Running Head: 4-YEAR HISPANIC-SERVING INSTITUTIONS

Hispanic-Serving Institutions in the U.S. Mainland and Puerto Rico:

Organizational Characteristics, Institutional Financial Context, and Graduation Outcomes

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As the Latino[1] population grows, the number of Hispanic-Serving Institutions (HSIs) in the US is expected to increase (Santiago & Andrade, 2010; Torres & Zerquera, 2012). HSIs are typically defined as 2- or 4-year, accredited, degree-granting, not-for-profit colleges and universities that enroll at least 25 percent full-time Hispanic students (Santiago, 2006, 2007). These institutions appear to play an important role in broadening access to postsecondary opportunities for Hispanic students, particularly in states where access to public flagship institutions is limited (Perna, Li, Walsh, & Raible, 2010). Although HSIs constitute just nine percent of American postsecondary institutions, they enroll 54% of Hispanic undergraduates in the US (HACU, 2012).

HSIs might alternatively be called "Hispanic Enrolling Institutions," as they are defined by enrollment, not by mission (Gasman, 2008). Thus, the extent to which HSIs are intentionally serving Hispanic students could be called into question, because most HSIs do not foreground their identities as HSIs (Contreras, Malcom, & Bensimon, 2008; Bensimon, Malcom, & Dávila, 2010). Studies show mixed results as to whether faculty attitudes and Hispanic student experiences differ between HSIs and non-HSIs (e.g., Bridges, Kinzie, Nelson Laird, & Kuh, 2008; Crisp, Nora, & Taggart, 2009; Hubbard & Stage, 2009; Nelson Laird, Bridges, Morelon-Quainoo, Williams, & Holmes, 2007).

One reason for these mixed results could be the heterogeneity among HSIs (Godoy, 2010). HSIs vary markedly with respect to sector, Carnegie type, enrollment size, percentage of Hispanic students (ranging between 25 to nearly 100%), and regional considerations. Yet, most comparative analyses that examine Hispanics' experiences in these institutions treat HSIs as one category. One exception is Hubbard and Stage's (2009) analyses of faculty attitudes in HSIs, which disaggregated HSIs by Carnegie type and found this to be a useful distinction.

To better understand how HSIs affect faculty, student, or administrator experiences, it is necessary to understand the characteristics by which HSIs meaningfully vary. This study addresses the research questions: What are the organizational characteristics, framed as structural-demographic, peer context, and organizational behavior factors, that differentiate among HSIs and make them heterogeneous? What, if any, of these factors distinguish among 4-year HSIs in relation to Hispanic student degree completion? Although about half of HSIs are 2-year institutions, we focus on 4-year HSIs in an effort to distinguish among factors related to bachelor's degree completion, defined in this study as the proportion of Hispanic students who graduate within six years of beginning college. Moreover, given the limitations in studies of Puerto Rican HSIs, we address the organizational characteristics of Puerto Rican as well as U.S. mainland HSIs. This study has research implications for differentiating among HSIs in future analyses and policy implications for understanding institutional factors related to degree completion in HSIs.

Literature Review

This section reviews literature on HSIs in relationship to college access and choice, faculty attitudes, and student engagement. HSIs appear to differ from non-HSIs in terms of college access and choice among Hispanic students. As noted earlier, 2-year and 4-year HSIs enroll nearly half of Hispanic college students, suggesting their critical role in providing postsecondary education to this population. In Florida and Texas, states where affirmative action has been prohibited, there is evidence that 2-year and 4-year HSIs provide Hispanics with additional access to college opportunities when other options, such as Predominantly White and more selective flagship institutions, are not enrolling a representative proportion of Hispanic students or employing a representative proportion of Hispanic faculty and administrators (Perna

et al., 2010). In this study, we focus on 4-year HSIs, because they produce relatively large numbers of Latino baccalaureates in the United States (Hixson, 2009).

This study's literature review and conceptual framework incorporate research about factors contributing to student persistence, as well as factors related to degree completion. Persistence is distinct from the outcome of degree completion, in that it can also include the condition of whether students are still enrolled in college and presumably on track to graduate. Research using the institution as the level of analysis in relation to aggregate student outcomes is more rare than research that employs the student as the unit of analysis in examining predictors of student outcomes, such as graduation rates. More studies have examined the student as the unit of analysis than the institution as the unit of analysis in regard to longitudinal postsecondary outcomes. Research that addresses organizational factors as well as student characteristics to understand individual student persistence can also offer insights on organizational factors that affect institutional-level aggregate graduation rates.

Four-year HSIs, compared with 4-year non-HSIs, appear to enroll high school graduates with lower levels of math preparation when other individual and high school characteristics are held equal, and descriptive statistics suggest that they enroll students with less access to various forms of capital (Nuñez & Bowers, 2011). Students in HSIs, therefore, begin college with characteristics already negatively related to the likelihood of degree completion. This peer environment places extra demands on HSIs in terms of remediation and the capacity of students to devote energy to their studies because many must work or be enrolled part-time (Godoy, 2010; Harmon, 2012; Stanton-Salazar, Macias, Bensimon, & Dowd, 2010).

There have been mixed findings as to whether faculty and student experiences and outcomes differ substantially at HSIs from institutions that are not HSIs. In their study of faculty

attitudes towards academic responsibilities, Hubbard and Stage (2009) found that, in comparison to their counterparts at Historically Black Colleges and Universities (HBCUs), who report being more focused on supporting students and on teaching than faculty in Predominantly White Institutions (PWIs), faculty in HSIs do not appear to differ significantly from their counterparts in PWIs in this regard. However, they did find that these attitudes and perceptions could also vary by Carnegie type of HSI and recommended that future studies address variations with respect to Carnegie type to better understand faculty experiences.

Other studies have found contradictory results with respect to student engagement. Nelson Laird and colleagues (2007) found that the quantity and quality of Hispanic student engagement in HSIs does not differ from that in non-HSIs. Conversely, Bridges and colleagues (2008) found that Hispanics appeared to be more engaged in HSIs than in PWIs. Although their research did not directly compare Hispanic outcomes in HSIs versus non-HSIs, Crisp et al. (2009) and Dowd, Malcom, and Bensimon (2010) suggested that STEM degree persistence among Hispanics is higher than might be expected, given Hispanics' low representation in the STEM fields (NSF, 2010). Stanton-Salazar and colleagues' research (2010) indicates that certain faculty and administrators in these institutions make a special effort to support Hispanic undergraduate students by linking them with research opportunities and internships in STEM, which can provide them with financial support to offset the option of having to pursue employment outside of the university (Godoy, 2010; Stanton-Salazar et al., 2010).

One reason that there may be mixed and inconclusive results as to faculty attitudes in and the effect of attending HSIs on student engagement and graduation is that few of these disaggregate among different types of HSIs. Hubbard and Stage's (2009) analysis of faculty attitudes in Minority Serving Institutions (MSIs) by Carnegie type and Cole's (2011) study on

the curricular offerings in various MSIs are among the few to consider variation within HSIs. Moreover, with some exceptions (e.g., Cole, 2011; Godoy, 2010), few studies have considered the institutional diversity of HSIs in the form of Puerto Rican as well as U.S. HSIs.

