

Examining Latinos Involvement in the Workforce and Postsecondary Technical Education in the United States

Cecilia Maldonado

University of Nevada-Las Vegas

Edgar I. Farmer

The Pennsylvania State University

ABSTRACT

In this article, the authors report the results of two studies examining the participation rates of Latino students in postsecondary technical education (CTE) programs in community colleges and two-year proprietary institutions in the United States in 1994 and 2000. It is believed that the quality of the future U.S. Labor market will depend, to a great extent, on this group's education and job skills. Although Latinos are the fastest growing minority group in the United States, they are also the poorest and most undereducated when compared to other minority groups. Results of both studies show that few Latino students enroll in and graduate from postsecondary CTE programs. Of those students that do enroll in and complete CTE programs at the postsecondary level, very few complete programs that are considered high-skill, high-wage.

INTRODUCTION

Latinos are an increasingly vital part of the national economy and the fastest growing segment of the U.S. population. Because of immigration and high birth rates, Latinos have displaced African Americans and become the largest minority population in the United States (U.S. Census Bureau, 2003). Now constituting 14% (41.3 million) of the total population (U.S. Census Bureau, 2006), Latinos have high participation rates in America's labor force, but tend to work in jobs that pay low wages, provide low economic mobility, are less stable, and are more hazardous. Moreover, many of the low-wage jobs do not provide health benefits, a major reason for increased poverty levels among Latinos. This participation is true for both male and female Latino workers and results from low educational attainment, decreased English language proficiency, and lack of work experience, training and/or other employability skills ("Deadly Trend," 2002). Although many Latinos enter the workforce at an early age, working in low-skill jobs diminishes the opportunity to gain the kind of general work experience that brings about opportunities for better paying low-risk positions.

In general, the low educational attainment for a large portion of this population contributes to employment outcomes described above. However, with the impending labor shortage (Carnevale, 2005) and the continuous growth of the Hispanic population, this segment of human capital will be increasingly important to the enhanced competitiveness of America's workforce. One of the ways that Latinos can participate in the high-skill – high-wage labor market is to get them to enroll and complete postsecondary programs which lead to a certificate/diploma or associate's degrees in technical fields. The purpose of this paper is to describe the results of two studies which investigate the participation of Hispanics in postsecondary technical education in the United States. The results presented will primarily include descriptive information and it will compare the involvement of Latinos in postsecondary technical education in 1994 and 2000.

Definition of Latino

The term "Latino" is used "to denote all U.S. persons whose origins can be traced to the Spanish-speaking regions of Latin America, including the Caribbean, Mexico, Central America, and South America" (Flores, et. al., 2002). It describes a very diverse group of people from all races and many nationalities. According to the U.S. Census Bureau (2005), the Latino population is made up of Mexicans (65.9%), Puerto Ricans (9.5%), Cubans (4.0%), Central Americans (7.8%), South Americans (5.2%), and other Hispanics (7.6%). Vasquez (2001), in describing the differences within the Latino community, emphasized that there are differences in each group's ethnic background and racial composition and that there were social, economic, political, cultural and linguistic differences. Chappa (1991) stated that,

Hispanics are not a monolithic group. Many called what is now a part of the southwestern United States (states such as Arizona, California, Texas, etc.) their home well before the founding of Jamestown. Yet some also arrived within

the last few years. The historical experience of each subgroup as it has developed in the United States is different (p.11).

“However, because of their locations, education, and immigration histories, the various subgroups suffer in the labor market in different ways and to different degrees” (Arbona, 1995, p.39). For example, Puerto Ricans, as a result of their citizenship, do not face many of the obstacles faced by other Latinos. But still, these differences, as well as the level of acculturation and migration history, are important factors in understanding the career development of Latinos. Such factors ultimately predicate occupational choice. The terms Latino and Hispanic will be used interchangeably in this paper.

Latino Participation in the Labor Force

Success in the workforce specifically rewards those with postsecondary education (Ganderton & Santos, 1995). Latinos make up about 13 percent of the labor force in the U.S. (Kochhar, 2005). However, the concentration seems to be in occupations that have low wages and educational requirements (Kochhar, 2005; Perez, 2000; NCES, 2003). In 2000, almost one-fifth (19.4%) of Latino workers were employed in a “service” occupation, which includes food preparation, personal services, and cleaning/maintenance jobs as compared to one in nine non-Hispanic Whites workers (11.8%) (NCLR, 2001, p.18). Conversely, Latinos were less likely than non-Hispanic Whites to work in high-paying managerial and professional specialty occupations. In 2000, 14% of Latinos were in managerial or professional occupations, compared with 33% of non-Hispanic Whites. Among Latino subgroups, Mexicans (12%), were the least likely to work in managerial or professional occupations (NCLR, 2001, p. 18). Ganderton and Santos (1995) state that,

Higher earnings favor college graduates, and postsecondary training is increasingly important in our economy. For Hispanics, failure to obtain postsecondary education represents a major obstacle to their economic improvement, and their increasing participation in the workforce suggests a decline in the level of education among workers in the United States (p. 44).

Latinos trail other ethnic groups in postsecondary attendance and completion. However, they have contributed to the nation’s social and economic prosperity. Perez (2000) believes that the biggest disparity between Latinos and other groups is their social economic position. A share of Latinos, according to NCLR (2001), have not reaped the benefits of the economic boom, which means that access to improved education, health, and economic status elude some Latinos. When compared to non-Hispanic Whites, Latinos have a large gap to close. Rand, one of the most influential think tanks in the country, conducted a study that analyzed the economic impact of Hispanics’ lack of education.

