2015-08-04

A Comparison of Academic Performance Between Community College Transfer Students and Non-transfer Students at a Four-year University in Ecuador

Aldo Alfredo Maino
University of Miami, amaino@hotmail.com

UNIVERSITY OF MIAMI

A COMPARISON OF ACADEMIC PERFORMANCE BETWEEN COMMUNITY COLLEGE TRANSFER STUDENTS AND NON-TRANSFER STUDENTS AT A FOUR-YEAR UNIVERSITY IN ECUADOR

By

Aldo A. Maino

A DISSERTATION

Submitted to the Faculty
of the University of Miami
in partial fulfillment of the requirements for
the degree of Doctor of Education

Coral Gables, Florida

August 2015

UNIVERSITY OF MIAMI

A dissertation submitted in partial fulfillment of
the requirements for the degree of
Doctor of Education

A COMPARISON OF ACADEMIC PERFORMANCE BETWEEN COMMUNITY COLLEGE TRANSFER STUDENTS AND NON-TRANSFER STUDENTS AT A FOUR-YEAR UNIVERSITY IN ECUADOR

Aldo A. Maino

Approved:

_____
Soyeon Ahn, Ph.D.
Associate Professor of
Educational and
Psychological Studies

_____
Susan Mullane, Ph.D.
Clinical Associate Professor of
Kinesiology and Sport Sciences

_____
Etiony Aldarondo, Ph.D.
Provost
Albizu University

_____
Dean of the Graduate School

_____
Brian Orefice, Ph.D.
Lecturer of Educational and
Psychological Studies

MAINO, ALDO A. (Ed.D., Higher Education Leadership)
A Comparison of Academic Performance Between Community College Transfer Students and Non-transfer Students at a Four-year University in Ecuador. (August 2015)

Abstract of a dissertation at the University of Miami.

Dissertation supervised by Professor Soyeon Ahn.
No. of pages in text. (91)

Since 2000, the number of students transferring from United States community colleges to four-year institutions has steadily increased. As a result, growing attention has been paid to community college students' academic performance following their transfer. Research conducted in the United States has reported mixed results regarding transfer students' academic performance in four-year institutions. Similar to the United States, many college students in Ecuador transfer to different types of postsecondary institutions. However, no research has been published on this experience in Ecuador that can inform educators and support transfer students' academic performance after transferring. To fill this gap, this study investigated the characteristics and academic success of community college students who transferred to a four-year institution in Ecuador. In particular, this study used secondary data to compare characteristics and academic performance (i.e., GPA) between transfer and non-transfer students attending a small private four-year university in Ecuador between Fall 2008 and Fall 2013.

Results from mixed-effects models showed that transfer students had a higher average GPA after one semester (intercept) than non-transfer students; however, no difference in the average change in GPA over the years (slope) was found between transfer and non-transfer students. Further analysis examining gender differences in the

average GPA after the first semester (intercept) showed that transfer females performed significantly better than males. It was also found that the area or program of study was a significant predictor explaining some of the variation in the average GPA after the first semester (intercept). For example, students in engineering programs had the lowest average GPA across the years. This suggests that extra attention and academic assistance might be necessary for these students entering to engineering program of study. In addition, significant differences in the average GPA after the first semester (intercept) were found depending on the quality of the community college that students transferred from. This result suggests that universities should design their marketing strategies and admission resources that recruit students from category A and B institutes of technology and universities, which can be further facilitated by subscribing articulation agreements with these institutions to allow prospect transfer students to transfer a great majority of their credit hours.

The current study shows, that transfer students are capable of being academically successful at four-year institutions. It further suggests that recruitment efforts aimed at community college transfer students should target students based on their transferring GPA and the quality of the transferring institution; while for non-transfer students on the basis of high school GPA. It is hoped that this study would help Ecuadorian authorities and institutional officers at all levels more effectively facilitate student mobility between the country's institutes of technology and its universities, and encourage more in-depth research on transfer students so that their academic potential becomes a reality.

DEDICATION

This dissertation is dedicated to my wife who has been a strong supporter and believer. She has demonstrated infinite patience and tolerance. This work is also dedicated to my daughters who do not yet understand the importance of a doctoral degree and suffered the consequences of having a father with limited time at such early stages of their lives. I am confident that such sacrifices will someday inspire them to pursue their own endeavors. This dissertation is also dedicated to my parents who, through example, sacrifice, determination, and encouragement, taught me the importance of being a professional. To my sister, who showed me since we were young not to be a conformist and to always go the extra mile.

ACKNOWLEDGEMENTS

I would like to thank Dr. Soyeon Ahn, the chair of this dissertation. I appreciate her support, time, patience, effort, unstoppable dedication, and her keen intellect and leadership. I would also like to thank all the committee members for being part of this dissertation: Dr. Susan Mullane, Dr. Etiony Aldarondo, and Dr. Brian Orefice. Thank you all for devoting part of your limited and important time and for your powerful feedback. I would like to thank a very special person, Dr. Carol-Anne Phekoo, for being part of this journey since day one, and for her contagious passion and knowledge that made this program exceed my expectations.

TABLE OF CONTENTS

LIST OF TABLES

Chapter 1: Introduction

Community colleges have surged in popularity due to affordability, distance, accessibility, flexible requirements for admission, and diversity in students' demographic backgrounds (Horn, Nevill, & Griffith, 2006). Anderson, Sun, and Alfonso (2006) stated that two-year community colleges are known to serve more diverse student populations as an alternative educational option for those who want to complete the first 2 years of a baccalaureate degree As a result, students attending community colleges are heterogeneous in terms of their socioeconomic status, race, and age (Hoachlander, Sikora, & Horn, 2003; McGuire & Belcheir, 2013). As of 2012, there were a total of 1,655 community colleges including 1,047 public and 415 private institutions across the United States (U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, 2012). The number of students enrolled in community colleges in the United States reached 40% of all undergraduates in 2012, achieving its highest record of 7.7 million students attending community colleges (American Association of Community Colleges [AACC], 2014).

Community colleges serve a variety of students' needs, including upgrading their skills in particular areas to go to college, learning language(s) as a hobby, earning an associate degree, and transferring to a four-year institution so as to pursue a bachelor's degree (Grubb, 1991). Many students consider community colleges as a pathway to four-year institutions. Thus, becoming a transfer student at a four-year institution is a common educational aspiration that community college students hold (Grubb, 1991).

In 1985, over one-third of students enrolled in United States higher education institutions were enrolled in community colleges, and less than 25% transferred to four-year

institutions (National Center for Educational Statistics, 2014). However, by the 2005-2006 academic year, 64% of community college students transferred to four-year institutions (Shapiro et al., 2013). With such a rapid increase in the number of students transferring from community colleges to four-year institutions in the United States, administrators and researchers in higher education have began to pay closer attention to transfer students' experiences and academic success in their universities.

Such attention is also needed in Ecuador where there are 282 institutes of technology (Secretaria de Educacion Superior, Ciencia, Tecnologia e Innovacion SENESCYT) (Secretary of Higher Education Science, Technology and Innovation). These institutes of technology in Ecuador are equivalent to community colleges in the United States and offer associate or technical degrees. Hereafter, the term *institute of technology* refers to an institution that offers an associate or technical degree in less than 2 years. Conversely, the term *university* refers to institutions offering baccalaureate degrees and other advanced degrees in a span of 4 years or longer. With students transferring from the institutes of technology to the four-year universities in Ecuador, it is vital for educators and administrators to understand the academic experience of these transfer students in order to ease their transition and support their academic success. However, no empirical studies addressing transfer students' experiences at the universities in Ecuador have been published. The current exploratory study begins to fill this gap by contributing to our understanding of the academic experiences of transfer students in Ecuador.

The Current Study

During the past 7 years, Ecuador has implemented important reforms in higher education. Starting with a new constitution in 2008, Ecuador established new government bodies that deal with regulation, control, and accreditation in higher education. These include the Secretaria Nacional de Educacion Superior, Ciencia y Tecnologia (SENESCYT) (Secretary of Higher Education Science, Technology and Innovation), Consejo de Educacion Superior (CES) (Council of Higher Education) and, Consejo de Evaluacion, Acreditacion y Aseguramiento de la Calidad de la Educacion Superior (CEAACES) (Council of Evaluation and Accreditation of Higher Education). In 2010, the Law of Higher Education was passed, and the Reglamento de Regimen Academico (RRA) (Regulation of Academic Regime) was enacted in 2013. The RRA dictates the structure of all higher education programs, including maximum number of courses per degree and percentage of credits transferable between each level of higher education. All of these changes in Ecuador have driven educators and administrators to readapt existing programs, to refocus on admissions strategies, and to initiate new articulation policies and procedures.

Assuming that a student's academic performance should be the central part of the analysis in designing new policy in higher education, it is then reasonable to focus on how transfer students at the university level perform after they transfer to the university. Therefore, the current study focused on transfer students' academic performance, particularly compared to non-transfer students at a four-year university in Ecuador. Specifically, this study compared GPAs between transfer and non-transfer students and examined how the GPAs of transfer and non-transfer students differed by students'

demographic and academic characteristics including high school GPA (HSGPA), program of study, number of credits transferred (only for transfer students), grade level, quality of the transferring institution (only for transfer students), and gender.

It is hoped that Ecuador's four-year universities would use the results of this study to improve their admission policies and enhance their transfer programs. In addition, since no relevant previous studies or public statistics from government bodies related to transfer students were available, this study serves as the basis for future research on transfer students that can inform more reliable, valid, and generalizable policy across institutions in Ecuador.

Academic Performance of Transfer Students

For the purpose of this study, transfer students were defined as "students that have attended one or more academic institutions as degree seekers" (Adelman, 2005, p. xv). Non-transfer students or native students are those who have attended no previous college or university as degree seeking students prior to entering a four-year institution (Cohen & Brawer, 2008). In this study, non-transfer students were defined as those who never officially transferred any previous academic record. In the literature, transfer students are known to be different from non-transfer students in terms of age, gender, number of working hours per week, number of credits transferred, and marital status (Baldwin, 1994; Fredrickson, 1998; Leavitt, 1989; Peng & Bailey, 1997; Terenzini, Pascarella, & Blimling, 1996; Townsend & Wilson, 2009).

Some studies revealed that a difference in academic performance existed between transfer and non-transfer students after transferring to four-year institutions, even though research findings have been mixed. A number of researchers (e.g., Cedja, Kaylor, &

Rewey, 1998; Diaz, 1992; Keeley & House, 1993; Laanan, 1996; Peng & Bailey, 1977; Townsend, 1993) have argued this occurs because transfer students often experience difficulties in adjusting to the more rigorous academic standards present at four-year institutions, this is referred to as "transfer shock" (Hill, 1965). Porter (1999) found that transfer students' cumulative GPAs were still lower than those of non-transfer students during their senior year at university.

On the other hand, researchers, such as Carlan and Byxbe (2000) and Glass and Harrington (2002), reported a negligible difference in academic achievement between transfer students from two-year community colleges and non-transfer students in universities. Carlan and Byxbe found that even though transfer students in their first semester might experience a dip in their GPA at their four-year institution, mostly due to transfer shock, they generally raised their GPA in subsequent semesters and maintained nearly the same average GPA as non-transfer students at four-year institutions. In addition, other researchers (e.g., Bell, 1998; Branson & Green, 2007) reported that transfer students were academically successful compared to non-transfer students.

The Theoretical Basis of the Study

Since transfer students go through a transition process of adjustment and development, two concepts of student development—students' learning development and social and psychological growth—are central to the current study. Student development is defined as, "The ways that a student grows, progresses, or increases his or her developmental capabilities as a result of enrollment in an institution of higher education" (Rodgers, 1990, p. 27). Pascarella and Terenzini (2005) concluded that, "students seeking a bachelors degree who begin their college careers in a two-year public institution

continue to be at a disadvantage in reaching their education goals compared with similar students entering a four-year college or university" (p. 381).

The theories on student development that formed the basis for the current study include (1) Schlossberg's (1984) transition theory, (2) Astin's (1984) involvement theory, and (3) Kuh's (Kuh, Kinzie, Schuh, & Whitt, 2010) theory of student engagement. First, Schlossberg's transition theory provides a framework for understanding the academic and personal needs of individuals in the transition process and is applicable to transfer students. Second, Astin's theory of student involvement contributes to understanding transfer students' perspectives. He stated, "Students learn by becoming involved" (p. 305). The theory of student involvement emphasizes that a student's development is directly influenced by the quantity and quality of that student's efforts. Thus, a student's gains are proportional to the quality and quantity of that student's involvement. Lastly, Kuh suggested that student engagement is another indicator of student success, which includes the following two critical features. The first is, expanding on Astin's theory, the amount of time and effort students put into their studies and other activities, and the second is the way the institution allocates resources and organizes learning opportunities and services to induce students to participate.

Research Questions

Because of the lack of research and statistics regarding transfer students' experiences in Ecuador, the current study was exploratory in nature and attempted to answer the following two sets of research questions. In particular, the current study intended to understand transfer students' academic performance as measured by their GPA throughout the academic year when compared to non-transfer students.

PART 1: Difference in the average GPA after the first semester (intercept) between transfer and non-transfer students?

1.1 Is there any difference in the average GPA after the first semester between transfer and non-transfer students?

1.2 Is there any difference in the average GPA after the first semester by student characteristics?

1.2.1 For transfer students, is there any difference in their average GPA after their first semester by gender, high school GPA (HSGPA), program of study, quality of transfer institution, or number of credits transferred?

1.2.2 For non-transfer students, is there any difference in their average GPA after their first semester by gender, HSGPA, or program of study?

PART 2: Difference in the average change in GPA over the years (slope) between transfer and non-transfer students?

2.1 Is there any difference in the average change in GPA over the years (individual semesters) between transfer and non-transfer students?

2.2 Is there any difference in the average change in GPA over the years by student characteristics?

2.2.1 For transfer students, is there any difference in the average change in GPA over the years by gender, HSGPA, program of study, quality of transfer institution, or number of credits transferred?

2.2.2 For non-transfer students, is there any difference in the average change in GPA over the years by gender, HSGPA, or program of study?

Significance of the Study

The current study can assist educators and administrators in the institutes of technology and the universities in Ecuador to better understand the academic performance of students who transfer from the two-year institutions of technology to the four-year universities. By understanding the experiences of transfer students, university administrators in Ecuador will be able to put in place programs and services, such as counseling, guidance, and tutoring, that can address the needs of transfer students and promote their academic success at the university level.

Moreover, as tuition costs at the institutes of technology are significantly lower than at the four-year universities (http://uide.edu.ec/SITE/precios-referenciales-carreras.php; http://www.tes.edu.ec/proceso-de-matriculacion), increasing numbers of students are turning to the institutes of technology to prepare them for later university enrollment. Research documenting the strengths and weaknesses of transfer students can pinpoint strengths and weaknesses in the institutes of technology so that targeted improvements can minimize the shock these students experience when they transfer.

If no remarkable difference between transfer and non-transfer students in terms of their academic performance is found, then the institutes of technology in Ecuador can be deemed effective in terms of meeting the needs of students, and this will further strengthen their reputation and attract even more students. Also, such research would underscore the value of the institutes of technology and promote student mobility

between postsecondary institutions. If there is a significant difference between transfer and non-transfer students, this study would alert administrators in the institutes of technology to initiate academic assessment plans that can identify areas for improvement, such as students' academic quality, engagement, and social integration.

Key Concepts

The following key concepts are defined in the current study as follows:

Academic Success: A combination of different variables (e.g., GPA, persistence graduation rates) in order to measure the academic performance of all types of students.

Articulation Agreement: Refers to the principal instruments that dictate the transfer process from institution to institution (Anderson et al., 2006) or the written agreements between community colleges and universities that allow course credits to be transferred from one institution to another (AACC, 2014).

Associate Degree: Degree awarded upon completion of approximately two years of full-time study (60 credit hours), which includes three parts: general education requirements, major requirements, and electives (AACC, 2014).

