

Factors affecting transfer of “traditional” community college students

Pamela L. Eddy
Ray Christie
Michael Rao

Dr. Eddy is an assistant professor of Higher Education in the Educational Leadership department at Central Michigan University in Mt. Pleasant, Michigan.

Dr. Christie is Vice Provost of Academic Administration at Central Michigan University.

Dr. Rao is the President of Central Michigan University and a professor of Higher Education in the Educational Leadership department.

While increasing demands on time and resources compete for attention with the transfer function of community colleges, the goal of providing the first two years of education on the pathway to a baccalaureate degree is still an important mission. The research reported here examines the determinants of successful traditional transfer students. The findings indicate that student socioeconomic status (SES), initial full-time enrollment at the community college, high school and college grades, high school peer influence, and obtaining an associate’s degree prior to transfer are all significant to the transfer process. Policy implications of these findings affect issues of funding, state educational priorities, and building bridges between two- and four-year institutions to ease transfer for students.

Introduction

Research (Brint, 2003) demonstrates that obtaining a college degree—particularly a four-year degree—translates to more lifetime income potential. As costs for a four-year college education continue to rise, community colleges become more attractive to students who seek a baccalaureate degree. In particular, students and families with the greatest economic need are attracted to the affordability of community colleges. Moreover, two-year colleges offer access to students who may not meet enrollment requirements for four-year college admissions and allow for decreased living expenses since commuting students can live at home and also continue working. Indeed, community colleges serve as the gateway to postsecondary education for 45% of incoming col-

lege freshmen (National Center for Education Statistics, 2002).

Contemporary issues facing institutions of higher education — providing greater outreach for community stakeholders, aiding in economic development opportunities, increasing grant writing capabilities to augment budgets reduced by state and federal funding cuts, addressing student learning outcomes — all present a backdrop against which community colleges provide transfer opportunities for students.

The traditional focus of community colleges on the tripartite mission of transfer, community development, and vocational education (Cohen & Brawer, 2003; Hutcheson, 1999) has shifted over time from an emphasis on transfer to an emphasis on community development and vocational education. The quick and responsive nature of community colleges to external needs has created a demand-response scenario often based on a profit motive (Gumport, 2003), with increasing reliance on work-force development (Grubb, Badway, Bell, Bragg, & Russman, 1997). Nonetheless, the academic goals of transfer still remain a mission for community colleges, especially in light of tuition increases at four-year institutions and the rapid increase in students under age 25 attending institutions of higher education (National Center for Education Statistics, 2002).

Community colleges are viewed by large numbers of students as the

most practical option for beginning college because of lower cost; extensive student services; typically flexible course schedules; alternative delivery options; and proximity to work, home, and family responsibilities (Cohen & Brawer, 2003; Hutcheson, 1999). Approximately half of all undergraduates attend two-year institutions, with fully 45% of first time freshmen beginning their college careers at two-year colleges (National Center for Education Statistics, 2002). Of those students who begin at a community college, 28.9% of first time students age 19 or younger transfer to a four-year college within four years of first entering community college (Dougherty & Kienzl, 2003). Estimates for transfer range from 20% to 30% depending on the data set used for analysis, the time frame of reference, and the definitions of the transfer variable (Grubb, 1991).

State governmental leaders across America place high expectations and demands on community colleges and currently invest \$28.6 trillion in these institutions (National Center for Education Statistics, 2002). Despite a seemingly large dollar amount, the actual level of total state investment in community colleges as a percentage of total revenue in fact has declined over time from 48% in 1980 to 34% in 1995 (National Center for Education Statistics, 1980, 1995, as cited in Gumport, 2003). Community colleges receive the lowest state funding per full-time equivalent student of all levels of public higher

education, a funding level that has decreased by 6% between 1975 and 1995 (Gumport & Jennings, 1999). By contrast, enrollments in two-year colleges have soared. Between 1979 and 2000, they increased by 40%, with 2000 enrollments at 5.7 million students across the nation; whereas four-year institutions increased by only 22% during the same time period (National Center for Education Statistics, 2002).

Through the years, community college advocates have argued the importance of providing access, particularly geographical, for students who are economically disadvantaged and inadequately prepared academically. "One of the community college's primary purposes has been to accept students from secondary school, provide them with general education and introductory collegiate studies, and send them on to senior institutions for the baccalaureate" (Cohen & Brawer, 1996, pp. 330-331).

But looking specifically at the transfer function of two-year colleges, some studies suggest that students who begin at community colleges are less likely to complete a baccalaureate degree than those who begin at four-year colleges (Christie & Hutcheson, 2003; Clark, 1994; Grubb, 1991; Vélez, 1985; Vélez & Javalgi, 1987). The present study focuses more on the prominent role community colleges play in local regions by serving

half of the undergraduates enrolled in college.

