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**Gender, Geography, Transfer, and Baccalaureate Attainment**

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## Abstract

Most of the literature regarding persistence in postsecondary education focuses on traditional-aged students who begin in a four-year institution, despite the fact that nearly one-half of all undergraduate enrollments are in two-year institutions. Any number of factors influences a student's decision to begin in a sub-baccalaureate institution. For example, for both traditional- and nontraditional-aged students, particularly those who are from rural areas and/or are first-generation, the ability to begin and complete postsecondary education may be influenced by their desire to stay close to home in order to manage the cost of attending. Additionally, nontraditional-aged students and women often have difficulty in attending a postsecondary institution a great distance from where they live. This is due to familial and work-related responsibilities. Thus, the notion of the "traditional" student has become a misnomer. And, while many students who begin in a two-year institution have aspirations to transfer and complete the baccalaureate degree, few actually do so successfully.

Using BPS: 96/01, this study sought to increase knowledge about attainment of the baccalaureate degree for vertical transfer students by examining individual characteristics such as level of urbanicity, age, gender, and the risk factor index using the BPS: 96/01 dataset. Findings indicate that few students (12%) successfully transferred to a four-year institution. Women and traditional-age students were more successful at baccalaureate attainment than men or nontraditional-aged students. Traditional-aged men and those who had more risk factors or attended a non-rural high school were more successful than nontraditional-aged men, had fewer risk factors, or attended a rural high school.

## Introduction

In today's knowledge-based or tertiary economy, some form of postsecondary education is critical for Americans to be able to attain or maintain a middle class lifestyle. Educational level is directly related to annual median income. According to the College Board (2006a), a 2005 high school graduate could expect to earn a median income of \$32,200, a community college graduate could expect to earn a median income of \$41,200, and a graduate with a baccalaureate degree could expect to earn a median income of \$54,800. These differences in earnings equate to 28% between a high school and community college graduate and 33% between a community college and four-year graduate. Even more astounding, however, is the 70% difference in median income between a high school graduate and a bachelor's degree recipient.

Not only does a postsecondary education benefit an individual, it also benefits society. Those with a higher education tend to be more involved in their communities, have an increased role in civic participation, and have higher incomes. Higher incomes, in particular, are important to not only individuals but also for society due to the increased amount of tax dollars paid and donations given to charity (Mumper, 1996).

Given this, it seems logical that policymakers, parents, and students themselves would be anxious to enroll in some form of postsecondary education following high school graduation. However, this is not always the case. According to the Advisory Committee on Student Financial Assistance (2002), nearly 2 million low-income students qualified to attend college will not. One reason often cited for not attending is the lack of an afford higher education. Unfortunately, since the early 1980s, college prices have rising in all sectors of higher education. This increase is especially pronounced at public

four-year institutions. The overall increase from 1981-82 to 2006-07 was 190% (in constant dollars) (College Board, 2006b). Probably what is most concerning is how rapidly tuition and fees have increased in the past five years alone—35%. This increase is higher than in any other five-year interval since the mid-1970s (College Board, 2006b).

One way many students, especially low-income students, have been able to offset these spiraling costs is through vertical transitions or 2+2. They enroll in a local community college for the first two years and transfer to a four-year institution for the final two years. This enables them to keep costs down through the lower tuition charges at community colleges and perhaps by living at home. The 2+2 model is beneficial to not only low-income students, but also millions more whose first institution of postsecondary attendance is the community college.

In fact, estimates indicate by 2013, enrollment at public two-year colleges will total around 6.8 million students. Today, 44 percent of students in public colleges attend two-year institutions (Long, 2005). Studies indicate that large numbers of these students (25-42%) anticipate attaining a bachelor's degree (Coley, 2000; Berkner, He, & Cataldi, 2002; Hoachlander, Sikora, & Horn, 2003). The increasing cost of higher education and dependence on a highly educated workforce points to the need for further research that focuses on bachelor's degree attainment of students who first attend community colleges.

The literature is rich with research regarding vertical transitions for students starting in a sub-baccalaureate institution. Scholars have been studying this phenomenon for more than 40 years. But, as four-year college costs continue to rise and state and federal policy makers look for ways to maximize efficiencies, community colleges will increasingly be a choice for many students to start their academic careers. Thus, studying

vertical transitions and baccalaureate attainment needs to continue to be a focus of researchers.

The purpose of this study is to add to the discussion by exploring how individual characteristics such as level of urbanicity of the high school and first institution attended, age, gender, and the risk factor index may influence transfer and baccalaureate completion. Risk factors include a) delayed enrollment into postsecondary education, b) no high school diploma, c) attending part-time, d) being financially independent, e) having a dependent other than a spouse, f) being a single parent, and/or g) working full-time (Horn & Premo, 1995).

#### Background of Current Study

This study begins with a story of two cousins who had very similar beginnings, yet vastly different outcomes. Both were first generation college students, similar in age. Both attended the same sub-baccalaureate institution, enrolled in the same program at that institution, completed an associate's degree, and transferred to the same four-year institution. Yet, only one cousin was successful at baccalaureate attainment. Thus, the original research question was asked—why? In trying to understand “why,” this research focuses on baccalaureate success of transfer students, and how certain characteristics may impact that success. Specifically, this research focuses on the nexus between baccalaureate attainment and geographic access, gender, age, and risk.