Bachelor's Degree: Degree awarded upon completion of approximately four years of full-time study in the liberal arts, sciences, or professional subjects (AACC, 2014).

Community College: This refers to any institution accredited to award the associate in arts or the associate in science as its highest degree (Cohen & Brawer, 2003).

Course: Regularly scheduled class sessions of 1–5 hours (or more) per week during a semester or quarter (AACC, 2014).

Credits: Units colleges use to record the completion of courses with passing grades that are required for an academic degree (AACC, 2014).

Four-year Institution: This refers to any institution accredited to award the baccalaureate or higher degree (i.e., master's and doctoral degrees).

Intercept: Intercept was estimated for each individual student by fitting the regression model that predicts one's semester GPA by time, which was centered at the first semester. Therefore, this term refers to the average semester GPA after the first semester at the university. For non-transfer students, the first semester computed was equivalent to the first semester at the same grade level at which transfer students started at the university.

Slope: Slope was estimated for each individual student by fitting the regression model that predicts one's semester GPA by time, which was centered at the first semester. This term refers to the average change in semester GPA over the years, which was represented by the individual trend delineating the average GPA change across the semesters.

Transfer Student: Students who move from their original colleges or universities to a second institution (Townsend, 1995).

Non-transfer Student: Student whose entire college career has been at a single four-year institution.

Freshman: A first-year student at a four-year institution.

Sophomore: A second-year student at a four-year institution.

Junior: A third-year student at a four-year institution.

Senior: A fourth-year student at a four-year institution.

Grade point average (*GPA*)*:* A system of recording achievement based on a numerical average of the grades attained in each course, in Ecuador, on a scale from 0 to 100 points.

High school GPA: A system of recording achievement based on a numerical average of the grades attained at high school graduation.

Program of Study: Choice of program of study at the university.

Number of Credits Transferred: The number of credits accepted by the four-year institution.

Quality of Transferring Institution: The quality of transferring institution was determined by CEAACES, which categorizes each institute of technology in Ecuador into four different categories: A, B, C, or D.

Chapter 2: Literature Review

This study focused on academic performance of transfer students in Ecuador from two-year institutions to four-year institutions when compared to non-transfer students in four-year institutions. This chapter begins with a brief review of historical backgrounds of community colleges in the United States and in Ecuador. Second, articulation agreements in the United States and in Ecuador were summarized. Third, three relevant theoretical frameworks of the current study (i.e., Schlossberg's Transition theory, Astin's Involvement theory, and Kuh's theory of Engagement), which are framed within the context of academic performance and transition, were reviewed. Lastly, the characteristics of transfer students and their GPA as a proxy of an academic performance in the institution were summarized, followed by the review of the factors affecting transfer students GPA.

Historical Background of Community Colleges

Community colleges in the United States. The community college movement in the United States started in 1901 with the foundation of Joliet College Junior College by William Rainey Harper (Brubacher & Rudy, 1997). Joliet College Junior College was operated as part of a high school until 1916, when it became a separate independent higher education institution. In the next decade, the number of community colleges grew dramatically, increasing by about 2,500% (Stumpf, 2013). Most of these community colleges focused on general liberal arts studies (Phillippe & Sullivan, 2005). The concept of the junior college evolved to support the increasing number of high school graduates who were interested in enrolling in college due to new access and open enrollment policies (Cohen & Brawer, 2003).

As of 2005, the college student population was more than 6.5 million students and in 2012 reached 7.7 million students (National Center for Education Statistics, 2012), most of them counting on the community college as the gateway to postsecondary education. Students who enrolled in community college in the fall of 2012 represented 40% of all undergraduates in the United States, and the total number of transfer students was 1,523,875 (National Center for Education Statistics, 2012). As of 2000, the white, non-Hispanic population accounted for 69.38% versus 30.62% for minority groups. It is projected that by 2050, the white, non-Hispanic population would decrease to 50%, and minority groups would increase to 50% of the population (AACC, 2014). Likewise, a considerable number of students in the United States who are not ready to attend a four-year university because of their degree of academic preparedness or financial situation (Cohen & Brawer, 2003) go to community college instead with the plan of later transferring to a four-year university.

The expansion of community colleges in the last century went through five generations (Tillery & Deegan, 1985). The first generation was from 1901 to 1930, when community colleges were extensions of high schools. While a higher education system was in place, it was not yet as accessible as today's junior colleges. It was evident that a gap existed in students' access to higher education when compared to elementary and secondary education during the first generation (Stumpf, 2013).

The second generation adopted the name junior college and took place from 1930 to 1950. During this time, the first two years of study at the junior college were considered equivalent to university-level courses. This generation was marked by a milestone, popularly known as the G. I. Bill (Servicemen's Readjustment Act of 1944),

which provided access to higher education for more than 1.5 million veterans (Cohen & Kisker, 2010). This led the way to the foundation of several community colleges within the country. More importantly, it was during this period that the option to transfer between institutions became effective, allowing students to begin their studies at two-year junior colleges and then transfer to four-year universities. Cohen and Brawer (2008) pointed out how the transfer function was an essential ingredient of community colleges, "When a course or program is approved for transfer credit to a senior institution, it becomes part of the collegiate function" (p. 24). Stumpf (2013) suggested, "community college leaders must preserve the collegiate function as an integral part of the community college culture" (p. 571).

The third generation from 1950 to 1970 was when the two-year institutions came to be referred to as community colleges. During the 1950s, more than 500 community colleges were founded (Vaughan, 2006). Also during this period, the nature of community colleges significantly changed. After the Vocational Education Act of 1963 and the Higher Education Reauthorization Act of 1965 were passed, community colleges were no longer solely for preparing students to transfer to four-year institutions. This legislation provided financial aid for students to pursue technical and vocational training, which was provided by community colleges (Stumpf, 2013).

The forth generation from 1970 to 1985 was referred to as the comprehensive community college generation. It was a period during which community colleges received strong and stable support from state and federal governments. Although these years led community colleges to expand and grow, their open access policies resulted in significant increases in student enrollment and, in turn, a decrease in the quality of

education. Different opinions exist regarding this open access policy of community colleges. For example, Cross (1971) pointed out that college should be based on egalitarian admissions, “Everyone should have equality of access to educational opportunities, regardless of socioeconomic background, race, sex or ability” (p. 6). On the other hand, Stumpf (2013) noted that egalitarian education results in “egalitarian excellence where everybody is above average and nobody fails” (p. 568). Additionally, open access affected the transfer function as transfer rates declined because four-year universities began relying on more stringent recruitment strategies, also more community college students were enrolling in vocational and technical programs.

The last generation from 1985 to 2000 was a projection by Tillery and Deegan (1985) of the future. Tillery and Deegan anticipated that community colleges would evolve even more rapidly and that administrators and leaders would focus on delineating roles, resolving the mission dilemma, evaluating the quality of education, and planning for the future. One that was not anticipated was that administrators would lack the time necessary to keep up with all of these changes and advance community colleges to the next generation (Raisman, 1990). Different challenges exist for community colleges in the 21st century as stated by the President Obama administration, whose goal is to educate an additional 5 million students with degrees or certificates by 2020 (AACC, 2014).

Institutes of technology and universities in Ecuador. All higher education institutions, including institutes of technology and universities, in Ecuador are strictly regulated and controlled by the Law of Higher Education and various educational authorities, including the SENESCYT, CES, and CEAACES.

Four-year universities, after more than a century, led the path to institutes of technology. The first university in Ecuador was Universidad Central del Ecuador (UCE), which was founded in 1826 in Quito. UCE, which is a public university, offers two specific programs: medicine and law. It wasn't until 120 years later that a private university, Pontificia Universidad Catolica del Ecuador, was founded and opened in 1946 in Ecuador (Batallas, Lopez, & Ochoa, 2006).

Beginning in 1950, economic growth in Ecuador led to expansion of the country's education system. Ecuador became the first banana exporter in the world, and as a result, the need for more professionals and qualified labor grew significantly (Batallas et al., 2006). In addition, during the 1970s, the private oil industry reverted back to public control, generating considerable profits that were invested in education. As a consequence, more universities and institutes of technology were created in Ecuador. A total of 354 institutes of technology and a total of 68 universities have been created since the 1970s (Educacion Superior en Latino America Capitulo Ecuador, 2006). The same trend was found across all of Latin America due to the high increase in demand for higher education. In 1950, there were 75 universities in Latin America, in 1985 there were 450, in 1995 there were 812, and by 2010 more than 3,000 universities had opened their doors across Latin America, resulting in the number of students increasing from 276,000 in 1950 to almost 15 million in 2010 (Lamarra, 2010).

In Ecuador, study areas offered in the institutes of technology are more heterogeneous than those offered in the universities, as each covers a broad spectrum of professional studies in mainly three different subgroups: industrial, administrative, and agricultural. Two-year institutions in Ecuador grew rapidly from 1979 to 1992, resulting

in the opening of 2.9 new institutions per year on average. From 1992 to 2000, 2-year institutions opened at a rate of 14.3 institutions per year and reached a total of 114 institutes (Sistema Nacional de la Informacion de la Educacion Superior en Ecuador, 2010) (National System of Higher Education Information). In 2009, 69 institutes of technology were closed, many of which were not operationally active. In addition, in April 2012, a total of 14 universities were closed by the Consejo de Evaluacion, Acreditacion, y Aseguramiento de la Calidad de la Educacion Superior due to their low academic quality. Such a large group of universities being closed marked a milestone in the history of higher education in Ecuador.

The institutes of technology in Ecuador offer technical degrees in two years and technological degrees in 3 years, while universities offer bachelor degrees in 4 or 5 years, depending on the program of study. Technological degrees require a total of 4,800 academic hours, whereas bachelor degrees require 7,200 academic hours and an additional 800 hours for engineering fields (Reglamento de Regimen Academico [RRA], 2014) (Regulation of Academic Regime). Free student mobility has been granted between these institutions under the Constitution of the Republic of Ecuador (2008), the Law of Higher Education (2010), and the RRA (2014). These policies regarding free student mobility give students in Ecuador the right and capability to transfer from one institution to another, in any direction, which can be between institutes of technology, between universities, or between institutes of technology and universities. The transfer function in Ecuador works similar to that in the United States and requires that certain prerequisites be satisfied.

In sum, a technical degree in Ecuador is equivalent to an associate degree offered by community colleges in the United States in terms of the completion time, academic requirements, and similarity of degree level. The same rationale applies to four-year universities in Ecuador, which offer licensee and engineering degrees equivalent to the bachelor's degree offered by universities in the United States. Students from any type of institution can benefit from the free mobility policy in Ecuador.

Transfer Courses

Courses are regularly scheduled with class sessions of 1-5 hours (or more) per week during an academic period. Institutions declare the completion of courses based on passing grades, and each course is assigned a specific number of credits, which are transferable to other institutions (AACC, 2014). However, in the transfer process, students can also lose credit hours earned from community colleges. Some credits might not be transferred for many different reasons, such as not being part of the curriculum or over the transfer limit (Ellis, 2013). A study conducted at eight public universities in Texas (Ellis, 2013) found that students lost credits when they transferred because they changed majors, took courses outside their degree plan, did not have equivalent or compatible courses at the 4-year university or had different requirements for majors, did not meet core requirement for their major, or had number of courses over the transfer limit. Ellis (2013) also found that the majority of students (52%) were able to transfer 100% of their credit hours earned at community colleges, with a wide range of 8 to 125 credit hours.

Unfortunately, no statistics regarding transfer rates are public in Ecuador; however, the transfer function appears to be implemented well enough for students to

transfer sufficient numbers of courses between institutions. The RRA has established standard procedures for transferring credit hours earned within or outside Ecuador. For instance, the new institution is required to conduct different steps: course description analysis, theoretical and practical examination test, and recognition of professional experience. Acceptable transfer courses must be part of the curriculum, and the course description must be at least 80% similar to the equivalent course.

Articulation Agreements

The transfer function is paramount in maintaining access to higher education for students who complete the lower level courses for a baccalaureate degree at a 2-year community college (Cepeda & Nelson, 1991; Laanan, 2007). The primary method for facilitating students' transferring between educational institutions is through articulation agreements (Montague, 2012). Wright, Briden, Inman, and Richardson (1996) define articulation as "the range of processes and relationships involved in the systematic movement of students between and among post-secondary institutions. The goal of articulation is to promote the problem-free transfer of courses from one institution to another" (p. 6). More succinctly, Ignash and Townsend (2001) refer to articulation as the "what" process to student transfers. Articulation agreements, as the instruments that serve to negotiate students' requirements to move from one institution to another (Anderson et al., 2006), are formal and informal arrangements between educational institutions (Montague, 2012; Wellman, 2002), allowing course credits to be transferred from one institution to another (AACC, 2014). Articulation agreements in the United States and in Ecuador are described below.

Articulation agreements in the United States. According to Roksa (2009), the fundamental objective of articulation agreements is to align academic programs and curricula. Students benefit from transferring the majority of their course credits or losing the minimum number of course credits. Likewise, articulation agreements are established in the United States to increase systematic efficiency and effectiveness of the transferring process in order to facilitate degree completion. In addition, community colleges benefit from articulation agreements with 4-year universities, as they serve to enhance academic prestige and to legitimate academic courses as a consequence. On the other hand, 4-year universities take advantage of these articulation agreements as they increase their enrollment and student body diversity (Montague, 2012).

Community colleges in the United States often develop articulation agreements in partnership with four-year universities, unless state public systems apply by mandatory legislative initiatives. Many states have made progress toward easing the transfer process; however, there are some states that still need to work on programs and pass them into legislation (DuPont, 2010). Thirty states have enacted transfer and articulation policies, and 40 states have established statewide cooperative agreements among institutions (National Center for Education Statistics, 2003). Nevertheless, there are programs that require previous articulation as suggested by the Accounting Education Change Commission (AECC) with the accounting programs, in order to ensure not only a successful transfer of credits but also a successful student experience (Montondon & Eikner, 1997).

Articulation agreements in Ecuador. The Constitution of the Republic of Ecuador (2008) grants, in general, free student mobility between institutions of higher

education in Ecuador. In addition, in 2013, the CES approved the RRA, which provides the legal framework that rules all academic issues in the Ecuadorian system of higher education, including the transfer function, its benefits, and limitations.

In Ecuador, no state-mandated articulation agreement exists in practice, not even between public institutions. However, in the absence of specific articulation agreements, higher education institutions have privately developed unique and tailored agreements that better suit each institution's enrollment requirements for selecting students. Regardless of a student's mobility rights, four-year universities in Ecuador have the autonomy to decide whether to accept specific transfer students. Some four-year institutions choose not to accept transfer students, while others actively look for articulation agreements with other institutions. These agreements usually take into consideration the ranking and academic reputation of each institution. The main purpose of articulation agreements is to allow students to transfer as easily and smoothly as possible and, as a consequence, increase enrollment and graduation rates. Nonetheless, for students who are not able to afford private four-year universities or who do not want to enroll in public universities, the transfer function has been an important pathway to four-year institutions in Ecuador.

The Theoretical Framework of the Current Study

Since this study dealt with the transition process of transfer students who need to adjust to a four-year university system as part of their student development, two constructs—students' learning development and social and psychological growth—were used as the theoretical basis of the current study. Student development is defined as "the ways that a student grows, progresses, or increases his or her developmental capabilities

as a result of enrollment in an institution of higher education" (Rodgers, 1990, p. 27). Pascarella and Terenzini (2005) highlighted that "students seeking a bachelors degree who begin their college careers in a two-year public institution continue to be at a disadvantage in reaching their education goals compared with similar students entering a four-year college or university" (p. 381). Below are the main theories related to student transitioning and academic performance.

Schlossberg's theory of transition. Schlossberg's (1981) earliest work, "A Model for Analyzing Human Adaptation to Transition," introduced her model of transition. In 1984, Schlossberg developed the theory of transition in her first book, *Counseling Adults in Transition.* The theory, typically categorized as the theory of adult development (Evans, Forney, Guido, Patton, & Renn, 2010), provides a framework for understanding academic and personal needs of individuals in the transition process. Schlossberg's transition theory is applicable to transfer students as they experience a transition process when transferring to 4-year universities.