The research reported here examines the determinants of transfer from a two-year to a four-year college for traditional students, those defined by having started community college within two years of high school graduation. The researchers further restricted the sample by excluding students who were merely taking courses at a community college with no intention of seeking a baccalaureate degree. The objective of narrowly defining the transfer student was to study those who envisioned transfer when they entered the two-year college. Previous studies (Lee & Frank, 1990; Vélez & Javalgi, 1987) have used a liberal selection process, generally including all community college students irrespective of their resemblance to traditional four-year college matriculates. By contrast, investigating a select group of community college students to focus on those most representative of a traditional college path attempts to identify particular attributes of the group that make transfer more likely.

Literature review and theoretical framework

Beginning in the 1970s, concerns were raised over the effectiveness of the community college's transfer function (Adelman, 1999; Dougherty, 1992; Grubb, 1991; Karabel, 1972; Kintzer & Wattenbarger, 1985; Pincus & Archer, 1989). During the same time period, demands on community college resources

to provide workforce development training (Grubb et al., 1997) and to help underprepared students with developmental coursework arose (Cohen & Brawer, 2003). Despite the pull of resources to fulfill other institutional missions, preparing students to transfer to a four-year college remained a central characteristic of community colleges (Brint & Karabel, 1989). More than a decade after writing *The Diverted Dream*, Brint (2003) concludes that community college students continue to hold aspirations to obtain a baccalaureate degree but notes that few realize those aspirations. It is important to understand what determines successful transfer in order to help inform policy since many students who attend community colleges might not otherwise seek higher education. For them the transfer route to obtaining a baccalaureate is their only option.

Vélez and Javalgi (1987), using data from the National Longitudinal Survey of the High School Class of 1972 (NLS) conclude that gender, race/ethnicity, high school track, religion, and socio-economic status (SES) have a strong and significant effect on transfer probabilities. Their sample included all students enrolled in a two-year college academic program in the fall of 1972. Vélez and Javalgi (1987) found that slightly more than half of the students enrolled in academic programs (geared toward transfer) transferred within seven years of graduating from high school. They focused upon the importance of integration into college life, con-

cluding that such factors as living on campus and participating in work-study programs positively influenced a student's likelihood of transferring.

Using data from the senior cohort of the 1980 High School and Beyond (HS&B) data set, Lee and Frank (1990) include in their "transfer" group students who enrolled in a four-year college or university between two and four years after high school. These authors concluded that the students' academic performance in community college was a strong predictor of their eventual transfer, but also noted that family background and high school factors exerted important indirect effects.

Grubb (1991) used both the NLS (1972) and the senior cohort from the HS&B data set to investigate transfer rates. He noted that 28.7% of the class of 1972 data set transferred within four years, compared to 20.2% of the class of 1980. He concluded that the declining transfer rates result from many influences, among them the changing demographic backgrounds of students, declining achievement during high school, declining federal aid, a collapse of career counseling in high schools, an increase in the number of "experimenters" in community colleges, the shift from academic to vocational programs within community colleges, the apparent weakening of academic associate degree programs as routes to transfer, and an increasing "mill-

ing around” in all of postsecondary education (pp. 215-216).

Most recently, Dougherty and Kienzl (2003) note a renewed interest by state and federal governments in the transfer function as a way to lower educational costs. Using data from the National Educational Longitudinal Survey (NELS:88/2000) and the Beginning Postsecondary Student Longitudinal Survey (BPS:90/94) these authors determined that transfer rates have increased since the 1980s to a current rate of 28.9%, but that transfer rates vary by state and by student characteristics. Similar to the aforementioned studies (Lee & Frank, 1990; Vélez & Javalgi, 1987), Dougherty and Kienzl’s findings concur that transfer rates vary depending on the students’ degree of academic preparation, race, age, and major—with older students transferring at a lower rate.

Tinto (1993) argues that students enter an institution with pre-entry attributes—family background, skills, abilities, and prior schooling—and external influences that determine their level of intent and commitment, both of which are important personal dispositions. Tinto’s model also recognizes many external demands. He suggests that students constantly redefine intent and commitment through formal or informal contact with an institution’s social and academic system; his underlying premise is that some degree of integration is necessary for persistence. Tinto primarily studied four-year institutions, thus some caution is

necessary when applying his model to two-year institutions. The present study applies Tinto’s theory simply as a guide to variable selection, and thus examines and controls for students’ backgrounds (gender, ethnicity, peer influence, and family socioeconomic status), skills, abilities, and prior schooling (high school GPA, aptitude test scores, type of high school curriculum, and control of high school), social contacts with the institution (on-campus employment), and academic integration at the institution (first-year GPA, full-time enrollment, and degree attained).

