Access and Achievement of Hispanics and Hispanic Immigrants in the Colleges of the City University of New York

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April 2006

This paper is based on a study prepared for the *Community Colleges and Latino Educational Opportunity Roundtable*, October 11, 2003, sponsored by The Civil Rights Project at Harvard University with generous support provided by the Pew Hispanic Center.

The Community College Research Center was founded through a generous grant from the Alfred P. Sloan Foundation, which continues to support its work.

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Acknowledgements

The authors wish to thank Cheryl Littman and David Crook in the Office of Institutional Research and Analysis at the City University of New York for providing us with the data for this study. We also thank Eric Weininger, who was instrumental in the creation of the 1990 cohort dataset and preparation of an earlier paper on immigrants at CUNY, which provided the inspiration for the current research.

Abstract

The City University of New York (CUNY) has played a central role in educating minority and immigrant New Yorkers, and Hispanics comprise the largest minority and immigrant populations in the City. To examine the extent to which CUNY provides Hispanic native-born and immigrant students with access and the opportunity for achievement, a study was conducted using 1990 and 2000 student demographic, enrollment, credit accumulation, and outcome data. Relative to their proportions in the city, Hispanics at CUNY are over-represented by native-born students and under-represented by immigrants. Hispanic attainment at CUNY is less than that of other populations, with the contrast between Hispanic and other immigrants greatest.

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Introduction

Led by recent increases in both the Hispanic and Hispanic immigrant populations, New York City is experiencing a rapid growth in the proportion of minorities and a resurgence in the proportion of immigrants in the city not seen since the early part of the last century. Census figures from 2000 show that, at 2.2 million, Hispanics make up more than one-quarter of the city's population, and the region as a whole is second only to the Los Angeles metropolitan area in number of foreign-born Hispanics. As the only public institution for higher education in the city, the City University of New York (CUNY) has historically played a central role in the education of minority and immigrant New Yorkers.

This paper examines the extent to which CUNY's tradition continues, particularly for Hispanics, who comprise the largest minority and immigrant populations in the city. Specifically, we used student enrollment, credit accumulation, and outcome attainment data to assess the extent to which CUNY provides these students with access to postsecondary educational opportunity and achievement. The richness of the CUNY data allowed us to examine differences within Hispanic nativity groups (native born and foreign born)[1] and within Hispanic nationalities – including such prominent sub-populations as Puerto Ricans, Mexicans, Dominicans, and persons from the countries of Central and South America.

Hispanic Immigrants in New York City

Since the loosening of immigration restrictions in the 1960s there has been a steady increase in immigration into the United States. According to the U.S. Census Bureau, the foreign-born population in the United States grew from 9.6 million in 1970 to 28.4 million in 2000 (Schmidley, 2001). The latter figure represents over ten percent of the total population, the highest proportion since 1930. Moreover, the composition of the immigrants is radically different from that of earlier decades. For example, in 1970 19.4 percent of the foreign born were from

[1] In this paper we identify an individual as foreign born if he or she was born outside the 50 United States and without at least one parent who is a U.S. citizen. The data cited here from the U.S. Census Bureau includes persons born in Puerto Rico and other U.S. Island Areas as native born. We make the distinction with Puerto Ricans as foreign born because the language and cultural differences that they experience when migrating to the mainland United States create similar educational challenges as other foreign-born residents. While the U.S. Immigration and Nationality Act makes a formal distinction between all foreign-born persons and immigrants by employing a strict definition of the latter as aliens (non-citizens) admitted to the United States legally for permanent residence, we take license in this paper to use the terms foreign born and immigrant interchangeably to avoid repetitive use of a single term.

Latin America and 61.7 percent from Europe. By 2000 those percentages had reversed so that 51.0 percent were from Latin America and a mere 15.3 percent from Europe. In 2000, there were 12.8 million foreign-born Hispanics, 45.2 percent of the total foreign-born population in the United States.

As one of the major ports of entry for immigrants and the largest U.S. metropolitan region, New York City remains a major destination for immigrant settlement in this country. In addition, New York continues to be a city with a significant Hispanic population – both immigrant and native born. The city's Hispanic population grew from 24.4 percent of the total population in 1990 to 27.0 percent in 2000. The native-born Hispanic population grew by 36 percent over the decade while the foreign-born Hispanic population grew by 18.3 percent. As a growing proportion of New York City's population, Hispanic immigrants are important contributors to the city's growth and development. While they continue to fill many of the city's less desirable service and manufacturing jobs, Hispanics are establishing business and entering more technical and professional positions, in both the public and private sector, that require some postsecondary education.

Hispanic Immigrants, Education, and Economic Opportunity

Many immigrants arrive in the United States with only a high school diploma or even less education and try to earn a living with hard work in low-skill labor positions. Only a generation or two ago a high school education, in combination with a strong work ethic, was adequate preparation for entry into the workforce with the expectation for a lifetime of wage work sufficient to support a family in moderate lifestyle. But the current economic reality is that such practice will rarely lift a person out of the trap of poverty in the United States. While a bachelor's degree provides a much stronger foundation for a consistent and growing income over a lifetime, even an associate degree produces a significant rise in wages over workers without a postsecondary degree (Grubb, 2002; Kane & Rouse, 1995). Contemporary economic wisdom in the United States indicates that some postsecondary education is essential to help ensure a living wage and increased income security throughout a lifetime.

Unfortunately, the educational attainment of many immigrants remains low by contemporary standards. Among persons age 25 and older, the foreign-born population generally has lower rates of completion of high school than the native-born population, 67.0 percent versus

86.6 percent.[2] But these statistics belie variation among different populations. Only one-third (33.8 percent) of foreign-born residents from Mexico have a high school diploma or more. Only a slightly higher percent (37.3) of immigrants from Central America do. In contrast, 68.1 percent of foreign-born persons from Caribbean countries (excluding Puerto Rico) and 79.7 percent from South America have a high school diploma or higher. Overall, immigrants from Latin American countries have the lowest rate of educational attainment of all continents; fewer than half (49.6 percent) have at least a high school diploma. Notably, immigrants from Africa have the highest education attainment rate; 94.9 percent have graduated from high school.

While many immigrants arrive with education and job skills, others choose to develop their job skills and training while in this country. For those residing in New York City, the colleges of the City University of New York (CUNY) constitute a primary destination for postsecondary education.

CUNY and Access to Higher Education in New York City

Historically, CUNY's role in the education system of New York City has been to provide an integrated system for higher education dedicated, according to New York State Education Law, "to the provision of equal access and opportunity for students, faculty and staff from all ethnic and racial groups and from both sexes" (City University of New York, n.d.). Of particular importance is the institution's opportunity to assist in the upward mobility of "disadvantaged" students. This mission was fulfilled in the 1920s and 1930s when CUNY took a special interest in educating the children of immigrants who arrived in the city during the preceding decades (City University of New York, 1995). With the recent resurgence in immigration from a new set of countries, this important role resurfaced for the CUNY of the 1990s and beyond.

While the university seeks to serve the diverse city population, admission to the CUNY bachelor's degree programs is selective, whereas admission to most of the associate programs is open and requires only a high school diploma, GED, or equivalent. In the past students could take remediation while enrolled in a bachelor's degree program, but beginning in spring 2001 all students needed to pass a set of skills assessment tests (or the equivalent) prior to admission into a bachelor's program. As a result, for the fall 2004 entering baccalaureate class, this requirement prevented the matriculation of more than 5,000 students who otherwise met all admissions

[2] Figures are from the U.S. Census Bureau (2001).

criteria for CUNY bachelor's programs (Arenson, 2004). With minority, immigrant, and low-income students disproportionately less well prepared for postsecondary education and generally scoring lower on standardized assessment tests, this requirement may strike such groups more adversely.

Given the population characteristics of New York City and the stated mission of CUNY, the university represents an ideal context for a study of immigrants in community colleges in the United States.[3] Utilizing this case-study opportunity, the study reported here investigates the enrollment and educational outcomes of Hispanics and Hispanic immigrants in CUNY to assess the contribution of CUNY in providing access to and achievement in higher education for these populations in New York City.

Purpose and Objectives of this Study

In examining the experience of Hispanics and Hispanic immigrants in CUNY, we asked the following questions:

- Have these populations gained access to CUNY? Specifically, has enrollment of Hispanics and Hispanic immigrants grown in proportion to the growth of their population in the city? Do they attend CUNY in disproportionate numbers by nativity and in relation to other immigrants? Do the answers to these questions differ for different Hispanic groups?
- Do Hispanics and Hispanic immigrants enroll at different rates by institution type (community college, senior college) or program type (associate, bachelor's)? What might explain any variations?
- Relative to native-born Hispanics and other immigrant populations, do Hispanic immigrants earn credits and attain degrees at rates comparable to other student populations? Is nativity a significant factor impacting Hispanic educational success at CUNY?
- What demographic, socioeconomic, and enrollment factors impact the outcomes among immigrant and native Hispanics?

[3] The CUNY system consists of 19 separate institutions. There are six community (two-year) colleges (Borough of Manhattan, Bronx, Hostos, Kingsborough, LaGuardia, and Queensborough), 11 senior (four-year) colleges (Baruch, Brooklyn, City College, Hunter, John Jay, Lehman, Medgar Evers, New York City College of Technology, Queens, College of Staten Island, and York), a graduate school, and a law school. Since 1990 total fall enrollment by headcount has consistently hovered around 200,000 students.

We compare the experience of Hispanic immigrants to native-born Hispanics and other immigrant groups. We also observe, for comparison, the enrollment and achievement rates of other race/ethnic groups, as well as the different nationalities among Hispanics.

Current Knowledge of Hispanic and Immigrant Access and Achievement in Postsecondary Education

This study of access and achievement of Hispanics and Hispanic immigrants in postsecondary education operates at the intersection of three areas of research. The first is the literature on access to higher education and the role that community colleges play in providing access for a diverse array of students. Second are the studies on Hispanics in higher education, which have shown that historically Hispanics have been under-represented among students in postsecondary education and that their achievement lags behind that of other student populations. Third are the studies of the educational attainment of immigrants in the United States, although studies of this population in higher education are rather rare relative to those on elementary and secondary education.

Community Colleges and Access to Higher Education in the United States

The role of community colleges as a means toward educational advancement has been a source of controversy. Several analysts have argued that these colleges impede mobility by thwarting or diverting the bachelor's degree ambitions of students who start at a community college with the intention of transferring and completing a four-year degree (Brint & Karabel, 1989; Dougherty, 1994; Lavin & Hyllegard, 1996). Therefore, critics assert, transfer to a four-year school is the most important indicator of the extent to which the community college provides an economically useful educational opportunity. Indeed, the large majority of traditional-age college students, including those in community colleges, state that they would like to earn at least a bachelor's degree; yet, students in two-year programs are much less likely to attain that objective than are those in four-year programs (Dougherty, 1994). Alternatively, community college advocates suggest that the colleges offer a step into higher education that would be more difficult for many if only four-year schools were available. For example, Rouse (1995) found that community colleges did in fact lower the educational attainment of students seeking a bachelor's degree (the diversion effect) but they also provided access to higher education for students who probably would not have enrolled in a four-year school if a community college were not available (the democratizing effect).