In his analysis of ethnic curricular offerings among different MSIs, Cole (2011) identified the proportion of Hispanic students enrolled in HSIs as one key dimension of variation among HSIs; he found a positive relationship between an HSIs' proportion of enrolled Hispanic students and the presence of coursework focusing on Hispanic issues in the curriculum. He attributed this to the possibility of increased student demand for such curricula in institutions with a higher presence of Hispanics. Moreover, he found that, with the exception of three unique HSIs that set out with an explicit mission to serve Hispanic students, Puerto Rican HSIs offered more Hispanic-oriented curricular options than U.S. mainland HSIs. He speculated that this might be due not only to increased student demand for these courses and to Puerto Rican HSIs' increased enrollment of Hispanics, but to Puerto Rico's establishment of a governing entity that sets apart a distinct political identity in the form of a commonwealth composed primarily of Latinos (Cole, 2011).

With the Obama administration's stated goal of raising postsecondary attainment by 2020 (White House, 2010), there has been increased policy emphasis on degree attainment (St. John & Musoba, 2011). Working toward this goal is particularly important for Hispanics, given that they have the lowest postsecondary attainment of any racial/ethnic group. Accordingly, the American Association of State Colleges and Universities (2012) identified college completion as one of the most critical issues facing colleges today, and college completion is often used as a metric to assess higher education institutions' eligibility for performance funding (Hamilton, 2011), another top issue confronting colleges today.

Deciding which metric to use to assess college completion is complex and contested. The proportion of full-time, degree-seeking students who enter an institution for the first time in a given fall semester and who complete a degree at that same institution within six years is a common measure ("cohort graduation rate"), since it is often collected by colleges for federal and state reporting purposes. This metric, however, disadvantages less selective colleges, which are more likely to enroll transfer students (who by definition will not complete their degrees at the same postsecondary institution at which they started) and low socioeconomic status students, who are less likely to persist in higher education, holding other factors constant (Cook & Pullaro, 2010; The Education Trust, 2011; Titus, 2006b). Also, less selective institutions like HSIs tend to receive less institutional funding than their more selective peers. Accordingly, HSIs are chronically underfunded (De los Santos & De los Santos, 2003; Malcom, Dowd, & Yu, 2010). Moreover, holding other student and institutional characteristics constant, lower institutional funding is related to lower institutional levels of student degree completion (Bound, Lovenheim, & Turner, 2010). Therefore, such institutions whose performance is assessed by six-year cohort graduation rates and tied to funding can see a perpetual cycle of decreased funding.

HSIs tend to have lower college graduation rates than other institutions, in part because the student population they serve has more academic and financial characteristics, including relatively limited academic preparation and financial resources, that place them at risk for not completing college (Dowd et al., 2010; Harmon, 2012; Nuñez & Bowers, 2011; Nuñez, Sparks, & Hernandez, 2011). Overlooking the role of inputs like incoming student characteristics and institutional resources disadvantages HSIs in assessing institutional performance and overlooks their role in providing access to a broader range of students (Astin, 1985, 2012; Hurtado, 2006). Conversely, when incoming student characteristics, institutional funding, and other factors like

providing higher education for the local Hispanic population are taken into account, there is evidence that some 4-year public HSIs are doing *better* in graduating Hispanics than their more selective public flagship counterparts (Vega & Martinez, 2012). Nonetheless, because it is required by federal and state governments, and because tracking students across institutions is challenging, the six-year cohort graduation rate as defined above is typically used as a graduation outcome measure and used to determine the awarding of accountability performance funding.

There have been concerns as to whether HSIs offer a unique experience for Hispanic students, one that supports them in achieving positive outcomes like persistence or graduation. In contrast to graduation, the outcome of persistence typically includes both: (a) whether a student has completed a degree or (b) whether a student is still enrolled within a certain time frame. Research has shown mixed results for HSIs in terms of evidence that these institutions promote persistence or graduation. One reason for these mixed results could be that little research has addressed the diversity within HSIs and how this institutional diversity may be related to outcomes like student graduation. As noted, the current measures of graduation rates that are comparable and available across institutions are limited. These measures may be even less relevant to the Hispanic population and to HSIs than to students in more traditional types of institutions. Yet, given the concern about Hispanic educational attainment and whether HSIs are indeed "serving" Hispanic students, we believe that it is worthwhile to investigate how institutional diversity among HSIs may be related to graduation outcomes.

Conceptual framework

This study draws on two theoretical perspectives: Berger and Milem's framework (2000) for understanding the impact of organizational behavior on student outcomes and Titus's (2006b, 2006c) extension of that framework that incorporates and further specifies what Berger

and Milem (2000) call the systemic aspect of organizational behavior. Their framework is based on a comprehensive review of the literature regarding linkages between organizational behavior and student outcomes. The conceptual model stipulates that, together, student entry characteristics and organizational characteristics shape an institution's peer group characteristics and student experiences, which, in turn, affect student outcomes (Berger & Milem, 2000, p. 308). Organizational characteristics include two dimensions: (a) structural demographic features (e.g., size, control, selectivity, Carnegie type, and location) and (b) organizational behavior (i.e., the norms and shared culture of institutional personnel and systems). Peer group characteristics include psychological, behavioral, and structural (demographic) characteristics. Student experiences include formal and informal behaviors in the academic, social, and functional (bureaucratic) realms, as well as student perceptions of the institutional environment in these realms (Berger & Milem, 2000). Together, these factors influence a range of student outcomes, including degree completion.

In addition, we drew on Titus's (2006b, 2006c) adaptation of Berger and Milem's (2000) framework, to emphasize the systemic dimension – and, more specifically – the institutional financial context - of organizational behavior. The systemic dimension focuses on how external forces, such as state and federal law, technology, and market dynamics, influence organizational behavior. Together, these factors affect the availability of resources that an institution can draw upon in its operations. Resource dependency theory can be used as one explanation of the systemic dimension of organizational behavior (Titus, 2006b, 2006c). It stipulates that, while striving toward organizational autonomy, organizations are also influenced and constrained by external forces, such as limited access to resources (Pfeffer & Salancik, 1978). Examining access to such resources is particularly salient for HSIs. Although eligible to receive Title V funding

from the government on the basis of their Hispanic enrollments, HSIs tend to have lower levels of funding than other types of institutions (De los Santos & De los Santos, 2003; Malcom et al., 2010; Mulnix, Bowden, & Lopez, 2002).

