EFFECT OF RACIAL/ETHNIC COMPOSITION ON TRANSFER RATES IN COMMUNITY COLLEGES: Implications for Policy and Practice

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This study examines factors associated with community college transfer rates. Regression models are developed using community college data at the institution level. The analyses employ two different definitions of the transfer rate and two different time spans over which to observe transfer behavior. Holding constant other factors expected to influence differences in transfer rates, the results reveal disparities in transfer rates according to the racial/ethnic composition of the student body. Community colleges with higher percentages of either Latino or African American students have lower 6-year transfer rates. The findings also confirm the results of other studies: community colleges with higher transfer rates tend to have younger student populations, students with higher socioeconomic status and better academic preparation, and a greater focus on academic programs. The important policy implications of these findings for states where the percentages of students of color are increasing are discussed.

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KEY WORDS: transfer rates; community colleges; race/ethnicity.

INTRODUCTION

Most community college systems in the United States began with a primary mission of promoting transfer education (Dougherty, 1994). However, by the latter half of the 20th century community colleges had evolved into comprehensive institutions, offering a mix of vocational, remedial, adult education, and liberal arts programs (Bailey and

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Averianova, 1999). As the functions of community colleges expanded, the percentage of enrolled students transferring to a 4-year institution to pursue a bachelor's degree declined; recent studies estimate the current national transfer rate to be between 20% and 25% (Bryant, 2001; Grubb, 1991).

While there is general agreement that transfer rates have declined, data limitations and controversy over how best to measure transfer rates make it difficult to define precisely the extent or causes of the decline, or to determine the degree to which the decline represents a problem requiring policy intervention. A natural consequence of the expansion of community college mission beyond transfer is a reduction in transfer rates. However, the decline in overall transfer rates is a problem if students face obstacles in meeting their educational goals, if whole classes of the population are underserved or underachieving, or if society's need for an educated workforce and citizenry goes unfulfilled.

Defining and Measuring the Transfer Rate

Efforts to understand the issue of community college transfer are complicated by the variety of transfer patterns (Townsend, 2001; Townsend and Dever, 1999). In addition to the traditional vertical transfer to 4-year universities, community college students transfer to other community colleges and to private sub-baccalaureate institutions. Students still attending high school or already enrolled in 4-year institutions take courses at community colleges and transfer those units to 2- or 4-year institutions. In addition, there has been an increase in the "reverse transfer" of students who begin their education at a 4-year institution but later transfer to a community college.

Even if we restrict our interest to the issue of transfer from community colleges to 4-year institutions, debate over how to appropriately define the transfer rate causes a disagreement over which students to include in the "base." The calculation of a transfer rate would seem to be relatively straightforward: the number of students who transfer to a 4-year institution divided by the number of potential transfer students. However, there are many possible specifications of this denominator. For example, should it include: (a) all entering students, (b) only students indicating an intent to transfer, (c) only students enrolled in a degree-granting program, (d) all students completing a specified minimum number of course credits, or (e) some combination of these possibilities?

Previous studies have noted great disparities in transfer rates based upon how the denominator is defined. Bradburn and Hurst (2001)

reported transfer rates ranging from 25% to 52% depending on how narrowly they defined the denominator. Nevertheless, useful conclusions can be drawn without coming to agreement about the best way to define transfer rate. Whether the absolute rate is in the 20% or 40% range is not the important point. What is important is how transfer outcomes are changing over time and how they differ across sub-groups of students.

Theoretical Constructs and Literature Review

Theories of social and cultural capital offer explanations for differences in transfer rates often found among various racial/ethnic populations. Bourdieu's (1973) theory of cultural capital posits that social class affects educational attainment through parental education and family expectations, thereby perpetuating educational inequity. Cultural capital derives from the whole set of characteristics, including culture, attitudes and economic opportunities, to which children of a particular ethnic or socioeconomic group are more likely to be exposed (see Borjas, 1992). The notion of social capital extends the influence to include the support available through the wider social network and relationships outside the family. Students of underrepresented minority populations are less likely to have high levels of cultural and social capital due to the lower educational attainment and experience of their parents, other family members, and home communities, leaving them without the information and resources needed to successfully navigate the higher education environment.

McDonough's (1997) conception of organizational habitus may also contribute to an understanding of the lower transfer success of particular racial/ethnic groups. Organizational habitus is a set of perceptions and beliefs held by members of an organization, which in turn shapes the members' attitudes and expectations. It may be the case that the organizational habitus of community colleges contributes to lower aspirations or performance among students of particular racial/ethnic groups and thus lowers rates of transfer to senior institutions.