Methods

The sample for the current study was taken from the national longitudinal High School and Beyond 1980 Sophomore Cohort (HS&B/So). While Lee and Frank (1990) also used the HS&B data set, they concentrated on the senior cohort in their model versus the sophomore cohort that is used in the research reported here. The sophomore cohort has a longer longitudinal span than does the senior cohort, allowing analysis of four years of additional postsecondary outcomes data. The additional years allow for greater insight into the years most critical to transfer and most relevant measuring outcomes. The HS&B data set comprises a multipurpose nationally representative longitudinal study of American high school students that surveyed almost 30,000 randomly selected students in over 1,000 randomly selected

high schools in 1980, with biennial follow-up through 1992, followed by a final follow-up in 1992 for the sophomore cohort.

The present study controlled for the types of students included in the analysis. In order to examine “traditional” students aspiring to the baccalaureate degree, the study includes only 1980 high school sophomores who graduated from high school and entered a public two-year college during 1982 or 1983. The study further excludes students who indicated in a spring 1982 survey that the lowest educational attainment they would be satisfied with was less than a baccalaureate degree. Using Grubb’s (1991) definition of “experimenters” as community college students who earn fewer than 12 equivalent semester hours of college credit further refines the data set and excludes such students from the analysis. The number of observations meeting these requirements was 490. Though the criteria result in a lower number of observations, the restrictive definition allows the researchers to target students meeting a traditional intention of transfer, namely, going to a community college directly after high school and then immediately transferring to a four-year college upon the completion of an associate’s degree to pursue a baccalaureate degree—one of the original missions

when educational leaders founded community colleges.

Variables

Table 1 shows the dependent and independent variables used in the study. The dependent variable is transfer, as derived from student transcripts, and it is defined as students who transferred to a four-year college or university prior to 1986. The study includes and controls for the several independent variables listed in the table. Other studies have used many of the same variables in examinations of transfer behavior (Adelman, 1999; Cabrera, LaNasa, & Burkum, 2002; Dougherty & Kienzl, 2003; Laanan, 2003; Lee & Frank, 1990; Grubb, 1991; Surette, 2001; Vélez & Javalgi, 1987).

The dichotomous independent variables are gender, ethnicity (white or minority), high school curriculum (academic or non academic), on-campus employment, full-time initial enrollment, high school control (public or private) and whether or not the students’ closest senior friends planned to attend college. High school and first-year college grades are on a seven-point scale ranging from one for mostly D grades to seven for mostly A grades. While collapsing ethnicity to a dichotomous variable does not account for differences between ethnic groups, the researchers had a cell size issue with a more restrictive data set for certain ethnic groups, precluding a finer breakout. They opted to include as an independent vari-

Table 1 • Independent and dependent variables

Variable	Coding	Use
Gender	Male = 1, Female = 0	Ind. var.
Ethnicity	Minority = 1, White = 0 *	Ind. var.
High school GPA	Ranged from mostly A (7) to mostly D (1)	Ind. var.
High school curriculum	Academic program = 1, non-academic program = 0	Ind. var.
Cognitive test score (composite)	Continuous over range 33.55 to 69.82	Ind. var.
Composite family socioeconomic status in 1982	Continuous over range -1.685 to 1.614	Ind. var.
On-campus job at first institution enrolled	On-campus job = 1, no on-campus job = 0	Ind. var.
High school type	Public = 1, private = 0	Ind. var.
First year college GPA	Ranged from mostly A (7) to mostly D (1)	Ind. var.
Closest senior friend plans to go to college	True = 1, false = 0	Ind. var.
Full-time initial enrollment	Yes = 1, no = 0	Ind. var.
Degree attained at first institution	Yes = 1, no = 0	Ind. var.
Transfer	Transfer to four-year college as second institution prior to 1986 = 1, other = 0	Dep. var.

* For purposes of this study, persons of Hispanic heritage are all coded as non-White.

able whether or not the student attained a degree at the matriculating institution, since earning an associate's degree is part of the conventional path to transfer (Grubb, 1991). While the authors acknowledge the documented "weakening

of the Associate's degree as a route to four-year colleges" (Grubb, 1991, p. 203), they chose, nonetheless, to structure the model to determine if a causal link between earning an associate's degree and eventual transfer can be established for the

“traditional” students included in the data set.

