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"A Great Opportunity": Persistence and Performance of Hoosier Link Students

Lori B. Handy
Indiana State University

VITA

Lori Beth Handy

EDUCATION

2011	Indiana State University, Terre Haute, Indiana Ph.D., Educational Administration (Leadership in Higher Education Specialization)
2000	Indiana University, Indianapolis, Indiana MBA, Kelley School of Business
1993	Indiana University, Bloomington, Indiana B.S., Business

PROFESSIONAL EXPERIENCE

2009 -	Ivy Tech Community College, Central Indiana Campus, Indianapolis, Indiana Director of Financial Aid
2008 - 2009	Ivy Tech Community College, Bloomington Campus, Bloomington, Indiana Interim Vice Chancellor for Student Affairs
2008 - 2008	Ivy Tech Community College, Bloomington Campus, Bloomington, Indiana Assistant Vice Chancellor for Student Affairs
2006 - 2008	Ivy Tech Community College, Bloomington Campus, Bloomington, Indiana Director of Enrollment Services
2002 - 2006	Indiana State University, Terre Haute, Indiana Distance Learning Coordinator
2004 - 2005	Indiana State University, Terre Haute, Indiana Adjunct College of Business Faculty Member
2003-2005	Ivy Tech Community College, Bloomington Campus, Bloomington, Indiana Adjunct Business Faculty Member
1993-2002	Cummins Engine Co., Columbus, Indiana Supervisor

“A GREAT OPPORTUNITY”:

PERSISTENCE AND PERFORMANCE OF

HOOSIER LINK STUDENTS

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Lori B. Handy

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COMMITTEE MEMBERS

Committee Chair: Mary F. Howard-Hamilton, Ed.D.

Professor of Educational Leadership

Indiana State University, Terre Haute, Indiana

Committee Member: Kandace G. Hinton, Ph.D.

Associate Professor of Educational Leadership

Indiana State University, Terre Haute, Indiana

Committee Member: James O. Smith, Ph.D.

Professor of Business Administration

Ivy Tech Community College of Indiana, Bloomington, Indiana

ABSTRACT

Nationally, students who begin at two-year institutions who desire a bachelor's degree struggle with the realization of their goal. Indiana is striving to make higher education more accessible, seamless, and cost effective. The partnership transfer program between Indiana University Bloomington (IUB) and Ivy Tech Community College Bloomington called Hoosier Link is a unique program that began in 2006 to enhance transfer student success through co-enrollment of a select group of students. This research study determined whether or not the Hoosier Link program had a positive impact on transfer student persistence and performance. Results found that while dependent variables did not show significance for persistence and performance, there was a correlation between students' pre-transfer GPA and post-transfer GPA. Additionally, an astounding 72% of the Hoosier Link students saw their first term post-transfer GPA dip. This is classified as "transfer shock" (Hills, 1965, p. 1). These students did recover from their shock and actually one of the Hoosier Link cohorts persisted better than other IUB transfer students. Astin's (1993) I-E-O theory was utilized in this study. The environmental aspect of this theory proved critical to Hoosier Link student success. Recommendations include: Hoosier Link peer and faculty mentors, living/learning residential community, and positive promotion of the program. Further study opportunities include: academic major evaluation, graduation longitudinal study, qualitative study of Hoosier Link students, other Hoosier Link cohorts, and a review of non-IUB transfer students from the Hoosier Link program.

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Introduction

Community colleges serve as a gateway to higher education for many students. With four-year institutions experiencing capacity restraints, increased admissions standards, and an escalating cost of tuition, there is an increasing number of students likely to begin their college education in two-year institutions. Articulation agreements, institutional partnerships, and transfer programs provide the path for students to transfer to four-year institutions (American Association of Community Colleges [AACC] & American Association of State Colleges and Universities [AASCU], 2004; Grubb, 1991; Jacobs, 2004). In Indiana, Hoosier Link, a co-enrollment program between Indiana University Bloomington and Ivy Tech Community College Bloomington, assists students in their transferring goals. This research will review the persistence and performance of Hoosier Link students as compared to other students to determine the effectiveness of the Hoosier Link program.

According to the National Center for Education Statistics (U.S. Department of Education, 2008d), 45% of all undergraduates nationally attended public two-year institutions during the 2006-2007 academic year. The community college system provides access to many students who aspire to eventually complete a bachelor's degree. Unfortunately, few who strive to transfer to a four-year institution actually succeed. A 2003 U.S. Department of Education report noted that about half of community college students who indicated a desire to transfer to a four-year

institution eventually transferred with a 25% actual transfer rate (Handel, 2007). More alarming is the bachelor's degree completion rate for students who begin at a two-year institution. According to the *Digest of Educational Statistics*, 9.7% of students beginning at two-year institutions earn a bachelor's degree within five years versus 58.4% for those beginning at a four-year institution (U.S. Department of Education, 2008c). The pursuit and attainment of the bachelor's degree by students beginning in the community college system may seem elusive. Transfer student programs and services exist at both two- and four-year institutions with varied success to improve the progression of this sometimes forgotten student population (Brint, 2003; Handel, 2007; Jacobs, 2004).

Higher Education in Indiana

In order to discuss higher education in Indiana, one must first understand how Indiana rates compared to other states. In 2004, Indiana ranked tenth nationally in the percentage of high school graduates who enrolled in postsecondary education in the fall term proceeding high school graduation (Erisman & De Rios, 2008). Although more students are entering higher education, Indiana is still not measuring up in higher education reported metrics when compared to other states. The National Center for Public Policy and Higher Education *Measuring Up Report* (2008) grades higher education in Indiana with a C in preparation, a C in participation, an F in affordability, a B- in completion, and a D+ in benefits. State policy makers are concerned not with only the number of students entering higher education and the national report card grading but also the number of students attaining a credential. In 2007, Indiana ranked a poor 41st in the nation with 22.1% of adults age 25 and over with a bachelor's degree or higher (Crissey, 2009).

Public postsecondary education in Indiana is planned and coordinated by the Indiana Commission for Higher Education (ICHE). The Commission's role is to define the educational mission of Indiana's public colleges and universities; review budgets of the public colleges and universities and the State Student Assistance Commission; approve/disapprove establishments of new branches, campuses, colleges, or schools; approve/disapprove the offering of degree or certificate programs; and make recommendations to the governing boards of institutions, the Governor, and the General Assembly (ICHE, 2007b). The Indiana Commission for Higher Education established strategic directions and initiatives in 2006 and 2007 to focus on five primary areas: access, affordability, student success, college preparation, and contributions to Indiana's economy (ICHE, 2007b). These initiatives formed a document titled "Reaching Higher: Strategic Directions for Higher Education in Indiana," published in June 2007. The Reaching Higher master plan is a positive step for change in Indiana. The plan specifies the need for greater efficiencies in higher education for the state with the need to maximize the use of the community college system and transfer function to provide increased access and affordability in Indiana.

The strength of statewide master plans and transfer functions was studied by Ignash and Townsend (2000). They reviewed 43 out of the 50 states' (86% response rate) higher education master plans. Four questions were asked of the master plans: what type of transfer direction of agreements (i.e., two- to four-year), what type of institutions were included (i.e., public, private), what transfer components were addressed, and what degree was faculty involved in the creation of statewide agreements. Ignash and Townsend used guiding principles during their evaluation of state plans. Principles incorporated in their review were: parity of institutions, parity of students, and accommodations for students who transfer without an associate degree. Indiana

rated a fairly weak strength of state level articulations. Ignash and Townsend found that existing agreements only addressed the transfer of associate degrees and did not cover the majority of students who transferred before completing the first two years of their undergraduate education. There is room for improvement regarding transfer planning and articulation in Indiana.

The ICHE strives to improve postsecondary access and attainment for Indiana residents (ICHE, 2007b). To do this effectively, a more diversified and coordinated higher education system is necessary to provide seamless education that benefits students with better service and ease of transfer from institution to institution. Additionally, the ICHE strives to eliminate duplicative associate degrees and remediation coursework by the four-year institutions to improve efficiency in Indiana's higher education system. The ICHE facilitated an agreement in 2001 to establish more clearly defined roles for state funded two- and four-year institutions (ICHE, 2007b). The Campus Compact agreement of 2001 provided the framework for associate degrees to be offered solely through the community college system while universities focus on four-year and advanced degrees. After the announcement of the elimination of overlapping associate degrees, Indiana University President Michael A. McRobbie stated, "Our goal is to establish a seamless system that gives all Hoosiers access to the high-quality degree programs they need to prepare themselves for the workforce and the changing world" (Indiana University, 2008a). The Commission also emphasizes a refocusing of remedial course offerings primarily to the community college system (ICHE, 2001). Access is not the only goal in Indiana; persistence and graduation has prompted the Commission to take an "access-to-completion agenda" (Erisman & Del Rios, 2008, p. 28) where barriers to completion are removed.

Transfer and articulation are critical for Indiana's progression toward a seamless postsecondary education system. In 2000, the Commission for Higher Education began its

Transfer Indiana initiative, which led to a statewide transfer and articulation committee consisting of two- and four-year institutions representatives. The Indiana General Assembly mandated that this committee establish a core transfer library with at least 70 community college courses able to transfer to the state's public four-year institutions. The Commission for Higher Education additionally was required to establish 12 two-year degree programs that could transfer to similar programs at the four-year public institutions (Jarosz, 2007). Even with the creation of the core transfer library in 2007, transfer rates have remained low at six to seven percent in Indiana (Erisman & Del Rios, 2008).

Another way to improve the access to completion agenda is through student development programming. The Indiana Commission for Higher Education's Reaching Higher master plan recommends organizing students into cohorts and learning communities to assist recent high school graduates with the transition from two-year institutions to four-year institutions (ICHE, 2008). Numerous transfer and articulation programs have been created in the past 15 years between Ivy Tech Community College and state-funded four-year institutions. Examples include the Passport Program at Indiana University Purdue University Indianapolis (IUPUI), DegreeLink with Indiana State University, and the Connect Program with Ball State University (J. Rhodes, personal communication, April 25, 2008). The Hoosier Link program, a cooperative transfer program between Indiana University Bloomington and Ivy Tech Community College Bloomington, is the focus of this study.

Indiana University Bloomington

Indiana University (IU) was established in 1820 with its oldest and largest campus located in Bloomington, Indiana. Indiana University is a flagship research institution in Indiana and has seven regional campuses throughout the state. Indiana University enrolled 101,727

students statewide with 31,626 at the Bloomington campus for the fall 2008 term. Indiana University Bloomington (IUB) offers 333 certifications and degrees and is located on 1,934 acres. Transfer students who transferred into IUB for the fall 2008 term consisted of 935 students (Indiana University, 2008c).

IUB utilizes a selective admissions process as does most four-year institutions. For the fall 2008 term at IUB, over 31,000 students applied for undergraduate admission. With a selectivity rate of 70.7%, approximately 22,000 were admitted with only 7,564 enrolling to yield a 34.4% rate (Indiana University, 2008c). The average SAT verbal and math scores were 566 and 585 with an ACT average of 26. The majority (89%) of students at IUB are enrolled full-time. Under-represented minorities (African Americans, American Indians, and Hispanics) consisted of 7.2% at IUB. Persistence is measured for students returning to their second semester and to their second year with the university. Students entering in fall 2006 at IUB persisted to the second semester at a 95.7% persistence rate (Indiana University, n.d.a). Persistence to the second year of studies for the fall 2006 cohort was reported at an 89% persistence rate for first-year, full-time students. Transfer persistence rates for the same year were 83% (Indiana University, n.d.b).

Ivy Tech Community College

Indiana was slow to adopt a community college system. The creation of the statewide community college system in 2005 lagged behind many other states with long histories of community college systems. Indiana recognized that a community college system provides access to all citizens and is more cost effective for the state, the taxpayer, and the student (Erisman & Del Rios, 2008). The new community college system in Indiana has allowed an additional 65,000 students access to postsecondary education since 2001 (Erisman & Del Rios,

2008). This growth was realized with the creation in 2005 of Ivy Tech Community College as Indiana's official community college in Indiana (Erisman & Del Rios, 2008; ICHE, 2008). Ivy Tech Community College (Ivy Tech) is a statewide system with 14 regions and 23 campuses and is the nation's only sole and fully state-supported community college system that covers the entire state (Erisman & Del Rios, 2008). Ivy Tech was established in 1963 and is currently the largest higher education institution in Indiana with over 120,000 students a year (Ivy Tech, 2008b). Ivy Tech Bloomington enrolled 6,923 unduplicated headcount for the 2007-2008 academic year (Ivy Tech, 2008a).

Ivy Tech reported persistence rates based on the 2007 cohort of first-time students. Statewide, the fall-to-fall persistence rate for full-time students was 53%. Ivy Tech Bloomington saw a persistence rate of the same cohort of 48% (Ivy Tech, 2008c). With many students transferring after one academic year at the community college level, this can explain the lower persistence rates compared to a four-year institution.

Ivy Tech developed a strategic vision plan in 2002 with goals set for 2010. One of the goals of this strategic plan was to attain a fifty percent increase in the successful transfer of Ivy Tech students to four-year institutions (Ivy Tech, 2003). This goal helped boost creation of course and degree articulations across the state. Results of a transfer study conducted by Ivy Tech Institutional Research concluded that, of the 2002 cohort, 80% of transfer students who transferred between 1999 and 2006 were Caucasian and 15% were African American, 62% were women, 43% were 15-19 years old and 27% were 20-24 years old, and 53% were part-time students (Ivy Tech, 2009). Ivy Tech Bloomington campus showed the second highest transfer rate within the Ivy Tech system. Based on the 2002 cohort, 18.7% of the students transferred within a one to three year period and 25.6% transferred within six years. The highest feeder

school for Ivy Tech Bloomington transfer students was Indiana University Bloomington (Ivy Tech, 2009).

In December of 2003, a General Studies degree articulation was signed between Ivy Tech Bloomington and IUB. This agreement opened the door for the transfer of 60 credit hours. The articulation of the biotechnology degree in September of 2004 and the kinesiology degree in January 2005 were the next critical steps in increasing the number of credits that transfer to include many science credits. The progression of cooperation between Ivy Tech and IUB is further evidenced by the creation of the Hoosier Link program. This important step in the partnership was finalized in November 2005 (Indiana University, 2005).

Hoosier Link Program

The Hoosier Link program was co-designed by leaders in student affairs and enrollment services at both Ivy Tech Bloomington and IUB, modeling a similar partnership program between Linn-Benton Community College and Oregon State University. The official Hoosier Link agreement was signed by the Chancellors of both institutions on November 18, 2005 (Indiana University, 2005). The Hoosier Link program was designed to allow for co-enrollment at Ivy Tech and IUB while students lived in various residential communities on the IUB campus. The first Hoosier Link cohort began during the 2006-2007 academic year and the program is currently in its sixth year. Hoosier Link students are a select group of students who do not initially meet IUB freshman admissions standards but show potential for academic success. Students are identified by the IUB Office of Admissions and are invited to participate in the program. Once students are offered entry into the Hoosier Link program, completion of an "Intent to Participate" form is required for a student to officially be considered in the program

(see Appendix A). Over 100 students participated in Hoosier Link for the 2006 and 2007 cohorts combined (J. Rhodes, personal communication, April 25, 2008).

Hoosier Link students are required to participate in orientation sessions at both Ivy Tech Bloomington and IUB. Orientation includes placement testing, academic advising, registration, and the review and signing of the student "Participation Agreement" (see Appendix B). The participation agreement specifies certain program requirements and restrictions. Students are also required to participate in workshops during their first year of the program, including a cultural diversity workshop. Required enrollment levels consist of taking nine credit hours from Ivy Tech and three credit hours from IUB during the fall term and 12 credit hours from Ivy Tech and three credit hours from IUB during the spring term. Achievement of 26 transferable credit hours with a minimum GPA of 2.5 guarantees students full-time admittance into IUB. Students taking academic skills advancement courses (remediation courses) are allowed up to four semesters to complete the transfer. Restrictions of the program include no participation in Greek organizations, no Internet or hybrid courses, and limited employment to less than 15 hours per week.

Academic performance is communicated to the students by midterm and end-of-term grades. Students with midterm grades lower than C are contacted by an advisor. Students are requested to identify themselves as Hoosier Link students with all institutional interactions as answers may differ based on their program enrollment. Co-enrollment is required until students are admitted as full-time IUB students. Ivy Tech Bloomington is considered the home institution and a financial aid consortium agreement is signed to allow for financial aid to consider the student's entire enrollment level. The signed participation agreement allows for information to be shared between both institutions pertaining to the student records and academic performance.

This information is to be used to track Hoosier Link students to measure student success and persistence (J. Rhodes, personal communication, April 25, 2008).

Joint advising training sessions occur between IUB University Division advisors and Ivy Tech Bloomington advisors in preparation for Hoosier Link advising. Registration holds are placed on the students' accounts at both institutions to ensure they meet with their assigned academic advisors before any course modifications can be made to their schedules. Course articulation agreements are utilized to ensure students only register in courses that will transfer to IUB. The Hoosier Link program provides many opportunities for IUB and Ivy Tech administrators to work closely together, strengthening each institution's relationship with each other (M. Ray, personal communication, June 12, 2008).

Statement of Problem

Transfer and articulation are issues that affect many students moving from one institution to another. The transition may be a seamless process or may be problematic depending on the transfer process and the relationships between the two institutions. The percentage of students who persist from a two-year to four-year institution who desire a bachelor's degree is alarmingly low (Handel, 2007). Even after transferring, students still have a risk of not persisting once at the four-year institution. It is well documented that "transfer shock", as evidenced by a drop in grades, occurs during the first semester after transfer (Hills, 1965; Keeley & House, 1993; Townsend, 2002). Programs of study, methods of course delivery, and support structures from both the two-year and the four-year institutions are factors in the severity of transfer shock. Transfer shock causes students to become discouraged with their progress toward their bachelor's degree and causes some students not to persist. Various programs and services exist to support transfer students with uncertain success. A problem that exists today includes

conflicting research regarding transfer success and inadequate evaluation of cooperative programs for transfer students.

Purpose of Study

The purpose of this study was to determine the degree to which Ivy Tech Bloomington students in the Hoosier Link program who transferred to IUB were able to perform and persist as full-time IUB students. Variables were evaluated to determine what role they played in Hoosier Link student performance and persistence. This research identified Ivy Tech Bloomington students who were selected in the Hoosier Link program and investigated if they experienced transfer shock after their first full semester at IUB as measured by academic performance at Indiana University Bloomington. This study compared Hoosier Link students' performance and persistence to IUB native students and other IUB transfer students as reported by Indiana University–University Institutional Research and Reporting.

Research Questions

1. What factors impact Hoosier Link student persistence and academic performance after transferring to IUB?
2. How does admission type (Hoosier Link, IUB native, other IUB transfer student) affect performance and persistence of students?

Significance of Study

This study is important for a number of reasons. First, Hoosier Link is a high profile program that consumes resources from both Ivy Tech Bloomington and IUB, and its effectiveness should be evaluated for continued funding. Second, because Ivy Tech Community College is the state's community college system, Ivy Tech administrators need to know how prepared students are who transfer. Third, IUB and Ivy Tech Bloomington need to understand

how students perform academically who transfer from Ivy Tech Bloomington in the Hoosier Link program. The implications for supporting and assimilating transfer students during their first semester after transfer are obvious. Finally, it is important to know how students taking remedial courses fare versus students who entered as program-ready students to understand if there are specific needs for either group to aid in their success. Despite numerous articulation agreements and transfer services available aimed at helping transfer students succeed, a significant gap exists in research on partnership programs between two- and four-year institutions with residential co-enrollment.

In summary, nationally, students who begin at two-year institutions who desire a bachelor's degree struggle with the realization of their goal. Indiana is striving to make higher education more accessible, seamless, and cost effective. The creation of Ivy Tech Community College has been an integral step in providing more Hoosiers access to postsecondary education. The partnership transfer program between IUB and Ivy Tech Bloomington called Hoosier Link is a unique program to enhance transfer student success. This research study attempted to determine whether or not the Hoosier Link program truly has a positive impact on transfer student persistence and performance. A thorough evaluation of pertinent literature regarding transfer students and programs will ensue.

Definition of Terms

The following terms used in this study require definition:

Academic Intensity. The number of credit hours a student takes in a semester.

Articulation. Supports the transfer intent. Institutions agree on course-to-course and degree-to-degree transfer to allow for smooth transfer credit for students.

Co-enrollment. Attendance at two or more institutions simultaneously.

Cohort. A group of students who experience an educational program together and start at the same time.

FAFSA. Free application for federal student aid.

GPA. Grade point average. A measure of a student's academic achievement. Calculated by dividing the total number of grade points received by the total number attempted.

Hoosier Link student. Student who is in the 2006 or 2007 cohort and co-enrolled at IUB and Ivy Tech Bloomington.

Indiana University other transfer students. Students who transferred into IUB from many other institutions.

Native student. Student who began his or her higher educational studies at a four-year institution and has not transferred to another institution of higher education (Carlan & Byxbe, 2000).

Persistence. The progression of reenrollment in college from one term to the next (Pascarella & Terenzini, 2005). This study measured persistence from academic year to academic year and from the first semester of enrollment to the last semester measured.

Reverse transfer. Student transferring from a four-year to a two-year institution.

Remediation. Courses in reading, writing, and mathematics for college students lacking skills necessary to perform college-level work at the level required by the institution determined by assessment testing. Remedial coursework does not count in a student's GPA (Merisotis & Phipps, 2000).

SAT. Scholastic Aptitude Test or Scholastic Assessment Test.

Swirling. Students transferring in several directions.

Transfer. According to Cohen and Brawer (1987), "Transfer is an intention expressed by some students who take community college classes and a behavior manifested by those who eventually matriculate at a four-year college or university" (p. 89). The movement from one institution to another. For the purposes of this research study, transfer is from a two-year to a four-year institution.

Transfer ecstasy. Occurs when there is an increase in the transfer student's grades during the first semester after transferring to a four-year institution (Laanan, 2001).

Transfer shock. According to Hills (1965), transfer shock occurs when there is a dip in transfer students' grades during the first semester after transferring to a four-year institution.

CHAPTER 2

Literature Review

Students who begin their educational careers in community colleges nationwide rarely realize goals of a baccalaureate degree. Dismal performance among Indiana's transfer students helps justify the steps Indiana has taken to improve the educational attainment of its population. The creation of Indiana's community college system has allowed for a dramatic increase of students entering into higher education. Programs such as Hoosier Link, a partnership program between Ivy Tech Bloomington and IUB, exist to improve the transfer function. Established educational theory will assist in framing discussion of transfer student success and provide the groundwork for further literature review. An in-depth review of past and current transfer literature will help create an outline of current trends and characteristics of transfer students, articulation, barriers to student success, and transfer programs.

Theoretical Framework

Theory aids in framing and developing further research. The primary theory utilized for this study is the theory of student persistence, involvement, and development by Astin's (1993) input-environment-outcome (I-E-O) model. Additionally, incorporation of Tinto's (1987) theory of student departure further aids in laying the foundation for the literature review which follows.

Astin's I-E-O model. Astin's (1993) I-E-O model was developed as a framework for assessments in higher education. The basic premise for this model is that educational

assessments are not complete unless the evaluation includes information on student inputs (I), the educational environment (E), and student outcomes (O; Astin, 1993). As seen in Figure 1, the input−environment−outcome (I-E-O) model is one way to determine how outcomes are affected by educational policies and practices.

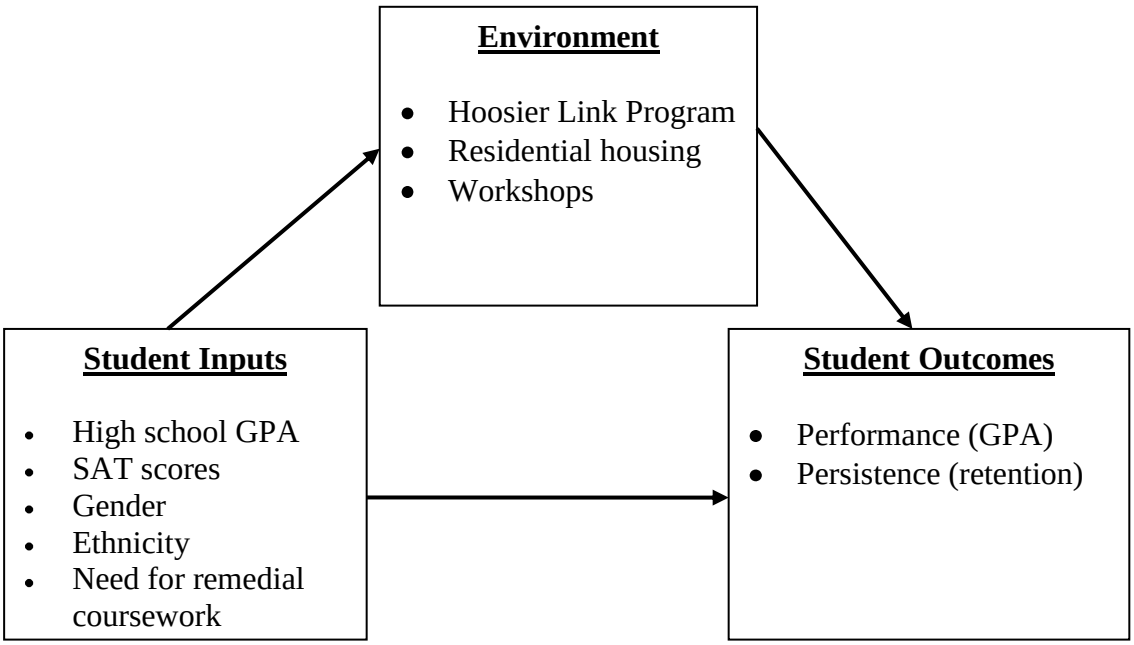

Figure 1. Astin's (1993) I-E-O model.