Many previous studies have attempted to identify the institutional and student factors associated with greater transfer success. Cuseo (1998) reviewed the literature on transfer, and found that institutional factors associated with higher transfer rates include a more "academic" curriculum, higher faculty involvement in transfer issues, more effective institutional research, better articulation with 4-year institutions, and substantial support and advising services for students. Other research points to the importance of a community college exhibiting a strong

"transfer culture," where the goal of transfer is given high priority among the faculty, staff and administration (Cohen and Brawer, 1996; Shaw and London, 1995, 2001). Focusing on student characteristics related to transfer, Grubb (1991) found that transfer rates are higher for males, Caucasians, students of high socioeconomic status, and those scoring higher on high school achievement tests and completing an academic track in high school.

Much of this research has involved case studies or other qualitative analyses of community colleges with high or low transfer rates. However, several studies have used quantitative modeling methods to study the factors associated with transfer success—the approach that we use in this research. Hurst and Bradburn (2001) used data from the Beginning Postsecondary Students Longitudinal Study (BPS) in logistic regression and Hierarchical Linear Modeling to examine student-, state- and institution-level effects on student transfer. They found higher probabilities of transfer for students who were younger, who came from a higher socioeconomic background, and who exhibited greater academic ability and higher expectations for their educational attainment. Enrollment in an academically oriented program and a greater number of credit hours was also positively associated with the likelihood of a student successfully transferring, as was the receipt of financial aid. The emphasis of a college on academic, as opposed to vocational, programs also positively influenced the likelihood of transfer.

Lee and Frank (1990) used regression analysis and data from the High School and Beyond (HS&B) survey to examine factors related to transfer. They found that students who transferred were of a higher social class, were less likely to be minority or female, were more academically oriented and successful in both high school and community college, and were less likely to be working while attending college. Students' academic behavior and success in community college had the strongest direct impact on transfer, while the influence of ethnicity and social class were more indirect through their relationship to academic preparation in high school.

While Lee and Frank (1990) concluded that minority students have lower transfer rates, other research contradicts this finding. Bailey and Weininger (2002) analyzed institutional data for students in community colleges that are part of the City University of New York (CUNY) system. Their regression analysis included measures of students' aspirations, socioeconomic status, academic preparation, and alternative commitments (e.g., work, childcare, etc.). The results indicated that African American and Latino students did not have a significantly lower likelihood of transfer than Caucasians after controlling for the other

factors, although they were less likely to complete a bachelor's degree after transfer.

The difficulty in pinpointing the relationship between race/ethnicity and transfer rates in quantitative models, holding other factors constant, is very likely due to the high degree of correlation between race/ethnicity and other important causal factors such as socioeconomic status and, in particular, academic preparation. Research conducted by the U.S. Department of Education has found that the most significant predictor of persistence through the baccalaureate degree for all students, including those beginning their postsecondary studies in community colleges, is the degree of academic rigor of their high school curriculum (Adelman, 1999). This research demonstrated that African American and Latino students were significantly less likely to have completed rigorous high school curricula.

Study Purpose

As described above, several studies have attempted to model the impact of various factors on transfer rates. While the results of these studies provide conclusive evidence on the importance of academic preparation and socioeconomic status to transfer rates, the evidence is mixed on a number of other factors. Based on our review of other studies, we develop several regression models that use explanatory variables representing student, college and community characteristics expected to account for differences in transfer rates among community colleges. An important difference in our research involves the level of data used; while the studies reviewed in the previous section primarily used student-level data in their models, our research uses institution-level data. This allows us to draw inferences about institutional factors that may affect transfer, but not about individual student characteristics.

We are particularly interested in including measures of race/ethnicity in an effort to determine if this factor has an independent influence on transfer rates. Any differences in transfer rates by race/ethnicity, after controlling for other important factors, would have important implications for our understanding of barriers to higher education and policy solutions to reduce those barriers. We use institution-level data based on two cohorts of first-time freshmen (FTF) in California's 108 community colleges. We use two alternate definitions of the transfer rate and observe transfer behavior over two different time spans, allowing us to comment on methodological questions raised in earlier research about the most appropriate way to measure the transfer rate.

METHOD

Sample

Data for this research were obtained from the California Community Colleges Chancellor's Office. To meet federal reporting requirements, the Chancellor's Office conducts a FTF (First Time Freshman) study, collecting data from all FTF in California's community colleges in the fall of a given year and then tracking these students for 6 years regarding transfer activity and the number of certificates and degrees granted. The FTF data track transfers from community colleges to campuses of the California State University and the University of California (many transfers to private and out-of-state institutions are also captured through the National Student Clearinghouse; 81 of the state's 108 community colleges currently provide data to the clearinghouse). Not having access to student-level data, we develop an institution-level model of factors related to differences in the transfer rate of each community college based on aggregate characteristics of its student cohort and some characteristics of its surrounding community. We use the student cohorts beginning their studies in 1996 and 1997 for an analysis of 3-year transfer rates, and the cohorts beginning their studies in 1994 and 1995 for an analysis of transfer rates over 6 years.