The analyst found that if the nation were to invest one dollar toward having Hispanics receive a college degree, the return on investment would be 4:1. This means that the benefit of having college-educated Hispanics in higher paying jobs available only to college graduates would represent higher taxes, contributions to social security, and disposable income that Hispanics would be able to plow back into the economy (as cited in Rodriguez-Valladares, 2002, p. 37).

Carnevale (1999) states, “an education’s role in determining jobs and earnings has grown and Hispanics have lost ground by not increasing college attendance at the same rate as other groups” (p. 27).

Language proficiency has a powerful impact on the type of work to which one has access, as well as economic mobility. English language skills are necessary for almost all jobs in the United States. Data analyzed by Siles & Pérez (2000) indicate that “a notable proportion of Latinos who speak Spanish do not have a level of English language ability that permits them to enter high-paying jobs in the current labor force” (p.6). In addition, they state that “...lack of English language skills can affect employment paths or job opportunities early in a worker’s career” (p. 8) and “...chances to move into high-wage jobs and industries projected to experience growth, are small if their English language skills are not at the level expected by the marketplace” (p.8).

With potential worker shortages being a concern for most U.S. businesses and as companies increasingly view their human capital as their greatest asset, such enterprises must concentrate more on employee development to maintain competitiveness in the market. Such development predictably will include the nation’s largest ethnic minority group, as in the future, it will potentially form the largest segment of the workforce.

Latino Education

Going to college and earning a degree is a significant predictor of earning potential and occupational choice (Morales, 2000). Nearly 60% of jobs today require college-level skills. These jobs are the fastest growing, and they replace those that previously required only high school diplomas [or less] (Carnevale, 1999). In general, Latinos have low educational attainment and lag behind non-Hispanic groups in high school and college degree completion (Pew Hispanic Center, National Survey of Latinos: Education, 2004). Large education gaps exist for Latinos, even beginning at pre-school age, perpetuating low educational attainment and reduced employment opportunity. As a result, Latinos are overrepresented in high-risk, low-skill/low-wage work. Due to various factors, Latinos are the group with the least education and experience the highest high school dropout rate among all ethnic groups (U.S. Census Bureau, 2000; NCLR, 2001). This high dropout rate limits their ability to pursue postsecondary education and obtain associate, bachelor, advanced degrees, and other kinds of training that lead to advanced employment.

Educational attainment, as reported by the U.S. Census Bureau (2000), indicates that the Hispanic population age 25 and over has attained less education than their non-Hispanic White counterparts. Latinos are lagging behind the educational attainment of non-Hispanic Whites – 27% of Latinos have less than a ninth grade education compared to 4.2% for non-Hispanic Whites, 15.7% have not completed high school versus 7.3%, 27.9% have diplomas which is less than the 34.1%, and 29.1% have more than a high school education as compared to 54.4%. These numbers are staggering especially since the Latino population is growing faster than any other group and has the highest (35.5%) number of people younger than age 18 (NCLR, 2001). This group will, in the near future, be the largest segment of our workforce and will contribute more to a tax base upon which all Americans will be increasingly dependent. Denying Latinos any opportunity for increased education or training hampers their future preparedness as they seek to make their mark as employers, employees, and entrepreneurs. Dependency upon the economic contributions of Latinos to our society is projected to increase as society ages and more baby boomers retire.

Latinos and Community Colleges

Latinos, more than other groups, tend to enroll in community colleges. In 2000, Latino students accounted for 14% of all students enrolled in 2-year colleges and 7% of those in 4-year institutions (Llagas & Snyder, 2003). When looking at Latino subgroups, for example, Mexican students have the highest enrollment in community colleges. According to Fry (2002), some 46% of Mexican college students who are high school graduates and are 18 – 24-years old enrolled in community colleges as compared to 31% of Puerto Ricans and Cubans.

Although community colleges may serve as the entry point for postsecondary education for Latinos, research indicates that students who enroll in community colleges often attend on a part-time basis, prolong their college education into their mid-20s and beyond and often have gaps in their attendance. Brown, Santiago and Lopez (2003) describe most Latino students as, “first-generation college students, are low-income, have a less academic high school education than their peers, and enroll in community colleges” (p.41). They continue by adding that “a large number of Latinos in higher education are also nontraditional students. They are older, work, attend college part-time, and often are also caring for family – all characteristics that influence the decisions Latino students make in participating in and completing higher education” (p.42). These descriptions also represent several of the seven “risk factors” identified by the U.S. Department of Education that negatively relate to persistence and degree attainment. The risk factors are delayed postsecondary enrollment, part-time enrollment, not having a regular high school diploma, working full-time, being financially independent, having children or dependents, and being a single parent (Fry, 2003). Such factors cause the incidence of transfer to four-year universities to decrease (Fry, 2002, 2004; Ganderton & Santos, 1995) or contribute to non-completion of postsecondary education.

Although the majority of the research on postsecondary educational outcomes have reported that community colleges deter the completion of a 4-year education for Latinos (Rendon & Nora, 1994; Arbona, 1990), Gray & Herr (1995) report

...the largest and fastest growing ranks of technical workers are not college-trained professionals; they are blue-collar technicians educated at the pre-baccalaureate postsecondary level, in high school vocational education programs, or in formal training programs in the workplace (p.30).

They also indicated that many technical fields in which credentials are awarded at the postsecondary associate degree level and below had the largest projected job openings between 1990 and 2005. This statement continues to be true today. Two-year postsecondary institutions have the best potential for directing the Latino population into lucrative technical fields, namely the “blue collar” technical occupations (Gray & Herr, 1995). Some of these fields include: agricultural business and production, agricultural sciences, business, communication technologies, computer and information sciences, construction, engineering, engineering

technologies, health professions, home economics, mechanics and repair, personal services, precision production, protective services, science technologies, or transportation (Community College Research Center, 2004).