Transition is "any event that results in a change in relationships, routines, assumptions or roles with the setting of self, work, family, health and/or economics" (Schlossberg, 1984, p. 43). Goodman, Schlossberg, and Anderson (2006) expanded the concept of transition, noting that a transition exists only if it is so defined by the individual experiencing it. Individuals experience many changes; however, they may occur without the individual attaching much significance to them. Therefore, such changes would not be considered transitions (Evans et al., 2010).

The meaning that transitions have for individuals is dependent upon the type, context, and impact of the transition. Goodman et al. (2006) described three types of

transitions: (1) anticipated transitions, which are predictable changes, such as transferring from one institution to another; (2) unanticipated transitions, which are not predictable, such as a divorce or a sudden death; and (3) non-events, which are expected to occur but do not, such as failure to be admitted at a university. Goodman et al. also referred to the context of the transition in terms of one's own or someone else's change and to the setting in which the change takes place, such as work or personal. Also, the impact that the transition can have on any individual is determined by the "degree to which the transition alters one's daily life" (Schlossberg, Waters, & Goodman, 1995, p. 33).

Transition is a process that extends over time and provides opportunities for growth and development; however, a positive outcome should not be assumed (Evans et al., 2010). Transition consists of a series of three phases: moving in, moving through, and moving out (Schlossberg et al., 1995). Moving in marks the start of the transition period, where the individual "becomes familiar with the rules, regulations, norms, and expectations of the new system" (Goodman et al. 2006, p. 49). The moving through phase comprises the longest period of time in the transition process. Moving out occurs at the end of the transition process and can mark the beginning of a new transition.

According to Schlossberg (1984) and Goodman et al. (2006), there are four major sets of factors (also known as the 4S system) that influence an individual's ability to cope with a transition: situation, self, support, and strategies. Situation describes the type of transition, the context of the transition, and the impact on the individual. Every situation is different and an individual's perception can be either positive or negative. Self refers to personal and demographic characteristics, including gender, age, ethnicity, socioeconomic status, and health. In addition, each individual brings psychological

resources, such as values, maturity, optimism, self-concept, and self-efficacy, that affect how one reacts to changes (Goodman et al., 2006). Support refers to the social support needed to cope with a transition. Types of social support include family, friends, professional networks, institutions, and communities (Schlossberg et al., 1995). The type of aid that results from having social support includes affect, affirmation, material goods and money, and honest feedback (Evans et al., 2010). Finally, strategies refer to the actions individuals take to modify their situation, control the meaning of the problem, or manage the stress. Each person perceives transitions differently, and each individual's response to a transition depends on their balance and interaction with the 4S system (self, situation, supports, and strategies).

In summary, Schlossberg's (1984) theory of transition provides the framework for understanding changes and transition that students go through they transfer from a 2-year institution to a 4-year university. The theory proposed by Schlossberg identifies and explains the challenges that students face before, during, and after the transition process.

Astin's theory of student involvement. Astin's (1984) theory of student involvement explains the perspective of transfer students themselves. According to Astin, this "theory can be simply stated as that students learn by becoming involved" (Pascarella & Terenzini, 2005, p. 53). The theory of student involvement emphasizes that student development is directly influenced by the quantity and quality of a student's efforts. A student's gains are proportional to the quality and quantity of that student's involvement. Astin (1999) defined involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297). This experience includes studying, Greek life, faculty interaction, place of residence, and athletics. Astin (1999)

referred to involvement as a behavioral component. “It is not so much what the individual thinks or feels, but what the individual does. How he or she behaves, that defines and identifies involvement” (p. 519).

Astin reported that students with high levels of social and academic involvement at two-year colleges are most likely to continue such high levels of involvement after transferring to four-year institutions. Conversely, uninvolved students neglect studies, spend little time on campus, have no extracurricular activities, and infrequently have contact with faculty members (Astin, 1999). Astin (1984) highlighted that student involvement is not only the student’s responsibility but also that of the institution. Regarding transfer students’ involvement, Tinto (1993) reported that many students who transfer to universities from junior and community colleges are much more limited in terms of their involvement and engagement in campus activities, learning experiences, and also interactions with other students.

Astin (1993) developed the input-environmental-output model (I-E-O), which serves as a conceptual guide for studying student involvement. The purpose of this model is to “assess the impact of various environmental experiences by determining whether students grow or change differently under varying environmental conditions” (Astin, 1993, p. 7). Input refers to personal qualities of the students and includes characteristics that students bring to the institution, like academic and social experience and demographic and family background. Environment refers to students’ experiences during their college years, which include people, campus life and culture, academic experience, and social exposure. Output refers to the talents that students actually possess after attending college, which include attitude, knowledge, and skills.

Astin (1999) highlighted five basic postulates of the involvement theory. First, involvement refers to the investment of energy in various objects. The objects may be general ones, such as the student experience, or specific, like preparing for chemistry or math. Second, involvement occurs along a continuum regardless of the object. Students manifest different degrees of involvement in a certain object and one student manifests different degrees of involvement in various objects at the different times. Third, involvement has both qualitative and quantitative characteristics. For instance, the level of involvement in academic work can be measured qualitatively, like understanding and comprehending a reading assignment, and quantitatively in number of hours devoted to academic work. Fourth, student involvement is directly proportional to the amount of student learning and development in any given educational program. Fifth, the effectiveness of any educational policy or practice is related to the capacity of that policy or practice to increase student involvement.

In summary, students' inputs, including previous academic and social experience, and their demographic background characteristics, such as gender and race/ethnicity, should be considered in understanding student academic performance as suggested by Astin (1984). As Laanan (2004) stated, "Astin's theory of student involvement provides a useful conceptual framework to examine and understand the complex academic and social adjustment process of community college transfer students" (p. 335).

Kuh's theory of student engagement. Student engagement is a critical component of student success. Student engagement focuses not only on what students bring to college, such as motivation and preparation, but also on what students do in college and how opportunities and environment mediate college retention and graduation

(Kuh, Kinzie, Schuh, & Whitt, 2005). The models that examine student success often include five sets of variables: (1) student background characteristics, including demographics and previous academic background and other experiences; (2) structural characteristics of institutions, such as mission, size, and selectivity; (3) interactions with faculty, staff members, and peers; (4) student perceptions of the learning environment; and (5) the quality of effort students devote to educationally purposeful activities (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007).

Kuh et al. (2010) focused on five educational practices that enhance student success: (1) level of academic challenge, (2) active and collaborative learning, (3) student interactions with faculty members, (4) enriching educational experiences, and (5) supportive campus environment. Level of academic challenge refers to intellectual challenge and creative work that involve academic work and complex cognitive tasks. Active collaborative learning refers to the learning students experience from being intensively involved in their education, as well as the valuable skills that they acquire by collaborating with others in solving problems or mastering difficult material. Student interactions with faculty members allow students to see first-hand how experts identify and solve problems and to become role models or mentors for continuous lifelong learning. Enriching educational experiences refers to the different opportunities that colleges and universities offer inside and outside the classroom that complement the goals of the academic program, such as diversity, technology, internships, community service, and senior capstone courses. A supportive campus environment makes available resources that students can use to enhance their academic skills and to enrich their social life, such as transition programs; advising networks; peer support; residential

environment; and special support programs for transfer students, international students or commuter students.

In summary, Kuh et al. (2010) concluded that student engagement has two key components that contribute to student success. The first one is the amount of time and effort students put into their studies and other related activities. The second component is the ways institutions allocate resources and organize services and learning opportunities that encourage students to actively participate. In the current study, Kuh's theory also serves as the conceptual framework of social adjustment, engagement, and student success in college as part of the impact of students' GPA on their college success.

Types of Transfer Students

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 term "transfer student" holds different connotations or meanings according to the situation of the student and the institutions. For example, regular first-time transfer students can be broadly defined as students who move from their original colleges or universities to a second institution (Townsend, 1995). However, Cohen (2003) narrowed the spectrum of this definition and distinguished a transfer as a student who has earned at least 12 credit hours at a community college prior to transfer. This type of transfer is commonly referred as an "upward transfer" or "vertical transfer" of students and in the US, it is also known as a 2/4-transfer function (DuPont, 2010).

Individuals who move or transfer more than once during their academic careers are considered *multiple transfer students* (De los Santos & Wright, 1990; Kearney,

Townsend, & Kearney, 1995; McCormick, 2003). According to McCormick (2003), 50% of transfer students are multiple transfer students. Another type of inter-institutional transition is the *reverse transfer,* which refers to a particular pattern whereby students start their academic career at a four-year institution and transfer to a two-year college afterwards (Yang, 2006). There is also the *downward transfer* in which students transfer from a community college to a less than 2-year institution (Bahr, 2009, 2012). *Upward transfer* represents a sizeable percentage of all transfer students; however, other types of inter-institutional transitions are significant. For example, there is a segment of students who begin at two-year institutions, transfer to four-year universities, and eventually transfer back (Bahr, 2012). For the purpose of this study, transfer students were considered to be those who started their studies at the two-year institutes of technology in Ecuador and later transferred to a four-year university in Ecuador.

Characteristics of U.S. Transfer Students

The profile of transfer students is known to be very heterogeneous in terms of age, socioeconomic status, time of transferring, type of institution, cumulative GPA, race/ethnicity, family background, number of credits transferred, and working hours per week (Duggan & Worth Pickering, 2008; Fredrickson, 1998). In contrast, non-transfer students are more homogeneous in terms of age and full-time student status.

Transfer students differ in the number of credits they transfer, which vary from transferring only a few credits up to an entire associate degree (Baldwin, 1994). They work full-time, part-time, or not at all and enroll as either full-time or part-time students (Fredrickson, 1998). Transfer students vary in age (Terenzini et al., 1996), but tend to be older (average of 26 years) than non-transfer students when they transfer to university

(Fredrickson, 1998; Townsend & Wilson, 2009). Being older, transfer students are more likely to be married and having family commitments can impact academic success and persistence (Leavitt, 1989; MacKinnon-Slaney, Barber, & Slaney, 1988).

There are many reasons why students decide to attend a two-year college instead of a four-year university. These include distance, cost, reputation, accessibility, academic record, and demographic background (Horn et al., 2006). Community colleges are usually located at the heart of the community with the purpose of serving the needs of the local population. Community colleges provide opportunities for students with low academic performance in high school, those who need English or other basic skills before undertaking university-level work, those who need job skills in order to get employment, those who need help deciding which career to pursue (Grubb, 1999). However, one of the main reasons that students enroll at two-year community colleges is their open access admission policy (Hoachlander et al., 2003).

The reasons for transferring from one institution to another depend on personal factors (Cedja & Kaylor, 2001) and academic and social factors (Townsend & Wilson, 2009). Personal factors are considered highly influential in the decision-making process, and a family's emotional or financial support is often a determining factor in the decision to enroll at a two-year institution. In contrast, lack of family support tends to influence students to remain at a community college. Also, personal aspirations in college are strongly related to transferring (Lee & Frank, 1990). Academic factors include specific majors offered by four-year institutions or the wide choice of possible majors, especially for undecided students. The collegiate experience provided by universities, such as living on campus, Greek fraternities and sororities, and sports, are not determinant factors

(Townsend & Wilson, 2009). Students also choose to transfer for social reasons, including friends or relatives at the university and networking opportunities. Conversely, the most common reasons why students choose not to transfer from community colleges to 4-year universities are not wanting to spend the extra money, not wanting to move away from home, not wanting to lose attention and faculty interaction at community colleges, preferring small classes at community colleges, not wanting to give up dual enrollment at community colleges, preferring option for evening classes at community colleges, and needing to improve grades and academic skills before transferring (Townsend & Wilson, 2009).

In general, "transfer students vary in age, gender, race, ethnicity, employment patterns, persistence, academic backgrounds, and socio-economic background" (Eggleston & Laanan, 2001, p. 89). Similarly, academic performance varies for transfer students. For instance, compared to high school graduates who began and persisted at their current institution, transfer students reported that at the time of their transfer they interacted less with faculty, participated in fewer educationally enriching activities, and gained less from college than their peers (National Survey of Student Engagement, 2005).

Difference in GPA Between Transfer and Non-transfer Students

Overall, the perception of educational quality between community colleges and four-year universities varies depending on the individual. For example, Laband and Piette (1995) found that course requirements were less demanding and exigent in community colleges, arguing that part-time community college faculty usually do not have doctoral degrees, which may result in less rigorous instruction. In contrast, Vaughan (1982) found that community colleges provided opportunities for students who otherwise would not

have enrolled in a higher education program. Johnson (1992) reported that while non-transfer students had higher ACT scores than transfer students, transfer students earned GPAs that were equivalent to those of non-transfer students.

Again, the research is mixed when it comes to differences in GPA between transfer and non-transfer students. For instance, Porter (1999) found that the GPAs of transfer and non-transfer students increased by year but that overall transfer students earned lower GPAs than non-transfer students during their senior year. Diaz (1992) found that a majority of transfer students recovered from transfer shock between the first and second semester after transferring and that the initial drop in their GPA was in most cases less than one half of a grade point. Also, students who transferred with an associate degree earned significantly higher GPAs (2.89) than those transferring earlier in their studies (2.63) (Heidi, 2002).

However, Branson and Green (2007) found that the cumulative GPA of transfer students was 0.10 points higher than the GPA of non-transfer students. In Canada, the same pattern was found in Bell's (1998) study, where transfer students had a higher GPA than non-transfer students at the end of their first year. However, Bell found that transfer students had lower graduation rates than non-transfer students. In addition, Egemba (1997) found that community college GPA was the strongest predictor of transfer students getting their bachelor's degree. Ditchkoff, Laband, and Hanby (2003) found that community college GPA was a strong and positive predictor of academic performance of transfer students. Community college GPA is also considered a predictor of transfer students' persistence and degree completion at university (Townsend, McNerny, & Arnold, 1993).

Lee and Frank (1990) highlighted that differences in the GPAs of transfer and non-transfer students were influenced by variables related to personal background, academic preparation, and social integration. As such, it should be noted that not only is it important to consider GPA, but the community college's academic prestige and quality also needs to considered. However, as a starting point in Ecuador where no relevant study regarding transfer students exists, the current study focused on students' GPA as a proxy of the academic performance of transfer students in the university.

Factors Affecting Transfer Students' GPA

Transfer shock. A number of studies demonstrated that students transferring from two-year institutions to four-year universities experience a "transfer shock" resulting in a lower grade point average (GPA), particularly during the first semester at the receiving institution (Cedja et al., 1998; Hill, 1965; Laanan, 1996; Peng & Bailey, 1977). Originally introduced by Hill (1965), transfer shock has been widely used to explain academic adjustment as measured by GPA and the temporary dip in grades commonly evidenced during students' first or second semester at four-year institutions (Laanan, 1996). The transition of students from community colleges or institutes of technology to four-year universities requires that students adjust to exigent academic demands as juniors or seniors (Keeley & House, 1993; Townsend, 1993). Community colleges differ from universities in many ways, including size, location, curriculum, grading criteria, faculty traits, and competition among students. All of this variability contributes to the transfer shock students may experience and have to deal with.

Personal factors can also affect transfer students' academic performance as measured by their GPA. Transfer students working full-time or with demanding family

obligations are more likely to experience a drop in GPA. Likewise, type of major and number of upper level courses can also affect GPA. For instance, Laband and Piette (1995) found that transfer students enrolled in an accounting program, had a lower GPA than non-transfer students.