Procedure

"Inclusive" Transfer Rate Definition

Two methods of defining a transfer rate are used in this research. The first transfer rate is calculated by dividing the number of transfers by the total number of FTF in a given cohort. This method of calculating transfer rates uses a denominator that includes students who may have no intent to transfer when they enter college. We attempt to control for the fact that all FTF do not desire to transfer through the inclusion of explanatory variables intended to account for differences in "intent to transfer" in a specific cohort across colleges. Including all students in the cohort may best reflect the inclusive mission of community colleges to offer broad access to higher education. This definition recognizes that students who do not initially intend to transfer may change their goals over time. In fact, community colleges can have a profound impact on social mobility to the extent they expose students to the idea of degree attainment.

Narrower Transfer Rate Definition

The second transfer rate used in this study is calculated by dividing the number of students in a cohort who transfer over 6 years by the number of

students in the cohort who (a) completed at least 12 units and, (b) enrolled in transfer-level math or English. This definition of transfer was designed to assess the transfer rate among students demonstrating some "intent to transfer" through their behavior over the 6-year period (California Community Colleges Chancellor's Office, 2002). It is a common practice to exclude some students from the denominator when calculating transfer rates based on the knowledge that many community college students have no intention to transfer, although there is considerable debate over which students to exclude. The restriction of the base to students completing some minimum number of units is particularly common.

Variables in the Model

We use several regression models to estimate the impact of various student, college and community characteristics on transfer rates. The basic model is defined as follows:

$$\text{Transfer Rate}_i = f(\text{Student Cohort Characteristics}_i,$$
$$\text{College Characteristics}_i, \text{Community Characteristics}_i),$$

where $i = 1, 2, 3, 4, \ldots, 108$ community colleges.

We develop three regression models reflecting the two different transfer rate definitions as the dependent variable:

1. An "inclusive" transfer rate measured over 3 years (mean = 6.44%).
2. An "inclusive" transfer rate measured over 6 years (mean = 23.8%).
3. A narrower transfer rate measured over 6 years (mean = 31.6%; data for a comparison model of this transfer rate using a 3-year period were not available).

The same independent variables are used in each model, as follows:

Student cohort characteristics: % Less than Age 25, % Female, % African American, % Asian American, % Latino, % Filipino/Pacific Islander, % Temporary Resident, % Uninformed Transfer Desire

School Characteristics: Miles to Nearest California State University (CSU), Number of Students, Academic Performance (AP) Index for Recent Freshmen, % Degrees Awarded in General Studies or Liberal Arts/Sciences

Community Characteristics: County Population Density, County Unemployment Rate, % County High School Students Receiving Reduced-Price Meals, % County High School Students English Language Learners

TABLE 1. Descriptive Statistics for Variables Included in the Models ($N = 211$)

College and community characteristics	Mean	SD
AP Index	47.7	4.9
Miles to CSU	29.2	35.2
% Degrees in Gen. Studies or Liberal Arts/Sciences	44.1	15.7
County Population Density	1465.9	2367.7
County Unemployment Rate	6.7	4.2
% County HS Students Reduced Price Meals	30.0	12.2
% County HS Students English Learners	15.7	6.5

Student cohort characteristics	Mean (SD) "inclusive" 3-year cohort	Mean (SD) "inclusive" 6-yr cohort	Mean (SD) narrower 6-yr cohort
Transfer Rate (log)	1.7 (0.63)	3.1 (0.49)	3.4 (0.35)
% Less Age 25	69.9 (10.8)	69.9 (10.7)	70.0 (10.7)
% Female	52.2 (4.6)	52.0 (4.6)	55.4 (4.7)
% African American	9.5 (11.4)	9.1 (10.7)	8.5 (12.6)
% Asian American	8.6 (8.1)	10.1 (9.0)	12.4 (10.7)
% Latino	25.9 (16.3)	26.0 (15.5)	22.3 (15.5)
% Filipino/Pacific Islander	3.9 (4.2)	0.7 (0.5)	0.8 (1.1)
% Temporary Resident	1.2 (2.8)	0.7 (0.7)	0.4 (0.5)
% Uninformed Transfer Goal	38.7 (12.4)	35.6 (14.0)	56.3 (14.6)
Number of Students	2055.2 (1188)	2142.1 (1341)	2142.1 (1341)

Table 1 presents descriptive statistics for the variables included in the models. The models include explanatory variables shown to be important to transfer in other studies, including characteristics of the student cohort that account for age, gender, race/ethnicity and citizenship status. Institutional characteristics in the model include the distance of the community college from a campus of the California State University (CSU) system, the size of the student population, and the level of academic preparation of recent groups of freshmen. The California Community Colleges Chancellor's Office developed the academic preparation (AP) index for each college by matching the records of FTF enrolled in community colleges in Fall 2000 with data from the California Department of Education on the Stanford nine test scores of high school juniors in 1998 and 1999 (see Bahr, 2002 for a detailed description of the development of the AP index).

