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Project Description I

Title:

Predictors of Student Success at For-Profit Colleges and Universities: A Focus on Completion Rate and Student Debt-to-Earnings Ratio

Statement of the research problem and national importance:

For-profit colleges and universities [1](FPCUs) are the fastest growing sector in U.S. higher education. While enrollment in FPCUs comprised 11% of all postsecondary (PSE) students in 2010 (IPEDS, author's calculation), the enrollment shows the largest increase from 0.4 million in 2000 to 1.2 million in 2008 (Aud, et al., 2010). In 2002, FPCUs secured $49 billion in federal student aid programs which increased to $132 billion by 2010 (GAO, 2011a). With their expansion and growth, FPCUs are now at the center of issues in higher education. Criticism of FPCUs has intensified with claims that FPCUs mislead students by marketing with miscalculated employment statistics or violating policies relating to academic dishonesty (see Field, 2011; GAO, 2011b). Students at for-profit colleges recorded low degree completion rates—just 20 percent actually earned a baccalaureate degree in 2001, and this rate rose only slightly to 25 percent in 2010 (NCES, 2010)—and student loan default rates are much higher than other PSE sectors.

This criticism has proceeded without an in-depth review of this unique sector of U.S. higher education. Historically, researchers have expressed concerns of limited knowledge on the sector. Miller and Hamilton (1964) noted "the lack of a national *audit* of all proprietary schools affords an incomplete picture of our total national educational resources" (Kinser, 2006a, p.2). After 30 years, Clowes and Hawthorne (1995) acknowledged "we cannot…present a complete picture of career colleges, because there has been limited scholarly interest in them …" (Kinser, 2006a, p. 3). Currently, we still do not have reliable research resources for FPCUs and students in the sector. Given the increasing importance of career and vocational education in serving nontraditional students in higher education (see U.S. Department of Education, 2006), it is imperative to delve into the proprietary sector.

Indeed, FPCUs are distinctive from traditional postsecondary institutions in several ways. As widely understood, career and vocational education is a primary mission of FPCUs (Kinser, 2006a). Despite the increasing number and scope of degree programs in FPCUs, there still exist many FPCUs that provide non-degree programs that grant certificates or non-degree credentials. According to the analysis of IPEDS, 60% of for-profit colleges are identified as non-degree granting postsecondary institutions. Conversely, since only 15% of public and private non-for-profit institutions are non-degree granting institutions, FPCU clearly play an important role as a non-degree postsecondary education provider. We also have limited knowledge on students at for-profit colleges. It is widely known that for-profits are more likely to attract underrepresented students. Many maintain an open admission policy with intensive student-centered services. Unfortunately, many studies often equate community college students with for-profit students. This research practice masks the distinctive characteristics of for-profit college students with regard to the impact of for-profit education on student success.

Increasing enrollments and their investments for education require proprietary colleges to provide quality education based on measureable indicators. As an example, the U.S. Department of Education recently announced Gainful Employment (GE) regulation for career and vocational postsecondary institutions including for-profit colleges. This aims to increase accountability of for-profit institutions by ensuring that their students should be employed with reasonable earnings to repay their investment for college education.

Responding to the current debates on the for-profit higher education sector, this proposed research will address the diversity of FPCUs, and their students. It will also examine a student success model at for-profit colleges. A typology of for-profit colleges will add to our understanding of the heterogeneity of FPCUs. In addition, identifying student characteristics will advance the understanding of this rapidly increasing population in higher education. Most importantly, this proposed dissertation will advance our knowledge and theory base of student success at FPCUs by providing empirical evidences. Furthermore, this study will have significant implications for policy makers who aim to increase accountability and institutional effectiveness of FPCUs.

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[1]For-profit colleges and universities and proprietary colleges are used interchangeably in this proposal.

Review the literature and establish a theoretical grounding for the research:

In order to provide a contextual basis of the proposed research, this brief literature review will address three dimensions that connect to three larger research questions: heterogeneity of for-profit colleges, characteristics of for-profit college students, and identifying factors that affect student success defined in two ways: graduation rate and student debt-to-earnings ratio.