#### Literature Review

##### *Background and Role of Sub-baccalaureate Institutions*

Critical to understanding a discussion of persistence and attainment through the lens of vertical transfer is an understanding of the background and role of sub-

baccalaureate institutions. This is explored briefly, here. The original junior colleges' (later to become known as community colleges) original function was to serve as the conduit to the baccalaureate degree granting institution for those who were equipped to continue their studies (Brint & Karabel, 1989). This original purpose has laid the foundation for what we know as the 2+2, or transfer function, among today's two- and four-year colleges and universities.

This role was criticized by Clark (1960). He argued that in reality the guidance practices of junior colleges post WWII were to serve as a "cooling out process" for those who were not equipped to pursue a baccalaureate degree. This process consisted of systematic procedures in which marginal students were convinced to pursue vocational rather than academic training. He concluded that these procedures let students down gently and helped them to realize that it was best for these students to remove themselves from the transfer programs.

While community colleges have always retained their original mission of transfer, their missions greatly expanded in the 1970s. New roles included vocational, adult, and remedial education, all of which have led to open access, affordability, inclusiveness, vocational education, and adult/remedial education to name a few (Hungar & Lieberman, 2001; American Association of Community Colleges, 2004). Today community colleges have been renewing their focus on the original mission of transfer, particularly as college costs continue to spiral and state legislatures have become increasingly interested in the 2+2 function as it relates to cost (Mumper & Freeman, 2005; Freeman & Conley, 2005). Community colleges provide a route for many students to gain entry into a baccalaureate institution who might otherwise find such a journey difficult. They have

open access policies and lower fees, necessary to attracting individuals who cannot afford to attend four-year institutions; have poor academic performance in high school; need remedial work; need specific work skills; or are just unsure about what they wish to do with their lives (Hoachlander, Sikora, & Horn, 2003). This enables students who ordinarily would not be admitted to a four-year institution to prepare for entry at a later date. Thus, community colleges are the foundation for baccalaureate completion. Often referred to as the 2+2 model, beginning one's postsecondary education at a community college, with plans to transfer to a four-year institution, is a more affordable way for low-income and less prepared students to attain a baccalaureate degree.

Despite the number and type of sub-baccalaureate institutions that exist today, vertical transitions from these sub-baccalaureate institutions to the four-year institution do not guarantee baccalaureate success. Students must persist throughout their academic careers. Thus, understanding persistence is a requirement for eventual baccalaureate attainment for not only four-year native students, but transfer students as well.

### *Persistence*

Persistence has been a subject of interest by scholars for many decades. Of the research conducted on persistence and attrition, several models have come to the forefront in higher education research. As such, many scholars use one or more of these models as the theoretical basis for their own research. These models include Astin's (1975) "Student Involvement" model, Tinto's (1975, 1987, 1993) "Student Integration" model, Bean's (1980) "Student Attrition" model, and Bean and Metzner's (1985) "Nontraditional Undergraduate Student Attrition" model. Each is addressed below.

First is Astin's (1975) "Student Involvement" model, which supported the notion that student involvement was a key factor in persistence. Basically, if students are involved they will learn and eventually persist. According to Astin (1975), student drop out "is inversely related to the degree of direct involvement in the academic and social life of the institution" (p. 175-176). Astin studied full-time students who enrolled for the first time in a four-year institution, while teasing out differences based on gender and race. Only those aspiring to the baccalaureate degree were included in his study.

Second, Tinto's (1975, 1987, 1993) "Student Integration" model built on the work of Spady (1970) and Durkheim's (1951) Theory of Suicide. Tinto formulated a theory of college persistence and withdrawal, which looked at the effects of certain behaviors on the longitudinal process of student persistence. Academic and social integration—the immersion of students in the many dynamics of college life—became the basis for this model, which largely regarded persistence as an outcome of the student's interactions with the social and academic systems of the institution. Here, attrition occurs as a result of interactions between students and their educational environment during their time at the institution of higher education. Persistence is seen as the congruence between a student's motivation and academic ability and the academic and social characteristics of the institution. This congruence shapes the commitment of completing college and the commitment to the institution. These are also known as goal commitment and institutional commitment, respectively. It stands to reason, then, that the stronger either of these commitments, the greater the likelihood of persistence and eventual completion.

Third, Bean's (1980) "Student Attrition" attempted to expand on the earlier works of Astin (1975) and Tinto (1975). He developed an exploratory study to test a causal

model of student attrition. His basic assumption was that student attrition was analogous to employee turnover in the workplace. This model of student persistence looked at academic variables, student intent, goals, expectations, and external and internal environmental factors.

Fourth, the “Nontraditional Undergraduate Student Attrition” model developed by Bean and Metzner (1985) expanded Bean’s (1980, 1981) model in order to develop a conceptual model of nontraditional undergraduate student attrition. This model incorporated the interactional dynamics of Bean’s previous research as well as characteristics of nontraditional students and the influence the environmental factors have on student persistence and departure. They looked at three distinct characteristics impacting student persistence (a) nontraditional-aged or over age 25; (b) attending part-time; and (c) non-residential. While they did not test this model empirically, based on an extensive review of the literature, it was their belief that nontraditional undergraduate students dropped out for different reasons than their traditional counterparts. Because of this and the increasing enrollment of nontraditional students, they felt that there was a need for a model which could better explain this population of students.