In his longitudinal, multilevel, and multivariate study of first-year students beginning at a 4-year institution, Titus (2006b, 2006c), found that some organizational behaviors related to resource dependency theory, which he termed "institutional financial context" variables, were significant predictors of student persistence. Titus drew on data from the Beginning Postsecondary Students Longitudinal Study 1996/2001(BPS: 1996/2001) and linked it with additional "institutional financial context" variables reflecting organizational behavior from the Integrated Postsecondary Education Data System (IPEDS) census of U.S. institutions for the 1995-1996 academic year. His analytical model operationalized organizational behavior as institutional-level financial activities, including patterns of expenditure (e.g., on instruction, administrative, and research activities) and sources of revenue (e.g., tuition, state appropriations, grants and contracts). Specifically, we adapted his model to understanding Hispanic institutional graduation rates by considering variables that could signify academic, social, and financial resources (academic, social, and financial support) that could be allocated toward these students and play a role in their likelihood of graduation. Because internal sources of revenue and expenditure patterns have also been found to be useful explanatory indicators of institutions' priorities, in the way of missions and research orientations (Morphew & Baker, 2004), we also applied these indicators to represent organizational behavior at HSIs in relation to Hispanic student degree completion.

Stated in relation to the conceptual framework, two research questions guided this study. What are the structural-demographic, peer context, institutional financial context factors, and

outcomes (measured as 6-year graduation rate) of 4-year general-mission HSIs in the U.S. mainland and in Puerto Rico? Second, what is the relationship between these organizational factors and the six-year graduation rate in these institutions? Although the context of higher education in Puerto Rico is very different from that of the U.S. mainland, we included Puerto Rican institutions, because they are often not considered in the literature on HSIs. Nonetheless, Puerto Rican institutions comprise a significant number of HSIs, as they are categorized under the same U.S. government federal definition of HSIs.

Method

Because the institution, rather than the individual student, was the unit of analysis in this study, we focused on those parts of the conceptual framework that represented institutional characteristics. These included organizational structural demographic features, structural peer group characteristics (peer group demographics), and organizational behavior as manifested in institutional financial context.

Sample

This study drew on data from the National Center for Education Statistics (NCES) IPEDS. This database includes data on institutional characteristics from all postsecondary institutions in the US that participate in any Title IV federal student financial assistance program (IPEDS, 2012b). As such, one advantage of using IPEDS data is that it involves a census of U.S. postsecondary institutions and thus offers the opportunity to examine a census of HSIs. Analyzing student-level data such as that available in the NCES Educational Longitudinal Study (ELS) or BPS (Beginning Postsecondary Students Longitudinal Study) could also provide helpful insights on the relationship between HSIs' organizational characteristics and students'

persistence, completion, and graduation outcomes, but these databases do not include all HSIs, nor can a representative population of HSIs be guaranteed.

Data from 2008 were pulled, because this was the most recent year for which the most complete data on HSI organizational characteristics and graduation rates were available. We defined HSIs as institutions that enrolled 25% or more Hispanic, full-time, degree-seeking students at public and private nonprofit four-year institutions (Santiago, 2007). Using this definition, 141 unique 4-year HSIs existed in the 2008 IPEDS dataset. (See Appendix A-1 for list of these 141 institutions).

To capture 4-year HSIs with missions to serve students in a wide variety of fields and disciplines, we focused only on HSIs that were baccalaureate, master's, and research/doctoral institutions, according to the Carnegie classifications (Hubbard & Stage, 2009). To distinguish these from other types of 4-year HSIs, we call these "4-year general mission HSIs." We excluded what Carnegie classified as special focus institutions, such as health professions, arts, or religious colleges. Twenty of the schools (about 15%) in the entire HSI sample were considered special focus institutions. In addition, we excluded another 20 of the 4-year HSIs that were classified by the Carnegie system as being primarily or substantially associates degree schools; these institutions were among the emerging community colleges that offer the baccalaureate degree (Cohen & Brawer, 2008), but their primary function is not to award baccalaureate degrees. After this process of exclusion, our initial sample of 141 was reduced to 97. After excluding cases with critical missing data (particularly data for the dependent variable) and another case that was an outlier, the analytical sample for this study consisted of 86 4-year "general mission" HSIs. Fifty-seven (about 66%) of these were located on the U.S. mainland, and the remaining 30 were in Puerto Rico (see Appendix A-2 for a list of the 86 institutions in the sample from the U.S.

mainland and from Puerto Rico that were 4-year general mission HSIs and had data on the 6-year graduation outcome variable).

Variables

The primary variable of interest was the 6-year graduation rate of Hispanics in the institution. This was calculated using data reported directly by the institutions. The number of Hispanic completers of bachelor's degrees within six years was divided by the Hispanic adjusted cohort, which excludes students from the cohort if they left the institution or other reason (e.g. death, service in the armed forces, or service on official church mission) (IPEDS, 2012a). In short, the graduation rate of the Hispanic adjusted cohort is the percentage of Hispanic students who began at the institution in fall 2003 and completed their degrees at that institution by August 2009. This is the main measure of how the cohort graduation rate is calculated by IPEDS and used in other research on African American students' graduation outcomes in HBCUs (Lundy-Wagner & Gasman, 2011).

Following Berger and Milem (2000), we first examined the institutions' *structural demographic* features. These included control (public vs. private), whether or not the HSI was located in Puerto Rico, and institutional size (measured by number of students enrolled). Following Hubbard and Stage (2009), we also examined the institutions' Carnegie type (Baccalaureate as the reference category, with Master's or Research/Doctoral as the comparison categories). For Carnegie type, we combined research and doctoral because the numbers of HSIs classified as these institution types were relatively small and because these Carnegie types both include graduate schools and doctoral programs.

To examine *peer group characteristics,* we first examined the proportion of Hispanic students in the HSIs (Cole, 2011). In addition, because student persistence has been shown to be

positively related to a higher collective SES of students at an institution (Titus, 2006a), and because many Hispanic students in college are low-income students (Contreras, 2011), we examined the peer SES of the institution as measured by the percentage of undergraduate students receiving Pell Grants.

For *institutional financial context* variables, we examined expenditures and sources of revenue for different institutional functions, to represent resources allocated to support students and other areas (Morphew & Baker, 2004; Titus, 2006b, 2006c). These measures included the dollar amount of expenditures per Full-Time-Equivalent (FTE) of students on the following four categories: students' academic and social support (including the sum of four categories: amount per FTE student spent on instruction, academic support, auxiliary services, and student services), grants and scholarships (representing financial support for students), and administrative functions (Morphew & Baker, 2004; Titus, 2006b, 2006c). Because of concerns about HSIs' access to institutional resources (De los Santos & De los Santos, 2003; Malcom et al., 2010; Mulnix et al., 2002), we also examined the dollar amount per FTE student of institutional revenue from the sources of: (a) student tuition, (b) state appropriations, and (c) grants and contracts (Titus, 2006b, 2006c). Appendix B provides more detail about how these variables were defined.

Analysis

We began by conducting a descriptive analysis of the structural demographic, peer group, and institutional financial context characteristics in 4-year general mission HSIs in both the U.S. mainland and Puerto Rico. Subsequently, we compared HSIs in the U.S. mainland and Puerto Rico on these various institutional characteristics, using chi-square tests and t-tests. To gauge the relationships between these characteristics and institutional graduation rates (the percentage of

the 2003 Hispanic cohort graduating within 6 years as defined previously), we also conducted a correlation analysis to explore the relationship between the dependent variable and the independent variables.