Academic preparation is an important factor associated with transfer students (Lee & Frank, 1990), and thus high school GPA (HSGPA) is considered a significant predictor of college academic performance (Cornwell, Mustard, & Van Parys, 2009). However, a considerable amount of evidence now suggests that HSGPA and SAT scores may not predict college performance as measured by GPA for all students and may depend on race and gender (e.g., Chee, Pino & Smith, 2005; Tracey & Sedlacek, 1989). In particular, in Ecuadorian universities and institutes of technology, HSGPA is not a factor considered in admission. Instead admission is based on a general admission test or remedial courses, especially for private institutions. For public institutions, students must take the National Test for Higher Education (ENES; http://www.snna.gob.ec/), administered by the National Secretary of Higher Education, Science and Technology (SENESCYT). In a study conducted in Peru, Ocana (2011) highlighted the importance of the characteristics of high schools as academic variables that affect students' academic performance and recommended that high schools be segmented, for better effect, by type of school (either public or private), number of students per class and year, and bilingual or not.

Transfer students also benefit from the academic background acquired at the community college level, and thus they tend to show greater experience and maturity when they enter four-year universities (Branson & Green, 2007). For some transfer

students, attending a community college could be considered a factor for success rather than an academic impediment or limitation. Nonetheless, the quality of the community college will have a long-term impact on transfer students. Dills and Hernandez-Julien (2008) found that transfer students who took introductory courses at higher quality community colleges earned higher grades in their intermediate courses than students transferring from lower quality institutions.

Lastly, students' demographic background characteristics can play an important role in the educational experiences of transfer students (Wang, 2013). Factors such as gender, race/ethnicity, and socioeconomic status play important roles and are positively related to educational expectations (Wang, 2013). Siegfried (1979) concluded that gender differences start developing during high school and extend to the college years. In the 1980s, different studies found that males had higher educational expectations and aspirations than females. However, in the 1990s, this trend was reversed and females had higher educational aspirations than males (Wang, 2013). Wawrzynski and Sedlacek (2003) found that male students were more interested in academic aspects, such as working with faculty on a research project, while female students reported positive academic behaviors, such as reviewing, revising, and updating class notes. In a study conducted in Mexico, Gómez, Oviedo, and Martínez (2011) found that gender and academic year (semester) were found to explain academic performance. For instance, statistics from the AACC (2014) demonstrated that 57% of all the students enrolled in community colleges in fall 2012 were female and 43% were male.

Several findings suggest that females have better academic performance than males in specialized courses, such as accounting (Mutchler, Turner, & Williams, 1987;

Tyson, 1989); however, others (Lipe, 1989) reported that males outperformed females and achieved higher cumulative grades. Meanwhile, age also shows some dichotomous results. Woodley (1984) found that the relationship between academic performance and age varied across disciplines of study. However, Hoskins, Newstead, and Dennis (1997) found an insignificant relationship between age and academic performance of transfer students. Different studies conducted in Latin America (such as in Peru, Mexico, Costa Rica, Chile, and Argentina) showed that academic characteristics of high schools, high school GPA, admission test scores, previous academic records, workload, gender, and academic year were factors associated with academic performance (Barahona, 2014; Garbanzo, 2007; Gomez et al., 2011; Ocana, 2011; Vazquez et al., 2012).

Chapter 3: Methodology

To understand whether transfer students from two-year institutes of technology in Ecuador differed in terms of their academic performance as measured by GPA from non-transfer students at a four-year institute in Ecuador, a quantitative study of secondary data obtained from a small private university located in Ecuador was conducted. This chapter describes the target population and sample, variables of interest, and statistical analyses that were used to address the research questions described in Chapter 1.

Target Population and Sample

The target population for this study was students who were attending a four-year university in Ecuador, which included both transfer and non-transfer students. Students were sampled from a small private university in Ecuador, where transfer students represented 47% of the entire undergraduate population, and females represented 20% of the total undergraduate population. The sample for this study consisted of 1,126 students admitted to a small private university in Ecuador from August 2008 (Fall semester) to August 2013 (Fall semester). Due to the manageable size of the university population, all 1,126 students admitted during this period were pre-selected. Of them, only students who were at least 18 years of age, had finished their first academic year, and had a first semester GPA as of Spring 2014 were selected. In addition, those who did not complete at least one semester or who dropped out between 2008-2013 were excluded, leaving a sample of 690 students for the statistical analysis in this study.

Research Design

The research design that was used in this study was a quantitative analysis of the secondary data obtained from a small private university in Ecuador. The use of secondary

data has strengths and limitations. Among the advantages is the fact that the information is already collected, therefore saving valuable time compared to other independent data collection methods, such as surveys or questionnaires (Windle, 2010); it allows for comparison between different variables over time with greater flexibility; and it enhances higher quality data allows for a broader study of larger samples that are more representative of the target population and include different variables to select and control (Duncan, 1991; Singleton, 1988). On the other hand, the use of secondary data restricts the ability of the researcher to design and tailor specific questionnaires or surveys to address particular research questions or constructs in depth (Duncan, 1991; Singleton, 1988; Windle, 2010). Therefore, balancing the advantages and disadvantages of using secondary data and considering the type of research questions and variables to be studied, this study used secondary data collected by the university in order to, provide greater objectivity and accuracy of results with a larger sample size.

Data Collection

Data for this study was officially requested in Spring 2015 of the Secretary of the university with detailed information of the variables needed, and once approved, the information technology (IT) department downloaded and processed the information from the university system into a excel spreadsheet. The variables, which were de-identified, included transfer or non-transfer status (transfer status was assigned if students had credits earned from a different institution), program of study, year of entry, previous academic achievement (HSGPA officially standardized by government authorities on a 20-point scale), academic performance (GPA per semester and transfer GPA), transferring institution, and student's gender.

Variables

Dependent variables. The dependent variables of this study were the following: (1) average GPA after one semester (*intercept*) for transfer and non-transfer students, and (2) average change in GPA over the years (*slope*) obtained from an individual regression model predicting GPA by semester (which was centered at the first semester) for transfer and non-transfer students. GPA was a continuous variable ranging from 0 to 100, and was computed, per semester, by dividing the total points earned by the number of courses taken.

Independent variables. The independent variables used in this study were the following: (1) whether a student was a transfer or non-transfer, (2) HSGPA, (3) program of study, (4) gender, (5) college year/grade level, (6) number of credits transferred when admitted, and (7) quality of the transferring institution.

First, transfer status was assigned to students who transferred any credits to the university, while non-transfer status was assigned for students who had not transferred credits. This variable was dummy coded with non-transfer students as a reference group (1 = transfer students and 0 = non-transfer students). Second, high school GPA (HSGPA) represented the grade point average of students at the end of high school. HSGPA was measured on a continuous 20-point ratio scale, which was standardized by the official Ecuadorian authority at the Ministry of Education and was used in all high schools in Ecuador.

Third, program of study included nine different majors/programs: (1) hotel management, (2) international business, (3) business administration, (4) organizational communication, (5) marketing, (6) information technology, (7) graphic design, (8)

automobile engineering, and (9) journalism. For the purpose of this study, the areas of study were coded into the following three categories: (1) social science (including hotel management, international business, business administration, organizational communication, and marketing), (2) engineering (including information technology and automobile engineering), and (3) other (including graphic design and journalism). These variables were dummy-coded with people in social science being the reference group.

Fourth, different academic periods were used for each program of study. For instance, engineering had two semesters per year and one summer, other programs had four trimesters per year and one summer. Additionally, some programs allowed an intensive semester between regular semesters. In order to use the same academic scale for all programs, trimesters one and two were coded as Spring semester, and trimesters three and four were coded as Fall semester. If an intensive semester was opened at the end of a fall semester, it was coded as Fall. If it was opened at the end of a spring semester, it was coded as Spring. Summer sessions remained coded as summer. As a result, a semester variable was categorized into three periods: Fall, Spring, and Summer.

Fifth, gender was dummy-coded with male being the reference group (0 = male and 1 = female). Sixth, college year/grade level was coded into 4 categories: 1 = freshman (< 1 year), 2 = sophomore (> 1, < 2 years), 3 = junior (> 2, < 3 years), and 3 = senior (> 3, < 4 years). Transfer students transferring up to 50 credits were categorized as freshmen, between 51 and 100 credits as sophomores, between 101 and 150 as juniors, and between 151 and 200 as seniors. Non-transfer students were categorized by the number of semesters studied as of Fall 2013. Three semesters (fall, spring, and summer) comprised a full college year; therefore, non-transfer students with up to three semesters

were categorized as freshmen, up to six semesters as sophomores, up to nine semesters as juniors, and more than 9 semesters as seniors.

Sixth, the number of credits transferred referred to the credit hours that students transferred and has accepted by the university. The number of credits ranged from a minimum of 3 to a maximum of 182. In order to graduate from the university, students have to study at least three semesters.

Lastly, the quality of the transferring institution was categorized into four categories, which were set by CEAACES. In 2013, CEAACES classified higher education institutions into four different categories: A, B, C, or D (http://www.ceaaces.gob.ec/sitio/evaluacion-universidades-2013/), considering three main standards: academic quality, infrastructure, and institutional management (based on more than 50 indicators). The quality of institution was scored on a 1-point scale and categorized into four subgroups as "A" if an institution was scored at or above .60, "B" if an institution was scored between .45 and .60, "C" if an institution was scored between .35 and .45, and "D" if an institution was scored at or below .35. For the purpose of this study, Categories A, B, and C were considered because there was only one case of a Category D institution and that student did not have at least one semester GPA and so was removed from the analysis.

Data Analysis

Transfer and non-transfer student GPAs were extracted from the university's academic system and properly segmented by semester for a total of two semesters per year plus the summer from Fall 2008 to Fall 2013. First, an individual regression model predicting GPA by semester (which was centered at the first semester at the university)

was fitted for each individual student. From each regression model, the estimated *intercept* (which represented an average GPA after the first semester) and *slope* (which represented an average change in GPA over the years) were extracted with their associated standard errors. In the current study, these intercepts and slopes (both in GPA points) extracted from the individual regression models (*not* GPA points per se) were used as dependent variables to answer the research questions using a series of mixed-effects models, which computed a variance-weighted average and its associated variance, separately by students' grade levels.

The first set of research questions concerned the students' average GPA after the first semester (*intercept*). In particular, a series of mixed-effects models comparing intercept by transferring status was first performed, separately by grade level (freshman/sophomore, junior, and senior), in order to examine whether the difference in average GPA after the first semester between transfer and non-transfer students. Then, a series of mixed-effects models that examined whether *intercepts* differed by different student characteristics was performed by grade level, separately for transfer and non-transfer students. The second set of research questions was concerned with students' average change in GPA over the years (slope). In particular, a mixed-effects model comparing *slope* by transfer status was performed, separately by grade level, in order to examine whether a difference in students' average change in GPA (*slope*) existed between transfer and non-transfer students. Then, a series of mixed-effects models comparing *slope*s by different student characteristics was performed by grade level (freshman/sophomore, junior, and senior), separately for transfer and non-transfer students.

A Priori-power Analysis

A priori-power analysis using GPOWER statistical software 3.1.5 (Erdfelder, Faul, & Buchner, 1996) indicated that the required sample size to find a small but significant effect with a desired statistical power of .90 was 213, when the significance level (α) was set at 0.05.

Chapter 4: Results

This chapter summarizes study findings from a series of mixed-effects models on (1) the average GPA after the first semester (intercept) and (2) the average change in GPA over the years (slope) that answer the two sets of research questions described in Chapter 1. This is followed by descriptive statistics of the variables used in the current study for transfer and non-transfer students attending the target university in Ecuador.

Descriptive Statistics

The target institution enrolled 1,126 transfer and non-transfer students between Fall 2008 and Fall 2013. Those students who did not complete at least one semester or dropped out during the target period (and thus had a GPA score of 0 or lower than 50 points) were excluded, leaving a sample of 690 students included in the statistical analysis in this study. A total of 690 students, including both transfer and non-transfer students, were included in this study. Note that the sample size of 690 students was more than the minimum of 213 stipulated in the a priori-power analysis (more details regarding a priori-power analysis can be found in Chapter 3). Of these 690 students, as shown in Table 1, 367 (53.19%) were non-transfer students and 323 (46.81%) were transfer students with 137 females (19.86%) and 553 (80.14%) males. The mean HSGPA for all 690 students in this study was 17.25 with a standard deviation of 1.12. These 690 students were from different programs, which were categorized into the following three groups: engineering (n = 497, 72.03%), social science (n = 184, 26.67%), and other (n = 9, 1.30%). Below, characteristics of the sample are summarized, separately by students' transferring status: transfer and non-transfer students (see Tables 1 and 2).

Transfer students. As shown in Table 2, transfer students (n = 323) had a mean HSGPA of 17.40 (SD = 1.15), an average transfer GPA of 81.98 (SD = 7.40), and a mean number of credits transferred of 115 (SD = 46.70). Transfer students' average GPA after their first semester at the university was 84.78 (SD = 7.31). There were 146 (44.8%) transfer students studying engineering, 169 (52.3%) transfer students studying social science, and 8 (2.4%) transfer students studying in other programs. Of the 323 transfer students, there were 118 (36.53%) females and 205 (63.47%) males.

As shown in Table 3, of the 118 female transfer students, their average HSGPA was 17.92 (SD = 1.15), their average GPA was 85.29 (SD = 3.55), their mean number of credits transferred was 140 (SD = 29.95), and their programs of study included 10 in engineering, 104 in social science, and 4 in other areas of study. The 205 transfer male students had a mean HSGPA of 17.14 (SD = 1.05), an average GPA of 80.07 (SD = 1.41), a mean number of credits transferred of 101 (SD = 48.74), and their programs of study involved 136 in engineering, 65 in social science, and 4 in other areas of study.

As shown in Tables 4 and 5, a total of 270 transfer students transferred from institutions in Category A, 45 students transferred from institutions in Category B, and 7 from Category C. There was 1 student who transferred from a university in the United States. Of the 270 students transferred from Category A institutions, 93 (34.44%) selected engineering as their area of study, 169 (62.59%) social science, and 8 (2.96%) other programs. Of these students from Category A institutions, 114 (42.22%) were females and 156 (57.78%) were males. The mean number of credits transferred from Category A institutions was 125.5 (SD = 39.31), the average HSGPA was 17.46 (SD = 1.19), and the mean GPA in college was 82.37 (SD = 7.62).

Of the 45 transfer students who transferred from Category B institutions, all of them (100%) chose to study engineering. Females represented 3 (6.67%) transfer students from B institutions, while males numbered 42 (93.33%). The mean number of credits transferred from Category B institutions was 57 (*SD* = 41.01), the average HSGPA was 17.2 (*SD* = 0.71), and the mean GPA in college was 80.54. Of the 7 transfer students who transferred from Category C institutions, 7 (100%) enrolled in engineering. Of these students from Category C institutions, 1 (14.29%) was female and 6 (85.71%) were male. The mean number of credits transferred from Category C institutions was 77.71 (*SD* = 17.68), the average HSGPA was 17.43 (*SD* = .71), and the average GPA in college was 75.26 (*SD* = 16.26).

Non-transfer students. As shown in Table 2, the average HSGPA of the 367 non-transfer students was 17.1 (*SD* = 1.08, *Min* = 15, *Max* = 20), and the mean GPA in college was 80.18 (*SD* = 8.43, *Min* = 50.2, *Max* = 96.3). Of the 367 non-transfer students, 351 (95.7%) were studying engineering, 15 (4.0%) were studying social science, and 1 student (0.3%) was studying in another program. The average GPA in college by study area was 79.89 (*SD* = 8.36, *Min* = 50.20, *Max* = 96.33) for all non-transfer students who chose engineering as their area of study, and 85.94 (*SD* = 7.31, *Min* = 68.66, *Max* = 96.38) for non-transfer students in social science. There was 1 non-transfer student in other programs of study; therefore the average GPA for this group was not computed.

