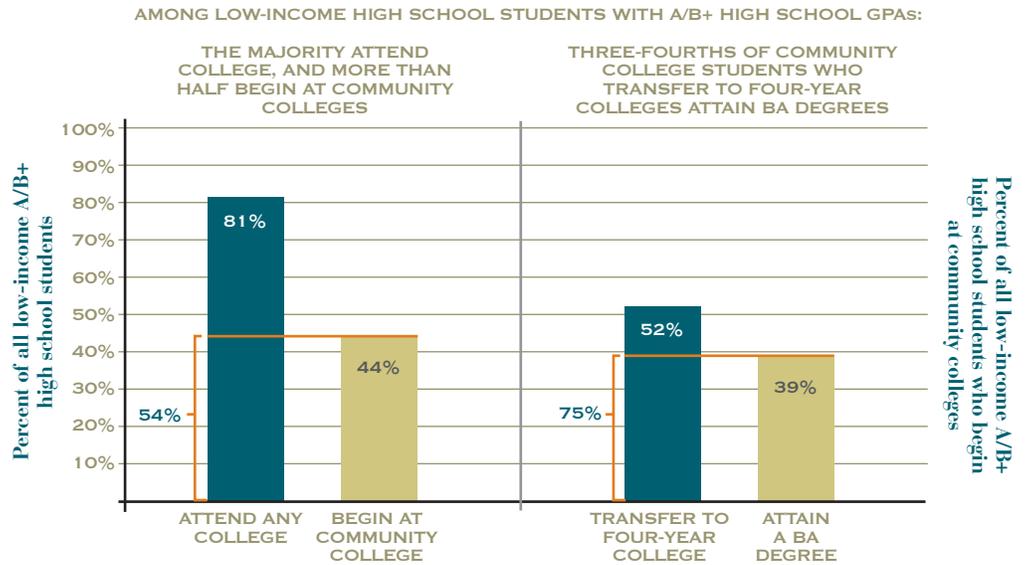
higher-income students transfer to four-year colleges, and low-income C+ and C students who start at four-year colleges are selected based on special characteristics. That the gaps in attaining four-year degrees are largest for low-income students who are best prepared to attend four-year colleges suggests that these students suffer from especially large impediments.



STILL, COMMUNITY COLLEGES PROVIDE AN IMPORTANT STEPPING STONE TO TRANSFER TO FOUR-YEAR COLLEGES AND ATTAIN BACHELOR'S DEGREES, PARTICULARLY FOR HIGH-ACHIEVING, LOW-INCOME STUDENTS. The vast majority (81 percent) of low-income students with A/B+ high school GPAs attend college. Of those, 44 percent (more than half) attend community colleges. (See Figure 8.) Roughly 52 percent of low-income community college students with A/B+ high school GPAs attain a community college credential, and 52 percent transfer to four-year colleges. Thirty-nine percent of these high-achieving low-income students, or three-quarters of those who transfer, attain a BA degree.

FIGURE 8

Many High-Performing Low-Income High School Students who Begin in Community Colleges Eventually Transfer to Four-Year Colleges and Attain Bachelor's Degrees

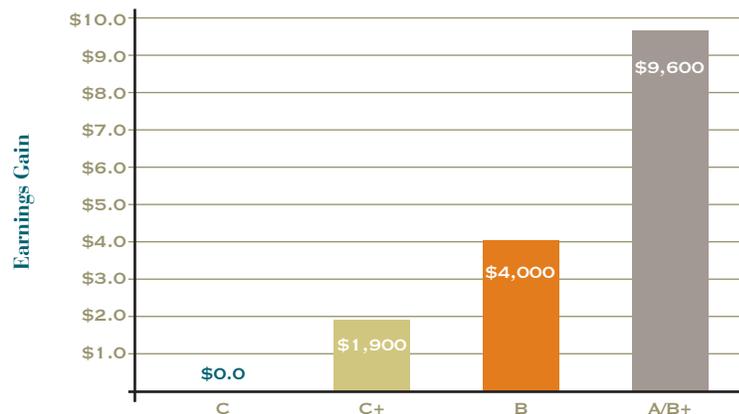


Note: Figure reflects the percent of students in the Florida 1996 cohort with A/B+ high school GPAs who enrolled in a public college in Florida and reached each educational milestone by 2006. Students are considered low-income if they received free or reduced-price lunch in grade eight.

BECAUSE HIGH SCHOOL PERFORMANCE HAS A POWERFUL EFFECT ON REACHING DIFFERENT POSTSECONDARY EDUCATION MILESTONES, IT HAS A POWERFUL EFFECT ON EARNINGS. Analysis of the Florida cohort who start their postsecondary education in community colleges shows that the average annual earnings of high school C students will be about \$45,000 seven years after leaving college.¹⁶ Annual earnings will be higher by about \$1,900 for C+ students; about \$4,000 for B students; and \$9,600 for A/B+ students. (See Figure 9.)

FIGURE 9

Predicted Difference in Average Annual Earnings for Florida Community College Students, by High School GPA (Relative to “C” Students) Seven Years After Leaving College



Note: Earnings data reflect the highest degree completed among Florida students in the ninth grade 1996 cohort who begin at public community colleges in Florida and attain a credential.

COMMUNITY COLLEGE STUDENTS WITH HIGHER GPAs COMPLETE MORE COURSES, AND MORE OFTEN CONCENTRATE THEIR COURSEWORK IN HIGH-RETURN FIELDS.

It is widely recognized that earnings rise with high school GPA because students with higher GPAs progress further through the postsecondary education pipeline. However, an even more important reason is that students with higher GPAs complete more courses that have higher financial returns, such as those in nursing, engineering, and computer programming. For example, seven years after leaving college, average annual earnings of Florida students with concentrations in low-return fields are projected to be about \$41,000.¹⁷ Earnings are projected to be higher by about \$7,300, \$12,200, and \$18,800, respectively, for students with concentrations in medium-, high-, and very-high-return fields. (See Figure 10.)

LEVEL OF RETURN	FIELDS OF STUDY	SAMPLE PROFESSIONS	AVERAGE EARNINGS
VERY HIGH	Health Care	Nurses, medical technicians	\$60,557
HIGH	Agriculture, business, computer science, education, engineering, environmental science, marketing, and math	Computer programmers, engineers	\$53,988
MEDIUM	Building trades, English, legal services, machinery repair, protective services, technical support for business and industry	Paralegals, security guards	\$49,036
LOW	Communications, consumer services, fine arts, humanities, human services, performing arts, personal services, public services, science ¹⁸ , and social studies	Artists, customer service representatives	\$41,766

Note: The table reflects average annual earnings for Florida students in the ninth grade 1996 cohort who begin at public community colleges in Florida and attain a credential. It includes students who proceed on from community colleges to receive their bachelor's degree or beyond.

These differences are considerably greater than the differences in earnings among students with different high school GPAs, as students at all GPA levels can substantially increase their earnings by taking more higher-return courses.

While substantial fractions of community college students in every GPA group have concentrations in medium-, high-, and very-high-return fields, 36 percent or more of the students in each GPA group have concentrations in low-return fields. (See Figure 11.) This suggests that it is feasible for students to increase their earnings, and their upward mobility, by altering the fields of courses they select, regardless of their high school academic performance.

