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Beyond Student Right-to-Know Data: Factors That Can Explain Community College Graduation Rates

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Policy makers, educators, and researchers recognize the importance of community colleges as open door institutions that provide a wide range of students with access to college. At the same time, competing demands for the state funds that would support community colleges have resulted in reduced public allocations and higher student tuition fees. Understandably, therefore, both state policy makers and parents are increasingly focused on the returns to their public or private investments in education, and the outcomes of community college attendance are now under greater scrutiny. To facilitate the evaluation of the colleges, there are now available data, through the Student Right-to-Know and Campus Security Act (1990), which amended the Higher Education Act, on every college's graduation rate for fall semester cohorts of first-time, full-time (FTFT) students in degree programs. This information is known as the Student Right-to-Know (SRK) data.

A related public concern is how the outcomes of community college students can be improved. Therefore, attempts are now being made to clarify the way that specific students define success and to identify the college policies and practices that can promote success for all students. For some community college students, college completion, defined as earning a degree or certificate, is the appropriate measure of success. For other students, success is demonstrated by transferring to a baccalaureate institution. Still others are satisfied with completing courses that increase their knowledge or skill level in a particular area even though their educational experience is not considered successful as defined by traditional educational outcomes.

Because of this range of outcomes for their students, some community colleges argue that focusing on the completion rate of a college is misleading, because many students do not have graduation as an objective. Further, many students face insurmountable barriers to success in college, such as family and work responsibilities and deficient academic preparation, which are beyond the control of the college. Nevertheless, data on goals and expectations do indicate that community college students are ambitious and that a majority of students who state that they want to complete a degree fail to do so (Bailey,

Jenkins, & Leinbach, 2005). Moreover, high aspirations make economic sense since earning only a few credits without completing a certificate or degree has few income returns (Bailey, Kienzl, & Marcotte, 2004).

Given the importance of completions, this Brief reports on research conducted by the Community College Research Center designed to strengthen the public's ability to assess and compare community college performance by measuring the effect of certain institutional characteristics on graduation rates. The research consisted of the development of models, based on SRK graduation rate data, which can identify the institutional characteristics that might influence those rates and then measure the effect of those characteristics on the rates. The ultimate goal of the research is to help community colleges improve the educational outcomes of their students.

Study Research Methods

Review of Related Research

Most studies analyzing the effect of institutional characteristics on graduation rates have focused on baccalaureate institutions, though some of these studies do have relevance for community colleges. For example, Pascarella and Terenzini (2005) have long studied this topic, and their most recent findings show less influence than in the past of institutional characteristics, especially after taking account of the specific types of experiences students had in college. Still, they found that institution size was negatively related to student retention, that students in private institutions and in more selective colleges graduated at higher rates, and that women enrolled in women's colleges and African Americans in historically black colleges and universities (HBCUs) appeared to have small advantages over similar counterparts in mainstream institutions.

Ryan (2004) used data on 363 baccalaureate institutions to estimate the impact of institutional expenditures for instruction, academic support, student services, and administrative support on the six-year graduation rates of cohorts within each institution. His findings, consistent with earlier research, suggest that instructional and academic support expenditures have positive and significant effects on cohort graduation rates (see, for example, Astin, Tsui, & Avalos, 1996; Habley & McClanahan, 2004; Mortenson, 1997; Porter, 2000; Scott, Bailey, & Kienzl, in press). However, expenditures on student services and expenditures on administrative (institutional) support failed to produce any significant impact on graduation rates.

What can community colleges learn from existing research on this topic, assuming that the factors analyzed in these studies will have similar effects for community

colleges? Studies consistently find that the typical characteristics of community college students are also those that predict lower graduation rates. Yet, attempting to improve institutional graduation rates by becoming more selective would violate an underlying mission of the colleges. Instead, it is necessary to determine and then exploit those characteristics of the colleges that promote success. Accurately identifying them can be accomplished only by developing models that consider the characteristics specific to community colleges. Using such models here, we hope that the findings can be used to more fairly assess the performance of community colleges.

Data Sources

This study used a sample of 915 community colleges (public two-year institutions) in all 50 states that are regionally accredited and grant degrees. It was extracted from the Integrated Postsecondary Education Data System (IPEDS), a set of annual surveys gathered by the National Center of Education Statistics (NCES) and designed to collect data on the institutional characteristics of all primary providers of postsecondary education (U.S. Department of Education, 2003). To measure the institutional graduation rate we used the 2002-03 IPEDS SRK data, which comprises overall student graduation rates, as well as rates for black, Hispanic, and female students separately.