As shown in Table 3, of the 367 non-transfer students, there were 19 (5.2%) females, and 348 (94.8%) males. The average HSGPA and average college GPA for non-transfer females were 18.19 (*SD* = 1.25, *Min* = 16.61, *Max* = 20.0) and 85.05 (*SD* = 6.65, *Min* = 76.0, *Max* = 96.38), respectively. Of the 19 non-transfer females, 6 (31.58%) were

studying engineering, 12 (63.16%) social science, and 1 (5.26%) another area. The average HSGPA and average college GPA for non-transfer males were 17.04 (*SD* = 1.04, *Min* = 15.0, *Max* = 20.0) and 79.86 (*SD* = 8.40, *Min* = 50.2, *Max* = 96.33), respectively. Of the 348 non-transfer males, 345 (99.14%) chose engineering as their area of study, 3 (0.86%) chose social science, and 0 were in other programs.

Results on Average GPA After the First Semester (Intercept)

All transfer and non-transfer students were first grouped into one of four grade levels: (1) freshman, (2) sophomore, (3) junior, or (4) senior. Because the number of transfer students in their freshman year was not sufficient, freshman and sophomore were grouped into one category. Therefore, the analyses below were performed on three distinct groups: freshman/sophomore, junior, and senior. More descriptive summaries of the study findings are provided in Tables 6 and 7.

Differences between transfer and non-transfer students. Three mixed-effects models were first performed to see if there was a difference in the intercept (average GPA after the first semester) between transfer and non-transfer students, separately by freshman/sophomore, junior, and senior grade levels. Results from a mixed-effects model indicated that the average mean difference in the average GPA after the first semester (intercept) between transfer and non-transfer students in the freshman/sophomore group was 3.92 with a *SE* of 2.59 ($z = 1.51$, $p = .13$), which was not found to be statistically significant ($\chi^2(1) = 2.29$, $p = .13$). There was no statistically significant mean difference in the average GPA after the first semester (intercept) between transfer and non-transfer students in the junior group either ($\chi^2(1) = 3.66$, $p = .06$, $M_{diff} = 2.23$, $SE = 1.16$, $z = 1.91$, $p = .06$). However, transfer students in the senior group were found to show a

significantly higher mean GPA after the first semester when compared to non-transfer senior students ($\chi^2(1) = 8.22$, $p = .004$, $M_{diff} = 2.61$, $SE = 0.91$, $z = 2.87$, $p = .004$). Table 6 summarizes the study findings described above.

Intercept by student characteristics for transfer students. Because there was no significant variation in the difference in the intercept between transfer and non-transfer students at each grade level except senior year, separate mixed-effects models were performed only for transfer students in order to find out whether student characteristics explained any of the difference in the average GPA after the first semester (intercept). More descriptive summaries of study findings are given in Table 7.

First, regarding grade level differences in the average GPA after the first semester (intercept), results from mixed-effects models indicated that, overall, there were significant mean differences in intercept by grade level for transfer students ($\chi^2(2) = 12.69$, $p = .002$). Post-hoc analysis using the Tukey method indicated that senior transfer students had a significantly higher GPA after their first semester than junior transfer students after their first semester ($M_{diff} = 3.69$, $SE = 1.17$, $z = 3.16$, $p = .004$). No mean difference in intercept was found to be statically significant between seniors and freshmen/sophomores ($M_{diff} = 3.67$, $SE = 1.99$, $z = 1.84$, $p = .15$) or between juniors and freshmen/sophomores ($M_{diff} = -.01$, $SE = 2.24$, $z = -.007$, $p = .99$).

Second, regarding gender differences in average GPA after the first semester (intercept), results from mixed-effects models indicated that there was a statistically significant difference in intercepts for junior transfer students by gender ($\chi^2(1) = 9.12$, $p = .003$, $M_{diff} = -9.03$, $SE = 2.99$, $z = 3.02$, $p = .003$), indicating that female junior transfer students had a significantly higher mean GPA after the first semester. The mean

difference by gender for senior transfer students in terms of their average GPA after the first semester (intercept) was -2.55 with a *SE* of 0.76 (z = -3.37, $p < .01$), which was found to be statistically significant ($\chi^2(1) = 11.39$, $p < .01$). Transfer freshmen/sophomores' average GPAs by gender could not be performed because there was only one representation of gender.

Third, regarding study area differences in average GPA after the first semester (intercept), results from mixed-effects models indicated that there was a statistically significant mean difference in intercepts for junior transfer students by study area (social science vs. engineering [note that there were only two groups of junior transfer students by study area], $\chi^2(1) = 44.86$, $p < .01$, $M_{diff} = 12.66$, $SE = 1.89$, $z = 6.70$, $p < .01$), indicating junior students in social science had a statistically higher average GPA after the first semester (intercept). Overall, there were significant differences in average GPA by study area for transfer senior students ($\chi^2(2) = 28.55$, $p < .01$). Post-hoc analysis using the Tukey method indicated that senior transfer students in the social sciences had a significantly higher GPA after the first semester than senior transfer students in engineering ($M_{diff} = 3.60$, $SE = .75$, $z = 4.79$, $p < .01$) and compared to those in other areas of study versus engineering ($M_{diff} = 7.40$, $SE = 2.23$, $z = 3.31$, $p = .002$). No mean differences in intercept were found between senior transfer students in social science and those in other areas or for freshman/sophomore transfer students by study area.

Fourth, regarding quality of the transferring institution difference in average GPA after the first semester (intercept), results from mixed-effects models showed that there were significant differences in average GPA for junior transfer students ($\chi^2(2) = 6.20$, $p = .045$). Post-hoc analysis using the Tukey method indicated that junior transfer students

transferring from Category A institutions had a significantly higher GPA after the first semester when compared to those from Category B institutions (M_{diff} = -5.58, SE = 2.32, z = -2.41, p = .04). No significant difference in the average GPA after the first semester (intercept) was found between junior students from Category C institutions and those from Category A institutions (M_{diff} = -7.69, SE = 7.86, z = -0.98, p = .57) or between junior students from Category C institutions and those from Category B institutions (M_{diff} = -2.11, SE = 7.87, z = -0.27, p = .96).

There were significant differences in average GPA after the first semester (intercept) by the quality of the transferring institution for senior transfer students ($\chi^2(2)$ = 8.34, p = .02). Post-hoc analysis using the Tukey method indicated that senior transfer students from Category A institutions had a significantly higher GPA after the first semester (intercept) compared to those from Category B institutions (M_{diff} = -3.58, SE = 1.35, z = -2.65, p = .02). No significant difference in intercept was found between senior students transferred from Category C institutions and those from Category A institutions (M_{diff} = -3.90, SE = 3.10, z = -1.26, p = .40) or between senior students from Category C institutions and those from Category B institutions (M_{diff} = -0.32, SE = 3.34, z = -0.10, p = .99).

Fifth, regarding HSGPA and its relationship to average GPA after the first semester (intercept), results from mixed-effects models showed that a significant relationship existed for junior and senior transfer students. For junior transfer students ($\chi^2(1)$ = 10.27, p = .001), it was expected that any additional increase in HSGPA increased the average GPA after the first semester (intercept) by 3.22 GPA points (b = 3.22, SE = 1.00, z = 3.21, p = .001). For senior transfer students ($\chi^2(1)$ = 20.75, p < .01),

any additional increase in HSGPA was expected to increase the average GPA after the first semester (intercept) by 1.41 points ($b = 1.41$, $SE = 0.31$, $z = 4.55$, $p < .01$). However, no significant relationship was found between HSGPA and average GPA after the first semester (intercept) for the freshman/sophomore group of transfer students ($\chi^2(1) = 0.11$, $p = .73$).

Lastly, regarding the number of credits transferred and its relationship with average GPA after the first semester (intercept), results from mixed-effects models indicated that there was a significant relationship between average GPA after the first semester and number of credits transferred for senior transfer students only ($\chi^2(1) = 4.43$, $p = .04$). This indicates that for every additional credit transferred, the average GPA was expected to increase by 0.02 points ($b = 0.02$, $SE = 0.01$, $z = 2.10$, $p = .001$). However, no relationship was found to be significant between average GPA and number of credits transferred for transfer students in the freshman/sophomore group ($\chi^2(1) = 3.29$, $p = .07$) or between average GPA and number of credits transferred for students in the junior group ($\chi^2(1) = 0.06$, $p = .81$).

Intercept by student characteristics for non-transfer Students. Because there was no significant variation in the difference in slope between transfer and non-transfer students at each grade level (freshman/sophomore, junior, and senior), a series of separate mixed-effects models were performed only for non-transfer students in order to discern whether student characteristics explained the difference in the average GPA after the first semester (intercept) for that particular group. Table 7 provides a summary of the study findings described above.

First, regarding grade level differences in average GPA after the first semester (intercept), results from mixed-effects models indicated that, overall, there were significant mean differences in intercept by grade level for non-transfer students ($\chi^2(2) = 14.63$, $p < .01$). Post-hoc analysis using the Tukey method indicated that senior non-transfer students had a significantly higher average GPA after the first semester (intercept) than non-transfer students from the freshman/sophomore group ($M_{diff} = 4.27$, $SE = 1.12$, $z = 3.82$, $p < .01$) and senior non-transfer students versus junior non-transfer students ($M_{diff} = 3.22$, $SE = 1.26$, $z = 2.55$, $p = .03$). No mean difference in intercept was found between junior and freshman/sophomore non-transfer students ($M_{diff} = 1.05$, $SE = 0.93$, $z = 1.12$, $p = .49$). Second, regarding gender differences in average GPA after the first semester (intercept), results from mixed-effects models indicated that there was a statistically significant difference in intercept for non-transfer freshman/sophomore students by gender (female = reference group) ($\chi^2(1) = 19.02$, $p < .01$, $M_{diff} = -8.38$, $SE = 1.92$, $z = -4.36$, $p < .01$), indicating that female freshman/sophomore students had a significantly higher average GPA after the first semester. However, no significant difference was found in the intercept for non-transfer junior students by gender ($\chi^2(1) = 0.05$, $p = .83$). No analysis to compare intercept for non-transfer senior students by gender was performed due to the insufficient number of students broken down by gender.

Third, regarding study area differences in the average GPA after the first semester (intercept), results from mixed-effects models indicated that, overall, there were significant differences in the average GPA after the first semester (intercept) by study area for non-transfer students ($\chi^2(2) = 22.73$, $p < .01$). Post-hoc analysis using the Tukey method indicated that freshman/sophomore non-transfer students in social science had a

significantly higher GPA after the first semester than those in engineering (M_{diff} = 8.74, SE = 2.07, z = 4.21, p < .01). Freshman/sophomore non-transfer students in other areas of study had a higher GPA after the first semester than those in engineering (M_{diff} = 16.97, SE = 7.31, z = 2.32, p = .05). No mean difference in intercept was found between freshman/sophomore non-transfer students in social science and those in other areas of study (M_{diff} = -8.24, SE = 7.55, z = -1.09, p = .49). With insufficient variation in data by study area, analyses for junior and senior non-transfer students could not be performed.

Lastly, regarding HSGPA and its relationship to average GPA after the first semester (intercept), results from mixed-effects models showed that, overall, there was a significant relationship between HSGPA and average GPA after the first semester for freshman/sophomore non-transfer students ($\chi^2(1)$ =36.86, p < .01) and for senior non-transfer students ($\chi^2(1)$ =5.00, p = .03). This indicated that for each increase in HSGPA, the average GPA after the first semester (intercept) was expected to increase by 2.95 points for non-transfer students in the freshman/sophomore group (b = 2.95, SE = 0.49, z = 6.07, p < .01) and by 1.50 points for non-transfer seniors (b = 1.50, SE = 0.67, z = 2.24, p = .03). No significant relationship was found between HSGPA and average GPA after the first semester (intercept) for non-transfer juniors ($\chi^2(1)$ = 0.53, p = .47).

Results on Average Change in GPA (Slope)

Descriptive summaries of study findings on slope are provided in Tables 6 and 7.

Differences between transfer and non-transfer students. Results from mixed-effects models indicated that the mean difference between transfer and non-transfer freshman/sophomore students in the average change in GPA (slope) was -0.92 with a SE of 0.80 (z = -1.15, p = .25), which was not found to be statistically significant ($\chi^2(1)$ =

1.32, $p = .25$). Junior transfer students showed no statistically significant difference in the average change in GPA (slope) when compared to junior non-transfer students ($\chi^2(1) = 0.06$, $p = .80$, $M_{diff} = 0.06$, $SE = 0.22$, $z = 0.25$, $p = .80$). The mean difference between senior transfer and non-transfer students in the average change in GPA (slope) was 0.28 with a *SE* of 0.18 ($z = 1.51$, $p = .13$), which was not found to be statistically significant ($\chi^2(1) = 2.29$, $p = .13$). Table 6 provides a summary of the study findings described above.

Slope by student characteristics for transfer students. No variation in the difference in the slope between transfer and non-transfer students was found at each grade level (freshman/sophomore, junior, and senior); therefore, a separate series of mixed-effects models were performed in order to discern whether student characteristics explained the difference in the average change in GPA (slope) for transfer students only. Table 7 provides a summary of the study findings described below.

First, regarding grade level differences in average change in GPA (slope), results from mixed-effects models indicated that there were significant mean differences in slope by grade level for transfer students ($\chi^2(2) = 7.42$, $p = .02$). Post-hoc analysis using the Tukey method indicated that senior transfer students ($M = -0.16$) had significantly bigger GPA change than freshman/sophomore transfer students ($M = -1.73$) ($M_{diff} = 1.57$, $SE = 0.60$, $z = 2.60$, $p = .03$). However, no mean difference in the average change in GPA was found between senior transfer and junior transfer students ($M = -0.47$; $M_{diff} = 0.31$, $SE = 0.33$, $z = 0.94$, $p = .60$) or between junior transfer and freshman/sophomore transfer students ($M_{diff} = 1.27$, $SE = 0.67$, $z = 1.89$, $p = .13$).

Second, regarding gender differences in average change in GPA (slope), results from mixed-effects models showed that no statistically significant difference was found for junior transfer students by gender ($\chi^2(1) = .57$, $p = .45$, $M_{diff} = -0.44$, $SE = 0.58$, $z = 0.76$, $p = .45$) or for senior transfer students ($\chi^2(1) = 1.73$, $p = .19$, $M_{diff} = 0.29$, $SE = 0.22$, $z = -1.32$, $p = .19$). No analysis by gender was done for freshman/sophomore transfer students because there was an insufficient number of freshman/sophomore transfer students in each gender category.

Third, regarding study area differences in the average change in GPA (slope), results from mixed-effects models showed that, overall, there were significant differences in the average change in GPA by study area for senior transfer students ($\chi^2(3) = 10.06$, $p = .02$). Post-hoc analysis using the Tukey method indicated that no significant difference in the average change in GPA was found between senior transfer students in other areas of study and those in engineering ($M_{diff} = -0.93$, $SE = 0.65$, $z = -1.43$, $p = .30$), senior transfer students in social science versus senior transfer students in engineering ($M_{diff} = 0.44$, $SE = 0.21$, $z = 2.06$, $p = .09$), or senior transfer students in social science versus senior transfer students in other areas ($M_{diff} = 1.37$, $SE = 0.65$, $z = 2.13$, $p = .07$). No mean difference in slope by study area was found for freshman/sophomore transfers ($\chi^2(1) = 1.84$, $p = .17$) or for junior transfers ($\chi^2(2) = 2.92$, $p = .23$).

Fourth, regarding quality of transferring institution differences in the average change in GPA (slope), results from mixed-effects models showed that, overall, there were no significant differences in the average change in GPA by quality of transferring

institution for freshman/sophomore transfer students ($\chi^2(2) = 0.90$, $p = .64$), for junior transfer students ($\chi^2(2) = 0.32$, $p = .85$), or for senior transfer students ($\chi^2(2) = 0.77$, $p = .68$).