The Community College Research Center (CCRC) (2004) which looked at demographic characteristics of students in occupational programs using the National Postsecondary Student Aid Study (NPSAS) 1996 and 2000 survey data indicated some of these trends: there was a large increase in the proportion of computer and data processing majors among occupational community college students; there was an increase in community college students with previously earned degrees; and, there was a shift in the primary reason for enrolling among community college students. Gray and Herr (1995) stated that more students should consider the two-year college because “two-year technical education has the best potential for a positive return and is critical for the future economic competitiveness of the United States” (p.6).

CONCEPTUAL FRAMEWORK

The conceptual framework for both studies was based on the state-of-the-art principles in C. Arbona’s work, *Career Development and Vocational Behavior of Racial and Ethnic Minorities* (1995). Career development is a lifelong process and a determinant of educational attainment that leads to occupational attainment. According to Arbona (1995),

the career development of Latinos has become a salient issue in the social sciences literature because it is believed that the quality of the future U.S. Labor market will depend, to a great extent, on this group’s education and job skills (p.38).

Although Latinos are the fastest growing minority group in the United States, they are also the poorest and most under educated when compared to other minority groups. The level of acculturation and migration history plays an important role in understanding the career development of Hispanics. According to Olmedo (1979), “Acculturation is most often used to refer to the process by which immigrants adapt to the sociocultural and psychological characteristics of the host society” (cited in Arbona, 1995, p.43) and Keefe and Padilla (1987) state that “the level of acculturation is often interpreted as a measure of the person’s capacity to function and interact in the larger society” (cited in Arbona, 1995, p. 43).

Migration history refers to the length of time the immigrant has spent in the new country. Two factors expected to influence how well Latinos are able to function effectively between their culture and the dominant culture, are the group’s migration history and socioeconomic status. Differences occur within Latino subgroups as well. “However, because of their location, education, and immigration histories, the various subgroups suffer in the labor market in different ways and to different degrees” (Arbona, 1995, p. 39). For example, Latinos of Mexican decent make up more than 75% of all Latinos in the United States (Kao & Thompson, 2003). Educational attainment for Latinos born of Mexican decent, especially for those that are first generation immigrants, is lower than those that are born in the United States (Kao & Thompson, 2003). However, other research indicates that “U.S. born children of Latino immigrants had higher levels of educational attainment than comparable second generation children of U.S. born parents” (as cited in Kao & Thompson, 2003, p. 560-561).

The framework is comprised of three generation levels that represent migration history and three levels of socioeconomic status (low, medium, and high) representing “occupational standing and educational level” (Arbona, 1995, p.41). Operational definitions for each generation level are:

first generation immigrants are people (both parents and child) born in their country; second generation immigrants represent children born in the U.S. whose parents (one or both) were born in another; and the third generation consists of both parents and children born in the U.S. (Arbona, 1995, p.42).

Table 1

Framework for Latino Career Development

		Generation Level		
		1	2	3
Socioeconomic Status	Low	I	IV	VII

Medium	II	V	VIII
High	III	VI	IX

Note: Based on generation level and socioeconomic status (Arbona, 1995, p. 42).

Arbona (1995) describes how Latinos can be categorized within the framework based on socioeconomic background and length of time in the United States (see Table 1). Cell I represents persons who are first generation immigrants (born in their country of origin) of low SES compared to Cell IX, which represents third generation (or later) immigrants with high SES. How this framework relates to theories of career development depends on the individual's level of acculturation. The higher the level of acculturation, the better it is to facilitate the process of career development. Arbona (1995) states, "that it is expected, then, that Hispanics from second and later generations (Cells IV to IX) will be more acculturated than first generation Hispanics (Cells I to III), and that among first generation Hispanics, those of higher socioeconomic classes and educational levels (Cells II and III) will be more acculturated than their more disadvantaged counterparts (Cell I)" (p.43).

METHODOLOGY

Population and Sample

For both studies the researchers used secondary data from the National Education Longitudinal Study (NELS). The National Education Longitudinal Study of 1988 was the first longitudinal study conducted by the National Center for Educational Statistics. Some 25,000 eighth graders and their parents, teachers, and school principals were surveyed in 1988. These same students were resurveyed in 1990, 1992, 1994 as part of the first, second, and third follow-ups of NELS:88 (National Center for Education Statistics: National Education Longitudinal Study of 1988, Base Year Student Component Data File User's Manual, March 1990, p.1). The fourth follow-up surveyed the same sample of students in the year 2000, when many of these individuals would have completed college and were 8 years out of high school (Curtin, Ingels, Wu & Heuer, 2002).

The general purpose of NELS was to produce a comprehensive data set for the development and evaluation of educational policy at all governmental levels by studying the educational, vocational, and personal development of students at various grade levels, and the personal familial, social, institutional, and cultural factors that may affect that development (National Center for Education Statistics: National Education Longitudinal Study of 1988, Base Year Student Component Data File User's Manual, March 1990, p.1).

The first study utilized data from the second and third follow-ups (NELS: 88/94) to investigate Latino students' participation in postsecondary technical programs in community colleges and two-year proprietary institutions in the U.S. The follow-up study utilized fourth follow-up data (NELS: 88/00) to examine Latino college completers and the differences in completion rates of Latino subgroups when they were classified by their generation status. Although the purposes of each study was somewhat different, the follow-up study looked at the number of Latinos who completed a postsecondary credential (certificate/diploma and higher) as well as the number who completed postsecondary technical education programs – a similar goal of the first study.