FIGURE 10

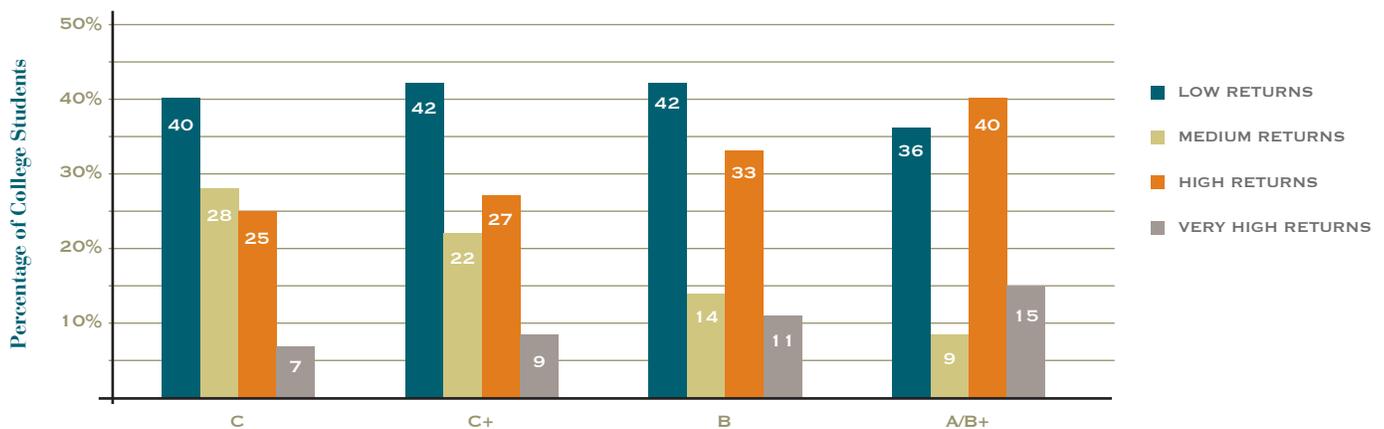
Predicted Difference in Average Annual Earnings for Florida Community College Students, by Return of Fields of Study (Relative to “Low Return” Fields of Study) Seven Years After Leaving College



Note: Earnings data reflect the highest degree completed among Florida students in the ninth grade 1996 cohort who begin at public community colleges in Florida and attain a credential.

FIGURE 11

Percent of Florida Community College Students Pursuing Various Fields of Study by High School GPA



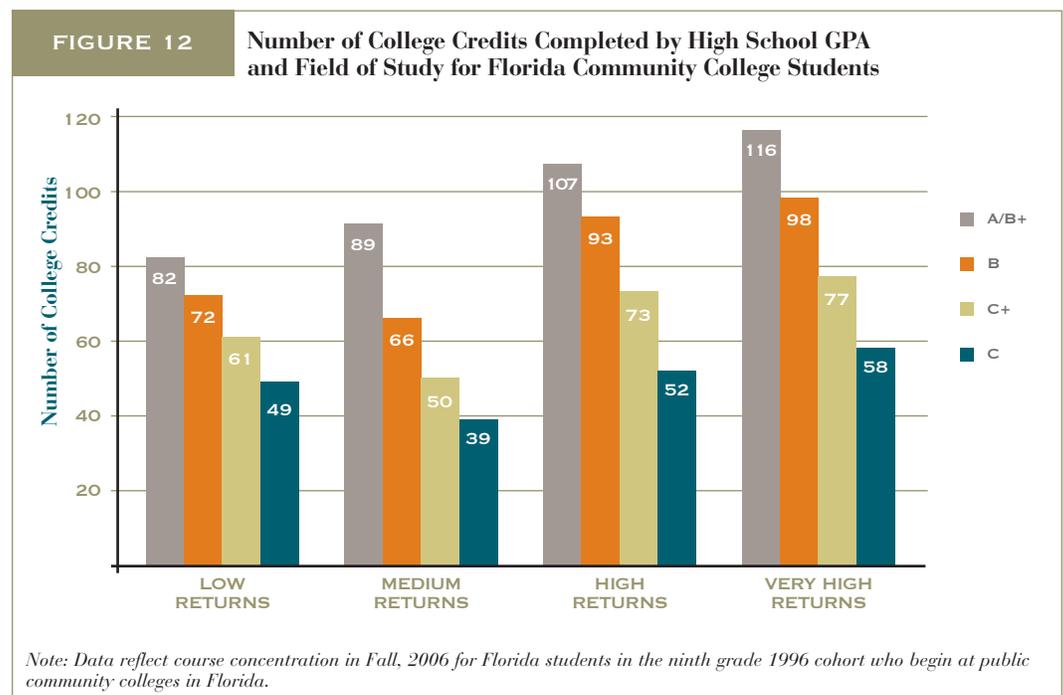
Note: Data reflect course concentration in Fall, 2006 for Florida students in the ninth grade 1996 cohort who begin at public community colleges in Florida. Bars may not add to 100 due to rounding.

HOWEVER, OPPORTUNITIES FOR LOW-GPA STUDENTS TO ENHANCE THEIR EARNINGS ARE MORE LIMITED THAN THEY ARE FOR HIGH-GPA STUDENTS. Only 25 percent of C students in the Florida cohort completed concentrations in the high-return category, compared to 40 percent of A/B+ students—a gap of 15 percentage points. This result is understandable given that the high-return college fields require the same high levels of quantitative and critical thinking skills required to attain A/B+ high school GPAs. Nevertheless, it suggests that low-GPA students need to select their courses carefully if they are to complete concentrations that will boost their earnings. Indeed, a consistent

pattern shown in Figure 11 is that as high school GPA rises, the likelihood of entering very-high- and high-return fields increases while the likelihood of entering medium return fields declines.

Students who complete the most credit-bearing courses also tend to have higher high school GPAs. On average, the number of postsecondary credits completed is 83 for A/B+ students, 66 for B students, 46 for C+ students, and 29 for C students in the Florida cohort. Further, within each return group, A/B+ students complete an average of 33 more credits than C students. These and other results demonstrate that there is a positive return from each course completed, especially for those in career-oriented fields, as opposed to academic fields.¹⁹

Students with higher high school GPAs complete more courses overall and more courses in high-return fields. (See Figure 12.) This explains why earnings differ by GPA and why the differences are especially large by field of study.²⁰ However, there is one notable exception to this general pattern: students with concentrations in medium-return fields complete fewer credits than those in low-return fields, but they have higher earnings. For example, C+ students with medium-return concentrations complete 11 fewer credits than those with low-return concentrations (50-61 = -11), but have earnings that are about \$8,000 higher—a notable return on investment. (See Figure 13.)