Inputs consist of student demographic characteristics, backgrounds, and perceptions at time of entry into the college. These include socioeconomic characteristics and students' prior academic performance. High school GPA, standardized test scores, class rank, rigor of high school courses, and other academic factors can have a direct effect on college outcomes (Dwyer, Millet, & Payne, 2006). College readiness is an additional input that the student brings into the model. Readiness in terms of level of coursework such as the amount and type of remedial coursework is also considered an input in the I-E-O model.

The institutional environment is an important factor in the success of transfer students as the review of literature will reveal. Astin (1993) believed that "the basic purpose of the [I-E-O]

model is to assess the impact of various environmental experiences by determining whether students grow or change differently under varying environmental conditions" (p. 7). The model not only incorporates the campus environment but also "provides the context for the student's investment of psychological and physical energy in the learning process" (Strauss & Volkwein, 2004, p. 204). According to Astin (1975, 1991), use of the model should reveal to researchers how activities can enhance the understanding of student development. Astin's model is ideal for educational program assessments. In fact, Astin (1991) stated that "any educational assessment project is incomplete unless it includes data on student inputs, student outcomes, and the educational environment to which the student is exposed" (p.17). Programs such as cohort-based programs where environmental components include student workshops, specific course selection, orientations, and residential living play a role in the I-E-O model.

Astin's (1993) I-E-O model does not distinguish the environmental variables concerning students' individual experiences from the overall institutional environment. Pascarella and Terenzini (2005) proposed "a general causal model" (p. 56) that takes into consideration the impact of both an institution's characteristics and its environment on student learning and cognitive development. The causal model complements the I-E-O model by providing the student interactions with their environment, such as interaction with faculty, college staff, and peers. Pascarella and Terenzini considered an institution's structural and organizational characteristics as influencers to the student's environment. Administrators and college faculty can focus on environmental factors through policy and programmatic control to influence student outcomes.

Student outcomes include student engagement, behavior, beliefs, persistence, and academic performance. Believing that engagement and involvement makes an impact on student

outcomes, Astin (1999) created a student involvement and development theory based on his studies of college dropouts published in 1975. His premise was that "student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience" (Astin, 1999, p. 518). Learning can be associated with educational programs that involve students in a quality manner. Astin purported that "the effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement" (p. 519). Policies and programs of a college or university can impact the outcome of various types of achievement measures such as grade point average. The theory attempts to show how the policies and programs work toward the motivation and behavior of students and ultimately affect their academic performance and persistence.

Astin's studies on dropouts identified that the college environment and peer groups significantly affect student persistence in college. In 1999, Astin investigated student involvement more intensively to build on his 1975 study. He used longitudinal data on several samples totaling over 200,000 students and reviewed over 80 different student outcomes that are related to student involvement (Astin, 1999). He found that the most significant environmental factor affecting persistence is residential living. Attributing the lack of the residential component to student persistence, Astin found that students in two-year institutions have a greater risk of dropping out than those in four-year institutions. It is easier for students to become involved and connect with a college environment when they live on campus. Peer groups also have been found to positively influence student learning, involvement, and development (Astin, 1999). Since the environment of the residential experience and the impact of peer groups assist in the increased involvement, development, and persistence of students, institutions could easily use

Astin's I-E-O theory to review or establish programs and policies that affect student persistence and performance.

Tinto's theory of departure. Tinto's (1987) theory of departure is relevant when looking at persistence. Tinto's theory states that the role of the social setting in an institution of higher education affects the departure of students. College students move from one community to another when leaving home and going away to a college with residential facilities. Today's transfer students swirl between institutions causing even more assimilation concerns. The more transitions students make, the more likely they are to encounter problems of adjustment (Tinto, 1987). According to Tinto, "In a very real sense, [students'] persistence in college depends upon their becoming departers from their former communities" (p. 95). Assimilation into a new environment after successfully departing from another is the traditional path of college students. Transfer students experience additional transitions when moving from the community college setting to the four-year institutional setting, such as campus and classroom size, transportation changes, residential living, and diversity of students.

Positive experiences that students have at their higher education institution deepens their commitment to the college and therefore results in persistence. Tinto's (1987) theory of individual departure "argues that some degree of social and intellectual integration must exist as a condition for continued persistence" (p. 119). Thus, tailored programs have a high likelihood to assist students, especially transfer students, to finish their degrees in the institution to which they transfer. Tinto emphasized the need for institution-specific analysis of the attrition process, which will create and influence retention programs.

Summary of theoretical framework. Astin's I-E-O theory coupled with Tinto's departure theory laid the groundwork for the variables, environments, and outcomes that need to

be evaluated to adequately measure student persistence and performance. Past and current research will reveal how theory comes to life in evaluating transfer student characteristics, trends, programs, and barriers. An examination of the literature will also identify any potential gaps in the research.

Transfer Student Trends and Characteristics

National Center for Education Statistics. The National Center for Education Statistics (NCES) conducts key longitudinal studies to investigate transfer student trends and characteristics. Three major longitudinal studies have been conducted by NCES: the National Longitudinal Study of the High School Class of 1972, High School and Beyond, and the National Education Longitudinal Study of 1988. The National Longitudinal Study of the Class of 1972 followed over 8,892 students through college from 1972 through 1986 and found that 6.17% of students transferred from a two-year institution to a four-year institution after their first year of college and 29.34% transferred after their second year (U.S. Department of Education, 1980).

The High School and Beyond survey included over 30,000 randomly selected students from over 1,000 randomly selected high schools in two cohorts (1980 senior class and 1980 sophomore class) who were surveyed every two years through 1986 and 1992, respectively. Eddy, Christie, and Rao (2006) utilized the High School and Beyond data to examine the variables that produce a successful transfer student. Independent variables included gender, ethnicity, high school GPA, cognitive test scores, composite family socioeconomic status, first year college GPA, and full-time enrollment, to name a few. Using the chi-square statistic at $p < 0.0001$, Eddy et al. found that student socioeconomic status had the biggest impact on transfer and enrollment status of full-time students. Student socioeconomic status also plays an

important role in college of choice and transfer decisions. The decision to attend college is often dependent on income. Community colleges serve as an easily accessible and affordable option for most low income students.

The Beginning Postsecondary Student (BPS) Longitudinal Survey begun by NCES in 1990 had three cohorts (1990, 1996, and 2004) of over 39,000 students with follow-up two and four years after they graduated from high school (U.S. Department of Education, 2009). A special supplemental report on community colleges was published in 2008 utilizing the BPS data (U.S. Department of Education, 2008a). The supplemental report found that two-year students who intended to transfer to a four-year institution had higher persistence rates than those who intended to complete an associate's degree. However, dropout rates of community college students who intended to transfer were significantly higher (39%) than those who started at a four-year institution (17%; U.S. Department of Education, 2008a). Interestingly, the supplemental report found that a greater percentage of students who entered community college in 2004 right after high school were very well qualified for a four-year institution in terms of their high school GPAs and standardized test scores as compared to the 1992 cohort. This could be explained by the increasing rising cost of higher education with the community college as an affordable place to start as well as increased transferability of coursework to four-year institutions.

Transfer rates and student demographics vary by state. Grubb (1991) found that the NCES studies only included 18 to 22 year olds, who were more interested in transfer than the older, non-traditional students who attend community colleges. The comparison of the Classes of 1972 and 1980 longitudinal studies showed an increasing trend of student transferring without completing an associate degree from 64% to 73% (Grubb, 1991). Grubb referred to these

students as “experimenters” who enter the community college to see if higher education is for them. This trend of lack of persistence and completion of an associate degree is discussed further regarding student academic success.

Transfer rates can also be dependent on other factors such as course load per semester. Doyle (2009) and Adelman (2006) studied the impact of increased academic intensity (measured by the number of credit hours a student took in a semester) and how it affected transfer rates. Doyle’s study consisted of data of over 10,000 students who enrolled in credit hours from 1995 through 1998 as first-time freshmen in public community colleges in Tennessee. Doyle used matching estimators to identify outcomes for the treatment and control groups. The findings showed that transfer rates were highest among those students who took more than 12 credit hours with 33% of them eventually transferring between 1998 and 2004 compared to 18% of students eventually transferring who took fewer than 12 credit hours (Doyle, 2009).

Research done by Adelman (2006) showed academic intensity in the first year of higher education to be a contributor to eventual success in attaining a bachelor’s degree. Adelman found that students who enrolled in a full load of courses in their first year had degree completion rates that were nearly one third higher than their counterparts who did not have full-time enrollment. Students taking more courses may have higher levels of support from their families, be more intellectually engaged, and become more integrated into campus life.

While many students’ goal is to attain a bachelor’s degree, attrition occurs throughout the transfer pipeline. Transfer statistics only tell one side of the transfer student’s story. Student surveys provide a further in-depth look at transfer student success and persistence.

Student engagement surveys. The Community College Survey of Student Engagement (CCSSE) conducted by the Center for Community College Student Engagement (CCCSE) assists

community colleges to assess initiatives, measure progress toward goals, and provide tools to measure quality of institutional programs (CCCSE, 2009). CCSSE's benchmarks make it possible for community colleges to compare themselves to similar colleges. Some states even utilize CCSSE as part of statewide performance and accountability systems (CCCSE, 2009). Each year CCSSE surveys its members' students to learn about their college experiences. The community colleges can then utilize the data to improve student learning and persistence. The 2008 survey (CCSSE, 2008) focused on high expectations and high support. Tinto (2008) stated in the forward of the 2008 report that the theme throughout the CCSSE report was that of high expectations as an essential condition for student success. Student success requires the establishment of policies and practices and patterns of action from faculty, staff, and student actions that reinforce those expectations. The survey included over 343,000 students from 585 institutions in 48 states as well as British Columbia, the Marshall Islands, and Nova Scotia (CCSSE, 2008).

The number of students from the CCSSE 2008 survey who stated their primary goal to transfer to a four-year college or university was 52%. Additionally, 49% of respondents who stated they were likely or very likely not to return to the community college were due to their transfer to a four-year college or university. According to CCSSE, the transfer student population is a group that cannot be ignored by institutions. Steps by institutions to have a profound impact on transfer student success could include mandatory student orientation, intentional student engagement, removal of barriers that cause a student not to return, and increased support for learners (CCSSE, 2008).

The National Survey of Student Engagement (NSSE, 2005) provides pertinent data on transfer students as well. The 2005 survey was completed by over 844,000 students from 972

four-year institutions. The results related to transfer students showed that over half (55%) of all transfer students took the majority of their courses from a community college. The most common reasons given for transferring to their current institution were the institution's location and the availability of a specific program of study. In addition, transfer students from two-year institutions had fewer interactions with faculty and participated in fewer educationally enriching activities (NSSE, 2005).

Student engagement is important for student persistence and success. According to the 2002 NSSE, transfer students "are generally less engaged across the board in learning activities, a troubling finding inasmuch as two-fifths of all seniors started college somewhere other than [at] the school from which they will graduate" (Hayek, 2002, p. 1). Campus climate and available student life activities from the two- and four-year institutions may affect the integration and engagement of transfer students.

The Survey of Entering Student Engagement (SENSE), a Center for Community College Student Engagement (CCCSE, 2008) initiative, measured student engagement and persistence in addition to other topics. Community colleges have begun to operate under a culture of evidence. The evidence is being used to transform practices and policies in the community college setting to improve student success. The 2008 field findings in the SENSE survey found that only 15% of students that earned no credits during their first term persisted to the next term (CCCSE, 2008). Students in academic skills advancement or remediation courses typically fall into this group. Community colleges are developing innovative approaches to improve persistence and student success. The 2008 SENSE survey found that many students did not take advantage of student support services because they did not know they existed and they did not know how to

access them. For example, 29 percent of entering students stated that they did not know about academic advising (CCCSE, 2008).

National data and surveys reveal evidence pertaining to transfer student success and persistence. College preparedness and course load intensity show importance. Research addressing other demographic characteristics of transfer student proves useful in the body of transfer literature.

Race and persistence and performance. The National Longitudinal Study of High School Seniors (U.S. Department of Education, 1980) of over 8,892 students nationally found that White students were more likely than Black/African American students to transfer from a two-year institution to a four-year institution and Black/African American students were more likely to transfer than Hispanic students. Transfer students who moved from a two-year institution to a four-year institution were a distinctive group in the study by the NCES. These transfer students had higher scores for socioeconomic status and achievement and were more likely to have a selected academic major (U.S. Department of Education, 1980).

Wawrzynski and Sedlacek (2003) conducted a multivariate statistical analysis of 2,492 incoming transfer students who completed a transfer student survey. They used a general linear model of multivariate and univariate analysis of variance with $p < .01$ to determine if past academic behaviors and expectations would vary by student demographic factors. The results of the research found significant findings with multivariate effect connected with racial and ethnic identity. This study shows further variables with effects on transfer student success as relating to adjustments, motivation, and student perceptions. For example, the study found that "the academic self-concept of Asian American students may have more pressure on them to be model students than those from other racial groups" (Wawrzynski & Sedlacek, 2003, p. 496). Also

found was that “African American and Asian American transfer students expressed greater interest in working with faculty on a research project or interacting outside of class than did White students” (Wawrzynski & Sedlacek, 2003, p. 497).

Students’ experiences in and out of the classroom influence their transition to college and their academic performance. Rendon and Jalomo (1995) conducted a qualitative study with 72 first-year community college students from three institutions with large numbers of Hispanic or African American students. Validation in and out of the classroom influenced the students’ level of involvement. Validation by faculty members who worked closely with students, encouraged students to work together, and treated students as equals appeared to assist students with the transition to college and increase their involvement with the college. Invalidation by faculty who discounted students’ contributions and peers who did not care or teased the students’ academic pursuits had a negative effect on student involvement.

Jalomo (1995) continued to evaluate the first-year community college students’ experiences. He summarized obstacles that these students faced prior to college enrollment to include low expectations set in high school, high school teachers who stereotyped students, living in an environment removed from academics, too much socializing in high school, living in a closed inner world, and resisting academic practices. Positive influences included positive family and peer encouragement for college attendance. Students interviewed found a cultural clash between their academic world and their personal world. Some stated they were dealing with cultural assaults by faculty and other students (Jalomo, 1995).

Non-cognitive variables such as adjusting as a transfer student and family support are as important as other more measurable factors pertaining to transfer student academic success. Trends, demographics, and other variables need to be considered when studying transfer students

and utilized when establishing successful transfer programs at the state and institutional level. These factors, while difficult to measure and study, can be taken into consideration during research analysis.

Remediation and persistence and performance. Remediation is not a new concept in higher education. Since the end of the 19th century, G.I. Bill, Civil Rights Act of 1964, and Higher Education Act of 1965, remediation has been a necessity for underprepared students entering higher education (Merisotis & Phipps, 2000). As adults are returning to college and underprepared high school graduates enter higher education, the need for remedial education has increased. Colleges have accepted responsibility to provide remedial/developmental education in basic reading, writing, and mathematics. Phipps (1998) argued that these subjects should have been learned in high school and thus should not be repeated in college. However, in reality, remediation has remained a pervasive part of postsecondary education.

There is variation in terms of who provides the remedial coursework. In recent years, several states have moved toward concentrating this function at the community colleges (Mazzeo, 2002). Some states such as Florida and Indiana are moving remediation to the community colleges to manage the increase of remediation. It is more cost effective for four-year institutions to focus on college-level coursework and have community colleges take responsibility for remediation in higher education.

An inverse relationship exists between the number of remedial courses and eventual completion of degree. The High School and Beyond study by the NCES found that out of 1982 high school graduates who completed at least one college semester, 60% of those who did not take remedial courses graduated, 55% percent of those who took only one remedial course graduated, and only 35% who took five or more remedial courses attained their degree

(Adelman, 1998). The result of remedial coursework not counting in grade point averages and college level credit earned can discourage students by increasing the time it takes for degree completion.

Community colleges typically have open access admissions policies. Open access brings students of all academic levels into the institution. According to the SENSE 2008 findings (CCCSE, 2008), community colleges typically lose half of the student body prior to the student's second year. This is primarily due to students who struggle with remedial coursework and do not progress to college level courses (CCCSE, 2008). Persistence to the second semester for community college students who earn college level credit during their first semester is 74% compared to only 15% persistence rate for those who are enrolled in all remedial coursework (CCCSE, 2008). It is apparent that remediation negatively affects persistence and completion of a credential but is so critical to student success.

Remediation is an essential component in the role of community colleges and for many students the community college is the only place to begin. Melguizo, Hagedorn, and Cypers (2008) studied the effect that remedial education has on the cost of community college transfers in terms of monetary costs and the costs of the time it took to transfer. Their study analyzed a data set of 411 community college transfer students from nine colleges of the Los Angeles Community College district (Melguizo et al., 2008).

A model of persistence and transfer was created that included student background characteristics, precollege achievement, institutional characteristics, financial aid, and state-level characteristics. Melguizo et al. (2008) approached the study differently from typical transfer studies by testing the actual costs of the transfer option for students with different remediation levels. Student transcripts were reviewed and a questionnaire was given to the students with two

follow up surveys with 85% tracking of their original sample. Descriptive and multivariate analysis was utilized to compare transfer costs with remediation levels. The average cumulative GPA of the students sampled was 3.0 and they spent an average number 9.5 semesters (almost 5 calendar years) at the community college before transferring. The key finding was the real cost for transfer students was the substantial amount of time students spent at the community college taking remedial courses that did not transfer. Results found the average cost of the community college students who enrolled in at least one remedial course in the first semester but who subsequently transferred was almost $7,000, in contrast to just over $4,000 paid by individuals who began community college with transfer-level courses (Melguizo et al., 2008).

Age of students taking remedial courses makes a difference (Jepsen, 2006). Jepsen analyzed the effects of taking developmental courses on persistence to the second year of college for a sample of community college students in California. He concluded that taking developmental courses was associated with returning for the second year as well as completing transfer-level courses. He found differences by age groups. For younger students, developmental courses were negatively associated with transfer, where for older students the association was positive for returning, persisting, and attaining a degree or certificate.

Remediation is one component that affects transfer rates and student success. It has been shown that remediation adds cost to a student's higher education budget. A review of financial assistance will investigate what role it plays in the performance and persistence of transfer student.

Financial aid and persistence and performance. Compared to four-year institutions, research reveals a definite cost savings in attending a community college. According to the NCES report titled, "Descriptive Summary of 2003–04 Beginning Postsecondary Students:

Three Years Later", (U.S. Department of Education, 2008b) approximately four million undergraduates started postsecondary education for the first time during the 2003-04 academic year, enrolling in a wide variety of institutions, including two- and four-year colleges and universities. Among all beginning students, 71 percent received some type of financial aid in 2003-04 with the average amount of aid received at $7,500 (U.S. Department of Education, 2008b). According to the report, in 2003-04 two-year public institutions' average annual tuition and fees were $1,200 with a total reported cost of attendance (which includes room and board, books, and other expenses as well as tuition and fees) for full-time/full-year of $6,600. Four-year public institutions saw average annual tuition and fees of $5,100 with a total cost of attendance at $13,900. Two-year public institutions reported having 52.6% of student receiving an average of $2,900 of financial aid and four-year public institutions reported 76.2% of students receiving an average of $7,300 of financial aid (U.S. Department of Education, 2008b). The summarized table below displays the average shortfall in aid at both two- and four- year institutions. Students who begin at the two-year institution will find the affordability results in a decreased amount in shortfall of funds and potentially less loan indebtedness.

Table 1

Average Shortfall in Financial Aid for Two- and Four-year Institutions

Institution Type	Average Tuition & Fees	Average Total Cost of Attendance	Average Financial Aid	Average Shortfall
2-year public institution	$1,200	$6,600	$2,900	$3,700
4-year public institution	$5,100	$13,900	$7,300	$6,600

Note. Adapted from "Descriptive Summary of 2003–04 Beginning Postsecondary Students: Three Years Later," by U.S. Department of Education, 2008b.

Other studies have focused on the effect of financial aid on community college students' persistence using studies from the NCES. Cofer and Somers (2000, 2001) found a positive and significant impact on grants and some loan levels for transfer and first-year persistence of community college students. While tuition and fees alone have a strong negative relationship with persistence, they found that students were 0.18% less likely to persist for each $100 increase in tuition (Cofer & Somers, 2000). With the large sample size used in the study from the National Postsecondary Student Aid Survey from 1996, a significant level of $p < .02$ level was utilized. Results found that grants, loans, and work study funds were positively associated with persistence. Two-year students were 12.14% more likely to persist per $1,000 in grants received, 7.75% more likely to persist for every $1,000 of student loans, and 17.05% more likely to persist for every $1,000 of work study funds. Debt levels associated with persistence results differed depending on the amount of debt accumulated. Students with a low debt level (under $3,000) were 4.85% less likely to persist than students with no debt. Students with high debt (over $7,000) were 15.96% more likely to persist than students with no debt (Cofer & Somers, 2000).

In the 2009-2010 academic year, federal and state governments awarded approximately $155 billion in financial aid (including grants and loans; College Board, 2010). A recent study investigated how federal Pell Grant and state grants impact persistence. Goldrick-Rab, Harris, Benson, and Kelchen (2011) randomly selected students who received federal Pell Grants and Wisconsin need-based grants at 13 Wisconsin public universities over three years to measure the impact of financial aid on college persistence. First-time, traditional-aged Pell Grant students who also received a $1,750 per semester additional state grant were monitored. The students sampled were all enrolled full-time as required by the state grant. They found that on average

the grants did not increase either enrollment or credit attainment but did have a positive effect of 28% increase in the proportion of students completing 60 credits over two years (Goldrick-Rab et al., 2011).

Affordability of college and loan indebtedness levels of students have become state and national concerns. McPherson and Schapiro (1991) laid out a framework in "Keeping College Affordable" that reviewed aid effectiveness. They found that a reduction in net price through an increase in grant aid does result in greater persistence, especially for lower income students They also believed comparative returns studies should be done to understand the pay-off of attending a community college versus a traditional four-year institution.

It has been widely documented that such background characteristics as socioeconomic status, age, gender, race, and ethnicity affect transfer. Dougherty and Kienzl (2006) reported that, among the most affluent students, transfer rates are approximately 55%. In contrast, those in the lowest income ranges are only 10%. Income level, tuition rates, and aid awards all are important when reviewing student success. Another variable that determines future student success is their performance on standardized admission tests.

Admission testing SAT/ACT. Colleges and universities across the country utilize standardized testing as a component of admissions decisions. College administrators use the SAT/ACT scores in determining student selection into the college in hopes of increasing student success in the form of retention and academic performance. Camara and Echternacht (2000) reported that the College Board, who owns and develops the SAT, boasts,

> The SAT has proven to be an important predictor of success in college. Its validity as a predictor of success in college has been demonstrated through hundreds of validity

studies. These validity studies consistently find that high-school grades and SAT scores together are substantial and significant predictors of achievement in college. (p. 9)

Numerous studies have displayed the link between SAT scores and student success.

Mattern and Patterson (2009) examined the relationship between scores on the SAT and retention to second year of college. Student level data were used from the freshman class of 2006 (nearly 150,000 students) at 106 four-year institutions across the country. Results showed the SAT predicts second-year retention with 95.5% of high performers (scores ranging from 2100 to 2400) returning and only 63.8% of low performers (scores ranging from 600 to 890) returning. Mattern and Patterson's study demonstrates that, while retention rates vary by student and institutional characteristics, evaluating a student's academic preparation (as measured by both SAT performance and high school GPA) can moderate these variances in retention rates to the second year of college.