First Study. The NELS Second follow-up in 1992 surveyed students in their second term of their senior year. The second follow-up measured learning throughout high school and also collected information that provided insight into the transition into the labor force and postsecondary education. A total of 21,188 (unweighted) students were surveyed.

The NELS Third follow-up in 1994 included a total of 15,875 (unweighted) respondents who provided insight into the effect of eighth grade and high school curricular experiences on postsecondary education choice and employment opportunities and choice. In addition, labor force participation, postsecondary persistence, curricular progress, and family formation also were explored. A total of 9,417 cases were selected. This number represented the number of respondents who identified themselves as White and Hispanic.

Follow-up Study. The NELS Fourth follow-up surveyed the same sample of students in the year 2000 when many of these individuals would have completed college and were 8 years out of high school (Curtin, Ingels, Wu & Heuer, 2002). It included a total of 12,144 (unweighted) respondents who were also members of all of the base year, first, second, and third studies. It provided insight

into a new set of educational and social issues about the NELS: 88 respondents who were at the time of the interview, 26 years old. “The focus was on postsecondary education and employment, and especially the transitions experienced by young adults as they moved from educational systems (secondary and postsecondary) into the labor market” (NCES, 2002, p.7). This study looked at the fourth follow-up respondents (N=12,144) who were Hispanic (n=1,360) and who were members of the base year, and all follow-up studies.

Survey Flags and Weights

The selection of the proper participation flags and weights is a critical step in determining the appropriate sample. They should be used in selecting the subset of respondents the researchers intend to examine. The general purpose of using weights with survey data is to compensate for unequal probabilities of selection and to adjust for the effects of non-response (National Center for Educational Statistics: NELS: 88, Base-Year to Fourth Follow-up Data File User’s Manual, July 2002, p. 65).

First Study. For this study, the flag (F3UNIV2D) from the third follow-up data set was used to select those students who had graduated and were in school at the time the survey was conducted. The weight variable F3QWT was employed. This weight was intended to be used with all members of the third follow-up sample who completed a questionnaire in 1994, regardless of their participation status in previous rounds. The weight allowed the researchers to generate national statistics for White and Hispanic students who were enrolled in college in 1994. When used with the appropriate flag, it allowed projections to the population (N=1,896,622) of spring 1992 twelfth graders who were eligible to complete questionnaires in 1992 and 1994.

Follow-up Study. For the follow-up study, the flag (F4PNLFL) from the fourth follow-up data set was used to select those students who were members of the base year, first, second, third and fourth follow-up. The weight variable F4PNLWT, the fourth follow-up complete panel weight was employed. The weight is used to estimate longitudinal parameters that describe the population of spring 1988 8th graders (NCES, 2002, p.84). This weight allows the researchers to generate national statistics for Hispanic students who completed a postsecondary credential in 2000. When used with the appropriate flag, it allows projections to the population (N=308,313) of Hispanic respondents who were 8th graders in 1988 and members of all follow-ups.

Data Analyses

The Statistical Package for the Social Sciences (SPSS®) software was used to analyze all data collected in both studies, although different versions of the software were utilized. The Crosstab function of SPSS® was utilized to generate frequencies and percentages to describe both sample populations. The analyses used in both studies are listed and described in Table 2 however, only the descriptive results for both studies are reported in this paper.

Table2

Data Analyses and Research Questions for First and Follow-up Studies.

Analyses		First Study Research Questions	Follow-up Study Research Questions
First	Follow-up		
Percentages/ Frequencies	Percentages/ Frequencies	1. What are the technical/occupational programs in which Hispanic students in the United States choose to enroll?	1. What percentage of Latino student subgroups identified as first, second, and third generation completed a high school diploma and a postsecondary credential?
Percentages/ Frequencies	Percentages/ Frequencies	2. What are the educational background factors for Hispanics pursuing postsecondary education?	2. What was the postsecondary completion rate of Latino student subgroups identified as first, second, and third generation, who were enrolled in programs that lead to a diploma, certificate, or associate degree? Which programs did they complete?
Logistic	Chi Square	3. What relationships exist between	3. What is the difference in

Regression		selected independent variables and the dependent variable, which examine the selection of a technical or occupational career program over other higher education programs?	postsecondary completion rates for Latino students identified as first, second, and third generation?
------------	--	--	---

RESULTS

The purpose of this paper is to describe the results of two studies which investigate the participation of Hispanics in postsecondary technical education in the United States. The results presented primarily include descriptive information from two studies and will compare the involvement of Latinos in postsecondary technical education in 1994 and 2000. Table 3 describes the sample populations from both studies. Although the first study compared Latino subgroups to Whites, the frequencies for Whites are not reported in Table 3. However, a brief discussion comparing the two groups is included in the narrative.

Table 3.

Weighted Demographic Variable Frequency Distribution of Sample Populations from the First (1992 High School Graduates) and Follow-up (2000 Postsecondary Completers) studies by Subgroups.