Heterogeneity of For-Profit Colleges and Universities

The mixed and diverse structure of FPCUs makes it difficult to explain the sector briefly. As Kinser (2006) asserted, the profile of FPCUs employed criteria needs to be provided to advance the research of the for-profit sector. During the 1970s, suggested criteria were likely to focus on institutional program (i.e., business vs. trade school) but this scheme has a limitation since it could not account for diversified programs in FPCUs. Lee and Merisotis (1990) proposed curricular classification based on accreditation agency and Education Commission of the States (ECS) further develops the criteria in order to reflect the unique elements for FPCUs that emerged during 1990s—enterprise colleges, supersystem, and internet institutions (Kinser. 2006a). This reflects the coexistence of multi-campus structure owned by large public corporations and family-owned small college while adding the emergence of online delivery system (Kinser, 2006a). Indeed, at the core of the rapid expansion of FPCUs, are the national chain FPCUs owned by large publicly traded corporations[1]. The major for-profit institutions often compete with each other by differentiating their programs. For example, the Apollo Group has proposed to serve working adults by granting Bachelor's degrees but the target is moving towards the traditional-aged student (Tierney & Hentschke, 2007). Kaplan Higher Education is the only for-profit institution that offers a law degree online while there are still many for-profit colleges that are small, serving local populations, or only providing certificate or short-term programs (Tierney & Hentschke, 2007). Since these large for-profit institutions often mask the existence of small FPCUs, the precise picture that inclusively describes the for-profit sectors is less likely to be demonstrated (Kinser, 2006b).

FPCUs continue to change and expand. Most recently, Kinser (2006a) advanced classification criteria as locations, ownership, and highest-degree offered. Yet, this has also a limitation since it only accounts for degree-granting FPCUs. In order to reflect institutional variations of FPCUs, multidimensional factors need to be considered and further developed.

Students in For-Profit Colleges and Universities

Many studies have explained that students who attend for-profit colleges are more likely to be older, independent, racial/ethnic minority, or have lower socioeconomic status than those who attend traditional higher education institutions. In this sense, students in for-profit colleges are often equated with community college students (Tierney & Hentschke, 2007). However, recent studies indicate that students in for-profit colleges have substantial differences from community college students. Oseguera, Kimball, and Hwang (2011) found that students attending a for-profit college have more family savings for college than students at their not-for-profit counterparts and are more likely to value education to find a job. Mullin (2010) found that for-profit students are more likely to enroll as full-time. Furthermore, proprietary college students are not a homogeneous group across the types of for-profit colleges. Chung (2008) found that students at four-year for-profit colleges tend to be older, male, and white than those at two-year for-profit colleges and are likely to have higher income than not-for-profit four-year college students.

With regard to student characteristics that influence success, empirical evidence is harder to find. Moreover, it is assumed that the factors that affect success are substantially different from ones that have been identified through research on traditional college students. Given the open admission policy of for-profit colleges, frequently used factors such as previous academic achievement or standardized test scores do not seem to be a valid measure. Instead, Tierney and Hestschke (2007) asserted that a student's initial goals and expectations need to be important factors to address student success at FPCUs. They asserted that student success is determined at the initial recruitment stage since mismatch between student goal and actual education program will lead students to leave before completing their goals. More importantly, it is unclear how student experiences at FPCUs affect their success. It is widely known that student-faculty interaction or student-centered pedagogy are important factors that predict

student success in traditional colleges and universities (see Pascarella & Terenzini, 2005). However, such research for FPCUs has not yet been published.

Defining Student Success

While many studies have been published on student success at four-year non-profit institutions, student success at for-profit colleges is less likely to be the focus of scholarly interests. Instead, recently released studies have focused on comparisons of success measures with community colleges or four-year not-for-profit institutions.