Geiser and Studley (2002) examined the relationship between SAT scores and freshman grades based on the records of 77,893 students who entered the University of California between fall 1996 and fall 1999. This study was initiated when the University of California was contemplating the elimination of the SAT test for admission decisions and replace it with a curriculum based achievement test such as the SAT II test. The results indicated that students' scores on the SAT II achievement tests were consistently better predictors of freshman grades than SAT I scores. With the College Board's use of standard prediction of college success as measured by freshman GPA, the researchers found the SAT II achievement tests to have an edge over the SAT I on this criterion. Although the incremental gain in prediction is relatively modest, the predictive superiority of the SAT II achievement tests is consistently evident not

only for the overall University of California sample, but also by campus, academic year, quality of high school, and intended major (Geiser & Studley, 2002).

Although standardized admissions tests are not typically required for attending a community college, the "Beginning Postsecondary Students: Three Years Later" study by the Department of Education (2008b) found that 68% of students starting at public two-year institutions took a standardized test. Forty percent were in the lowest test score category among all beginning postsecondary students, and another 33% were in the low middle test score category (U.S. Department of Education, 2008b). Most colleges and universities review SAT or ACT scores to determine selective admission. In addition, high school grade point averages are reviewed.

High school grade point average (GPA). In addition to standardized test scores, most colleges and universities consider students' high school GPA in admissions decisions with the prediction that high school GPA will result in higher levels of student persistence and success. Adelman (2005) used data from the National Education Longitudinal Study of 1988 to study how pre-college academic preparation, academic intensity of the high school curriculum, and students' high school test scores are associated with student transfer from community colleges to four-year institutions. The following definition of transfer was utilized by Adelman: "The student (a) begins postsecondary study at a community college, (b) earns more than 10 additive credits from community colleges before attending a four-year college, and (c) subsequently earns more than 10 additive credits from four-year colleges" (p. 9). Adelman found that, of all measures of high school background, class rank and GPA alone emerged as the strongest variables in the explanation marking a student's outcome in the lowest GPA quintiles in the first year of attendance in postsecondary performance.

The Beginning Postsecondary Students: Three Years Later study by the Department of Education (2008b) found that 47% of beginning postsecondary students under 24 years of age starting at a four-year institution had earned a GPA of 3.5 or higher in high school. Out of those beginning their postsecondary education at a two-year institution, 46% had high school GPAs below 3.0 (U.S. Department of Education, 2008b). This information helps explain the need for remediation in two-year institutions.

Summary of transfer student trends and characteristics. National surveys and research studies pertaining to all characteristics of transfer students add to the wealth of literature explaining student persistence and performance. Remedial coursework, financial aid, standardized entrance exams, and high school GPA, among others, are all key factors in studying student movement from two- to four-year institutions. In addition to student characteristics, institutional structure can affect student success.

Articulation

A growing amount of governmental mandates for policies and procedures to control articulation and transfer has pressured public institutions to cooperate with each other. However, collaborative efforts also exist among community colleges and four-year institutions as more students begin at the two-year institutions. Kintzer (1996) discussed that "sacrificing or compromising an institutional advantage is sometimes necessary to maintain a fair and flexible articulation/transfer system" (p. 2). Partnerships between institutions are a compromise and an investment in the future for both institutions and their students. Mutual understanding among key leaders during the creation, implementation, and maintenance of articulations and transfer processes is imperative not only for the success of the transfer program at the institutions but also for student success.

During the 1970s and 1980s, data showed declines in transfer rates from two- to four-year institutions (Brint & Karabel, 1989). This decline nationally caused many institutions, state legislatures, and state coordinating boards to adopt state-mandated articulation policies. Anderson, Sun, and Alfonso (2006) set out to determine if statewide articulation mandates had a positive effect on the number of transfer students in those states. What they found after reviewing 680 first-time students who initially enrolled at a public two-year institution was students in states with mandated articulation policies did not experience an increased probability of transferring. Additionally, they concluded that "students that depend on their parents' income, students with highly educated parents, students who receive financial aid in their first year of college, students with higher percentages of full-time enrollment, and students who work while enrolled have higher estimated probabilities of transferring" (Anderson et al., 2006, p. 278).

For institutions and students to be successful at the transfer process, the partnerships have to grow beyond the articulation agreement. Kisker (2005) conducted a qualitative study with university and college administrators that investigated the strength of institutional partnership between a four-year institution and nine community colleges in the surrounding area in Southern California. Kisker's findings included:

> Importance of previous relationships between institutions, the significance of presidential support for partnership practices, the need for adequate and sustained funding, the importance of maintaining a university presence on community college campuses, and creating a culture of transfer at the two-year institution. (p. 11)

The larger role that community colleges play in transferring students to four-year institutions with a seamless process, the more legitimate community colleges will be perceived by students, parents, four-year institutions, and the community. Grubb (1991) stated that "despite the

multiple and changing purposes of the community college, then, the transfer function remains important to its image and to a particular vision of the institution, if not necessarily to continued enrollment" (p.196).8

Standardization at a statewide level should assist, encourage, and increase the number of students who transfer from two- to four-year institutions within that particular state. Partnerships between institutions are another way to ease the process for transfer. In 2005, the U.S. Government Accountability Office reported to Congress on a number of transfer student concerns. Specifically, Congress asked the Government Accountability Office to examine how postsecondary education institutions decide which credits to accept for transfer, how states and accrediting agencies facilitate the transfer process, and the implications for students and the government when there is an inability for credits to transfer. The researchers reviewed credit transfer policies nationally in all 50 states with a random sample of two- and four-year public and private institutions. Site visits occurred in four states, where administrators were interviewed. Researchers found approximately 69% of institutions with articulation agreements. The report stated that transfer agreements, although requiring significant commitment between institutions, assist in making the transfer process run smoothly and transparent for students (U.S. Government Accountability Office, 2005).

Summary of articulation. Articulation agreements create the framework for cooperation between two- and four-year institutions. State legislatures, commissions, board of regents, colleges, and universities can plan and articulate degree programs and courses to improve the transfer students' experience. However, transfer programs provide the service component and structure to implement the agreed articulations. Transfer programs attempt to eliminate barriers that transfer students face during the transfer process.

Institutional Transfer Programs

Throughout the country, many large flagship research institutions are becoming more selective and limiting their incoming student population. The tightening of the four-year institution entry requirements makes an increased flow of students into the community college systems more likely. This shift in student populations requires more cooperation between two- and four-year institutions to offer students a coordinated transfer pipeline. Improved communication between sending and receiving schools, transfer specialists, and transfer agreements are needed for a seamless transfer (Jacobs, 2004).

California transfer process. California has successfully implemented two-year to four-year institution transfer processes. California's rich history of transfer legislation and success is known nationally. A Master Plan for Higher Education was implemented in California in 1985 that coordinated the community college system. In 1991, California passed a bill establishing joint accountability for instituting transfer functions between the community colleges, the University of California system, and the California State University system (Zamani, 2001). California proposed in 2004-2005 a "guaranteed transfer option" that would redirect 10% of the University of California budget from the fall 2004 freshman class to the community colleges (California State Postsecondary Education Commission, 2005).

While the guaranteed transfer option failed to progress, they did successfully implement a transfer admission guarantee agreement for University of California campuses. The State of California legislature has shown their commitment to the transfer concept by passing several key pieces of legislation and investing significant resources to the California Community Colleges to assist with the coordination to increase transfer rates. The upgrades of existing services and creation of new programs increased the number of transfer students admitted in California by

5,751 over a six-year period (California State Postsecondary Education Commission, 2005). Recommendations from the California Postsecondary Education Commission (2005) for improved transfer included

> strengthening campus enrollment planning to reflect the importance of transfer; reporting regularly on the academic performance of transfer students; encouraging greater pre-major articulation between community colleges and 4-year institutions; ensuring stable funding for articulation projects; exploring the creation of a statewide Associate of Arts Transfer Degree; and require lower division general education and major requirements that are common across institutions. (p. 9)

Success has been evidenced in California with the large persistence and transfer rates of their community college transfer students. According to the University of California Higher Education Compact Performance Measures report of 2005, "more than 90% of California Community College transfer students persist to a second year at University of California and 82% graduate within four years of transferring" (University of California, 2007, p. 9). The report also stated that

> all University of California general campuses have now established articulation agreements with each of the 109 community colleges in the state, helping students navigate the process of preparing for a specific University of California major and transferring to the university. (University of California, 2007, p. 3)

California is not alone in the transfer student focus. Other states such as Oregon have led the way on partnership programs. Partnership programs created between two- and four-year institutions to improve transfer student success.

Co-enrollment in Oregon. Today's transfer trend is becoming more complex with students moving back and forth between institutions and co-enrolling in two- and four-year institutions. With many two- and four-year institutions located in close proximity to each other, it would make sense that students would simultaneously enroll in coursework in two institutions (Borland, 2004). Reverse transfer and swirling are terms familiar to research on transfer students. Co-enrollment is a recent concept that has seen limited review.

The State of Oregon has a co-enrollment residential model worth review. The Oregon Joint Boards of Education accepted and endorsed a report on transfer and articulation in 1999 that was then mandated in the Oregon Legislative Assembly. The plan, entitled "A Plan for Course and Credit Transfer between Oregon Community Colleges and Oregon University System Institutions," stipulated that courses transfer successfully among public institutions and that an effective monitoring system is in place (Arnold, 2001).

Arnold (2001) provided evidence for the monitoring of this plan with his study of four years of data matching between the Oregon University System and the Oregon Community College System. The study consisted of over 40,000 transfer students and over 13,000 admitted transfers. He found that most Oregon community college students transferred to an Oregon University System institution without having completed an associate's degree, with "about 10 percent of 'all transfers' and less than one-third of 'admitted transfers'" (p. 49) transferring with a degree.

Arnold (2001) not only studied the number of students who transferred but also their academic performance after transfer. The three years of data matching found the overall GPA for all transfer students to be 3.06 compared to the first-time native freshmen students with an overall GPA of 2.80. Persistence and graduation were also reviewed. Arnold found persistence

to be a difficult measurement due to the nonlinear movement of students. He found that transfer students performed well with 63.1 percent having graduated in four years, compared to 52.8 percent of first-time freshmen in six years (Arnold, 2001). Arnold recommended additional studies on students who simultaneously enrolled in two- and four-year institutions. He stated that not enough was known about these students, this concept, or official current programs that could assist policy makers in the future.

A unique partnership program exists in Oregon between Linn-Benton Community College and Oregon State University that has yielded success for transfer students. The Degree Partnership Program was created in 1998 and allows for co-enrollment at both institutions while providing additional support services such as coordinated advising, transfer and articulation of credit each term, free bus service, access to co-curricular experiences at both institutions and residence hall, health center, and recreation center usage (Degree Partnership Program, 2006). This program allows students to shift back and forth socially and academically between the two institutional environments to enhance their educational experience. Between 1998 and 2007, more than 6,000 students were admitted into the program (Clemetsen & Balzer, 2008).

The Oregon transfer program has proved successful. The academic performance and graduation rate consisted of a three-year transfer graduation rate of 29% for student in the partnership program, double that of non-partnership students (Degree Partnership Program, 2006). Of the graduates, 57% were older than 25 and the average cumulative GPA was 3.15 with an average of 90 credit hours from Oregon State University. Oregon State University graduated 984 students during 1998-2005 from the partnership program. The average cost savings to the student in tuition and fees was $4,000-6,000 over a four-year period (Degree Partnership Program, 2006).

Co-enrollment as seen by the Oregon State University Degree Partnership Program can be beneficial for increased student persistence. The NCES conducted a study "to provide an overview of the extent to which undergraduates attended multiple institutions as well as the relationship between multiple institution attendance and persistence, attainment, and time to degree" (Peter & Carroll, 2005, p. iii). Data from the Beginning Postsecondary Students Longitudinal Study and the 2000/2001 Beyond Longitudinal study were utilized. Use of standard t-tests and two-way analysis of variance (ANOVA) occurred to analyze the data. Statistical significances for both tests were reported at $p < .005$ (Peter & Carroll, 2005). "Students who began in public 2-year institutions who had co-enrolled had higher rates of bachelor's degree attainments and persistence at 4-year institutions than their counterparts who did not co-enroll" (Peter & Carroll, 2005, p. 19).

Co-enrollment is a relatively new concept in higher education. Oregon has shown how it can be successful. With the pressure on states to increase graduation rates, co-enrollment is a viable option to get more students through the transfer pipeline. Indiana has initiated these types of programs as well.

Co-enrollment and partnerships in Indiana. Indiana University Purdue University Indianapolis (IUPUI) and Ivy Tech Indianapolis campus established a co-enrollment program, called the Passport Program, in 1993 to increase the number of transfer students between the two institutions and enhance their relationship (A. Helman, personal communication, October 8, 2009). Passport students do not go through a selection process to participate in the Passport Program but are required to meet with advisors at both institutions. Students do not live in on-campus residential housing and can be covered with a financial aid consortium agreement. A 2006 Passport report showed an increase of student participants in the program from 240 in 1993

to 1,913 in 2005 with an increase of average number of transfer credits from 0.9 in 1993 to 12.5 in 2005 (IUPUI, 2006). Findings included transfer students are less likely to enroll on a full-time basis as compared to the overall undergraduate student population at IUPUI. This is not uncommon considering typical community college students' enrollment patterns. Interestingly, students who transferred from Ivy Tech Indianapolis to IUPUI in the fall 2004 as freshmen attained slightly lower grade point averages in their first year at IUPUI compared to students from other major feeder institutions (IUPUI, 2006). Although this transfer shock is evident, the Passport students were retained at a higher rate of 61% than other IUPUI transfer students (IUPUI, 2006). The Passport Program is an excellent example of how partnerships between two institutions can assist transfer student success.

The Hoosier Link program between IUB and Ivy Tech Bloomington established its first cohort in 2006. As described in Chapter 1, Hoosier Link is a selective program with co-enrollment. Students are selected by IUB Office of Admissions but are considered Ivy Tech students until they successfully transfer. A guarantee transfer option is a component of the program. No thorough analysis of the Hoosier Link program has been completed to date.

Other partnership programs exist in Indiana, such as DegreeLink and Connect. DegreeLink is a partnership program between Ivy Tech and Vincennes University and Indiana State University. This program was established in 1997 by the Indiana Commission for Higher Education to provide offerings to be delivered through Indiana State University's DegreeLink, a statewide, baccalaureate degree completion initiative predominantly delivered by means of distance education to meet the educational needs of Hoosier adults who are place and time bound (ICHE, 2007a). Although this program did allow for co-enrollment and financial aid consortium

agreements, the primary function of the program was articulated degree completion (M. Hughes, personal communication, December 15, 2010).

Ball State University has partnered with Ivy Tech and Vincennes University as well with their Connect Program. This program directs students who did not initially meet the Ball State admissions requirement to the community college system to take a prescribed course listing. Once students have successfully completed the requirements (minimum of 24 college level credits with no grade lower than a C and a minimum cumulative GPA of 2.0) they are guaranteed admittance to Ball State University (Ball State University, 2011).

Summary of institutional transfer programs. Higher education institutions across the country are searching for programs that will increase persistence and graduation rates. Transfer programs and initiatives have proven successful. Partnership programs exist in Indiana for transfer students. Co-enrollment is a new concept that has been gaining momentum as seen in Oregon and Indiana. Unfortunately, barriers still exist for transfer students, even with successful transfer programs.

Barriers to Transfer Student Success

Literature suggests that the transfer process complexities may hinder community college students from completing their baccalaureate goals (Alfonso, 2006; Brint, 2003; Cejda, 1997; Flaga, 2006; Hills, 1965; Laanan, 2001). Barriers that transfer student confront have moved beyond the issues of transfer credit or articulation. Student barriers found by Townsend (1993) during a qualitative study with nine transfer students included faculty teaching practices, classroom atmosphere, and student perceptions. Students reported unwillingness by faculty to provide assistance when student identified a lack of knowledge. This was a sharp contrast from the supportive faculty the students experienced at the community college.

Other barriers were found by Townsend and Wilson (2006) during a qualitative study of 19 transfer students. Townsend and Wilson sought answers to factors that influenced students' fit within the four-year institutions. Student relationships with faculty again were mentioned. Some students felt that the university faculty was less interested in teaching and less interested in meeting individually with students than their previous community college faculty. Coping with the new social environment posed a barrier as well. Some students expressed difficulty in making friends at the university because of the large feel of the four-year institution. In addition, some transfer students found their new institution as "an awkward fit, at least initially" (Townsend & Wilson, 2006, p. 450). Community colleges typically provide more personalized services to students. Some students in this study felt the fit might have been easier if they had received "a hand hold for a little bit during their first few weeks or semester at the university" (Townsend & Wilson, 2006, p. 450).

Other influences serve as barriers to transfer students. Kippenhan (2004) discussed additional barriers such as "academic boredom, indecision about a major, inability to transition, academic difficulties, . . . institutional size, location, level of curriculum, and cost" (p. 16). Laanan (2001) found that barriers to successful transfer included the student's ability to locate transfer services, inadequate preparation for the four-year university environment, and a lack of support programs at the university. Students also are still frustrated with the two-year institutions credits not transferring to four-year institutions. Advising plays a critical role during a student's first couple of terms in making sure students' understand what courses are required at four-year institutions and making sure they transfer appropriately.

Summary of barriers to transfer student success. Approaches from two-year and four-year institutions to resolve transfer barriers are necessary. Social integration for transfer

students and their families is as important as their academic progress. Transfer student programs exist today at four-year institutions such as orientations and advising specific to their needs. Additional work can be done in this area to improve retention and persistence to graduation of transfer students.

Academic Success Factors

Transfer students experience challenges during the transfer process with adjustment to a four-year institution. Studies have shown a phenomenon of a dip in GPA after transfer students' first semester. This dip in GPA was termed *transfer shock* by Hills (1965). Multiple variations of studies have been completed replicating Hills's original study that resulted in similar findings. Other studies (Cejda, 1997; Cejda, Kaylor, & Rewey, 1998; Johnson, 2005) found no existence of transfer shock and in some cases found a rise in GPA termed *transfer ecstasy*. Transfer programs and services assist transfer students in their adjustment to the four-year lifestyle. Residential facilities play an important role in the assimilation and success of transfer students. Residential components aid in the persistence of all students as will be discussed later.

Transfer shock studies. Transfer shock, a term first coined by Hills in his landmark study in 1965, refers to the dip in GPA of the transfer student when adjusting to a four-year institution. Hills (1965) reviewed research that was conducted from 1928 through 1964 that pertained to junior college transfer students and found that native students performed better. Four-year institutions have specific transfer student orientations and programs to assist in reducing transfer shock. However, studies show that transfer shock still exists today. Other support services and structures are necessary to guide and assist transfer students to ensure their retention and graduation. Successful transfer to a four-year institution also depends on academic major from the community college. The first semester GPA can have a lasting impact and has

shown to reflect badly upon transfer students if assessments are based upon it (Glass & Harrington, 2002).

Included among numerous studies conducted to determine if specific academic programs result in the degree of transfer shock, Carlan and Byxbe (2000) conducted a study of 500 students over three years. The purpose of their study was to determine if four-year institution students (native students) were better prepared for junior and senior level courses than community college transfer students. Results of the regression analysis using $p > .05$ showed that transfer students did experience declines in their grades compared to their community college grades, thus experienced transfer shock. Carlan and Byxbe identified two factors that explained the difference between these two groups of students: aptitude differences and the community college nurturing environment. The two variables that contributed most to the transfer student GPA prediction were 100/200 level course GPAs and academic major selection. The grade decline was worse with students in business and science majors. In a comparison of native and transfer students, the native students' racial background was the most pertinent contributing factor in their academic performance. Finally, Carlan and Byxbe's study found that earning an associate's degree was not significant to academic performance.

Several studies that focused on the measurement of transfer shock have found conflicting results such as transfer ecstasy or no transfer shock. Transfer shock studies that examined a discipline-based perspective include those by Cejda (1997) and Cejda et al. (1998). These studies reviewed the academic success for 100 and 434 transfer students respectively. The results of both studies showed that students transferring into fine arts, humanities, and social sciences realized post-transfer GPA increases termed *transfer ecstasy* (Cejda et al., 1998, p.7), whereas other academic majors such as business, mathematics, and sciences experienced a

significantly greater amount of transfer shock. The transfer shock findings are consistent with the Carlan and Byxbe (2000) study.

Johnson (2005) examined 2,467 students' academic performances for those who were enrolled in natural science majors at a mid-sized four-year public West Coast university over a 12 year period (1992-2003). Analysis of variance (ANOVA) and analysis of covariance (ANCOVA) were utilized to determine effects of variables on academic performance (GPA). Johnson found no statistical evidence of a difference in academic performance between native and transfer students. Rationale behind the findings includes smaller class sizes that eased the adjustment for transfer students, the majors examined offered numerous extended-hour labs and field trips, and a geographically isolated campus (Johnson, 2005). The specific focus on one academic major, as in this study, is useful to determine what factors can alleviate transfer shock across other academic programs.

Factors beyond academic programs can affect transfer shock. Keeley and House (1993) studied sophomore and junior transfer students from Northern Illinois University. They found that "overall, students did experience some degree of transfer shock" (Keeley & House, 1993, p. 4). Keeley and House also found that students transferring from Illinois public community colleges generally showed a higher degree of transfer shock, but having earned an associate degree was a positive factor in transferring. Women transferred with better GPAs and generally outperformed men and students over 25 who transferred experienced little transfer shock. Minority transfer students brought lower transfer GPAs and experienced a greater degree of transfer shock, and transfer performance varied widely by major (Keeley & House, 1993). Their findings show the variety of factors that affect transfer student academic performance. Enrollment managers must be sensitive to this commonly observed transfer irregularity. In

crafting appropriate policy and intervention practices, they also should consider what curricular and integration factors may contribute to transfer shock (Borland, 2004).

Persistence factors. Transfer shock studies examine academic performance of transfer students after their first semester of transfer at the four-year institution. Ishitani (2008) investigated how students may recover from transfer shock and persist. Ishitani utilized an event history modeling for the study. The number of transfer students reviewed in Ishitani's study totaled 1,347 with groupings as follows: 643 freshmen transfers, 434 sophomore transfers, 270 junior transfers. The study compared departure rates of these transfer groups compared to native students. The entire sample was from one institution. The results found that, in each semester, freshman transfer students persisted at lower rates than native students during the entire observation period. Sophomore and junior transfer students displayed higher persistence rates than native and freshman transfer students (Ishitani, 2008).

Utilization of the data from the national longitudinal studies from High School Classes of 1972 and 1980 helps identify the causes of the decline in transfer rates and transfer success. Adelman (2005) completed a study for the U.S. Department of Education using the High School Classes of 1972 and 1980 to investigate success of transfer students. For Adelman's study, a transfer student is one who started in a community college, earned more than 10 credits from the community college before enrolling in a four-year college and then earning more than 10 credits from the four-year college. Of the nine variables in the model of factors associated with transfer, Adelman found the following to be statistically significant at $p < .05$ or better: earned credits in college level mathematics increased the probability of transfer by 22.7 percent; earned credits during summer terms increased the probability of transfer by 19.1 percent; students who maintained continuous enrollment were 22.4 percent more likely to transfer than those who did

not; and if 20 percent or more of all grades received were withdrawals and repeats, the probability of transfer decreased by 38.7 percent.

Grubb (1991) utilized the data from the High School Classes of 1972 and 1980 as well and found implications with the trends of students transferring without completing a credential. Grubb's results indicated that

> students who transferred without an Associate's degree were less likely than those with either a vocational or an academic Associate degree to complete a B.A. degree–no doubt because those without an Associate degree were likely to have more credits to earn, requiring a longer period of time which contributed to the likelihood of dropping out. (p. 208)

Grubb referred to students who take a small number of courses in the community college and then leave as *experimenters*, and these students are less likely to transfer.

Predictors of student persistence and commitment were reviewed in study by Strauss and Volkwein (2004). Strauss and Volkwein used Astin's (1993) I-E-O model to review pre-college characteristics, student academic performance, and persistence behavior with educational outcomes. Their study consisted of 8,217 first-year students (2,499 from four-year institutions and 5,718 from two-year institutions) with over 51 public institutions represented. The study by Strauss and Volkwein is a secondary analysis of data collected from the State University of New York System in 1997, the Higher Education Directory, and from the 1997 Integrated Postsecondary Education Database System (IPEDS). The dependent variable was institutional commitment as seen in students' overall impression of belonging. The independent variables consisted of pre-college characteristics such as students' age, gender, racial group affiliation, marital status, and presence or absence of dependent children. Other independent variables

included encouragement from significant others, financial aid, social integration and growth, academic integration, and grade point average. The results showed that students' age (older) and those with grant financial aid were significant predictors of institutional commitment; White students and those who were married had a higher level of commitment. The strongest impact for commitment at two-year institutions was the academic integration and faculty interaction with average slope of 0.16 ($p < 0.001$; Strauss & Volkwein, 2004).

