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Tracking Community College Transfers Using National Student Clearinghouse Data

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Abstract

Accurate measures of transfer are important to the assessment of community college outcomes. This article uses a relatively new database from the National Student Clearinghouse to assess transfer rates at the State University of New York community colleges. Past studies only tracked students within the public sector of a given state. Once transfers to out-of-state and private college are considered, the results of this study indicate that we may be underestimating the transfer rate by as much as 25%.

One of the central roles for the community college is to provide a low cost, accessible education for students working toward a bachelor's degree. The success in fulfilling this mission is a subject of some debate. (See Dougherty, 1994 and Pascarella, 1999 for a review of this issue.) Vital to this debate, however, is the ability to accurately measure the rate of transfer from two-year to four-year colleges. The current study uses a relatively new national database from the National Student Clearinghouse (NSC) that will assist in this process.

Transfer may be viewed from the perspective of a single college, a single state or the nation as a whole. Much of the research on the transfer question comes from single institution studies. These studies often rely on student surveys or, occasionally, on the records of selected four-year transfer institutions. (As examples, see Conklin, 1995; Glass & Bunn, 1998; Broome, 2000.) The surveys used in these studies usually have low response rates and are not based on actual registration data at the transfer institution. As such, they do not provide a very reliable transfer record and rarely track more than a handful of students moving across state borders. Nevertheless, these studies do provide some insight, albeit incomplete, into institutional performance and are often incorporated into campus-based program assessment and accreditation reports.

Results improve greatly when public institutions do statewide studies of transfers. Wellman (2002, p.15) reports that 33 states now do transfer rates reports using actual registration data stored in a central data bank, which covers the entire public higher education system. (Windham, 1999; New Mexico, 1999; New York, 2000 are typical examples.) These reports are largely descriptive but occasionally scholars use them to do a more powerful analysis of community college transfers. (See Ehrenberg & Smith, 2002, for a recent example done for New York State.) The shortcoming of these statewide databases is that there often is very limited demographic and enrollment information on students from individual campuses and they can only track students within the public university system of a given state. Transfers to private colleges and to those located outside the state escape measurement.

From a national policy perspective, however, both institution and state-specific studies are of less value than studies that track students longitudinally on a national level. Studies done using U.S. Department of Education (DOE) data sets, such as the High School and Beyond, have "much to say about the impact of transfer and multiple institution attendance on academic achievement" (Kozeracki, 2001, p. 63). Moving beyond the institution and the state level is critical because students in U.S. postsecondary institutions are increasingly mobile. A recent study by the National Center for Education Statistics (NCES)

reported that the students who started "their postsecondary education in the academic year 1989-90, … 45% had enrolled as undergraduates at more than one institution by 1994" (McCormick, 1997, p. 3). According to Clifford Adelman, a senior research analyst at DOE, this number is probably up to 60% by now with 40% of students crossing state lines (Adelman, 1999, vii-viii, and personal correspondence with authors 2/19/02). If we use the numbers provided by Adelman we can say that, on average, approximately 24% of any recent fall cohort of students would transfer to an out-of-state college. This high degree of student mobility makes it imperative that transfer behavior be tracked on a national level, not only for four-year but also for two-year colleges if we are to calculate the correct transfer rate. However, as valuable as the existing national databases from NCES are, these are based on a small sample of students in the U.S. and do not allow a single college to track its own transfers throughout the higher education system.

The current study shows how colleges can track almost all of their own students who transfer into both public and private colleges and across state lines using the NSC database. While the data has its own limitations, it is an improvement from existing methods for tracking transfers from two-year to four-year colleges in the U.S. When it is linked to state and institutional data, it can provide a powerful tool for understanding the nature of the transfer process. For purposes of illustration, the transfer records of two upstate New York community colleges are examined using such a linked database.

What Do We Know about Transfer Rates?

At first glance, calculating a transfer rate would appear to be simply a matter of looking at the percentage of students who start at the community college and transfer to four-year colleges. However, in calculating such a rate, the definitions that scholars use for the numerator and the denominator vary greatly and therefore affect the comparability of their findings. No national consensus on the definition of a community college transfer student exists, although the one proposed by Arthur Cohen at UCLA has gained some recognition. Working with money from DOE and the Ford Foundation, Cohen has mounted a national effort to produce a uniform measure of the transfer rate (Cohen, 1991). According to Cohen, a transfer rate can be most validly calculated by including in it only students who are beginning their postsecondary studies in a community college and who stay long enough to complete at least four courses (12 credits). More specifically, the transfer rate can be defined as:

> all students entering the two-year college in a given year who have no prior college experience and who complete at least twelve college credit units [we will refer to this group as the Cohen cohort], divided into the number of that group who take one or more classes at a university within four years (Cohen, 1991, p. 3).