I suggest two measures for student success at FPCUs: completion rate and student debt-to-earnings ratio. Completion rate has been the most prevalent measure for success across all types of postsecondary institutions. Deming, Claudia, and Katz (2011) found that students in FPCUs are more likely to complete certificate or Associate Degree programs than community college students. A GAO Report (2011a), which analyzed 11 published papers on student outcomes at FPCUs, demonstrated the same findings. This tendency is also consistent with the earlier study by Kinser (2006a). It seems clear that FPCUs are associated with higher completion rate in sub-baccalaureate programs but the results do not address why FPCUs are better with non-degree education and poor at degree education.

On the other hand, Tierney and Hentschke (2007) suggest that well-paid employment is the best measure of success for students from for-profit colleges. Considering that educational programs at FPCUs are directly connected to the local employer's need, quality education can be evaluated aligned with this mission of education (Tierney & Hentschke, 2007). Kinser (2009) also expressed some concerns by stating "if students are defaulting because the tuition they pay does not result in sufficient earnings after graduation, this may indicate an inadequate curriculum or programs that are mismatched to labor force needs" (p. 17). This claim is connected to the growing concerns in student finances and educational returns. GE regulation signals the significance of debt-to-earnings ratio as outcome indicator. Therefore, in response to increasing accountability on student less-returnable investment on education, it is imperative to explore the association between institution and individual student factors that affect debt-to-income ratio.

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[1] While there exist small, family-owned, local basis for-profit colleges, a small number of industry lead the share of proprietary market. The largest groups include Apollo Group,

Education Management Corporation, Career Education Corporation, DeVry, or Kaplan Education (Bennett, Lucchesi, &Vedder, 2010; Kinser, 2007).

Describe the research method that will be used:

This proposed study will address three research questions. Each question will be answered using different methods—cluster analysis, descriptive statistics, and hierarchical linear modeling (HLM).

Question 1: How can FPCUs in IPEDS be classified? What criteria can be used?

In order to test whether suggested criteria[1] in literature review ensure the heterogeneity between institutions, FPCUs available in IPEDS will be analyzed using cluster analysis. Cluster analysis allows testing the within-group homogeneity and between-group heterogeneity (Bahr, 2010). Among several strategies for cluster analysis, *k*-means analysis is the best strategy for large datasets (Bahr, 2010) like BPS:04/09 used in this proposed research. Through attempts to generate clusters of FPCUs, the homogeneity will be examined through key institutional characteristics such as enrollment size, cost of attendance, retention and graduation rates. Through this analytical strategy, criteria will allow identified differences between FPCUs and address institutional diversity of the sector (for example, see table 1). In order to identify different classification structures for degree-granting and non-degree granting FPCUs, non-degree granting FPCUs (n=2,021) will be examined separate from degree-granting FPCUs (n=1,348)[2].

Question 2: What are the student characteristics at FPCUs?

This question is connected to the previous research question since student characteristics will be explored across the suggested types of FPCUs through question 1. This will require descriptive statistics by providing means of student age, race, gender, or SES across the types of FPCUs (for example, see table 1).

Question 3: What are the predictors for student success at FPCUs?

This will be a primary research question for the proposed research. To answer this question, I will employ a hierarchical linear modeling (HLM). HLM is an effective analytic strategy for the nested data (i.e., individual students are nested in a postsecondary institution) by partitioning variances between individuals from variances at institution level (Raudenbush & Bryk, 2002).

Data Source and Sample

The data set used for the analysis will be Beginning Postsecondary Students (BPS04:09) from NCES. BPS04:09 includes first-time students who began postsecondary education in 2003-2004. Sample for this analysis will be determined as students who enrolled in FPCUs (including less than two-year, two-year, and four-year institutions) as their first postsecondary institution in 2003-2004 (n=1,948)[3].

Outcome Variables

This proposed study will have two types of outcome variables (for variable list, see Appendix A). The first set of outcome variables is dichotomous variable that indicates whether students graduate or not within 100% (0=not graduate, 1=graduate) and 150%, (0=not graduate, 1=graduate) timeline. Since these are binary variables, hierarchical generalized linear model (HGLM) will be an appropriate analytic strategy (Raudenbush & Bryk, 2002).