Persistence of transfer students to degree completion depends on a number of factors. Alpern (2000) found that students' satisfaction with their institution is a good predictor of successfully completing a baccalaureate degree. Alpern evaluated 541 returned surveys from transfer students from three diverse four-year institutions. Her findings also indicated that transfer students looked to the community colleges and the four-year institution to provide precise and applicable institution related information regarding the transfer process, regardless of the academic program being pursued. The students surveyed reported their GPAs did not decline after transfer. Suggestions from Alpern's study included better communication of transfer and orientation as well as greater cooperation between the two-year and four-year institutions to provide support services.

Transfer student success differs from institution to institution and state by state. Many factors affect these students' performance. Academic preparation from the community college environment, transfer processes between institutions, and integration programs at the four-year institution are all important to reducing transfer shock for these students.

Flaga (2006) stated, "The transfer shock literature does not tell the full story of student transition. Academic performance is an important part of students' experiences, but grades are the result of a complex set of processes that occur throughout the semester" (p. 4). Flaga

conducted a qualitative research study in 2002 to examine the dimension of transition for transfer students. Flaga studied how 35 community college transfer students proceeded through their first year at a four-year university after transfer. Flaga's 2006 research identified five dimensions of transition for students: learning resources, connecting, familiarity, negotiating, and integrating. In this study, students provided advice to future transfer students. Some of the participants' suggestions to future transfer students included (a) having prior contact with the four-year university, (b) visiting the campus, (c) forming a relationship with an advisor, (d) getting transfer course equivalency information, (e) living on campus, (f) understanding the parking system, and (g) becoming involved on campus (Flaga, 2006). This study showed the importance of social connecting and familiarity and how they lead to integration that ultimately helps the success of transfer students.

Advising was crucial to the students in Flaga's (2006) findings. Many students in her study were very disappointed with how their courses transferred. If the student had been in contact with an advisor prior to transferring this would have made a difference. Flaga found that orientation programs and orientation seminar courses enhance the success for transfer students. On-campus living "increased opportunities to integrate into the academic, social, and physical environments, and helped students find their niche faster" (Flaga, 2006, p. 15).

Numerous studies have shown the benefits of living on campus as it pertains to persistence (Astin, 1999; Chickering, 1974; Flaga, 2006; Pascarella & Terenzini, 2005). The residential component provides the social network development needed for transfer students to adjust (Berger & Malaney, 2003). The environmental component of Astin's I-E-O model fits well when reviewing how residential living affects students.

Chickering (1974) was one of the first researchers to evaluate performance and engagement of on-campus students versus commuter students. Chickering completed two major studies where attitudes and behaviors of a total of over 174,000 randomly selected freshman students were examined through questionnaires from 270 two- and four-year institutions. Stepwise multiple regression analyses were conducted. Students who lived on-campus reported being more engaged with their academic programs and other on-campus activities. On-campus students had more interaction with faculty members than did commuter students. Commuter students "were less satisfied with their college and less frequently planned to return or to study full-time" (Chickering, 1974, p. 58). Students living in the residential facilities yielded a higher GPA after their freshman year than students who lived with their parents (3.810 vs. 3.574) (Chickering, 1974). Commuter students were also shown to have diminished degree aspirations and did not persist as well as on-campus students.

The creation and use of transfer centers is an institutional response to improve transfer student success. When these transfer centers and programs are facilitated by a partnership between two- and four-year institutions, the collegiate culture is better transferred to the student (Zamani, 2001). In order to increase the national transfer trends and success rates, more inventiveness on the part of the two- and four-year institutions needs to occur. Collaboration and partnering to create and maximize transfer opportunities and improved student services and programming is critical for transfer students' success, especially underrepresented students. Zamani reviewed numerous partnership programs for transfer students to evaluate institutional responses to barriers to the transfer process. Zamani found there are many innovative programs and policies that have facilitated smooth transitions for students and that more of these

responsive and aggressive programs need to be implemented to improve upward mobility of transfer students.

Summary of academic success factors. Transfer shock has been seen as a common occurrence with transfer students. Even with a dip in GPA after transferring, many transfer students are finding ways to persist and recover from transfer shock. Pre-college characteristics and student's satisfaction with their institution can help predict their success to completion. Living in on-campus residential facilities and having a social network as well as transfer student support structures will also increase transfer student success.

Conclusion of Literature Review

Trends describing the transfer function in this country show a surprisingly small number of students who transfer and succeed. Demographic information can be useful in targeting programs to aid these students at the two- and four-year institutions. If institutions do not already have established articulation programs, they are quickly catching up as more students are beginning their college careers at community colleges for a number of reasons. In addition to the articulation function, four-year institutions need a more student-centered approach to help integrate students and facilitate and develop their success. Faculty and administrators' attitudes and practices play a large role in how transfer students perceive the receiving institution and how they ultimately perform academically.

The research regarding transfer students and the transfer function has increased over the years. Articulation agreements are not new and have been studied adequately. Transfer programs with co-enrollment are a fairly recent phenomenon with limited study. It is apparent that with the status of higher education in the United States today that the number of transfer students will continue to increase.

Transfer student success studies have shown evidence of the transfer shock phenomenon. Literature explaining how student demographics have an impact on persistence and performance has been reviewed. The next step in the transfer process is for institutions to provide programs and services to assist transfer students' successful transfer, performance, and persistence to the completion of the baccalaureate degree.

This research study will investigate the impact of a co-enrollment partnership between IUB and Ivy Tech Bloomington. The Hoosier Link program has yet to be studied in depth. The methodology chapter will provide the details related to who participated in the study, the variables examined, and the statistical methods applied.

CHAPTER 3

Study Design and Methodology

The review of literature revealed the need for this study. The validity of the transfer shock research has shown it to be real or marginal. Studies suggest that transfer student programs and support services improve the transfer function and transfer student success. Co-enrollment and residential experiences have proven to be successful per the research for student persistence and performance. However, very few studies have been done on co-enrolled students and university partnership programs, hence the need for this study. This study investigated the success of the Hoosier Link program by reviewing student persistence and performance of two Hoosier Link cohorts compared to native IUB students and other IUB transfer students as reported through Indiana University–University Reporting and Research.

Utilizing the Input–Environment–Outcome (I-E-O) theoretical model for this study, a thorough discussion of the use of each I-E-O component within the methodology was performed. According to Astin (1991),

> the performance of students at the end of an educational program is substantially affected by their performance at the point of initial entry (input). In other words, one cannot simply assume that the students' outcome performance after completion of a program of study has been caused by that program of study. At the same time, one cannot assume that differences in outcome performance between students exposed to different kinds of

> programs can be attributed to the differential effects of those programs unless we first take into account their differing input performance at the beginning of the program. (p. 42)

Additionally, Astin stated that a student's outcome refers to the student's performance on an outcome measure at a particular point in time and does not take into consideration any pre-existing factors that may account for that performance.

Tinto's theory of departure was also utilized when reviewing characteristics for students who did not successfully transfer or successfully perform and persist after transfer. Tinto (1987) stated that attrition needs to be reviewed with studies of persistence. Persistence and recovery from any transfer shock were reviewed in this research study.

Purpose of Study

The purpose of this study was to determine the degree to which Ivy Tech Bloomington students in the Hoosier Link program that transferred to IUB were able to perform and persist as full-time IUB students. This research identified Ivy Tech students in the Hoosier Link program and investigated if they experienced transfer shock after their first full semester at IUB as measured by academic performance (GPA) at IUB compared to their cumulative GPA while in the Hoosier Link program at Ivy Tech. It measured the severity of any potential transfer shock and its duration. Additionally, persistence from term to term and academic year to academic year was measured. This study also compared the two Hoosier Link cohort students to IUB native students and other transfer students to IUB.

Research Questions

1. What factors impacted Hoosier Link student persistence and academic performance after transferring to IUB?

2. How did admission type (Hoosier Link, IUB native, or other IUB transfer) affect performance and persistence of students?

Participants

Three groups of students were included in this study:

1. 2006 and 2007 Hoosier Link cohort students.
2. 2006 and 2007 IUB native students through IUB undergraduate retention reports.
3. 2006 and 2007 transfer students to IUB through IUB undergraduate retention reports.

Participants in this study were from the 2006 and 2007 Hoosier Link cohorts. IUB Office of Admissions selected the students to be offered the Hoosier Link program. Hoosier Link students were denied direct admission to IUB and given the opportunity to participate in the Hoosier Link program. The Hoosier Link student cohort results were compared to IUB native students and other IUB transfer students who began their educational careers during the same semester as the Hoosier Link cohorts. All Hoosier Link participants lived in the IUB residential facilities during their freshman year. IUB native students were required to live in the residential facilities unless they received a waiver due to living within 25 miles from campus, and transfer students were not required to live on-campus. The Hoosier Link students were allowed to select the living community they wished to live in, the same as IUB native students. They were not all placed in the same living/learning community. Hoosier Link students were not differentiated in any way from IUB native students in their residential experience.

The two Hoosier Link student cohorts were selected into the Hoosier Link program through IUB Office of Admissions. The Hoosier Link participants in this study successfully completed the first year of the program as co-enrolled students and successfully transferred to IUB. Identification of the Hoosier Link students was obtained through the IUB Office of First

Year Experience Programs. The IUB native and transfer student information was gained through Indiana University–University Reporting and Research retention reports.

All of the Hoosier Link students in this study were enrolled full-time (at least 12 credit hours) during the 2006-2007 or 2007-2008 academic years. The two Hoosier Link cohorts co-enrolled with a minimum of nine credit hours from Ivy Tech and three credit hours from IUB during their first fall semester and a minimum of 12 credit hours from Ivy Tech and three credit hours from IUB during their spring semester. Both IUB native and other IUB transfer students were enrolled full-time at IUB per the retention reports from Indiana University–University Reporting and Research.

The participants used in this study were not contacted or identified by name in the study. This study was conducted using secondary data gathered from IUB Office of First Year Experience Programs.

Institution Characteristics

IU was established in 1820 with its oldest and largest campus located in Bloomington, Indiana. IU is a flagship research institution in Indiana and has seven regional campuses throughout Indiana. IU enrolled 101,727 students statewide with 31,626 in Bloomington for the fall 2008 term. The majority (89%) of students at IUB are enrolled full-time. Underrepresented minorities (African Americans, American Indians, and Hispanics) consisted of 7.2% at IUB. Persistence is measured for students returning to their second semester and to their second year with the university. Students entering in fall 2006 at IUB persisted to the second semester at a 95.7% persistence rate (Indiana University, n.d.a). Persistence to the second year of studies for the fall 2006 cohort reported at an 89% persistence rate for first year full-time students. Transfer persistence rates for the same year were 83% (Indiana University, n.d.b).

Ivy Tech Community College is the state's largest public post-secondary institution and the nation's largest single accredited statewide community college system with more than 200,000 students enrolled annually. Ivy Tech has 14 regions and 23 campuses throughout Indiana. Ivy Tech Bloomington enrolled 6,923 unduplicated headcount for the 2007-2008 academic year (Ivy Tech, 2008a). Ivy Tech reported persistence rates based on the 2007 cohort of first time students. Statewide, the fall to fall persistence rate for full-time students was 53%. Ivy Tech Bloomington saw a persistence rate of the same cohort of 48% (Ivy Tech, 2008c).

Research Design

Secondary data analysis design describes this study. The 2006 and 2007 Hoosier Link data were provided as a secondary data set from IUB Office of First Year Experience Programs. Secondary data sets are useful to researchers for a number of reasons: time efficiency, cost effectiveness, and data quality (McMillan & Schumacher, 2010). This study statistically examined the secondary data provided. According to McMillan and Schumacher (2010), secondary data analysis typically has a high degree of validity and reliability studies; therefore it is a good design to use for educational research. The data analysis applied social research and program evaluation to analyze relationships. The longitudinal research data provided were already in established groups. The control group in this design were IUB native and IUB other transfer students. The experimental group in this study was students participating in the Hoosier Link program. The review of the literature assisted in identifying specific variables related to this study.

Procedures

Identification of the Hoosier Link cohort students was provided by the IUB Office of First Year Experience Programs. The Ivy Tech GPA, general demographic information,

financial aid expected family contribution, and remediation credits were acquired from the Ivy Tech information that was shared with IUB per the student's signed Participation Agreement and Information Release Form (Appendix B). The Hoosier Link cohort students' GPA and persistence data were identified from IUB student information system and acquired through IUB Office of First Year Experience Programs. IUB native students and other IUB transfer student data were obtained aggregately through retention reports from Indiana University–University Reporting and Research.

Permission was sought and approved through IUB Office of First Year Experience Programs to provide all Hoosier Link data with no student names included. The IUB Office of First Year Experience Programs tracked the Hoosier Link cohorts from their first semester in the program when students were co-enrolled at IUB and Ivy Tech. For this study, additional longitudinal persistence and GPA information was collected by IUB. Only general data analysis has been completed by the IUB Office of First Year Experience Programs until this study. The electronic copy of the data were obtained and converted into Statistical Package for the Social Sciences (SPSS) format for data analysis.

Variables

Using Astin's (1993) I-E-O model as a guide, variables to study were selected. The inputs (I) consist of characteristics (demographics) of students upon entry into the Hoosier Link program. Environment (E) pertained to number of remedial courses taken, residential living, and Hoosier Link workshops. Outcomes (O) were seen through transfer, GPA, and persistence from term to term and academic year to academic year.

This study consisted of two independent variables and two dependent variables. The first independent variable used was program classification (Hoosier Link, IUB native, and other IUB

transfer students) with specification of cohort and start year designation (2006, 2007). The second independent variable was demographics (gender, race, high school cumulative GPA, SAT/ACT scores, expected family contribution based on the student free financial aid student application [FAFSA] if completed, and number of remedial credits if any were taken). The dependent variables consisted of performance and persistence in terms of GPA and retention from term to term and academic year to academic year.

Independent variables. Several independent variables were examined in this study including gender, race, high school cumulative GPA, SAT/ACT scores, expected family contribution, and number of remedial credits taken.

Gender. Female or male, reported as female = 1 and male = 2 as reported on the student IUB admission applications.

Race. Reported on the student IUB admission applications and designated by Black/African American = 1, Hispanic/Latino = 2, White/Caucasian = 3, Asian = 4, multiracial = 5, and other = 6.

High school cumulative grade point average. Based on a 4.0 scale and captured from student files from IUB based on the student's final official high school transcript.

SAT/ACT scores. Captured via admissions records from IUB. Standard ACT scores were converted to SAT equivalents for students who only reported ACT scores by using the College Board concordance tables (College Board, 2009).

Expected family contribution. Calculated by the student's FAFSA that is used by colleges and universities to determine federal student aid eligibility. The expected family contribution is a measure of a student's family's financial strength and is calculated according to a formula established by law. Income information, assets, family size, and number of family

members who will attend college are considered in the formula (U.S. Department of Education, Federal Student Aid, 2011). Expected family contribution was attained by Ivy Tech information that had been given to IUB through the transfer process. Expected family contribution can be used to study socioeconomic status of students.

Remedial courses. Determined by the COMPASS assessment test given at Ivy Tech if the student did not receive a waiver with certain SAT/ACT scores. Number of remedial credits earned was determined through a review of student's Ivy Tech academic transcript and report by IUB. This variable was coded by the number of credit hours of remediation coursework earned.

Dependent variables. Two dependent variables were utilized in this study: persistence and performance. Persistence was measured by semester to semester and academic year to academic year progression. Performance was measured in terms of GPA based on a 4.0 scale.

Persistence. The first measure of persistence was measured by the number of initial Hoosier Link students who successfully transferred to IUB as Hoosier Link students. This attribute was measured with a 1 = transfer and 2 = not transfer. Persistence continued to be measured after transfer throughout the student's academic history. Term-to-term and year-to-year persistence was measured with a 1 = enrolled and 2 = did not enroll.

Performance. GPA is a standard metric for academic performance used widely in education (Mathiasen, 1984). Hoosier Link cohort students' GPAs were recorded for pre- and post-transfer to determine level of potential transfer shock. GPA was measured on a 4.0 scale. The IUB GPAs of IUB native students and other IUB transfer students were also studied using aggregate public data obtained from retention reports from Indiana University–University Reporting and Research.

Data Analysis

Descriptive statistics were used in evaluating the data. Specific methods used to describe the cohorts included descriptive statistics such as frequencies of demographic variables, mean and standard deviation of GPAs, frequency of retention and transfer rates, and percentages of retention rates and other demographic variables. Descriptive statistics are useful to organize data in an easily understandable way.

Multiple regression analysis technique was also conducted to determine whether statistically significant predictive relationships could be identified between the independent variables and dependent variables. By using this method, the value of each dependent variable (persistence and performance) was predicted from a weighted linear combination of the independent variables (gender, race, high school cumulative GPA, SAT/ACT scores, expected family contribution, and remediation credits taken) for each Hoosier Link cohort. By conducting a multiple regression analysis for each cohort, the coefficient of determination, which is the proportion of the dependent variable that can be explained by the combination of the independent variables, was determined. Because the multiple regression models had several independent variables or predictors, stepwise multiple regression was used to determine which specific predictor or independent variable made meaningful contribution to the overall prediction of persistence and performance. The purpose of multiple regression analysis was to identify the best combination of predictors of the dependent variables. With this method, standard simple linear regressions of independent variables were conducted one variable at a time and analyzed for their ability to account for the most variance in the dependent variables. When all variables were entered, the regression model was completed.

$$\text{Persistence} = B_{gender}X_{gender} + B_{race}X_{race} + B_{gpa}X_{gpa} + B_{sat}X_{sat} + B_{efc}X_{efc} + B_{rem}X_{rem} + e_i$$

$$\text{Performance} = B_{gender}X_{gender} + B_{race}X_{race} + B_{gpa}X_{gpa} + B_{sat}X_{sat} + B_{efc}X_{efc} + B_{rem}X_{rem} + e_i$$

Correlation is used when measuring the relationship between two variables. When a positive correlation is found, it allows one variable to predict the other variable in the future. In this study, Pearson product-moment correlation (or Pearson correlation) was used to measure the relationship between students' last GPA at Ivy Tech Bloomington with post-transfer semester GPAs at IUB. Pearson correlation measures the degree and direction of linear relationship between two variables as well as the confidence levels for those correlations (Gravetter & Wallnau, 2004).

Student data were entered on a tracking spreadsheet as seen in Appendix C. The level of significance used was .05 *alpha*. The SPSS was utilized for the data analyses for this study.

Study Limitations

This study was subject to the following limitations:

Sample. The sample size was restricted due to the limited number of students accepted into the 2006 and 2007 Hoosier Link cohorts and the number of students who successfully transferred to IUB. The IUB native and other IUB transfer students' data were gathered from the IU Undergraduate Retention Reports (Indiana University, n.d.a; Indiana University, n.d.b; Indiana University, n.d.c).

Secondary data. For this study, the research was dependent on the accuracy of information obtained from student data records including admission data self-reported by the students through IUB. Use of evidence from secondary sources may pose potential threats to

accuracy and reliability of data. Self-reporting errors, transcription errors, interpretation of data, and the method of original data collection may be potential limitations for this study.

Other limitations. This study only considered traditional fall and spring terms. Summer terms were not utilized because summer is an optional term for all students, its level of enrollment was more difficult to measure, and summer typically was held in non-conventional lengths. Not all students had financial aid expected family contribution data as not all students completed a FAFSA for each year of enrollment. Additionally, not all students completed remedial coursework based on their assessment testing. Academic major was not available for inclusion in this study. A limitation of all regression techniques is that only relationships can be ascertained and underlying causal mechanisms may not be identified.

I am currently employed at Ivy Tech Community College and previously oversaw the Ivy Tech Bloomington component of the Hoosier Link Program. The limitation on the number of Hoosier Link cohorts was restricted due to the number of years of the program existence. This study was only between Ivy Tech Bloomington and IUB where this unique transfer program is located.

Summary

Chapter 3 presented the methodology used in addressing the research questions posed by the study. Research questions were presented and the source and description of the study's sample and participants was discussed. Institutional characteristics were reviewed for Ivy Tech and IUB. For best fit with this study, a secondary data analysis research design was established. Variables used in the study were defined and the sources of the data were presented. Procedures used in the analysis of the data were articulated for the use of regression and correlation, along

with the limitations to the study. Chapter 4 presents the findings of the analysis of the data used in the study.

CHAPTER 4

Analysis and Results

The purpose of this study was to determine the degree to which Ivy Tech Bloomington students in the Hoosier Link program that successfully transferred to IUB have been able to persist and perform as full-time IUB students. This research identified Ivy Tech students in the Hoosier Link program in the 2006 and 2007 cohorts and investigated if they experienced transfer shock after their first full semester at IUB after transfer as measured by academic performance (GPA) at IUB. This study measured the severity of transfer shock and its duration for the Hoosier Link students. Additionally, persistence from term to term and academic year to academic year was reviewed for the Hoosier Link students. Hoosier Link students' persistence and performance was then compared to IUB native students and other IUB transfer students.

This chapter is presented in three sections: (a) examination of the data beginning with findings from the analysis of dependent and independent variables, (b) presentation of findings related to each of the research questions, and (c) chapter summary.

Analysis

The initial Hoosier Link cohort populations combined for the 2006 and 2007 years totaled 205 students (2006 cohort $n = 93$, 2007 cohort $n = 112$). All students in the 2006 and 2007 Hoosier Link cohorts were 18-19 years of age at time of entry into the Hoosier Link program. Hoosier Link students were selected by IUB Office of Admissions. Appendices D and

E display the location of Indiana counties of the 2006 and 2007 Hoosier Link cohorts selectees. Transfer and other demographic data are reviewed below.

Transfer. Out of the initial 205 students who started in the program in 2006 or 2007, 125 (61%) transferred to IUB as part of the Hoosier Link program and were accepted to IUB as full-time IUB students. The 2006 cohort transferred to IUB at a 53.8% transfer rate and the 2007 cohort transferred to IUB at a 67% transfer rate, as seen in Table 2. Eighty students total from both cohorts did not transfer as Hoosier Link Students to IUB. These students chose other avenues such as staying at Ivy Tech longer to possibly complete an associate's degree, transferring to other colleges, transferring to IUB later not as a Hoosier Link student, or stopped out of college (J. Rhodes, personal communication, April 25, 2008).

Table 2

2006 and 2007 Hoosier Link Cohort Transfer Rates

Cohort	Transfer	Frequency	Percent
2006	Yes	50	53.8
	No	43	46.2
	Total	93	100.0
2007	Yes	75	67.0
	No	37	33.0
	Total	112	100.0
Total Both Cohorts	Yes	125	61
	No	80	39
	Total	205	100

The Hoosier Link students who successfully transferred met the guarantee transfer option of the program. Therefore all of the Hoosier Link students who applied as transfer students were

admitted, a 100% acceptance rate. IUB published transfer admission selectivity rates and yields. In 2006, 65.5% of transfer applications were accepted with a 57% yield rate for transfer student enrollment (Indiana University, 2007b). In 2007, IUB reported that 63.5% with a 54.3% yield rate for transfer student enrollment (Indiana University, 2008b). The transfer acceptance rate tightened from 2006 to 2007 as did IUB's general undergraduate admission per the IUB annual fact books.

Demographic characteristics.

Gender. The combined Hoosier Link cohorts consisted of 105 women and 100 men. More men were selected in the 2006 cohort versus the 2007 cohort (55.9% versus 42.9%) as seen in Figure 2. More women were selected in the 2007 cohort versus the 2006 cohort (57.1% versus 44.1%) as seen in Figure 2. IUB reported in 2006 to have directly admitted 48% men and 52% women and in 2007 directly admitted 49% men and 51% women (Indiana University, 2007b; Indiana University, 2008b).