Under the broad category of community characteristics, we include population density, and the social and economic characteristics of the county where the college is located. Population density is intended to be a proxy for the "urban" nature of a county. The characteristics of urban counties (crime rates, economic opportunities, transportation, etc.) can exert uncontrollable influences on the transfer rate of a college operating within them. With no direct data on the socioeconomic status of the colleges' student populations, we include the percentage of the county's high school students who received reduced-price meals as a measure of a community-wide economic constraint on college transfer rates. We also include the share of the county's high school students who were identified as English language learners.

Since the denominator in the "inclusive" measure of transfer rate includes all first-time freshmen, we try in the regression models to account for differences in "intent to transfer" across colleges. The % Uninformed Transfer Desire variable, based on a survey of a large majority of the students in each cohort, represents the percentage of students whose desire in attending community college was to transfer to a 4-year program. It is defined as "uninformed" because the colleges administer the survey before students meet with a counselor. Furthermore, we attempt to control for differences in the mission of different colleges by including the percentage of recent graduates of each college who received a general studies or a liberal arts/sciences general degree. We expect that colleges with a greater percentage of students graduating in these degree programs are more likely to be geared through their "mission" to attracting and producing transfer students.

Functional Form and Other Statistical Considerations

Given our expectation that all explanatory variables are more likely to exert a non-linear (rather than linear) influence on the chosen measures of transfer rate, we place the dependent variable in log form. The use of a dependent variable in log form allows for the calculation of regression coefficients that account for non-linear relationships. In addition, there are statistical advantages to be gained by combining the data from two cohorts together into a single regression analysis. To check for the appropriateness of doing this, we ran two separate regressions for the 1996 and 1997 3-year cohorts, one with each cohort's data, and then ran a third regression that used data from both cohorts combined. Chow Tests (Studenmund, 2002, pp. 241–242) indicated that it was acceptable to combine both cohorts of data because the regression coefficients calculated from the separate regressions were statistically equivalent.

Our final regression results are reported using the pooled data sets, with the addition of a dummy variable equal to one for data from the 1996 cohort (the 1994 cohort for the 6-year analysis) to control for any unmeasured differences between the 2 years. The final regression analyses contained 212 observations (data for a few colleges were missing). We checked for multicollinearity in our regression by calculating variance inflation factors (VIFs) for each explanatory variable (Studenmund, 2002, pp. 256–257). Calculated VIFs for each regression coefficient were all below 3.4, with most being below 2.0. Hence, all fell under the standard value of 5.0 generally used to indicate a problem with multicollinearity.

RESULTS

The regression results for each model are recorded in Tables 2–4. Though included in regressions, results for constant term and a 1996 dummy variable are excluded from tables. The regression coefficients recorded in the tables measure the percentage change in transfer rate given a one-unit change in the respective explanatory variable. Therefore, the

TABLE 2. Model 1: OLS Regression Analysis of 3-Year Student Cohorts Using "Inclusive" Definition of Transfer Rate ($N = 211$)

Variable	B	SE	Elasticity	β
% Less Age 25	0.02598	0.00526	1.82	0.446*
% Female	−0.00292	0.00785	−0.15	−0.021
% African American	0.00274	0.00390	0.03	0.049
% Asian American	0.01501	0.00523	0.13	0.193*
% Latino	−0.00919	0.00297	−0.24	−0.237*
% Filipino/Pacific Islander	−0.01429	0.01362	−0.06	−0.096
% Temporary Resident	0.01591	0.00926	0.02	0.070***
% Uninformed Transfer Goal	−0.00543	0.00357	−0.19	−0.099
% Degrees in General Studies or Liberal Arts/Sciences	−0.00275	0.00292	−0.12	−0.069
AP Index	0.04041	0.01259	1.93	0.316*
Miles to CSU	−0.00049	0.00169	−0.01	−0.027
Number of Students	−0.00001	0.00003	−0.02	−0.019
County Population Density	−0.00001	0.00001	−0.01	−0.038
County Unemployment Rate	0.02817	0.00804	0.19	0.187*
% County HS Students Reduced Price Meals	−0.00005	0.00020	−0.002	−0.005
% County HS Students English Learners	0.01600	0.00654	0.25	0.166**

$R^2 = .46$; *$p < .01$; **$p < .05$; ***$p < .10$.