Ideally, Cohen's definition would measure all of the transfers in the cohort to any college in the country. Because, until recently, no national database existed which would allow a single college to track its own students, Cohen's definition has only been used for public institutions within a state. For all practical purposes, the numerator in his definition becomes "the number of that group who take one or more classes at an in-state public university within four years" (Cohen, 1996, p. 26). Again, students transferring to private colleges and to colleges across state borders are missed.

In a recent review of the transfer literature, Palmer reports that, according to Cohen's in-state definition, the transfer rate of the community colleges in a 13 state sample averaged "22% for first-time students entering community colleges in 1990… [although] the …statewide transfer rates ranged from 11% to 40%" (Palmer, 2000, p. 10). Using a similar definition of a transfer student and a national database, Adelman found that 26% of students who started at the community college and accumulated at least 10 credits had transferred to a four-year institution and that their bachelor's degree completion rate was more than 70% (Adelman, 1999. viii). In summary, studies show that when we start with students who began at the community college and accumulated about a semester worth of credits, we get a transfer rate of somewhere in the mid-20% range.

However, looking beyond the definition of transfer proposed by Cohen, one can imagine a range of alternate possibilities. From the two-year college perspective, a liberal definition of transfer might count any student who had ever taken a single credit course and moved on to a four-year college as a transfer. Or, using a more restrictive definition, one could count only community college graduates of a given year as possible transfers. Alternatively, colleges might calculate a transfer rate based only on students who indicated that transfer was their intention when they entered the community college. In fact many community colleges seem to prefer restricting the transfer data to the latter category, because a large number of students nationally do not enter the two-year college with the intention of transferring. As Palmer reports, one study for Illinois showed a 22% transfer rate for all students but a 34% rate for students enrolled in transfer programs who declared upon entry that they intended to transfer (Palmer, 2000, p. 11). In another study using a national sample of community college entrants, of those who indicated an intention to complete a bachelor's degree or higher, 36% had transferred to a four-year college within five years (Bradburn and Hurst

2001). (On the importance of intentions to transfer, also see Leigh and Gill, 2002.)

Just as there is a wide range of definitions of a transfer student from the perspective of the sending institutions, an equally wide range of possibilities exists from the perspective of the receiving institutions. If colleges count any student who comes in with community college credit as a transfer student, we will get a higher transfer rate than if we define transfer more narrowly. Using the broad definition, according to Cohen, statewide studies show that "30 to 60 percent of people obtaining a baccalaureate degree from public universities have some community college courses on their record" (Cohen, 1996, p. 60). The fact is that, with undergraduate student mobility increasing in the U.S. (Kane, 1999, p. 77) many researchers do not even like talking about the transfer process as linear, that is going directly from a two-year college to a four-year college. Rather, they talk about the "swirl" of students in higher education as they move in and out of a variety of institutions before receiving a degree (Adelman, 1999; Palmer, 2000; Townsend, 2000).

Thus, we find that we have almost as many definitions of transfer as we have studies of the process. In fact, the definition used by any particular study is most likely dictated by the data available, and because that varies widely, so does the definition used by the researcher. This study is no exception to that rule. Our database has limitations that dictate how we define a transfer student. However, we experiment with a variety of definitions, using different cohorts, as a means of exploring the range of research options when local and state data is merged with that from the NSC.

National Student Clearinghouse Data

The NSC was created in 1993 as a means to confirm the enrollment status of financial aid recipients. The electronic registry now includes 2,700 colleges and universities and claims to cover 91% of U.S. college enrollments. Membership in NSC is open to any postsecondary institution that participates in the Federal Title IV program (financial aid). Most recently the NSC database was expanded to include information on credentials and is used for degree and enrollment verification for third party requesters, such as employers, health insurers, or background screening firms. Participating colleges provide NSC with regular updates on all students enrolled in credit courses, not just students on financial aid. Colleges are not charged for submitting data to NSC, but they are charged for services such as the matching of records that we have done in this study.

Although not designed for the purpose of tracking transfer students, we have found that NSC is a useful and accurate way of following students as they move from one institution to another. Its major limitation is that, at the present time, the information available in the core database can only be used to verify a student's enrollment and little else. However, the NSC is in the process of collecting information on degrees received. Once completed this will be helpful in verifying whether community college transfers actually get a bachelor's degree. At the present time, however, only 210 U.S. colleges in our data sample provided degree information. Fortunately, the SUNY database does provide degree information on transfer students within the system. We have linked the NSC file with those of SUNY to provide a more complete picture of bachelor's degrees awarded but this still leaves out most of the privates and the out-of-state transfers. That means that a query on degrees received will understate the actual number received by our transfer students. Because of these limitations, we have not analyzed the data on degrees awarded in this study. The limited amount of information we have for the SUNY system is given in Table 5. However, the number of colleges reporting this information to NSC is increasing very rapidly and at some point in the near future this will be a valuable tool for verifying degrees received.