The second outcome variable will be a continuous variable that indicates student debt-to earnings ratio. Since these outcome variables are continuous, hierarchical linear model (HLM) will be used for this analysis.

Independent Variables

The independent variables are included in Appendix B. Independent variables for Student level (level 1) will include student background, student initial goal, reason to attend, and educational experiences at FPCUs. Independent variables for institution level (level 2) will include institutional characteristics as identified through research question 1.

Statistical Model

1) HGLM analysis (outcome: graduate on-time)

Level 1 (student level):

$Y_{mij} = \beta_{0j} + \beta_{1j} X_{1ij} + \beta_{2j}X_{2ij} + \beta_{3j} X_{3ij} + \beta_{4j}X_{4ij} + \beta_{5j}X_{5ij} + \beta_{6j}X_{6ij} + \beta_{7j}X_{7ij} + r_{ij}$

Ymij represents the log-odds of membership of in m category (e.g., graduate on time) relative to reference category (e.g., do not graduate on time).

β_{0j} represents the intercept of institution j

X_{1ij}: student i's gender

X_{2ij}: student i's race

X_{3ij}: student i's age at first enrollment

X_{4ij}: student i's socioeconomic status

X_{5ij}: student i's degree goal

X_{6ij}: student i's reason to attend PSE

X_{7ij}: educational experiences at PSE

Level 2 (institution level):

$\beta_{0j} = \gamma_{q0} + \gamma_{q1}W_{1j} + \gamma_{q2}W_{2j} + \gamma_{q3}W_{3j} + \gamma_{q4}W_{4j} + \mu_{qj}$

β_{0j} represents the institution j's average log odds of students' graduation rate after controlling student background.

W_{1j}: location of institution j

W_{2j}: size of institution j

W_{3j}: degree-granting status of institution j

W_{4j}: identified characteristics through cluster analysis

2) HLM analysis[4] (outcome: student debt-to-earnings ratio)

Level 1 (student level):

$Y_{ij} = \beta_{0j} + \beta_{1j} X_{1ij} + \beta_{2j}X_{2ij} + \beta_{3j}X_{3ij} + \beta_{4j}X_{4ij} + \beta_{5j} X_{5ij} + \beta_{6j}X_{6ij} + \beta_{7j}X_{7ij}\ r_{ij}$

Yij represents student debt-to-earnings ratio of student i in institution j.

Level 2 (institution level):

$\beta_{qj} = \gamma_{q0} + \gamma_{q1}W_{1j} + \gamma_{q2}W_{2j} + \gamma_{q3}W_{3j} + \gamma_{q4}W_{4j} + \mu_{qj,}$ for q=0, 1, 2, 3, 4, 5, 6, 7

Question 4: Are there any differences in factors affect student success between degree-granting FPCUs and non-degree granting FPCUs?

As found in previous studies (Deming, Claudia, & Katz, 2011; Kinser, 2006a), FPCUs tend to be effective in non-degree programs. In order to examine what factors affect student success across these two types of FPCUs, the statistical models used to answer research question 3 will be examined separately for each degree-granting and non-degree granting FPCU.

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[1] The criteria includes curricular emphasis (i.e., whether an institution primarily offer vocational curriculum or focus on academic programs), degree-offer status (i.e., whether an institution offer degrees or not), location (i.e., local characteristics), or ownership (i.e., publicly traded cooperation or not), etc.

[2] Among 3,369 FPCUs available in IPEDS2010, 2,021 are identified as non-degree granting FPCUs and 1,348 are identified as degree-granting FPCUs.

[3] Variable used for the sample selection will be FSECTOR in BPS04:09.

[4] Variables used for HLM analysis are same for those in HGLM analysis.