Limitations

The data presented us with limitations on what we could explore. First, our sample size was relatively small, which limited us in the extent to which we include a range of independent variables in the multivariate analysis. Second, these data, while offering a census of HSIs, did not contain measures about the attitudes, perceptions, and behaviors of institutional personnel (which could help to explain the organizational behavior of the institution in more depth) or students (which could help to explain more fully the peer group characteristics and student experiences). It also did not contain adequate or comparable measures of selectivity across institutions. Third, the data presented here are crosssectional and therefore, correlational, but not causal, relationships can be inferred. Although we had access to IPEDs data from six years prior to when the 2008 students were graduating, we chose to use independent variable data from 2008. This is because there were less missing data for this year, and because these data were more likely to be consistently collected and reported in a comparable manner within the same year (an important consideration, given the “noise” and inconsistencies in IPEDS data, as noted by Morphew & Baker, 2004). In addition, not all of the institutions in the 2008 HSI sample were HSIs six years prior to 2008.

Moreover, in our focus on comparing U.S. and Puerto Rican HSIs, we did not address more local or regional considerations, such as urbanicity, labor market conditions, the presence of other HSIs nearby, state policies, or the proportion of the local college-aged population that is Hispanic. Examining these issues which might enhance contextual understanding of students’

experiences and outcomes in HSIs (Butler, 2010; O'Connor, Hammack, & Scott, 2010; Perna, 2006; Rodriguez, 2011; Titus, 2009). While we could not take into account a range of organizational factors in the analysis, we nonetheless consider this study a first step toward understanding the various organizational characteristics of HSIs, and as a building block for future research on the relationship between structural-demographic, peer characteristics, and institutional financial contexts factors in HSIs and Hispanic students' graduation rates.

Findings

As noted earlier, in our preliminary analysis of the 141 4-year HSIs (the names of which are listed in Appendix A-1), we were surprised to find that nearly one-third (30%) of 4-year HSIs do not offer bachelor's degrees across a wide range of fields. These institutions are comprised of those that offer primarily associates, but also baccalaureate degrees (15% of all 4-year HSIs), and of special focus institutions (institutions that offer specialized fields of study, such as medicine, religion, or arts), which comprise an additional 15% of all 4-year HSIs. Because these types of institutions do not focus on awarding bachelor's degrees across a range of fields, and because our outcome variable of interest was 6-year baccalaureate degree graduation rates, we narrowed our sample to examine characteristics of 4-year HSIs whose primary function is to award bachelor's degrees (what we have called 4-year general mission HSIs).

Table 1 offers a descriptive profile of the institutional characteristics of 4-year general mission HSIs across the U.S. mainland and Puerto Rico, and within the U.S. mainland and Puerto Rico separately. For 2008, the graduation rate in these HSIs was 35%. This rate was 39% in the US and 26% in the Puerto Rican HSIs, a significant difference.

Other preliminary results not displayed indicated that among the 56 U.S. mainland institutions, 39% were in Arizona, New Mexico, Oklahoma, or Texas. Another 38 percent were

in states further west, especially California. Thirteen percent were in the mid-Atlantic states or New York, and seven percent in the southeast. Only 1 HSI was located in the Great Lakes or the Rocky Mountains regions. As expected, the HSIs in the entire sample were evenly distributed between public and private institutions; however, the majority in the US (61%) were public, almost twice as much as the proportion of HSIs that were public (33%) in Puerto Rico. This was also a significant difference. Four-year general mission HSIs enrolled 5,491 students on average. U.S. mainland HSIs enrolled more students, on average (6,288), than those in Puerto Rico (3,999).

Taken together, just over half of HSIs across the US mainland and Puerto Rico (56%) were master's institutions, one-third were baccalaureate institutions, and 12% were research or doctoral institutions. However, the Carnegie classifications of HSIs in the US and Puerto Rico were very different. Three quarters in the US were master's institutions, while nearly three quarters in Puerto Rico were baccalaureate institutions. Very few HSIs (12%) were research institutions; these were twice as likely to be located in the US as Puerto Rico (14% versus 7%, respectively).

These findings regarding the Carnegie classifications likely reflect the different higher education contexts and structures in the US and Puerto Rico. On average, Puerto Rican HSIs enrolled 100% Latino students, not a surprising figure. Meanwhile, U.S. four-year general mission HSIs, on average, enrolled a student body consisting of 43% Hispanic students. About half of the students in 4-year general mission HSIs (52%) received Pell Grants; however, students in Puerto Rican HSIs were much more likely (73%) than their U.S. counterparts (41%) to receive Pell Grants.

In general, HSIs spent an average of $14,784 on academic and social support per full-time enrolled student, followed by $5,743 on administration, and $1,328 on financial support, in the form of grants and scholarships. These institutions received $9,816, on average, in revenues from tuition per student, followed by $5,480 in revenue per student from state appropriations, and $3,949 per student from grants and contracts. However, reflecting differences in control, enrollment size, and Carnegie classification, HSIs in the US and in Puerto Rico differed markedly along these institutional financial context variables. HSIs in the US spent significantly more ($19,005) than those in Puerto Rico ($6,905) on academic and social support per student and on administration per student ($7,494 versus $2,475, respectively). In both of these arenas, U.S. HSIs spent nearly three times as much per student as Puerto Rican HSIs.

With respect to revenue, HSIs in the US received significantly more in tuition per student ($12,641), nearly three times as much as Puerto Rican HSIs ($4,542). U.S. HSIs also received significantly more revenue from grants and contracts per student ($5,073), which was also nearly three times as much as Puerto Rican HSIs ($1,853). Collectively, the descriptive results illustrate the diversity in structural demographic and peer characteristics, as well as institutional financial context, among HSIs, both within and between HSIs in the US and Puerto Rico.

Table 2 displays a correlation matrix indicating bivariate correlations between these variables. Among the relationships between the independent variables and the outcome variable, being a research or doctoral-oriented HSI was associated with higher graduation rates. The institutional peer characteristics of having higher proportions of Hispanic students and higher proportions of students receiving Pell Grants were each significantly and negatively associated with graduation rates.

Among financial context expenditures variables, increased dollars spent on academic and social support (instruction, academic support, auxiliary services, and student services) per student was positively and significantly associated with graduation rates. In addition, increased dollars spent on administration was positively related to graduation rates. Among financial context revenues variables, more dollars received from tuition per student was related positively to graduation rates.

The correlation matrix results also revealed some significant relationships among HSIs' peer characteristics, financial expenditures, and financial revenues that could affect graduation rates. The two strongest correlations among all of the variables in the matrix were between the institutional proportion of students receiving Pell grants and an institutional location in Puerto Rico, rather than the U.S. mainland ($r = .71$), and between the institutional proportion of students receiving Pell grants and the institutional proportion of Hispanic students ($r = .70$). In turn, dollars per student spent on academic and social support and administration, and dollars per student received from tuition were each negatively related to the proportion of Hispanic students or students receiving Pell grants at the HSIs. Moreover, a higher proportion of students receiving Pell grants was moderately and negatively related to revenue dollars per student received from state appropriations and grants and contracts.