SUNY, Broome and Cayuga Community College

Higher education in New York is more heavily privatized than it is in most other states. Private four-year colleges enroll about 36% of all undergraduates in the state, with public four-year colleges enrolling 32% and community colleges 29%. The state has two community college systems - one serving New York City (CUNY) and the other (SUNY) serving the rest of the state (National Center for Public Policy and Higher Education, 2000).

The SUNY system advertises itself as the largest integrated public university system in the U.S., with 64 campuses (of which 30 are community colleges) and 370,000 students (of which 200,000 are at the community colleges). The system has a central administration located in Albany, NY, with a University Board and Chancellor who control educational policy and procedures. After examining the data collection in several states, one researcher reported that SUNY had an excellent database showing students who transferred from two-year to four-year colleges both with and without an associate degree (Wellman, 2002, p. 30).

Broome Community College (BCC) is a two-year unit within the SUNY system, located in Binghamton, NY, about 200 miles from New York City. The college has one campus with approximately 4,100 full-time and 2,400 part-time credit students (4,800 FTE's in fall 2002). At BCC, 86% of the student population is white and, of the 865 degrees awarded in the year 2000, 53% of them were Associate in Applied Science (AAS) degrees. The AAS is supposedly designed as a non-transfer degree. The remaining 47% were Associate in Arts (AA), and Associate in Science (AS) degrees, which are advertised as transfer degrees.

Binghamton University, another unit of the SUNY system with a full menu of graduate programs, is located in the same city as BCC. It is consistently ranked by *U.S. New & World Report* and similar rating services as the most selective within the SUNY system and one of the best buys in the nation. Two other four-year units of the SUNY system (SUNY-Cortland and SUNY-Oneonta) are located within 50 miles of BCC and have less selective admission standards. As might be expected, Binghamton, Cortland and Oneonta are the major transfer colleges used by BCC students. The closest private college is Cornell University, an ivy league college located 50 miles away. Because Binghamton is on the southern border of the state, only five miles from Pennsylvania the public and private colleges in Pennsylvania recruit both high school and community college transfers quite heavily.

Cayuga Community College (CCC) is a two-year unit within the SUNY system located in the middle of the state. The college has its main campus in Auburn, N.Y. with an extension site 30 miles away. At CCC, 95% of the student population is white and of the 403 degrees awarded in the year 2000, 44% were AAS degrees and 56% were AA or AS degrees. For the Fall 2002, the college had 1,775 full-time and 1,313 part-time credit students with an FTE count of 2,134. This is about half the size of BCC, although at CCC, part-time students make up a greater percentage of enrollments than they do at BCC. Under normal circumstances, we would expect that the higher percentage of part-time students would reduce the transfer rate for any given cohort, other things being equal.

The main campus is just 25 miles from Syracuse, the home of two good-size private colleges. One is a locally popular Catholic university and the other is Syracuse University, one of the major private institutions in the state. Syracuse University is a high-profile university with nationally ranked sports teams, supposedly a major attraction for young students including transfers from CCC. Two of the SUNY four-year colleges, SUNY-Cortland and SUNY-Oswego are within 50 miles of CCC, and, as might be expected these are the major transfer colleges for CCC students. Another larger SUNY community college is within 20 miles of the main campus and two others are within 35 miles. The closest state border, Pennsylvania, is about 100 miles away. By reason of its location, other things being equal, we would expect CCC to have a higher transfer rate to private colleges than BCC does, but a lower out-of-state transfer rate.

Another noticeable difference between BCC and CCC is that CCC has a smaller number of degree programs, particularly in technical and occupational areas. For instance, BCC has 13 health science (AAS) programs as opposed to just one (nursing) at CCC. If degrees awarded are used as a proxy for program enrollment, then, with a greater emphasis on transfer programs, AA or AS degrees, CCC should have a higher overall transfer rate than does BCC, other things being equal. Also, with a more limited choice of programs and a much larger community college located within 20 miles of the main campus, we might expect CCC to have a higher transfer rate to two-year colleges than does BCC.

Data Sets Used in This Study

This study utilizes information from three sources—the student information systems of BCC and CCC (referred to below as the local extract), the SUNY central database and the NSC database.