Additional independent variables included in the model are composite scores of cognitive tests and socioeconomic status. The cognitive test variable is a percentile composite score encompassing several subjects (Tuma & Carroll, 1995). The reading section of the cognitive test asks comprehensive questions based on analysis and interpretation of short passages, and the vocabulary section asks questions using a synonym format. The mathematics section asks students to determine if one quantity is larger than another quantity, if they are equal, or if given information is insufficient. Science questions reflect science knowledge and scientific reasoning ability. The writing section assesses students’ writing ability and basic grammar skills. The civics education section centers on principles of law, government, and social behavior (Zahs, Podlow, Morrissey, Marnell, & Nichols, 1995). The socioeconomic status variable is a composite score giving equal weight to “father’s occupation, father’s education, mother’s education, family income and material possessions in the home” (Tuma & Carroll, 1995, p. 78).

Analysis

Table 2 shows the weighted means and standard deviations by transfer behavior for students included in the study, and Table 3 provides correlation coefficients for the variables used in the study. Students who transferred are descriptively

more likely to be male and White; they have earned higher high school and college grades as well as higher cognitive test scores. Those who transfer are more likely to be from private high schools, more likely to have completed an academic high school curriculum, and more likely to associate with classmates who intend to pursue a college education. Furthermore, students who eventually transferred are more likely to have enrolled full-time and earned a degree at their first postsecondary institution.

An appropriate tool for analyzing a dichotomous dependent variable is logit regression. In the logit analysis the dependent variable is transformed into the natural logarithm of its odds ratio, changing the form of the relationship so it can be analyzed (Menard, 1995). Logit analysis determines the impact of a given independent variable while controlling for other variables in the model. The analysis can handle any combination of independent variables despite their differing scales of measurement (Demaris, 1992).

Statistical tests determine the significance of results. The output models the likelihood that two-year college matriculants will transfer to a four-year college, and the model uses a National Center for Education Statistics (NCES)-derived weight “to compensate for unequal selection probabilities and to adjust for nonresponse” (Zahs et al., 1995, p. 24). Unequal selection probabilities refer to the NCES research design that oversamples stu-

Table 2 • Weighted means and standard deviations by transfer event

Variable	Students Who Transferred N=218	Students Who Did Not Transfer N=272	All College Students N=490
Gender (male)	.53 (.50)	.46 (.50)	.49 (.50)
Ethnicity (Minority)	.18 (.38)	.36 (.48)	.28 (.45)
High school GPA	4.87 (1.21)	4.29 (1.19)	4.55 (1.23)
High school curriculum (academic)	.73 (.44)	.59 (.49)	.66 (.47)
Cognitive test score (composite)	55.82 (7.55)	51.29 (8.16)	53.28 (8.21)
Composite family socioeconomic status	.45 (.59)	.12 (.74)	.27 (.70)
On-campus job at first institution enrolled	.15 (.36)	.15 (.36)	.15 (.36)
High school type (public)	.90 (.30)	.92 (.27)	.91 (.28)
Closest senior friend plans to go to college	.86 (.35)	.71 (.45)	.78 (.42)
Full-time initial enrollment	.80 (.40)	.63 (.49)	.70 (.46)
Self-reported first year college grades	4.92 (1.18)	4.33 (1.25)	4.60 (1.25)
Degree attained at initial institution	.33 .47	.17 .38	.24 (.43)
Transfer			.45 (.50)

*Note: Weights are normalized to the actual sample size.
Standard deviations in parentheses.

Table 3 • Correlation analysis (N=490)

Variable	2	3	4	5	6	7	8	9	10	11	12	13
1 Gender (male)	.07	-.10	-.04	-.01	.07	.01	-.03	.05	-.04	-.14	-.08	.06
2 Ethnicity (minority)		-.18	-.08	-.43	-.34	.12	.08	-.02	.10	-.19	-.10	-.20
3 High school GPA			.35	.50	.13	.04	.05	.26	.07	.46	.10	.23
4 High school curriculum (academic)				.43	.11	.00	-.03	.25	.05	.18	.10	.15
5 Composite score of cognitive ability					.34	-.08	-.07	.16	-.06	.37	.05	.28
6 Composite family socioeconomic status						-.03	-.09	.06	-.12	.12	.03	.24
7 On-campus job at first institution enrolled							.04	.08	.19	.04	.18	.00
8 High school type (public)								-.06	.01	-.06	-.09	-.04
9 Closest senior friend plans college									.08	.15	.12	.18
10 Full-time initial enrollment										.05	.22	.18
11 Self-reported first-year college grades											.23	.24
12 Degree attained at initial institution												.19
13 Transfer to four-year college												

* Note: Weights are normalized to the actual sample size.

dents with certain characteristics. The likelihood ratio chi-square statistic determines the overall value of the model. Comparing the category predicted by the model to the actual data helps to assess the quality of the model, as do certain statistics designed to measure the association of predicted probabilities with actual, transfer behavior. The Wald chi-square statistic and its associated probability assess the significance of independent variables (SAS Institute, 1995).