For students who begin in a sub-baccalaureate institution, yet have baccalaureate intentions, they must vertically transfer to the four-year institution. Thus understanding vertical transitions is important to understanding persistence and eventual baccalaureate attainment. This is addressed below.

### *Vertical Transitions*

Vertical transitions—or transfer from a sub-baccalaureate institution to a four-year institution—has been a subject of interest among higher education officials for more

than four decades. One of the earliest studies about vertical transfer was conducted by Knoell and Medsker in 1965. They looked at more than 7,000 junior (community) college students who transferred to a four-year institution in 1960. Their findings were generally similar to what current research suggests. For example, economics played a role in the decision to begin in a two-year institution, those most likely to succeed had performed well in high school and the two-year institution, and a delay in enrollment diminished their chance at success. But the most relevant finding was that “after three full calendar years following transfer, 62% of the junior college students had been granted their baccalaureate degrees” (Knoell & Medsker, 1965, p. 25). Further, 9% were still enrolled with graduation expectations within the following year (Knoell & Medsker, 1965). Large numbers of transfer students who started out in a community college were successful at baccalaureate completion in the 1960s.

However, in the 1970s during the time when community colleges were expanding their missions, baccalaureate completion rates of transfer students seemed to be falling. As Dougherty (1987) noted in his synthesis of the research, of those who did persist to the upper division level, only 24% of them were community college transfers, compared to 76% of their native counterparts. Even when controlling for pre-existing student characteristics and differential attrition, he found that 49% of community college students who had baccalaureate intentions and persisted through the first two years actually transferred to the four-year institution in the third year. However, 96% of those students who began in the four-year institution persisted to the third year. He surmised that community college attendance hindered students in two ways, (a) students lost their desire to transfer and (b) students who still wished to transfer found it difficult to do so.

Other studies have explored what may impact transfer. For example, Lee and Frank (1990) found that in 1980, community colleges enrolled almost one-fourth of all high school graduates, having expanded considerably from the 1970s. Of those who first enrolled in the community college, 24% transferred to a four-year institution. Similarly, Hoachlander, Sikora and Horn (2003) found that “about 29% of all first-time community college students transferred to a 4-year college or university during the 6-year survey period...” (p. xi).

Clearly, transfer from a sub-baccalaureate to a four-year institution is a principal avenue by which many students are able to attain a baccalaureate degree. This is especially important for students who elect to first attend a two-year institution due to cost.

#### *Individual Characteristics*

Individual characteristics play a role in whether or not a student is successful. Researchers have identified characteristics that are important to consider. These include geographic access, age, gender and risk and are addressed below.

First, Heller (2001) identified geographic access as important to studying student success. Traveling any distance to a postsecondary institution is difficult for many students. And, students from rural areas in particular have lower transfer and baccalaureate attainment rates than students from non-rural areas (Adelman, 2005; Monroe & Richtig, 2002). Students attend community college in the same area where they attended high school, again supporting the notion of keeping costs down through the ability to live at home.

Second, many studies indicate that women are making greater strides in higher education today than ever before (Peter, Horn & Carroll, 2005; King, 2000). However, there is evidence that men are still more successful than women (Lee & Frank, 1990, Freeman, Conley, & Brooks, 2006; Peter, Horn, & Carroll, 2005).

Third, nontraditional-aged students account for a large portion of the community college population (Adelman, 1994; Choy & Ottinger, 1998; Berkner, et al., 2002). This is a finding which appears to be consistent through time. Nontraditional students, by their very nature, are more likely to be employed full-time and have familial responsibilities. These two factors combined tend to tie them to place.

Finally, other research has shown that risk factors have strong and significant effects on transfer and baccalaureate degree attainment. These include a) delayed enrollment into postsecondary education, b) no high school diploma, c) attending part-time, d) being financially independent, e) having a dependent other than a spouse, f) being a single parent, and/or g) working full-time (Horn & Premo, 1995). As the number of risk factors increase, the less likely it is that students will transfer from a two-year to a four-year institution, much less anticipate attaining a baccalaureate degree. Some studies go so far as to imply that attending a community college may perpetuate rather than ameliorate social stratification in higher education (Clark, 1960; Velez & Javalgi, 1987; Lee & Frank, 1990; Tinto, 2004).

Given this extensive literature, the assumption was that certain individual characteristics would distinguish those who transferred and completed the baccalaureate degree from those who did not. Here, I added to the literature by exploring the impact that level of urbanicity, gender, age, and risk had on baccalaureate attainment of those

who began in a sub-baccalaureate institution. The research questions for this study follow.