These two perspectives on the role of community colleges imply different judgments about the representation of particular groups in community colleges. The diversion perspective suggests a bleaker picture for Hispanics and immigrants for whom community colleges are the main access point into the American higher education system. Based on evidence from national datasets, community colleges do serve a disproportionate number of minority students, students from low-income families, those who are first-generation college students, and those with lower high school academic achievement (Bailey et al., 2003; Ganderton & Santos, 1995; Vernez & Abrahamse, 1996). We seek to understand the extent to which CUNY produces either the diversion effect or the democratization effect for Hispanic and Hispanic immigrant students who enter university.

Hispanics in Higher Education

Overall, Hispanics continue to be under-represented in higher education, yet over-represented in community colleges relative to their proportion of the population (Harvey, 2002). Furthermore, the majority of Hispanics (53 percent) in higher education are enrolled in two-year colleges (White House Initiative on Educational Excellence for Hispanic Americans, 1999); this is a larger percentage than for other minority groups.

Over the past decade, some researchers have reported low outcome measures for community college students who were minorities or had academic deficiencies (Rendon & Mathews, 1994; Richardson, 1994). Research specifically examining Hispanics has produced mixed results. Ganderton and Santos (1995), using the High School and Beyond (HS&B) dataset, were able to differentiate Hispanic sub-groups into individuals of Cuban, Puerto Rican, and Mexican descent. They found that relative to Cuban-descent students, those of Mexican and Puerto Rican descent are less likely to complete a four-year degree (in the six years studied), with the lower probability statistically stronger for Mexicans. Starting in a two-year school lowers the likelihood of bachelor's degree attainment for all students, but the negative influence of attendance at a two-year institution is not as strong for Hispanics.[4] They also found that among high school completers, Hispanics are nearly as likely as whites to attend college, but after six years they had a far lower bachelor's degree completion rate, even though the proportion of Hispanics with eight semesters of attendance is the same as for whites. These

[4] Ganderton and Santos (1995) used Ordinary Least Squares (OLS) in their analysis. Rouse (1995) found that OLS estimates tended to exaggerate the negative effects of starting in a community college.

findings indicate an important difference between access and completion that depends on the efficiency of turning enrollment into degrees.

Gonzalez and Hilmer (in press) used an instrumental variable technique to differentiate between the diversion and democratization effects. They found that Hispanic students who start in a community college, when compared with those who start in a four-year college, complete fewer years of college and have a lower probability of completing a bachelor's degree. Nevertheless, that difference is not statistically significant. On the other hand, they did find a statistically significant diversion effect for black and white students.

Thus both the Gonzalez and Hilmer and the Ganderton and Santos papers found that starting at a two-year college is *less disadvantageous* with respect to total education and the probability of completing a bachelor's degree for Hispanics than for other groups. But while both papers controlled for nativity, the sample sizes of their dataset did not allow them to fully interact nativity and race/ethnicity (the foreign born accounted for less than ten percent of their sample). This constraint assumes that the diversion and democratization effects were the same for the different sub-groups, including foreign born, among all Hispanics.

Immigrants in Higher Education

There is limited research on the higher education experience of immigrants. In one exception, Vernez and Abrahamse (1996) used HS&B, which tracked a sample of high school sophomores and seniors from 1980 through six years of post-high school activities, to analyze data on postsecondary students born outside of the United States. However, all the students attended high school in the United States for at least part of their secondary career, since to be in the sample they had to be attending high school in the U.S. in 1980. The HS&B survey included enough immigrants for them to divide the immigrant population into four racial/ethnic subgroups: Asian, black, Hispanic, and white.

Using a series of descriptive tables and Ordinary Least Squares (OLS), Vernez and Abrahamse found that, overall, immigrant high school graduates are more likely than native-born graduates to enroll in postsecondary education. In addition, immigrants are more likely to attend a two-year college than college-going native-born students, and they are more likely to follow the pattern of attending a two-year school and then transferring to a four-year institution for further education. Vernez and Abrahamse also found that family background and attitudes toward education are more important factors in determining educational enrollment than is

immigrant status, all else being equal. Consequently, there is a greater difference across the race/ethnic groups in postsecondary education participation than there is between immigrants and natives. Despite this lack of significance of immigrant status, the researchers did find that immigrant status is significantly and positively associated with "continuity of college attendance" (i.e., four-year attendance persistence). Hence, immigrants, all else being equal, are more likely than natives to remain in school.

Vernez and Abrahamse present interesting findings for Hispanic immigrants. In general, levels of Hispanic postsecondary enrollment are the lowest among the four ethnic groups. They attribute this to key background factors that inhibit postsecondary enrollment: low income, low levels of parental education, and lower educational aspirations. However, among Hispanics, they found that natives are more likely (statistically significant) to attend a two-year or four-year college exclusively, while immigrants are more likely than natives to attend a two-year institution and then transfer to a four-year school. And while Hispanic postsecondary participation rates are low, immigrant status among Hispanics (and blacks) has a positive effect on postsecondary participation. Ganderton and Santos (1995) also found this positive effect of immigrant status for Hispanics.

In an extension of the above research, Hagy and Staniec (2002) used the National Education Longitudinal Study (NELS) of eighth graders in 1988 to disaggregate postsecondary education choices by generational status (immigrant, child of immigrant, native) and by two-year and four-year institutional enrollments. Like HS&B, NELS followed a cohort through several years of high school and postsecondary experience, including only students who attended U.S. high schools. In terms of college choice, Hagy and Staniec found that race plays a less important role than immigrant status in postsecondary educational choices. In general, immigrants are more likely to enroll in some form of postsecondary education than either second-generation (child of immigrant) or native students. Importantly, they found an additional, though small, effect of Hispanic immigrants having an increased likelihood of community college enrollment than their native-born counterparts. And for second-generation Hispanics they found an increased likelihood of four-year college enrollment. Thus, as Vernez and Abrahamse found, immigrant status for Hispanics has both an effect on the likelihood of college enrollment and on the type of college chosen.

Our paper also builds on previous research on immigrants in CUNY community colleges by Bailey and Weininger (2002). Their research used part of the longitudinal CUNY dataset that we used here. They focused primarily on the experience of immigrants, and while they controlled for race/ethnicity (Hispanic, black, Asian, and white) they did not conduct separate analyses for Hispanic immigrants. In analyses of choice between two- and four-year colleges and of the determinates of outcomes, Bailey and Weininger found that nativity is a more important factor than race/ethnicity. Hispanics are no more likely than whites to enter a community college, and there is no statistically significant difference between Hispanics and other students who started at a community college in the probability of transfer or degree completion.

Overall, research at the national level suggests first that Hispanics, and particularly Hispanic immigrants, rely disproportionately on community colleges. Moreover, there is some evidence that any educational disadvantages associated with initial enrollment in a community college may be more modest for Hispanics, and perhaps for Hispanic immigrants, than for other demographic groups. The evidence from CUNY is somewhat different, revealing no statistically significant differences for Hispanics in probability of enrollment in a two-year college nor in graduation or transfer (for those who start in a two-year college).

This research, using data from CUNY, extends these analyses in three ways. First, we used more current data: student characteristics from 2000 and outcome data from 1990 through 2002. Second, we disaggregated Hispanics into Puerto Ricans, Mexicans, Dominicans, Cubans, Central and South Americans, and Other Hispanics. Finally, we conducted separate analyses for native- and foreign-born Hispanics, and in some cases we were able to differentiate by nativity for some of the Hispanic subgroups.

Datasets

The CUNY Office of Institutional Research and Analysis (OIRA) maintains data files for every fall semester cohort of first-time freshmen entering the University. These files, containing a record for every student in the cohort, are updated annually. They include student demographic information collected during the application process, as well as data on each student's semester-by-semester enrollment in the CUNY system. For this study we used the student cohort from 1990 for our longitudinal analysis of student enrollments and outcomes, and we used the 2000 data to compare the characteristics of the entering student cohort with the population in the city as a whole at that time. We also compared the characteristics of the two cohorts to identify changes over time in the composition of the CUNY first-time freshman classes.

The 1990 CUNY first-time freshman cohort had 26,996 students. The application form for 1990 did not include a question on place of birth (though this question has been included on the application since 1992). However, a survey sent to all students who applied to be first-time freshmen included a question on country of birth, as well as questions on race/ethnicity, [5] national identity, and comprehensive information about their socioeconomic and educational background.[6] Of the members of the 1990 cohort, 8,332 students responded to the survey, and 6,600 provided complete race/ethnicity and nativity information, as required by our analysis. In order to norm the sample to the full cohort population and adjust for survey non-response, a set of weights was calculated on the basis of a wide variety of demographic and background information gathered by CUNY. All of the figures we report for the 1990 cohort represent weighted results.

The annual enrollment data for the 1990 cohort are maintained by CUNY for all the colleges in the system. They consist of enrollment information for every semester from fall 1990 through summer 2002, including the college where enrolled, degree pursued, enrollment intensity, credits attempted and earned (including remedial), and degrees and dates conferred. Using this information we calculated total credits earned toward any degree and over the complete enrollment, as well as semesters of part-time enrollment or non-enrollment (for

[5] Race/ethnic categories include black, non-Hispanic; white, non-Hispanic; Hispanic; Asian or Pacific Islander; American Indian or Native Alaskan; Other (specify). Our analysis aggregates the latter two.
[6] See Table 7 for a complete list of the 1990 cohort variables used in the analysis.

interrupted enrollment) to any degree and for the student's complete enrollment. The survey data and the annual enrollment data were merged and used for the longitudinal analyses.

The 2000 cohort data consist exclusively of information provided by students on their undergraduate application for admission. This information includes high school attended, earned GED or diploma, native language, country of birth if not a U.S. citizen, country of family origin or country with which identified (nationality), and self-reported race/ethnicity. The latter two are optional pieces of information provided by the applicants; all other information is required. The 2000 first-time freshman cohort consisted of 24,967 students. After excluding those whose race/ethnicity information was missing and whose nativity could not be determined, we were left with 20,757 for analysis. We used these data to describe the CUNY first-time student population and to make comparisons between the cohort characteristics and the larger population of New York City, as measured by the U.S. Census.

In contrast to studies of postsecondary educational attainment and achievement that use national-level surveys of a sample of students, our study is notable in two important ways. First, we used information only on students who enrolled in postsecondary education. Therefore, we did not investigate any characteristics that encourage or inhibit postsecondary enrollment. All our students are college students. Second, they all attend a single postsecondary educational system (albeit one with 19 different community and senior colleges). Therefore, if a student transferred from or to a college outside of the CUNY system, our data contained no such information.[7] Hence, rather than tracking students' whole postsecondary educational histories, we were observing their history within the CUNY system.

Consequently, our analysis is confined to student enrollment and achievement within a single institution, and the ability of that institution to serve its students. What our findings may lack in breadth, they make up for in depth by the sheer number of students, which allowed us to disaggregate sub-populations of Hispanics and immigrants in ways that most studies using the national surveys are unable to do because of sample size constraints.

[7]In 1996, CUNY used data from the National Student Loan Clearinghouse to track students from the 1990 cohort and found that by 1996 about six percent of that cohort had enrolled in non-CUNY institutions.

Access to CUNY in 2000

Our first question asks whether Hispanic immigrants in New York City have gained access to higher education at CUNY, as measured by their enrollment relative to their proportion of the 18-35-year-old population in New York City.[8] To answer this question we compared rates of enrollment by student type with the comparable rates in the city population as a whole, as a means of assessing the extent to which different populations of the city are represented at CUNY.