TABLE 3. Model 2: OLS Regression Analysis of 6-Year Student Cohorts Using "Inclusive" Definition of Transfer Rate ($N = 211$)

Variable	B	SE	Elasticity	β
% Less Age 25	0.01575	0.00268	1.10	0.343*
% Female	0.00984	0.00924	0.51	0.092
% African American	−0.00106	0.00280	−0.01	−0.023
% Asian American	0.00715	0.00266	0.07	0.131*
% Latino	−0.00085	0.00253	−0.02	−0.027
% Filipino/Pacific Islander	−0.05334	0.04204	−0.04	−0.056
% Temporary Resident	−0.03448	0.04072	−0.02	−0.052
% Uninformed Transfer Goal	0.00701	0.00199	0.25	0.201*
% Degrees in General Studies or Liberal Arts/Sciences	0.00388	0.00145	0.17	0.124
AP Index	0.03069	0.00756	1.46	0.310*
Miles to CSU	−0.00163	0.00142	−0.05	−0.117
Number of Students	−0.00001	0.00001	−0.02	−0.027
County Population Density	0.00001	0.00001	0.01	0.047**
County Unemployment Rate	0.00711	0.00772	0.05	0.061
% County HS Students Reduced Price Meals	−0.00969	0.00269	−0.29	−0.242***
% County HS Students English Learners	0.00793	0.00542	0.13	0.106

$R^2 = .65$; *$p < .01$; **$p < .05$; ***$p < .10$.

magnitudes of the regression coefficients are not comparable because the units of measurement are different for each explanatory variable. As a means of comparing the strength of the influence of each independent variable on community college transfer rates, we provide both standardized beta coefficients and elasticities for each explanatory variable. Elasticity measures the percentage change in the dependent variable given a 1% change in an explanatory variable. A standardized beta coefficient measures the change in the dependent variable per standard deviation increase in an explanatory variable. We only discuss the calculated elasticities due to their ease of interpretation for policy analysis.

The results of all three analyses indicate that academic preparedness exerts the greatest positive influence on transfer rates; higher levels of academic preparedness among college students lead to higher transfer rates. A 10% increase in the AP index yields a 7.5–19.3% increase in transfer rate (depending on the transfer measure used). The share of students under age 25 exerts nearly as strong a positive influence and confirms, at the institutional level, the results of student-level studies showing that students in this age group are more likely to transfer.

**TABLE 4. Model 3: OLS Regression Analysis of 6-Year Student Cohorts Using
Narrower Definition of Transfer Rate (*N* = 212)**

Variable	*B*	SE	Elasticity	β
% Less Age 25	0.00894	0.00212	0.63	0.271*
% Female	−0.00766	0.00397	−0.43	−0.102***
% African American	−0.00417	0.00212	−0.04	−0.149**
% Asian American	0.00336	0.00183	0.04	0.103***
% Latino	−0.00396	0.00237	−0.09	−0.175***
% Filipino/Pacific Islander	0.00316	0.01667	0.002	0.010
% Temporary Resident	0.04087	0.03953	0.02	0.063
% Uninformed Transfer Goal	−0.00118	0.00120	−0.07	−0.049
% Degrees in General Studies or Liberal Arts/Sciences	0.00179	0.00110	0.08	0.080***
AP Index	0.01565	0.00623	0.75	0.220*
Miles to CSU	−0.00122	0.00093	−0.04	−0.122
Number of Students	0.00003	0.00002	0.06	0.115***
County Population Density	0.00001	0.00001	0.02	0.067**
County Unemployment Rate	0.00112	0.00548	0.008	0.013
% County HS Students Reduced Price Meals	−0.00348	0.00218	−0.10	−0.121
% County HS Students English Learners	0.00011	0.00658	0.002	0.002

R^2 = .57; *p < .01; **p < .05; ***p < .10.

A 10% increase in the share of students under age 25 yields a 6.3–18.2%
increase in transfer rate. A modest positive impact is also exerted in all
three models by the share of Asian-American students in the cohort; a
higher share of Asian Americans in a college tends to increase the college's
transfer rate. A 10% increase in the share of students of Asian descent
results in a 0.4–1.3% increase in transfer rate. As described next, the effects
of the other variables differ somewhat in the three models, demonstrating
the impact of methodological choices about the transfer rate calculation
and the time span over which transfer behavior is observed.