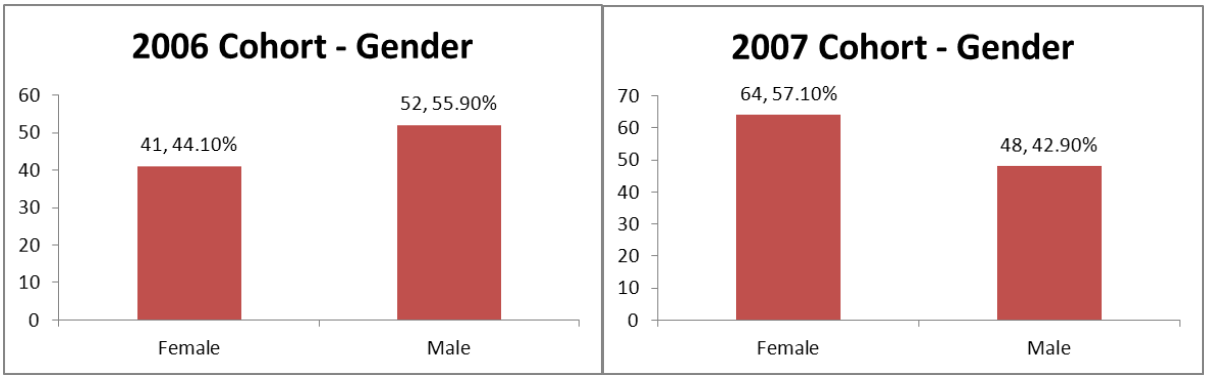

Figure 2. 2006 and 2007 Hoosier Link cohort gender.

Out of the 125 Hoosier Link students who successfully transferred to IUB, 68 were female and 57 were male. The yield of students who began the program and successfully transferred can be seen in Table 3. The 2006 cohort saw similar success rates from both male

and female students. The 2007 cohort resulted in more women successfully transferring than men.

Table 3

2006 and 2007 Gender Transfer Rates

Cohort	Female	Transferred	% successful	Male	Transferred	% successful
2006	41	22	53.66%	52	28	53.85%
2007	64	46	71.88%	48	29	60.42%

Race. The total sample of all incoming 2006 and 2007 Hoosier Link cohorts combined consisted of students who reported themselves on their IUB admissions application as White (*n* = 189, 84%), Black/African American (*n* = 7, 3.1%), Hispanic/Latino (*n* = 6, 2.6%), Asian (*n* = 1, .4%), Multiracial (*n* = 1, .4%), and other (*n* = 1, .4%). Table 4 shows the breakdown for race for the two Hoosier Link cohorts. The Hoosier Link race breakdown is comparable to IUB's race make up in 2007 of Black/African American (4.27%), Hispanic/Latino (2.47%), Asian (3.61%), American Indian (.29%), and all other including White (89.36%; Indiana University, 2008b).

Table 4

2006 and 2007 Hoosier Link Cohorts Combined Frequencies and Percentages for Race.

Variable	Frequency	Percent
White	189	84.0%
Black/African American	7	3.1%
Hispanic/Latino	6	2.6%
Asian	1	.4%
Multiracial	1	.4%
Other	1	.4%
Total	205	100.0%

SAT score range. The College Board's SAT standardized test currently consists of three components: reading, writing, and math. At the time the 2006 and 2007 Hoosier Link cohort students took the SAT, only two sections existed: verbal and math. The majority of Hoosier Link students (86.8%, 178/205) who began in the Hoosier Link student entered with a SAT score in the 800-1190 range. Indiana University reported in their annual fact book that entering freshman in 2006 reported an average SAT score of 1121 (Indiana University, 2007b). This is 186 points higher than the average 2006 Hoosier Link cohort SAT score of 935. The 2007 cohort also saw lower SAT scores compared to IUB's entering 2007 class (1147 at IUB and 930 for 2007 Hoosier Link cohort). Standardized test scores were one item reviewed when IUB Office of Admissions decided who was selected to be invited into the Hoosier Link program. Table 5 through Table 7 display SAT data for both Hoosier Link cohorts.

Table 5

2006 and 2007 Hoosier Link Cohorts Combined SAT Score Range

SAT Score Range	Frequency	Percent
1200+	5	2.4%
800-1190	178	86.8%
400-790	21	10.3%
No SAT	1	0.5%
Total	205	100.0%

Table 6

2006 Hoosier Link Cohort Combined SAT Score Range

SAT Score Range	Frequency	Percent
1200+	3	3.2%
800-1190	81	87.1%
400-790	8	8.6%
No SAT	1	1.1%
Total	93	100.0%

Table 7

2007 Hoosier Link Cohort Combined SAT Score Range

SAT Score Range	Frequency	Percent
1200+	2	1.8%
800-1190	97	86.6%
400-790	13	11.6%
No SAT	0	0.0%
Total	112	100.0%

High school GPA. High school cumulative GPA was reported from the student's last official high school transcript received by the IUB Office of Admissions. The first Hoosier Link cohort (2006) had a lower number of students admitted with a high school GPA between 3.00 and 4.00 (20.4% compared to 57.1%). Per Jack Rhodes, this was contributed to the program's increased selectivity in the second year (J. Rhodes, personal communication, April 25, 2008). Indiana University does not report high school GPA on incoming students in the annual fact book. Table 8 through Table 10 display Hoosier Link high school GPA information.

Table 8

2006 and 2007 Hoosier Link Cohorts Combined High School GPA

GPA Range	Frequency	Percent
3.00-4.00	83	40.5%
2.00-2.99	102	49.8%
Less than 2.00	1	0.5%
Missing	19	9.2%
Total	205	100.0%

Table 9

2006 Hoosier Link Cohort High School GPA

GPA Range	Frequency	Percent
3.00-4.00	19	20.4%
2.00-2.99	59	63.4%
Less than 2.00	0	0.0 %
Missing	15	16.1%
Total	93	100.0%

Table 10

2007 Hoosier Link Cohort High School GPA

GPA Range	Frequency	Percent
3.00-4.00	64	57.1%
2.00-2.99	43	38.4%
Less than 2.00	1	0.9%
Missing	4	3.6%
Total	112	100.0%

Expected family contribution. Hoosier Link students were not required to complete a FAFSA. Sixty-one percent (125/205) of all Hoosier Link students completed a FAFSA while in the Hoosier Link program. The 2006 cohort had 51 students file a FAFSA and the 2007 cohort had 74 file. Persistence data as related to expected family contribution is presented below. Information on number of IUB native and other IUB transfer student FAFSA filers was not available.

Persistence. Persistence was measured in this study as continuous progression of enrollment/registration from term to term and from academic year to academic year of only students who successfully transferred to IUB. The following data (Figure 3) shows persistence rates after transfer to IUB. The combined 2006 and 2007 Hoosier Link cohorts persisted at a 98.4% rate from first term to second term post-transfer. Fall to fall persistence was also studied. The 2006 Hoosier Link cohort persisted fall term to fall term at a 70% rate (66 persisted out of 75) and the 2007 Hoosier Link cohort persisted fall term to fall term at an 88% rate (35 persisted out of 50).

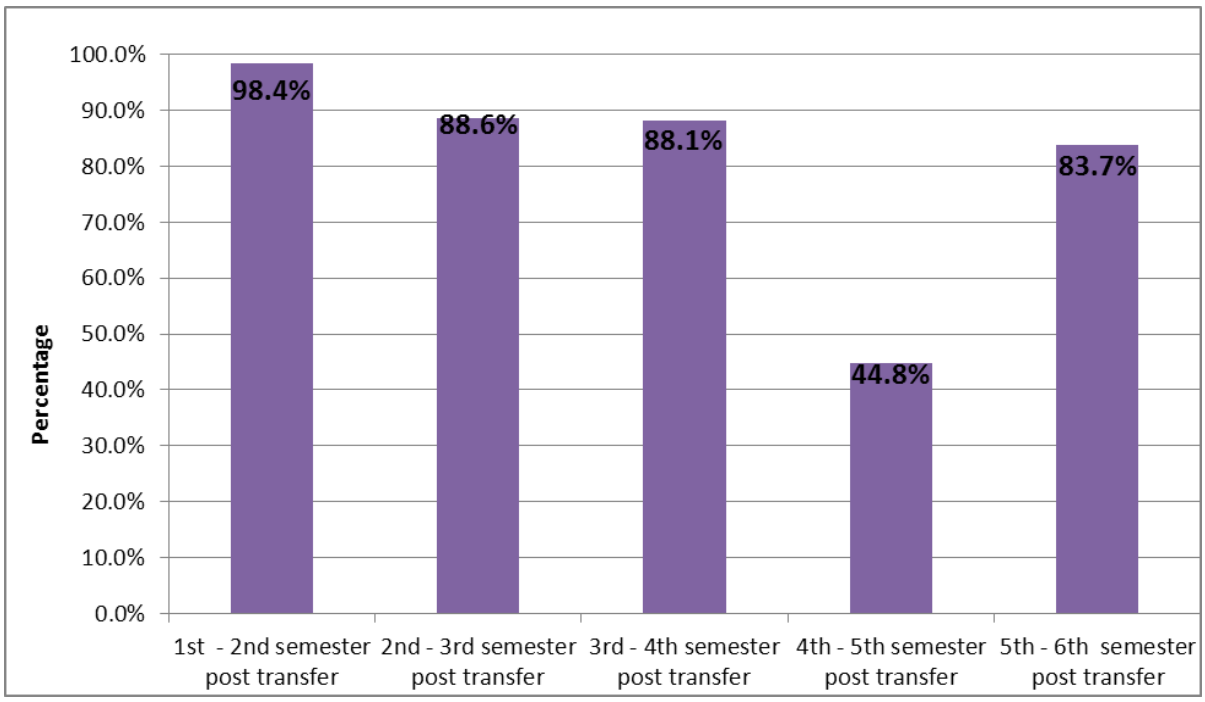

Figure 3. 2006 and 2007 Hoosier Link cohorts combined persistence rates term to term.

Comparison to IUB native and transfer students. Indiana University undergraduate retention report published fall term to fall term retention rates for beginning native and transfer students at the IUB campus. The 2006 Hoosier Link cohort persisted at a lower rate than IUB native and transfer students of the same year as seen in Figure 4 (70% Hoosier Link, 88.9% for

native, and 83% transfer; Indiana University, n.d.b). The 2007 Hoosier Link cohort persisted similarly to the IUB native and transfer students of the same year as seen in Figure 5 (88% Hoosier Link, 90.4% for native, and 86.6% for transfer; Indiana University, n.d.c). The 2007 Hoosier Link cohort showed greater persistence than IUB other transfer students in fall to fall by 1.4%.

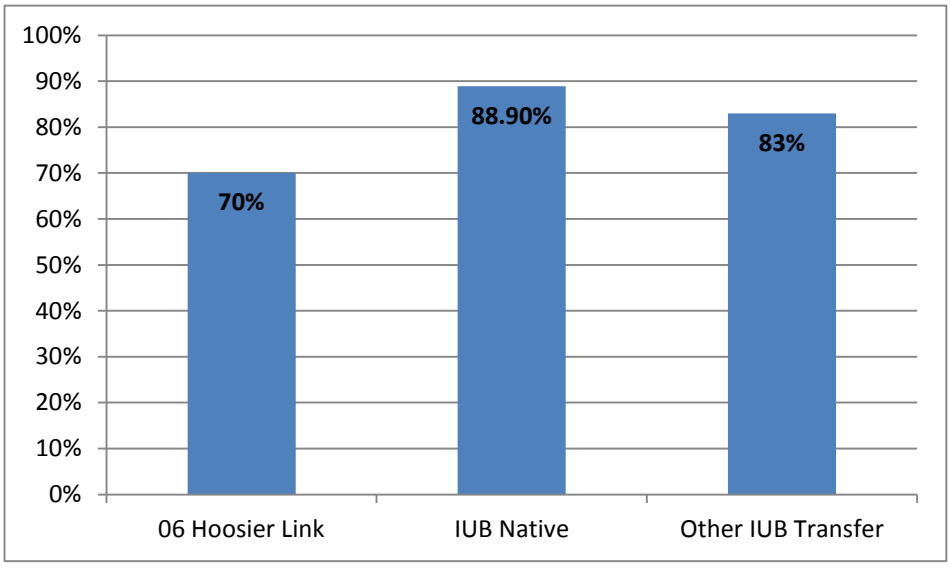

Figure 4. 2006 Hoosier Link cohort first year fall to fall persistence rates compared to IUB native and other IUB transfer students.

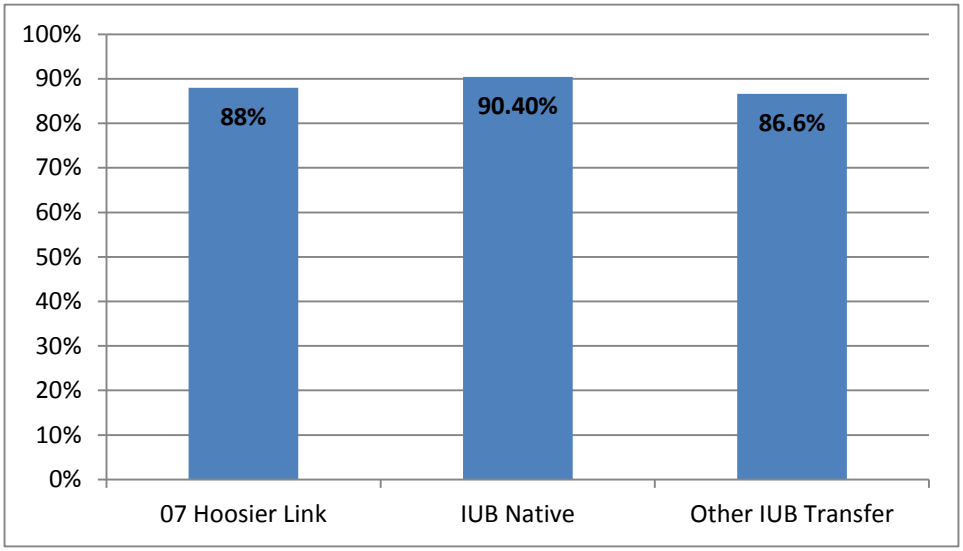

Figure 5. 2007 Hoosier Link cohort first year fall to fall persistence rates compared to IUB native and other IUB transfer students.

Characteristics of Hoosier Link students who persist and do not persist. Persistence through the fourth term post-transfer at IUB found little difference between genders. Women persisted at 76% rate and men at a 77% rate. The students' first year retention rates were equally similar for both men and women in the Hoosier Link program with both groups of students at 98% retention rates.

Expected family contribution was evaluated for Hoosier Link students who persisted and did not persist from fall term to fall term. As seen in Tables 11 through 13, the students who persisted had on average a higher mean expected family contribution. Expected family contribution was measured by the FAFSA.

Table 11

Expected Family Contribution Fall 2006 –Fall 2007

	N	Minimum	Maximum	Mean	Std. Deviation
Persisted	53	0	61,879.00	13,296.80	11,806.18
Did Not Persist	20	0	31,202.00	10,107.37	9,837.42
Difference			30,677.00	3,189.43	1,968.76

Table 12

Expected Family Contribution Fall 2007 –Fall 2008

	N	Minimum	Maximum	Mean	Std. Deviation
Persisted	94	0	61,879.00	12,360.57	11,673.75
Did Not Persist	30	0	36,592.00	12,070.54	10,790.67
Difference			25,287.00	290.03	883.08

Table 13

Expected Family Contribution Fall 2008 –Fall 2009

	N	Minimum	Maximum	Mean	Std. Deviation
Persisted	66	0	61,879.00	13,901.56	13,077.12
Did Not Persist	58	0	36,592.00	10,457.03	8,954.42
Difference			25,287.00	3,444.53	4,122.70

Standardized testing through the SAT showed that the math SAT score was larger on average for Hoosier Link students who persisted fall term to fall term. The students who persisted also had a smaller standard deviation for all SAT categories (except for math in fall 2006-fall 2007). Tables 14 through 16 show the SAT information for students who persisted and did not persist.

Table 14

SAT Scores Fall 2006 –Fall 2007

		N	Minimum	Maximum	Mean	Std. Deviation
Persisted	SAT reading	69	320	700	466.96	61.05
	SAT math	69	310	720	469.86	76.40
	SAT writing	66	270	560	449.70	52.54
	Read+math	69	720	1300	936.81	119.47
Did Not Persist	SAT reading	23	360	600	470.87	71.92
	SAT math	23	350	650	442.17	72.17
	SAT writing	21	360	550	453.81	52.96
	Read+math	23	760	1210	913.04	116.68

Table 15

SAT Scores Fall 2007 –Fall 2008

		N	Minimum	Maximum	Mean	Std. Deviation
Persisted	SAT reading	162	310	700	460.56	62.26
	SAT math	162	310	720	471.67	67.50
	SAT writing	157	270	680	454.14	60.03
	Read+math	162	710	1300	932.22	109.12
Did Not Persist	SAT reading	42	330	600	465.71	68.79
	SAT math	42	350	660	452.86	69.54
	SAT writing	39	350	610	463.85	65.12
	Read+math	42	750	1210	918.57	113.77

Table 16

SAT Scores Fall 2008 –Fall 2009

		N	Minimum	Maximum	Mean	Std. Deviation
Persisted	SAT reading	129	310	680	456.90	59.54
	SAT math	129	310	720	471.86	67.92
	SAT writing	127	310	680	456.61	58.73
	Read+math	129	710	1270	928.76	106.81
Did Not Persist	SAT reading	75	330	700	469.73	69.50
	SAT math	75	330	660	460.80	68.49
	SAT writing	69	270	610	455.07	65.48
	Read+math	75	720	1300	930.53	115.85

GPAs for Hoosier Link students who persisted from fall to fall terms was not surprisingly greater than those that did not persist. Tables 17 through 19 show last GPA at Ivy Tech prior to transferring and cumulative GPA when entering IUB.

Table 17

Grade Point Average Fall 2006 –Fall 2007

	N	Minimum	Maximum	Mean	Std. Deviation
Persisted					
Last GPA at Ivy Tech	70	0	4.0	2.72	1.10
Cum GPA when entering IUB	50	2.0	4.0	3.14	.50
Did Not Persist					
Last GPA at Ivy Tech	23	0	4.0	1.90	1.31

Table 18

Grade Point Average Fall 2007 –Fall 2008

	N	Minimum	Maximum	Mean	Std. Deviation
Persisted					
Last GPA at Ivy Tech	163	0	4.0	2.88	.96
Cum GPA when entering IUB	124	2.0	4.0	3.18	.47
Did Not Persist					
Last GPA at Ivy Tech	42	0	4.0	1.98	1.38
Cum GPA when entering IUB	1	2.83	2.83	2.83	0

Table 19

Grade Point Average Fall 2008 –Fall 2009

	N	Minimum	Maximum	Mean	Std. Deviation
Persisted					
Last GPA at Ivy Tech	129	0	4.0	3.00	.78
Cum GPA when entering IUB	111	2.0	4.0	3.16	.48
Did Not Persist					
Last GPA at Ivy Tech	76	0	4.0	2.19	1.39
Cum GPA when entering IUB	14	2.50	3.87	3.24	.42

Regression results.

Persistence. Standard simple linear regression was conducted to determine the accuracy of the independent variables (gender, SAT scores, high school GPA, race, remedial credit hours,

and pre-transfer GPA) predicting transfer student persistence from fall 2008 to spring 2010. Regression results indicate that the overall model did not significantly predict persistence of transfer students, $R^2 = 0.038$, R^2 $A_{dj.} = -0.040$, F (6, 74) = 0.488, $p = 0.816$. This model accounts for 3.8% of variance in persistence of transfer students. A summary of regression coefficients is presented in Table 20 and indicates that none of the six independent variables significantly contributed to the model for persistence.

Table 20

Coefficient of Model Variables

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
Model	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part
(Constant)	0.986	0.267		3.696	0			
Gender	0.027	0.081	0.039	0.329	0.743	0.021	0.038	0.038
HS GPA	0.126	0.133	0.109	0.945	0.348	0.11	0.109	0.108
Sat score	-0.15	0.16	-0.141	-0.919	0.361	-0.039	-0.11	-0.11
Race	-0.08	0.16	-0.064	-0.528	0.599	-0.025	-0.06	-0.06
Cum GPA when entering IUB	-0.11	0.187	-0.067	-0.564	0.575	-0.09	-0.07	-0.06
Remedial hours	-0.25	0.231	-0.157	-1.074	0.286	-0.076	-0.12	-0.12

Note. Dependent variable: persistence from fall 2008 to spring 2010.

Performance. The Hoosier Link cohort performance was measured by GPA. Tables 21 through 23 show the Hoosier Link students' pre-transfer GPA for those who successfully transferred. The two cohorts combined resulted in 81 (64.8%) of the students transferring to IUB with a GPA 3.0 or higher. It appears the 2007 cohort transferred to IUB with a larger percentage of students with a pre-transfer GPA over 3.0 (68% versus 60%).

Table 21

2006 and 2007 Hoosier Link Cohorts Combined Pre-transfer GPA

GPA Range	Frequency	Percent
3.00-4.00	81	64.8%
2.00-2.99	44	35.2%
Total	125	100.0%

Table 22

2006 Hoosier Link Cohort Pre-transfer GPA

GPA Range	Frequency	Percent
3.00-4.00	30	60.0%
2.00-2.99	20	40.0%
Total	50	100.0%

Table 23

2007 Hoosier Link Cohort Pre-transfer GPA

GPA Range	Frequency	Percent
3.00-4.00	51	68.0%
2.00-2.99	24	32.0%
Total	75	100.0%

Both Hoosier Link cohorts' GPAs were recorded for each term of enrollment before transfer and after transfer. Only the students who successfully transferred to IUB were captured in the transfer shock data. The review of the rate of increase or decrease in GPA was studied after transfer to determine what, if any, transfer shock had occurred. The results showed the first semester after transfer from Ivy Tech to IUB an astounding 72% of the combined Hoosier Link

cohorts experienced transfer shock. After transfer, these students saw a decrease or dip in the term GPA as compared to their pre-transfer cumulative GPA. Transfer shock was determined by comparing the students' last cumulative GPA pre-transfer to GPA in students' first term post-transfer. The rate of the continued degree in GPA declined as seen in Figure 6 below showing the rate of transfer shock decreased or showed recovery.

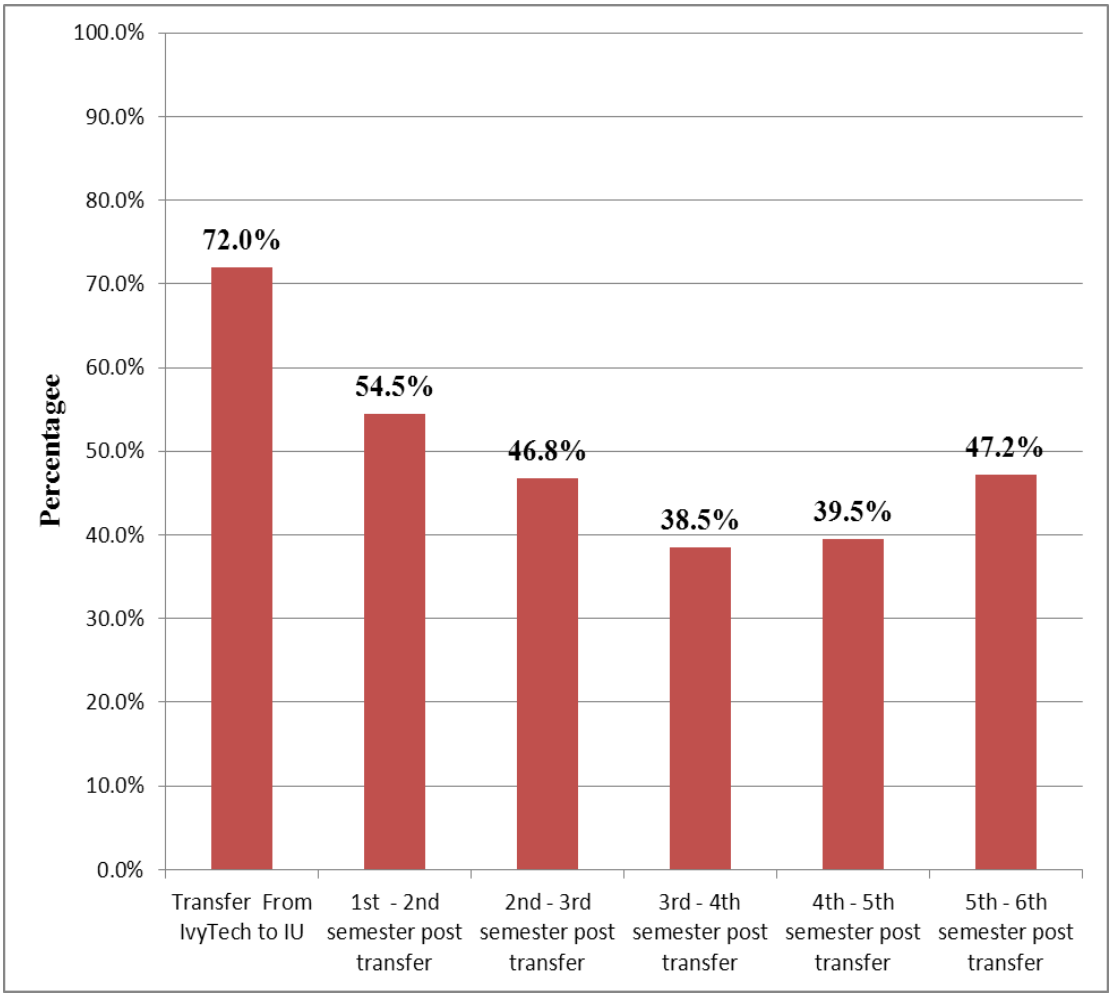

Figure 6. 2006 and 2007 Hoosier Link cohorts combined rate of transfer shock.