Unfortunately, IPEDS does not provide all the information needed to fully explore the impact of institutional characteristics on community college graduation rates. For example, information on some student population characteristics, such as economic background and academic ability or preparation, are unavailable for institutions. The amount of federal aid (primarily Pell Grants) per FTE (full-time equivalent) undergraduate was used as a proxy for the extent of financial need among a college's students, for example. Additionally, since community college students are not universally required to take standardized entrance exams, we do not have a comprehensive measure of student ability. We also developed an additional explanatory variable identifying technical colleges as those that awarded more certificates than associate degrees. This was necessary because we expect that such schools, due to the brief and directed nature of certificates, would have higher rates of completion that reflect the credential being offered rather than any particular capacity of the institution. Finally, consideration was given in the analysis of graduation rates to account for transfers to other schools as a successful outcome. While these data consist of the best information that is available, they do not provide as much detail as we would like to produce the most meaningful findings. For example, data that allow individuals to be tracked across institutions are more illuminating, but such datasets, collected at the state level, are only beginning to become available and only in a handful of states. The low overall graduation rates shown in the analysis from this research study thus reflect both the characteristics of community college students and the distortions caused by using an institutional rate; they indicate that it would make more sense to use graduation rates to compare across similar institutions than to assess overall community college graduation rates.

The Models

The data collected from IPEDS were used to create models to measure the influence of community college and student characteristics on their graduation rates. The student cohort for all the models consisted of first-time, full-time, degree-seeking undergraduates. The models included a selection of explanatory variables based on factors that previous studies have indicated are related to degree completion in community colleges: location of the college (urban, suburban, rural); type of college, if special (i.e., historically black, tribal, technical); undergraduate enrollment size; proportion of minority, female, and part-time students; proportion of part-time faculty; in-state tuition; instructional and administrative expenditures; academic support; student services; and federal aid. Table 1, which shows mean variable values, indicates that most community colleges in the study sample are located in suburban areas. The "average college" enrolls 3,044 FTE students, most of whom are female (58 percent) and 20 percent of whom are either black or Hispanic. The colleges charge an average of \$1,659 per academic year for in-state tuition. Almost one in five of them awards more certificates than degrees.

Cohort	
First-time, full-time degree-seeking undergraduates	505
Number who attained a degree within three years	113
Number who attained a degree or transfer-out within three years	192
Fixed Characteristics	
College is located in urban area	39%
College is located in suburban area	52%
College is located in rural area	9%
College is a Historically Black College or University	1%
College is a tribal college	2%
Certificate degree oriented college	17%
Technical College	19%
Compositional Characteristics	
Total full-time equivalent (FTE) undergraduates	3,044
1,000 FTE undergraduates or less	21%
1,001-2,500 FTE undergraduates	37%
2,501-5,000 FTE undergraduates	25%
More than 5,000 FTE undergraduates	17%
Proportion FTE black and Hispanic undergraduates	20%
Proportion FTE part-time undergraduates	34%
Proportion FTE female undergraduates	58%
Proportion part-time faculty	53%
Financial Characteristics	
In-state tuition	\$1,659
Instructional expenditures per FTE undergraduate	\$4,157
Academic support per FTE undergraduate	\$817
Student services per FTE undergraduate	\$981
Administrative expenditures per FTE undergraduate	\$1,461
Federal aid (Pell Grants) per FTE undergraduate	\$824

Source: Authors' calculations from IPEDS Graduation Rate Survey data, 2002-03.

Study Results

Given that the models use institutional-level data, the interpretation of the effect of any of the individual campus or other environmental factors pertains to the overall likelihood of the first-time, full-time (FTFT) community college students in the sample of colleges to earn a

credential or transfer, and not to the likelihood of any particular individual with particular characteristics to achieve such an outcome.

Enrollment and Graduation Rates

Graduation rates (completion of a degree or certificate) for students in the sample community colleges cluster between 10 and 30 percent. Overall, 22.3 percent of FTFT students earned a postsecondary credential in their starting institutions after three years, while an additional 16 percent transferred out. These time-restricted rates at community colleges are low because most students attend part-time (and therefore take longer to accomplish their goals, even if they eventually do so) and because many may not be seeking degrees (they may enroll in a limited number of courses in order to improve their job skills or pursue a personal interest). First-time students who were enrolled full-time represent only a minority of all community college students: 10 percent of all enrollments and 56 percent of all first-time students in 1999-2000, according to IPEDS. These findings are consistent with other results from the research literature.

Effects of College Fixed Characteristics

In general, colleges located in urban areas have 3.7 percent lower graduation rates than those located in suburban areas, while rural colleges have nearly 4 percent higher completion rates. The performance of historically black community colleges and tribal colleges is not significantly different from the performance of other institutions. When transferring is included as a successful outcome, the success rate of urban colleges is only 2.4 percent less than that of suburban colleges, and the performance of historically black community colleges becomes roughly 13 percent higher than other institutions.