Discussion

This study offers a sense of the variation in organizational characteristics of 4-year HSIs. It indicates that 4-year HSIs vary significantly in terms of institutional mission, and that this heterogeneity is worth exploring further. This research indicates that applying Berger and Milem's (2000) conceptual framework of the association between organizational behavior and student outcomes, and Titus's (2006b, 2006c) incorporation of the role of institutional financial

context into that framework, highlights key dimensions of variation among HSIs that may also be related to important student outcomes such as graduation rates.

In addition, our research also addresses the concern about whether HSIs are "serving" Hispanic students by considering 6-year graduation rates as the key outcome variable of interest. Six-year graduation rates have commonly been used in performance funding formulas (Cook & Pullaro, 2010). This study indicates that the average graduation rate in 4-year general mission HSIs in the US mainland and Puerto Rico is 35%, and that it differs significantly between HSIs in the two regions, 39% among U.S. HSIs and 26% in Puerto Rican HSIs.

When considering these differences, it is important to note that the Puerto Rican higher education historical, economic, and social context is quite different from U.S. higher education context. There are many factors not examined in this study that structurally differentiate between Puerto Rican and U.S. mainland HSIs, and can account for why Puerto Rican HSIs see lower graduation rates than those on the U.S. mainland. For example, the labor participation rate in Puerto Rico is one of the lowest in the world, making it more difficult for residents of the island to fund their postsecondary educations. This trend corresponds with an economic trend in which, since 1997, government funding for the University of Puerto Rico system (the main 4-year public education institution system on the island) has been cut substantially. Consequently, the University of Puerto Rico system has faced budget deficits and implemented subsequent tuition increases of up to 50 percent (Rodriguez, 2011). Because student and institutional access to financial capital is critical in promoting Latinos' graduation rates, these challenging economic and higher education conditions in Puerto Rico make sustaining Latino graduation rates even more difficult.

While the graduation rate figures in U.S. mainland 4-year general mission HSIs also appear low, it is important to place into context the finding that the U.S. mainland HSIs' Hispanic 6-year graduation rate of 39% slightly exceeds the 36% Hispanic 6-year graduation rate across *all* U.S. mainland 4-year institutions nationally (Radford, Berkner, Wheeless, & Shepherd, 2010). Considering that, compared with other postsecondary institutions, HSIs: (a) receive far less federal funding per student (HACU, 2012) , (b) spend considerably less on instruction and other institutional functions because of limited funding (Merisotis & McCarthy, 2005), and (c) enroll students with far less access to academic, financial, cultural, and social capital (Nuñez, & Bowers, 2011), HSIs' graduation rates look far more favorable. In other words, given that conditions of lower institutional peer SES (Titus, 2006b) and lower institutional funding (Bound et al., 2010) are each negatively and independently related with student persistence, HSIs appear to be doing "more with less" (Malcom, Dowd, & Yu, 2010) in terms of advancing Hispanics' educational attainment. It is critical to recognize HSIs' student incoming characteristics and access to institutional funding (Astin, 1985; Vega & Martinez, 2012) when assessing these institutions' student outcomes.

With the exception of Cole (2011) and Godoy (2010), research on HSIs has solely focused on HSIs on the U.S. mainland. However, our study illustrates that about one-third of 4-year general mission HSIs are located in Puerto Rico. Our study extends Cole's (2011) finding about the differential level of ethnocentric curricular offerings in U.S. mainland versus Puerto Rican HSIs, to suggest also that HSIs in the U.S. mainland and Puerto Rico differ on key organizational structural, peer group, and financial context characteristics. U.S. mainland HSIs are more likely to be public, larger, and research-oriented. Puerto Rican HSIs enroll far higher proportions of Hispanics and students receiving Pell Grants. Because students who attend

institutions with lower peer SES are less likely to persist within six years of beginning college (Titus, 2006b), it is not surprising that Puerto Rican 4-year HSIs have lower 6-year Hispanic graduation rates than U.S. mainland HSIs. Moreover, reflecting their other organizational structural-demographic and peer characteristics, Puerto Rican HSIs receive less revenue from tuition, state, and grants and contracts sources, and are able to spend far less per student. In fact, Puerto Rican HSIs spend or receive one-third to one-half the funding per student than do U.S. HSIs.

The variables in this study were collected at one time point, so we cannot presume that any of the institutional factors studied *cause* shifts in graduation rates. Moreover, because of limitations in our data, we have been unable to hold the effects of other variables constant when examining relationships between independent variables and graduation rates. However, we can provide an initial idea of which of the various structural demographic, peer group, and institutional context factors are important in distinguishing among HSIs' varying graduation rates, as well as which factors might be important to attend to in future research on organizational behavior and student outcomes in HSIs.

Being a more research-oriented institution has a positive association with graduation rates. Having a research-oriented mission is related to institutional selectivity, which is positively related to student persistence (Melguizo, 2010; Rhee, 2008; Titus, 2006a, 2006b). Indeed, most of the 4-year HSIs graduating larger numbers of Hispanic students in the US mainland are general mission research/doctoral or master's institutions (Hixson, 2009).

Students at more selective, research-oriented institutions also tend to be more academically prepared for college. Reliable and consistent measures for institutional selectivity and aggregate student academic preparation were not available in this study's data. However,

other research has found that, holding constant academic preparation and other individual and high school contextual factors, high school graduates who enroll in 4-year HSIs have lower math performance than their non-HSI counterparts (Nuñez & Bowers, 2011). Moreover, Latinos and lower-income students attend more segregated and far less well-resourced K-12 schools than other students, with fewer options to take advanced college preparatory courses (Bowen, Chingos, & McPherson, 2009; Gandara & Contreras, 2009). Thus, Hispanic students and their lower-income counterparts who attend lower-resourced schools are at a disadvantage for postsecondary graduation before they even begin postsecondary education, since high school academic course rigor is the most important predictor of college completion (Adelman, 2006).

Moreover, even when controlling for a battery of critical individual and institutional factors (including race/ethnicity), the institutional peer characteristic of a lower SES student body (for which proportion of Pell Grant recipients is a proxy), is negatively related to student persistence (Titus, 2006c). Therefore, lower SES peer characteristics, in addition to lower academic preparation (and lower institutional selectivity), may help to explain this study's results that the HSI institutional peer characteristics of having higher proportions of Hispanic students or having higher proportions of students who receive Pell Grants are negatively related to graduation rates. Another explanation for why HSIs with higher proportions of Hispanic students and students who receive Pell Grants could see lower graduation rates is that HSIs with higher proportions of these types of students tend to operate with a less supportive financial context for these students, a point which we turn to next.

As is similar for all 4-year institution types (Webber & Ehrenberg, 2009), a higher dollar amount spent on academic and social support per student (operationalized here as the sum of per-student expenditures on instruction, academic support, auxiliary services, and student services) is

positively related to graduation rates at HSIs. In fact, Webber and Ehrenberg (2009) have found that such expenditures are even more important in predicting graduation rates for students from low-SES, and by association, Latino and Black backgrounds.