Uploaded Appendix Document(s):

- Appendix A. Outcome measures for student success a
- Appendix B. Selected independent variables for HLM
- Table 1. Expected findings from research question

Project Description II

Will you use NCES target dataset? Yes

Please check all NCES datasets that apply
- Beginning Postsecondary Student (BPS) Longitudinal Study and Transcript Data
- IPEDS Institutional Characteristics (IC)

Explain why each dataset best serves this research. Include a variable list for each dataset used.

The BPS data set is the most appropriate dataset for the proposed research for three purposes. First, BPS 04:09 study sample represents the approximately 4 million undergraduates who were first-time postsecondary beginners in 2003–04. It includes a wider age range (from 17 to 80) and includes a larger proportion of students who did not enroll in college immediately after high school. It allows me to examine non-traditional students, a group who is more likely to enroll in for-profit colleges. Second, BPS contains rich information relating to student characteristics, experiences while attending colleges, and attainment and completion 6 years after college entrance. This enables me to examine student outcomes 6 years after starting their postsecondary education. Three, BPS04:09 includes a reasonable number of

students who attended for-profit colleges and this will reduce the barriers caused by insufficient samples for statistical analysis.

I also expect that IPEDS will supply me with institutional-related variables. Since IPEDS includes for-profit colleges that participate in federal financial aid programs and have a wide range of variables that indicate institutional characteristics, it will be the best source for examining institutional effect and differences among the proprietary sector. Institutional variables in IPEDS can be merged into BPS:04/09, and it allows me to establish a two-level HLM analysis by making up the unavailable variables from BPS.

Will you use NSF target dataset? No

Explain why each dataset best serves this research. Include a variable list for each dataset used.

Will you address the NPEC focus topic? Yes

If yes, please briefly describe:
This proposed research is directly linked to the NPEC topic of this year: exploring postsecondary non-degree granting programs. Between 1997 and 2007, sub-baccalaureate awards from FPCUs increased by 54.3% (Horn & Li, 2009). Four-year for-profit colleges marked a nearly 350% increase during this period (Horn & Li, 2009). As a result, research focusing on why FPCUs are rapidly contributing to non-degree awards is needed. This study proposes examining the NPEC issue by focusing on 1) institutional level analysis on degree-granting vs. non-degree granting FPCUs; and 2) student level analysis on degree-granting program vs. non-degree granting program. Institution level analysis will be conducted using IPEDS to identify institutional characteristics between degree-granting vs. non-degree granting FPCUs. Student level analysis will include whether a student is enrolled in a non-degree program at degree-granting FPCU or non-degree granting FPCU. This study will contribute to our understandings of an under-researched area by providing empirical answers to the following questions: Who are students at those programs? What are the differences of non-degree programs offered in degree-granting FPCUs and non-degree granting FPCUs? How does non-degree program attendance affect student debt-to-earnings ratio? Are there any differences in factors affecting student success between non-degree vs. degree-program at FPCUs?

Project Description III

Provide a timeline of key project activities:

My plan is to finalize the literature review by April 2012. I expect to establish a concrete conceptual model for analysis before the AIR grant start date. This dissertation will be completed by April 2013 in the following order:

 1. Data Preparation and Analysis Planning (May 2012)

    - Access, clean, and prepare data for analysis
    - Impute missing values
    - Revisit the analysis model and revise it if needed

 2. Data Analysis (June 2012—December2012)

    - Descriptive analysis for each institution and individual level
    - Run cluster analysis
    - Run HLM
    - Draft finding section

3. Finalize Write-ups (July 2013—March 2013)

    - Develop the finding draft concretely
    - Revisit conceptual framework and literature review

4. Review and Revising (March 2013—April 2013)

5. Submit final paper to AIR (May 2013)

List deliverables such as research reports, books, and presentations that will be developed from this research initiative:

 The final dissertation will be submitted to AIR and presented at the 2013 AIR Forum. In addition, I will prepare articles on my research to submit to top-tier journals in education in order to share the findings with other interested scholars and researchers.