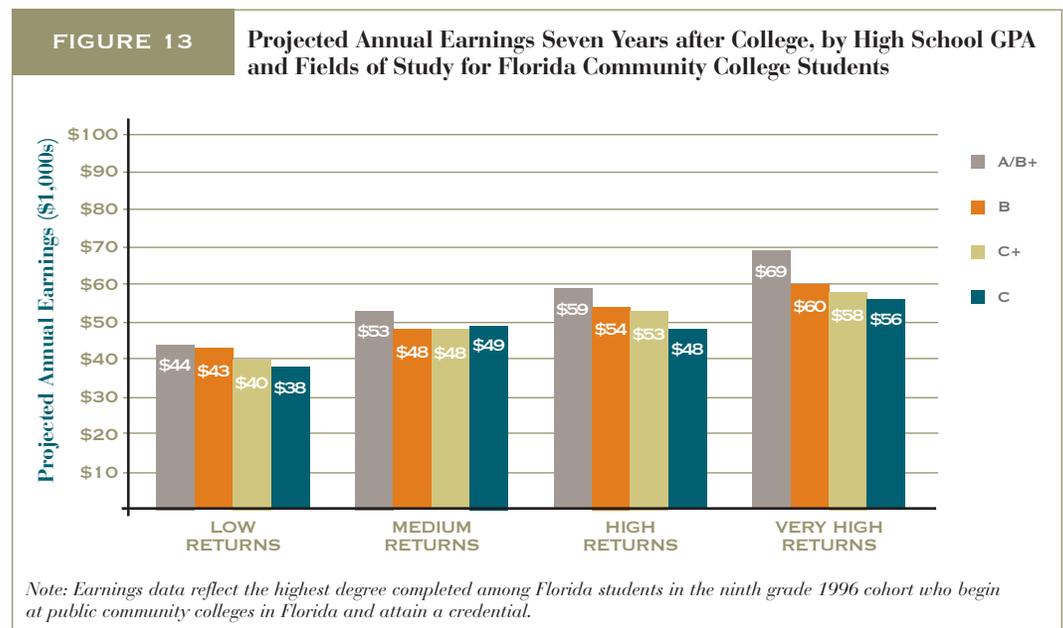


This difference stems from academic coursework having low returns during the first two years of college, and makes sense because students with academic concentrations

devote most of their first two years of college to completing the prerequisites needed to begin taking more applied courses, especially courses in quantitative fields like computer science. Therefore, it is mainly in the last two years of four-year programs and in graduate school that students complete applied courses in high-return fields, such as engineering and medicine.

UNLESS STUDENTS TRANSFER TO FOUR-YEAR COLLEGES AND ATTAIN BA AND GRADUATE DEGREES, THEY END UP WITH LOWER EARNINGS THAN DO THOSE STUDENTS WHO TAKE COMMUNITY COLLEGE COURSES THAT ENHANCE THEIR EARNINGS.

The key policy-oriented implication of this evidence is that there would be a positive result from: (1) helping more students who perform well in academic subjects at community colleges transfer to four-year colleges; (2) assisting community college students to accurately assess their prospects for doing well in academic courses and transferring to four-year colleges; and (3) giving them more information that will help them select higher-return career-oriented courses if their prospects for completing four-year academic programs are poor.



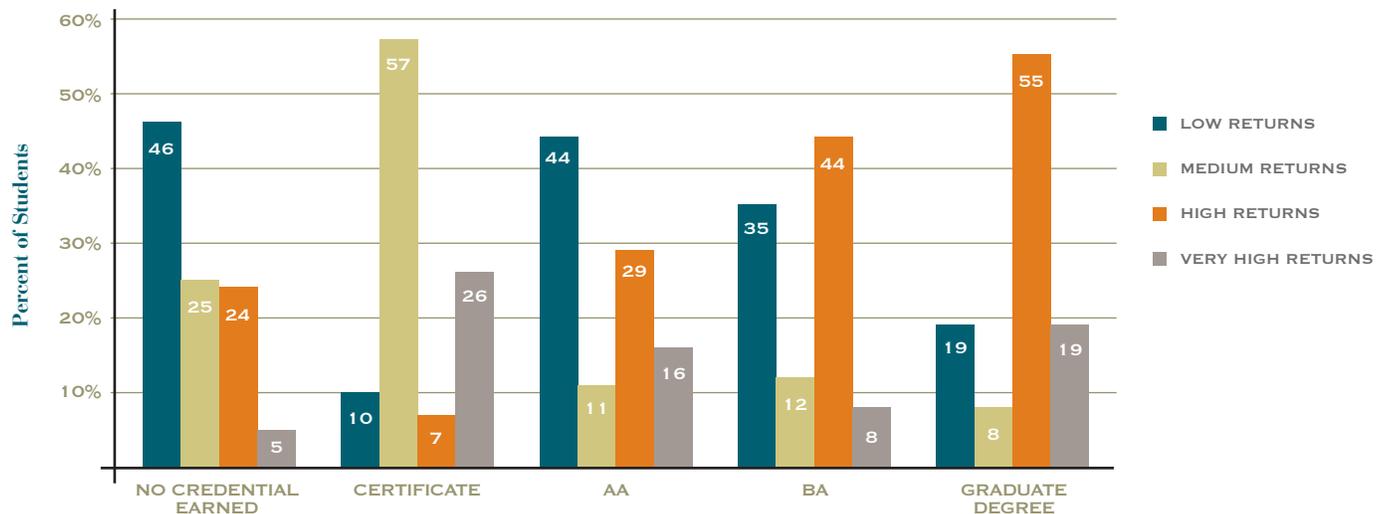
The farther along the education pipeline students progress, the more likely they are to have concentrations in high-return fields. As shown by the orange bars in Figure 14, 24 percent of Florida students who attend college, but do not complete a credential, have concentrations in the high-return category. This proportion increases to 29 percent for AA students, to 44 percent for BA students, and to 55 percent for students with graduate degrees. As shown by the dark blue bars, 46 percent of students with no credential have concentrations in low-return fields, and the proportion declines to 44 percent of AA students, 35 percent for BA students, and 19 percent for graduate degree students.

The obvious outliers from this pattern are certificate students, who represent the highest proportion of students in the very high-return category, 26 percent, and the lowest proportion of students in the low-return category, 10 percent. These results are understandable because certificates are evidence of completing career-oriented programs, while degrees tend to represent completion of academic concentrations, often in low-return liberal arts fields. However, these results provide further evidence that courses in career-oriented fields may provide a viable opportunity to raise the earnings potential for many students who would have difficulty completing long, expensive, and academically demanding programs, especially at four-year colleges.

The high value of career-oriented instruction at community colleges is further supported by the finding that many students in career-oriented programs end up employed at jobs that use the skills they learned in school. Those students employed in a related industry have earnings that are about 50 percent greater than those of students unable to find training-related jobs.

FIGURE 14

Students who Reach Higher Education Milestones are More Likely to Concentrate their Coursework in High-Return Fields



Note: Data reflect course concentration in Fall, 2006 for Florida students in the ninth grade 1996 cohort who attended a Florida public college.

IDENTIFYING AND OVERCOMING THE PERSONAL AND INSTITUTIONAL IMPEDIMENTS THAT REDUCE THE RETURNS TO COMMUNITY COLLEGE EDUCATION

The evidence presented above demonstrates that community colleges substantially increase students' earnings by providing career-oriented training and serving as a stepping-stone for transfers to four-year colleges, but also that many students leave

postsecondary education without gaining academic degrees or skills of value in the workplace. For example, a relatively high proportion of terminal AA students in the Florida cohort, 16 percent, had concentrations in health care, a very-high-return field. But 44 percent had concentrations in low-return fields, about the same proportion as students who attended college, but did not attain a credential. (See Figure 14.)

Overcoming the impediments faced by both students and community colleges in helping high-performing students transfer to four-year colleges and all students complete high-return courses could further increase students' earnings and their economic mobility. This section identifies those impediments, and suggests six interrelated steps for overcoming them.

IMPROVE THE ACADEMIC PREPARATION OF ENTERING STUDENTS SO THEY CAN COMPLETE MORE RIGOROUS COURSES, ESPECIALLY THOSE IN HIGH-RETURN FIELDS.

A major focus of public education policy is improving basic education skills in reading, writing, and mathematics. Numerous national, state, and local efforts have been launched to set standards for academic performance, monitor performance, and hold schools accountable for improving their performance. In addition, major efforts have been launched to expand public early education programs and evaluate an array of innovative ways to improve curricula, teaching methods, and the way principals and teachers are prepared, recruited, and rewarded.