Since the chi-square ($-2 \log$ likelihood) statistic reported in Table 4 is significant to the probability value level .0001, it offers convincing evidence that the model fits the data better than does the intercept by itself. At least one parameter estimate is statistically significant (Aldrich & Nelson, 1984; Liao, 1994; SAS Institute, 1995).

The Table 4 coefficients are relative to three measurement scales: the estimated logit probability, the standardized estimate, and the odds of transfer. Parameter estimates represent the net, additive effect caused by a one-unit change in the respective independent variables on the estimated logit probability of transfer. Respective odds ratios represent the net, multiplicative effect caused by a one-unit change in the respective independent variables on the odds of transfer (Retherford & Choe, 1993).

The exponentiated value of a given parameter estimate is its odds ratio. Standardized estimates refer to the standard deviation change

caused in the estimated logit of the dependent variable by a one standard deviation change in independent variables (Menard, 1995). Table 4 also provides the marginal net effect of independent variables on transfer, that is, the net effect of a one-unit change in a given independent parameter on the probability of transferring to a four-year college. The margin for continuous variables is defined as a one standard deviation increase from the weighted mean.

Comparing the Hosmer and Lemeshow (1989) statistic, as reported in Table 4, to the chi-square distribution supports the null hypothesis of the Hosmer and Lemeshow test that the model provides a good fit to the data. The model correctly classified 69.4% of all observations, including 76.8% of students who did not transfer and 60.2% of students who did transfer. "Classification is sensitive to the relative sizes of the two component groups and will always favor classification into the larger group" (Hosmer & Lemeshow, 1989, p. 147).

The present study evaluates the significance of parameter estimates by their respective Wald chi-square probability values which reflect the chi-square distribution with one degree of freedom. Variables that affect transfer, above and beyond the influences of other variables listed in the model, are socioeconomic status, peer influence, high school and college grades, full-time enrollment, attaining a degree at

Table 4 • Logit Regression Results for Modeling Transfer Event (N=490, Sum of Weights=490)

Model Fitting Information and Testing Global Null Hypothesis BETA=0						
Criterion	Intercept Only	Intercept and Covariates	Chi-Square for Covariates	Chi-Square for Covariates		
-2 LOG L	625.22	522.51	102.71 with 12 DF	(p < 0.0001)		
Analysis of Maximum Likelihood Estimates						
Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Standardized Estimate	Odds Ratio ¹	Net Effects ¹
Cognitive test scores	0.0263	0.0181	2.12	0.1237	1.24	5.39%
Composite family SES	0.6791	0.1759	14.90***	0.2720	1.61	11.81%
Closest Sr friend plans Clg	0.7176	0.2822	6.4639***	0.1702	2.05	17.20%
Degree attained 1st inst.	0.6071	0.2696	5.0699**	0.1492	1.84	15.06%
On-campus job	-0.4868	0.3248	2.25	-0.1008	0.62	-11.79%
High school curriculum	-0.2203	0.2636	0.70	0.0603	0.80	-0.5%
Ethnicity (minority)	-0.2597	0.2726	0.9081	-0.0672	0.77	-6.41%
Gender (male)	0.4432	0.2193	4.086**	0.1281	1.56	10.97%

Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Standardized Estimate	Odds Ratio ¹	Net Effects ¹
High school grades	0.2712	0.1142	5.636**	0.1908	1.31	8.32%
Full-time Initial Enrl	0.9230	0.2500	13.63***	0.2416	2.52	22.05%
College GPA	0.1963	0.1013	3.76*	0.1403	1.22	6.12%
H.S. type (public)	0.0630	0.3856	.0267	0.0104	1.07	1.56%
Intercept	-5.3463	1.0175	27.61			
Association of Predicted Probabilities and Observed Responses						
	Concordant		73.3%	Somers' D	0.467	
	Discordant		26.5%	Gamma	0.468	
	Tied		0.2%	Tau-a	0.234	
	(42,840 pairs)			c	0.734	

Note: Weights are normalized to the actual sample size. The model correctly predicts 69.4% of observations. The Hosmer and Lemeshow (1989) Goodness-of-fit statistic = 15.4 with 8 DF ($p > .05$).

* $p < .10$ ** $p < .05$ *** $p < .01$

¹The margin used to calculate net effects and odds ratios for college GPA, high school GPA, cognitive test scores, and SES is a one standard deviation increase from the mean.

the students' first institution, and being male.

When ranking the relative strength of independent variables on the dependent variable, the standardized estimate serves as the appropriate criterion (Menard, 1995). A useful measure of the net association between the event of transfer and statistically significant independent variables is the odds ratio.