Hispanic Subgroups %, n									
Student Characteristics by Subgroups	First Study (1994) (n=206,907)*				Follow-up Study (2000) (n=99,949)				
	M	C	PR	O	M	C	PR	O	
SES									
Quartile 1 (low)	50.6	23.1	36.6	24.2	49.4	18.4	21.6	18.7	
Quartile 2	21.9	25.2	34.5	25.5	21.9	30.0	35.2	20.4	
Quartile 3	16.5	18.4	18.1	18.9	20.1	7.0	20.8	15.1	
Quartile 4 (high)	6.0	33.3	10.8	25.5	8.6	44.6	22.4	45.8	
Total	125,104	9,725	21,181	46,996	56,144	7,226	10,480	24,632	
H.S. Status (1994)									
Recd. HS Diploma	95.6	96.0	94.7	97.6	90.1	100.0	90.1	96.6	
Recd. GED	1.2	2.1	2.1	1.8	6.1	0	1.0	2.5	
Recd. Cert. of Att									
Enrolled in HS	.2			.2	0	0	5.8	0	
Work Equiv.HS Diploma	1.5		3.3	.4	1.9	0	3.1	1.0	
Not Grad./Not Working on	1.4	1.9			1.9	0	0	0	
Total	125,104	9,726	21,181	46,995	56,145	7,226	10,479	24,632	
Degree Program Student Enrolled (1994)									
Cert./Dip./Assoc.	22.8	35.9	29.3	20.4					
Other Higher Ed. Program	56.2	41.6	47.4	54.3					
Combination 1 &2	11.2	16.4	15.8	11.2					
Undeclared	9.8	6.2	7.5	14.1					
Types of PSE degrees attained as of 2000									
Cert/License only					29.3	1.4	44.8	21.5	
Assoc degree only					25.7	12.6	10.6	14.1	
Bach degree only					33.0	54.4	36.2	40.8	
Cert. and AA but not					4.3	12.7	5.0	2.0	

higher				
Cert. and BA but not higher	1.8	1.1	1.0	3.8
AA and BA but not higher	3.2	4.6	0	10.6
Cert., AA, & BA but not higher	.3	0	1.0	.5
MA degree but not higher	2.2	13.3	1.4	5.5
Ph.D./Professional doc	.1	0	0	1.2
Total	56,145	7,226	10,479	24,631

Note: M - Mexican; C - Cuban; PR - Puerto Rican; O - Other Hispanic * includes missing cases

Results from First Study. The distribution of males and females within Latino subgroups was fairly equal (~48% male to ~51% female). When comparing socioeconomic status of Latinos to Whites, each of the Latino subgroups had the highest percentage represented in the two lowest quartiles (Quartile 1 and Quartile 2) except for the Cuban group (See Table 3). About 51% of Mexican and 37% Puerto Rican respondents were grouped in Quartile 1(Low) when compared to 12% of Whites. About 34% of Whites, 33% of Cubans and 25.5% Other Hispanics were grouped in Quartile 4 (high) as compared to 6% of Mexicans and 11% of Puerto Ricans.

Both mother and father expectations were analyzed. The data indicate that Latino parents had high aspirations for their children (as reported by the sample member). Most parents expected their children to earn at least a bachelor's degree. A low percentage of parents wanted their children in vocational/occupational programs. The Cuban group identified master's degree and Ph.D. degree or other professional degrees as expected educational levels (see Table 3 – Follow-up data).

Other results indicated that, overall, Latino enrollment in postsecondary education in 1994 was approximately 72% of the total Latino population in twelfth grade in 1992. The total number decreased from 206,907 to 149,815, a drop of about 28% which means that 72% went on to college. Of those Latinos in college, about 23% (34,595) identified themselves as pursuing technical and /or occupational programs. The largest Latino subgroup participating in technical/occupational programs was Mexican (63% - 21,840/34,595). Within each of the subgroups, the majority of students identified themselves as being enrolled in transfer programs, which mean that their intention is to attain a bachelor's degree: 68% Mexican, 63% Puerto Rican, 59% Cuban, and 66% other Latino. When looking at specific technical/occupational programs the findings revealed that the largest enrollment of Latino students were in the following programs: Protective Services (3.1%); Mechanic (2.6%); Education (2.4%); and Dental/Medical Technician (2.3%). Programs such as Precision Production (0.2%); Electronics (0.6%) and Engineering Technology (1.1%) remained low (<2%). Programs such as Child Care and Guidance, Textiles, and Dietetics had no Latino enrollment.

Results from Follow-Up Study. This study examined Latino college completers and the differences in completion rates of Latino subgroups when they were classified by their generation status as defined by Arbona (1995). Some of the background and educational characteristics of the sample weighted population (n=99,949) are listed in Table 3. This sample, now decreased by about 68% of the total Latino population (N=308,313) represents the number of Latino respondents with a postsecondary credential (32%).

The majority of the Mexican (49.4%) respondents fell in the lowest socioeconomic quartile compared to the majority of Cuban (44.6%) and Other Hispanic (45.8%) groups whose socioeconomic status fell in the highest quartile. Mexican (8.6%) respondents showed the greatest disparity in their socioeconomic status with the least number represented in the highest socioeconomic quartile. When examining the generation status of each subgroup, the majority of Mexican (51.6%) respondents were classified as generation 3, while Cuban (62.8%) and Puerto Rican (68.6%) respondents were classified as generation 2; other Hispanics had an equal number represented in generation 2 (38.3%) and generation 3 (39.2%).

The greatest proportion of the respondents in most of the subgroups reported attaining a bachelor's degree only (Mexican, 33.0%; Cuban, 54.4%; and Other Hispanic, 40.8%) except for the Puerto Rican cohort which attained a certificate or license only, the greatest proportion of the time (44.8%). Cuban respondents had the greatest number (13.3%) of all subgroups completing a Master's degree (see Table 3).