Table 1 shows the New York City population aligned with the number of first-time freshmen students at CUNY in 2000, broken out separately by nativity and race/ethnicity. Observe that the proportion of foreign-born residents in the city is 44.1 percent of the age 18-35 population. Also, Hispanics account for over 30 percent of the total in this age range, the largest proportion of any minority ethnic group. A comparison of the citywide population percentages with those of first-time freshmen at CUNY from 2000 shows that foreign-born students are represented in higher proportions at CUNY than they are in the general city population. Over 10,000 of the nearly 21,000 first-time freshmen in fall 2000 (for whom ethnicity and nativity information are known) are foreign born. The foreign-born group thus represents 48.6 percent of the student population – a remarkable increase from 1990, when just over one-third of the entering students were born abroad. Consequently, CUNY went from a slight under-representation of immigrants (relative to the 36.8 percent foreign-born population of the city in 1990) in 1990 to a large over-representation of immigrants by 2000. This shift appears as a positive step for the educational attainment and opportunity of new residents in New York City.

With the exception of Hispanics, all minority populations are over-represented at CUNY. Hispanics are represented at CUNY in a nearly identical proportion to their representation among the citywide 18-35 population: 30.1 percent versus 30.2 percent. In contrast, Asian/Pacific Islanders, non-Hispanic blacks, and Other minorities are all over-represented by at least 20 percent.[9] Only whites are under-represented at CUNY. The failure of Hispanics to be represented at CUNY in greater proportion to their citywide population is a disturbing finding in light of the

[8] The 18-35-year-old population captures the majority of the college-going population and excludes age cohorts unlikely to enroll in for-credit undergraduate education. Henceforth, mention of city populations refers only to this 18-35 cohort, unless otherwise noted.

[9] Measured by dividing the CUNY percent for each group by its corresponding New York City percent.

important mission of CUNY to serve minority populations with traditionally less access to other postsecondary institutions.

We broke each race/ethnicity group into native-born and foreign-born populations on Table 2. A comparison of the enrollment of foreign-born Hispanic students to native-born Hispanics shows that the latter are more strongly represented at CUNY, relative to their respective proportions in the city population. While native-born Hispanics represent 40.7 percent of the Hispanic population in the city, they comprise 55.1 percent of the CUNY first-time freshman Hispanic population. Meanwhile, immigrants comprise 44.9 percent of Hispanic students in the fall 2000 cohort while they are 59.3 percent of the city's Hispanic population. These findings indicate Hispanics are over-represented by native-born Hispanic students at CUNY while immigrant Hispanic students are under-represented (relative to their respective population proportions in the city). This observation among students at CUNY runs counter to the findings of other studies of Hispanics using national survey data which found that being foreign born (and attending high school in the United States) increases the likelihood of an Hispanic student to attend college (Ganderton & Santos, 1995; Hagy & Staniec, 2002).

There are two important differences between our data and the national surveys used in other studies. First, our population is not restricted to students who attended U.S. high schools. The latter may be an important factor among immigrants in college enrollment, perhaps because many immigrants who attend high school in the U.S. may come with the intention of pursuing postsecondary education here and want to gain experience in the American education system and improve language skills prior to postsecondary education. Second, it is possible that Hispanic immigrants in the city are more likely to enroll in non-CUNY schools for postsecondary education than are native-born Hispanic students in New York. For example, native-born students may feel a greater attachment to staying in New York City than students who have already traveled a great distance to come to the United States and are more willing to venture farther for their postsecondary education. Regardless, this finding from our data suggests that being a foreign-born Hispanic in New York City decreases a student's likelihood of attending CUNY, when compared with all Hispanics.

More striking is the comparison of Hispanic immigrants at CUNY with other immigrant groups. From Table 3, which shows race/ethnicity within nativity, we see that Hispanics are the only ethnic group for whom the proportion of the foreign-born population is smaller at CUNY

than it is for the city at large. That is, while Hispanics represent 40.6 percent of the city's foreign-born population, they represent only 27.8 percent of the foreign-born first-time freshmen at CUNY. Meanwhile, foreign-born students of all other ethnic groups, and particularly those of African descent are over-represented in CUNY relative to their citywide populations. Thus, not only are Hispanic immigrants attending CUNY at lower rates than native-born Hispanics, but they are also attending CUNY at lower rates than all other immigrant populations, relative to their citywide populations. So, in comparison with other Hispanics and other immigrants, Hispanic immigrants are going to college at the city's public university system in smaller numbers than are justified by their proportion of the city's population.

It is worth disaggregating the Hispanic population to investigate distinct sub-populations among Hispanics, as identified by their country of birth (or country of national identity, if native born). We used the U.S. Census' designations of major Hispanic sub-groups by disaggregating Hispanics into persons from Puerto Rico, Mexico, Dominican Republic, Cuba, all Central and South American countries combined (excluding Mexico), and all other Hispanic (see Table 4). Puerto Ricans are the dominant native-born Hispanic group within New York, as they represent nearly 60 percent of the native-born Hispanic population. However, they constitute only 12.9 percent of the foreign-born Hispanic population in the city. Consequently, roughly more than three-fourths of all Puerto Ricans in the 18-35 age group are native born. Compared with native-born Hispanics, the distribution of foreign-born Hispanics in New York is more evenly spread across nationalities. Dominicans and those from Central and South America (CSA) each comprise roughly one-fourth of the foreign-born Hispanic population, while those from Mexico are an additional one-fifth of the total. Within each of these three groups – Dominicans, Central and South Americans, and Mexicans – the vast majority of its populations is foreign born. We will compare the distribution of the Hispanic sub-groups at CUNY with their distribution among the citywide Hispanic populations and between the native-born and foreign-born Hispanic populations in order to tease out some significant variations.

We see on Table 4 that the most striking representation at CUNY is the higher than expected proportions of students from the Dominican Republic and the countries of Central and South America (CSA).[10] Among the native-born populations, the proportions of these two

[10] The nationalities of CSA students include Ecuador (31%), Colombia (26%), Peru (11%), Honduras (7%), El Salvador (6%), and Guatemala (5%), with smaller representation from other countries.

Hispanic populations at CUNY are more than double what would be expected based on their relative populations among native-born Hispanics in the city. And even among the foreign-born population, both the Dominican and CSA students are over-represented by nearly 75 percent of what would be expected when dividing the CUNY percent by the city percent. All other Hispanic sub-groups – Puerto Rican, Mexican, and Cuban (and other) – are under-represented at CUNY relative to their citywide population. This under-representation exists for both the native-born and the foreign-born populations, and is most apparent among Puerto Ricans. Although, with 44.3 percent, Puerto Ricans have the highest proportion of native-born Hispanic students at CUNY, they remain strongly under-represented since they comprise 59.5 percent of the native-born Hispanic population in the city. This pattern of under-representation exists among foreign-born Puerto Ricans as well, who comprise only 8.6 percent of that CUNY population, versus 12.9 percent citywide. Clearly, the Puerto Rican population at CUNY does not reflect as strongly the large presence of Puerto Ricans, both native and foreign born, in the city as a whole.

Earlier we observed that the Hispanic immigrant population attends CUNY at lower rates relative to both native-born Hispanics and other immigrant populations. Table 5 shows the representation of the city population and CUNY population by nativity within Hispanic sub-population to reveal important variations. The foreign-born populations across all Hispanic sub-groups are strongly under-represented at CUNY. Even the Dominican and CSA foreign-born populations, which do relatively well compared with other Hispanics, do not attend CUNY at rates expected, given their representation among the citywide population. Specifically, 79.7 percent of Dominicans in the city are foreign born, yet only 58.9 percent of the Dominican students at CUNY are foreign born. Likewise, the CSA population in the city is 81.9 percent foreign born, but the proportion of foreign born of this group at CUNY is only 64.2 percent. In conclusion, it appears that all foreign-born Hispanic populations contribute to the relatively low rates of enrollment among immigrant Hispanics at CUNY. Next, we will see how Hispanics and Hispanic immigrants fare within the different colleges at CUNY.

Enrollment in CUNY by Institution and Program Type in 2000

Table 6 answers our second question on student enrollment by institution type and program type within CUNY. In fall 2000, the number of first-time freshmen at CUNY community colleges (for whom nativity and ethnicity could be determined) was exactly 9,000. Among them, 8,895 (42.9 percent of all 20,757 first-time freshmen at CUNY) were enrolled in an associate degree program and the remaining 105 were in a certificate-granting program. There were 11,757 students enrolled in CUNY four-year colleges in 2000, with 7,546 (36.4 percent of the whole freshman cohort) in a bachelor's degree program, 4,186 (20.2 percent) in an associate degree program, and 25 in a certificate program. Due to their small number, certificate students will not be discussed in our analysis. As before, we looked at Hispanic immigrants in relation to other Hispanics, other immigrants, and within Hispanic sub-groups. For this analysis of distribution within CUNY the benchmark population is the total first-time freshmen population at CUNY in 2000.

Distribution by College Type

Among different race/ethnic groups, Hispanics are the most highly over-represented in community colleges, while whites are the most under-represented. Specifically, while Hispanics represent 30.1 percent of the CUNY population they comprise 35.6 percent of first-time CUNY community college students. Similarly, immigrant students, in general, are over-represented in community colleges; they comprise nearly 55 percent of the community college students while accounting for less than half (48.6 percent) of the total CUNY first-time freshman population in 2000. This finding is consistent with findings on Hispanics and immigrants discussed above.

The distribution by ethnicity within the native-born and foreign-born populations generally reflects the overall distribution by ethnicity. That is, native-born Hispanics and native-born blacks are both over-represented at the CUNY community colleges. And foreign-born Hispanics are over-represented (more so than their native-born peers) while the proportion of foreign-born blacks is in proportion to their total population at CUNY. Specifically, while foreign-born Hispanics comprise 27.8 percent of the CUNY students, they comprise 35.5 percent of the students in community colleges. Thus, among Hispanics, the foreign-born population is the most highly over-represented in community colleges (for blacks it is the native-born population as opposed to their foreign-born counterparts). Therefore, on top of finding that

Hispanic immigrants are generally under-represented in CUNY, those who were first-year freshmen in fall 2000 are concentrated disproportionately in two-year schools. This latter finding is consistent with the studies of national datasets by Vernez and Abrahamse (1996) and Hagy and Staniec (2002). As a stepping-stone for first-generation immigrant students, we might expect this pattern of over-representation. The diversion criticism of community colleges (Brint & Karabel, 1989), however, casts the pattern in a more negative light.

The within-Hispanic enrollment patterns between the CUNY two-year and four-year colleges exhibit very little variation, though the minor differences are worth noting. Recall that we found Dominicans and CSA students over-represented at CUNY. Both the native-born and foreign-born students among these populations are represented at the two-year and four-year schools in proportion to their total population. Puerto Ricans, who are highly under-represented at CUNY, exhibit a pattern whereby the foreign-born are slightly over-represented at CUNY four-year colleges. Finally, both Mexican native-born and foreign-born students are highly over-represented at four-year institutions, although there are too few Mexicans in this population to generate noteworthy conclusions.

Distribution by Program Type

An important consideration in the access of Hispanics and Hispanic immigrants to CUNY is their distribution among program types. Research has shown that the benefits to a bachelor's degree outweigh those of an associate degree (Grubb, 2002; Kane & Rouse, 1995), and so we would like to see Hispanics and immigrants well-represented among bachelor's degree programs. The findings from Table 6 indicate that this is not the case.