While the overall effect of these efforts may have been modest as measured by the National Assessment of Education Progress, specific programs and policies have shown positive results. In particular, schools organized along the principles of Knowledge is Power Program's (KIPP) system of charter schools have shown dramatic improvements in the academic performance of inner city youth.²¹ Also, Indiana, Massachusetts, Virginia, and many other states have implemented high-quality testing systems and shown substantial improvement in test scores, especially among schools and demographic groups that initially received low scores.

These efforts suggest that it is possible, but far from easy or inexpensive, to improve the preparation of students for postsecondary academic and career-oriented programs through a combination of changing incentives, providing better feedback, adopting systematic reforms, and providing more resources. Most troubling is that many of these efforts appear to have the most positive effects on elementary school students, and lose much of their effectiveness as students enter high school.²²

Effective community college "second chance" programs that improve academic skills expand educational opportunities for poorly prepared enrollees. Providing developmental

courses has long been a focus of community colleges, which often carefully evaluate the readiness of students entering degree programs to complete those programs and require students who fail screening tests to take developmental courses until they can meet the colleges' standards.

There have been many attempts to find innovative ways to engage students' interests and develop effective ways to help them master subjects that have eluded them through years of schooling.²³ Several of these projects have demonstrated considerable promise, but there is little evidence that most students who did not perform well in high school can quickly master the basic subjects to the point of completing rigorous college programs, especially those requiring high levels of quantitative skill and critical thinking.²⁴ What does appear possible is to develop a range of academic and non-academic skills that are valuable in the workplace through experiential learning, where students are asked to read, write, and solve problems in a practical context. For example, Washington State's community colleges have adopted the I-BEST program where an academic and a career technical instructor work together in a single course to develop a mix of skills.²⁵

2.

PROVIDE CAREER COUNSELING AND ASSESSMENT TO ENSURE STUDENTS UNDERSTAND THE FULL RANGE OF COURSE AND EMPLOYMENT OPTIONS OPEN TO THEM. PROVIDE JOB PLACEMENT SERVICES TO HELP STUDENTS COMPLETING PROGRAMS FIND JOBS THAT USE THE SKILLS THEY DEVELOP.

The evidence that there are substantial gaps between the postsecondary attainment of low-income students relative to higher-income students with similar high school performance suggests that low-income students may have greater information deficits than do other students.²⁶

A lack of parents, friends, or mentors who attended college or hold high-paying jobs contributes to disproportionate information deficits among low-income students. In particular, many low-income students who do not perform well in high school may not realize that there are pathways open to them at community colleges that lead to high-paying jobs, with or without strong academic performance.²⁷ They thus do not enroll in college at all or fail to select high-return courses they are likely to complete. Information deficits may prevent low-income students from effectively dealing with the problems they encounter in making the transition from high school to college. These issues also could make it difficult for low-income students who complete high-return courses from obtaining jobs that use the skills they developed. This is because low-income students often lack advice from a network of friends and relatives who are most likely to identify job openings in highly-paid fields.

Effective community college programs providing career counseling and assessment services could reduce low-income students' information deficits about the range of options available at community colleges, educate them about how their attributes compare to those needed to pursue various options, and clarify the characteristics of jobs available following completion of different programs. Community colleges currently cannot devote the amount of resources to student orientation and services as do private and public four-year universities. Moreover, only a few community colleges give a high priority to improving student services and have made major efforts to do so.

One reason for these differences is that far more funds are spent on each student's education at four-year private colleges than at four-year public colleges, and at four-year public colleges than at community colleges. Also, there is fierce competition among private four-year colleges and the more selective public four-year colleges to attract students able to pay the high tuition, living expenses, and fees or who are willing to go into debt to do so. Thus, these schools have powerful incentives to increase the likelihood that students at highly selective four-year colleges will complete their undergraduate education and get high-return jobs.

Such competition for students does not exist for typical community college students. Nevertheless, the experience of community colleges that have invested in improving orientation programs and student services shows that major improvements in student persistence, course selection, and credential attainment can be made at modest cost.²⁸ Thus, expanding these services holds substantial promise for increasing the returns to students and society to investments in community college education.

Importantly, most attention has been given to improving student services related to selecting courses that meet degree requirements, developing improved study and time management skills, coping with academic and social stress, and understanding the qualifications and procedures for obtaining financial aid. Less attention has been given to improving career counseling and assessment designed to help students recognize their own aptitudes and interests so that they select courses that are well-tailored to helping them reach their personal goals.

The career counseling and assessment programs that have proven to be highly cost-effective by for-profit postsecondary institutions, the public workforce investment system, and perhaps most importantly, by the military and other employers that provide long-lasting and costly training to selected recruits, could be of use to community colleges. Of major importance are tests, such as the Armed Services Vocational Aptitude Battery (ASVAB), that quickly and reliably identify the vocational strengths of high school seniors prior to making large investments in their training. The ASVAB test is available to all high school students at no cost, and some high schools routinely arrange for students to take this test.

In addition, most One-Stop Career Centers, the main federal source of employment and training assistance to workers, carefully screen clients before issuing training vouchers to help ensure that the applicants have selected programs that improve employment prospects and that they are likely to complete. In both the military and workforce development applications, it is clear that the improvement in educational outcomes justifies the low cost of the screening.²⁹

Community college job placement services also tend to be limited, while four-year colleges have dramatically increased the number, scope, and quality of internship opportunities and often use alumni networks to help place graduates. Moreover, improved counseling and assessment, coupled with improved prospects of landing high-paying jobs, could lead students to become more engaged in college because they see the connection between school and work.



3.

PROVIDE SUPPORTIVE SERVICES AS LOW-INCOME STUDENTS PROGRESS THROUGH COLLEGE, INCLUDING HELP WITH THE FINANCIAL AID PROCESS, AND ASSISTANCE JUGGLING SCHOOL, WORK, AND FAMILY RESPONSIBILITIES.

The enrollment, persistence, and transfer gaps between low-income and other students could be related to a lack of financial resources. However, there is strong evidence that financial impediments to two- or four-year college attendance mainly stem from a lack of knowledge about the availability of financial aid programs, the rules that govern eligibility, the complexity of the application process, and unwarranted aversion to taking out loans.³⁰ This situation is especially true in Florida, Georgia, North Carolina, and other states where most students who perform reasonably well in high school automatically qualify for scholarships covering costs of tuition, fees, and books.³¹

Evidence presented in past Economic Mobility Project research papers indicates that increasing the availability of funds through the two largest public means-tested financial aid programs, Pell Grants and Stafford Loans, would not significantly benefit low-income students because colleges tend to raise tuition as financial aid increases. Furthermore, low-income students have an aversion to going into debt to finance their college education, and students' lack of understanding of the rules governing the receipt of aid and the complexity of the application process limits use of existing aid programs.³² Indeed, a variety of studies have concluded that financial aid is so complex that application processes should be streamlined and students and their families should be better educated about how to file applications.³³

Thus, it appears that improved counseling and assessment would have a larger effect than only increasing financial aid because students do not recognize pathways that could substantially raise future earnings and, therefore, believe it is not worth investing in their education.

More specifically, studies of the Kalamazoo Promise and similar programs that offer generous postsecondary funding to students who graduate from high school suggest that these programs do not materially lower the cost of attending community colleges because the costs are already low and existing programs are available to pay most of those costs. Nevertheless, programs have a positive effect on enrollment in local community colleges because they increase students' awareness that attending college is financially possible and that a range of college programs that lead to well-paid jobs is available, even for students who did not do especially well in high school.³⁴

4.