The possible topics for publications are as below.

- Heterogeneity of for-profit colleges and universities: Proposed criteria for institutional classification.
- How do student characteristics differ between non-degree vs. degree-granting FPCUs?
- Institutional factors that affect On-Time-Completion at for-profit colleges and universities.
- Do institution-related factors really matter in the student debt-to-earnings ratio?: A focus on for-profit colleges and universities.

Describe how you will disseminate the results of this research:

The final results of this dissertation will be disseminated by presenting at 2013 AIR Forum in Long Beach, California. While I develop this proposal, a part of this dissertation also will be presented at 2012 ASHE in Las Vegas and 2013 AERA annual meeting.

Provide a reference list of sources cited:

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IRB Statement

Statement of Institutional Review Board approval or exemption:

I will contact the IRB office at the Pennsylvania State University based upon the announcement of decision from AIR.

Statement of Use of Restricted Datasets

I am already approved to access restricted NCES datasets and the license allows me to use BPS restricted dataset.

Biographical Sketch

I am a third year Ph.D. candidate in the Higher Education program at the Pennsylvania State University. After completing my bachelor's and master's degree from Yonsei University in Seoul, South Korea, I was employed as an assistant researcher at the Korean Educational Development Institute (KEDI) in Seoul. As part of my responsibilities, I helped collect and analyze national level data for the Korean Education Longitudinal Study of 2005 (KELS). KELS was designed to examine students' educational experiences and follow their transition from secondary to postsecondary institutions. I was also responsible for promoting data

use among multiple researchers.

Since I have started doctoral study in the U.S., I have acquired various experiences that will help me to realize my career goals. My efforts during my first year of study focused on learning fundamental theories and literature across history, administration, curriculum, and student development in higher education. After completing my first year, I began volunteering on a grant-funded project with Dr. Oseguera. The project involved analyzing the Education Longitudinal Study of 2002 (ELS) to examine student access to for-profit vs. not-for-profit postsecondary institutions. My responsibilities included data retrieval and cleaning, data preparation and analyses, and finding write-ups. These experiences allowed me to gain an in-depth understanding of theories about college access and diverse institutional types in the U.S. In addition, a community and technical college course I took in my second year broadened my perspective from traditional types of postsecondary institutions to various types of institutions that have distinctive missions. In that sense, the for-profit sector stimulates my curiosity since it offers unique types of education and it has a reputation for targeting underserved populations.

Moreover, if I had not volunteered on this research project, I might not have attained my knowledge of national data sets or acquired skills for data analysis. Although I have experience in Korean national data sets, my desire to establish expertise in U.S. national data sets clearly stems from my second year experiences. Fortunately, I was selected as a fellow at the 2011 National Summer Data Policy Institute (NSDPI) that aims to promote the usage of large national data sets from NCES and NSF through educating and networking across diverse professionals in higher education. A week of learning in NSDPI expanded my knowledge about various data sets and enabled me to brainstorm ideas for my dissertation. It also allowed me to identify additional data sets I could utilize to best address my topic of interest, namely for-profit higher education institutions. These datasets include Beginning Postsecondary Students Longitudinal Study (BPS: 04/09) and Integrated Postsecondary Education Data System (IPEDS).

Institutional research (IR) is another area that I hope to pursue as one of my research interests. I recently received approval to earn an IR certificate from the Pennsylvania State University and I am also working as a Data Analyst Graduate Assistant at the office of the Student Affairs Research and Assessment (SARA) in my institution. Through working at SARA, I have gained valuable learning opportunities that should allow me to engage in real-world professions, communicate with diverse administrators within Student Affairs and throughout the University, and to see how the data contributes to the decision-making of University administrators. While I work at this position, my interests in institutional data policy and effective assessment strategies are growing. I believe that this experience will enhance my ability to design and conduct research projects with important practical implications across diverse types of postsecondary institutions.