Within the CUNY senior colleges, Hispanic students are proportionally evenly represented between associate and bachelor's degree programs. They represent about 26 percent of the student population in both groups. In contrast, blacks in senior colleges are severely under-represented among bachelor's degree programs, while all other race/ethnic groups are over-represented. Foreign students are disproportionately over-represented in community colleges, while they are slightly better represented among bachelor's degree students in the senior colleges, (45.3 percent of bachelor's degree students versus 43.9 percent of all senior college students). Unfortunately, the distribution of Hispanics by nativity diverges slightly from this pattern, as native-born Hispanics are slightly over-represented among bachelor's students while foreign-born Hispanics are over-represented among associate students at the senior colleges.

Though these differences are not statistically significant, they demonstrate a recurring trend among Hispanic immigrants. Hispanic immigrants do not exhibit the same levels of access and achievement in postsecondary education at CUNY as their immigrant peers in other racial/ethnic categories.[11]

Among Hispanics, we see that both Dominican (28.4 percent) and CSA (22.0 percent) populations are more strongly represented in bachelor's programs relative to their overall representation in the senior colleges (26.5 percent and 19.8 percent, respectively) than other native-born Hispanic sub-groups. While this over-representation is more prominent among the native-born populations than among the foreign-born populations, the distribution among foreign-born students by program type is about even in the senior colleges for all Hispanic sub-populations, with the exception of Puerto Rican immigrants, who are under-represented.

To help explain the observed variations in institution and program enrollment, we ran a regression analysis on bachelor's program enrollment using a set of socioeconomic and demographic variables. To do this analysis, we used the 1990 cohort dataset since it provided more comprehensive student information and had the longitudinal information necessary to run regressions on student achievement and outcomes. Prior to discussing the analysis, in the next section we present the characteristics of the 1990 student cohort and observe enrollment changes over time from 1990 to 2000.

[11] Only foreign-born blacks exhibit greater under-representation in the senior college bachelor's programs than Hispanic immigrants, though we observed that the former are proportionately well-represented at CUNY and within the senior colleges in general.

Enrollment and Achievement of the CUNY 1990 Freshman Cohort

In their analysis of student access and achievement at CUNY, Bailey and Weininger (2002) ran regression analyses on program enrollment, credit accumulation, and degree completion over six years using a variety of demographic and student background variables. Their findings relevant to this study were discussed above. Here, we use the same CUNY dataset, but include some key additional explanatory variables in our model relevant to our study of Hispanic immigrants and observe them over the longer time period of twelve years.[12]

Description of the 1990 CUNY Cohort

Table 7 shows the mean values of the explanatory variables we used in the regression analysis. It provides a general snapshot of the 1990 first-time freshman cohort at CUNY for all students and Hispanic and non-Hispanic students by nativity. The table provides a comparison with some of the results exhibited in the tables from the 2000 cohort, with important changes to point out. First, the first column on Table 7 shows that the 1990 cohort has a much smaller proportion of foreign-born and Hispanic students than does the 2000 cohort (Table 1). Thus, over the decade the proportion of Hispanic immigrants at CUNY grew from 33.5 percent[13] of all Hispanic students in 1990 to 44.9 percent by 2000 (Table 2). Based on the research cited earlier on immigrants in postsecondary education, we expected that nativity would be an important explanatory variable in program enrollment and student achievement.

Similarly, generational status in the United States may influence entry into postsecondary education. That is, the later the generation in this country (second- and third- or more generation Americans) the more likely are individuals to seek higher educational opportunity. Thus, we included dummy variables for first-generation (foreign born), second-generation (native born with foreign-born parents), and third-generation (native born with native-born parents) students. Bailey and Weininger (2002) found that foreign-born students who graduated from a foreign high school are more likely than native-born students to enroll in an associate program, while foreign-born students who graduated from U.S. high schools are more likely to enroll in a bachelor's program. We tested their findings and their impact on student outcomes for Hispanic students at CUNY.

[12] See the Appendix for a discussion of the value of observing CUNY outcomes for twelve years.
[13] Weighted percent of survey respondents; not shown on Table 7.

We included dummy variables for Hispanic sub-groups[14] to observe significant effects of different nativity groups. From 1990 to 2000 there was a sharp decline in the percentage of foreign-born Puerto Rican students, from 30.1 percent to only 8.6 percent of the foreign-born Hispanic population. Foreign-born Dominicans and Central/South Americans (even with the exclusion of Mexicans from this sub-group in 2000) had a significant increase, from 29.9 and 35.8 percent, respectively, to well over 40 percent for both. These shifts may be attributable to demographic shifts in the city population or to changes in access to CUNY.

Two other important demographic characteristics are gender and age, which can both be significant factors in achieving an outcome (i.e., females exhibit increased likelihood of achievement) and program enrollment (i.e., older students are less likely to enroll in a bachelor's degree program) (Alfonso, Bailey, & Scott, 2005). Observe on Table 7 that Hispanic students are more likely to be female and are, on average, younger than non-Hispanics among native-born students. However, notice that foreign-born Hispanic students, like other immigrant students, tend to be older (average age 22.3 years). We were interested in seeing if age and gender have explanatory power for Hispanic students as they do for students overall.

There are large percentages of both native-born and foreign-born Hispanic students in the lowest household income group (37.5 and 47.0 percent, respectively, from households with an income less than $15,000) and among those with less parental education (over 70 percent had parents with high school as their highest level of education). As stated above, Hispanics are generally over-represented in associate programs in community colleges (44.4 percent of native-born Hispanics and 52.8 percent of foreign-born Hispanics). Thus, Hispanic students are more likely to be first-generation college students and from families with modest economic backgrounds – two characteristics that can be detrimental to access and achievement in postsecondary education (Alfonso et al., 2005). We expected that supporting children, working while enrolled, and having a GED might also negatively impact student outcomes, and so these variables were included in our model. Further, having a GED and other educational background factors, as measured by CUNY standardized assessment tests in mathematics, reading, and writing, are likely indicators for program access. Observe that Hispanic students have lower

[14] Since the 1990 CUNY data does not distinguish students of Mexican origin from other students of Central and South American nationality, we could not analyze these groups separately.

average assessment test scores in all three assessment tests[15] and are much more likely than other students – both native and foreign born – to take remediation in their first year (43.0 percent of native-born and 53.7 percent of foreign-born Hispanics).

According to Table 7, slightly fewer Hispanic students enroll part time, though they have higher rates of interrupted enrollment than their non-Hispanic peers. This pattern translates into fewer average credits earned over twelve years than for non-Hispanic students. Specifically, while native-born Hispanics have a mean number of credits earned at CUNY of 53.7, and those who are foreign born average a slightly higher 54.3, the corresponding figures for non-Hispanic students are 58.1 and 71.6, respectively.[16] The generally fewer credits earned by Hispanics may be partly explained by their higher rates of remedial enrollment, for which credits are usually not accumulated. However, importantly, while there is no statistically significant difference between average credits earned for native and immigrant Hispanics, the difference is large and significant for non-Hispanic students.[17] It appears that Hispanic immigrants do not exhibit any greater success over their non-immigrant peers in this measure of achievement because all Hispanic students have low rates of credit accumulation.

Finally, notice that while Hispanic students earn an associate degree and transfer to a senior college at rates nearly identical to or higher than non-Hispanic students, the rate of bachelor's degree attainment for both the native born and foreign born are significantly lower than for their corresponding non-Hispanic peers (18.2 percent versus 22.8 percent for native born and 16.0 percent versus 28.0 percent for foreign born). This pattern exists even for students initially enrolled in a bachelor's degree program. After twelve years, 40.0 percent of all such students earn a bachelor's degree, while only 32.4 percent of Hispanics students do (not shown on Table 7). Given this pattern of different outcome rates, it appears that Hispanic students are able to accumulate adequate credits for lower degrees, but have difficulty persisting and earning enough for the higher level degree, regardless of initial program and institution.

[15] The lower reading and writing test scores may be attributable to deficiencies in English. However, an examination of self-reported English language proficiency found no significant differences between Hispanics and all students in the numbers who reported deficiency in English.

[16] When the non-Hispanic students are broken out by race/ethnicity and nativity, all sub-populations without exception have higher mean credits accumulated than do either Hispanic category. Furthermore, all foreign-born populations have significantly higher mean credits earned than do their respective native-born race/ethnic peers, with the exception of Asian/Pacific Islanders, for whom both the native- and foreign-born populations exhibit the highest means of all sub-populations (data not shown on table).

[17] Statistical significant differences measured by a 95 percent confidence interval.

To provide some explanation for these observed patterns of program enrollment and achievement, we did a regression analysis on student enrollments, credit accumulation, and outcomes. First we look at factors affecting initial-degree program enrollment for the 1990 cohort.

Determinants of Initial Program Enrollment

We ran logistic regressions for all students in the 1990 cohort and for the Hispanic student sub-population. Our first regression investigated the determinants of program enrollment – specifically what characteristics explain initial enrollment in a bachelor's program. Table 8 shows the results of the regressions.[18] For all students (first 3 columns), those who are second generation in the U.S. (native-born students with foreign-born parents) are more likely than third- or higher-generation students (the control group) to enroll in a bachelor's degree program. Even foreign-born students who attended a high school in the United States are significantly more likely than the control group to enroll in a bachelor's program. Higher educational aspirations among these students may be driving their enrollment in the higher-degree program.

Other significant explanatory variables have the expected influence for all students: those who are black, older, supporting children, working either full or part time, or have a GED are significantly less likely to enroll in a bachelor's program. Conversely, females, those with higher educational aspirations, and those with higher assessment test scores (math and reading) are more likely to enroll in a bachelor's program.[19] Note that Hispanics are statistically no more or less likely than whites (the control population) to enroll in a bachelor's degree program, which is consistent with the percentages found on Table 7 and the findings of Bailey and Weininger (2002).

For Hispanic students only (second 3 columns), being female, working, aspirations, and math test score variables are all significant and in the same direction as for all students. However, notably, all the nativity variables lose their significance for Hispanic students. This

[18] Positive coefficients indicate that a variable increases the probability of the outcome being measured – in this case, enrollment in a bachelor's degree program. The marginal effect (dy/dx) indicates the strength of that effect, and results in bold are significant at the 5 percent level.

[19] A household income of less than $15,000 is also positive and significant for bachelor's enrollment, which contrasts with the expected patterns of students from higher income backgrounds enrolling in higher degree programs. This finding might partly be explained by CUNY's SEEK program, a large and successful program which provides financial, counseling, and tutoring assistance to economically and educationally disadvantaged students in their senior colleges. Such a program may increase the attraction of senior colleges to low-income students.

finding indicates that nativity is not important in explaining access among Hispanic students, and that neither foreign-born students nor second-generation Hispanics are more likely to enroll in a bachelor's degree program than are third-generation Hispanics. It coincides with the findings in our descriptive analysis, which indicates that Hispanic immigrants do not exhibit higher rates of access to postsecondary education than non-immigrant Hispanics. That is, Hispanic immigrants are statistically no more likely than their native-born Hispanic peers to enroll in a bachelor's degree program. This contrasts sharply with the finding that immigrants among other ethnic groups do have higher rates of enrollment in bachelor's programs.

Another exception for Hispanic students is the impact of the reading-assessment test results. While higher scores were a significant predictor for enrollment in a bachelor's program for all students, it is not significant (though still positive) for just Hispanic students. Using the reading scores as a proxy for English language ability, Bailey and Weininger (2002) concluded that this finding indicates a de-emphasis of language skills in enrollment for foreign-born students. As suggested by our own finding, their conclusion may also hold for Hispanic students, many of whom learned English as a second language.