MAKE MORE FINANCIAL AID AVAILABLE TO STUDENTS WITH FAMILY RESPONSIBILITIES AND TO STUDENTS WHO PERFORMED WELL AT COMMUNITY COLLEGES WHO HAVE TO BEAR MUCH LARGER COSTS IF THEY TRANSFER TO FOUR-YEAR COLLEGES.

At the same time, current large-scale public aid programs could be made more effective by better taking into account the special circumstances that are common for low-income students. These circumstances include having major family responsibilities with limited access to childcare and other forms of assistance, and involvement in crime and other antisocial behavior.³⁵ It would be reasonable to provide more aid to students who have family responsibilities that limit the time they have to work or attend school. Programs also could be improved by providing greater amounts of aid to cover the last two years of education for transfer students, especially those who need to relocate or travel long distances to attend four-year colleges.

5.

INCREASE FUNDING TO PROVIDE MORE SLOTS IN HIGH-COST, HIGH-RETURN COURSES, AND ALTER FUNDING MECHANISMS TO REMOVE PERVERSE INCENTIVES TO ENROLL STUDENTS IN LOW-RETURN COURSES OR OTHER COURSES THEY ARE UNLIKELY TO COMPLETE.

Information impediments appear to be the major reason why so many community college students end up leaving school without completing at least medium-return programs. In contrast, lack of capacity could be a primary reason more students do not complete programs in the highest-return field—health care. Community colleges lack the financial resources to expand the number of slots in health care and many high-return fields. This is because the cost of doing so is much higher than the sum of tuition and state reimbursement for each student enrolling in these courses, which accounts for most of a community college's revenue. Yet, the value of increasing the supply of well-trained

health care and other professionals almost certainly would justify shifting resources from low-return courses to courses in health care and other fields where costs are soaring, in part, because employers cannot find enough well-qualified workers.

Thus, the key underlying problem is that community colleges' funding mechanisms do not equate students' and society's benefits of completing courses with the schools' costs. Rather, there are incentives to enroll students in low-cost, low-return courses and little attention is given to ensuring students complete courses that will have greater benefit. The end result is that many very-high-return and high-return courses tend to be oversubscribed with well-qualified students.

The perverse incentives stem from the majority of community college funding coming from state aid in the form of capitation fees and tuition tied to enrollment, not course or program completion nor to the net economic value of the course to the student or the community. In addition, while there is considerable cross-state variation in the amount of funds received per course enrollee, many states fund credit-bearing courses more generously than non-credit bearing courses (such as remedial courses), and many states reduce the capitation fee for career and technical courses that do not lead to a credential.

There has been almost no experimentation with altering funding structures to increase incentives to better serve the interests of students and employers. Nevertheless, there are many ways to alter the financial incentives faced by colleges so that they reward persistence and completion of high-return programs, and thereby create incentives to better match programs to students' and employers' needs. For example, colleges could be given a bonus for each student who completes a given course, rather than a fee based solely on enrollment. State payments could progressively increase for courses that require completion of more prerequisites. Payments could be adjusted to provide more funds for high-cost courses in high demand fields, and colleges that perform especially well, taking into account student and labor market characteristics, could be awarded merit bonuses.



6.

ADOPT ACCOUNTABILITY SYSTEMS CAPABLE OF IDENTIFYING BENEFITS AND COSTS THAT COULD PROVIDE THE GUIDANCE NEEDED BY COMMUNITY COLLEGES TO RAISE THEIR RETURN ON EDUCATION INVESTMENTS.

Community colleges generally do not have accountability systems that provide information about the cost-effectiveness of their programs. Therefore, even if these institutions want to better meet students' and employers' needs, they do not have sufficient information on how to use existing funds to the greatest effect.

Instituting systems that accurately measure performance along a range of dimensions, holding community colleges accountable for positive outcomes from the point of view of students and the local economy, and providing financial rewards for excellence would radically alter community colleges' incentives and information base. Such changes, therefore, would likely lead to a range of highly beneficial changes for students and society. These changes include expanding career and academic counseling and assessments needed for students to select high-return programs that they are likely to complete, adopting curricula and hiring teachers who would engage students' interests and provide the skills needed to transfer to four-year colleges and excel in the workplace, and increasing the number of slots available in high-cost high-return courses.

SUMMARY AND CONCLUSIONS

Community colleges already make major contributions to economic mobility by enabling students to transfer to four-year colleges, and by teaching work-enhancing skills. The primary beneficiaries of the transfer function are low-income students who perform well in high school and college. The primary beneficiaries of the career-enhancing function are low-income students who did not perform especially well in high school, but take a wide range of high-return courses while attending community college, especially courses in health care.

The largest factor limiting the ability of community colleges to raise the earnings of their students through the transfer function is students' poor academic preparation in high school and the difficulty of quickly boosting their performance through developmental programs. The Florida cohort analysis clearly demonstrates that students need to have a B or better high school grade point average to have a reasonable chance of attaining AA degrees, transferring to four-year colleges, and attaining BA degrees. But lack of supportive services also appears to be of considerable importance, especially in explaining why more high-performing low-income students do not transfer to four-year colleges. The Florida study also shows that among A and B+ students, those from low-income families are 5 percentage points less likely to attend college and 1 percentage point less likely to attain AA degrees, but over 11 percentage points less likely to transfer to four-year colleges and attain BA degrees.

Improving academic preparation is a major focus of education reform efforts, but there are no simple, low-cost ways to do this. In contrast, more could be done at a low cost to increase the chances low-income students who performed well in high school and community colleges obtain BA and graduate degrees.

The primary factor limiting the ability of community colleges to raise individual earnings through career-oriented courses is that students appear to be unaware that they can successfully complete a broad range of courses with high value in the workplace. Although direct evidence on students' perceptions is lacking, more than half of all students in the Florida study with low high school GPAs do not remain in college long enough to complete programs that will enhance their earnings. Yet many students with low high school GPAs are able to complete concentrations in a variety of fields that substantially boost their earnings. In particular, these students are able to attain certificates in medium-return fields such as building trades, as well as terminal AA degrees that lead to high-paying health care jobs, the field with by far the highest returns.

The benefits of improving course selection to build skills of value in the workplace and keep students in school long enough to build career-enhancing skills is much less widely recognized and embraced than improving academic performance. As a result, community colleges generally have given little attention to improving student outcomes by such actions as making high-quality, career-oriented counseling and assessment programs more widely available.

This report used detailed data to identify the considerable strengths of community colleges, which could be further developed, as well as their weaknesses, which could be reduced to allow them to be even more effective. This analysis, therefore, provides a sound empirical basis for determining what can and should be done to overcome individual and institutional impediments that prevent community colleges from better meeting the needs of their students, especially low-income students most dependent on community colleges for improving their economic mobility.