A higher dollar amount per student spent on administration is also positively related to Hispanic graduation rates at HSIs. There are concerns that increased spending per student on administration may draw resources away from promoting student learning and outcomes (Morphew & Baker, 2004; Titus, 2006b, 2006c). However, because of our limited sample size, we were unable to simultaneously control for the distinctive effects of spending on academic and social support and administration. Therefore, this effect may also reflect the positive relationships between increased expenditures on administration and other resources (academic and social support expenditures, tuition revenues, and grants and contracts revenues), per student. Collectively, then, increased spending on administration for HSIs indicates increased institutional funding, which is positively related to graduation rates for students in general (Bound et al., 2010).

Increased revenue per student from tuition is another financial context variable that is positively related to Hispanic graduation rates at HSIs. Higher revenue from tuition per student is associated with increased revenues from the other financial context revenue variables – state appropriations and grants and contracts – as well. This finding underscores the role of institutional resources in contributing to Hispanic graduation rates at HSIs.

While beyond the scope of this study, it is important to again sound a cautionary note taking into account transfer and time-to-degree patterns in understanding Hispanic postsecondary attainment outcomes. Many Latino students transfer between institutions, or take longer to finish their degrees, in their postsecondary careers. For example, among a nationally representative

sample of students and 4-year institutions, Radford and colleagues (2010) found, six years after entering college, that virtually equivalent proportions of Latino students were still pursuing their degrees (37% - either at their first institution or at another institution) as had graduated with bachelor's degrees at their first institution (36%). Thus, the six-year graduation rate used in IPEDS to measure postsecondary graduation outcomes could make Latinos' graduation rates appear to be half of what they actually would be, if the possibilities of transferring institutions and/or a longer-time-to-degree were accounted for. That is, using the current six-year time frame to assess degree completion and focusing only on students who begin and finish at the same institution could exclude the experiences of many Hispanic students who enroll in HSIs. This form of measurement could provide an inaccurate (and negative) portrayal of HSIs' graduation patterns of Hispanic students (Cook & Pullaro, 2010).

Our results point to the importance of taking into account incoming student characteristics, and institutional resources that can be devoted to students, when assessing institutional performance for HSIs. Vega and Martinez (2012) noted that taking into account factors like the proportion of Hispanic students served and institutional resources provides a more balanced and favorable account of the contributions of public institutions that enroll large proportions of Hispanic students. As our study indicates, HSIs that serve large proportions of Hispanic and/or low SES students also tend to receive fewer institutional resources. Other research has indicated that, holding other individual and institutional factors constant, students from lower SES backgrounds and students (regardless of their own SES) at institutions with a lower collective student SES also see lower persistence graduation rates (Titus, 2006b, 2006c). Institutions that provide access to higher education for a broader range of students from different ethnic and class backgrounds tend to see lower graduation rates, simply in part because the

institutions and the students enrolled in them have fewer resources with which to promote or navigate pathways toward postsecondary success.

Conclusion

This study suggests the utility of applying an organizational conceptual framework that takes into account structural-demographic, peer group, and institutional financial context characteristics in differentiating among HSIs, both in the US and in Puerto Rico. Examining HSIs along the structural demographic, peer characteristics, and financial context factors discussed in this paper points to future directions for understanding the variability among HSIs. This study also provides a directional understanding of how this institutional variability is related to differences in Hispanic graduation rates. These institutional factors, as well as others, can reflect and affect how HSIs "serve" their students and promote Hispanic students' graduation.

Four-year HSIs can vary substantially with respect to their missions. Preliminary findings revealed that, according to the Carnegie classification system, nearly a third (30%) of 4-year HSIs are considered either institutions which offer substantial proportions of associates degrees (which is perhaps not surprising, given Hispanics' tendency to enroll in community colleges) or special focus colleges, whose emphasis is to educate students solely in the areas of health sciences, art, or religion. For this first study, we wanted to narrow our focus to institutions offering baccalaureate degrees in a wide range of disciplines, but future research could address the extent to how these missions vary with respect to directing institutional functions toward serving Hispanic students, and how these activities affect Hispanic student graduation rates.

Given differences in institutional characteristics between U.S. mainland and Puerto Rican 4-year general mission HSIs, future studies should address how geographic location affects HSIs' provision of services to Hispanic students. Geographic location can affect the extent to

which Hispanic students choose to attend HSIs in the first place (Butler, 2010); which, in turn, could also affect organizational peer characteristics, behavior, and graduation rates. Four-year general mission HSIs on the U.S. mainland are located in very different state policy environments, and state revenue and appropriations can, independently of student characteristics and organizational behaviors, affect student graduation rates (Titus, 2006a, 2009). As noted earlier, Puerto Rico faces different economic and higher education challenges that could negatively affect the capacity of its institutions to graduate students within a 6-year time frame.

Although faculty characteristics (such as percentage of Latino faculty) and attitudes can substantially influence the experiences of students of color (e.g., Nuñez & Murakami-Ramalho, 2012; Smith, 2009), few studies have spoken to how Latino faculty characteristics and behaviors are related to Latino student outcomes. Better data collection and reporting in this area would strengthen the capacity of future research to address this issue. IPEDS is limited in the organizational variables it collects. Moreover, as others have noted (Morphew & Baker, 2004), high levels of missing or inconsistent data on some of these variables, like faculty characteristics (including the racial/ethnic composition of faculty), make it difficult to analyze a more complete set of factors related to Latino student success. Other data sources, such as those collected by the Higher Education Research Insitute (HERI) and the National Study of Student Engagement (NSSE) could be mined for further insights as to the relationship between faculty attitudes and behaviors, and student experiences and outcomes. It would be important for these surveys to have representative, or at least, sufficient, samples of Latino students and HSIs.

With respect to policy and practice, it must be noted that the proportion of Hispanic students in 4-year general mission HSIs receiving Pell Grants is striking, particularly in Puerto Rico. Hispanic and low-income students are among the most vulnerable students to high costs of

college, and if they are required to fund their education through higher tuition, their graduation rates may suffer (Baum, McPherson, & Steele, 2008; Bowen et al., 2009; The Education Trust, 2011). Hispanic students are also more concerned than others about how financing their education might affect their capacity to finish college (e.g., Longerbeam, Sedlacek, & Alatorre, 2004). Because SES at both the individual and institutional (collective peer) levels is independently related to persistence, institutional attention to serving students with high financial needs, including Hispanics from these backgrounds, is critical (Titus, 2006b, 2006c).

This study suggests that the role of per-student institutional expenditures on academic and social support for students is worth exploring further in understanding Hispanic graduation rates at HSIs. This suggestion for further research is underscored by other research suggesting that students from lower-SES backgrounds, many of whom are Hispanic, benefit even more from this type of support in graduating from college within a six-year time frame, than their counterparts from higher-SES backgrounds (Webber & Ehrenberg, 2009). Disaggregating the types of academic and social support expenditures that contribute most to Hispanic graduation rates in HSIs would also offer valuable insights for policy and practice, including how HSIs that receive Title V funding might best allocate this funding to promote Hispanic college graduation.