Fifth, regarding HSGPA differences in the average change in GPA (slope), results from mixed-effects models indicated that no relationship was found between average change in GPA and HSGPA for freshman/sophomore transfer students ($\chi^2(1) = 0.22$, $p = .64$, $b = 0.49$, $SE = 1.04$, $z = 0.47$, $p = .64$), for junior transfer students ($\chi^2(1) = 1.32$, $p = .25$, $b = 0.21$, $SE = 0.18$, $z = 1.15$, $p = .25$), or for senior transfers ($\chi^2(1) = 1.33$, $p = .25$, $b = 0.11$, $SE = 0.09$, $z = 1.15$, $p = .25$).

Lastly, regarding number of credits transferred differences in average change in GPA (slope), results from mixed-effects models indicated that there was a significant relationship between slope after the first semester and number of credits transferred for freshman/sophomore transfer students ($\chi^2(1) = 12.25$, $p < .01$). This indicated that for every additional credit transferred, the average change in GPA decreased by 0.28 points ($b = -.28$, $SE = 0.08$, $z = -3.50$, $p < .01$). A significant relationship was also found for senior transfer students between average change in GPA (slope) and number of credits transferred ($\chi^2(1) = 6.10$, $p = .01$, $b = 0.006$, $SE = .002$, $z = 2.47$, $p < .01$), suggesting that the average change in GPA was expected to change by 0.006 points for every additional change in credit transferred. However, an insignificant relationship was found between average change in GPA (slope) and number of credits transferred for junior transfer students ($\chi^2(1) = 0.19$, $p = .67$).

Slope by student characteristics for non-transfer students. No variation in the difference in the slope between transfer and non-transfer students was found at each

grade level (freshman/sophomore, junior, and senior), therefore a separate series of mixed-effects models were performed in order to find out whether student characteristics explained the difference in average change in GPA (slope) for non-transfer students only. Table 7 provides a summary of the study findings described below.

First, regarding grade level differences in the average change in GPA (slope), results from mixed-effects models indicated that, overall, significant mean differences were found by grade level for non-transfer students ($\chi^2(2) = 6.72$, $p = .03$). Although, post-hoc analysis using theTukey method indicated that no significant difference was found between junior and freshman/sophomore non-transfer students ($M_{diff} = -0.58$, $SE = 0.29$, $z = -2.01$, $p < .10$), between senior non-transfer students and freshman/sophomore non-transfer students ($M_{diff} = -0.65$, $SE = 0.39$, $z = -1.67$, $p = .21$) or between senior and junior non-transfer students ($M_{diff} = -0.06$, $SE = 0.48$, $z = -0.13$, $p = .99$).

Second, regarding gender differences in the average change in GPA (slope), results from mixed-effects models showed that no statistically significant difference by gender was found for non-transfer freshman/sophomore students ($\chi^2(1) = 0.12$, $p = .73$, $M_{diff} = -0.21$, $SE = 0.62$, $z = -0.35$, $p = .73$) or for junior non-transfer students ($\chi^2(1) = 0.26$, $p = .61$, $M_{diff} = 0.40$, $SE = 0.79$, $z = 0.51$, $p = .61$). Also, no analysis could be done for non-transfer seniors because there were insufficient numbers of students by gender.

Third, regarding study area differences in the average change in GPA (slope), results from mixed-effects models indicated that, overall, there was no significant difference in the average change in GPA (slope) by study area for freshman/sophomore non-transfer students ($\chi^2(2) = 1.45$, $p = .49$). No analyses by study area could be done for juniors and seniors because there were not enough participants in each study area. Lastly,

regarding the relationship between HSGPA and the average change in GPA (slope), results from mixed-effects models indicated that no relationship was found between the average change in GPA (slope) and HSGPA for freshman/sophomore transfer students ($\chi^2(1) = 0.16$, $p = .69$, $b = 0.06$, $SE = 0.16$, $z = 0.39$, $p = .69$) or for senior transfers ($\chi^2(1) = 0.00$, $p = 1.0$, $b < 0.01$, $SE = 0.04$, $z = 0.005$, $p = 1.0$).

Chapter 5: Discussion

Academic success has been long considered an important topic of research in higher education. In particular, with the increase in the number of students transferring from community colleges to 4-year institutions in the United States since 2000, more attention has been paid to transfer students' success at university. Research conducted in the United States has found mixed results regarding transfer students' academic success. Some researchers (e.g., Cedja et al., 1998; Cuseo, 1998; Laanan, 1996; Porter, 1999) have raised concerns regarding transfer students' performance. These concerns center around the stereotype that community college students are less well prepared academically than their counterparts (non-transfer students) and often face difficulty in being involved and engaged in campus activities and learning experiences after they transfer to 4-year isntitutions (Kuh et al., 2005; Tinto, 1993). However, others (e.g., Boswell, 1992; Branson & Green, 2007; Glass & Harrington, 2002) claim that transfer students' academic performance is not homogeneous and can even surpass the academic performance of non-transfer students.

Similar to the United States, many students in Ecuador transfer to different four-year universities from the country's institutes of technology. However, no research has been conducted in Ecuador that examines the transfer experiences of these students and their academic performance after they transfer. Given that academic performance should be the centerpiece of any analysis for new policy-making, the current study compared GPAs of transfer and non-transfer students. It is expected that this study will fill a gap in the literature and provide important information about the experience and performance of transfer students in Ecuador. During the past 7 years, Ecuador has implemented dramatic

changes to its education system, including higher education, through the creation of governmental bodies, laws, regulations, and policies, and it is hoped that the current study will help faculty and administrators build effective programs and create relevant policies that better serve transfer students before and after their transitions to four-year universities in Ecuador.

The Current Study

The primary purpose of this exploratory study was to examine the academic performance (i.e., GPA) of transfer students compared to non-transfer students attending a small private four-year university in Ecuador. In particular, this study used secondary data obtained from the target university about all of the university's students, including transfer and non-transfer students, who registered between fall 2008 and fall 2013. This study first summarized the number of transfer and non-transfer students by student characteristics including gender, high school grade point average, study area, number of credits transferred (only for transfer students), and quality of transferred institution (only for transfer students). Then, a series of mixed-effects models on intercept (average GPA after the first semester) and slope (average change over the years) extracted from each regression model for an individual student was performed to answer the following two research questions.

The first research question (Part I) examined whether there was any significant difference in the average GPA after one semester (intercept) between transfer and non-transfer students. In addition, in order to better understand transfer and non-transfer students' academic performance at the 4-year institution by student characteristics, differences in the average GPA after one semester (intercept) were examined separately

for transfer freshman/sophomore, junior, and senior students by different student characteristics (gender, HSGPA, program of study, quality of transfer institution, and number of credits transferred) and non-transfer freshman/sophomore, junior, and senior students by different student characteristics (gender, HSGPA, and program of study).

The second research question (Part II) examined whether there was any significant difference in the average change in GPA (slope) over the years. In addition, in order to better understand transfer and non-transfer students' academic performance in the four-year institution, differences in their average GPA over the years (slope) were examined separately for transfer freshman/sophomore, junior, and senior students by different student characteristics (gender, HSGPA, program of study, quality of transfer institution, and number of credits transferred) and non-transfer freshman/sophomore, junior, and senior students by different student characteristics (gender, HSGPA, and program of study).

Summary of Findings on Research Question Part 1

For research question 1.1, Table 6 provides a descriptive summary of the study findings comparing the average GPA after one semester between transfer and non-transfer students. As shown in Table 6, the current study showed that there was a significant mean difference in the average GPA after one semester (intercept) for senior-level students only. Senior transfer students had a higher GPA ($M = 86.77$) in the intercept than non-transfer students ($M = 84.16$). However, no significant mean differences in average GPA after the first semester were found between transfer and non-transfer students at the freshman/sophomore or junior levels. This result is consistent with a number of previous studies (e.g., Boswell, 1992; Glass & Harrington, 2002), which

showed that transfer students' academic performance on lower division coursework was equal or greater than that of non-transfer students and at upper division coursework was better than that of the non-transfer students.

Findings for research question 1.2.1. Table 7 presents a descriptive summary of the study findings regarding transfer students' average GPA after the first semester. First, results show that senior transfer students had a significantly higher mean GPA after the first semester compared to junior transfer students; however, there was no difference in the mean GPA after the first semester between senior and freshman/sophomore students or between junior and freshman/sophomore students. Second, it was found that gender differences in the mean GPA after the first semester among transfer students existed at the junior and senior years. In particular, female transfer students had a higher GPA after one semester than male transfer students during the junior and senior years; however, the gender difference was significantly smaller during the senior year, indicating that the gender gap decreases as students move to the upper grade levels. This result is consistent with the literature that reported more positive academic behavior among females than males (Wawrzynski & Sedlacek, 2003).

Third, a significant difference in the mean GPA after one semester was found among junior and senior transfer students in area of study. Junior transfer students had a higher average GPA after the first semester (intercept) in social science (M = 93.40) than transfer students in engineering (M = 80.73). A smaller but still significant difference was found for senior transfer students in social science (M = 88.04) compared to those in engineering (M = 84.44) and between transfer students in other areas of study (M = 91.83) compared to those in engineering (M = 84.44). No mean difference in the average

GPA after the first semester (intercept) for freshman/sophomore transfer students was found by study area. Fourth, in terms of the quality of the institutions transfer students came from, there were significant differences in the GPA after the first semester (intercept) for junior and senior transfer students. Juniors who transferred from Category A institutions had a higher average GPA after the first semester (M = 86.70) than students who transferred from Category B institutions (M = 80.81). Senior students also had a higher average GPA after the first semester when transferring from Category A institutions (M = 87.32) than Category B institutions (M = 83.56). No significant mean differences were found, for junior or senior transfer students, when transferring from Category C versus A or B versus C institutions.

Fifth, a significant relationship was found between HSGPA and average GPA for junior and senior students, although the difference was smaller for senior transfers. This finding was consistent with Ditchkoff et al.'s (2003) study, in which high school GPA was found to be a strong predictor of future academic performance of transfer students. Similar results were found in a study conducted in Costa Rica (Garbanzo, 2007), reporting that high school GPA was a predictor of academic performance for transfer students, and further emphasized the importance of the quality of the previous secondary institution. Lastly, regarding the number of credits transferred, results showed that senior transfer students had a higher mean GPA after the first semester than students transferring at the freshman/sophomore or junior levels. This indicates that the higher the number of credits transferred, the higher the GPA was in the transferred institution.

Findings for research question 1.2.2. Table 7 presents a descriptive summary of the study findings regarding non-transfer students' average GPA after the first semester.

First, a significant mean difference in the average GPA after the first semester was found at the senior level in 2013 for non-transfer students. Results showed that senior non-transfer students in 2013 had a higher average GPA (M = 83.92) than freshman/sophomore students (M = 79.65) and junior students in 2013 (M = 80.69). Second, regarding gender differences, female non-transfer students showed a higher average GPA (M = 87.16) than male transfer students (M = 78.78) at the freshman/sophomore level in 2013. No significant gender differences were found among non-transfers who were in their junior or senior year in 2013. Third, findings showed that senior non-transfer students in 2013 had a higher average GPA in both social science (M = 87.53) and other areas of study (M = 95.77) when compared to those in engineering (78.80). Lastly, a significant relationship was found between average GPA among non-transfer freshman/sophomore and senior students in 2013; however, the expected change in the mean GPA after the first semester for students in their senior year in 2013 was smaller than that for students in their freshman/sophomore year in 2013.

Summary of Findings on Research Questions Part 2

For research question 2.1, Table 6 provides a descriptive summary that compares the average GPA after one semester between transfer and non-transfer students. As shown in Table 6, results show that no significant mean differences were found in the average change over the years (slopes) between transfer and non-transfer students in freshman/sophomore, junior, or senior years.

Findings for research question 2.2.1. Table 7 summarizes the study findings regarding transfer students' GPA change over the years. There were significant mean differences in average changes over the years (slopes) by grade level for transfer students.

Difference in the slope was only found between senior transfer students and freshman/sophomore transfer students, showing that senior transfer students had a bigger average change in GPA than freshman/sophomore students. Second, no significant differences in the average change over the years (slopes) were found for gender, study area, or quality of transferred institution for the freshman/sophomore, junior, or senior years. Third, no significant relationship was found between HSGPA and average change over the years (slopes) for the freshman/sophomore, junior, or senior students. Fourth, a significant relationship was found between the number of credits transferred and average change over the years (slopes) for freshman/sophomore and for senior transfer students. Results showed that for freshman/sophomore transfer students a negative relationship existed. For every additional credit transferred, the slope decreased by 0.28 GPA points. In contrast, for senior transfer students a positive relationship was found, indicating that for every additional credit transferred the slope increased by 0.006 GPA points.

Findings for research question 2.2.2. Table 7 summarizes the study findings regarding non-transfer students' average GPA change over the years. There were no significant differences in average change in GPA for non-transfer students by grade level. Also, none of the sample characteristics were found to explain the difference in slopes for non-transfer students.

Implications of Current Study

Several implications can be drawn from the current study. As described in Table 6, transfer students showed better academic performance in terms of their average GPA after the first semester than non-transfer students at the senior level only. Transfer and non-transfer students at the freshman/sophomore and junior levels showed no significant

differences in their average GPA after the first semester. This suggests that both groups performed equally. The only exception was found when students who transferred as seniors were compared to non-transfer students at the senior level. This contradicts the previous finding and might shatter the belief that transfer students have weak academic backgrounds and thus perform lower after they transfer. However, this is consistent with Vaughan and Templin's (1987) finding, which showed that transfer students, typically less well-prepared academically than freshmen, often compare favorably to non-transfer students at 4-year universities after transferring. Therefore, it is recommended that administrators, admissions directors, and coordinators in Ecuadorian institutions be open and willing to admit transfer students. However, it is noted that caution should be given to generalize this finding, until further analysis with broader populations in Ecuador can support it.

Implications for transfer Students. Transfer students tended to perform better when transferring during their senior year; therefore, the more credits transferred, the higher the average GPA after one semester was expected. A similar pattern was found in the average change over the years (slope), demonstrating that students transferring during their senior year tended to have more changes in GPA over the semesters than students who transferred during their freshman/sophomore years. These results are summarized in Table 6. In addition, students transferring during their junior or senior year and enrolling in social science programs were more likely to have a significantly higher average GPA after the first semester than similar students in engineering programs. However, neither area of study nor the quality of the transferring institution appeared to make a difference

in GPA change over the semester. Therefore, special attention should be given to students who are in engineering programs when students transfer to a four-year institution.

Given that students in engineering had lower academic performance in terms of their average GPA after the first semester, it is recommended that four-year institutions offer special assistance beyond the required curriculum, such as assisted study groups, intensive faculty interactions, specialized workshops, academic leveling courses, academic advising, and individualized feedback per course, specially for students transferring at the freshman/sophomore level or for students enrolling in engineering-related programs. Most universities offer less attention to transfer students than these students received at their community colleges. As a result, transfer students frequently face difficulty becoming involved and engaged socially and sometimes academically at universities, and transfer students often feel disconnected from their institutions (Kuh et al.. 2005). Previous studies (e.g., Laanan, 2007) reported that university-sponsored academic workshops helped transfer students better adjust to the university by improving their learning skills and providing the necessary knowledge to achieve successful outcomes. It is important that universities assist transfer students to acculturate themselves to their new institutions as early in the process as possible for immediate results and long-term impact.

Also, it was found that the quality of the transferring institution was a significant predictor of average GPA for transfer students. Therefore, policymakers, admissions officers, and specially marketing officials should focus on attracting students from Category A and B institutions. Specialized recruitment programs for admitting transfer students should be implemented for Category A and B institutions and for social science

programs, using students' past academic performance as evidence and encouragement of further achievement. Also, as the number of credits transferred positively affected academic performance, it is recommended that articulation agreements be signed with the institutes of technology based on a careful analysis of the curriculum at each institute and that a formal pathway be delineated whereby 4-year universities admit students after a specified number of years of study at the institutes of technology.