Discussion

The present transfer model indicates that of the "traditional" students included in the data set 44.5% of them transferred, representing a larger number of transferring students than found in previous studies (Dougherty & Kienzel, 2003; Grubb, 1991). Since the data set included only those students who indicated an aspiration for a baccalaureate degree, required initial enrollment within two years of high school graduation, and excluded experimenters, the higher transfer numbers are not diluted by inclusion of students who were community college students with no intention to transfer.

As others have reported (Cabrera, et al., 2002), the current research found that student socioeconomic status had the biggest influence on transfer. The second largest impact on the transfer decision was whether students were enrolled full-time when entering the community college. The financial basis of both of these primary determinants of transfer point to an area where policy can have an im-

pact. Since the time the data was collected, federal and state funding support for students has declined. The decline is particularly acute for students in lower social economic strata, just the type of students who are more likely to enroll in community colleges.

The ability to attend the community college full-time is often based on income, hence the increase in numbers of part time students over time as students strive to balance both school and employment (Bryant, 2001). Full-time students made up approximately 37% of total community college enrollment in 1997 (National Center for Educational Statistics, 2002), with 75% of these students working part-time or full-time (Phillippe & Patton, 1999). Comparably, 86% of part-time community college students work (Phillippe & Patton, 1999). Thus, if full-time enrollment status is a predictor of transfer, attention needs to be directed to policy and programs that allow community college academic transfer students the support needed to attend the two-year college full-time.

The present model indicates high school grades also influence the success of community college transfer students. Coupled with grades in high school is the peer influence, as measured by the educational aspirations of the students' closest high school friend. Thus, more links need to be established between community colleges and high schools to promote the ideal of advanced education. Particular attention should be paid to those

public school districts serving lower SES students, calling attention to the fact that college is an option for these students. If the goal is to encourage lower SES high school students to attend community colleges, it is critical to address issues of financial support. If financial support is not available, establishing links between low SES high schools and local community colleges becomes a moot point.

Findings from the model highlight that transfer is influenced by first attaining an associate's degree prior to transferring to a four-year institution. The model indicates that, like high school grades, college grades also affect transfer success. Succeeding at the community college with good grades and finishing a degree program establishes the foundation for a successful transition to a four-year college. Finally, as did Vélez and Javalgi, (1987), the present researchers found that being male increased the likelihood of transfer.

Student financial aid policies and practices that assist or hinder transfer should be addressed in other research, particularly in light of continued decreases in state and federal funding for community colleges. The payoff for students in obtaining a four-year college degree is an increase in earnings potential (Brint, 2003). Beyond the individual, the community also benefits from having a better trained workforce, a particularly salient point in the current knowledge age (Dolence & Norris, 1995).

Given the importance of high school and college grades and peer influence on transfer decisions, it is important to build bridges between the various educational stakeholders—K-12 schools, community colleges, and four-year institutions. An important component of the communication network is counseling and advising for two-year transfer candidates and the availability of transfer information at the home community college (Monroe & Richtig, 2002). In addition, there appears to be a link between high transfer rates in states with formalized and explicit articulation agreements between community colleges and four-year colleges (Keith, 1996). Dougherty and Kienzl (2003) found that transfer rates varied from 18% to 35% among the ten states included in their study. Since one of the goals of community colleges is to meet community needs, the difference in transfer rates between states indicates differences in the priority of transfer within these states.

Even for community colleges within states, there is considerable variation. Currently, the Carnegie Foundation classifies all community colleges in one category, although there is discussion of changing the designation to be more reflective of institutional differences among community colleges (McCormick & Cox, 2003). Shaw and London (2001) point out that two-year college institutional culture regarding the transfer function also affects rates of transfer between two-year and four-year institutions. A range

of factors determine the type of institution in which a student will enroll, such as state policies on the roles of different types of institutions of higher education, individual institution admission policies, and student preferences. Thus, in discussing issues of transfer, it is critical to consider the context, noting both inter-state and intra-state differences.

Conclusion

In summary, the authors found that of those traditional age students from the data set who sought transfer, 44.5% were successful. Determinants of transfer were composite family SES, full-time initial community college enrollment, high school grades, influence and intention of further education of high school friends, obtaining an associate's degree prior to transferring, college grades, and male gender. Some states are exhibiting higher transfer rates and better coordination between four-year and two-year institutions. Further research needs to highlight why some states are seeing a higher rate of transfer success.

Additional research using more recent longitudinal data would provide a more current view of transfer at the turn of the 21st century. Defining and tracking transfer rates will provide data for policy makers to institute programs that support students as they seek transfer.

The exclusion of experimenters from the data set showed a higher rate of transfer than is found in

other studies, a result that highlights the need to have precise definitions of transfer. The "correct" level of transfer is subjective, with institutional, community, and state contexts influencing the definition of appropriate levels. For states interested in obtaining higher transfer rates as a measure of outcomes for community colleges, this study points to a number of factors that aid community college students in successful transfer.