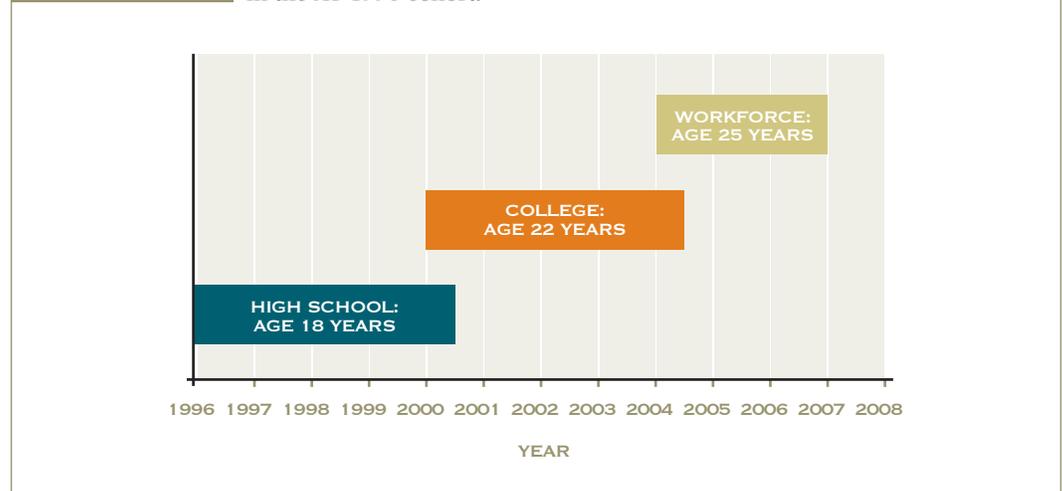
APPENDIX

DATA

The state of Florida maintains the largest and most complete set of administrative data available for analyzing the effect of education on earnings. Student-level records can be linked across multiple databases that include high school transcripts, high school attendance and enrollment records, student demographics, college transcripts, college credentials, and quarterly wage records from the Florida unemployment insurance system. These data allow us to examine the effect of taking specific college courses on subsequent earnings, and the extent to which different types of high school preparation are associated with successful completion of high-return courses.

The data include records for every student attending a Florida *public* high school or *public* postsecondary institution from 1995 to 2005, and Florida quarterly wage records for each of these students through 2007. Our primary database includes all first-time ninth graders in the 1996 academic year (AY 1996).³⁶ Although the amount of time spent in high school, college, and the workforce differs among students, figure A1 provides an example of a timeline with the student's age and amount of time spent at each stage for a "typical" cohort member who graduates from high school after four years in the Spring of 2000 (at the end of AY 1999), enters college in the Fall of 2000, remains in college for four years, and then enters the labor force. The overlap in the bars is to suggest the variation in the actual experience of students.

FIGURE A1 Example of a timeline for a first-time ninth grade student in the AY 1996 cohort.



One of the major advantages of the Florida data is that they include records for every public school student in the state, rather than a representative sample. While national surveys such as the National Longitudinal Survey of Youth (NLSY) and High School & Beyond (HS&B) contain only a few thousand students per cohort, our ninth grade AY 1996 cohort includes records for over 220,000 students. The Florida database also is one of the few sources that track students from high school to college and into the work force. In addition, it consists of some of the most up-to-date data available with wage records through 2007.

Yet working with the Florida data also poses a number of challenges for our analysis. It is uncertain whether students not completing the twelfth grade dropped out of high school, transferred to a private high school, or attended school in another state. Similarly, it is unclear whether high school graduates who do not enter a Florida public college attended private (for-profit and non-profit) or out-of-state postsecondary institutions. In addition, we do not know whether students with zero earnings are not working by choice, unemployed, working in an uncovered government sector, self-employed, or working in another state. Further, we do not know if post-schooling earnings are low because the former students choose to work part-time. As a result of these data gaps, the majority of our analysis focuses on students who: (a) reached the twelfth grade; (b) attended a public college in Florida; and (c) had post-schooling earnings at least equal to the equivalent of a full-time job at the federal minimum wage.

We also had no variable indicating each student's field of concentration, so we had to infer this information from college transcript records. All college courses were categorized into one of the following eight groups: health-related, humanities, professional, remedial (includes remedial courses in math and language arts), social science, STEM (science, technology, engineering, and mathematics), voc-tech (vocational or technical), and other. A complete list of courses included in each group appears in Table A1. For students who attended a four-year college, concentration was defined as the field in which students completed the greatest number of upper-level courses. Two-year colleges do not offer upper-level courses, so concentration was defined as the field in which students completed the greatest number of courses. Students with the same maximum number of courses in more than one category were assigned to the category "other" concentrations. Any student who did not complete at least 24 credit hours (equivalent to one year of full-time courses) was not assigned a field of concentration. As a result of taking a common core of liberal arts and/or prerequisite courses prior to entering a specific field of specialization, the field of specialization would be indeterminate.

The Florida data offer a broad array of student demographic characteristics including gender, race, age, mental handicaps, and Limited English Proficiency status; however, there is little information available about students' socioeconomic status. The only variable related to family income is whether a student participated in the federally funded free and reduced price lunch (FRL) program during the eighth grade.³⁷ Thus, comparisons of the educational experiences and earnings of low-income students with that of other students are limited to comparisons between FRL students and non-FRL students.

Our initial data file consisted of 220,009 students who entered the ninth grade at a Florida public high school for the first time in 1996 and completed at least one course in the ninth grade. We excluded two percent of the observations because the student had reports for 20 or more courses in any one semester. We assume that these records were cases where several students had the same ID number. We also excluded students who were repeat ninth graders in 1996 (17 percent) and students enrolled in the ninth grade in 1996 who did not take a single course at a Florida public school in that year (15 percent).³⁸ The final file included a cohort of 144,545 students who were first-time ninth graders taking at least one course at a public school in the 1996 academic year. Our sample includes 84,700 students who reached grade 12 by 2000.

TABLE A1

Courses Included in Each Field of Concentration

HEALTH RELATED	
Cardiovascular Technology	Medicine
Chiropractic	Midwifery
Dental Assistant	Nursing
Dental Hygiene	Nutrition
Dental Laboratory Technology	Occupational Therapy
Dental Support	Ophthalmic Technology/Vision Care
Dentistry	Pharmacy
Electroneurodiagnostics	Physical Therapy
Emergency Medical Services	Physician Assistant
Gerontology	Practical Nursing/Health Care Providers
Health Information Management	Prosthetics and Orthotics
Health Sciences/Resources	Respiratory Care
Interdisciplinary Health Sciences	Speech Pathology and Audiology
Massage	Surgical Technology Studies
Medical Assisting	Veterinary Medicine
Medical Imaging And Radiation Therapy	Art
Medical Laboratory Science	
HUMANITIES	
Art	
Classical Languages and Literature	
Dance	
English Language and Literature	
Foreign Language Education	
Foreign Language: American Sign Language and Interpreting	
Foreign Language: Amerindian Languages	
Foreign Language: Arabic Language and Literature	

...continued

TABLE A1

Courses Included in Each Field of Concentration

...continued

HUMANITIES (CONTINUED)	
Foreign Language: Catalan Language and Literature	
Foreign Language: Central Asian Languages and Literature	
Foreign Language: East Asian Languages and Literature	
Foreign Language: French Language and Literature	
Foreign Language: German and Germanic Languages and Literature	
Foreign Language: Haitian Languages and Literature	
Foreign Language: Hebrew Language and Literature	
Foreign Language: Italian Language and Literature	
Foreign Language: Portuguese Language and Literature	
Foreign Language: Slavic Languages and Literature	
Foreign Language: South Asian Languages and Literature	
Foreign Language: Spanish Language and Literature	
Foreign Language: Sub-Saharan African Languages and Literature	
Foreign Languages (Modern and Classical)	
Humanities	
Language Arts and English Education	
Linguistics	
Medieval and Early Modern Studies	
Music - Applied	
Music - Other Than Applied	
Philosophy	
Religion	
Theatre Arts	
PROFESSIONAL	
Accounting	Law
Architecture	Leadership Studies
Banking	Library and Information Studies
Business Education	Management
Business Law	Marketing
Criminal Justice	Mass Communication
Drafting: Engineering Technologies	Quantitative Methods In Business
Finance	Real Estate
Fire Science	Risk Management and Insurance
General Business	Surveying and Mapping
Hospitality Management	
REMEDIAL	
Remedial Math	
Remedial Reading	
Remedial English	
SOCIAL SCIENCES	
African Studies	Education: Vocational - Industrial Arts
American and African-American Studies	Educator Preparation Institutes
Anthropology	European Studies
Asian Studies	Geography
Economics	History
Education Systems	History and Philosophy of Science
Education: Foundations and Policy Studies	Interdisciplinary Social Sciences
Education: Administration and Supervision	International and Comparative Policy Studies
Education: Counseling Services	Jewish/Judaic Studies
Education: Exceptional Child	Labor Studies
	...continued