Within Hispanic sub-populations (Puerto Ricans are the control group), Dominicans and Cubans are more likely to enroll in a bachelor's program. This finding affirms the earlier assessment of the success of the Dominican population in New York in enrolling in the CUNY senior colleges. All other Hispanic sub-populations exhibit no significant difference.

Determinants of Achievement: Credit Accumulation

Measuring the accumulation of credits is important in two respects. First, accumulation of credits is necessary for degree attainment. Second, for the minority of students not seeking a degree, the accumulation of credits still represents a measure of postsecondary education learning and achievement that may benefit their wage-earning capacity in the future (Marcotte, Bailey, Borkoski, & Kienzl, 2005). Therefore, we ran an OLS regression on credits accumulated to identify factors that might explain differences in credit accumulation over twelve years.

Many of the same explanatory variables that are significant for enrollment in a bachelor's program are also significant for credit accumulation, with some important additional variables (see Table 9). For all students, being foreign born (regardless of high school location), and being second generation increase the likelihood of higher credit accumulation over twelve years. Thus, immigrants and children of immigrants, at least those within the CUNY system, seem to have

more success in persistence and achievement in the classroom. Furthermore, compared to white students, and regardless of nativity, being in a minority is a negative and significant explanatory variable for credit accumulation. These findings suggest that both nativity and race/ethnicity are important determinants of degree accumulation. Other strong significant variables include working full time and having a GED, each of which has a negative impact; and enrollment in a bachelor's program, and part-time and interrupted enrollments, which are all significant and positive. The latter may seem surprising at first, but remember that we are observing credit accumulation over twelve years. Over that time period, most students, even those who manage to accumulate many credits, are likely to have foregone enrollment and/or enrolled less than full time for at least one semester, whereas students who left school with few credits after only a few semesters are likely to have been both full-time and uninterrupted during their brief enrollment.

For Hispanic students only, the findings from the credit-accumulation regression are similar to those for enrollment in a bachelor's program. That is, relative to all students, nativity loses significance, with the exception of foreign-born students who attended high school in the United States. The latter are likely to earn more credits than third-generation natives. Vernez and Abrahamse (1996) also found that Hispanic immigrants who attended high school in the U.S. are more likely to persist. The difference here may be their experience in the U.S. education system prior to their postsecondary enrollment, which benefits their achievement at CUNY. This is the only condition where nativity is significant for Hispanic students. As with all students, working full time and having a GED are significant and negative; being in a bachelor's program, and having part-time and interrupted enrollment are all positive and significant. Herewith we conclude that factors influencing credit accumulation are not much different for Hispanic students than for all students at CUNY, though nativity plays a less significant role for Hispanics than for other students.

Determinants of Achievement: Degree Attainment

Tables 10 and 11 show the results of the logistic regression on associate degree outcome and bachelor's degree outcome, respectively, for all students and for Hispanic students. We discuss the two tables in concert, pointing out the important findings.

Most importantly, the nativity characteristics which are almost all significant for all students for both associate and bachelor's outcomes, hold no significance for Hispanic students. Therefore, as with program enrollment and credit accumulation, immigrant status plays no

significant role in twelve-year outcome attainment for Hispanics.[20] However, among Hispanic student populations, results show that being Dominican has a strong positive and significant impact on both degree outcomes. Still, overall, being Hispanic has significant and negative coefficients for bachelor's degree attainment, but no significance for associate degree attainment. The fact that Hispanic students are less likely than white students to earn a bachelor's degree is particularly disturbing since there is no significant difference in their likelihood of enrollment in a bachelor's degree program.

Furthermore, neither of the control variables for initial program enrollment (associate or bachelor's) is significant for the attainment of a bachelor's degree by Hispanics (Table 11). What this says is that, unlike the student population as a whole, for Hispanic students initial program and institution do not affect their likelihood of earning a bachelor's degree at CUNY. As found in studies of national data (Ganderton & Santos, 1995; Gonzalez & Hilmer, in press), this finding suggests that Hispanic students who start in an associate program or community college are not disadvantaged in their efforts to earn a bachelor's degree relative to their Hispanic peers who start in a bachelor's program. Therefore, for Hispanic students at CUNY, we don't observe evidence of community colleges diverting students from bachelor's degree attainment. One explanation may be that among Hispanic students there is less difference between the educational background of students entering community colleges and those entering senior colleges. The evidence from the regression on enrollment in a bachelor's program (Table 8) seems to support this explanation since variables indicative of educational background and ability such as GED and reading assessment test scores *were not* significant for enrollment in a bachelor's program for Hispanic students, whereas they were for all other CUNY students.

Another important finding about Hispanics is that being female is insignificant for earning an associate degree, though it is positive and significant with respect to earning a bachelor's degree. Thus, Hispanic women are more successful relative to men at earning a bachelor's degree, while they hold no advantage for associate degree attainment. However, in contrast, supporting children is not significant for Hispanics in associate degree attainment, yet it is negative and significant for Hispanics in bachelor's degree attainment. This finding would seem contrary to the finding for women, since women are disproportionately burdened with the responsibility of supporting children while in school. Nonetheless, since female gender and

[20] The nativity variables were also all insignificant for six-year outcomes for Hispanic students.

parenthood are used as controls, the findings are not contradictory, but only confirm other findings about both females (positive) and parental responsibilities (negative) for degree attainment.

Conclusions

Enrollment at CUNY

There are several important conclusions from this analysis of the CUNY data. One striking finding is the dramatic growth in the foreign-born and Hispanic enrollments in CUNY during the 1990s. In 1990, just over one-third of CUNY students were foreign born, but ten years later almost one-half of all CUNY students were born abroad. The foreign-born population in the city also grew during this decade, but the increase in the immigrant CUNY population was much more significant. The Hispanic population at CUNY also surpassed the growth of the citywide Hispanic population. In 1990, both in the city and at CUNY the Hispanic population was 24.4 percent. By 2000 the Hispanic proportion at CUNY had grown to 30.1 percent, while the proportion grew only to 27 percent in the city overall. In concert, these two demographic shifts worked to increase the proportion of Hispanic immigrants in CUNY to 13.5 percent of the first-time freshman cohort in 2000, up from 8.2 percent in 1990. Thus, by 2000, almost one-half (44.9 percent) of the Hispanic students in the cohort were foreign born.

A second finding is that the influence of nativity on higher education enrollment and attainment is different for Hispanics than for other minority populations, such as blacks and Asians. We found that Hispanic immigrants, unfortunately, do not exhibit the educational success to the extent shown by other minority immigrant populations.

Overall, Hispanics are under-represented at CUNY, due in particular to the under-representation of Hispanic immigrants; native-born Hispanics are well represented at CUNY. This contrast between immigrants and natives within the overall Hispanic population differs sharply with the situation for other minorities. Immigrant and native blacks and Asians are over-represented at CUNY. The data for foreign-born Hispanics suggest that the growing Mexican immigrant population and to some extent the island-born Puerto Rican and the undifferentiated Hispanic populations in New York account for this modest representation of Hispanic immigrants relative to other immigrant groups. In contrast, Dominicans and Central and South Americans, both native and foreign born, make extensive use of CUNY.

Within CUNY, Hispanics are relatively concentrated in community colleges. For Hispanics, this is particularly true for the foreign born, although native-born Hispanics are also concentrated in the community colleges. Consequently, nativity is insignificant in explaining

program enrollment among Hispanics. This finding contrasts sharply with the findings for other students, in which immigrant populations and second-generation Americans are more likely to enroll in a bachelor's program than are native-born third-generation students.

Educational Outcomes

There are also several interesting findings concerning educational outcomes. First, Hispanic students tend to earn fewer credits, even over twelve years, than do students from all other racial/ethnic populations. When comparing Hispanics to other populations by nativity, foreign-born Hispanics earn credits at significantly lower rates compared with other immigrants; the difference is far greater than the difference between native-born Hispanics and other native-born populations. Furthermore, all Hispanics – but in particular Hispanic immigrants – have very low rates of bachelor's degree attainment relative to other native- and foreign-born populations at CUNY. Thus, by all measures, Hispanics fare more poorly than other populations at CUNY, with the contrast between Hispanic and other immigrants much greater than the contrast between native-born Hispanics and other native-born populations. This is due in part, it seems, to the success of most immigrant populations in CUNY. However, our findings do not indicate a diversion effect for Hispanic students who start at CUNY community colleges, when compared to their peers who begin in a senior college. Though this likely is due to the low rate of bachelor's degree completion among Hispanics at the senior colleges rather than any democratization effect of the CUNY community colleges.

The relative weakness of Hispanic immigrant educational attainment is an important and disturbing finding. The possible reasons for the weakness – the different educational aspirations of Hispanics relative to other immigrants, their purposes for coming to New York City, or cultural differences among the different immigrant populations – are important areas of investigation.

Possible Causes of Hispanic Educational Performance

Beyond the relatively poor performance of Hispanic immigrants (compared with other immigrant populations) the explanatory factors for the lower rates of success among Hispanics in general are not so apparent. While we found that Hispanics and Hispanic immigrants have larger numbers of students in the lowest income households, have parents with the lowest level of education, support children of their own and work full time (the latter two situations for foreign-

born Hispanics only), and have GEDs and lower assessment test scores, very few of these variables have significant negative explanatory power for earning an associate or bachelor's degree. Parents with a high school education or less and students working full time negatively impact Hispanic students' ability to earn an associate degree, while supporting children is negative and significant only for bachelor's degree attainment.

This study was unable to measure the impact of the new skills-assessment requirement implemented in spring 2001 (discussed above) on Hispanic and Hispanic immigrant students. Nonetheless, the requirement is likely to be detrimental to bachelor's program access for Hispanic student populations, based on their lower assessment-test scores and the rate of the 1990 cohort's enrollment in remediation. The requirement may foretell even more restricted opportunity for bachelor's degree attainment for these already disadvantaged populations, which are already under-represented in bachelor's programs and at the CUNY senior colleges.

In conclusion, CUNY certainly plays an important role in providing education and opportunity to minority and immigrant students, although it is less successful at doing so for Hispanic and Hispanic immigrant students in New York City. However, among Hispanics, students of Dominican and Central and South American descent utilize and succeed at CUNY comparatively well. With both native and immigrant Hispanic populations growing in the city, a more concerted effort must be made to provide access to the colleges at all levels and to promote achievement among all Hispanics in order to keep pace with the achievements of other native and immigrant populations at CUNY.

Appendix A: Tables

Table 1: New York City Population Age 18-35 and CUNY First-Time Freshmen, 2000 by Nativity and Race/Ethnicity (Column Percents within Category)

	New York City		CUNY	
	Number	Percent	Number	Percent
Total	2,275,991	100.0%	20,757	100.0%
Native Born	1,272,645	55.9%	10,674	51.4%
Foreign Born[1]	1,003,346	44.1%	10,083	48.6%
Hispanic	688,032	30.2%	6,246	30.1%
Black, Non-Hispanic	513,169	22.5%	5,605	27.0%
Asian/Pacific Islander	250,819	11.0%	2,858	13.8%
White, Non-Hispanic	727,803	32.0%	4,742	22.8%
Other[2]	96,168	4.2%	1,306	6.3%

Sources: 2000 U.S. Census; Integrated Public Use Microdata Series: Version 3.0.
City University of New York, Office of Institutional Research and Analysis.
Authors' Calculations.