Even using a more restrictive definition of transfer students, the authors found determinants for successful transfer students comparable to previous studies (Cabrera, et al., 2002; Dougherty & Kienzl, 2003; Grubb, 1991; Lee & Frank, 1990; Vélez & Javalgi, 1987). What differed, however, was the higher rate of transfer using a more precise definition of transfer and a more restrictive selection of observations.

Community colleges will not be able to succeed in their transfer mission and serve as a point of access to higher baccalaureate education unless financial support continues to be available for low SES students. If a larger proportion of citizens holding a baccalaureate degree is important to state policy makers, it is imperative for states to provide support for those determinants with the most influence on the transfer function, e.g., financial assistance to allow for full-time enrollment at the community college and academic support to aid classroom success. This study makes clear that even "traditional"

community college students need support on the pathway from the community college to the four-year institution. Moreover, despite accounting for determinants of successful transfer for 45% of the students in the sample, over half of the students who entered the community college intending to transfer did not. Since fully half of the students in the study indicated a desire to transfer but were not successful, further study is needed to discover what other determinants explain their lack of success.

The implications of this study for policy makers are several. The benefits of a baccalaureate degree have been demonstrated for years. Many states, such as Michigan, have expressed great interest in increasing the proportion of their populations holding baccalaureate degrees. Investment in community colleges has been viewed as important because of their cost and efficiency.

Since both high school grades and social influences in high school affect the desire to attend college, policies with incentives or requirements for community colleges to coordinate effectively with high

schools and vice versa would seem to follow. Ideally, policies promoting coordination would focus on student counseling and academic plans designed to ensure transfer, with a particular focus on students of lower socioeconomic status. Policies that encourage high school students to enroll in college-preparatory courses would also aid in improving transfer. States should ensure that high school graduation requirements adequately prepare all high school graduates for post-secondary education or training.

Many states have encouraged their populations to attend community colleges, partly for the reasons described above. With almost half of all college students enrolled in community colleges, a powerful policy lever exists to encourage transfer and baccalaureate degree attainment. Considering the enormous growth in community college enrollments across the country, federal and state-level policy makers need to develop access-based financial award incentives to attend community colleges on a full-time basis.

References

- Adelman, C. (1999). *Answer in the tool box: Academic intensity, attendance patterns, and bachelor's degree attainment*. Washington, DC: National Institute on Postsecondary Education, Libraries, and Lifelong Learning.
- Aldrich, J., & Nelson, F. (1984). *Linear probability, logit, and probit models*. London: Sage Publications.
- Bryant, A. N. (2001). Community college students: Recent findings and trends. *Community College Review*, 29(3), 77-93.
- Brint, S. (2003). Few remaining dreams: Community colleges since 1985. In K. M. Shaw & J. A. Jacobs (Eds.), *Community colleges: New environments, new directions* (pp. 16-37). *The Annals of the American Academy of Political and Social Science*, 586(March). Thousand Oaks: Sage Publication.
- Brint, S., & Karabel, J. (1989). *The diverted dream: Community colleges and the promise of educational opportunity in America, 1900-1985*. New York: Oxford University Press.
- Cabrera, A.F., LaNasa, S.M., & Burkum, K.R. (2002, November). *Pathways to college: What affects lowest-SES students' decisions to transfer to a four-year institution?* Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Sacramento, CA.
- Christie, R., & Hutcheson, P. A. (2003). Net effects of institutional type on baccalaureate degree attainment of "traditional" students. *Community College Review*, 31(2), 1-20.
- Clark, B. R. (1994). The "cooling out" function revisited. In J.L. Ratcliff (Ed.), *Community Colleges* (2nd ed., pp. 67-78). Needham Heights, MA: Simon & Schuster Education Group.
- Cohen, A. M., & Brawer, F. B. (1996). *The American Community Colleges* (3rd ed.). San Francisco: Jossey-Bass.
- Cohen, A. M., & Brawer, F. B. (2003). *The American community college* (4th ed.). San Francisco: Jossey-Bass.
- Demaris, A. (1992). *Logit modeling*. London: Sage Publications.
- Dolence, M. G., & Norris, D. M. (1995). *Transforming higher education: A vision for learning in the 21st century*. Ann Arbor, MI: Society for College and University Planning.
- Dougherty, K. (1992). Community colleges and baccalaureate attainment. *Journal of Higher Education* 63(2), 188-214.
- Dougherty, K., & Kienzl, G. (2003, April). *Transfer from community colleges to four-year colleges: Temporal and geographic variation*. Paper presented at the American Educational Researcher Association Conference, Chicago, IL.