Colleges wishing to track the transfer records of their students send a local extract file to the NSC that contains, at minimum, a student's name and date of birth. The local extract file used for this study also contained fields for: the student's Social Security number; date for 12 semesters that the student might have been enrolled at the community college; whether the initial enrollment was as a first-time or transfer student; whether the student was an educational opportunity (EOP) or remedial admit; a curriculum program code; degrees awarded and year; field of degree; ethnicity; gender; and credits completed at the community college. Our extract files contained records for both matriculated and non-matriculated students in credit courses. The inclusion of non-degree seeking students created a few data anomalies that have not affected our results significantly. These will be pointed out later. Once the local extract is complete, it is electronically sent to NSC and matched against all of its student records. The merged file is then sent back to the college for analysis. In order to comply with the Family Educational Rights and Privacy Act (FERPA) regulations, the NSC does not use student Social Security numbers to match student records but only the name and birth date. The NSC claims that its method is highly accurate.

Data from the local extract and the NSC was then linked with data obtained from the SUNY system. SUNY data provides more information on each student than NSC. It includes degrees received and grade point averages for each transfer student at each campus within the system for every semester enrolled. But, the SUNY Student Data File (SDF) only captures student registrations at a census date that is at the end of the third week of classes. Students withdrawing prior to the census date are not included in the data set nor are students registering after the SDF is submitted by each college. The NSC system is designed to capture all registrants for financial aid purposes. The NSC files are submitted three times each semester, at the beginning, middle and end of the semester. This provides for a more complete enrollment record than a census date-based system. However, the NSC system is not without its drawbacks. Institutions and students submitting data to NSC may request to have their records blocked from the

view of other institutions doing enrollment follow up studies. Records may be blocked for other reasons as well. The runs done for this study show that 5% of the transfer records were blocked for both Cayuga and Broome. The NSC data tells us where the students transferred and why the record was blocked but does not include that students' file in the data set. We could not include the blocked students in our analysis because they could not be categorized according to race, gender, etc. But because we do have the number of blocked students who transferred we know that the transfer rates in this study will be underestimated by at least 5% for each college.

The analysis below uses the combined data sets just described. While the focus is on two community colleges within the SUNY system, comparisons with all of the 30 community colleges within the system are included where appropriate. The only other study we are aware of using the NSC data is for a single college in Maryland (Boughan 2001).

Data Analysis

From the discussion above and our survey of the literature, several research questions have emerged. These are:

- Just how powerful is the NSC system as a tool for tracking community college transfers?
- Are community college students as mobile as the undergraduates reported on in earlier studies done by the DOE (Adelman, et al.)?
- What are the transfer rates to private and out-of-state colleges?
- Does location seem to affect transfer to out-of-state and /or private colleges?
- Does program mix seem to affect transfer rates?
- What are the transfer rates of the Cohen cohort once private and out-of-state colleges are counted?
- Are graduates more likely to transfer than non-graduates?
- Do students in non-transfer programs (AAS) transfer at the same rate as students in designated transfer programs (AA, AS)?

We begin to address the first question in Table 1. Here we have presented the most inclusive numbers on transfers to be found in this study and have separated them into those found by the SUNY tracking system and those found by the NSC tracking system.

In Table 1 the cohort used was all new students who entered both BCC and CCC in the fall semester of the selected years. New students include first-time and transfer students enrolled in credit courses. Continuing students are not included because they would have entered in an earlier year and would be included in another cohort. The total number of students includes both males and females who entered either full-time or part-time.

The data for both BCC and CCC indicates that use of the NSC system more than doubles the number of transfers that are found by using the SUNY transfer tracking system. The high numbers of transfers found by the NSC system does not indicate that students are transferring out of the SUNY system or to private colleges. In fact, many of students located by the NSC system are transfers within SUNY that were not captured by the SUNY tracking system for the reasons noted earlier (mainly because SUNY uses a census date and NSC does not). Thus, because the NSC system contains different parameters than the SUNY system, it provides a double check on the number of students transferring without duplicating any of the counts. As a result we can conclude that the NSC system is a powerful tool for tracking community college transfers.