#### Research Questions

1. What are selected characteristics (level of urbanicity, age, gender, and risk factor index) of first-time beginning students whose first institution of attendance is a sub-baccalaureate institution?
2. What are selected characteristics (level of urbanicity, age, gender, and risk factor index) of first-time beginning students who transfer from a sub-baccalaureate institution to a four-year institution?
3. What are selected characteristics (level of urbanicity, age, gender, and risk factor index) of first-time beginning students who first attended a sub-baccalaureate institution and attained a baccalaureate degree by 2001?
4. Are selected characteristics (level of urbanicity, age, gender, and risk factor index) related to baccalaureate attainment among students who first begin in a sub-baccalaureate institution?
5. Are selected characteristics (level of urbanicity, age, gender, and risk factor index) related to baccalaureate attainment among women who first begin in a sub-baccalaureate institution?
6. Are selected characteristics (level of urbanicity, age, gender, and risk factor index) related to baccalaureate attainment among men who first begin in a sub-baccalaureate institution?

### Limitations

There were a couple of limitations to this study. First, there is no variable which measures the level of urbanicity of the final (baccalaureate degree-granting) institution attended. Without such a variable, it is difficult to fully understand how level of urbanicity impacts transfer student success.

Second, the BPS was a longitudinal study that lasted for only six years. This may have not been enough time for transfer students to have completed the baccalaureate degree, especially for those students who attend on a part-time basis or had work and/or familial responsibilities.

### Method

The data for this study were drawn from the National Center for Education Statistics 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS: 96/01). Additional data were drawn from the Common Core of Data (CCD) and the Integrated Postsecondary Education Data System (IPEDS) for those variables where information was missing. A combination of descriptive statistics and multivariate techniques were used to explore the research questions.

The primary concern of this study was the relationship between (a) level of urbanicity (b) age, (c) gender, and (d) the risk factor index and baccalaureate attainment of students who begin their postsecondary careers in a sub-baccalaureate institution.

### *Sample*

The Beginning Postsecondary Students (BPS) Longitudinal Study consists of a sample of all undergraduates, regardless of when they graduated from high school, who enrolled in postsecondary education for the first time in 1995-96 and were last

interviewed in 2001, approximately six years later. This survey provides the latest data on degree attainment and persistence six years after the students first enrolled as well as their four-year college transfer rates and the outcomes of these transfers. The sample used in this paper was restricted to BPS students whose first enrollment was in a sub-baccalaureate institution.

### *Variables*

The unit of analysis was students who began in a sub-baccalaureate institution. The dependent variable was a dichotomous indicator of whether or not the student attained the baccalaureate degree by 2001. The independent variables included level or urbanicity of the high school, first institution attended, and whether or not a student stayed in a rural area for college; age; gender; and the risk factor index. Operationalization of the independent variables follows.

The geographic location variable was dichotomized into rural and non-rural. The researcher looked at rural vs. non-rural on three levels—the first institution (sub-baccalaureate) of higher education attended, the high school attended, and a new variable “stay rural” which was constructed to measure whether or not a student stays rural (enrolled in both a rural high school and a rural sub-baccalaureate institution). The first institution and high school variables were examined using both the old locale codes: metro-centric and new locale codes: urban-centric. According to Gevert (2006), the new urban-centric coding scheme uses the most current geographic concepts and will eventually replace the current metro-centric coding methodology. Both locale codes were examined to look for any possible difference according to how students are classified. After the creation of the subset of the data where only those variables of

interest were included, it was necessary to construct the locale variable for those cases in which locale was missing. Due to the large number of missing data on these variables, the researcher had to take several steps to construct the geographic variables for both first institution attended (sub-baccalaureate) and high school attended. They were as follows.

1. If a student's first postsecondary institution was 50 miles or less from their high school, then first postsecondary institution and the high school were coded the same—rural or non-rural—for both old and new locale codes.
2. If a student's first postsecondary institution was rural and greater than 50 miles from their high school, then the high school was considered non-rural—for both old and new locale codes.
3. If the new locale code for the high school was missing and the number of miles was missing or greater than 50, but the old locale code was provided, then the level of urbanicity for the high school was coded based on the old locale code provided.
4. If a student's first postsecondary institution was 50 miles or less from their high school and the high school locale was missing, then the level of urbanicity was the same as the first institution attended.
5. If a student's first postsecondary institution was greater than 50 miles from their high school and the high school locale was missing, the cases were deleted. It was not possible to determine without the likelihood of error the high school locale.
6. If there was a lack of information from which the level of urbanicity could otherwise reasonably be determined, then those cases were deleted from the dataset.

After imputation of the variables, approximately 60 cases were deleted prior to the analysis.

The age variable was dichotomized in order to discern among traditional-aged students and nontraditional-aged students. Traditional-aged students included those 18 or younger. Nontraditional-aged students were considered to be older than 18 years. Here, the researcher looked at age as a predictor of baccalaureate attainment based on whether the student was traditional or non-traditional. Gender included male and female.

Horn and Premo (1995) were the first to identify the seven risk factors and develop the risk factor index. The index was developed as a part of a report using data from the NPSAS:93 study. The report focused on those students who were nontraditional and “at-risk” of not completing a postsecondary program. These students had at least one if not more of the following characteristics, now identified as risk factors. They are (a) delaying enrollment into higher education, (b) having no high school diploma, (c) attending part-time, (d) being financially independent, (e) having a dependent other than a spouse, (f) being a single parent, and (g) working full-time. Here, the researcher looked at the number of risk factors and how it influenced baccalaureate attainment of those students who began in a sub-baccalaureate institution.