The current study suggests that gender differences in average GPA existed for junior and senior transfer students. Females had significantly higher average GPA after one semester than males; however, gender differences in average GPA faded out at the senior level. These findings are consistent with other studies conducted in the United States (Cedja, 1997; Glass & Harrington, 2002) and in other Latin American countries, such as Mexico, where Mexican female students had better academic performance than their counterpart (Gomez et al., 2011). However, average change in GPA (slope) did not show differences by gender. Nonetheless, students affairs personnel should devote more attention to junior male transfers, especially during their first year after transferring, implementing special designed tutoring, mentoring, and counseling programs, as well as extracurricular workshops in order to increase male participation, and as a consequence, help them adjust more effectively to the transition process. It is important that transfer students be aware of these services and take advantage of these opportunities.

Furthermore, the study suggests that high school GPA positively affects the average GPA after the first semester for juniors and seniors; however, at the upper grade levels, the better the average GPA after the first semester for transfer students. Given that high school GPA was found to be a significant predictor of academic performance in

college, admissions officers should more heavily weigh high school GPA when evaluating students' transfer applications. Also, high school GPA should be considered an even more important measurable admission requirement for engineering programs, which showed significant lower average GPA after the first semester than social science programs and other areas of study. Considering that high school GPA has an impact on average change in GPA in college, university officials can create a prediction model for each program of study and set the minimum standard required high school GPA in order to assist students to obtain the desired grades per program.

In summary, the area of study and the quality of the transferring institution affected academic performance for transfer students. Policymakers should balance admission policies for transfer students based mostly on the program of study and the quality of the transferring institution. Therefore, articulation agreements should be promoted with Category A and B institutions in order to ensure students' academic success at university after they transfer. In fact, other variables to consider when recruiting students, include high school GPA and gender; however, it should be noted that the latter is less likely to impact students' academic performance compared to program of study and the quality of the transferring institution.

Implications for non-transfer Students. Non-transfer students improved their academic performance over time as they advanced in grade level. It is recommended that more attention be given to freshman/sophomore students, as they tended to show the lowest average GPA. In general, institutional strategies to overcome this issue would be to encourage students and to provide the appropriate environment to increase and improve student involvement. Tinto stated, "Nowhere is the importance of student

involvement more evident than in and around the classrooms of the college" (p. 132). Social and academic activities are strongly suggested, like Greek life, living on campus, student-faculty interaction, academic advising, and collaborative learning programs. No significant difference was found in slope, accentuating the need to focus on freshman/sophomore students as quickly and as efficiently as possible. Interventions should be implemented to reduce gender differences, especially for freshman/sophomore students. Females had significantly better academic performance in terms of average GPA than males. Faculty and academic staff should devote more time and effort to freshman/sophomore males, by assigning more time with faculty interaction and personalized follow-up and feedback in each course of study. Gender was not a significant factor predicting the average change in GPA for non-transfer students.

The current study suggests that the program of study is critical for improving students' academic performance as represented by average GPA. Institutions should balance academic and social strategies considering each program of study, with special attention to freshman/sophomore engineering students, who need more attention, including faculty involvement and additional leveling courses during the first semester. No significant difference was found in average change in GPA (slope) by program of study. It is also suggested, for non-transfer students, that high school GPA be considered as an important admission requirement, as it was found to be a significant predictor of average GPA for freshman/sophomore and senior non-transfer students. Although the impact was higher at the freshman/sophomore grade level than during the senior year, institutions should set high school GPA admission standards considering and balancing the program of study and high school GPA. It is recommended that higher high school

GPAs be required for engineering programs than for social science or other programs of study.

Limitations

This study was based on secondary data obtained from a private Ecuadorian institution, and even though there are a number of advantages to using secondary data as mentioned in Chapter 3, the researcher was limited in controlling the type of data collected, which restricted the ability to address particular research questions. The study is also limited to certain variables available through the institution's information system. For example, students' socioeconomic status was not included in the data set because the institution did not collect this data and there was no official information available. The results are also limited to a certain period of time and specific variables that could be applicable only to similar scenarios. High school GPA was considered on a 20-point scale regardless of the type of school (private or public). GPA was not available per course grade so the average GPA per academic period was used, which for the purpose of this study was standardized by semesters. GPA can also be affected by students' selection of a program of study, whether it is engineering, social science, or another program. The participants represented a mix of programs of study; however, the social science programs were over represented by transfer students, and engineering was overrepresented by non-transfer students and also by male students.

Because the current study was based on data of students from one institution's population, the generalizability of the results is limited. Also, differences in quality between public and private universities in Ecuador limit the generalizability of the findings. Further studies can include samples from different institutions providing better

external validity and generalizability. Additional surveys or questionnaires that allow for examination of other variables that might affect students' academic performance in terms of average GPA after the first semester (intercept) and average change in GPA (slope) should be considered in the future. Researchers can broaden the scope of this study or expand areas of students' academic success by measuring not only academic performance based on average GPA and average change in GPA, but also retention, time of graduation, and degree completion.

Future Research

Transferring from one institution to another or yet to several others during college life is common in Ecuador, even though no statistics are available to the public. As so, transfer students' academic performance compared to non-transfer students becomes not only an interesting area of study but also, one that is needed. As limited research has been conducted in Ecuador, this exploratory study is expected to serve as an important starting point to motivate further research on transfer students in Ecuador. Future studies could include a broader population across different universities countrywide that better project national results and help not only university administrators but also government officers and policymakers to improve and design better programs, activities, and policies, both private and public.

Furthermore, future studies can extend the current study by incorporating other variables. It is recommended that SES be included, considering that it has been reported, for transfer students, as a predictor variable of persistence and degree attainment (Wang, 2009). This study found that high school GPA had a positive effect on transfer students' average GPA at a four-year university. It may be helpful to identify public and private

high schools to see if this is a general trend or limited to a specific type of high school. The reasoning behind this suggestion is that Ecuadorian public schools are considered to be lower quality than private schools, possibly suggesting that transfer students coming from private schools are more likely to perform better than those from public schools. Also, the transferring institutions could be classified as public or private for the same purpose. Other variables that could be helpful in future studies as possible predictors of average GPA include the following: admission test scores, percent of applicants admitted, and number of working hours per week. Also, researchers could consider the need to design and include questionnaires and/or surveys to help better understand different issues that might affect, directly or indirectly, the average GPA and the average change in GPA during the college years.

Conclusion

This study indicates that transfer students are fully capable of being successful at four-year institutions in Ecuador, but several conditions and characteristics must be properly met. Recruitment efforts aimed at transfer students should focus on transferring GPA and the quality of the transferring institution, while non-transfer students should be targeted on the basis of high school GPA. This study can help Ecuadorian authorities and institutional officers, at all levels, promote student mobility between two-year and four-year institutions and hopefully will motivate and encourage researchers to study this topic contributing valuable findings to benefit the Ecuadorian higher education system and its students.

References

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.

American Association of Community Colleges. (2014a). *2014 factsheet*. Retrieved from http://www.aacc.nche.edu/AboutCC/Documents/Facts14-Data_R3.pdf

American Association of Community Colleges. (2014b). *Glossary terms.* Retrieved from http://international.aacc.nche.edu/study/Pages/glossary.aspx

American Association of Community Colleges. (2014c). *US population projection.* Retrieved from http://www.aacc.nche.edu/AboutCC/Trends/Pages/uspopulation projection.aspx

Anderson, G. M., Sun, J. C., & Alfonso, M. (2006). Effectiveness of statewide articulation agreements on the probability of transfer: A preliminary policy analysis. *Review of Higher Education, 29*(3), 261-291.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, *25*(4), 297-308.

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*(5), 518.

Bahr, P. R. (2009). College hopping: Exploring the occurrence, frequency, and consequences of lateral transfer. *Community College Review*, *36,* 271-298.

Bahr, P. R. (2012). Student flow between community colleges: Investigating lateral transfer. *Research in Higher Education 53*(1), 94-121.

Baldwin, A. (1994). Indicators of university success of associates degree recipients in the fields of business, computer science, and engineering. *Journal of Applied Research in the Community College, 1*(2), 113-128.

Barahona, P. (2014). Factores determinantes del rendimiento academico de los estudiantes de la universidad de Atacama [Determinant Factors of Academic Achievement of University of Atacama Students], *Estudios Pedagogicos, XL*(1)*,* 25-39. Retrieved from http://www.redalyc.org/ articulo.oa?id =173531772002

Batallas, S., Lopez, R., & Ochoa G. (2006). *Educacion Superior en Iberoamerica Capitulo Ecuador* [Higher Education in Ibero-America Chapter Ecuador]. Retrieved from http://planinst.unsl.edu.ar/pags-pdi/plan/1docs-info/info-nacs/08-info-ecuador.doc

Bell, S. (1998). College transfer students: A Canadian case. *Community College Journal of Research and Practice, 22*(1), 21.

Boswell, S. L. (1992). *Comparison of the academic performance of community college transfer students, private junior college transfer students, and native students in the upper divisions of three senior educational institutions in the University of North Carolina system, fall semester, 1988, through fall semester.* Retrieved from http://search.proquest.com/docview/304001176? accountid=14585

Branson, J., & Green, B. (2007). Academic performance of transfer and non-transfer students in introductory agriculture courses. *NACTA Journal, 51*(2), 5-10.

Brubacher, J. S., & Rudy, W. (1997). *Higher education in transition: A history of American colleges and universities* (4th ed.). New Brunswick, NJ: Transaction.

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*(2), 27.

Cedja, B. D. (1997). An examination of transfer shock in academic disciplines. *Community College Journal of Research and Practice*, *21*, 279– 288.

Cejda, B. D. & Kaylor, A. J. (2001). Early transfer: A case study of traditional aged community college students. *Community College Journal of Research and Practice*, *25*, 621-638.

Cedja, 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*(3), 1-13.

Cepeda, R., & Nelson, K. (1991). *Transfer: A plan for the future.* Sacramento, CA: California Community Colleges.

Chee, K., Pino, N. W., & Smith, W. L. (2005). Gender differences in the academic ethic and academic achievement. *College Student Journal, 39*(3), 604.

Cohen, A. M. (2003). *The community colleges and the path to the baccalaureate*. Los Angeles, CA: Department of Education, University of California.

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.

Cohen, A. M., & Brawer, F. B. (2003). *The American community college (4th ed)*. San Francisco: Jossey-Bass.

Cohen, A. M., & Brawer, F. B. (2008). *The American community college (5th ed)*. San Francisco, CA: Jossey-Bass.

Cohen, A. M. & Kisker, C. B. (2010). *The shaping of American higher education: Emergence and growth of the contemporary system (2nd Ed.)*. San Francisco, CA: Jossey-Bass.

Consejo Nacional de Evaluacion y Acreditacion. (2009). *Base de datos*. *Proyecto Mandato 14*. *Evaluacion de desempeño institucional de las universidades y escuelas politecnicas del Ecuador* [Database. Project Mandate 14. Evaluation of performance of universities]. Retrieved from http://www.ceaaces.gob.ec/sitio/wp-content/uploads/2014/02/INFORME_FINAL_UNIVERSIDADES_M141.pdf

Consejo Nacional de Evaluacion y Acreditacion. (2013). *Evaluacion de universidades 2013* [Evaluation of universities 2013]. Retrieved from http://www.ceaaces.gob.ec/sitio/evaluacion-universidades-2013/

Constitution of the Republic of Ecuador. (2008). Retrived from http://www.asambleanacional.gob.ec/sites/default/files/documents/old/constitucion_de_bolsillo.pdf

Cornwell, C., Mustard, D. B., & Van Parys, J. (2009). *The new SAT and academic performance in the first year of college*. Unpublished manuscript, Department of Economics, University of Georgia, Athens, GA.

Coyer, S. M., & Gallo, A. M. (2005). Secondary analysis of data. *Journal of Pediatric Health Care*, *19*(1), 60-63.

Cross, K. P. (1971). *Beyond the Open Door: New Students to Higher Education*. San Francisco, CA: Jossey-Bass.

Cuseo, J. B. (1998) *The transfer transition: A summary of key issues, target areas and tactics for reform.* Rancho Palos Verdes, CA: Marymount College.

De los Santos, A., Jr., & Wright, I. (1990). Maricopa's swirling students: Earning one-third of Arizona State's bachelor's degrees. *Community, Technical and Junior College Journal, 60*(6), 32-34.

Diaz, P. E. (1992). Effects of transfer on academic performance of community college students at the four-year institution. *Community College Journal of Research and Practice, 16*(3)*, 279–291.*

Dills, A. K., & Hernandez-Julien, R. (2008). Transfer college quality and student performance. *Eastern Economic Journal*, *34*, 172–189.

Ditchkoff, S. S., Laband, D. N., & Hanby, K. (2003). Academic performance of transfer versus native students in a wildlife bachelor of science program. *Wildlife Society Bulletin, 31*(4), 1021-1026.

Duggan, M. H., & Worth Pickering, J. (2008). Barriers to transfer student academic success and retention. *Journal of College Student Retention, 9*(4), 437-459.

Duncan, G. J. (1991). Made in heaven: Secondary data analysis and interdisciplinary collaborators. *Developmental Psychology, 27,* 949–951.

DuPont, T. A. (2010). An integrative review of 2/4 transfer programs. *Journal of Service Science, 3*(1), 23-28.

Egemba, C. I. (1997). *An investigation and analysis of the baccalaureate degree completion rates of community college transfer.* Retrieved from http://search.proquest.com/docview/304412905?accountid=14585

Eggleston, L. E., & Laanan, F. S. (2001). Making the transition to the senior institution. *New Directions for Community Colleges*, *114*, 87–97.

Ellis, M. (2013). Successful community college transfer students speak out. *Community College Journal of Research and Practice*, *37*(2), 73-84.

Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments, & Computers, 28*(1), 1-11.

Evans, N. J., Forney, D. S., Guido, F. M., Patton, L. D., & Renn, K. A. (2010). *Student development in college: Theory, research, and practice* (2nd ed.). San Francisco, CA: Jossey-Bass.

Fredrickson, J. (1998). Today's transfer students: Who are they? *Community College Review, 26*(1), 43-54.

Garbanzo, G. (2007). Factores asociados al rendimiento académico en estudiantes universitarios, una reflexión de la calidad de la educación superior pública [Factors associated to academic performance of students, a reflection of the quality of public higher education]. *Revista Educacion, 31*(1), 43-63. Retrieved from http://dx.doi.org/10.15517/revedu.v31i1.1252

Gladieux, L. (2004). *Low income students and the affordability of higher education America's untapped resource: Low-income students in higher education*. New York, NY: Century Foundation.

Glass, J. C., Jr., & Harrington, A. R. (2002). Academic performance of community college transfer students and "native" students at large state university. *Community College Journal of Research and Practice, 26*(5), 415-430.

Gomez, D., Oviedo, R., & Martínez, I. (2011). Factores que influyen en el rendimiento academico del estudiante universitario [Factors influencing the academic performance of college students]. *Tecnociencia Chihuahua*, *5*(2), 90-97.

Goodman, J., Schlossberg, N. K., & Anderson, M. L. (2006). *Counseling adults in transition: Linking practice with theory* (3rd ed.). New York, NY: Springer.

Grubb, W. N. (1991). The decline of community college transfer rates. *The Journal of Higher Education, 62*(2), 194-222.

Grubb, N. (1999). *Honored but Invisible*. New York, NY: Routledge.

Heidi, J. (2002). *Biennial transfer student report: 1999–00 and 2000–01 academic years*. Norfolk, VA: Tidewater Community College.

Helm, P. K., & Cohen, A. M. (2001). Leadership perspectives on preparing transfer students. *New Directions for Community Colleges, 114*, 99-103.

Hill, J. R. (1965). Transfer shock: The academic performance of the junior college transfer. *Journal of Experimental Education*, *33*(3), 201-215.

Hoachlander, G., Sikora, A., & Horn, L. (2003). *Community college students: Goals, academic preparation, and outcomes* (NCES 2003-164). Washington, DC: National Center for Education Statistics.

Horn, L., Nevill, S., & Griffith, J. (2006). *Profile of undergraduates in U.S. postsecondary education institutions, 2003-04: With a special analysis of community college students.* (Statistical Analysis Report No. NCES 2006-284). Washington, DC: National Center for Education Statistics.