The apparent decline in the transfer rates, shown in Table 1, from 1996 to 2000 may not be real. If we

Table 1
Tracking Transfers with SUNY and NSC Systems — New Students (first-time and transfer) in Fall Semester for Selected Years— Broome and Cayuga CC, Status as of Spring 2001

Year	Number of BCC Students	SUNY Tracking BCC	SUNY plus NSC/BCC	Tran. Rate % *	Number of CCC students	SUNY Tracking CCC	SUNY plus NSC/CCC	Tran. Rate % *
1996	1527	281	566	37.1	1087	237	496	45.6
1997	1616	302	572	35.4	1042	255	537	51.5
1998	1737	275	558	32.1	1147	254	531	46.3
1999	1718	217	512	29.8	1154	219	488	42.3
2000	1637	121	373	22.8	1028	98	261	25.4

*Note: As we go back in time from the end date of Spring 2001 we might expect the transfer rate to rise because students have more time to transfer.

calculate a transfer rate as the percentage of all new students who transfer before or after graduation from the community college to any two- or four-year college in the U.S. then we would generally expect to find a higher transfer rate the further back in time we go. Thus, for the BCC Fall 1996 cohort, 37.1% had transferred by the Spring 2001 semester but for the Fall 2000 cohort only 22.8% had transferred. A similar pattern can be seen with the CCC data. With our fixed end date of Spring 2001, using a cohort after 1997 will not give us very useful numbers, because the students who enter the community college will not have had enough time to graduate and/or transfer. For this reason the cohorts used for the rest of this study will be either 1996 or 1997.

Table 2 provides a more detailed breakdown of the students included in Table 1 for the Fall 1997 entering cohort.

For BCC the most notable thing about the percentages above is how similar they are with transfer rates in the mid-30% range for most groups. The two results that stand out are: first, more non-graduates (362) transfer than graduates (210), although the percentages of graduates who transfer is much higher (48.7% vs 30.6%); and second, students who stay at the community college for at least 12 credits are more likely to transfer.

For CCC the transfer rates of the cohorts are very consistent, around the 50% range. Like BCC, more students transfer without a degree than with one, although the transfer rate of the latter group is higher. Most notable by comparison, however, is the fact that the CCC transfer rates are about 15% higher than those at BCC. We will attempt to explain why this might be so as we proceed.

Transfer and Non-Transfer Programs

Some research has suggested that students graduating from non-transfer programs (AAS in this study) at the community college may be "transferring in equal or even greater numbers than students with the traditional transfer degrees" (Townsend, 2001, p. 66). The answer to this question depends on how you define both the cohort you start with and the transfer rate. The SUNY system uses a first-time, full-time cohort for its analysis and counts transfers as any registration at a SUNY two- or four-year college (see Dellow and Romano, 2002, for a critique of

Table 2
Transfer Rates of New Students (first-time & transfer) for Selected Cohorts Fall 1997, BCC and CCC, as of Spring 2001

	Broome Community College			Cayuga Community College		
New Students	Cohort	Transfers	Percent	Cohort	Transfers	Percent
All students	1616	572	35.4	1042	537	51.5
Males	789	280	35.5	498	265	53.2
Females	827	293	35.4	544	272	50.0
Whites*	770	290	37.7	976	503	51.5
Blacks*	42	13	31.0	38	20	52.6
Hispanics*	13	4	30.8	13	7	53.8
Graduates	431	210	48.7	226	141	62.4
Non-Graduates	1185	362	30.6	816	396	48.5
12+ Credits	1442	523	36.3	558	298	53.4
Less than 12 Credits	174	49	28.2	484	239	49.4

*Includes only students who checked this ethnic category at admission. This information is optional and when students do not check a specific category they are counted as unknown. The ethnic breakdown of BCC students in this study is: White (770); Black/African American (42); Hispanic (13); Asian/ Pacific Islander (0); Native American Indian/Eskimo (30); Unknown (761) = 1616. Previous studies of the entire student population at BCC indicates that 86% are white while the local population is 95% white (Romano, 2001). Cayuga has a more accurate way of counting ethnic categories which reduces the unknowns significantly. For CCC the student population is 95% white; 2% black; 0.5% Hispanic; 2.0% other and only 0.5% unknown. BCC has a somewhat more diverse student population than CCC.

Table 3
Transfer Rates for Transfer Programs, Non-Transfer Programs, and Students without a Degree — First-Time, Full-Time Students Initially Enrolled in Fall 1997, Status as of Fall 2001

State University of New York Community Colleges (cc's)	Fall 1997 First Time Full Time Cohort	Graduates with AA/AS Degree Who Transferred		Graduates with AAS/AOS Degree Who Transferred		Graduated Cohort Who Transferred			Non Graduated Students Who Transferred		Total Cohort Transferred	
		#	%	#	%	#	%		#	%	#	%
All SUNY cc's	28,460	3,463	12.2%	998	3.5%	4,461	15.7%		4,004	14.1%	8,465	29.7%
College with highest rate	709	102	14.5%	71	10.1%	173	24.4%		158	22.4%	331	46.7%
College with lowest rate*	2,914	184	6.3%	58	2.0%	242	8.3%		221	7.6%	463	15.9%
BCC	1,015	125	12.4%	32	3.2%	157	15.5%		151	15.0%	308	30.3%
CCC	386	63	16.6%	20	5.2%	83	21.5%		74	19.4%	157	40.7%

* Data for highest and lowest college includes only the 24, out of 30 colleges, that had full transfer data available from both the SUNY and the NSC databases.
+ The Associate in Occupational Studies (AOS) degree does not require any general education courses and is offered by several SUNY colleges but not by either BCC or CCC.

the appropriateness of this cohort for the community college). This is different from the Cohen definition that we have discussed above but it is our only point of reference if we want to compare BCC and CCC with other community colleges within the SUNY system. Table 3 shows the results.