#### *Statistical Methods*

A combination of descriptive statistics and multivariate techniques were used to answer the research questions. Statistics relevant to students who began their postsecondary education at a sub-baccalaureate institution and transferred to a four-year institution were produced using the BPS 96/01 Data Analysis System (DAS), SAS and SUDAAN. The DAS produces weighted estimates, standard errors that take into account the complexity of the sampling procedures, and weighted sample sizes for the estimates.

To answer the first three questions, estimates and the corresponding standard errors were computed.

To answer research questions 5-6, a logistic regression analysis was conducted in SAS and SUDAAN. Logistic regression is an appropriate multivariate technique when the dependent variable is dichotomous (DesJardins, 2001). Mathematically:

$$(1) \quad \log \frac{P_i}{1 - P_i} = a + BX_i$$

In this case, there are two outcomes or events of interest for the model—attained versus did not attain.  $P_i$  is the probability that a student who began their postsecondary education in a two-year institution attained. While  $1 - P_i$  is the probability that the student did not attain a baccalaureate degree. The factors related to attainment of transfer students form a set of independent variables,  $X$ , and  $a$  and  $B$  are the intercept and the estimated coefficients of each of the independent variables included in the model, respectively. The null hypothesis ( $H_0$ ) was that none of these characteristics distinguish those who attained a baccalaureate degree from those who do not. The alternative hypothesis ( $H_A$ ) was characteristics will distinguish those who attained a baccalaureate degree from those who do not.

### Results

Descriptive statistics were computed to answer the first three research questions. Results indicate that a majority of students first began in a sub-baccalaureate institution. And, consistent with previous research, more nontraditional-aged students than traditional-aged students also began in a sub-baccalaureate institution. Similarly, students who first attended a sub-baccalaureate institution had more risk factors than their four-year institution counterparts. As the number of risk factors increased, so too did the

percent who first attended a sub-baccalaureate institution. Students with no risk were more likely to attend a four-year institution than those with any number of risk factors. As risk increased, students were more likely to begin their postsecondary careers in a sub-baccalaureate institution (see Table 1). As shown in Table 2 more women than men first attended a sub-baccalaureate institution. Similarly, more traditional-aged students first attended a four-year institution than did nontraditional-aged students. Finally, of those who first began in a sub-baccalaureate institution, 92% did not attain a baccalaureate degree by 2001.

When exploring characteristics of students who vertically transferred, results indicated that only 12% of students who began their postsecondary education in a sub-baccalaureate institution transferred to the four-year institution. Similarly, fewer than 18% of those students who attended a rural high school transferred from a sub-baccalaureate to a four-year institution. Fourteen percent of those students who first attended a rural sub-baccalaureate institution transferred to a four-year institution. A large number of students whose first institution was rural never transferred to the four-year institution. Nontraditional-aged students transferred at very low rates, as did women. Of particular interest, however, was that risk factors appeared to be a barrier to transfer (see Table 3).

As shown in Table 4. Of the 12% who transferred, few were successful at baccalaureate attainment. This suggests that perhaps transfer is a barrier. It is especially

Table 1

*Percent Attended a Sub-baccalaureate and Four-Year Institution by Selected Characteristics*

Characteristics	Sub-bacc	Four-year
Total	58.8 (2.46)	41.1 (2.46)
Level of Urbanicity of 1st Inst.		
Rural	58.7 (8.83)	41.2 (8.83)
Non-rural	58.8 (2.56)	41.1 (2.56)
Level of Urbanicity of High School		
Rural	39.8 (7.78)	60.1 (7.78)
Non-rural	33.1 (2.05)	66.8 (2.05)
Age		
Traditional-age 18 or <	42.8 (3.06)	57.2 (3.06)
Nontraditional-age > 18	80.4 (2.04)	19.6 (2.04)
Gender		
Male	58.9 (2.58)	41.0 (2.58)
Female	58.6 (2.73)	41.3 (2.73)
Risk Index		
No Risk Factors	30.1 (3.65)	69.8 (3.65)
One Risk Factor	66.1 (2.78)	33.8 (2.78)
Two Risk Factors	83.9 (1.80)	16.1 (1.80)
Three Risk Factors	90.2 (1.78)	9.7 (1.78)
Four Risk Factors	89.5 (1.74)	10.4 (1.74)
Five Risk Factors	89.0 (2.97)	10.9 (2.97)
Six Risk Factors	91.6 (2.55)	8.3 (2.55)
Seven Risk Factors	--	--

*Note.* Standard errors are in parentheses. May not add to 100.0 percent due to rounding. *Source:* Beginning Postsecondary Students Longitudinal Study, 1996-2001, Data Analysis System, February 16, 2007.