Finally, it is critical that HSIs' graduation rates be assessed in an equitable way, particularly when comparing their graduation rates with those of other 4-year institutional types. On the whole, four-year HSIs institutions receive far less funding to support their activities than other institutions (HACU, 2012; Merisotis & McCarthy, 2005). Moreover, these institutions serve very high proportions of students, including Hispanic and low-income students, who might not otherwise by served by more selective institutions (The Education Trust, 2011; Perna et al., 2010). Independent of other factors, including institutions' organizational behavior, all of these

factors are negatively related to graduation rates (Bound et al., 2010; Titus, 2006b). Alternative scorecards (Bensimon & Malcom, 2012; Vega & Martinez, 2012) contextualize graduation outcomes in terms of student "inputs" (Astin, 1985), such as the proportions of Hispanic and low-income students served and in terms of degrees completed among members of local communities. These types of assessments can highlight the unique contributions that 4-year general mission HSIs make to graduating Hispanic baccalaureates.

Notes

1. The terms "Hispanic" and "Latino" are used interchangeably in this study.

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Table 1.

Descriptive Profile of Institutional Characteristics of HSIs and Differences between U.S. and Puerto Rican HSIs~

	Total HSIs (n = 86)		**U.S. Mainland (n = 56)**	**Puerto Rican (n = 30)**	**T Value or Chi Square**
	Mean or frequency (%)	SD (for continuous variables)	Mean or frequency (%)	Mean or frequency (%)	
Outcome variable					
Graduation rate	35%	15.4	39%	26%	3.98***
Structural demographic variables					
Control					
Public	51%	--	61%	33%	5.86*
Private	49%	--	39%	67%	
Enrollment size	5491	5764	6288	3999	2.16*
Carnegie classification					
Baccalaureate	33%		11%	73%	35.10***
Master's	56%		75%	20%	
Research/doctoral	12%		14%	7%	
Peer characteristics					
% Hispanic enrollment	63%	30.7	43%	100%	22.93***
% receiving Pell Grants	52%	22.0	41%	73%	7.49***
Institutional financial context (expenditures per FTE in dollar amount)					
Academic and social support ^	14,784	8,057	19,005	6,905	11.132***
Financial support ^^	1,328	1,496	1,555	906	1.95†
Administration	5,743	4,812	7,494	2,475	6.58***
Institutional financial context (revenues from each source per FTE in dollar amount)					
Tuition	9,816	9,175	12,641	4,542	5.42***
State appropriations	5,480	6,314	6,333	3,886	1.73†
Grants and contracts	3,949	4,134	5,073	1,853	4.65***

†*p<.1, *p<.05, **p<.01, ***p<.001*

~Due to rounding, some percentages may not add up to precisely 100%.

^Academic and social support includes expenditures on four functions: instruction, academic support, auxiliary services, and student services

^^Financial support is the amount of expenditures per FTE on grants and scholarships.

Table 2.

Covariance Matrix of Correlations between Structural Demographic, Peer Characteristics, and Selected Financial Context Variables.

Covariance Matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Outcome Variable												
1.Hispanic graduation rate												
Structural demographic characteristics												
2.Control	-.06											
3.Region	.40***	-.25*										
4.Size	.15	-51***	.19									
5.Carnegie	.33***	-.20†	.53***	.39***								
Peer characteristics												
6.% Hispanic	-.47**	.17	.88***	-.20†	-.45***							
7.% Pell	-.36**	.22*	-.71***	-.20†	-.41***	.70***						
Financial context – expenditures per each area per FTE in dollar amount												
8.Academic and social support	.47***	.013	-.720***	-.093	.43***	-.61***	-.53***					
9.Financial support	-.07	-.76***	.50***	.29**	.17	-.08	-.16	.04				
10.Administration	.25**	-.05	.50*	-.08*	.42***	-.41***	-.39***	.64***	.08			
Financial context – revenues per each area per FTE in dollar amount												
11. Tuition	.36**	.60***	.42***	-.32**	.24*	-.43***	-.28**	.68***	-.40***	.42***		
12. State appropriations	.04	-.85***	.19†	.32**	.30**	-.08	-.19†	.07	.69***	.32**	-.52***	
13. Grants and contracts	-.07	-.53***	.37**	.16	.30**	-.13	-.21†	.35**	.39**	.52**	-.25*	.58**

† *p<.1, *p<.05, **p<.01, ***p<.001*

Appendix A-1
Hispanic-Serving Institutions (HSIs) in 2008 according to Geographic Location and State
(N = 141)

Geographic location (n) and state	Institution
Puerto Rico (47)	
	American University of Puerto Rico—Bayamón
	American University of Puerto Rico—Manatí
	Atenas College
	Atlantic College
	Bayamón Central University
	Caribbean University-Bayamón
	Caribbean University-Carolina
	Caribbean University-Ponce
	Caribbean University-Vega Baja
	Carlos Albizu University—San Juan
	Colegio Pentecostal Mizpa
	Colegio Universitario de San Juan
	EDP College of Puerto Rico Inc-San Sebastián
	Escuela de Artes Plasticas de Puerto Rico
	Inter American University of Puerto Rico-Aguadilla
	Inter American University of Puerto Rico-Arecibo
	Inter American University of Puerto Rico-Barranquitas
	Inter American University of Puerto Rico-Bayamón
	Inter American University of Puerto Rico-Fajardo
	Inter American University of Puerto Rico-Guayama
	Inter American University of Puerto Rico-Metro
	Inter American University of Puerto Rico-Ponce
	Inter American University of Puerto Rico-San Germán
	John Dewey College-University Division
	Pontifical Catholic University of Puerto Rico-Arecibo
	Pontifical Catholic University of Puerto Rico-Mayagüez
	Pontifical Catholic University of Puerto Rico-Ponce
	Puerto Rico Conservatory of Music
	Universidad Adventista de las Antillas
	Universidad Central Del Caribe
	Universidad del Este
	Universidad del Turabo
	Universidad Metropolitana
	Universidad Politecnica de Puerto Rico
	Universidad Teológica del Caribe
	University of Puerto Rico at Cayey
	University of Puerto Rico in Ponce
	University of Puerto Rico-Aguadilla
	University of Puerto Rico-Arecibo

University of Puerto Rico-Bayamón
University of Puerto Rico-Carolina
University of Puerto Rico-Humacao
University of Puerto Rico-Mayagüez
University of Puerto Rico-Medical Sciences Campus
University of Puerto Rico-Río Piedras Campus
University of Puerto Rico-Utuado
University of Sacred Heart

U.S. Mainland (94)

Arizona

Brookline College—Phoenix
Brookline College—Tempe
Brookline College—Tucson

California

California Christian College
California State Polytechnic University-Pomona
California State University-Bakersfield
California State University-Channel Islands
California State University-Dominguez Hills
California State University-Fresno
California State University-Fullerton
California State University-Long Beach
California State University-Los Angeles
California State University-Monterey Bay
California State University-Northridge
California State University-San Bernardino
California State University-Stanislaus
Charles R Drew University of Medicine and Science
Epic Bible College
Fresno Pacific University
Humphreys College-Stockton and Modesto Campuses
La Sierra University
Mount St. Mary's College
Pacific Oaks College
San Diego State University-Imperial Valley Campus
The National Hispanic University
United States University
University of California-Merced
University of California-Riverside
University of La Verne
Whittier College
Woodbury University