The data above reads as follows: All of the 30 community colleges had 28,460 new first-time, full-time students enroll in the Fall 1997 semester. By Fall 2001, 12.2% of that cohort had graduated with either an AA or an AS degree and had transferred. The total of that entering cohort who had transferred as of Fall 2001 was 29.7% (12.2+ 3.5+ 14.1). Measured in this way, contributions to the transfer rate are higher for graduates of the programs designed for transfer (AA/AS) than for graduates of the programs not designed for transfer (AAS/AOS). Although the rates shown in Table 3 vary widely at different colleges, all of the 24 colleges represented showed this same pattern. This does not mean that students do not transfer before they graduate. The data in Table 3 shows that they do and Table 2 indicates that when we include part-time students in the cohort, an even greater number of students transfer without a degree than with a degree.

Table 4
Selected BCC & CCC Transfer Rates – First-time Cohort Entering Fall 1997, Status as of Fall 2001

	BCC Transfer Rate (N = 1437)	BCC % Transfers (N = 520)	CCC Transfer Rate (N =436)	CCC % Transfers (N = 234)
All Transfers	36.2%	100%	53.7%	100%
To 2-year colleges	6.4%	17.5%	12.4%	23.1%
***To 4-year colleges**	30.0%	82.5%	40.8%	76.1%
In-state public	23.2%	77.4%	25.3%	50.0%
In-state private	2.0%	6.6%	9.6%	18.0%
Out-state public	3.3%	11.0%	2.3%	4.3%
Out-state private	1.7%	5.4%	2.1%	3.9%

*Cohen cohort - first-time (full- and part-time) students who started in Fall 1997 and completed 12 or more credits (at BCC n=1437; at CCC n=436) divided into the number of that group who take one or more classes at a four-year college within four years (by Fall 2001)

Transfers to Four-Year Colleges

Because a major emphasis in this study is to focus on the transfer of students from two- to four-year colleges, it is important to subtract the two-year transfers from the data found in Tables 1, 2 and 3. We can then begin to calculate the transfer rate of the Cohen cohort. The 1997 cohort of first-time students is used in Table 4 because that cohort will show us the transfers within a four-year period, as the Cohen definition requires.

BCC Transfer Rates

As Table 4 shows, for BCC 17.5% of the transfers were to community colleges. While all of these transfers were non-graduates, this is still more than we would have expected because the closest community college is 50 miles away and not an easy daily commute.

This table also shows the transfer rate of the Cohen cohort. The definition of a transfer rate, as proposed by Cohen and widely used by researchers, produces an average national transfer rate of somewhere in the mid-20% range for first-time students transferring to in-state public colleges within a four-year period. The BCC rate for this cohort is about the same as the national average, at 23.2% going to in-state public colleges. But, as pointed out previously, statewide studies do not count the in-state private or the out-of-state public and private transfers, and a true Cohen transfer rate cannot be calculated without including these figures. Using the NSC database, we find that 23% of the BCC transfers went to colleges in these three categories. By including private and out-of-state colleges we have raised the transfer rate of the Cohen cohort from the mid-20% range to about 30%. If the BCC experience can be generalized to the national average, then we have been underestimating the community college transfer rate by about 25%.

From Table 4 we can also see that, of the BCC students transferring to four-year colleges, only 12% went to private colleges, either in or out-of-state, and 16.4% went across state borders to either private or public colleges. Data from DOE, previously cited, indicates that

perhaps 40% of undergraduates transfers cross state lines (Adelman, 1999). The community college students in this study are far less mobile than the four-year college students reported by Adelman.