-
- Grubb, W. N. (1991). The decline of community college transfer rates: Evidence from national longitudinal surveys. *Journal of Higher Education*, 62(2), 194-222.
- Grubb, W. N., Badway, N., Bell, D., Bragg, D., & Russman, M. (1997). *Workforce, economic and community development: The changing landscape of the entrepreneurial community college*. Berkeley, CA: NCRVE and Mission Viejo League for Innovation.
- Gumport, P. J. (2003). The demand-response scenario: Perspectives of community college presidents. In K. M. Shaw & J. A. Jacobs (Eds.), *Community colleges: New environments, new directions* (pp. 38-61). *The Annals of the American Academy of Political and Social Science*, 586(March). Thousand Oaks: Sage Publication.
- Gumport, P. J., & Jennings, J. (1999). *Financial challenges in public higher education: A trend analysis*. Technical report no. NCPI-1320 of the U.S. Department of Education. Grant no. R309A60001. Stanford, CA: National Center for Postsecondary Improvement.
- High School & Beyond Sophomore Cohort: 1980-92 Postsecondary Education Transcripts*. (1995). [Restricted data file]. Washington, DC: National Center for Education Statistics.
- Hosmer, D., & Lemeshow, S. (1989). *Applied logistic regression*. New York: John Wiley & Sons.
- Hutcheson, P.A. (1999). Reconsidering the community college. *History of Education Quarterly*, 39(Fall), 307-321.
- Karabel, J. (1972). Community colleges and social stratification. *Harvard Educational Review*, 42(4), 521-62.
- Keith, B. (1996). The context of educational opportunity: States and the legislative organization of community college systems. *American Journal of Education*, 105, 67-101.
- Kintzer, F., & Wattenbarger, J. (1985). *The articulation/transfer phenomenon: Patterns and directions*. Washington, DC: American Association of Community and Junior Colleges.
- Laanan, F.S. (2003). Degree aspirations of two-year college students. *Community College Journal of Research and Practice*, 27(6), 495-518.
- Lee, V.E., & Frank, K. A. (1990). Students' characteristics that facilitate the transfer from two-year to four-year colleges. *Sociology of Education*, 63(July), 178-193.
- Liao, T. (1994). *Interpreting probability models: Logit, probit, and other generalized linear models*. London: Sage Publications.
- McCormick, A.C., & Cox, R.D. (Eds.). (2003). Classification systems for two-year colleges. *New Directions for Community Colleges*, (122). San Francisco, CA: Jossey-Bass.
-

-
- Menard, S. (1995). *Applied logistic regression analysis*. London: Sage Publications.
- Monroe, A. M., & Richtig, R.E. (Fall 2002). Factors affecting transfer decisions. *The Community College Enterprise*, 19-39.
- National Center for Education Statistics (2002). *Digest of Education Statistics*. Washington, DC: Department of Education.
- Phillippe, K. A., & Patton, M. (1999). *National profile of community colleges: Trends and statistics* (3rd ed.). Washington, DC: Community College Press, American Association of Community Colleges.
- Pincus, F., & Archer, E. (1989). *Bridges to opportunity: Are community colleges meeting the transfer needs of minority students?* New York: Academy for Educational Development and College Entrance Examination Board.
- Retherford, R., & Choe, M. (1993). *Statistical models for causal analysis*. New York: John Wiley & Sons, Inc.
- SAS Institute. (1995). *Logistic regression examples using the SAS system*. Cary, NC: SAS Institute Incorporated.
- Shaw, K. M., & London, H. B. (2001). Culture and ideology in keeping transfer commitment: Three community colleges. *The Review of Higher Education*, 25(1), 92-114.
- Surette, B. J. (2001). Transfer from two-year to four-year colleges: An analysis of gender differences. *Economics of Education Review*, 20, 151-163.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago: The University of Chicago Press.
- Tuma, J., & Carroll, C. (1995). *High school and beyond: 1992 descriptive summary of 1980 high school sophomores 12 years later*. Washington, DC: Office of Educational Research and Improvement.
- Vélez, W. (1985). Finishing college: The effects of college type. *Sociology of Education*, 58, 191-200.
- Vélez, W. & Javalgi, R. G. (1987). Two-year college to four-year college: The likelihood of transfer. *American Journal of Education*, 96(1), 81-93.
- Zahs, D., Podlow, S., Morrissey, M., Marnell, P., & Nichols, B. (1995). *High school and beyond fourth follow-up methodology report*. ERIC Document Reproduction Service No. ED386459. Chicago: The University of Chicago.

Copyright of *The Community College Enterprise* is the property of Schoolcraft College, and its content may not be copied or emailed to multiple sites or posted on a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.