The percentage of GPA drop for both cohorts combined was an 11% decrease in GPA from their cumulative GPA pre-transfer and their first semester GPA at IUB. The 2006 Hoosier Link cohort experienced an 11.9% decrease in GPA and the 2007 Hoosier Link cohort

experienced an 11.7% decrease after transfer. Hoosier Link students' first GPA after transfer, while showing 72% with a dip in GPA, still resulted in 111 students (89%) with GPAs over 2.0. Compared to retention reports from IUB, the entire 2007 cohort at IUB found 92% with GPAs over 2.0.

Regression model for students who experienced shock first semester at IUB. Standard simple linear regression was conducted to determine the accuracy of the independent variables (gender, SAT scores, high school GPA, race, remedial credit hours, and pre-transfer GPA) predicting the persistent from fall 2008 to spring 2010 semester of students that experienced shock on arrival at IUB. Regression results indicated that the overall model did not significantly predict persistence of transfer students that experienced transfer shock in their first year at IUB, $R^2 = 0.066$, $R^2\ A_{dj.} = -0.036$, $F\ (6, 55) = 0.649$, $p = 0.691$. This model accounts for 6.6% of variance in persistence of transfer students that experienced shock. A summary of regression coefficients is presented in Table 24 and indicates that none of the six independent variables significantly contributed to the model for those students who experienced transfer shock.

Table 24

Regression Results for Students Who Experienced Shock First Semester at IUB

	B	Beta	t	P	Partial r
Gender	-.056	.079	-.580	.564	-.078
HSGPA	.196	.164	1.23	.224	.164
TotalSAT	-.172	-.154	-.771	-.771	-.103
Race	-.158	-.110	-.794	.431	-.106
PretrGPA	-.156	-.095	-.703	.485	-.094
Remcr	-.254	-.177	-.917	.363	-.123

Of the 61 Hoosier Link students who successfully transferred to IUB, women transferred in higher numbers with less transfer shock than men. Of all the women who successfully transferred, 51 students experienced a transfer shock (75%) of an average 0.65 GPA point drop in their first term at IUB versus their cumulative GPA prior to transferring. Hoosier Link men were not as successful with their performance as their female counterparts. Of the men who successfully transferred, 46 experienced a transfer shock (80%) of an average 0.75 GPA point drop in their first term at IUB versus their cumulative GPA prior to transferring.

Correlation results. Correlations between last GPA at Ivy Tech with post-transfer semester GPAs at IUB were calculated. A significant positive correlation was found between the students' last GPA at Ivy Tech and the successive semesters' GPAs post-transfer at IUB. A correlation for the data revealed that Ivy Tech GPA and post-transfer GPA at IUB were significantly related, $r = .64$, $n = 90$, $p < .05$. Table 25 shows the complete correlation results for pre- and post-transfer GPA.

Table 25

Correlation between Pre-transfer GPA and Post-transfer GPA

Measure		1 $n = 90$	2 $n = 90$	3 $n = 90$	4 $n = 88$	5 $n = 77$	6 $n = 70$	7 $n = 33$	8 $n = 28$
1. Last GPA at Ivy Tech	*r*	–	0.64	0.642	0.47	0.531	0.444	0.659	0.384
	p		0.00	0.00	0.00	0.00	0.00	0.00	0.04
2. First Term GPA at IUB	*r*		–	1.00	0.44	0.51	0.38	0.46	0.31
	p			0.00	0.00	0.00	0.00	0.01	0.11
3. 1st Term Post-transfer	*r*			–	0.43	0.51	0.38	0.47	0.31
	p				0.00	0.00	0.00	0.01	0.11
4. 2nd Term Post-transfer	*r*				–	0.60	0.43	0.30	0.38
	p					0.00	0.00	0.09	0.04
5. 3rd Term Post-transfer	*r*					–	0.45	0.58	0.37
	p						0.00	0.00	0.05
6. 4th Term Post-transfer	*r*						–	0.51	0.31
	p							0.00	0.11
7. 5th Term Post-transfer	*r*							–	0.67
	p								0.00
8. 6th Term Post-transfer	*r*								–
	p								

Findings

Data analysis showed that beginning Hoosier Link students struggled with successfully transferring to IUB with only 61% successfully transferring. Once transferred, Hoosier Link students struggled with their academic performance. Seventy-two percent (90 out of 125) experienced transfer shock (dip in their GPA) after their first semester post-transfer to IUB.

Even with this experience of a dip in GPA post-transfer, Hoosier Link students still were comparable to IUB native and transfer students in their first semester GPA (IUB with 92% of students with a GPA greater than 2.0, Hoosier Link with 89% of students with a GPA greater than 2.0). The Hoosier Link students did persist well (98.4% rate from first term post-transfer to their second term post-transfer). Persistence from fall term to fall term (70% for the 2006 cohort, and 88% for the 2007 cohort) was also determined for Hoosier Link students. Compared to IUB native students, both Hoosier Link cohorts did not persist as well from fall term to fall term (89% for both IUB 2006 and 2007 native students; Indiana University, n.d.b, Indiana University, n.d.c).

The independent variables showed no significance in explaining Hoosier Link persistence or performance. Hoosier Link students from the 2007 cohort persisted better than the 2006 cohort in fall-to-fall progression. The 2007 Hoosier Link cohort had a slightly higher retention rate than other IUB transfer students (88% to 83%). Positive correlation was found between the Hoosier Link students' pre-transfer GPA and post-transfer GPA for those who transferred and persisted.

Research questions. Research questions guided this study. Research question 1: What factors impacted Hoosier Link student persistence and academic performance after transferring to IU Bloomington? Results: Statistically, no independent variables showed significance toward persistence or performance for the Hoosier Link cohorts. However, pre-transfer GPA was positively correlated with post-transfer GPA.

Research question 2: How did admission type (Hoosier Link, IUB native, or other IUB transfer) affect performance and academic persistence of students? While Hoosier Link students did experience transfer shock, the 2007 Hoosier Link cohort persisted fall to fall as well as native

students and better than other IUB transfer students (2007 Hoosier Link: 88%, IUB native 88.9%, IUB transfer 83%). IUB native students for both years persisted better than all other groups reviewed.

Summary

A thorough review of the independent variables was discussed. Persistence and performance of the two Hoosier Link cohorts were measured and compared to IUB native and other IUB transfer students. While no independent variables were found to significantly impact persistence or performance, there was a positive correlation between pre- and post-transfer GPA for the Hoosier Link students.

Hoosier Link students did see only a 61% transfer rate to IUB. Once transferred, 72% of them experienced a dip in their GPA (transfer shock) in their first semester after transfer. Even with this dip in GPA, these students persisted at a 98.4% persistence rate from fall to spring terms and an average 79% persistence rate from fall to fall (70% for 2006 cohort, 88% for 2007 cohort). Chapter 5 will summarize the study, discuss key findings, identify issues and barriers, draw conclusions while tying theory to practice, and provide recommendations for future research.

CHAPTER 5

Conclusions and Recommendations

Data analysis determined that Hoosier Link students' demographic characteristics did not significantly contribute to or hinder persistence or performance once students transferred to IUB. Findings suggest that while Hoosier Link students did persist comparable to IUB native and other IUB transfer students, they did experience transfer shock. This dip in GPA in their first post-transfer term affected 72% of the Hoosier Link students who successfully transferred to IUB. This chapter will summarize the study, discuss key findings, identify issues and barriers, draw conclusions while tying theory to practice, and provide recommendations for future research.

Summary of Study

Statement of problem. Transfer and articulation are issues that affect many students moving from one institution to another. The transition may be a seamless process or may be problematic depending on the transfer process and the relationships between the two- and four-year institutions. The percentage of students who persist from a two-year to four-year institution who desire a bachelor's degree is alarmingly low (Handel, 2007). Even after transferring, students still have a risk of not persisting once at the four-year institution. It is well documented that transfer shock, as evidenced by a drop in grades, occurs during the first semester after transfer (Hills, 1965; Keeley & House, 1993; Townsend, 2002). Transfer shock causes students

to become discouraged with their progress toward their bachelor's degree and causes some students not to persist. Various programs and services exist to support transfer students with uncertain success. A problem that exists today includes conflicting research regarding transfer student success and inadequate evaluation of cooperative programs with co-enrollment for students.

Indiana has adopted a strong transfer initiative to increase the completion rate of baccalaureate degrees while reducing the cost of obtaining educational credentials (ICHE, 2007b). The Hoosier Link program between IUB and Ivy Tech Bloomington is a step toward the state initiative. Institutional partnerships are a new phenomenon in Indiana and research is limited regarding these programs.

Purpose of study. The purpose of this study was to determine the degree to which Ivy Tech Bloomington students in the Hoosier Link program who transferred to IUB have been able to perform and persist as full-time IUB students. This research identified Ivy Tech Bloomington students in the Hoosier Link program in 2006 and 2007 and investigated if they experienced transfer shock after their first full semester at IUB as measured by academic performance at IUB. This study measured the severity of transfer shock and its duration. Additionally, persistence from term to term and academic year to academic year were studied. This study compared Hoosier Link students to IUB native students and other IUB transfer students through aggregated publicly published data.

Variables. This study examined the dependent variables of persistence and performance and independent variables to determine if statistical significance relationships existed between the two. Independent variables included gender, race, high school cumulative GPA, SAT scores, expected family contribution, and remedial credits earned. Dependent variables were persistence

as measured in continued enrollment from term to term and year to year and performance as measured by GPA.

Key Findings

This study was driven by two major research questions. Questions were based on Astin's (1993) model of inputs, environment, and outcomes. Research question 1: What factors impact Hoosier Link student persistence and academic performance after transferring to IUB? Through data analysis, no significance was found between independent variables (demographic variables) and Hoosier Link student persistence and academic performance. However, a further in-depth review of each independent variable will be discussed. Research question 2: How does admission type (Hoosier Link, IUB native, or other IUB transfer) affect academic performance and persistence of students? Upon review of comparison of Hoosier Link cohort results with IUB retention reports, it appears that IUB native students persisted better than both Hoosier Link cohorts and IUB other transfer students for both years 2006 and 2007. The 2007 Hoosier Link cohort did persist better than other IUB transfer students in first-year persistence. Persistence was measured by continued enrollment from term to term and academic year to academic year. Persistence is a function of student motivation to continue to return and register for courses.

Results from this study on the Hoosier Link program are similar to IUPUI results of their Passport Program. Passport students who transferred to IUPUI from Ivy Tech Indianapolis in the fall 2004 attained slightly lower GPAs in their first year at IUPUI compared to students from other major feeder institutions (IUPUI, 2006). Even with experiencing transfer shock, the Passport students were retained at a higher rate of 61% than other transfer students to IUPUI. While Passport students are not specially selected into the program, they were co-enrolled at both Ivy Tech Indianapolis and IUPUI.

Hoosier Link students were selected by the IUB Office of Admissions. The demographic composition of these students was similar to that of other IUB native students. The groups of students studied were fairly homogeneous, as are most IUB students admitted, and comparable to the demographic composition of Bloomington and Indiana in general.

While the results to the research questions did not find the independent variables to be significant, 72% of Hoosier Link students did experience transfer shock in their first term post-transfer. One must investigate further why this occurred. Even with experience of transfer shock, Hoosier Link students persevered and continued to persist after transfer (98% persisted from first term post-transfer to second term post-transfer; 70% fall-to-fall persistence for 2006 cohort and 88% for 2007 cohort).

Independent variables. The Hoosier Link program began with 205 students in 2006 and 2007 combined. Sixty-one percent (125 out of 205) of these students successfully transferred to IUB through the Hoosier Link guaranteed transfer option. The persistence and performance of these 125 transfer students were measured in this study. Independent variables (gender, race, high school cumulative GPA, SAT scores, expected family contribution, and remedial credits) in this research study are considered inputs in Astin's (1993) I-E-O model. Although regression analysis did not find significance in the independent variables predicting successful student persistence and performance, each independent variable deserves review.

Gender. More women than men are enrolling in higher education nationally today. According to the NCES, 26% more women enrolled in higher education than men in the fall 2009 (U.S. Department of Education, 2011). This was the case with the Hoosier Link program as well, with more women than men (68 versus 57) transferring to IUB through the program.

Of the 61 Hoosier Link students who successfully transferred to IUB, women transferred in higher numbers and with less transfer shock than men. The 2006 cohort saw the same percentage of transfer rate between men and women (53%). The 2007 cohort women were more successful in transferring than their male counterparts (71.88% versus 60.42%). Of all the women who successfully transferred, 51 students experienced a transfer shock (75%) with an average drop of 0.65 GPA in their first term at IUB. Hoosier Link men were not as successful with their academic performance as their female counterparts. Of the men who successfully transferred, 46 experienced a transfer shock (80%), averaging a drop of 0.75 GPA in their first term at IUB.

Persistence through the fourth term post-transfer at IUB found little difference between genders. Women persisted at 76% rate and men at a 77% rate. The students' first year retention was equally similar for both men and women in the Hoosier Link program with both groups of students at 98% retention rates. The Hoosier Link results of female participant success are encouraging. These results differ from other studies and literature regarding gender and persistence and performance. Luo, Williams, and Vieweg (2007) found with their study of 1,713 students who transferred that female students were predicted to be about 17% less likely to return than male students. IUB also reported more men than women persisting to their second year for both 2006 and 2007 (Indiana University, n.d.b, n.d.c).

Race. The small sample size available for this study and the homogeneous nature of the students selected into the Hoosier Link program from the IUB Office of Admissions show little diversity in race. The racial composition of the Hoosier Link students was similar to IUB's native and transfer student population. Transfer rates, transfer shock, and persistence data by

race were evaluated with descriptive statistics. Had a larger sample of African American and Hispanic students been available, differing results may have occurred.

Transfer rates by race were determined. Even with the small sample size, 85% (6 out of 7) African American Hoosier Link students successfully transferred to IUB and 100% (6 out of 6) Hispanic Hoosier Link students successfully transferred. Caucasian Hoosier Link students saw a 59% (112 out of 189) transfer rate. Even though the small sample size may positively skew the transfer success of African American and Hispanic Hoosier Link students, these data show greater success of transfer compared to their Caucasian peers.

Transfer shock was experienced by all categories of race in the Hoosier Link program. Sixty-seven percent (4 out of 6) African American Hoosier Link students experienced transfer shock with a 0.52 point average dip in their GPAs. All (100%) Hispanic Hoosier Link students experienced transfer shock with a 0.70 point average dip in their GPAs. Caucasian Hoosier Link students experienced 77% student transfer shock with a 0.70 point average dip in their GPAs. Even with a small sample size, African American Hoosier Link students experienced a reduced transfer shock than other racial groups studied.

Student persistence to their second year or third term post-transfer was evaluated by race. African American Hoosier Link students persisted at an 83% rate, Hispanic Hoosier Link students persisted at an 83% rate, and Caucasian Hoosier Link student persisted at an 86% rate. Hoosier Link African American students persisted better than both IUB 2006 and 2007 data reported (83% versus 81%; Indiana University, n.d.b, n.d.c).

High school cumulative GPA. Selective admission institutions such as IUB utilize high school cumulative GPA and high school ranking in their selection processes. Although high school ranking was not available for the Hoosier Link study, high school cumulative GPA was

reviewed. Even though regression analysis did not find high school cumulative GPA as being a significant variable in predicting persistence and performance, it is valuable to review in further detail.

Hoosier Link students who successfully transferred to IUB saw a slightly higher high school cumulative GPA than those who did not transfer (2.96 versus 2.89). Once transferred to IUB, Hoosier Link students with higher high school cumulative GPAs ranging from 3.00 to 4.00 saw less transfer shock than the others with GPAs ranging from 2.00-2.99 (0.63 dip versus 0.81 dip). This is not surprising since research showed students with higher high school GPAs performed better (Adelman, 2005).

SAT scores. Hoosier Link students were found to have lower SAT scores than IUB students as reported in the IUB 2006 and 2007 annual fact books. This is not surprising considering SAT scores are one component in the IUB admission decision. One of the reasons the Hoosier Link students were offered the Hoosier Link program was because they did not meet direct IUB admit criteria but were seen as having potential due to high school ranking and high school cumulative GPA. The SAT has been heavily studied for its ability to predict achievement in college (Camara & Echternacht, 2000; Geiser & Studley, 2002; Mattern & Patterson, 2009).

Although Hoosier Link student SAT scores were not a significant predictor of persistence and performance, the scores are interesting to review. As discussed in Chapter 4, Hoosier Link students who persisted had larger SAT math scores than those who did not persist. Tables 14 through 16 show the fall-to-fall persistence rates with SAT score information.

Expected family contribution. Socioeconomic status is typically measured by income levels. With that information unavailable, student expected family contribution is the next best option because it measures the family's financial health. All Hoosier Link students did not

completed the FAFSA. Of those who completed a FAFSA, expected family contribution was found not to be significant in predicting persistence and performance. Persistence data related to expected family contribution are found in Tables 11 through 13 in Chapter 4. Student who persisted fall to fall terms had on average higher mean expected family contributions reported by an average of $1,274.

Remedial courses. Literature explained that remedial coursework can discourage students (Adelman, 1998; CCCSE, 2008; Jepsen, 2006; Melguizo et al., 2008). Hoosier Link students who enrolled in remedial coursework due to placement on assessment tests saw discouraging results as well. Of the Hoosier Link students who successfully transferred to IUB, 25 enrolled in an average of 4.3 remedial credits. Thirty-seven Hoosier Link students who did not successfully transfer to IUB had an average of 5.5 remedial credit hours. Once students transferred to IUB, the students who had remedial coursework persisted to the third term post-transfer at a 76% rate. They also experienced transfer shock. Sixty-four percent of them experienced transfer shock with an average of a 0.75 dip in their GPA post-transfer.

Student surveys. Student surveys were conducted with both 2006 and 2007 Hoosier Link cohorts by the IUB Office of First Year Experience Programs. While these results at the time given were to help evaluate the program for future modifications, they can also be reviewed to find themes to accompany the data already presented. A total of 32 2006 Hoosier Link students and 60 2007 Hoosier Link students participated in these surveys. Survey results showed that 2006 cohort students wanted to know more about the Hoosier Link contract and participation agreement requirements (65.6%) and financial aid information (46.9%; Indiana University, 2007a). After rating their overall experience with the Hoosier Link program, 57% either strongly agreed or agreed that they were pleased with their decision to participate in the program (Indiana

University, 2007a). Students were not satisfied with the workshops they were required to attend with 58% disagreeing or strongly disagreeing that the workshops taught any useful skills (Indiana University, 2007a). Student comments were collected on the Hoosier Link survey and ranged from very positive to very negative. Positive comments pertained to advising, motivation to meet guarantee transfer option, and still experiencing IUB as a student (Indiana University, 2007a). Negative comments ranged from advising, contract restrictions, financial aid, and billing (Indiana University, 2007a).

The 2007 cohort survey found similar results. When asked about their initial reaction to being selected to the Hoosier Link program, 42% responded positively and 40% responded negatively (Indiana University, 2008d). When asked if offered they would participate in the Hoosier Link program again, 75.4% responded yes and 12.3% responded no (Indiana University, 2008d). When asked about their biggest challenges with the program, the 2007 cohort answers ranged from transportation issues and advising to financial concerns. Transportation issues pertained to distance between campuses and utilizing two bus systems to travel from institution to institution. Advising and course scheduling concerns pertained to late class scheduling due to orientation dates and cobbling together a schedule with both institutions with courses that transferred to IUB. Financial concerns pertained to financial aid disbursement and bill payment schedules at IUB (Indiana University, 2008d). When asked if at the end of Hoosier Link they felt ready to be a full-time student at IUB, students resoundingly responded yes (89%). No one responded negatively.

Environment. Hoosier Link students experienced life on both the four-year residential campus and the smaller atmosphere of a community college while co-enrolled. As Astin's 1999 study suggested, the most significant environmental factor affecting persistence is residential

living. The Hoosier Link cohort students experienced this positive effect. Other environmental aspects of detailed orientations, advising, and workshops had an impact on student outcomes. IUB residential services even created a food service kiosk at Ivy Tech Bloomington so Hoosier Link students could easily utilize their meal plans to eat while on the Ivy Tech Bloomington campus. Peer group involvement through the cohort environment assisted in personal peer relationships that positively influenced Hoosier Link students.

Tailored programs, such that Tinto (1987) suggested, have a high likelihood of encouraging persistence to finish degrees. The Hoosier Link program provided that tailored hand hold that many students need. Community colleges typically provide more personalized services to students. As Townsend and Wilson (2006) stated, some students feel the fit of transfer might have been easier if they had received "a hand hold for a little bit during their first few weeks or semester at the university" (p. 450).

Students did feel positively about the program as seen by survey comments. A 2007 cohort member stated, "It was easier attending a community college the first year with only one IU class. It made the transition easier because it's smaller and easier to adjust" (Indiana University, 2008d, p. 11). Another student stated, "Loved it [the program], small classes at Ivy Tech and a large one at IU allowed my transition to be easier" (Indiana University, 2008d, p. 12).

Issues and Barriers

Transfer shock. Hoosier Link students who successfully transferred to IUB experienced a dip in their GPAs in their first term post-transfer. Seventy-two percent of these students experienced on average an 11% decrease in their GPAs first term after transfer. Regression analysis determined no independent variables could explain this dip in GPA.

While transfer shock is measured by the drop in GPA post-transfer, the shock may be a manifestation of the shock experienced in moving from one environment and culture to another. The environment at Ivy Tech Bloomington provided friendly student services with one-to-one counseling and advising. Smaller class sizes were the norm at Ivy Tech with an average of 22 students per class (Ivy Tech, 2011). Faculty at Ivy Tech was predominantly adjunct instructors who brought real world examples to the classroom with a focus on applied practical learning. Ivy Tech Bloomington campus is relatively small with all services found in one location in one building.

IUB is a large, division one four-year research institution that spans almost 2,000 acres. Student services are in a number of locations throughout campus. According to *U.S. News and World Report* (2011), IUB reported in 2010 that 66.2% of all classes served more than 20 students. The vast difference in campus and college environments may have contributed to students' adjustment to full-time enrollment at IUB post-transfer.

The dip in GPA may be due to the rigor of full-time coursework at IUB. Although students were given a taste of IUB course rigor through one class per term prior to full transfer, they did mainly experience smaller classrooms with personalized faculty attention while at Ivy Tech Bloomington. A 2007 Hoosier Link cohort student responded in a survey that "I feel that Ivy Tech is a lot like high school and that IU is not" (Indiana University, 2008d, p. 12).

The large number of students who experienced transfer shock may have been due to faculty transfer subjective bias. Specifically, subjective views are related to or originated from a person's emotions and prejudices (Soukhanov,1988). As stated in *Webster's II New Riverside University Dictionary* (1988), bias is a mental tendency or "inclination or preferences that interferes with impartial judgment: prejudice" (Soukhanov, 1988, p. 169). There are subjective

behaviors attributed toward particular groups of individuals when an observer is biased against them because the perception of another group is often negative or skewed.

Research is available regarding subjective bias in education. Shepard (1995) found an issue of subjectivity in teacher decision making when considered from a cognitive or information processing view. Rather than focusing on the contents of teacher beliefs and cognitions, the underlying cognitive processes that drive subjective inference and bias in teacher decision making needs to be first identified and then contained (Shepard, 1995).

Community colleges and their students face bias, as seen in a study by Dowd, Cheslock, and Melguizo (2008) where elite schools shrug off community college transfer students. Although elite and private colleges and universities value access for students with low socioeconomic status, they prefer transferring these students in from four-year institutions instead of two-year community colleges (Dowd et al., 2008). Pascarella and Terenzini (2005) understood that two-year transfer students have to adapt to the four-year institutional environment and its normative influences of peers and faculty members. Tinto (1993) also explained that the outcome of departure for transfer students may be due to the lack of integration the individual shares in the normative attitudes and values of peers and faculty in the receiving institution. That membership into the new four-year community requires students abide by the formal and informal structural requirements of the new environment.