TABLE A1

Courses Included in Each Field of Concentration

...continued

SOCIAL SCIENCES (CONTINUED)	
Latin American Studies	Social Studies Education
Political Science	Social Work
Psychology	Sociology
Public Administration	Women's Studies

STEM	
Aeronautical Science	Engineering: General/Support
Biochemistry	Environmental Studies
Biological Science	Geology
Biomedical Engineering	Industrial Engineering
Chemical/Nuclear Engineering	Interdisciplinary Science/Natural Science
Chemistry	Mathematics
Civil/Environmental Engineering	Mathematics Education
Computer Math/Materials Engineering	Mechanical Engineering
Computer Science and Computing Technologies	Meteorology
Digital Media	Oceanography/Ocean Engineering
Electrical Engineering	Office Systems Technology
Electrical-Electronic Technology	Physics
Engineering Technologies	Science Education
	Statistics

VOCATIONAL/TECHNICAL	
Agriculture	Mechanics: Auto/Bod/Diesel/Marine/Sm. Eng.
Building Construction	Military Science
Cosmetology/Barbering	Ornamental/Horticultural Science
Graphic Arts	Paralegal/Legal Assisting
HVACR: Heat./Vent./Ac/Refrig.: Tech./Trades	Precision Metals Technology
Industrial Design	Transportation and Logistics
Integrated Pest Management	Vocational Preparatory Instruction

OTHER	
Adult Education	Leisure
Communications	Mental Retardation
Cooperative Education	Oral Interpretation
English As A Second Language/Teaching ESL	Peace Studies
Family and Consumer Sciences	Photography
Funeral Services	Physical Education
Health/Leisure/Physical Education	Reading
Human Services	Speech Communication
Interdisciplinary Studies and Honors	Student Life Skills
Interior Design	Urban and Regional Planning
Landscape Architecture	

EARNINGS PROJECTIONS

Projected earnings numbers represent the average of earnings in the highest quarter subsequent to leaving school through 2007. The quarterly average is multiplied by four to produce an annual figure, which is more easily understood. In addition, the annualized averages have been multiplied by 1.25 to account for subsequent near-term growth. This adjustment was made because our dataset ends in 2007, which allows us to observe post-school earnings for only about 12 quarters for most students with BA degrees. The adjustment is based on use of a regression to project earnings into the future that suggests BA students will show earnings gains of about 25 percent on average over the next three years. Our regression estimates show that students who obtain two-year credentials or no credential showed slower initial rates of growth, but that growth remained moderately high for a long period. Thus, both BA and other students can be expected to show gains of 25 percent between the period of observation and the end of the seventh year after leaving school.

The following linear model is estimated for the highest full-time post-school earnings (2004-2007) for student i :

$$earn_i = \beta_0 + \beta_1 Concentration_i + \beta_2 Student_i + \beta_3 Performance_i + \beta_4 School_i + \beta_5 Work_i + \beta_6 Market_i + \varepsilon_i$$

where $Concentration_i$ represents a series of dummy variables for the subject area of the student's concentration; $Student_i$ represents student characteristics including gender, race, age, free and reduced priced lunch (FRL) status in grade 9, Limited English Proficiency (LEP) status in high school, and Students with Disabilities (SWD) status in high school; $Performance_i$ represents student performance in terms of high school GPA and high school absentee rate in grade 9, and college GPA; $School_i$ refers to high school characteristics including school locale, school type, percent of students who reach grade 12, percent Black students, percent Hispanic students, percent FRL students, and school size (number of ninth graders); $Work_i$ represents work experience in terms of number of quarters employed in high school, average earnings during high school, number of quarters employed during college, average earnings during college and number of quarters of post-school work experience; $Market_i$ refers to labor market conditions including the percentage of workers employed in each industry at the workforce investment area (WFIA) where the student attends college and average monthly earnings for all employees in the WFIA, and ε_i is the error term which is assumed to be normally distributed.

Concentrations were categorized into low-, medium-, high-, or very-high-returns based on the magnitude of the coefficients relative to Humanities in the regression-adjusted results. Concentrations with earnings that were not significantly higher than those of Humanities concentrators were categorized as low-return fields. Earnings were \$1,000 to \$3,000 higher for medium-return fields, \$3,000 to \$5,000 higher for high-return fields, and more than \$5,000 higher for very-high-return fields.

NOTES

¹ In September 2009, the seasonally adjusted unemployment rate for those without a high school diploma was 15 percent. For those with only a high school diploma it was 10.8 percent, compared to 8.5 percent for those with some college or an associate's degree, and 4.9 percent for those with at least a bachelor's degree. (Source: Bureau of Labor Statistics October 2009, Table A-4 LS <http://www.bls.gov/news.release/empsit.t04.htm>.)

² Earnings figures throughout the report reflect the highest degree completed among students who begin at public community colleges in Florida, and attain a credential, and therefore includes students who proceed on from community colleges to receive their bachelor's degree or beyond.

³ Haskins, "Education and Economic Mobility," in Isaacs, Sawhill, and Haskins, 2008.

⁴ Ibid.

⁵ U.S. Census Bureau, 1998.

⁶ Butler, Beach, and Winfree, 2008.

⁷ Data was provided by the Florida Department of Education's K-20 data warehouse. The data include records for every student attending a *public* high school or *public* postsecondary institution from 1995 to 2006, and quarterly wage records for each of these students through 2007. The sample for this study includes all first-time ninth graders in the 1996 academic year who reached the twelfth grade (N=84,700). Ninety-eight percent of these students exited high school by the year 2000, while the remaining 2 percent of students exited high school between 2001 and 2005. (It is not possible to distinguish between students who graduated from high school and those who left high school in grade 12 before completing a diploma.)

⁸ American Association of Community Colleges, 2009; U.S. Department of Education, 2008.

⁹ U.S. Department of Education, 2008. Of the 11.7 million students enrolled in community colleges, 6.7 million are enrolled for credit.

¹⁰ Kane and Rouse, 1995.

¹¹ See the National Center for Education Statistics's Digest of Education Statistics, 2008, Tables 192, 193, and 227. Further, a report using the Beginning Postsecondary Students Longitudinal Study (BPS:96/01) found that among students attending college directly after high school, only 28 percent of students in the lowest quartile of household income initially enrolled in four-year colleges compared to 63 percent of students in the highest quartile of family income (Bailey, Jenkins, and Leinbach, 2005a).

¹² Throughout this report, high school GPA categories are defined as follows (based on a scale of 4.0): A/B+=3.5 or higher, B=3.0 to 3.4, C+=2.5 to 2.9, C=2.0 to 2.4, D or below=less than 2.0. (Students with A and B+ GPAs are combined into one category due to the small number of students with 4.0 GPAs).