Table 4 shows the percentage of Latino groups who completed both a high school diploma and postsecondary credential by subgroup and generational status. In generation one: Mexican (60%) respondents obtained a certificate/license only the majority of the time while both Cuban (49%) and Puerto Rican (78%) respondents obtained a bachelors degree only the majority of the time. The same groups in generation two shift. Mexicans (31%) obtained bachelors degrees the majority of the time while Puerto Ricans (54%) obtained certificates/licenses only the majority of the time. By the second generation, twenty-four percent of Cuban respondents obtained up to a Masters degree compared to the other groups (less than 6%). By the third generation, Mexican (21%) and Other Hispanic (13%) respondents were the only groups to obtain either a certificate/license or associate's degree only. Most groups (in the third generation) had the highest percentage of students who had attained a bachelor's degree only (Mexican 45%; Puerto Rican 86%; Other 46%). Cuban, third generation respondents had the highest number of respondents who attained a certificate and associate's degree (50%) followed by bachelor degree attainment (42%).

The following are the specific technical programs in which Latinos completed by generation status. Only first generation Puerto Ricans (Paralegal, 32.3%); second generation Mexicans (Allied Health, 8.5%), and Other Hispanics (Design, 7.6%); and third generation Mexicans (Nursing Assistant, 4.6%) have higher completion rates in programs that lead to a certificate, diploma, or associate degree. High skill-high wage programs, such as precision production and electronics, have very low completion rates (Gen1, 0%, 0%; Gen 2, .7% completion rates by Mexican and 0% by the other three groups & 1.1% Mexican, 2.5% Other Hispanic; Gen 3, 1.0% Mexican and 0% by the other three groups & 0% by all groups respectively).

In general, very few Latinos pursue vocational/technical fields as indicated by higher completion rates at the baccalaureate level. Latinos receiving credentials in some of the more lucrative technical or high-skill/high-wage fields such as precision production, electronics, and engineering technology are almost as non-existent today as they were in the first study (Maldonado and Farmer, 2001). A positive statistic from the follow-up study, however, is the growth of Latinos in health related occupations. Growth at both the associate degree level and below and at the bachelor's degree level is significant. While Mexicans in the first study were the most disenfranchised, as a group they made vast improvements in their completion rates. In terms of the subgroups within their generation status, this study showed that the longer the groups are in the U.S. (second and third generation), the better their educational attainment.

Table 4

Weighted Percentage of Hispanic Student Subgroups with a High School Diploma by Type of Postsecondary Credential and Generational Status

Hispanic Subgroups by Generation	Cert/Lic. Only %	Assoc. only %	Bach. Only %	Cert. & AA %	Cert.& BA %	AA & BA %	Cert., AA, & BA %	MA %	Ph.D./Prof. %
Generation 1 n=11,692									
Mexican	60.3	11.4	22.7	0	3.8	1.8	--	0	--
Cuban	0	29.8	48.6	0	0	21.6	--	0	--
Puerto Rican	6.3	16.2	77.5	0	0	0	--	0	--
Other Hispanic	19.2	19.5	21.3	3.4	1.7	27.6	--	7.4	--
Total	36.3	15.6	31.3	1.1	2.4	10.9	--	2.4	--
Generation 2 n=33,090									
Mexican	21.5	27.3	31.4	9.7	1.7	2.9	--	5.0	.5
Cuban	2.6	10.9	38.4	0	0	3.8	--	24.3	0
Puerto Rican	54.2	4.1	23.6	8.7	0	0	--	2.4	0
Other Hispanic	7.4	6.1	58.5	0	3.2	14.6	--	6.2	4.0
Total	22.0	17.7	39.3	6.2	1.5	5.1	--	7.1	1.1
Generation 3 n=34,511									
Mexican	20.8	25.0	45.1	2.3	1.5	3.7	0	1.4	--

Cuban	0	0	41.6	49.9	4.3	4.3	0	0	--
Puerto Rican	0	0	86.2	0	0	0	13.8	0	--
Other	12.7	18.3	46.3	2.9	7.8	3.6	1.7	7.1	--
Hispanic									
Total	17.3	21.5	46.2	5.1	3.0	3.6	.7	2.6	--

Summary

In summary, this paper described the results of two studies which investigated the participation of Hispanics in postsecondary technical education in the United States. The results presented in this paper primarily included descriptive information from each study and it compared the involvement of Latinos in postsecondary technical education in 1994 and 2000. One of the key findings of both studies was the lack of participation of Latinos in postsecondary technical education particularly in occupations considered to be high skill – high wage. Completion rates of such degrees are highest for first generation respondents and generally decline for most Hispanic subgroups in later generations. Additionally, attrition of Latinos from college in general, increased from 1994 to 2000 (down from 149,815 in 1994 to 99,949 in 2000). However, those that did persist and complete a postsecondary credential earned mostly bachelor’s degrees.

Discussion

High performance workplaces are demanding higher level skills of their workers. A better educated workforce has higher fiscal impact on the economy (Carnivale, 2005). Education, therefore, is the basis for improving human performance at work “because the highest returns to employer training result from training the most trainable – those with the best educational preparation” (Carnivale, 2005, p. 40). Although much of the current research on college achievement support the attainment of baccalaureate degrees, the value of a postsecondary technical education cannot be ignored. According to a study conducted by National Assessment of Vocational Education (1994), “employers had a positive view of postsecondary education and that there was some empirical evidence that postsecondary occupational education completers received higher wages than community college program completers who failed to complete a vocational program” (cited in Jacobs, 2001, p. 175). The CCRC (2004) in their study indicated that there was an increase in community college students with previously earned degrees, possibly indicating that all bachelor’s degrees do not lead to higher employment and wages.