Table 2

*Percent of Selected Characteristics of Beginning Students by Institution Type*

Characteristics	Sub-bacc	Four-year
Total	58.8 (2.46)	41.1 (2.46)
Level of Urbanicity of 1st Inst.		
Rural	16.2 (9.47)	26.9 (5.21)
Non-rural	83.7 (9.47)	73.0 (5.21)
Level of Urbanicity of High School		
Rural	25.5 (9.62)	26.5 (4.04)
Non-rural	74.4 (9.62)	73.4 (4.04)
Age		
Traditional-age 18 or <	39.7 (4.51)	78.9 (2.54)
Nontraditional-age > 18	60.2 (4.51)	21.0 (2.54)
Gender		
Male	45.2 (3.79)	45.3 (2.28)
Female	54.7 (3.79)	54.6 (2.28)
Risk Index		
No Risk Factors	20.8 (2.49)	75.1 (2.10)
One Risk Factor	22.9 (3.74)	14.6 (1.35)
Two Risk Factors	15.7 (2.05)	4.3 (0.81)
Three Risk Factors	14.8 (2.83)	2.6 (0.55)
Four Risk Factors	15.1 (2.49)	2.0 (0.45)
Five Risk Factors	7.2 (1.68)	0.8 (0.27)
Six Risk Factors	2.3 (0.86)	0.3 (0.15)
Seven Risk Factors	0.7 (0.39)	---
Baccalaureate Attainment		
Attained	7.4 (1.53)	59.3 (2.92)
Did Not Attain	92.5 (1.53)	40.6 (2.92)

*Note.* Standard errors in parentheses. May not add to 100.0 percent due to rounding.

*Source:* Beginning Postsecondary Students Longitudinal Study, 1996-2001, Data Analysis System, April 22, 2007.

Table 3

*Percent Vertically Transferred to a Four-year Institution by Selected Characteristics*

Characteristics	Transferred	Did Not Transfer
Total	12.0 (1.02)	87.9 (1.02)
Level of Urbanicity of 1st Inst.		
Rural	14.2 (3.75)	85.7 (3.75)
Non-rural	11.6 (1.13)	88.3 (1.13)
Level of Urbanicity of High School		
Rural	17.7 (5.48)	82.3 (5.48)
Non-rural	12.3 (1.45)	87.6 (1.45)
Age		
Traditional-age 18 or <	14.2 (1.54)	85.9 (1.54)
Nontraditional-age > 18	9.4 (0.64)	90.7 (0.64)
Gender		
Male	15.2 (1.49)	84.7 (1.49)
Female	9.4 (1.07)	90.5 (1.07)
Risk Index		
No Risk Factors	11.7 (1.40)	88.2 (1.40)
One Risk Factor	19.5 (1.89)	80.4 (1.89)
Two Risk Factors	14.5 (2.72)	85.4 (2.72)
Three Risk Factors	9.2 (2.86)	90.7 (2.86)
Four Risk Factors	5.8 (1.68)	94.1 (1.68)
Five Risk Factors	4.7 (1.33)	95.2 (1.33)
Six Risk Factors	13.7 (7.40)	86.2 (7.40)
Seven Risk Factors	--	--

*Note.* Standard errors are in parentheses. May not add to 100.0 percent due to rounding.

*Source:* Beginning Postsecondary Students Longitudinal Study, 1995-2001, Data Analysis System, February 16, 2007.

Table 4

*Percent of Selected Characteristics of Vertical Transfer Students*

Characteristics	Transferred
Total	12.0 (1.02)
Level of Urbanicity of 1st Inst.	
Rural	29.7 (8.91)
Non-rural	70.2 (8.91)
Level of Urbanicity of High School	
Rural	38.8 (11.36)
Non-rural	61.1 (11.36)
Age	
Traditional-age 18 or <	67.2 (3.15)
Nontraditional-age > 18	32.7 (3.15)
Gender	
Male	56.9 (3.66)
Female	43.0 (3.66)
Risk Index	
No Risk Factors	42.4 (3.33)
One Risk Factor	28.9 (2.03)
Two Risk Factors	12.2 (1.87)
Three Risk Factors	7.4 (2.15)
Four Risk Factors	4.3 (1.25)
Five Risk Factors	2.5 (0.72)
Six Risk Factors	2.0 (1.10)
Seven Risk Factors	--
Baccalaureate Attainment	
Attained	37.2 (4.96)
Did Not Attain	62.7 (4.96)

*Note.* Standard errors are parentheses. May not add to 100.0 percent due to rounding.

*Source:* Beginning Postsecondary Students Longitudinal Study, 1995-2001, Data Analysis System, March 31, 2007.

pronounced for students who attended either a rural high school or a rural sub-baccalaureate institution or both. Thus, baccalaureate attainment was unlikely. Finally, the number of risk factors also played an important role as to whether or not a student vertically transferred. Nearly three-quarters of those who transferred had either no or only one risk factor. Students who had more than one risk factor did not transfer to a four-year institution.

More than one-third of vertical transfer students did attain a baccalaureate degree by 2001. While one-third of students who reported having attended a non-rural high school were successful, this was not the case for students who attended a rural high school. There were not enough cases to report for those students who attended a rural high school. Far more traditional-aged students reported baccalaureate success than did nontraditional-aged students. Again, the number of risk factors impacted whether or not a student was successful at baccalaureate attainment. Those with no or only one risk factor were much more successful at baccalaureate attainment than those students who had more than one risk factor (see Table 5).

Logistic regression analysis was conducted to answer the final three research questions. Two models were examined for each of the research questions. The first model included the old locale codes. The second model included the new locale codes.