Four-year research institution faculty commonly holds prejudice and lack of respect for community college faculty (AACC & AASCU, 2004). Steele (1997) described that students' academic identification is formed between the student and the school where the students' self-regard significantly depends on their achievement. Students need school identity to survive the ebb and flow of their academic lives and sustain motivation. In the case of Hoosier Link

students, they are told from the beginning in orientation that they must identify themselves as Hoosier Link students when talking with university or college personnel. Students look for belonging and if there is a stereotype threat against them (such as being seen as inferior to other groups of students) then they may come to actualize that bias. Stereotype threat, according to Steele (1997), is "a situational pressure 'in the air' so to speak, [that] affects only a sub portion of the stereotyped group and, in the area of schooling, probably affects confident students more than unconfident ones" (p. 617).

Wawrzynski and Sedlacek (2003) stated that the growing student transfer population is often seen by researchers and practitioners with a singular perspective, which consequently results in a stereotyping and myths of the transfer population. Transfer students are often labeled as not wanting to engage with their new institution. This stereotype or perception of bias comes out in a comment from a 2007 Hoosier Link cohort member in a student survey when it was stated, "Many times I thought the program was helpful, but many times I felt as though the program was 'talking down' to us, as though none of us were equipped to go to college" (Indiana University, 2008d, p. 2).

The literature also addresses faculty influence on student persistence and performance. Townsend (1993) found student barriers during a qualitative study with transfer students that included faculty teaching practices, classroom atmosphere, and student perceptions. Students reported unwillingness by faculty to provide assistance when students identified a lack of knowledge. This was a sharp contrast from the supportive faculty the students experienced at the community college.

Program issues.

Financial aid. Hoosier Link students were considered Ivy Tech students with Ivy Tech as their home institution for financial aid purposes. Ivy Tech and IUB disburse their financial aid very differently. IUB generally disburses financial aid 10 days before the term, whereas Ivy Tech does not disburse until the fourth or fifth week into the term. This delayed posting of financial aid through Ivy Tech for Hoosier Link students caused some financial issues as refunds come to students at Ivy Tech much later than their four-year institution counterparts. While Ivy Tech tuition, fees, and books could be used with pending financial aid, IUB charges could not. Money was not transferred from Ivy Tech to IUB, and IUB billing cycles were not adjusted for Hoosier Link students. Therefore, Hoosier Link students had to make payments at IUB prior to receiving their aid from Ivy Tech. This created hardships for some students: "Financial aid has been painful, IUB charges late fees when the financial aid is being processed by Ivy Tech and one is unable to do anything about it," and "[my experience] was horrible, my money from Ivy Tech takes a long time to come in so I am always late for IU and miss their deadline. I even got an eviction letter from IU" (Indiana University, 2008d, p. 17).

The Hoosier Link program resulted in significant cost savings to the Hoosier Link students. With Ivy Tech tuition in 2007 at $91.30 a credit hour and Indiana University with a $218.53 per credit hour, Hoosier Link students saw a 58% decrease just in tuition costs while in the program (Ivy Tech Community College, 2007; Indiana University, 2007c). The full cost of the program, however, may not have been understood by students going into the program.

Additional financial issues came for students who were Twenty-first Century Scholars. Hoosier Link students who were in the Twenty-first Century Scholarship program through the State of Indiana were not eligible for an IUB covenant program that other IUB students were

eligible for. This covenant program was an IUB program where all residential costs were covered with IUB institutional funds for Twenty-first Century Scholars. Housing is a substantial cost for all students, typically more expensive than tuition and fees.

Program restrictions. The Hoosier Link program had a very specific strict contract that was reviewed during student orientation. Students signed these participation agreements, found in Appendix B. As feedback was solicited from the cohorts through their survey, some complaints were expressed regarding this agreement. One 2006 cohort member stated, "Contract is way too demanding with workshops and certain requirements that have to be met" (Indiana University, 2007a, p. 1). Students expressed disappointment that they could not participate in Greek life on the IUB campus. In fact, a few students were dismissed from the Hoosier Link program for participating in these activities.

Transportation. Transportation was a concern for many students due to the distance of IUB to Ivy Tech of approximately four miles. While there was bus transportation, it required a transfer from one bus system to another to make their way to the Ivy Tech Bloomington campus. Some students utilized their own vehicles but then parking remained a concern. Others expressed concern with transportation and class scheduling between the two institutions. Hoosier Link students did receive free parking at the Ivy Tech Bloomington campus and a free bus pass for the rural bus that went to Ivy Tech. Hoosier Link students did, however, have to pay the transportation fee and parking permit fees at IUB.

Academic concerns. Academic term start dates were not the same for both institutions. While this allowed for early arrival in the residential facilities for Hoosier Link students, it also came with additional costs. Hoosier Link students were charged an early arrival fee due to this semester start date difference.

Students expressed concerns about academic advising. One 2006 cohort member stated, "The advisor here was very uneducated on the Hoosier link program and didn't really help too much at all" (Indiana University, 2007a, p. 2). Math requirements differed between both institutions, which caused some confusion. Different assessment testing was also completed at both institutions. These differences could have caused advising discrepancies since students had advisors assigned to them at both Ivy Tech Bloomington and IUB.

Students seemed concerned about their Ivy Tech grades not transferring. Academic credit transferred to IUB and not students' GPA. This is typical for transfer credit between higher education institutions. Additionally, remedial coursework taken at Ivy Tech did not transfer and was not included in the credit hours in determining the guaranteed transfer to IUB. While this information may seem commonplace to administrators, it could have been better explained during orientation.

Issues and Limitations

The data provided consisted of sporadic information regarding intended academic majors. Studies (Carlan & Byxbe, 2000; Cejda, 1997; Cejda et al., 1998; Johnson, 2005) showed that academic major has a significant impact on retention and performance such as transfer shock. The majority of the students who had academic majors listed were listed as undecided or general studies. Pre-medical students were screened out of the program because of transfer issues allowing them to be eligible for those degrees.

Hoosier Link students transferred to IUB during different semesters. Therefore, data were recorded by terms pre-transfer and terms post-transfer. Because of this limitation, regression analysis was completed with both Hoosier Link cohorts combined. These different

start dates limited any potential correlation with significant events or activities that may have occurred on Ivy Tech Bloomington and IUB campuses during each specific semester.

The sample size provided was limited to two years of Hoosier Link student cohorts. These cohort sizes were determined by IUB. The 2006 and 2007 Hoosier Link cohorts are now nearing or have completed graduation. At the time of data gathering, graduation statistics were not available.

Initially, detailed student information was sought on IUB native and other IUB transfer students from other institutions and specifically other transfer students from Ivy Tech Bloomington. This information was difficult to obtain. Therefore, aggregate published data from IUB was utilized to draw comparisons against Hoosier Link data. Not all the IUB compared students resided in the residential facilities and a small portion were not in the same age group as the Hoosier Link students.

The 2006 and 2007 Hoosier Link cohort populations studied were fairly homogeneous. Had there been more minority students, the analysis might have produced more robust effects for ethnicity/race. The main implication of the overwhelmingly Caucasian sample is that the Hoosier Link program needs to reinforce efforts to increase the diversity of the students selected into the program.

Implications and Recommendations

The Hoosier Link program was created and designed to provide opportunity for students who potentially would not be direct admits to IUB to still experience the IUB campus life. The program set out to provide assistance through workshops and individual advising to increase the persistence and performance of transfer students between Ivy Tech Bloomington and IUB. Although the transfer rates were disappointing with only 53.8% of the 2006 cohort and 67% of

the 2007 cohort successfully transferring to IUB, their overall persistence was good after transfer. Hoosier Link students did experience transfer shock with their grade point averages dipping after transfer. The severity lessened as the students progressed semester to semester, as seen in Figure 6.

Recommendations for administrators. The premise of the Hoosier Link program was to provide the opportunity to students to eventually transfer to IUB who were borderline on direct admission to IUB. One way to increase the likelihood of increased transfer and success is to increase the quality of the student selected (i.e., higher high school GPA and SAT scores). This, however, could limit the access that the program has strived for.

Mid-term grade review is a positive way to identify where students may need interventions to ensure success. Retention specialists at Ivy Tech and/or IUB could intervene with students to make recommendations. Recommendations such as required tutoring and/or ensuring students are not working over the required limit on the contract would be helpful. The 2008 SENSE survey found that many students did not take advantage of student support services because they did not know they existed and they did not know how to access them (CCSSE, 2008). Programs such as Hoosier Link provide that information to students and could even require the use of student support services.

To lessen the transfer shock factor, perhaps peer mentors who are previous successful Hoosier Link students would be helpful. The 2006 and 2007 Hoosier Link cohorts were disbursed throughout residential facilities on the IUB campus per their choice. Astin's (1993) I-E-O theory emphasizes the impact of the residential component of a traditional four-year residential university. A Hoosier Link learning/living community would build cohesion with the cohort and perhaps even reduce transportation issues. Living and learning communities with

previous Hoosier Link resident assistants (RAs) may also help with specific programming that would allow for the elimination of the mandated workshops.

Hoosier Link cohort support currently ends after the student's transfer to IUB. Perhaps a continued support network for these cohort members to ensure successful transition to the four-year environment would be beneficial and increase success and persistence rates. Even though Hoosier Link students attended an IUB orientation prior to their freshman year in the program, perhaps a transfer orientation would be helpful for their transition to full-time IUB student life. Periodic reunions and status updates for these cohort members may also be beneficial.

The Hoosier Link program should not be seen as a disappointment to students who are not directly admitted to IUB. This program could be seen as a highly selective and sought-after program. The reduction in costs of the program (specifically Ivy Tech tuition and fees compared to IUB) and specialized/personalized treatment with advising could be highlighted. Perhaps a statewide marketing campaign would be beneficial to promote the program in a positive light.

Recommendations for faculty. Faculty participation in the selection, orientation, and advising of Hoosier Link students would be useful for both faculty members and students. This will allow earlier contact and relationship building early in the Hoosier Link program. Faculty mentors from IUB and Ivy Tech Bloomington for groups of Hoosier Link students would assist in the elimination or reduction in transfer shock and faculty bias. Joint faculty and advisor meetings between IUB and Ivy Tech Bloomington would help eliminate any bias that may exist between faculty at both institutions.

Recommendations for students. Students should feel pride in being selected in the Hoosier Link program. This cost-effective program can give students a guaranteed transfer into IUB with specialized programming. Students should utilize and participate in student support

services such as tutoring and workshops. Residing in a living/learning community will help Hoosier Link students establish relationships with other Hoosier Link students and may assist in transportation and study groups. Hoosier Link students who successfully transfer to IUB should remain good candidates for future mentoring with incoming Hoosier Link students.

Implications for policy and practice. Hoosier Link is a cooperative effort between IUB and Ivy Tech Bloomington. Review of cohort data will allow for program adjustments to be made. Determining a clear purpose of the program will allow for specific outcomes sought. If access is a valued component of the Hoosier Link program, then allowing Ivy Tech Bloomington to promote and select Hoosier Link cohort students would perhaps bring more diversity to future cohorts.

Policies regarding financial aid disbursement and billing should be reviewed for Hoosier Link students. This would eliminate many of the non-educational distractions that Hoosier Link students faced. Additional funding for Hoosier Link scholarships and Twenty-first Century Covenant should be investigated.

Selection of college-ready students to participate in the Hoosier Link program may be beneficial. Elimination of remedial coursework would allow for quicker transfer. Additionally, block scheduling for Hoosier Link students may enhance course availability and reduction of transportation issues. This type of scheduling would promote faculty/student connectedness and study group creation. It would also allow for a smoother orientation program where registration of courses would be streamlined.

Recommendations for Further Research

This study was limited in scope due to use of the first two Hoosier Link cohorts. Additional studies would allow for increased information regarding the partnership between

Indiana University and Ivy Tech Community College. Many students transfer to IUB from all 14 regions of Ivy Tech. A thorough review of all Ivy Tech transfer students to IUB may determine how successful the Hoosier Link program was compared to other Ivy Tech transfer students. This type of study would possibly determine any regional differences based on the Ivy Tech campus that the student transferred in from.

Other transfer programs exist in Indiana between Ivy Tech Community College and other four-year public institutions. A comparison of programs such as the Passport Program between Ivy Tech Indianapolis and IUPUI, DegreeLink between Ivy Tech statewide and Indiana State University, and the Connect Program between Ivy Tech statewide and Ball State University would be interesting. Although these programs do not include a residential component and may not be consistent with co-enrollment of students, it would be stimulating to see how they stack up to the Hoosier Link program for persistence and performance.

Academic major as a variable was seen in research studies discussed in the literature review (Carlan & Byxbe, 2000; Cejda, 1997; Cejda et al., 1998; Johnson, 2005). Research showed academic major to affect persistence and performance. Although this information was unfortunately not available in the data set provided for this study, it would be valuable information for further research.

The survey information provided by the IUB Office of First Year Experience gave valuable insight to the students' feelings regarding the program. A further qualitative study of Hoosier Link students would reveal other themes for success and evaluation for the program. Survey themes then could be used as variables to determine if significant. As students are nearing completion or have graduated, a retrospective review of the program would be valuable. Hoosier Link 2006 and 2007 cohort graduation information should be available soon. It would

be interesting to see how the Hoosier Link students' graduation rates compare to IUB native and other IUB transfer students.

With the Hoosier Link program moving into its sixth year, a comprehensive study of all Hoosier Link cohorts after 2007 would be fascinating as well. Changes to the program were implemented after the beginning of this research study. Reviews of the effectiveness of those changes after the 2007 cohort have not been completed.

Attrition or lack of completion is a common topic today in the higher education funding debate. A review of what caused Hoosier Link students not to persist to transfer and completion would be valued. This study did not consider Hoosier Link students who transferred elsewhere. Evidence from records showed that some students eventually transferred to IUB outside of the Hoosier Link program. A more in-depth review of all the students who began in the Hoosier Link programs and what happened to them could be complemented by Tinto's (1987) model on student attrition.

Summary

Community colleges have begun to operate under a culture of evidence. The evidence is being used to transform practices and policies in the community college setting. The Hoosier Link program provided another alternative to access to higher education for the students selected. College students today are transferring and swirling between institutions more than ever. Transfer programs such as Hoosier Link are becoming commonplace today. Increasing the number of students who persist and graduate has become a larger focus in higher education. Transfer programs can assist in that goal by moving students through the education pipeline. Theory shows that inputs and environment impact outcomes and students depart higher education for a number of reasons that are preventable.

This study analyzed if student input variables were significant for Hoosier Link student persistence and performance. Although the results did not prove the independent variables to be significant, other results required further review. Transfer shock was seen with the Hoosier Link students and can be explained in a number of ways. Further research could be done to determine significance of other factors.

According to Astin (1975, 1991), use of his model reveals to researchers how activities can enhance the understanding of student development and is ideal for educational program assessments. Programs such as cohort-based programs like Hoosier Link where environmental components include student workshops, specific course selection, orientations, and residential living play a role in the I-E-O model. Recommendations to improve the Hoosier Link program fit well into Pascarella and Terenzini's (2005) causal model that complements the I-E-O model. By providing the students interactions with their environment, such as interaction with faculty, college staff, and peers, Pascarella and Terenzini suggested that institutions' structural and organizational characteristics influence the student's environment and hence student performance (outcomes).

The role of the community college continues to increase in higher education nationwide. Transferring students to four-year institutions with a seamless process increases the legitimacy of community colleges as perceived by students, parents, four-year institutions, and the community. With many two- and four-year institutions located in close proximity to each other, it would make sense that students would simultaneously enroll in coursework in two institutions (Borland, 2004).

Recommendations were presented as suggestions for the Hoosier Link program. Cohort selection, residential living/learning communities, and peer and faculty mentors were suggested.

The Hoosier Link program has shown its importance as a creative transfer program. While tweaks to the program are inevitable, students still experienced, as a 2007 cohort member stated, “a great opportunity” (Indiana University, 2008d, p. 1).

REFERENCES

Adelman, C. (1998). The kiss of death? An alternative view of college remediation. *National Crosstalk, 6*(3), 11. Retrieved from http://www.highereducation.org/crosstalk/ct0798/voices0798-adelman.shtml

Adelman, C. (2005). *Moving into town—and moving on: The community college in the lives of traditional-age students*. Washington, DC: U.S. Department of Education. Retrieved from http://www2.ed.gov/rschstat/research/pubs/comcollege/movingintotown.pdf

Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*. Technical report, United States Department of Education, Washington, DC. Retrieved from http://www2.ed.gov/rschstat/research/pubs/toolboxrevisit/toolbox.pdf

Alfonso, M. (2006). The impact of community college attendance on baccalaureate attainment. *Research in Higher Education, 47,* 873-903. doi:10.1007/s11162-006-9019-2

Alpern, B. E. (2000). *Factors that influence community college transfer students' satisfaction with their baccalaureate institutions*. Retrieved from ERIC database. (ED449854).

American Association of Community Colleges & American Association of State Colleges and Universities. (2004). *Improving access to the baccalaureate.* Washington, DC: Community College Press.

Anderson, G. M., Sun, J. C., & Alfonso, M. (2006). Effectiveness of statewide articulation agreements on the probability of transfer: A preliminary policy analysis. *The Review of Higher Education, 29,* 261-291. doi:10.1353/rhe.2006.0001

Arnold, J. C. (2001). Student transfer between Oregon Community Colleges and Oregon University System institutions. *New Directions for Community Colleges, 2001,* 45-59. doi:10.1002/cc.20

Astin, A. W. (1975). *Preventing students from dropping out.* San Francisco, CA: Jossey-Bass.

Astin, A. W. (1991). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. New York, NY: American Council on Education and MacMillan Publishing Company.

Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco, CA: Jossey-Bass.

Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development, 40,* 518-529. Retrieved from www.jcsdonline.org

Ball State University. (2011). *Ball State University Connect Program* [Brochure]. Retrieved from http://cms.bsu.edu/admissions/connect

Berger, J. B., & Malaney, G. D. (2003). Assessing the transition of transfer students from community colleges to a university. *Journal of Student Affairs Research and Practice, 40*(4), 1-23. Retrieved from http://journals.naspa.org

Borland, K. W. (2004). Enrollment management issues. In B. C. Jacobs, B. Lauren, M. T. Miller, & D. P. Nadler (Eds.), *The college transfer student in America: The forgotten student* (pp. 27-46). Washington, DC: American Association of Collegiate Registrars and Admissions Officers.

Brint, S. (2003). Few remaining dreams: Community colleges since 1985. *The Annals of the American Academy of Political and Social Science, 586,* 16-37. doi:10.1177/0002716202250208

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

California State Postsecondary Education Commission. (2005). *Student transfer in California postsecondary education. Commission report 05-08.* Retrieved from http://www.eric.ed.gov/PDFS/ED491118.pdf

Camara, W. J., & Echternacht, G. (2000). The SAT I and high school grades: Utility in predicting success in college. *The College Board, research notes.* New York, NY: The College Board, Office of Research and Development. Retrieved from http://professionals.collegeboard.com/profdownload/pdf/rn10_10755.pdf

Carlan, P. E., & Byxbe, F. R. (2000). Community colleges under the microscope: An analysis of performance predictors for native and transfer students. *Community College Review, 28,* 27-42. doi:10.1177/009155210002800202

Cejda, B. D. (1997). An examination of transfer shock in academic disciplines. *Community College Journal of Research and Practice, 21,* 279-289. Retrieved from http://www.tandf.co.uk/journals/tf/10668926.html

Cejda, B. D., Kaylor, A. J., & Rewey, K. L. (1998). Transfer shock in an academic discipline: The relationship between students' majors and their academic performance. *Community College Review, 26,* 1-13. doi:10.1177/009155219802600301

Center for Community College Student Engagement (CCCSE). (2008). *Imagine success: Engaging entering students (2008 SENSE Field Test Findings)*. Austin, TX: The University of Texas at Austin, Community College Leadership Program.

Chickering, A. W. (1974). *Commuting versus resident students*. San Francisco, CA: Jossey-Bass.

Clemetsen, B., & Balzer, J. (2008). Paving the path to success: Community college & university degree partnerships, *College and University Journal, 83*(3), 12-19.

Cofer, J., & Somers, P. (2000). Within-year persistence of students at two-year colleges. *Community College Journal of Research and Practice, 24,* 785-807. doi:10.1080/10668920050179808

Cofer, J., & Somers, P. (2001). What influences student persistence at two-year colleges? *Community College Review, 29,* 56-76. doi:10.1177/009155210102900304

Cohen, A. M., & Brawer, F. B. (1987). *The collegiate function of community colleges: Fostering higher learning through curriculum and student transfer*. San Francisco, CA: Jossey-Bass.

The College Board. (2009). *ACT and SAT concordance tables* [RN-40]. Retrieved from http://professionals.collegeboard.com/profdownload/pdf/RN-40.pdf

The College Board. (2010). *Trends in student aid.* Retrieved from http://trends.collegeboard.org/downloads/Student_Aid_2010.pdf

Community College Survey of Student Engagement. (2008). *High expectations and high support*. Austin, TX: The University of Texas at Austin, Community College Leadership Program. Retrieved from http://www.ccsse.org/publications/2008_National_Report.pdf

Community College Survey of Student Engagement. (2009). *Overview*. Retrieved from http://www.ccsse.org/aboutccsse/aboutccsse.cfm

Crissey, S. R. (2009). *Educational attainment in the United States: 2007*. (Report No. P20-560). Retrieved from http://www.census.gov/prod/2009pubs/p20-560.pdf

Degree Partnership Program. (2006, February). Paper presented at Linn-Benton Community College and Oregon State University Workshop. Retrieved from http://www.ous.edu/state_board/jbac

Dougherty, K. J., & Kienzl, G. S. (2006). It's not enough to get through the open door: Inequalities by social background in transfer from community colleges to four-year colleges. *Teachers College Record, 108*, 452-487. Retrieved from http://www.tcrecord.org

Dowd, A. C., Cheslock, J. J., & Melguizo, T. (2008). Transfer access from community colleges and the distribution of elite higher education. *The Journal of Higher Education, 79,* 442-472. doi:10.1353/jhe.0.0010

Doyle, W. R. (2009). Impact of increased academic intensity on transfer rates: An application of matching estimators to student-unit record data. *Research in Higher Education, 50,* 52-72. doi:10.1007/s11162-008-9107-6

Dwyer, C. A., Millett, C. M., & Payne, D. G. (2006). *A culture of evidence: Postsecondary assessment and learning outcomes. Recommendations to policymakers and the higher education community* (ETS Policy and Research Report No. HED-COE-1). Retrieved from http://www.ets.org/

Eddy, P. L., Christie, R., & Rao, M. (2006). Factors affecting transfer of "traditional" community college students. *The Community College Enterprise*, *12*, 73-92. Retrieved from http://www.schoolcraft.edu/pdfs/cce/12.1.73-92.pdf

Erisman, W., & Del Rios, M. (2008). *Creating change one step at a time: Efforts to improve college access and success in Indiana*. Retrieved from http://www.ihep.org/assets/files/publications/a-f/CreatingChangeINReport.pdf

Flaga, C. T. (2006). The process of transition for community college transfer students. *Community College Journal of Research and Practice, 30,* 3-19. doi:10.1080/10668920500248845

Geiser, S., & Studley, R. (2002). UC and the SAT: Predictive validity and differential impact of the SAT I and SAT II at the University of California. *Educational Assessment, 8,* 1-25. doi:10.1207/S15326977EA0801_01

Glass, J. C., Jr., & Harrington, A. R. (2002). Academic performance of community college transfer students and "native" students at a large state university. *Community College Journal of Research and Practice, 26,* 415-430. doi:10.1080/02776770290041774

Goldrick-Rab, S., Harris, D. N., Benson, J., & Kelchen, R. (2011). *Conditional cash transfers and college persistence: Evidence from a randomized need-based grant program*. (Institute for Research on Poverty Discussion Paper no. 1393-11). Retrieved from http://ssrn.com/abstract=1887826

Gravetter, F. J., & Wallnau, L. B. (2004). *Statistics for the behavioral sciences.* Belmont, CA: Thomson Learning.

Grubb, W. N. (1991). The decline of community college transfer rates. *Journal of Higher Education, 62,* 194-222. Retrieved from http://www.jstor.org/stable/1982145

Handel, S. J. (2007). Second chance, not second class: A blueprint for community-college transfer. *Change, 39*(5), 38-45. doi:10.3200/CHNG.39.5.38-45

Hayek, J. (2002). Most college students satisfied but transfer students less engaged. *The National Survey of Student Engagement*. Bloomington, IN: Indiana University, Center for Postsecondary Research. Retrieved from http://nsse.iub.edu/2002_annual_report/html/pdf/NSSE%202002%20press%20release.pdf

Hills, J. R. (1965). Transfer: The academic performance of the junior college transfer. *Journal of Experimental Education, 33,* 201-215.