As expected, colleges that award more certificates than associate degrees contribute to higher rates of credential completion.

The state where a community college is located has a large effect on the college's graduation rate, although available data do not allow the determination of the reason for rate variations. Since there are differences, often substantial, between the regulatory, economic, and social environment of individual states, future investigation, consisting of detailed state-by-state analyses, would likely identify which factors contribute to higher completion rates.

Effects of College Compositional Characteristics

The size of a community college is an important predictor of its degree completion rate. Larger community colleges, regardless of where they are located, and especially those with more than 2,500 FTE undergraduates, have 9 to 13 percent lower graduation rates than do smaller colleges. Perhaps the reason why students complete at higher rates in smaller colleges is that they provide a more personalized environment. It may also be true that smaller institutions have a more limited and focused set of programs, which may attract students who know what they want or provide a structure to guide students who do not know what they want toward completion.

In terms of the demographic characteristics of the

student body, having a large proportion of minority students enrolled lowers the probability that FTFT students will complete, even after controlling for other characteristics of the college.

Interestingly, a high proportion of women in the student body is negatively associated with completion rates. Not only is this finding contrary to previous research, and to the fact that in the 2002-03 IPEDS Graduation Rate Survey (GRS) FTFT women have higher graduation rates than FTFT men, but two recent studies of baccalaureate institutions indicate a positive relationship between the proportion of female students and graduation rates (Porter, 2000; Scott, Bailey, & Kienzl, in press). Still, this study has found that colleges with more female students tend to have lower graduation rates. Also, colleges with relatively larger part-time student populations have lower completion rates (even for full-time students).

To determine whether there is an interaction between a large number of female students and also a large number of part-time students, an analysis of the data with additional variables was conducted. It demonstrated that the proportion of part-time students is negatively associated with institutional completion rates only if the institution has more than 50 percent women, suggesting that the negative effect of the enrollment share of women is stronger in institutions with more part-time students.

Effects of College Financial Characteristics

With respect to the financial characteristics of community colleges, only instructional expenditures per FTE is statistically significant, but the magnitude of the effect is not very large. Community colleges that invest relatively more in instruction have higher rates of degree completion. Every additional \$1,000 spent on instruction per FTE undergraduate improves graduation rates by 1.3 percent.

Conclusions

The analysis of Student Right-to-Know graduation rates, summarized here, confirms several hypotheses about the institutional determinants of graduation rates at community colleges. First, it demonstrates a consistent negative relationship between enrollment size and completion. The analysis further indicates that colleges with a high share of minority, part-time, or female students have lower graduation rates. Another significant finding is that greater instructional expenditure is related to a greater likelihood of graduation. Finally, the state in which a college is located is significantly related to its graduation rate, suggesting that a state's policy environment has a strong bearing on college outcomes. All of these results are worth further study.

Given the limitations of the SRK graduation rate data, this study should be seen as the beginning of a broader research agenda that combines quantitative and qualitative research to further identify institutional and state characteristics and policies that promote student success. One strategy is to use national longitudinal individual student data, such as the National Education Longitudinal Study or the Beginning Postsecondary Students Longitudinal Studies, and link them to the individual institutions that each student attends. Although the sample

sizes are not large enough to analyze the performance of individual colleges, such an analysis could be used to measure the effect of institutional characteristics. A second approach is to conduct similar analyses using individual longitudinal records from state datasets. While it would not allow for the study of state effects, state datasets are large enough to study the experience at individual institutions while controlling for individual student characteristics. State unit record data, which allow the use of many more comprehensive outcome measures (such as transfer rates to public institutions, retention, course completion, and others), can also be used to evaluate the usefulness of the SRK graduation rates.

In addition, this study can be used to benchmark colleges by comparing the raw graduation rate to the expected graduation rate based on the previously demonstrated effect of the various characteristics of each institution. An actual rate that exceeds an expected rate suggests that the college is over performing relative to its characteristics. Although such an approach could be used for accountability purposes or to rank colleges, we see it as much more useful as a research tool to identify samples for further study using qualitative methods. Case studies that compare over- and under-performing colleges can begin to reveal the institutional policies and behaviors associated with greater student success.

Thus, consideration of the many characteristics of community colleges, alone and in concert with each other, opens up a rich research agenda that moves away from specific evaluation studies of individual programs and discrete interventions, and focuses attention on overall institutional performance. This broad effort is being enhanced by the growing availability of datasets that span different institutions and that are large enough to track individuals and to examine individual colleges. While each dataset or methodology has limitations, a comprehensive research agenda that uses a variety of different datasets and combines quantitative and qualitative approaches can provide many opportunities to develop knowledge that can be useful for educators and policymakers trying to improve community college student outcomes.

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