Notes: 1. Persons born in Puerto Rico and U.S. territories and possessions are included in foreign born.
2. Other includes those who self-identify as two or more races.

Table 2: New York City Population Age 18-35 and CUNY First-Time Freshmen, 2000 Race/Ethnicity by Nativity (Column Percents within Category)

	New York City		CUNY	
	Number	Percent	Number	Percent
Hispanic	688,032	100.0%	6,246	100.0%
Native Born	280,172	40.7%	3,441	55.1%
Foreign Born	407,860	59.3%	2,805	44.9%
Black, Non-Hispanic	513,169	100.0%	5,605	100.0%
Native Born	343,959	67.0%	3,130	55.8%
Foreign Born	169,210	33.0%	2,475	44.2%
Asian/Pacific Islander	250,819	100.0%	2,858	100.0%
Native Born	42,674	17.0%	589	20.6%
Foreign Born	208,145	83.0%	2,269	79.4%
White, Non Hispanic	727,803	100.0%	4,742	100.0%
Native Born	570,455	78.4%	2,993	63.1%
Foreign Born	157,348	21.6%	1,749	36.9%
Other	96,168	100.0%	1,306	100.0%
Native Born	35,385	36.8%	521	39.9%
Foreign Born	60,783	63.2%	785	60.1%

Sources: 2000 U.S. Census; Integrated Public Use Microdata Series: Version 3.0.
City University of New York, Office of Institutional Research and Analysis.
Authors' Calculations.

Table 3: New York City Population Age 18-35 and CUNY First-Time Freshmen, 2000 Nativity by Race/Ethnicity (Column Percents within Category)

	New York City		CUNY	
	Number	Percent	Number	Percent
Total Native Born	1,272,645	100.0%	10,674	100.0%
Hispanic	280,172	22.0%	3,441	32.2%
Black, Non-Hispanic	343,959	27.0%	3,130	29.3%
Asian/Pacific Islander	42,674	3.4%	589	5.5%
White, Non-Hispanic	570,455	44.8%	2,993	28.0%
Other	35,385	2.8%	521	4.9%
Total Foreign Born	1,003,346	100.0%	10,083	100.0%
Hispanic	407,860	40.6%	2,805	27.8%
Black, Non-Hispanic	169,210	16.9%	2,475	24.5%
Asian/Pacific Islander	208,145	20.7%	2,269	22.5%
White, Non-Hispanic	157,348	15.7%	1,749	17.3%
Other	60,783	6.1%	785	7.8%

Sources: 2000 U.S. Census; Integrated Public Use Microdata Series: Version 3.0.
City University of New York, Office of Institutional Research and Analysis.
Authors' Calculations.

Table 4: New York City Population Age 18-35 and CUNY First-Time Freshmen, 2000 Nativity by Hispanic Identity (Column Percents within Category)

	New York City		CUNY	
	Number	Percent	Number	Percent
Total Hispanic	688,032	100.0%	6,246	100.0%
Native Born	280,172	40.7%	3,441	55.1%
Puerto Rican	166,761	59.5%	1,525	44.3%
Mexican	10,280	3.7%	64	1.9%
Dominican	27,876	9.9%	892	25.9%
Cuban	4,691	1.7%	60	1.7%
Central/South American	21,728	7.8%	642	18.7%
Other Hispanic	48,836	17.4%	258	7.5%
Foreign Born	407,860	59.3%	2,805	44.9%
Puerto Rican	52,459	12.9%	240	8.6%
Mexican	85,520	21.0%	98	3.5%
Dominican	109,771	26.9%	1,276	45.5%
Cuban	2,923	0.7%	11	0.4%
Central/South American	98,094	24.1%	1,149	41.0%
Other Hispanic	59,093	14.5%	31	1.1%

Sources: 2000 U.S. Census; Integrated Public Use Microdata Series: Version 3.0.
City University of New York, Office of Institutional Research and Analysis.
Authors' Calculations.

Table 5: New York City Population Age 18-35 and CUNY First-Time Freshmen, 2000 Hispanic Identity by Nativity (Column Percents within Category)

	New York City		CUNY	
	Number	Percent	Number	Percent
Puerto Rican	219,220	100.0%	1,765	100.0%
Native Born	166,761	76.1%	1,525	86.4%
Foreign Born	52,459	23.9%	240	13.6%
Mexican	95,800	100.0%	162	100.0%
Native Born	10,280	10.7%	64	39.5%
Foreign Born	85,520	89.3%	98	60.5%
Dominican	137,647	100.0%	2,168	100.0%
Native Born	27,876	20.3%	892	41.1%
Foreign Born	109,771	79.7%	1,276	58.9%
Cuban	7,614	100.0%	71	100.0%
Native Born	4,691	61.6%	60	84.5%
Foreign Born	2,923	38.4%	11	15.5%
Central/South American	119,822	100.0%	1,791	100.0%
Native Born	21,728	18.1%	642	35.8%
Foreign Born	98,094	81.9%	1,149	64.2%
Other Hispanic	107,929	100.0%	289	100.0%
Native Born	48,836	45.2%	258	89.3%
Foreign Born	59,093	54.8%	31	10.7%

Sources: 2000 U.S. Census; Integrated Public Use Microdata Series: Version 3.0.
City University of New York, Office of Institutional Research and Analysis.
Authors' Calculations.

Table 6: First-Time Freshmen Students at CUNY, Fall 2000
Initial Program Type and College by Race/Ethnicity and Nativity (Column Percents within Category)

	Community Colleges						Senior Colleges								Total	
	Certificate		Associate Degree		Total		Certificate		Associate Degree		Bachelor's Degree		Total			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	105	100.0%	8,895	100.0%	9,000	100.0%	25	100.0%	4,186	100.0%	7,546	100.0%	11,757	100.0%	20,757	100.0%
Native-Born	47	44.8%	4,026	45.3%	4,073	45.3%	8	32.0%	2,464	58.9%	4,129	54.7%	6,601	56.1%	10,674	51.4%
Foreign-Born	58	55.2%	4,869	54.7%	4,927	54.7%	17	68.0%	1,722	41.1%	3,417	45.3%	5,156	43.9%	10,083	48.6%
Hispanic	26	24.8%	3,167	35.6%	3,193	35.5%	7	28.0%	1,086	25.9%	1,960	26.0%	3,053	26.0%	6,246	30.1%
Black, non-Hispanic	35	33.3%	2,614	29.4%	2,649	29.4%	8	32.0%	1,466	35.0%	1,482	19.6%	2,956	25.1%	5,605	27.0%
Asian/Pacific Islander	28	26.7%	1,084	12.2%	1,112	12.4%	3	12.0%	392	9.4%	1,351	17.9%	1,746	14.9%	2,858	13.8%
White, non-Hispanic	14	13.3%	1,521	17.1%	1,535	17.1%	7	28.0%	1,018	24.3%	2,182	28.9%	3,207	27.3%	4,742	22.8%
Other	2	1.9%	509	5.7%	511	5.7%	0	0.0%	224	5.4%	571	7.6%	795	6.8%	1,306	6.3%
Total Native-Born	47	100.0%	4,026	100.0%	4,073	100.0%	8	100.0%	2,464	100.0%	4,129	100.0%	6,601	100.0%	10,674	100.0%
Hispanic	15	31.9%	1,437	35.7%	1,452	35.6%	1	12.5%	698	28.3%	1,290	31.2%	1,989	30.1%	3,441	32.2%
Puerto Rican	6	40.0%	671	46.7%	677	46.6%	0	0.0%	337	48.3%	511	39.6%	848	42.6%	1,525	44.3%
Mexican	0	0.0%	18	1.3%	18	1.2%	0	0.0%	19	2.7%	27	2.1%	46	2.3%	64	1.9%
Dominican	4	26.7%	361	25.1%	365	25.1%	1	100.0%	160	22.9%	366	28.4%	527	26.5%	892	25.9%
Cuban	0	0.0%	24	1.7%	24	1.7%	0	0.0%	14	2.0%	22	1.7%	36	1.8%	60	1.7%
Central/South American	3	20.0%	246	17.1%	249	17.1%	0	0.0%	109	15.6%	284	22.0%	393	19.8%	642	18.7%
Other Hispanic	2	13.3%	117	8.1%	119	8.2%	0	0.0%	59	8.5%	80	6.2%	139	7.0%	258	7.5%
Black, non-Hispanic	19	40.4%	1,414	35.1%	1,433	35.2%	3	37.5%	800	32.5%	894	21.7%	1,697	25.7%	3,130	29.3%
Asian/Pacific Islander	3	6.4%	137	3.4%	140	3.4%	0	0.0%	83	3.4%	366	8.9%	449	6.8%	589	5.5%
White, non-Hispanic	9	19.1%	860	21.4%	869	21.3%	4	50.0%	780	31.7%	1,340	32.5%	2,124	32.2%	2,993	28.0%
Other	1	2.1%	178	4.4%	179	4.4%	0	0.0%	103	4.2%	239	5.8%	342	5.2%	521	4.9%
Total Foreign-Born	58	100.0%	4,869	100.0%	4,927	100.0%	17	100.0%	1,722	100.0%	3,417	100.0%	5,156	100.0%	10,083	100.0%
Hispanic	11	19.0%	1,730	35.5%	1,741	35.3%	6	35.3%	388	22.5%	670	19.6%	1,064	20.6%	2,805	27.8%
Puerto Rican	0	0.0%	133	7.7%	133	7.6%	0	0.0%	44	11.3%	63	9.4%	107	10.1%	240	8.6%
Mexican	0	0.0%	51	2.9%	51	2.9%	0	0.0%	17	4.4%	30	4.5%	47	4.4%	98	3.5%
Dominican	3	27.3%	828	47.9%	831	47.7%	1	16.7%	163	42.0%	281	41.9%	445	41.8%	1,276	45.5%
Cuban	0	0.0%	7	0.4%	7	0.4%	0	0.0%	1	0.3%	3	0.4%	4	0.4%	11	0.4%
Central/South American	8	72.7%	697	40.3%	705	40.5%	5	83.3%	159	41.0%	280	41.8%	444	41.7%	1,149	41.0%
Other Hispanic	0	0.0%	14	0.8%	14	0.8%	0	0.0%	4	1.0%	13	1.9%	17	1.6%	31	1.1%
Black, non-Hispanic	16	27.6%	1,200	24.6%	1,216	24.7%	5	29.4%	666	38.7%	588	17.2%	1,259	24.4%	2,475	24.5%
Asian/Pacific Islander	25	43.1%	947	19.4%	972	19.7%	3	17.6%	309	17.9%	985	28.8%	1,297	25.2%	2,269	22.5%
White, non-Hispanic	5	8.6%	661	13.6%	666	13.5%	3	17.6%	238	13.8%	842	24.6%	1,083	21.0%	1,749	17.3%
Other	1	1.7%	331	6.8%	332	6.7%	0	0.0%	121	7.0%	332	9.7%	453	8.8%	785	7.8%

Source: City University of New York, Office of Institutional Research and Analysis. Authors' Calculations.

Notes: Includes only students for whom nativity and race/ethnicity could be determined.