Differences by Time Span

Models 1 and 2 use the same broad definition of "potential transfer
students," but different time spans. We calculated this more "inclusive"
transfer rate for each college as the number of transfers divided by the
total number of students in the cohort. The same explanatory variables are
used in each model. Model 1 measures the impact of the various factors on
transfer rates over a 3-year period. In addition to the effects summarized

above, this model reveals a negative influence on transfer rate related to the share of Latinos in the student cohort; that is, the higher the share of students who are Latino, the lower the college's transfer rate. In Model 1, higher transfer rates are also associated with greater shares of students in a cohort with temporary residency status and with a higher unemployment rate in the surrounding county.

Model 2 looks at the impact of the various factors on the "inclusive" transfer rates over a 6-year period. The negative influence of the share of Latinos in the student cohort is not evident in this model. A negative influence on transfer rate is exerted by the share of high school students in the county eligible for free or reduced-price meals, the variable representing the socioeconomic status of local families. Over a 6-year period, the share of students in the cohort that indicated a goal of transfer has a positive influence on transfer rates, a result not seen over 3 years. Greater population density in the surrounding county, a measure of the "urban" nature of the college's location, is positively related to transfer rates.

Differences by Transfer Rate Definition

The third model also analyzes transfer behavior over a 6-year period and uses the same 1994 and 1995 cohorts of students as in Model 2. However, Model 3 uses as its dependent variable the transfer rate calculation that restricts the pool of "potential transfer students" to those taking at least 12 units of coursework and enrolling in transfer-level math or English. This model reveals negative influences on transfer rates of increasing shares of students in the cohort that are Latino, African American or female. These relationships are not apparent in the 6-year model using the more "inclusive" transfer rate calculation. In addition, the model demonstrates a positive influence on transfer rates related to the share of a college's graduates earning degrees in general studies or liberal arts/sciences. The size of the student population and the population density of the surrounding county also exert positive influences on transfer rate in this model.

DISCUSSION

Previous research has described the important influence of academic preparation, socioeconomic status and comprehensive transfer programs on the transfer rates of community colleges. Researchers have identified several other factors that may have an independent influence on transfer rates, including students' race or ethnicity. We conducted the current

study in an effort to better identify the factors that are important for policy makers and college administrators to consider in monitoring the transfer function of community colleges.

Disparities by Racial/Ethnic Composition

Perhaps the most interesting results of the analyses relate to the disparity in transfer rates according to the racial/ethnic composition of the student body. According to Model 1, colleges with higher percentages of Latino students have lower transfer rates over 3 years, even after controlling for academic preparation and socioeconomic status. Model 2, which estimates the same ''inclusive'' transfer rates as model 1 but over 6-year cohorts instead of 3-year cohorts, only exhibits a disparity in transfer by racial/ethnic composition through the positive influence associated with the share of students who are Asian American. The results of Model 3 indicate that colleges with higher shares of either Latino or African-American students have lower transfer rates. This model also uses a 6-year time frame, but estimates the more restrictive transfer rates that include only students demonstrating ''intent to transfer.'' The finding of disparities in transfer rates by racial/ethnic composition, even when allowing for 6 years and restricting our view to students who demonstrate intent to transfer, makes a stronger case that there are differences associated with race/ethnicity that are important to acknowledge, understand and monitor.

In drawing conclusions and suggesting policy implications from our work, it is important to note again that our analysis involves institution-level rather than student-level data. The observed differences could be related to characteristics of, and resources available to, those racial/ethnic groups or to the policies, practices and environment at the institutions. If there were disparities in transfer rates associated with race/ethnicity at the student-level, as some studies have found, you would expect to find those effects when aggregating the data to the institutional level as we have done. On the other hand, you could find aggregate institutional effects related to the racial/ethnic composition of colleges even if there were no differences at the student level, due to bias or other characteristics of the institutions.

However, we found an average effect of racial/ethnic composition across 108 community colleges, so the institutional bias would have to exist in the majority of the institutions in order to show up as a significant predictor of transfer rates. Regardless of whether our findings relate to characteristics of specific racial/ethnic groups or to institutional factors, the results point to the need for policymakers to focus on poorly performing institutions serving large numbers of Latino and other

underrepresented minority students. The discussion that follows draws on other research to suggest both individual and institutional factors that may contribute to the differences in transfer rates, and to point out some policy implications of those differences.

Since we account for socioeconomic status and academic preparation as determinants of differences in transfer rates, factors other than these are involved in the transfer patterns by racial/ethnic composition. Research demonstrates that persistence and completion rates are higher for students who begin college immediately after high school, enroll full time, and attend continuously than for students with more non-traditional attendance patterns (Berkner, He, Cataldi, and Knepper, 2002). Latino and African American students are more likely to have non-traditional enrollment patterns, including delayed entry, part-time attendance, and periods of "stopping out" or taking time off from college (Fry, 2002, Lee and Frank, 1990). This is particularly true for students who begin their studies in community colleges.