When using the old locale codes, women were significantly more likely to attain the baccalaureate degree than were men ( $p=.0002$ ). Similarly traditional-aged students were more significantly more likely to attain the baccalaureate degree than were nontraditional-aged students ( $p=.02$ ) (see Table 6). Results were similar when using the

Table 5

*Percent Attained the Baccalaureate Degree by Selected Characteristics*

Characteristics	Attained	Did Not Attain
Total	37.2 (5.0)	62.8 (5.0)
Level of Urbanicity of 1st Inst.		
Rural	47.5 (12.2)	52.5 (12.2)
Non-rural	34.6 (6.8)	65.4 (6.8)
Level of Urbanicity of High School		
Rural	---	---
Non-rural	33.1 (9.6)	66.9 (9.6)
Age		
Traditional-age 18 or <	46.7 (6.7)	53.3 (6.7)
Nontraditional-age > 18	18.9 (7.7)	81.1 (7.7)
Gender		
Male	32.5 (7.6)	67.5 (7.6)
Female	41.6 (4.4)	58.4 (4.4)
Risk Index		
No Risk Factors	45.6 (14.6)	54.4 (14.6)
One Risk Factor	35.6 (14.2)	64.4 (14.2)
Two Risk Factors	---	---
Three Risk Factors	---	---
Four Risk Factors	---	---
Five Risk Factors	---	---
Six Risk Factors	---	---
Seven Risk Factors	---	---

*Note.* Standard errors are parentheses. May not add to 100.0 percent due to rounding. *Source:* Beginning Postsecondary Students Longitudinal Study, 1996-2001, Data Analysis System, May 25, 2007.

Table 6

*Regression Coefficients for Old Locale Codes: Men and Women*

	B	SE	Wald	df	p	Odds Ratio
Gender	.83	.21	15.71	1	.0002***	2.29
Age	.88	.37	5.58	1	.02**	2.40
Risk factor index	-.14	.11	1.42	1	.23	.87
High school old locale (rural)	-.75	.70	1.15	1	.28	.47
First institution old locale (rural)	.50	2.27	.05	1	.82	1.65
Stay rural	.61	2.13	.08	1	.77	1.83
Constant	-1.41	.41	---	---	---	.24

*Note:* Approximate n=330

\*p < .10. \*\*p < .05. \*\*\*p < .01.

new locale codes. As shown in Table 7, women were 2.34 times more likely to attain the baccalaureate degree than men ( $p=.0006$ ). Traditional-aged students were 2.61 times more likely to attain the baccalaureate degree than were nontraditional-aged students ( $p=.01$ ).

When analyzing the data with women only in these models, there was no statistical significance. This held true whether using either the old locale codes or the new locale codes. However, when analyzing the data with men only, there were a number of significant findings.

When exploring outcomes for men only while using the old locale codes, two variables were significant. Traditional-aged men were 2.65 times more likely to attain a baccalaureate degree than nontraditional-aged men ( $p = .03$ ). Additionally, men who had more risk factors had odds of attaining a baccalaureate degree that were 1.61 times greater than men who had fewer risk factors ( $p = .08$ ) (see Table 8).

Conducting this same analysis using the new locale codes, three variables were significant. As shown in Table 9, traditional-aged men were 3.15 times more likely to attain baccalaureate degree than nontraditional-aged men ( $p = .009$ ). Second, men who had more risk factors had odds of attaining a baccalaureate degree that were 1.66 times greater than men who had fewer risk factors ( $p = .06$ ). Finally, men who attended a non-rural high school had odds of attaining a baccalaureate degree that were 16.66 times greater than men who attended a rural high school ( $p = .004$ ).

Table 7

*Regression Coefficients for New Locale Codes: Men and Women*

	B	SE	Wald	df	p	Odds Ratio
Gender	.85	.23	13.57	1	.0006***	2.34
Age	.96	.36	7.13	1	.01***	2.61
Risk factor index	-.15	.11	1.74	1	.19	.86
High school new locale (rural)	-.73	.47	2.39	1	.12	.48
First institution new locale (rural)	-.57	1.61	.12	1	.72	.57
Stay rural	1.25	1.51	.68	1	.41	3.48
Constant	-1.29	.39	---	---	---	.28

*Note:* Approximate n=330

\*p < .10. \*\*p < .05. \*\*\*p < .01.

Table 8

*Regression Coefficients for Old Locale Codes: Men Only*

	B	SE	Wald	df	p	Odds Ratio	Inverse Odds Ratio
Age	.97	.46	4.45	1	.03**	2.65	
Risk factor index	-.47	.27	3.00	1	.08*	.62	1.61
High school old locale (rural)	-1.30	1.11	1.39	1	.24	.27	
First institution old locale (rural)	.04	2.89	.00	1	.98	1.04	
Stay rural	1.21	2.81	.19	1	.66	3.37	
Constant	-.98	.50	---	---	---	.37	

*Note:* Approximate n=330

\*p < .10. \*\*p < .05. \*\*\*p < .01.

Table 9

*Regression Coefficients for New Locale Codes: Men Only*

	B	SE	Wald	df	p	Odds Ratio	Inverse Odds Ratio
Age	1.15	.42	7.33	1	.009***	3.15	
Risk factor index	-.51	.27	3.66	1	.06*	.60	1.66
High school old locale (rural)	-2.74	.91	9.05	1	.004***	.06	16.66
First institution old locale (rural)	-.97	3.64	.07	1	.79	.38	
Stay rural	3.11	3.49	.79	1	.37	22.35	
Constant	-.81	.52	---	---	---	.44	

*Note:* Approximate n=330

\*p < .10. \*\*p < .05. \*\*\*p < .01.