There are many variables that impact educational attainment of Latinos. In addition, those variables can be different for each of the various subgroups. The educational attainment and the associated background factors are important considerations in Latinos’ career development. Herr and Niles (1994), two distinguished scholars, stated that “...decision making, development of self-identity, and life choices do not occur in a vacuum. They occur within political, economic, and social conditions that influence the achievement images and belief systems on which individuals base their actions” (p182). Furthermore, “factors such as poverty, poor education, and racism often combine to affect negatively the individual’s self-concept, ambition, motivation, and self-efficacy, thereby diminishing the perceived utility of engaging in long-range future planning” (p. 182). These factors and conditions demonstrate the complexities surrounding career development and educational attainment of Latino students. It should be noted that career development among Latinos may vary depending upon how well an individual becomes acculturated to the dominant culture. Thomas and Alderfer (1989) described minorities as bicultural. Because they move between their culture and the dominant culture, most minorities experience difficulties functioning effectively. Latinos’ ability to meet educational and occupational tasks are based on two predictors, migration history and socioeconomic background (Maldonado & Farmer, 2001; Arbona, 1995). As noted with both studies, there was a significant decrease in the number of Latinos who started their postsecondary education in 1994 (NELS: 88/94: n=149,815) to those that actually completed a postsecondary credential/s in 2000 (NELS: 88/00: n=99,949). The researchers believe that college attendance and graduation rates are directly affected by low educational attainment of the Latino population as a whole and the high percentage of drop-outs as a result of an educational system that does not promote excellence in an entire group of people.

Advocating that Latinos pursue postsecondary technical programs may be viewed as controversial to those who research college achievement and the attainment of bachelor’s degrees. For those advocates, we respond by stating that a postsecondary technical education provides options for those who would otherwise “get stuck or spill out of the pipeline” (Schmidt, 2003). While the attainment of bachelor’s degrees is not discouraged by the researchers, the decision to pursue such a degree should not be made haphazardly or without taking into account considerations such as future openings in the field and salary. Research reported by CCRC (2004) states that the number of people who are enrolled as occupational students held another degree (>30%) and “the gain was the highest among those who held a bachelor’s degree as their highest prior degree (increased from 2% to 9%)” (p.5). In short the role of advisors at the community college and in high schools is critical in steering not just Latino students but all students in careers that the

labor market will support. Additionally, the researchers believe that pursuing a career and technical education degree does not preclude a person from attaining a higher degree. In fact, they believe that success early on breeds the motivation to continue.

Both studies presented in this paper should set the stage for further research on the importance of consistent career development for Latinos throughout their educational life as well as provide educational policy makers with information needed to make future educational changes. In addition, academic advisors in middle schools, high schools and community colleges must reevaluate their practices and inform more students of the opportunities available through postsecondary technical occupations. For the Latino population, parents must be informed of those opportunities as well.

The Latino presence and graduation rate in today's institutions of higher education has improved but is no way keeping pace with the Latino American presence in the United States. If the United States wants to remain competitive in the global economy, the ability to produce high levels of skilled workers is critical to the overall performance of its economy (Carnivale, 2005). The contributions of Latinos to that performance will rest on how well the pipeline is sealed and graduation rates, at both high school and higher education increase.

REFERENCES

- Arbona, C. (1990). Career counseling research and Hispanics: A review of the literature. *The Counseling Psychologist, 18*(2), 300–323.
- Arbona, C. (1995). Theory and research on racial and ethnic minorities: Hispanic Americans. In F.T.L. Leong (Ed.), *Career development and vocational behavior of racial and ethnic minorities* (pp.37–66). Mahwah, NJ: Lawrence Erlbaum Associates.
- Brown, S. E., Santiago, D., & Lopez, E. (2003, March/April). Latinos in higher education: Today and tomorrow [Electronic version]. *Change, 35*(2), 40–46.
- Carnevale, A. (1999). *Education equals success: Empowering Hispanic youth and adults*. Princeton, N.J.: Educational Testing Services.
- Carnevale, A. (2005, January). The coming labor and skills shortage. *T&D, 59*(1), 37–41.
- Chappa, J. (1991). Special focus: Hispanic demographics and educational trends. In D.J. Carter & R. Wilson (Eds.), *Minorities in higher education: Ninth annual status report* (pp.11–17). Washington, DC, American Council on Education.
- Community College Research Center. (2004, August). The characteristics of occupational students in postsecondary education (Issue Brief No. 21). New York, N.Y.: Author.
- Curtin, T. R., Ingels, S. J., Wu, S., and Heuer, R. (2002, July). *Base-year to fourth follow-up data file user's manual (NCES 2002-323)*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.
- 'Deadly Trend' of Hispanic worker deaths on top of agenda at OSHA. (2002, October, 17). *Labor Relations Week, 16*(41), 1257.
- Flores, G., Fuentes-Afflick, E., Barbot, O., Carter-Pokras, O., Claudio, L., Lara, M., McLaurin, J. A., Pachter, L., Gomez, F. R., Mendoza, F., Valdez, R. B., Villarruel, A. M., Zambrana, R. E., Greenberg, R., & Weitzman, M. (2002, July 3). The health of Latino children: Urgent priorities, unanswered questions, and a research agenda. *Journal of the American Medical Association, 288*(1), 82–90.
- Fry, R. (2002, September 5). *Latinos in higher education: Many enroll, too few graduate* [Electronic version]. Washington, D.C.: Pew Hispanic Center.
- Fry, R. (2003, October). *Labor market outcomes of Hispanics by generation* (Report No. 188). New York, NY: ERIC Clearinghouse on Urban Education. (ERIC Document Reproduction Service No. EDO-UD-03-7)
- Fry, R. (2004, June 23). *Latino youth finishing college: The role of selective pathways*. Retrieved March 1, 2006, from <http://pewhispanic.org/files/reports/30.pdf>