Colorado

Adams State College

Florida

	Barry University
	Broward College
	Carlos Albizu University-Miami Campus
	City College
	Florida International University
	Hodges University
	Jones College-Miami Campus
	Miami Dade College
	Nova Southeastern University
	Saint John Vianney College Seminary
	Saint Thomas University
	Trinity International University
Georgia	
	Southern Catholic College
Illinois	
	Lexington College
	Northeastern Illinois University
	Saint Augustine College
Kansas	
	Donnelly College
	Ottawa University-Kansas City
Mississippi	
	Southeastern Baptist College
New Jersey	
	New Jersey City University
	Saint Peter's College
New Mexico	
	Brookline College—Albuquerque
	Eastern New Mexico University-Main Campus
	New Mexico Highlands University
	New Mexico State University-Main Campus
	Northern New Mexico College
	University of New Mexico-Main Campus
	University of the Southwest
	Western New Mexico University
New York	
	Boricua College
	College of Mount Saint Vincent
	CUNY City College
	CUNY John Jay College of Criminal Justice
	CUNY Lehman College
	CUNY New York City College of Technology
	Long Island University-Brentwood
	Mercy College
	Vaughn College of Aeronautics and Technology
Oregon	

	Mount Angel Seminary
Texas	
	Austin Graduate School of Theology
	Baptist University of the Americas
	Brazosport College
	Midland College
	Our Lady of the Lake University-San Antonio
	Saint Edward's University
	South Texas College
	Southwestern Adventist University
	St. Mary’s University
	Sul Ross State University
	Texas A & M International University
	Texas A & M University-Corpus Christi
	Texas A & M University-Kingsville
	The University of Texas at Brownsville
	The University of Texas at El Paso
	The University of Texas at San Antonio
	The University of Texas Health Science Center at San Antonio
	The University of Texas of the Permian Basin
	The University of Texas-Pan American
	University of Houston-Downtown
	University of St. Thomas
	University of the Incarnate Word
Washington	
	Heritage University

Appendix A-2

Hispanic-Serving Institutions (HSIs) in 2008 Used in the Study According to Geographic Location and State (N = 86)

Geographic location (n) and state	Institution
Puerto Rico (30)	
	Bayamón Central University
	Caribbean University-Bayamón
	Caribbean University-Carolina
	Caribbean University-Ponce
	Caribbean University-Vega Baja
	Inter American University of Puerto Rico-Aguadilla
	Inter American University of Puerto Rico-Arecibo
	Inter American University of Puerto Rico-Barranquitas
	Inter American University of Puerto Rico-Bayamón
	Inter American University of Puerto Rico-Fajardo
	Inter American University of Puerto Rico-Guayama
	Inter American University of Puerto Rico-Metro
	Inter American University of Puerto Rico-Ponce
	Inter American University of Puerto Rico-San Germán
	Pontifical Catholic University of Puerto Rico-Ponce
	Universidad Adventista de las Antillas
	Universidad del Este
	Universidad del Turabo
	Universidad Metropolitana
	University of Puerto Rico-Aguadilla
	University of Puerto Rico-Arecibo
	University of Puerto Rico-Bayamón
	University of Puerto Rico-Carolina
	University of Puerto Rico at Cayey
	University of Puerto Rico-Humacao
	University of Puerto Rico-Mayagüez
	University of Puerto Rico in Ponce
	University of Puerto Rico-Río Piedras Campus
	University of Puerto Rico-Utuado
	University of Sacred Heart
U.S. Mainland (56)	
California	
	California State Polytechnic University-Pomona
	California State University-Bakersfield
	California State University-Dominguez Hills
	California State University-Fresno
	California State University-Fullerton
	California State University-Long Beach
	California State University-Los Angeles
	California State University-Monterey Bay

	California State University-Northridge
	California State University-San Bernardino
	California State University-Stanislaus
	Fresno Pacific University
	Humphreys College-Stockton and Modesto Campuses
	La Sierra University
	Mount St. Mary's College
	The National Hispanic University
	University of California-Riverside
	University of La Verne
	Whittier College
	Woodbury University
Colorado	
	Adams State College
Florida	
	Barry University
	Florida International University
	Hodges University
	Saint Thomas University
Illinois	
	Northeastern Illinois University
New Jersey	
	New Jersey City University
	Saint Peter's College
New Mexico	
	Eastern New Mexico University-Main Campus
	New Mexico Highlands University
	New Mexico State University-Main Campus
	University of New Mexico-Main Campus
	University of the Southwest
	Western New Mexico University
New York	
	College of Mount Saint Vincent
	CUNY City College
	CUNY John Jay College of Criminal Justice
	CUNY Lehman College
	Mercy College
Texas	
	Our Lady of the Lake University-San Antonio
	Saint Edward's University
	Southwestern Adventist University
	St Mary’s University
	Sul Ross State University

	Texas A & M International University
	Texas A & M University-Corpus Christi
	Texas A & M University-Kingsville
	The University of Texas at Brownsville
	The University of Texas at El Paso
	The University of Texas at San Antonio
	The University of Texas of the Permian Basin
	The University of Texas-Pan American
	University of Houston-Downtown
	University of St. Thomas
	University of the Incarnate Word
Washington	
	Heritage University

Appendix B
Description of Variables and Measures

Variable Name	Description and Coding
Dependent Variable	
Graduation Rate	
% Hispanic graduation rate	Percentage of Hispanic completers of bachelor's degrees within 6 years (students who began and finished at same institution, range 3-73)
Structural Demographic Characteristics	
Control of institution	Binary variable coded 0 – public, 1 - private
Geographic region	Binary variable coded 0 – Puerto Rico; 1- US mainland
Institution size	Continuous variable (range 261-25441)
Carnegie Classification 2005	Categorical variable coded 0 - Baccalaureate, 1 - Master's, 2 – Research and Doctoral
Peer Characteristics	
Percent Hispanic students	Percent enrollment composed of Hispanic, full-time, undergraduate, and degree-seeking student (range 25-100)
Percent Pell Grants	Percentage of undergraduate students who received Pell Grants (range 14 - 95)
Institutional Financial Context – Expenditures for Each Area per FTE in Dollar Amount	
Academic and social support	Sum of expenditures on four functions: (a) instruction, (b) academic support, (c) auxiliary services, and (d) student services (range 1427-37383)
Financial support	Amount of expenditures on grants and scholarships (range 0-6610)
Administration	Amount of expenditures on administration (range 580-32276)
Institutional Financial Context – Revenues from Each Source per FTE in Dollar Amount	
Tuition	Continuous variable (range 413-38761)
State appropriations	Continuous variable (range 0-22117)
Grants and contracts	Continuous variable (range 0-22887)