## Discussion

This study was designed to examine the factors influencing baccalaureate attainment by students who began in a sub-baccalaureate institution. Specifically, it involved characteristics such as the level of urbanicity of the high school and first institution attended, “stay rural,” age, gender, and the risk factor index. Descriptive statistics and logistic regression analysis were used to analyze data from BPS:96/01, IPEDS, and CCD to gain a better of understanding of the impact of these variables on baccalaureate persistence for transfer students.

Descriptive statistics indicate that more students begin their postsecondary careers in a sub-baccalaureate institution (59%). Of those, more are women (55%) and nontraditional-aged (60%) than men or traditional-aged.. However, one of the most interesting findings is that the majority who begin in a sub-baccalaureate institution (93%) do not attain a baccalaureate degree. This makes sense, given that only 12% of those who begin in a sub-baccalaureate institution actually transfer to the four-year institution. Perhaps one reason could be that those who begin in a sub-baccalaureate institution tend to have more risk factors than their four-year counterparts. Overall, of those who do transfer, more than one-third (38%) reported baccalaureate attainment within six years.

When exploring an individual’s level of urbanicity, findings indicate that 40% of students who attended a rural high school first attended a sub-baccalaureate institution. Further, of all students who first began in a sub-baccalaureate institution more than one-quarter (26%) reported having attended a rural high school. Of those students who transferred to a four-year institution, far more had attended a non-rural high school (61%)

and a non-rural sub-baccalaureate institution (70%). Finally, of those who reported attending a non-rural high school one-third (33%) had attained a baccalaureate degree by 2001. There were not enough cases to report for those who attended a rural high school, suggesting that students from rural high schools who first attend a sub-baccalaureate institution are not successful at eventual baccalaureate attainment. An alternative explanation could be that the sample size was insufficient.

Multivariate analyses indicate that more women and traditional-aged students attained the baccalaureate degree than men or nontraditional-aged students. When looking at women only, no statistical significance was found on any of the independent variables. However, men who were traditional-aged were more likely to attain the baccalaureate degree than men who were nontraditional-aged. Similarly, those men who had more risk factors had odds of attaining a baccalaureate degree that were 1.61 times greater than men who had fewer risk factors. Finally, when exploring the new locale codes, men who attended a non-rural high school had odds of completing a baccalaureate degree that were 16 times greater than men who attended a rural high school.

These results differ from findings of Freeman, Conley, & Brooks (2006), and Freeman (2007). For example, Freeman, Conley & Brooks (2006) found that women were actually less likely to attain a baccalaureate degree. Freeman (2007), however, sought to understand persistence to the baccalaureate degree—either (a) attained the baccalaureate degree or (b) still enrolled as of 2001. She found no statistical significance when using persistence as the dependent variable. Thus, if students transferred, they persisted. Freeman's (2007) results and the results of this study suggest two important points. First, transfer is a barrier to baccalaureate completion for students who begin in a

sub-baccalaureate institution. Second, for those who manage to transfer, successful baccalaureate attainment takes longer than six years.

There is a difference in the outcome depending upon the way in which the dependent variable is operationalized. These findings add to the complexity of understanding what makes for successful baccalaureate attainment of transfer students. Further, the results of this study suggest we need better ways in which we define, operationalize, and study geographic access, which includes issues related to level of urbanicity and proximity.

#### Recommendations for Future Research

Several recommendations for future research are offered here. First, the risk factor index should be weighted to account for those factors which may be more prevalent, problematic or confounded than others. Additionally, being first generation should be studied as a risk factor. As Chen and Carroll (2005) point out “such students are at a distinct disadvantage in gaining access to postsecondary education” (p. iii).

Second, researchers need to rethink the lens through which they view persistence as it pertains to community college students. More focus is needed on student outcomes, rather than institutional retention to fully understand what makes for success.

Third, better data are needed to understand geographic access. Currently, level of urbanicity found in the national datasets is derived from ACT and SAT data. Students who begin in a sub-baccalaureate institution often do not take these exams. There is a large gap in the literature with regard to students from rural areas and postsecondary educational attendance and attainment.

Fourth, we need to further explore why transfer appears to act as a barrier to baccalaureate persistence. Researchers need a better understanding of the variables that impact transfer rates and how state policies may have an impact.

The results of this study and previous studies related to it articulate a clear need for better understanding about geographic access and baccalaureate persistence and attainment. Additionally, we do not have a thorough understanding of why transfer appears to act as barrier to baccalaureate persistence and eventual attainment. While some scholars would undoubtedly argue that beginning at a sub-baccalaureate institution is part of the problem, the results presented here are not so conclusive. Yes, few students who begin in a sub-baccalaureate institution transfer. But, if they transfer, they persist.

Researchers, practitioners, and policymakers at every level, must work collaboratively in order to ensure the success of students who wish to attain a baccalaureate degree, regardless of the institution in which they began their postsecondary education. With the increased importance of a higher education, and particularly the notion that the baccalaureate degree is becoming a requirement for entry into the workforce demands not only a better understanding of the issues raised here, but also it demands cooperation and collaboration among these stakeholders.

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