- Ganderton, P. T. & Santos, R. (1995). Hispanic college attendance and completion: Evidence from high school and beyond surveys. *Economics of Education Review*, 14 (1), 35 – 46.
- Gray, K., & Herr, E. (1995). *Other ways to win*. Thousand Oaks, CA: Corwin Press.
- Herr, E.L., & Niles, S. (1997). Multicultural Career Guidance in the Schools. In Paul Pedersen & John C. Carey (Eds.) *Multicultural counseling in schools* (pp.157-176). Boston, MA: Allyn and Bacon.
- Jacobs, J. (2001). What is the future for post-secondary occupational education? *Journal of Vocational Education Research*, 26 (2), 172 – 205.
- Kao, G. & Thompson, J. S. (2003). Racial and ethnic stratification in educational achievement and attainment. *Annual Review of Sociology*, 29, 417-442.
- Kochhar, R. (2005, December 15). *The occupational status and mobility of Hispanics*. Retrieved March 3, 2006, from <http://pewhispanic.org/files/reports/59.pdf>
- Llagas, C. & Snyder, T. D. (Eds.). (2003, April). *Status and trends in the education of Hispanics (NCES 2003-008)*. Washington, D.C.: National Center for Educational Statistics (NCES). Retrieved July 17, 2003 from Academic Search Premier Database.
- Maldonado, C. & Farmer, E. (2001). Hispanic students' participation in postsecondary technical programs in the United States. *International Journal of Vocational Education and Training*, 9(1), 47-58.
- Morales, R. (2000). What a worker finds in the U.S. labor market. In S. M. Pérez (Ed.), *Moving up the economic ladder: Latino workers and the nation's future prosperity*. State of Hispanic America 1999 (pp. 35 – 60). Washington, D.C.: National Council of La Raza.
- National Council of La Raza. (2001, August). *Beyond the census: Hispanics and an American agenda*. Washington, D.C: Author. Retrieved July 17, 2003, from www.nclr.org
- Perez, S. M. (Ed.). (2000). *Moving up the economic ladder: Latino workers and the nation's future prosperity*. Washington, D.C.: National Council of La Raza.
- Pew Hispanic Center and the Kaiser Family Foundation. (2004, January). *National Survey of Latinos: Education*. Retrieved April 1, 2004, from <http://www.pewhispanic.org/site/docs/pdf/LatinoEducationSummaryandChartpackJan262004.pdf>
- Rendon, L. I., & Nora, A. (1994). A synthesis and application of research on Hispanic students in community colleges. In J.L. Ratcliff (Ed.), *Community colleges* (pp. 287-293). Needham Heights, MA: Simon & Schuster Custom Publishing.
- Rodriguez-Valladares, M. (2002, December). The dropouts [Electronic version]. *Hispanic*, 15 (12), p.36-39,42.
- Schmidt, P. (2003, November 28). Academe's Hispanic future. *Chronicle of Higher Education*, 50 (14), A8 – A13.
- Siles, M. and Pérez, S. M. (2000). What Latino workers bring to the labor market: How human capital affects employment outcomes. In S.M. Pérez (Ed.), *Moving up the economic ladder: Latino workers and the nation's future prosperity* (pp. 1-34). Washington, D.C.: National Council of La Raza.
- Thomas, D. A. & Alderfer, C. P. (1989). The influence of race on career dynamics: Theory and research on minority career experiences. In M.B. Arthur, D.T. Hall, & B.S. Lawrence (Eds.), *Handbook of career theory* (pp. 133-158). Cambridge, N.Y.: Cambridge University Press.
- U.S. Census Bureau. (2000, March). *The Hispanic population in the United States: Population characteristics*. Retrieved July 17, 2003, from www.census.gov
- U. S. Census Bureau. (2003, June 18). *Annual demographic supplement to the March 2002 current population survey*. Retrieved February 3, 2005, from www.census.gov/Press-Release/www/2003/cb03-100.html

- U.S. Census Bureau. (2005, December). *The Hispanic population in the United States: 2004*. Retrieved July 17, 2003, from <http://www.census.gov/population/www/socdemo/hispanic/cps2004.html>
- U.S. Census Bureau. (2006, January). *Population profile of the United States: Race and Hispanic origin in 2004*. Retrieved March 1, 2006, from <http://www.census.gov/population/pop-profile/dynamic/RACEHO.pdf>
- U. S. Department of Education, National Center for Education Statistics [NCES]. (1990, March). *National Education Longitudinal Study (NELS: 88) Base year student component data file user's manual* (NCES 90-464). Washington, D.C.: S. J. Ingels, S. Y. Abraham, R. Karr, B. D. Spencer, and M. R. Frankel. J. Owings, Project Officer.
- U.S. Department of Education, National Center for Educational Statistics [NCES]. (2002, July). *National Longitudinal Study (NELS: 88/00) Base-year to fourth follow-up data file user's manual* (NCES 2002-323). Washington, D.C.: T. R. Curtin, S. J. Ingels, S. Wu, R. Heuer, & Research Triangle Institute. J. Owings, Project Officer.
- U.S. Department of Education, National Center for Education Statistics [NCES]. (2003, April). *Status and trends in the education of Hispanics*, (NCES 2003-008). Washington, DC: Author.
- Vazquez, M. (2001). Latinos. Viva la diferencia! *CRM*, 5, 22-24.