Table 7: First-Time Freshmen Students at CUNY, Fall 1990 Survey Respondents
Mean Values (weighted) of Independent Variables by Student Type and Nativity

	All Students	Hispanic Students		Non-Hispanic Students	
		Native Born	Foreign Born	Native Born	Foreign Born
	(n=5,449)	(n=987)	(n=551)	(n=2,499)	(n=1,412)
Native born	67.2%	100.0%		100.0%	
Parents native born	44.5%	26.5%		78.9%	
Parents foreign born	22.7%	73.5%		21.1%	
Foreign born	32.8%		100.0%		100.0%
Attended U.S. high school	25.7%		86.4%		75.8%
Attended foreign high school	7.1%		13.6%		24.2%
Hispanic	24.4%	100.0%	100.0%		
Puerto Rican		64.9%	30.1%		
Dominican		12.9%	29.9%		
Cuban		1.2%	1.1%		
Central/South American		14.1%	35.8%		
Other Hispanic		6.9%	3.1%		
Black, non-Hispanic	30.7%			40.6%	40.8%
Asian/Pacific Islander	9.9%			3.3%	33.6%
White, non-Hispanic	31.1%			52.5%	17.4%
Other race/ethnicity	3.8%			3.6%	8.2%
Female	58.0%	58.8%	59.6%	59.5%	53.9%
Male	42.0%	41.2%	40.4%	40.5%	46.1%
Age	21.1	19.8	22.3	20.7	22.3
Household Income					
$30,000 or more	26.9%	18.8%	9.6%	35.9%	19.6%
$15,000 - $29,999	23.4%	24.6%	21.0%	21.2%	28.0%
Less than $15,000	26.9%	37.5%	47.0%	17.6%	32.1%
Missing	22.8%	19.1%	22.3%	25.3%	20.3%
Parents Highest Level of Education					
High school or less	57.5%	70.0%	73.2%	51.3%	56.9%
Some college	18.5%	17.8%	10.0%	23.4%	11.5%
College degree or more	24.0%	12.2%	16.8%	25.2%	31.7%
Supporting child(ren)	13.8%	10.1%	19.2%	12.5%	17.3%
Working During First PSE Year					
Full-Time	16.3%	12.5%	21.8%	15.8%	18.1%
Part-Time	53.9%	49.4%	42.4%	59.2%	49.5%
Not Working	29.8%	38.0%	35.9%	25.0%	32.4%
GED	14.7%	14.2%	22.5%	12.9%	16.0%
Bachelor's Degree Aspirations	82.2%	81.3%	77.8%	82.4%	84.1%
Assessment Test Scores					
Math (range 1 to 40)	23.8	21.9	19.6	23.8	26.4
Reading (range 1 to 45)	28.3	28.5	23.2	30.6	25.0
Writing (range 1 to 12)	6.6	6.6	5.3	7.1	5.7
Initial Program and Institution					
Associate in Community College	41.9%	44.4%	52.8%	39.8%	41.1%
Associate in Senior College	18.5%	15.0%	11.7%	21.5%	17.0%
Bachelor's in Senior College	39.5%	40.6%	35.5%	38.8%	41.8%
Took Remediation in First Year	35.9%	43.0%	53.7%	28.0%	41.4%
Twelve Year Enrollment/Outcomes					
Ever part-time (except summer)	60.4%	59.0%	53.4%	63.4%	57.4%
Ever interrupted (except summer)	41.6%	45.9%	45.0%	41.2%	38.4%
Total credits earned	60.4	53.7	54.3	58.1	71.6
Earned Associate	16.6%	15.5%	19.6%	14.7%	20.0%
Transferred to Senior College	13.0%	12.7%	13.8%	12.0%	15.1%
Earned Bachelor's	22.8%	18.2%	16.0%	22.8%	28.0%

Authors' Calculations.

Table 8: First-Time Freshmen Students at CUNY, Fall 1990 Survey Respondents Logistic Regression on Enrollment in Bachelor's Program

	All Students			Hispanic Students		
	Coef	Std Err	dy/dx	Coef	Std Err	dy/dx
Native Born						
Parents foreign born	**0.204**	**0.092**	**0.048**	0.062	0.172	0.014
Foreign Born						
Attended U.S. high school	**0.290**	**0.099**	**0.068**	0.208	0.206	0.049
Attended foreign high school	**-0.493**	**0.162**	**-0.105**	-0.357	0.399	-0.079
Hispanic	-0.030	0.100	-0.007			
Dominican				**0.499**	**0.174**	**0.121**
Cuban				**1.164**	**0.592**	**0.283**
Central/South American				-0.068	0.169	-0.016
Other Hispanic				-0.093	0.263	-0.021
Black, non-Hispanic	**-0.421**	**0.095**	**-0.094**			
Asian/Pacific Islander	0.060	0.132	0.014			
Other race/ethnicity	-0.208	0.183	-0.047			
Female	**0.404**	**0.071**	**0.092**	**0.394**	**0.131**	**0.090**
Age	**-0.025**	**0.010**	**-0.006**	-0.040	0.025	-0.009
Household Income						
$15,000 - $29,999	0.100	0.097	0.023	-0.160	0.207	-0.037
Less than $15,000	**0.436**	**0.099**	**0.103**	0.268	0.192	0.063
Missing	**-0.201**	**0.094**	**-0.046**	**-0.457**	**0.207**	**-0.102**
Parents Highest Level of Education						
High school or less	0.044	0.081	0.010	0.024	0.181	0.006
Some college	-0.004	0.101	-0.001	-0.117	0.218	-0.027
Supporting child(ren)	**-0.634**	**0.137**	**-0.135**	-0.400	0.238	-0.088
Working During First PSE Year						
Full-Time	**-0.490**	**0.119**	**-0.107**	**-0.766**	**0.216**	**-0.162**
Part-Time	**-0.234**	**0.074**	**-0.054**	**-0.396**	**0.131**	**-0.092**
GED	**-0.648**	**0.113**	**-0.137**	-0.377	0.198	-0.084
Bachelor's Degree Aspirations	**0.955**	**0.093**	**0.196**	**1.143**	**0.174**	**0.230**
Assessment Test Scores						
Math (range 1 to 40)	**0.092**	**0.005**	**0.021**	**0.069**	**0.010**	**0.016**
Reading (range 1 to 45)	**0.031**	**0.006**	**0.007**	0.005	0.010	0.001
Writing (range 1 to 12)	-0.030	0.025	-0.007	0.038	0.044	0.009
Constant	-3.622	0.319		-2.433	0.682	
Pseudo R-squared		0.192			0.155	
Observations		5,449			1,538	

Note: Bold values are significant at the 5% level.
Source: City University of New York, Office of Institutional Research and Analysis. Authors' Calculations.

Table 9: First-Time Freshmen Students at CUNY, Fall 1990 Survey Respondents OLS Regression on Total Credits Earned in Twelve Years

	All Students		Hispanic Students	
	Coef	Std Err	Coef	Std Err
Native Born				
Parents foreign born	**10.3**	**1.841**	6.1	3.337
Foreign Born				
Attended U.S. high school	**19.0**	**1.844**	**12.0**	**3.907**
Attended foreign high school	**17.2**	**2.881**	11.0	6.914
Hispanic	**-11.1**	**2.019**		
Dominican			**11.6**	**3.283**
Cuban			11.2	11.215
Central/South American			5.0	3.187
Other Hispanic			6.6	5.096
Black, non-Hispanic	**-5.6**	**1.850**		
Asian/Pacific Islander	-5.0	2.597		
Other race/ethnicity	**-9.1**	**3.554**		
Female	**8.1**	**1.361**	**12.8**	**2.510**
Age	-0.1	0.134	0.1	0.277
Household Income				
$15,000 - $29,999	-0.2	1.887	6.7	3.965
Less than $15,000	-0.1	1.913	**7.9**	**3.802**
Missing	**-4.5**	**1.891**	-2.0	4.124
Parents Highest Level of Education				
High school or less	1.5	1.609	2.5	3.524
Some college	-1.5	2.024	-1.4	4.350
Supporting child(ren)	-2.0	2.190	-4.3	3.915
Working During First PSE Year				
Full-Time	**-21.3**	**2.133**	**-18.3**	**3.788**
Part-Time	-2.6	1.446	1.5	2.537
GED	**-7.7**	**1.961**	**-8.7**	**3.425**
Bachelor's Degree Aspirations	**5.3**	**1.683**	3.2	2.926
Assessment Test Scores				
Math (range 1 to 40)	**1.3**	**0.097**	**1.4**	**0.179**
Reading (range 1 to 45)	0.2	0.104	0.3	0.196
Writing (range 1 to 12)	0.9	0.462	-0.6	0.813
Initial Program and Institution				
Associate in Community College	-2.4	1.823	-1.7	3.638
Bachelor's in Senior College	**15.7**	**1.955**	**13.0**	**3.887**
Took Remediation in First Year	0.9	1.429	1.1	2.426
Enrollment				
Ever part-time (except summer)	**26.8**	**1.432**	**31.7**	**2.576**
Ever interrupted (except summer)	**16.4**	**1.399**	**16.2**	**2.526**
Constant	-7.6	5.386	-31.4	10.292
Adjusted R-squared	0.283		0.308	
Observations	5,449		1,538	

Note: Bold values are significant at the 5% level.

Source: City University of New York, Office of Institutional Research and Analysis. Authors' Calculations.

Table 10: First-Time Freshmen Students at CUNY, Fall 1990 Survey Respondents Logistic Regression on Earning an Associate Degree in Twelve Years

	All Students			Hispanic Students		
	Coef	Std Err	dy/dx	Coef	Std Err	dy/dx
Native Born						
Parents foreign born	0.155	0.115	0.016	0.236	0.231	0.025
Foreign Born						
Attended U.S. high school	**0.559**	**0.111**	**0.064**	0.440	0.247	0.049
Attended foreign high school	**0.490**	**0.166**	**0.059**	0.520	0.406	0.063
Hispanic	-0.024	0.123	-0.002			
Dominican				**0.454**	**0.201**	**0.054**
Cuban				-0.688	1.172	-0.054
Central/South American				0.173	0.194	0.019
Other Hispanic				0.251	0.323	0.028
Black, non-Hispanic	-0.096	0.112	-0.010			
Asian/Pacific Islander	-0.221	0.165	-0.021			
Other race/ethnicity	-0.299	0.210	-0.027			
Female	**0.378**	**0.084**	**0.038**	0.299	0.160	0.030
Age	0.010	0.007	0.001	0.000	0.016	0.000
Household Income						
$15,000 - $29,999	-0.059	0.116	-0.006	0.072	0.261	0.008
Less than $15,000	-0.001	0.119	0.000	0.292	0.247	0.032
Missing	-0.191	0.116	-0.019	-0.131	0.265	-0.013
Parents Highest Level of Education						
High school or less	0.005	0.098	0.001	**-0.469**	**0.216**	**-0.050**
Some college	-0.165	0.129	-0.016	-0.303	0.276	-0.029
Supporting child(ren)	0.088	0.122	0.009	0.352	0.241	0.040
Working During First PSE Year						
Full-Time	**-0.825**	**0.131**	**-0.069**	**-1.090**	**0.254**	**-0.086**
Part-Time	-0.169	0.088	-0.017	-0.225	0.157	-0.023
GED	-0.148	0.108	-0.015	-0.146	0.194	-0.014
Bachelor's Degree Aspirations	-0.081	0.095	-0.008	-0.052	0.172	-0.005
Assessment Test Scores						
Math (range 1 to 40)	**0.038**	**0.006**	**0.004**	**0.027**	**0.012**	**0.003**
Reading (range 1 to 45)	**0.012**	**0.006**	**0.001**	0.017	0.012	0.002
Writing (range 1 to 12)	0.012	0.028	0.001	-0.024	0.048	-0.002
Initial Program and Institution						
Associate in Community College	**0.406**	**0.096**	**0.043**	-0.004	0.197	0.000
Bachelor's in Senior College	**-2.051**	**0.183**	**-0.191**	**-1.708**	**0.323**	**-0.161**
Took Remediation in First Year	0.097	0.086	0.010	**0.312**	**0.154**	**0.033**
Enrollment						
Ever part-time (except summer)	**0.508**	**0.106**	**0.055**	**0.798**	**0.195**	**0.090**
Ever interrupted (except summer)	**-0.245**	**0.105**	**-0.024**	-0.016	0.197	-0.002
Constant	-3.082	0.310		-2.553	0.637	
Pseudo R-squared		0.161			0.145	
Observations		5,449			1,538	

Note: Bold values are significant at the 5% level.