For students in this study, the most popular state for transfer for the Fall 1996-2000 cohorts was New York, which captured 84% of the BCC transfers. The second most popular state was Pennsylvania, with 213 (4.5%) of the transfers. The popularity of Pennsylvania as a transfer site can probably be explained by the proximity of BCC to the Pennsylvania border. Students were either returning home (less than 2% of colleges enrollments are from Pennsylvania) or were recruited away from New York by a nearby college. Beyond this, a small but interesting share of both the two-year and the four-year out-of-state transfers were to colleges in North Carolina. Of the students who transferred from BCC between 1996 and 2001, 1.5 % went to colleges in that state. Most of them went to the Raleigh/Durham area where the largest IBM facility in the U.S. is located. At one time, IBM was the largest employer in the area surrounding BCC, and probably the migration to North Carolina is because of students following their parents. Because of corporate downsizing and relocations in the computer industry during the 1990s, the population of the BCC service area declined by about 5%, and the FTE count at the college went down from a high of 4,980 in 1992-93 to a low of 3,979 in 1997-98. It is clear from this data that most or all of the transfers to North Carolina colleges were not voluntary and therefore may not carry the same policy implications as other more voluntary transfers. This also indicates that any comparison of transfer rates between institutions must somehow consider the impact of significant changes in local labor market conditions in the period being studied.

The data for BCC has a few anomalies, none of which are considered to affect the results of this study by more than one percent in either direction. The most important of these are the presence of 100-150 international students who graduate and transfer at high rates but who are difficult to track because they do not have a Social Security or student ID number which is consistent from one institution to another. These students are excluded from our data. Broome Community College also sends 200 students a year to study abroad and most of these are visiting students who accumulate a semester's worth of credit that they transfer back to their home campuses. These are non-matriculated students at BCC but are included in our data. The biases of these two groups almost offset each other and thus do not affect the results presented in this study in any material way. The same cannot be said for the data anomalies found at CCC.

Cayuga Community College Transfer Rates

From Table 4 we can see that the percentage of transfers from CCC going to community colleges was 23.1% vs. 17.5% for BCC. This is probably because of the more limited variety of programs at CCC and the close proximity of another community college to CCC. However, at the present time we have no way of testing this hypothesis beyond this logic.

Table 4 also shows that 26.2% of CCC's transfers go to private or out-of-state public colleges. This is higher than the BCC rate, and is a contributing factor in raising the transfer rate of the Cohen cohort to 40.8%. Looking at this in more detail we find that the percentage of students leaving the state is higher at BCC (16.4%) than at CCC (8.2%). We speculate that the percentage of students at CCC who leave the state and go to either public (4.3%) or private (3.9%) colleges is because of CCC's location in the middle of the state. Most students transfer to colleges close to their home, and thus the transfers at CCC are even less mobile across state borders than those at BCC. As far as transfer to in-state private colleges, CCC has a higher percentage of its transfers going to these colleges (18%) than does BCC (6.6%). Again we speculate that this is because of the fact that more private colleges are within easy reach of CCC. These intuitive results lend support to previous research that shows that geography has a lot to do with the nature of college enrollments (Tinto 1985, Card 1995). The data for CCC would suggest that perhaps the transfer rate for the Cohen cohort has been underestimated by more than 60% (40.8% vs. 25%). However, the CCC transfer rates overall appear to be significantly above the national average and probably can't be generalized to the nation.

The data anomalies are more significant for CCC than for BCC and may raise the transfer rates reported for CCC by as much as 5%. The major problem is the relatively large number of non-matriculated early admission high school students (400-500) who attend CCC on a part-time basis. These students are high achievers with probably a 90% college entrance rate. Some may even accumulate 12 or more credits before graduating from high school and will thus be qualified to be included in the Cohen cohort. Although they may never step foot on the CCC campus, and are not typical of the usual new student at CCC, they must be included in this study given our current measuring methodology. As first-time, part-time students they would be counted in the cohorts shown in Tables 1-4 and make up as much as 50% of the entering cohort. But when part-time students are excluded and first-time, full-time entering students are used as a cohort, as in Table 5, the differences in the transfer rates between BCC and CCC narrow considerably. As we have seen, when different cohorts are followed, different transfer rates are produced. Looking again at the Cohen cohort in Table 4, we find that CCC has a transfer rate of 40.8% while that of BCC is 30%. Some of this difference is because of a program mix at

CCC that favors transfers and some of it is because of the high number high school students enrolled at CCC on a part-time basis. Other reasons for this disparity might be accounted for by different entering students' characteristics and/or educational goals. Finally there is always the possibility that CCC is doing a better job at promoting transfer opportunities than BCC. At the present time we have no way of analyzing what each of these factors may contribute to the differences between CCC and BCC.

Successful Educational Outcomes

Community colleges are often criticized for the small number of degrees they award. Within SUNY, counting the number of degrees awarded to first-time, full-time students is part of the informal performance evaluation process. Gradually the SUNY system is moving away from the measurement of degrees to a more inclusive system of measuring successful educational outcomes. Looking at the transfer issue, this means that a transfer, with or without a degree, is counted as a success. Using the data available from this study, we calculate attrition as the percentage of an entering first-time, full-time cohort that has not graduated, or transferred, or is still enrolled, not just from their initial college but from any college. Table 5 below shows the results of this calculation for the 30 community colleges in the SUNY system and for the two colleges examined more closely in this study.