Ignash, J. M., & Townsend, B. K. (2000). Evaluating state-level articulation agreements according to good practice. *Community College Review, 28,* 1-19. doi:10.1177/009155210002800301

Indiana Commission for Higher Education. (2001, June 8). *Indiana's higher education system strengthened: Hoosiers to benefit from regional campus agreement* [Press release]. Retrieved from http://www.in.gov/che/files/010608pr.pdf

Indiana Commission for Higher Education. (2007a, October 12). *Decision item D: Indiana State University request for release of line-item appropriations for DegreeLink, the Community Learning Centers of South Central Indiana, and College Cooperative Southeast.* Retrieved from http://www.che.state.in.us/Agendas/2007/0710DecD.pdf

Indiana Commission for Higher Education. (2007b). *Reaching higher: Strategic directions for higher education in Indiana.* Retrieved from http://www.in.gov/che/files/7-Reaching_Higher-7-7.pdf

Indiana Commission for Higher Education. (2008). *Reaching higher: Strategic initiatives for higher education in Indiana: Reaching higher with college completion.* Retrieved from http://www.in.gov/che/files/3-College_Completion-7-7.pdf

Indiana University. (2005, November 18). *IU, Ivy Tech officials to sign Hoosier Link agreement today.* [Press Release]. Retrieved from http://newsinfo.iu.edu/news/page/normal/2639.html

Indiana University. (2007a). *Hoosier Link survey of 2006 students.* Bloomington, IN: Office of First Year Experience Programs.

Indiana University. (2007b). *Indiana University fact book 2006-2007*. Bloomington, IN: University Reporting & Research. Retrieved from http://institutionalmemory.iu.edu/aim/bitstream/handle/10333/303/fact_book_0607%5b1%5d.pdf?sequence=4

Indiana University (2007c). *Indiana University student fees, Bloomington Campus fall and spring terms, 2007-2008*. Bloomington, IN: Office of the Bursar. Retrieved from http://bursar.indiana.edu/publications/07-08%20Fee%20Schedule.pdf

Indiana University. (2008a, May 8). *Indiana University and Ivy Tech announce agreement on associate degrees* [Press release]. Retrieved from http://newsinfo.iu.edu/news/page/normal/8177.html

Indiana University. (2008b). *Indiana University fact book 2007-2008*. Bloomington, IN: University Reporting & Research. Retrieved from http://institutionalmemory.iu.edu/aim/handle/10333/304

Indiana University. (2008c). *Indiana University fact book 2008-2009.* Bloomington, IN: University Reporting & Research. Retrieved from http://www.iu.edu/~uirr/reports/standard/doc/fact%20book/fact_book_0809.pdf

Indiana University. (2008d). *Survey of 2007 Hoosier Link students.* Bloomington, IN: Office of First Year Experience Programs.

Indiana University. (n.d.a). *Official undergraduate retention report: Persistence to the second semester* (Vol. 16, No. 2). Retrieved from http://www.iub.edu/~uirr/reports/standard/doc/ret/sem/16.2.pdf

Indiana University. (n.d.b). *Undergraduate retention report: Persistence to second year – 2006 cohort* (Vol. 17, No. 1). Retrieved from http://www.iu.edu/~uirr/reports/standard/doc/ret/yr/17.1.pdf

Indiana University. (n.d.c). *Undergraduate retention report*: *Persistence to second year – 2007 cohort* (Vol. 18, No. 1). Retrieved from http://www.iu.edu/~uirr/reports/standard/doc/ret/yr/18.1.pdf

Indiana University Purdue University Indianapolis. (2006). *A summary of recent enrollment trends among students who have attended both Ivy Tech –Indianapolis and IUPUI.* Indianapolis, IN: IUPUI Office of Informational Management and Institutional Research. Retrieved from http://registrar.iupui.edu/emc/passport1.pdf

Ishitani, T. T. (2008). How do transfers survive after "transfer shock"? A longitudinal study of transfer student departure at a four-year institution. *Research in Higher Education, 49,* 403-419. doi:10.1007/S11162-008-9091-X

Ivy Tech Community College. (2003). *Strategic plan 2010: From success to the best, Ivy Tech Community College*. Indianapolis, IN: Office of the President.

Ivy Tech Community College. (2007, May 30). *Ivy Tech Community College remains Indiana's most affordable college*. [Press Release]. Retrieved from http://nwi.ivytech.edu/web/news/07/affordabletuition.html

Ivy Tech Community College (2008a). *Ivy Tech Community College: Annual unduplicated headcount enrollment*. Retrieved from http://www.ivytech.edu/institutional-research/enrollment/Headcount.pdf

Ivy Tech Community College. (2008b, December 11). *Ivy Tech surpasses Indiana University in enrollment* [Press Release]. Retrieved from http://services.bloomington.ivytech.edu/news/press_clippings/2008/ht_ivyenrollment.html

Ivy Tech Community College. (2008c). *Report update on retention of fall 2007 first-time college students at Ivy Tech: Executive summary*. Retrieved from http://www.ivytech.edu/institutional-research/outcomes/Fall_to_fall_retention_update_1-8-09.pdf

Ivy Tech Community College. (2009). *Student outcomes at Ivy Tech Community College: Transfer rates college wide and by region*. Retrieved from http://www.ivytech.edu/institutional-research/outcomes/2009_Transfer_Report_Final.pdf

Ivy Tech Community College. (2011). *About Ivy Tech Community College.* Retrieved from http://www.ivytech.edu/about/

Jacobs, B. C. (2004). Today's transfer students: Trends and challenges. In B. C. Jacobs, B. Lauren, M. T. Miller, & D. P. Nadler (Eds.), *The college transfer student in America: The forgotten student* (pp. 1-14). Washington, DC: American Association of Collegiate Registrars and Admissions Officers.

Jalomo, R., Jr. (1995, April). *First-year student experiences in community colleges: Crossing borders, making connections and developing perceptions about learning*. Paper presented at the Annual Conference of the American Educational Research Association, San Francisco, CA: Retrieved from ERIC database. (ED383367)

Jarosz, F. (2007, June 18). Increasing education's accessibility: Easier credit transfers can make dream of 4-year degree a reality. *The Indianapolis Star*, p. B1.

Jepsen, C. (2006, April). *Basic skills in California's community colleges: Evidence from staff and self-referrals.* Paper presented at the American Education Research Association (AERA) meeting, San Francisco, CA.

Johnson, M. D. (2005). Academic performance of transfer versus “native” students in natural resources & science. *College Student Journal, 39,* 570-579. Retrieved from http://www.projectinnovation.biz

Keeley, E. J., III, & House, J. D. (1993, May). *Transfer shock revisited: A longitudinal study of transfer academic performance.* Paper presented at the Annual Forum of the Association for Institutional Research, Chicago, IL. Retrieved from http://www.eric.ed.gov/PDFS/ED357774.pdf

Kintzer, F. C. (1996). *A historical and futuristic perspective of articulation and transfer in the United States*. Retrieved from ERIC database. (ED389380)

Kippenhan, H. (2004). Recommendations for the recruitment and retention of transfer students. *College and University, 80*(1), 13-17. Retrieved from http://www.aacrao.org/Libraries/Publications_Documents/summer2004.sflb.ashx

Kisker, C. B. (2005). *Creating and sustaining community college-university transfer partnerships: A qualitative case study*. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Philadelphia, PA. Retrieved from ERIC database. (ED490675)

Laanan, F. S. (2001). Transfer student adjustment. *New Directions for Community Colleges, 114,* 5-13. Retrieved from http://www.wiley.com

Luo, M., Williams, J.E., & Vieweg, B. (2007). Transitioning transfer students: Interactive factors that influence first-year retention. *College and University Journal, 83*(2), 8-19.

Mathiasen, R.E. (1984). Predicting college academic achievement: A research review. *College Student Journal, 18,* 360-386. Retrieved from http://www.projectinnovation.biz

Mattern, K. D., & Patterson, B. F. (2009). Is performance on the SAT related to college retention? *The College Board, research report no. 2009-7*. New York, NY: The College Board. Retrieved from http://professionals.collegeboard.com/profdownload/pdf/09b_429_RD_ReportRelationSAT_WEB_100204.pdf

Mazzeo, C. (2002). Stakes for students: Agenda setting and remedial education. *The Review of Higher Education, 26,* 19-39. doi:10.1353/rhe.2002.0027

McMillan, J. A., & Schumacher, S. (2010). *Research in education: Evidence-based inquiry.* Boston, MA: Pearson.

McPherson M. S., & Schapiro, M. O. (1991). *Keeping college affordable.* Washington, DC: The Brookings Institution.

Melguizo, T., Hagedorn, L. S., & Cypers, S. (2008). Remedial/developmental education and the cost of community college transfer: A Los Angeles County sample. *The Review of Higher Education, 31,* 401-431. doi:10.1353/rhe.0.0008

Merisotis, J. P., & Phipps, R. A. (2000). Remedial education in colleges and universities: What's really going on? *The Review of Higher Education, 24*(1), 67-85. Retrieved from http://www.tmcc.edu/president/downloads/documents/PRESRemedialEduColleges.pdf

National Center for Public Policy and Higher Education. (2008). *Measuring Up 2008: The state report card on higher education –Indiana*. Retrieved from http://measuringup2008.highereducation.org/print/state_reports/long/IN.pdf

National Survey of Student Engagement. (2005). *Exploring different dimensions of student engagement (2005 annual survey results)*. Bloomington, IN: Indiana University, Center for Postsecondary Research. Retrieved from http://nsse.iub.edu/pdf/nsse2005_annual_report.pdf

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students. Volume 2: A third decade of research.* San Francisco, CA: Jossey-Bass.

Peter, K., & Carroll, C. D. (2005). *The road less traveled? Students who enroll in multiple institutions.* (NCES Publication No. NCES 2005-157). Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2005157

Phipps, R. (1998). *College remediation: What it is, what it costs, what's at stake?* Washington DC: Institute for Higher Education Policy. Retrieved from http://www.ihep.org/assets/files/publications/a-f/CollegeRemediation.pdf

Rendon, L. I., & Jalomo, R., Jr. (1995, February). *Validating student experience and promoting progress, performance, and persistence through assessment*. Paper prepared for the National Center on Postsecondary Teaching, Learning, and Assessment Institute, Los Angeles, CA. Retrieved from ERIC database. (ED381051)

Shepard, R. (1995). Subjectivity in teacher decision making: Underlying cognitive processes. *Education, 115,* 509-515. Retrieved from http://www.projectinnovation.biz/education_2006.html

Soukhanov, A. H. (Ed.). (1988). *Webster's II new riverside university dictionary.* Boston: MA: Houghton Mifflin Company.

Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist, 52,* 613-629. Retrieved from http://www.nber.org/sewp/events/2005.01.14/Bios+Links/Krieger-rec5-Steele_Threat-in-the-Air.pdf

Strauss, L. C., & Volkwein, J. F. (2004). Predictors of student commitment at two-year and four-year institutions. *The Journal of Higher Education, 75,* 203-227. Retrieved from ERIC database. (ED458854)

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition.* Chicago, IL: The University of Chicago Press.

Tinto, V. (2008). Forward. In Community College Survey of Student Engagement (Ed.), *High expectations and high support* (p. 2). Austin, TX: The University of Texas at Austin, Community College Leadership Program. Retrieved from http://www.ccsse.org/Publications/2008_National_Report.pdf

Townsend, B. K. (1993). *University practices that hinder the academic success of community college transfer students*. Paper presented at the 18th Annual Meeting of the Association for the Study of Higher Education, Pittsburgh, PA. Retrieved from http://www.eric.ed.gov/PDFS/ED363360.pdf

Townsend, B. K. (2002). Transfer rates: A problematic criterion for measuring the community college. *New Directions for Community Colleges, 117,* 13-23. doi:10.1002/cc.49

Townsend, B. K., & Wilson, K. B. (2006). "A hand hold for a little bit": Factors facilitating the success of community college transfer students to a large research university. *Journal of College Student Development, 47,* 439-456. doi:10.1353/csd.2006.0052

University of California. (2007). *Higher Education Compact performance measures 2005-2006.* Retrieved from http://www.cpec.ca.gov/CompleteReports/ExternalDocuments/UCCompactReport-final-2005-06.pdf

U.S. Department of Education, Federal Student Aid. (2011). *Expected family contribution.* Retrieved from http://www.fafsa.ed.gov/fotw1112/help/fftoc01g.htm

U.S. Department of Education, National Center for Education Statistics. (1980). *Transfer students in institutions of higher education: National longitudinal study of high school seniors.* (NCES Publication No. NCES 77-250). Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=77250

U.S. Department of Education, National Center for Education Statistics. (2008a). *Community colleges: Special supplement to the 2008 condition of education.* (NCES Publication No. NCES 2008033). Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008033

U.S. Department of Education, National Center for Education Statistics. (2008b). *Descriptive summary of 2003-04 beginning postsecondary students: Three years later.* (NCES Publication No. 2008-174). Retrieved from http://nces.ed.gov/pubs2008/2008174a.pdf

U.S. Department of Education, National Center for Education Statistics. (2008c). *Digest of education statistics: 2007. Table 318: Percentage distribution of enrollment and completion status of first-time postsecondary students starting during the 1995-1996 academic year, by type of institution and other student characteristics: 2001.* Retrieved from http://nces.ed.gov/programs/digest/d07/index.asp

U.S. Department of Education, National Center for Education Statistics. (2008d). *Postsecondary institutions in the United States: Fall 2007, degrees and other awards conferred: 2006-2007, and 12-month enrollment: 2006-2007.* (NCES Publication No. NCES 2008159REV). Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008159rev

U.S. Department of Education, National Center for Education Statistics. (2009). *About BPS (Beginning Postsecondary Students).* Retrieved from http://nces.ed.gov/surveys/bps/about.asp

U.S. Department of Education, National Center for Education Statistics. (2011). *Profile of degree/certificate-seeking entering undergraduate students, by control and level of institution.* Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011252

U.S. Government Accountability Office. (2005). *Transfer students: Postsecondary institutions could promote more consistent consideration of coursework by not basing determinations on accreditation*. (Publication No. GAO-06-22). Washington, DC: Author. Retrieved from http://www.gao.gov/new.items/d0622.pdf

U.S. News and World Report. (2011). *Indiana University—Bloomington.* Retrieved from http://colleges.usnews.rankingsandreviews.com/best-colleges/indiana-university-1809

Wawrzynski, M. R., & Sedlacek, W. E. (2003). Race and gender differences in the transfer student experience. *Journal of College Student Development, 44,* 489-501. doi:10.1353/csd.2003.0045

Zamani, E. M. (2001). Institutional responses to barriers to the transfer process. *Directions for Community Colleges, 114,* 15-24. doi:10.1002/cc.17

APPENDIX A

Intent to Participate Form

Intention To Participate Form

Name: Lintermuth, Vernon D
University ID: 0000000001
Birth Date: 12/1/1970
Email: vlinterm@indiana.edu
Residency: Nonresident

To verify your intention to participate you will need to complete and return the brief form below. In addition, you will need to submit an Ivy Tech Community College of Bloomington application for admission (enclosed).

Please return these forms as soon as possible. Once these items are received you will be sent additional information regarding residence halls, orientation, advising and registration.

☐ Yes, I will participate in Hoosier Link.

☐ No, I will not participate in Hoosier Link because:

- ☐ I have accepted an offer of admission at another university, specifically _____
- ☐ I have decided not to attend college at this time.
- ☐ Other reasons: _____

_____

_____

_____ _____

Your Signature Date

Please return this via postal service to:
Ivy Tech Community College
Attn: Hoosier Link
200 Daniels Way
Bloomington, IN 47404

Or via fax to:
(812) 330-6142

APPENDIX B

Participant Agreement Form

Hoosier Link

Indiana University Bloomington Ivy Tech Community College

Participant Agreement and Information Release Form

I understand that my participation in the Hoosier Link program is conditional on the following understandings and commitments. This contract supports my success as a Hoosier Link student, not only in completing my transfer to IU Bloomington (IUB), but in obtaining my degree.

As a Hoosier Link Program student, I understand that:

1. I will be offered guaranteed transfer to IUB only after completing a total of 26 transferable/academic credit hours combined between Ivy Tech Community College and IUB. This completed coursework must exhibit a 2.5 combined cumulative grade point average in credit bearing coursework at Ivy Tech and IUB. Additionally, all IUB coursework must exhibit a 2.0 cumulative grade point average.
2. It may take more than 2 semesters of academic work to complete the requirements for transfer to IUB. As long as I remain in good academic standing at both Ivy Tech and IUB, I will be able to continue as a Hoosier Link student.
3. I may be required to complete college preparatory courses before enrolling in some transferable college level courses. This decision will be based on my placement and assessment test results and consultation with an academic advisor.
4. I will take a restricted or modified course load, if advised to do so by either an Ivy Tech or IUB advisor.
5. I must register for and maintain enrollment in the courses which my academic advisors and I discuss. Any changes to my schedule, including drops, adds, or withdrawals, must be discussed with my advisor prior to my taking action.
6. I will not enroll in any Distance Learning courses (Internet, Hybrid, etc.) while I am a Hoosier Link student.
7. I will participate in a required four-phase orientation program designed for Hoosier Link program participants.
8. I will participate in advising, tutorial services, study skills and financial aid counseling, as well as developmental meetings and workshops when advised by an academic advisor or a Hoosier Link staff member. These will occur at both Ivy Tech and IUB.
9. I will not participate in recruitment or pledge a sorority or fraternity, nor join Greek interest groups (including Little Sisters and similar organizations) while enrolled as a Hoosier Link student.
10. I will keep all on/off campus employment hours to no more than 15 hours per week. I understand that more than 15 hours per week will require consultation with an academic advisor.
11. I understand that **class attendance is expected for all Ivy Tech and IUB courses.**
12. I will read and abide by the rules and regulations set forth for each institution, included in the Ivy Tech Bloomington *Student Handbook* and the Indiana University *Code of Student Rights, Responsibilities and Conduct*.

I authorize the "Release of Information between Ivy Tech Community College and Indiana University".

I understand and agree that if I fail to abide by these conditions, I may be dismissed from the Hoosier Link program and will need to reapply independently for admission to IUB.

Student Name (Please Print Clearly) _____

IU Bloomington University ID Number_____

Student Signature_____Date_____

APPENDIX C

Data Spreadsheet

	Demographic Variables													
Student	Cohort year	Transfer?	Gender	Race	EFC 07-08	EFC 08-09	EFC 09-10	Aver EFC	Rem credits	SAT read	SAT math	SAT writ	HS GPA	DOB
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														

APPENDIX C (cont.)

	Measuring Persistence														
Student	fall 06	spr 07	fall 07	spr 08	fall 08	spr09	fall 09	spr 10	fl06-sp07	sp07-fl07	fl07-sp08	sp08-fl08	fl08-sp09	sp09-fl09	fl09-sp10
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															

APPENDIX C (cont.)

	Measuring Performance/Transfer Shock									
Student	lastGPAIT	1stgpaIU	1stpretr	2ndpretr	3rdpretr	4thpretr	5thpretr	6thpretr	7thpretr	8thpretr
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

APPENDIX C (cont.)

	Measuring Performance/Transfer Shock							
Student	1stposttr	2ndposttr	3rdposttr	4thposttr	5thposttr	6thposttr	difIT-IU	%IT-IU
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

APPENDIX C (cont.)

	Measuring Performance/Transfer Shock									
Student	dif1-2post	%1-2post	dif2-3post	%2-3post	dif3-4post	%3-4post	dif4-5post	%4-5post	dif5-6post	%5-6post
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

APPENDIX C (cont.)

Key

Transfer	Gender	Race
Yes=1	female=1	Black/African American=1
No=2	male=2	Hispanic/Latino=2
		White=3
Persistence		Asian=4
yes=1		Multiracial=5
no=2		Other=6
remcr	remedial credit hours	
HSGPA	high school cumulative GPA	
EFC	expected family contribution	
pretrGPA	cum GPA when entering IUB	
lastGPAIT	last semester GPA at ivy tech	
1stGPAIU	first semester GPA at IU	
1stpretr	1st semester before transfer	
2ndpretr	2nd semester before transfer	
1stposttr	1st semester after transfer GPA	
2ndposttr	2nd semester after transfer GPA	
difIT-IU	difference of GPA between last semester at Ivy Tech and 1st semester after transfer	
%IT-IU	% change from last semester at ivy tech and 1st semester after transfer	
dif1-2post	difference between 1st and 2nd semester's GPA after transfer	
%1-2post	% change from 1st semester to 2nd semester GPA after transfer	
dif2-3post	difference between 2nd and 3rd semester's GPA after transfer	
%2-3post	% change from 2nd semester to 3rd semester GPA after transfer	
dif3-4post	difference between 3rd and 4th semester's GPA after transfer	
%3-4post	% change from 3rd semester to 4th semester GPA after transfer	
dif4-5post	difference between 4th and 5th semester's GPA after transfer	
%4-5post	% change from 4th semester to 5th semester GPA after transfer	
dif5-6post	difference between 5th and 6th semester's GPA after transfer	
%5-6post	% change from 5th semester to 6th semester GPA after transfer	

APPENDIX D

2006 Hoosier Link Cohort County Information

Indiana County	Number of Hoosier Link Students Selected
Monroe	16
Marion	13
Hamilton	7
Johnson	6
Lake	5
St. Joseph	5
Hendricks	4
Morgan	4
Elkhart	3
Greene	3
Allen	2
Dearborn	2
Floyd	2
Lawrence	2
Vigo	2
Wayne	2
Brown	1
Carroll	1
Cass	1
Franklin	1
Gibson	1
Grant	1
Hancock	1
Howard	1
Jasper	1
Madison	1
Marshall	1
Porter	1
Putnam	1
Shelby	1

Indiana County	Number of Hoosier Link Students Selected
Tippecanoe	1
Warrick	1
Adams	0
Bartholomew	0
Benton	0
Blackford	0
Boone	0
Clark	0
Clay	0
Clinton	0
Crawford	0
Daviess	0
Decatur	0
De Kalb	0
Delaware	0
Dubois	0
Fayette	0
Fountain	0
Fulton	0
Harrison	0
Henry	0
Huntington	0
Jackson	0
Jay	0
Jefferson	0
Jennings	0
Knox	0
Kosciusko	0
Lagrange	0
La Porte	0
Martin	0

Indiana County	Number of Hoosier Link Students Selected
Miami	0
Montgomery	0
Newton	0
Noble	0
Ohio	0
Orange	0
Owen	0
Parke	0
Perry	0
Pike	0
Posey	0
Pulaski	0
Randolph	0
Ripley	0
Rush	0
Scott	0
Spencer	0
Starke	0
Steuben	0
Sullivan	0
Switzerland	0
Tipton	0
Union	0
Vanderburgh	0
Vermillion	0
Wabash	0
Warren	0
Washington	0
Wells	0
White	0
Whitley	0

APPENDIX E

2007 Hoosier Link Cohort County Information

Indiana County	Number of Hoosier Link Students Selected
Monroe	17
Marion	14
Hamilton	8
Lake	8
Johnson	5
Allen	5
Hendricks	4
Morgan	3
Greene	3
Porter	3
Shelby	3
Dubois	3
Jackson	3
Vanderburgh	3
St. Joseph	2
Elkhart	2
Dearborn	2
Lawrence	2
Bartholomew	2
Floyd	1
Wayne	1
Brown	1
Franklin	1
Grant	1
Hancock	1
Jasper	1
Marshall	1
Warrick	1
Adams	1
Clark	1
Clay	1

Indiana County	Number of Hoosier Link Students Selected
Daviess	1
Delaware	1
Henry	1
Huntington	1
Montgomery	1
Parke	1
Rush	1
Spencer	1
Vigo	0
Carroll	0
Cass	0
Gibson	0
Howard	0
Madison	0
Putnam	0
Tippecanoe	0
Benton	0
Blackford	0
Boone	0
Clinton	0
Crawford	0
Decatur	0
De Kalb	0
Fayette	0
Fountain	0
Fulton	0
Harrison	0
Jay	0
Jefferson	0
Jennings	0
Knox	0

Indiana County	Number of Hoosier Link Students Selected
Kosciusko	0
Lagrange	0
La Porte	0
Martin	0
Miami	0
Newton	0
Noble	0
Ohio	0
Orange	0
Owen	0
Perry	0
Pike	0
Posey	0
Pulaski	0
Randolph	0
Ripley	0
Scott	0
Starke	0
Steuben	0
Sullivan	0
Switzerland	0
Tipton	0
Union	0
Vermillion	0
Wabash	0
Warren	0
Washington	0
Wells	0
White	0
Whitley	0