¹³ Although this discussion focuses on the impact of high school GPA on postsecondary attainment and earnings, it is important to keep in mind that students with high GPAs not only received better grades than did those with low GPAs, but they also took more rigorous courses, especially in math and science, had better attendance, and had fewer disciplinary problems.

¹⁴ Similar results showing the powerful relationship between high school performance and reaching key postsecondary milestones have been obtained by other researchers.

¹⁵ The figures show the difference in means between students who did and did not receive free and reduced-price lunches in the eighth grade, but more sophisticated regression analysis shows that these gaps do not materially narrow when a host of observable characteristics (in addition to high school GPA) are taken into account.

¹⁶ Earnings estimates throughout the paper represent the average of earnings in the highest quarter subsequent to leaving school. The quarterly average is multiplied by four to produce an annual figure, which is more easily understood. In addition, the annualized averages have been multiplied by 1.25 to account for subsequent near-term growth. This adjustment was made because our dataset ends in 2007, which allows us to observe post-school earnings for only about 12 quarters for most students with bachelor's degrees. The adjustment is based on use of a regression to project earnings into the future that suggests both BA and other students can be expected to show gains of 25 percent between the period of observation and the end of the seventh year after leaving school.

¹⁷ A *concentration* represents having completed at least three courses (attaining at least 12 credits) in the field with the greatest number of credits. The designation of the fields of study are based on definitions developed by the U.S. Department of Education (Bradby, 2007), and the placement into return categories are derived from analysis of the returns to specific courses taken by members of the Florida cohort (see Jacobson and Mokher, 2009 for the details). The results are similar to those derived from earlier analysis of administrative data for community college students in Pennsylvania and Washington, as well as studies using survey data. However, a key reason variation in the returns to specific fields is not more widely recognized is that few databases have the details of course selection for sufficiently large student samples to assess the effect of course selection on earnings.

We use as a baseline for our comparisons students who attend Florida public two-year or four-year colleges and had concentrations in low-return fields, rather than students who did not attend college at all or did not attend long enough to have a concentration. We do this because this group's characteristics are most similar to those of students with concentrations in other fields and because there is some uncertainty about whether other students attended private colleges in Florida or colleges outside of Florida that are not covered by the Florida data. About one-third of students entering college leave without having a concentration. Those students complete only about 12 credits on average. As a practical matter, however, it makes little difference which group of students we use as the baseline for earnings comparisons.

¹⁸ We place science in the low-return category because science courses have low returns at the community college level unless they lead to completion of more applied technical courses, such as engineering and computer science. Unfortunately, only a small fraction of students taking science courses use them as a springboard to applied fields.

¹⁹ Jacobson and Mokher, 2009; Grubb, 1999.

²⁰ While there maybe some self-selection of the most able students or those with the best access to high-paying jobs into high- return courses, much of the gains in earnings appear to be a direct result of what is learned in college (the amount and nature of postsecondary schooling). For example, in comparing twins, Ashenfelter and Rouse, 1999 found that the twin with better education earned about 8 percent more for every additional year of schooling.

²¹ Swail, 2005; Thernstrom and Thernstrom, 2003.

²² The assessment of the effect of high school Career Academies by Kemple and Willner (2008) provide a notable exception to the literature suggesting that it is exceedingly difficult for educational interventions to help African American males leave school with skills of value in the workplace.

²³ Golfin, Jordan, Hull, and Ruffin, 2005.

²⁴ Bailey, 2009.

²⁵ Jenkins, Zeidenberg, and Kienzl, 2009.

²⁶ Bailey et al, 2005b notes that family background changes the probability of success in college.

²⁷ Avery and Kane, 2004.

²⁸ Bailey, Alfonso, Calcagno, Jenkins, Kienzl, and Leinbach, 2004; Dougherty and Kerrigan, 2007.

²⁹ McConnell et al, 2006.

³⁰ Haskins, Holzer, and Lerman, 2009.

³¹ For example, the state of Florida supports a large merit-based program, the Bright Futures Scholarship, which was initiated in the fall of 1997. The Bright Futures Scholarship provides students with 100 percent of tuition and fees, as well as funds for other college-related expenses. The scholarship is available to all students who meet the requirements for high school GPA (a minimum of “B” for four-year colleges or “C” for two-year colleges), ACT/SAT scores, college preparatory courses, and community service hours.

³² Haskins, Holzer, and Lerman, 2009.

³³ Bettinger, Long, and Oreopoulos, 2009; Dynarski and Scott-Clayton, 2007.

³⁴ Andrews, DesJardins, and Ranchhod, 2008.

³⁵ Research by Sum, Kahtiwada, O'Brien, and Palma, 2009 strongly links low performance in high school with a large set of social problems, particularly for inner city youth—impediments that are especially difficult to overcome.

³⁶ We used data for first-time ninth graders in Academic Year 1996, the second earliest year available, to determine which of these students received free and reduced price lunches (FRLs) in the eighth grade. It is well known that many eligible students do not apply for FRLs when they reach high school.

³⁷ Families are eligible for the FRL program if they have an annual income less than 130% of the federal poverty guidelines for free lunch, and 130% to 185% of the federal poverty guidelines for reduced price lunch. In 2007-08, the maximum annual income for a family of four was \$26,845 for students getting free meals and \$38,203 for those getting reduced price meals (<http://www.fns.usda.gov/cnd/Governance/notices/iegs/IEGs07-08.pdf>).

³⁸ Students who were repeat ninth graders in 1996 were excluded so that a single cohort of students could be followed. Our sample includes students who entered the ninth grade for the first time in 1996 and then repeated the ninth grade in 1997 and subsequent years.

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ABOUT THE PROJECT

The Economic Mobility Project is a unique nonpartisan collaborative effort of The Pew Charitable Trusts that seeks to focus attention and debate on the question of economic mobility and the health of the American Dream. It is led by Pew staff and a Principals' Group of individuals from five leading policy institutes—The American Enterprise Institute, The Brookings Institution, The Heritage Foundation, The New America Foundation, and The Urban Institute. As individuals, each principal may or may not agree with potential policy solutions or prescriptions for action but all believe that economic mobility plays a central role in defining the American experience and that more attention must be paid to understanding the status of U.S. economic mobility today.

PROJECT PRINCIPALS

Richard Burkhauser, Ph.D., American Enterprise Institute
 Marvin Kosters, Ph.D., American Enterprise Institute
 Ron Haskins, Ph.D., *Center on Children and Families*, The Brookings Institution
 Stuart Butler, Ph.D., *Domestic and Economic Policy Studies*, The Heritage Foundation
 William Beach, *Center for Data Analysis*, The Heritage Foundation
 Ray Boshara, *Domestic Policy Programs*, The New America Foundation
 Harry Holzer, Ph.D., The Urban Institute
 Eugene Steuerle, Ph.D., *Urban-Brookings Tax Policy Center*, The Urban Institute
 Sheila Zedlewski, *Income and Benefits Policy Center*, The Urban Institute

PROJECT ADVISORS

David Ellwood, Ph.D., *John F. Kennedy School of Government*, Harvard University
 Christopher Jencks, M. Ed., *John F. Kennedy School of Government*, Harvard University
 Susan Mayer, Ph.D., *Irving B. Harris School of Public Policy*, The University of Chicago
 Bhashkar Mazumder, Ph.D., Federal Reserve Bank of Chicago
 Sara McLanahan, Ph.D., Princeton University
 Ronald Mincy, Ph.D., Columbia University School of Social Work
 Timothy M. Smeeding, Ph.D., University of Wisconsin-Madison
 Eric Wanner, Ph.D., The Russell Sage Foundation

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