Bourdieu's conceptualization of cultural capital may be useful in understanding the disparities in transfer, we found by racial/ethnic composition. Underrepresented minority students are more likely to be the first in their family to attend college, and may therefore have less access to the knowledge and advice of parents and other family members about the college process in general and transfer in particular (Ceja, 2001, Schwartz, 2001). In addition, the cultural traditions of particular ethnic populations, even when they reflect a positive focus on family and community, could reduce the likelihood of transfer. For example, research suggests that Latino parents place a high value on the education of their children (Arzubiaga, Ceja, and Artiles, 2000; Gandara, 1995; Perez, 1999). At the same time, Latino culture often places more value on the welfare of the family than on individual aspirations, and encourages Latino youth to remain close to home and family (Ginorio and Huston, 2001). The desire or need of Latino students to stay within a particular geographic area and to contribute economically to the welfare of their families may make it more difficult for them to transfer to 4-year universities (Rendon, Justiz, and Resta, 1988), which may not be located nearby or may not offer programs with flexible class schedules. A recent study on the educational outcomes of Latino students found that, while Latinos enroll in some form of postsecondary education at rates similar to other students, they are less likely to persist through the baccalaureate (Fry, 2002). This research suggests that it is precisely the lower rate of transfer that is impeding success.

In order to encourage and support underrepresented minority students in attaining the baccalaureate, state and institutional policies may need to

be modified to respect and accommodate the cultures of these communities, focusing on the many students who are already enrolling in postsecondary education but who are not transferring and persisting through graduation. As one option, cooperative agreements between community colleges and 4-year institutions could make upper division courses available on community college campuses. Supportive services targeted at underrepresented community college students may be useful for overcoming deficits in cultural capital by providing information on transfer options and requirements as well as on financial aid opportunities to assist students in advancing to a 4-year university. A number of community colleges have programs offering mentoring, academic and career counseling, and peer support to increase the retention, graduation and transfer rates of underrepresented students. Some institutional research suggests that these programs are effective (see, for example, Kangas, 1994), but no comprehensive review of the programs has been conducted.

Furthermore, our results suggest that McDonough's notion of organizational habitus could help illuminate the disparity among racial/ethnic populations in transfer. The organizational culture within colleges and universities could introduce barriers ranging from blatant discrimination to subtle messages that dissuade students of color from the successful pursuit of a transfer program (Nevarez, 2001; Solorzano, Ceja, and Yosso, 2001). Research suggests that having an effective "transfer culture" in a community college is important to facilitate students' pursuit of the baccalaureate, particularly for low-income and underrepresented students (Shaw and London, 2001). There is a need, however, to document the specific components of a successful "transfer culture" and to disseminate that information to community college leaders. In addition, state policy on the division of responsibility among the different segments of higher education and on the location of college and university campuses, along with community college decisions on which of their missions to emphasize, could make effective transfer programs more or less available to particular segments of the population.

States should also examine their financial aid policies for their potential to increase transfer among underrepresented students. For example, low income students at California's community colleges can obtain fee waivers, but few resources are available to help them with living expenses. Recent state legislation made Cal Grants an entitlement for every income-eligible student meeting the minimum academic requirements. However, the entitlement is only available to recent high school graduates, and excludes older, non-traditional students who must compete for a limited number of Cal Grants allocated specifically for this

group of students. Research has demonstrated that both Latino and African American students more often delay college attendance and attend part-time, so that their attendance stretches beyond the traditional college age of 18–24 (Fry, 2002). The restriction of Cal Grant entitlements for community college transfer students to those under age 24 may miss the opportunity to use state financial aid policy to increase transfer among underrepresented students. Other states likely have similar policies regarding the type of and requirements for financial aid that could either hinder or improve the transfer success of underrepresented students.

Clearly, further research into cultural and economic issues attendant to college attendance for African Americans and Latinos could help policy makers and college administrators craft effective solutions to minimize racial/ethnic disparities in transfer. Underrepresented students in general, and Latino students in particular, are increasingly dominant in the educational systems of several states. Considering the large and growing Latino population in states like California, New York, Texas and Florida, it is critical to acknowledge and understand any barriers to higher education faced by these students, and to find effective ways to support the educational goals of Latino students and their families.