Hoskins, S. L., Newstead, S. E., & Dennis, I. (1997). Degree performance as a function of age, gender, prior qualifications and discipline studied. *Assessment & Evaluation in Higher Education, 22*(3), 317-328.

Ignash, J. M., & Townsend, B. K. (2001). Statewide transfer and articulation policies: Current practices and emerging issues. In B. K. Townsend & S. B. Twombly (Eds.), *Community colleges: Policy in the future context.* Westport, CT: Ablex.

Instituto Superior Tecnologico Espiritu Santo. (2015). *Proceso de matriculacion* [Enrollment process]. Retrieved from http://www.tes.edu.ec/proceso-de-matriculacion.

Johnson, D.M. (1992). A comparison of transfer and non-transfer agriculture and home economics undergraduate students: Academic aptitude, achievement and degree persistence. *Journal of Agricultural Education 33*(3), 8-15.

Kearney G. W., Townsend B. K., & Kearney T. J. (1995). Multiple-transfer students in a public urban university: Background characteristics and interinstitutional movements. *Research in Higher Education*, *36*(3), 323-344.

Keeley, E. J., & 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.

Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *Journal of Higher Education*, *79*, 540–563.

Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2007). *Piecing together the student success puzzle: Research, propositions, and recommendations*. San Francisco, CA: Jossey-Bass.

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2005). *Assessing conditions to enhance educational effectiveness. The inventory for student engagement and success.* San Francisco, CA: Jossey-Bass.

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2010). *Student success in college: Creating conditions that matter.* San Francisco, CA: Jossey-Bass.

Laanan, F. S. (1996). Making the Transition: Understanding the Adjustment Process of Community College Transfer Students. *Community College Review*, *23*(4), 69–84.

Laanan, F. S. (2004). Studying transfer students: Part 1: Instrument design and implications. *Community College Journal of Research and Practice*, *28*(4), 331-351.

Laanan, F.S. (2007). Studying transfer students: Part II: Dimensions of transfer students' adjustment. *Community College Journal of Research and Practice, 31*(1), 37-59.

Laband, D. N., & Piete, M. J. (1995). Better learning from better management: How to improve the principles of economics course. Does who teaches principles of economics matter? *American Economics Association Papers and Proceedings*, *85*(2), 335-338.

Lamarra, N. (2010). La convergencia de la educación superior en América Latina y su articulación con los espacios europeo e iberoamericano. Posibilidades y limites. [The convergence of higher education in Latin America and its interaction with the European and American space. Possibilities and limits]. *Revista Iberoamericana de Educación, 35*, 39-71.

Law of Higher Education (2010). Retrieved from http://www.ces.gob.ec/descargas/ley-organica-de-educacion-superior

Leavitt, R. S. (1989). Married women returning to college: A study of their personal and family adjustments. *Smith College Studies in Social Work, 59*(3), 301-315.

Lee, V. E., & Frank, K. E. (1990). Students' characteristics that facilitate the transfer from two-year to four-year colleges. *Sociology of Education*, *63*(3), 178-193.

Lipe, M. G. (1989). Further evidence on the performance of female versus male accounting students. *Issues in Accounting Education, 4*(1), 144-152.

MacKinnon-Slaney, F., Barber, S. L., & Slaney, R. B. (1988). Marital status as a mediating factor on career aspirations of re-entry female students. *Journal of College Student Development, 29*(4), 327-333.

McCormick, A. C. (2003). Swirling and double-dipping: New patterns of student attendance and their implications for higher education. *New Directions for Higher Education*, *121*,13-24.

McGuire, S.T., Belcheir, M. (2013). Transfer student characteristics matter. *Journal of College Student Retention 15*(1), 37-48.

Montague, N. R. (2012). Articulation agreements: No credits left behind. *Issues in Accounting Education, 27*(1), 281-298.

Montondon, L., & Eikner, E. (1997). Comparison of community college transfer students and native students in an upper level accounting course. *Community College Review, 25(*3), 21-38.

Mutchler, J. F., Turner, J. H., & Williams, D. D. (1987). The performance of female versus male accounting students. *Issues in Accounting Education, 2*(1), 103-111.

National Center for Education Statistics (2003). *The condition of education: Transfers from community colleges to 4-year institutions.* (NCES 2003–067). Washington, DC: U.S. Department of Education.

National Survey of Student Engagement. (2005). *Student engagement: Exploring different dimensions of student engagement.* Bloomington, IN: Indiana University Center for Postsecondary Research.

Ocana, Y. (2011). Variables academicas que influyen en el rendimiento academico de los estudiantes universitarios [Academic variables that influence the academic performance of college students]. *Investigacion Educativa*, *15*(27), 165-179.

Oseguera, L., Locks, A. M., & Vega I. (2009). Increasing Latina/o students' baccalaureate attainment: A focus on retention. *Journal of Hispanic Higher Education*, *8*, 23-53.

Pareja, F. (1986). La Educacion Superior en el Ecuador[Higher education in Ecuador]. *Regional* Retrieved from http://unesdoc.unesco.org/images/0007/000726/072628so.pdf

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

Peng, S. S., & Bailey, J. P. (1997). Differences between vertical transfers and native students in four-year institutions. *Research in Higher Education*, *7(*2), 145-154.

Phillippe, K. A., & Sullivan, L. G. (2005). *National profile of community colleges: Trends and statistics* (4th ed.). Washington, DC: Community College.

Porter, S. R. (1999, May). *Assessing transfer and native student performance at four-year institutions.* Paper presented at the 43rd annual forum of the Association for Institutional Research, Seattle, WA.

Raisman, N. (1990). Moving into the fifth generation. *Community College Review, 18*(2), 15-22.

Reglamento de Regimen Academico. (2014). [Regulation of Academic Regime]. Retrieved from http://www.ces.gob.ec/gaceta-oficial/reglamentos.

Rodgers, R. F. (1990). Recent theories and research underlying student development. In D. Creamer & Associates (Eds.), *College student development: Theory and practice for the 1990s* (pp. 27–79). Alexandria, VA: American College Personnel Association.

Roksa, J. (2009). Building bridges for student success: Are higher education articulation policies effective? *Teachers College Record, 111*(10), 2444–2478.

Schlossberg, N. K. (1981). A model for analyzing human adaptation to transition. *The Counseling Psychologist, 9*(2), 2-18.

Schlossberg, N. K. (1984). *Counseling adults in transition* (1st ed.). New York, NY: Springer.

Schlossberg, N. K., Waters, E. B., & Goodman, J. (1995). *Counseling adults in transition* (2nd ed.). New York, NY: Springer.

Secretaria de Educacion Superior, Ciencia, Tecnologia e Innovacion (SENESCYT). (2014). *Lista de institutos tecnologicos del Ecuador*. Retrieved from http://www.senescyt.gob.ec/INSTITUTOS.pdf

Shapiro, D., Dundar, A., Ziskin, M., Chiang, Y. Chen, J., Torres, V., & Harrell, A. (2013). *Baccalaureate attainment: A national view of the postsecondary outcomes of students who transfer from two-year to four-year institutions* (Signature Report No. 5). Herndon, VA: National Student Clearinghouse Research Center.

Siegfried, J. J. (1979). Male-female differences in economic education: A survey. *Journal of Economic Education*, *10*, 1-11.

Singleton, J. F. (1988). Secondary data analysis. *Journal of Physical Education, Recreation & Dance, 59*(4), 38.

Stumpf, A. D. (2013). The American community college story, take two: An unfinished essay. *Community College Journal of Research and Practice, 37*(7), 566-574.

Terenzini, P. T., Pascarella, E., & Blimling, G. S. (1996). Students' out-of-class experiences and their influence on learning and cognitive development: A literature review. *Journal of College Student Development, 37*(2), 149-162.

Tillery, D., & Deegan, W. L. (1985). *The evolution of two-year colleges through four generations*. In W. L. Deegan & D. Tillery (Eds.), *Renewing the American community college: Priorities and strategies for effective leadership*. San Francisco, CA: Jossey-Bass.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago.

Thomas, S. L., & Heck, R. H. (2001). Analysis of large-scale secondary data in higher education research: Potential perils associated with complex sampling designs. *Research in Higher Education*, *42*(5), 517-540.

Townsend, B. K., McNerny, N., & Arnold, A. (1993). Will this community college transfer student succeed? Factors affecting transfer student performance. *Community College Journal of Research and Practice, 17,* 433-443.

Townsend, B., & Wilson, K. (2009). The academic and social integration of persisting community college transfer students. *Journal of College Student Retention, 10*(4), 405-423.

Tracey, T. J., & Sedlacek, W. E. (1989). Factor structure of the non-cognitive questionnaire-revised across samples of Black and White college students. *Educational and Psychological Measurement, 49*, 637-648.

Tyson, T. (1989). Grade performance in introductory accounting courses: Why female students outperform males. *Issues in Accounting Education, 4*(1), 153-160.

Universidad Internacional de Ecuador. (2015). *Precios referenciales carreras* [Referential costs per program]. Retrieved from http://uide.edu.ec/SITE/precios-referenciales-carreras.php

U. S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (2012). *Fall 1970 through 2012, Enrollment component.* Retrieved from http://nces.ed.gov/programs/digest/d13/tables/dt13_303.70.asp

U. S. Department of Education, National Center for Education Statistics, (2014). *Transferability of Postsecondary Credit Following Student Transfer or Coenrollment.* Retrieved from http://nces.ed.gov/pubs2014/2014163.pdf

Vaughan, G. B. (2006). The community college story. Washington, DC: Community College Press.

Vaughan, G. B., & Templin, R. G. (1987). Value added: Measuring the community college's effectiveness. *The Review of Higher Education*, *10*(3), 235-245.

Vazquez, C., Cavallo, M., Aparicio, S., Muñoz, B. Robson, C., … Ruiz, L. (2012). Factores de impacto en el rendimiento academico universitario. Un estudio a partir de las percepciones de los estudiantes. *Decimo septimas jornadas Investigaciones en la Facultad de Ciencias Económicas y Estadística*. Universidad Nacional de Rosario [Factors that impact academic performance of college students. A study of students perceptions]. Retrieved from http://www.fcecon.unr.edu.ar/ web-nueva/sites/default/files/u16/Decimocuartas/ vazquez_c_factores_de_impacto_en_el_rendimiento_academico.pdf

Wang, X. (2009). Baccalaureate attainment and college persistence of community college transfer students at four-year institutions. *Research in Higher Education, 50*(6), 570–588.

Wang, X. (2012). Factors contributing to the upward transfer of baccalaureate aspirants beginning at community colleges. *The Journal of Higher Education*, *83*(6), 851-875.

Wang, X. (2013). Baccalaureate expectations of community college students: Socio-Demographic, motivational and contextual influences. *Teachers College Record*, *115*, 1-39.

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

Wellman, J. V. (2002). *State policy and community college-baccalaureate transfer*. Washington, DC: The Institute for Higher Education Policy.

Windle P. E. (2010). Secondary data analysis: Is it useful and valid? *Journal of PeriAnesthesia Nursing, 25*(5), 322-324.

Woodley, A. (1984). The older the better? A study of mature student performance in British universities. *Research in Education, 32*, 35–50.

Wright, M. I., Briden, M., Inman, A. H., & Richardson, D. (1996). *Articulation and transfer: Definitions, problems, and solutions.* Tempe, AZ: Maricopa County Community College District. Retrived from http://files.eric.ed.gov/fulltext/ED390512.pdf

Yang, P. (2006). UCLA community college review: Reverse transfer and multiple missions of community colleges. *Community College Review, 33*(3), 55-70.

Table 1

Frequency of Transfer and Non-transfer Students by Gender and Study Area

		Transfer (n = 323)		Non-transfer (n = 367)	
Variable		*n*	%	*n*	%
Gender					
	Female	118	36.53	19	5.2
	Male	205	63.47	348	94.8
Study area					
	Engineering	146	44.8	351	95.7
	Social science	169	52.3	15	4
	Other	8	2.4	1	0.3

Table 2

HSGPA and GPA of Transfer and Non-transfer Students

Students		HSGPA		GPA	
(*N* = 690)	*n*	*M*	*SD*	*M*	*SD*
Transfer	323	17.4	1.15	84.78	7.31
Non-transfer	367	17.1	1.08	80.18	8.43

Note. HSGPA: High School Grade Point Average; GPA: Grade Point Average

Table 3

HSGPA and GPA of Transfer and Non-transfer Students by Gender

Students ($N = 690$)		HSGPA			GPA	
		n	*M*	*SD*	*M*	*SD*
Transfer						
	Female	118	17.92	1.15	85.29	3.55
	Male	205	17.14	1.05	80.07	1.41
Non-transfer						
	Female	19	18.19	1.25	85.05	6.65
	Male	348	17.04	1.04	79.86	8.4

Note. HSGPA: High School Grade Point Average; GPA: Grade Point Average

Table 4

Frequency of Transfer Students by Quality of the Transferring Institution

Quality of Institution	*n*	%
A	270	83.59
B	45	13.93
C	7	2.17

Note. $n = 323$; 1 student transferred from a university in the United States

Table 5

Frequency of Transfer Students by Quality of the Transferring Institution and Selected Area of Study

	Engineering		Social science		Other	
Quality of institution	*n*	%	*n*	%	*n*	%
A	93	34.44	169	62.6	8	2.96
B	45	100	-	-	-	-
C	7	100	-	-	-	-

Note. $n = 323$; 1 student transferred from a university in the United States

Table 6

Summary of Study Findings of Transfer Students Compared to Non-transfer Students

	Average GPA after the first semester	Average change in GPA over the years
Freshman/sophomore	T = NT	T = NT
Junior	T = NT	T = NT
Senior	T > NT	T = NT

Note. T= Transfer Students; NT=Non-Transfer Students; Insignificant difference between transfer and non-transfer students is represented as =.

Table 7

Summary of Findings on Intercept and Slope by Student's Characteristics

		Average GPA after the first semester		Average change in GPA over the years	
		Transfer	Non-transfer	Transfer	Non-transfer
F/S	Gender	F = M	F > M	F = M	F = M
	Area of study	ENG = SS = O	ENG = SS = O	ENG = SS = O	ENG = SS = O
	Quality institution	A = B = C	-	A = B = C	-
	HSGPA	HSGPA ☒ GPA	HSGPA ☒ GPA	HSGPA ☒ GPA	HSGPA ☒ GPA
	# of credits transferred	F/S = J = S	-	F/S = J = S	-
J	Gender	F > M	F = M	F = M	F = M
	Area of study	SS > ENG	ENG = SS = O	ENG = SS = O	ENG = SS = O
	Quality institution	A > B	-	A = B = C	-
	HSGPA	HSGPA √ GPA	HSGPA ☒ GPA	HSGPA ☒ GPA	HSGPA ☒ GPA
	# of credits transferred	F/S = J = S	-	F/S = J = S	-
S	Gender	F > M	F = M	F = M	F = M
	Area of study	SS & O > ENG	SS & O > ENG	ENG = SS = O	ENG = SS = O
	Quality institution	A > B	-	A = B = C	-
	HSGPA	HSGPA √ GPA	HSGPA ☒ GPA	HSGPA ☒ GPA	HSGPA ☒ GPA
	# of credits transferred	S > J & F/S	-	F/S < J & S	-

Note. F = Female; M = Male; ENG = Engineering; SS = Social Science; O = Others; F/S = Freshman/Sophomore; J = Junior; S = Senior; HSGPA = High School Grade Point Average; GPA = Grade Point Average; A = Quality A Institution; B = Quality B Institution; C = Quality C Institution; Significant Relationship between variables is represented as √; No Relationship between variables is represented as ☒; Insignificant difference between transfer and non-transfer students is represented as "=".

Your table information goes this way along the left margin of the page, which you currently have. If this is the first page of a chapter or appendix, the page number should go in the bottom center of the page.