As we mentioned at the start of this study, the information on bachelor's degree attainment in Table 5 is very incomplete because of the current limitations of NSC's data. However, as more colleges report this data this measure will improve. Looking at the students who attained any degree, transferred or were still enrolled, the community colleges in the SUNY system had an overall success rate (column 11) of 52.4% for the Fall 1997 cohort of first-time, full-time students. The two colleges examined most closely in this study exceeded that rate.

An important critique of Table 5 is that a successful educational outcome is defined only in terms of graduation, persistence or transfer. It does not consider the job placement of students who do not intend to transfer or do not obtain a degree. Looking at the two colleges most closely examined in this study, Table 5 shows that when we use graduation, transfer or persistence as a measure of success, the differences between the two has narrowed to about 3.3% in favor of CCC. However, because BCC has a program mix that is more oriented toward the workforce than CCC, it may be that once job placements for students with or without AAS degrees are considered, BCC would have a higher success rate than CCC.

Thus, a more inclusive measure of success than that shown in Table 5 would look at the labor market outcomes of students. This will be more difficult to measure because verifiable data is not available. However, one promising development is the linking of statewide student databases to the unemployment insurance records of the state. The unemployment insurance records contain the wage rates and incomes of all workers in the state and by using Social Security numbers to track community college students we will be able to calculate the payoff to vocational programs or clusters of courses (as an example see Jacobson, LaLonde, Sullivan, 1997). Currently the states of Florida, Washington, Texas, and North Carolina have systems in place such as this (Sanchez & Laanan, 1998). At some point we will be able to combine these outcomes with those of the transfer records to get a more complete picture of successful educational outcomes at the community college.

Summary of Results

Looking back at the research questions listed earlier we have found the following:

- Use of the NSC data more than doubled the number of community college transfer students we were

Table 5
Successful Educational Outcomes of First-Time Full-Time Students Initially Enrolled in a SUNY Associate Degree Program In Fall 1997, Status as of Fall 2001

COLLEGE	COHORT ENTERED FALL 1997	NUMBER GRADUATING				WITHOUT A DEGREE				TOTAL SUCCESS EDUCAT. OUTCOMES	ATTRIT
		ASSOCIATE DEGREES		BACCALAUREATE		PERSIST AT INITIAL COLLEGE	TRANSFERS				
		FROM INITIAL COLLEGE	FROM OTHER SUNY	WITH ASSOC. DEGREE	WITHOUT ASSOC. DEGREE		TO SUNY STILL ENROLLED	TO SUNY NOT ENROLLED	TO NON-SUNY		
1	2	3	4	5	6	7	8	9	10	11	12
ALL SUNY COMMUNITY COLLEGES	28,460 100.00%	8,769 30.81%	273 0.95%	619 2.17%	217 0.76%	1,602 5.62%	1,329 4.66%	1,198 4.20%	1,481 5.20%	14,907 52.37%	13,553 47.62%
BROOME CC	1,015 100.00%	308 30.34%	8 0.78%	24 2.36%	16 1.57%	69 6.79%	68 6.69%	38 3.74%	46 4.53%	555 54.67%	460 45.32%
CAYUGA CC	386 100.00%	124 32.12%	8 2.07%	10 2.59%	1 0.25%	16 4.14%	24 6.21%	36 9.32%	15 3.88%	224 58.03%	162 41.96%

Col. 11 = Col 3 + Col 4 + Col 6 + Col 7 + Col 8 + Col 9 + Col 10 + 2 students at BCC with certificates only. Col. 11 for all community colleges includes 38 certificates.

able to track in this study. By using this data we were able to show that current research has underestimated the transfer rate by at least 25%. This raises the transfer rate of the Cohen cohort from the mid-20% range to about 30%. Considering the limitations of the NSC data, we might be able to add another 5% to that number.

- Transfer rates differ quite a bit depending upon how we define the numerator and the denominator.
- Community college students are probably less likely to cross state borders when they transfer than are students at four-year colleges.
- Transfer rates to private colleges and out-of-state colleges are more likely when these colleges are close to home.
- For first-time, full-time entrants, transfer rates from community college transfer programs are significantly higher than transfer rates from non-transfer programs.
- More students transfer without the associate degree than with the degree, but a greater percentage of graduates transfer than non-graduates.
- The location of transfer can be affected by local economic conditions.

While it is true that, because of the limitations of the NSC data, the results of this study are bound to underestimate the number of transfers, it is also true that future research on the community college transfer rate should not be done without using this data.

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