Other Factors Affecting Transfer Rates

The results of our regression analyses confirm other research indicating that colleges with younger student populations have higher transfer rates, reflecting the lesser likelihood of transfer for older, non-traditional students who are likely to have significant work and family responsibilities. This result emphasizes the importance of designing programs and supportive services that accommodate the special needs of older students seeking to transfer, both within community colleges and in the senior institutions, as community college transfer represents the primary means of access to undergraduate education for older students.

The results of Model 3 also show that, on average, colleges with higher shares of female students have lower rates of transfer. Other researchers have also found this gender effect in examining transfer rates (Grubb, 1991). While some recent press reports have suggested that the gender gap in college attendance has disappeared, pointing out that women outnumber men on many university campuses (for example, see Garofoli, 2002), our results indicate that there may still be reason for concern about the transfer success of women beginning their studies in community colleges. The circumstances that can impede baccalaureate

attainment for any community college student (i.e., part-time attendance, lack of financial resources, work/family obligations, etc.) may affect female students even more strongly than males. For example, recent research by the U.S. Department of Education demonstrated that female undergraduates are more likely than their male counterparts to have children under their care, one risk factor for failing to persist through the baccalaureate (Horn, Peter, and Rooney, 2002). Alternatively, the organizational culture, specific practices or services provided within community colleges may not provide sufficient support for female students seeking to transfer.

As expected, the results of Model 3 demonstrate that colleges that produce a greater share of graduates in general studies or liberal arts/sciences have higher rates of transferring students to 4-year institutions. This may reflect a greater emphasis by these colleges on the transfer mission, and/or a greater ability to attract students with serious transfer intentions. It may indicate that colleges placing significant effort and resources into alternative missions such as vocational education and economic development have more difficulty achieving high transfer rates. Additional research is warranted into the potential conflicts among the many missions of community colleges, and the impact of those conflicts on the colleges' ability to maintain a strong transfer function.

The models developed in this report primarily include variables considered exogenous to the colleges; that is, factors over which the colleges have little or no control but which can affect the success of their transfer function. The models do not include any measures of the efforts colleges are making specific to the transfer function. Examples of such measures might include the amount of resources invested in transfer efforts, whether or not a college has a dedicated transfer center, the number of hours the center is open to provide services to students, and the degree to which promoting transfer is seen as a campus-wide responsibility. If available, college-level data on these issues could be included in a model to help identify effective transfer efforts; this approach could be particularly useful if the research included some follow-up qualitative analysis to better describe the more successful transfer programs.

The variables included in our model explained approximately half of the variance in community college transfer rates. That suggests that there is a significant impact of community college policies and practices on the rate at which their students transfer to 4-year universities. This is a hopeful thought. If the characteristics of successful institutional practices can be systematically identified and shared, considerable improvements in transfer outcomes should be forthcoming.

Defining Transfer Rates

Our results suggest that the more restrictive method of calculating and monitoring transfer rates may be more valuable from a policy perspective. While using the more "inclusive" method of considering all students as "potential transfer students" may best reflect the mission of community colleges to offer broad access to higher education, it may mask the effect of certain factors on transfer and thus obscure some problems with our educational system. Using the more "inclusive" transfer rate, we found no disparity in rates by gender, and found no differences in transfer rate for colleges with a high share of African American students. In addition, while the method revealed lower transfer rates over a 3-year period for colleges with large numbers of Latino students, those differences did not show up when examining the "inclusive" rate over 6 years. Including all students in the "base," even those who attend for brief periods for specific purposes unrelated to transfer, may make it more difficult for the analysis to pick up the effects of certain factors on transfer rates. While it could still be debated how best to define "intent" and which students to include, our results suggest that, in determining the factors affecting transfer and in monitoring the transfer function of community colleges, including all students in the transfer rate calculation obscures important information. Our results also suggest that 6 years is a more appropriate time span over which to observe transfer outcomes; the factors included in the models explain a larger share of the variance in transfer rates using the longer time span.

SUMMARY

This research helps to identify student, college and community factors that influence transfer success in community colleges. Among other findings, our results indicate that there are disparities in transfer related to the racial/ethnic composition of the student body. Holding constant other factors expected to influence community college transfer rates, we find that institutions with higher percentages of either Latino or African American students have lower 6-year transfer rates, while colleges that have a larger percentage of Asian American students have higher transfer rates. The findings demonstrate racial/ethnic disparities in transfer success even among students most likely to transfer, and after accounting for academic preparation and socioeconomic status. It is important to acknowledge, understand and monitor these disparities. It is particularly essential to identify and study successful efforts to increase transfer among Latino students, as they represent a large and growing share of the population in

many institutions. In order to preserve access to higher education, ensure educational equity, and produce the educated workforce essential to the nation's economic future, community colleges need better information and better tools to enhance transfer opportunities for all students.

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