Source: City University of New York, Office of Institutional Research and Analysis. Authors' Calculations.

Table 11: First-Time Freshmen Students at CUNY, Fall 1990 Survey Respondents
Logistic Regression on Earning a Bachelor's Degree in Twelve Years

	All Students			Hispanic Students		
	Coef	Std Err	dy/dx	Coef	Std Err	dy/dx
Native Born						
Parents foreign born	**0.344**	**0.110**	**0.050**	0.236	0.237	0.024
Foreign Born						
Attended U.S. high school	**0.573**	**0.114**	**0.086**	0.357	0.272	0.037
Attended foreign high school	**0.357**	**0.168**	**0.054**	0.201	0.489	0.021
Hispanic	**-0.570**	**0.122**	**-0.070**			
Dominican				**0.443**	**0.222**	**0.050**
Cuban				0.689	0.673	0.087
Central/South American				0.108	0.220	0.011
Other Hispanic				0.271	0.335	0.029
Black, non-Hispanic	**-0.349**	**0.109**	**-0.045**			
Asian/Pacific Islander	-0.137	0.146	-0.018			
Other race/ethnicity	-0.282	0.210	-0.035			
Female	**0.395**	**0.082**	**0.053**	**0.770**	**0.182**	**0.072**
Age	-0.017	0.010	-0.002	0.016	0.021	0.002
Household Income						
$15,000 - $29,999	0.064	0.110	0.009	0.274	0.269	0.028
Less than $15,000	-0.016	0.114	-0.002	0.425	0.255	0.045
Missing	-0.022	0.112	-0.003	-0.055	0.285	-0.005
Parents Highest Level of Education						
High school or less	0.110	0.094	0.015	0.133	0.243	0.013
Some college	0.015	0.119	0.002	0.246	0.300	0.026
Supporting child(ren)	-0.280	0.149	-0.036	**-0.904**	**0.332**	**-0.069**
Working During First PSE Year						
Full-Time	**-0.674**	**0.143**	**-0.079**	-0.545	0.296	-0.046
Part-Time	-0.154	0.084	-0.021	0.072	0.172	0.007
GED	**-0.369**	**0.131**	**-0.046**	-0.479	0.265	-0.041
Bachelor's Degree Aspirations	**0.341**	**0.106**	**0.043**	0.334	0.228	0.030
Assessment Test Scores						
Math (range 1 to 40)	**0.051**	**0.006**	**0.007**	**0.049**	**0.012**	**0.005**
Reading (range 1 to 45)	0.008	0.006	0.001	0.016	0.014	0.002
Writing (range 1 to 12)	**0.057**	**0.029**	**0.008**	0.032	0.060	0.003
Initial Program and Institution						
Associate in Community College	**-0.319**	**0.102**	**-0.043**	-0.396	0.240	-0.038
Bachelor's in Senior College	**0.230**	**0.116**	**0.032**	0.147	0.282	0.015
Took Remediation in First Year	-0.082	0.091	-0.011	-0.095	0.174	-0.009
Enrollment						
Ever part-time (except summer)	**1.787**	**0.107**	**0.314**	**1.991**	**0.246**	**0.282**
Ever interrupted (except summer)	-0.143	0.121	-0.019	-0.292	0.245	-0.026
Constant	-3.735	0.345		-5.535	0.756	
Pseudo R-squared		0.234			0.248	
Observations		1,538			1,538	

Note: Bold values are significant at the 5% level.

Source: City University of New York, Office of Institutional Research and Analysis. Authors' Calculations.

Appendix B: Discoveries From Measuring Twelve Years of Student Outcomes at CUNY

To adequately assess the achievement of postsecondary students it is necessary to observe their enrollment and outcomes over several years. Most studies use only six years to observe student outcomes due to either data limitations or conformity to the expectation that this time frame is adequate for measuring completion of a bachelor's degree by first-time postsecondary students. While six years may be sufficient for traditional postsecondary students (recent high school graduates, first-time, full-time students in a bachelor's program at a four-year college), these students are the exception at CUNY. In fact, fewer than 30 percent of all 1990 CUNY first-time students are full-time students in a bachelor's program and under age 20. That proportion shrinks to less than 20 percent if students who require remediation in their first year are excluded.

Observation of enrollment and outcomes over a longer period can capture a greater variety of enrollment patterns, such as those exhibited by non-traditional students. Therefore, we observed the 1990 first-time freshman cohort for twelve years of enrollment, from matriculation in fall 1990 through summer 2002. Extended longitudinal observation is not possible with the national-level longitudinal datasets such as NELS and HS&B, the longest of which allows for only eight years of postsecondary enrollment.

Therefore, to test the value of the extended period of observation, we compared the rates of student outcomes over both six and twelve years. We sought to determine the extent of student persistence and outcomes beyond the normal six-year window by measuring the rate at which students dropped out or had an outcome (certificate, degree, or transfer from a community to a senior college) after six years and after twelve years.[21] Using the 1990 first-time-freshmen-weighted cohort, we found that fully 83 percent of all students had either an outcome or dropped out permanently within six years (by summer 1996).[22] Specifically, 30 percent had an outcome while 53.5 percent dropped out. Yet, another 9 percent earned their first outcome after the six-year window. Since we observed enrollment and outcomes within only a single college system,

[21] This assumes that twelve years is the maximum range beyond which students will neither have an outcome nor return to school. Rates beyond this period are assumed to be extremely low.
[22] A student dropped out permanently if he or she was not enrolled again at CUNY through the summer of 2002.

students who left the CUNY system to enroll and earn degrees elsewhere were not counted as having an outcome there. *These data therefore underestimate the outcome rates*.

For Hispanic students the percentage with a concluding event (outcome or permanent drop out) by six years is 81 percent. However, only 25 percent of all Hispanic students had an outcome within six years. An additional 9 percent had an outcome by twelve years. Hispanic immigrants exhibited absolutely identical percentages as native-born Hispanics over six and twelve years, which is notable because the immigrant black and white populations achieve higher rates of outcomes within six years than do their peer native-student populations. This finding demonstrates that Hispanic immigrants' access and achievement at CUNY are not significantly different from that of native-born Hispanics – a sharp contrast to most immigrant student populations.

While for most students the six-year window is adequate to observe a concluding event (outcome or drop out) in their postsecondary career at CUNY, there is still a significant number (nearly ten percent) who require additional years to reach an outcome. The students whose enrollment extends beyond six years comprise a large enough population to make it worthwhile to include their outcomes and identify their characteristics, particularly as we suspect that the students who take longer to complete an outcome or who stop out and re-enroll over a longer period of time may exhibit qualities different from those who are quicker to complete their postsecondary education at CUNY.

References

Alfonso, M., Bailey, T., & Scott, M. (2005). The educational outcomes of occupational sub-baccalaureate students: Evidence from the 1990s. *Economics of Education Review, 24*(2), 197-212.

Arenson, K. W. (2004, May 28). Low scores bar many admitted to CUNY. *New York Times*, p. B3.

Bailey, T. R., Leinbach, D. T., Scott, M., Alfonso, M., Kienzl, G. S., Kennedy, B., et al. (2003). *The characteristics of occupational sub-baccalaureate students entering the new millennium*. Unpublished manuscript, Community College Research Center, Teachers College, Columbia University.

Bailey, T. R., & Weininger, E. B. (2002). Performance, graduation, and transfer of immigrants and natives in City University of New York community colleges. *Educational Evaluation and Policy Analysis, 24*(4), 359-377.

Brint, S.G., & Karabel, J. (1989). *The diverted dream: Community colleges and the promise of educational opportunity in America, 1900-1985*. New York: Oxford University Press.

City University of New York. (1995). *Immigration/migration and the CUNY student of the future*. New York: City University of New York.

City University of New York. (n.d.). *About CUNY: Mission*. Retrieved September 12, 2003, from http://www.cuny.edu

Dougherty, K. J. (1994). *The contradictory college: The conflicting origins, impacts, and futures of the community college*. Albany, NY: State University of New York Press.

Ganderton, P. T., & Santos, R. (1995). Hispanic college attendance and completion: Evidence from the high school and beyond surveys. *Economics of Education Review, 14*(1), 35-46.

Gonzalez, A., & Hilmer, M. J. (in press). The role of 2-year colleges in the improving situation of Hispanic postsecondary education. *Economics of Education Review*.

Grubb, W. N. (2002). Learning and earning in the middle, part I: National studies of pre-baccalaureate education. *Economics of Education Review, 21*(4), 299-321.

Hagy, A. P., & Staniec, J. F. O. (2002). Immigrant status, race, and institutional choice in higher education. *Economics of Education Review, 21*(4), 381-392.

Harvey, W. B. (2002). *Minorities in higher education, 2001-2002: Nineteenth annual status report*. Washington, DC: American Council on Education.

Kane, T. J., & Rouse, C. E. (1995). Labor-market returns to two- and four-year college. *American Economic Review, 85*(3), 600-614.

Lavin, D. E., & Hyllegard, D. (1996). *Changing the odds: Open admissions and the life chances of the disadvantaged*. New Haven: Yale University Press.

Marcotte, D. E., Bailey, T. R., Borkoski, C., & Kienzl, G. S. (2005). The returns of a community college education: Evidence from the National Education Longitudinal Survey. *Educational Evaluation and Policy Analysis, 27*(2), 157-175.

Rendon, L. I., & Mathews, T. B. (1994). Success of community college students: Current issues. In J. L. Ratcliff, S. Schwarz & L. H. Ebbers (Eds.), *Community colleges* (2nd ed., pp. 343-353). Needham Heights, MA: Simon & Schuster.

Richardson, R. C., Jr. (1994). Responding to student diversity: A community college perspective. In J. L. Ratcliff, S. Schwarz & L. H. Ebbers (Eds.), *Community colleges* (2nd ed., pp. 295-308). Needham Heights, MA: Simon & Schuster.

Rouse, C. E. (1995). Democratization or diversion? The effect of community colleges on educational attainment. *Journal of Business and Economic Statistics, 13*(2), 217-224.

Schmidley, A. D. (2001). *Profile of the foreign-born population in the United States: 2000.* (U.S. Census Bureau Current Population Reports, Series P23-206). Washington, DC: U.S. Government Printing Office.

Vernez, G., & Abrahamse, A. (1996). *How immigrants fare in U.S. education*. Santa Monica, CA: RAND.

White House Initiative on Educational Excellence for Hispanic Americans. (1999). *Latinos in Education*. Washington, DC: Author.