Once I successfully earn a Ph.D. in higher education, I want to continue to engage educational research and further develop my scholarly inquiries. Based on my greatest confidence in pursuing research, I want to promote learning for those who are minority students in graduate programs and lead them to succeed as professionals in academia. My long-term goal is to become an expert in international communication within the higher education field. Coming from Korea, I know that there are other Koreans (and other non-U.S. citizens) who want to learn more about the U.S. higher education and here in the U.S., academic professionals are interested in global perspectives. I have come to understand that a person takes a surprisingly important role when they are able to communicate across boundaries. That is what I would like to pursue for my future.

Budget Requirements

Salary/Stipend: $13900.00
Tuition and fees: $1600.00
Travel: $1500.00
Other travel related expenses: $3000.00
Other research expenses: $0.00
Total Request: $20000.00

Funding History

I have not applied for other dissertation grant programs for this proposed research. I was selected as a fellow of 2011 National Summer Data Policy Institute sponsored by AIR, NCES, and NSF. Other than this, I have no prior funding history from AIR or other organization.

Letter of Support from Dissertation Faculty Advisor

- [Letter of Support](#)

Appendix A. Outcome measures for student success at FPCUs

Outcome	Variable	Data Source
Completion Status		
100% timeline	PROUTF2 (2-year program); PROUTF4 (4-year program)	BPS04:09
150% timeline	PROUTF3 (2-year program); PROUTF6 (4-year program)	BPS04:09
Student debt-to-earnings ratio	CUMOWE06; CUMOWE09 INCRES05; INCRES09	BPS04:09

Appendix B. Selected independent variables for hierarchical linear modeling analysis

Variable Name	Description	Data Source
Student level (Level 1)		
Demographics		
GENDER	Gender	BPS04:09
AGE	Age at first enrollment	BPS04:09
HISPANIC	race: Hispanic	BPS04:09
RAINDIAN	race: Indian	BPS04:09
RAASIAN	race: Asian	BPS04:09
RABLACK	race: Black	BPS04:09
RAISLAND	race: Pacific Islander	BPS04:09
RAOTHER	race: Other	BPS04:09
RAWHITE	race: White	BPS04:09
Degree goals		
DGOALY1	Degree goals at first year	BPS04:09
Socioeconomic status[1]		
TRIO	Trio eligibility	BPS04:09
RISKINDX	Risk index	BPS04:09
Reason of attendance		
RAD04C	Affordable or financial	BPS04:09
RAD04D	Location	BPS04:09
RAD04E	Personal or family reasons	BPS04:09
RAD04A	Program or coursework	BPS04:09
RAD04B	Reputation	BPS04:09
Educational Experiences		
DISTNUM	Number of courses took via distance ed	BPS04:09
DISTALL	Entire program via distance ed	BPS04:09
FREQ04A	Faculty informal meeting	BPS04:09
FREQ04B	Faculty talk outside class	BPS04:09
FREQ04C	Meet academic advisor	BPS04:09
FREQ04G	Study groups	BPS04:09
Institution Level (Level 2)		
Institutional Characteristics		
LOCALE	Degree of urbanization 2003-04	BPS04:09
ENRLSIZE	Enrollment size 2003-04	BPS04:09
REGACCRD	Regional accrediting agency	BPS04:09
PCT_MIN	Percent minority enrollment 2003-04	BPS04:09
FGRNT_P	Percent received federal grants at institution 2003-04	BPS04:09
Degree granting status	Degree-granting FPCUS vs. Non-degree granting FPCU	IPEDS

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[1] These variables need to be examined further (see footnote in methodology section).

Table 1. Expected findings from research question 1 & 2

	Criteria		
	Location	Ownership	Degree-granting status
Institutional Characteristics			
Size			
Cost of attendance			
Retention Rate			
Graduation Rate			
Student characteristics			
Age			
Gender			
Race			
SES			

Note. Suggested criteria in this table are based on Kinser (2006) and they will be included for cluster analysis. However, it should be noted that the criteria will not be the same with this example and it will be updated based on the findings from cluster anlysis.