

DISSERTATION

A TALE OF TWO TERMS: EXPLORING DIFFERENCES  
BETWEEN SPRING AND FALL TRANSFER STUDENTS

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## ABSTRACT

### A TALE OF TWO TERMS: EXPLORING DIFFERENCES BETWEEN SPRING AND FALL TRANSFER STUDENTS

This study sought to explore what factors contribute to transfer student success and attempted to create a model using logistic regression to help predict likeliness of transfer student success. Using a sample that included all students who transferred to Colorado State University from a regionally accredited US institution between fall 2007 and spring 2010, four main research questions were asked. The study included a focus on timing by comparing spring transfers with fall transfers and also by looking at the timing of the application process.

In general, results show that there were very few significant differences between spring and fall transfer students regarding demographic makeup, academic background, and academic preparation. Any statistically significant differences had very small effect sizes. Statistically significant differences in timing factors, however, had effect sizes considered moderate to strong (between .59 and .70). The timing from application, to admission, to confirmation of enrollment was much shorter for spring transfers than for fall transfers. These timing differences had a statistically significant correlation with first, second, and third term GPA, but the effect size was rather weak. Also weak, but statistically significant, was the relationship between continuous enrollment and being “on time” throughout the application process. Of particular note is that timing seemed to impact spring transfer students differently than fall transfer students.

Results from the logistic regression model created to help predict likeliness of transfer student success showed that even when a variety of factors were taken into account, prediction of

transfer student success was inadequate. This suggests that there are additional factors at play than those which can be measured before a transfer student begins his or her study at the transfer institution. The discussion section teases apart some of the findings from this study and offers suggestion for further research.

## ACKNOWLEDGEMENTS

It takes a village to raise a PhD, and I have been fortunate to live in a village and among villagers who have supported me academically, intellectually, emotionally, and socially along this journey. Throughout this process, I have been fortunate to receive support and encouragement from the faculty who taught our classes and especially from my committee: Linda, Gene, Paul, and Tom. It is so clear that they truly wanted me to succeed and I thank them. Linda was instrumental in keeping me on track and responding to my every question.

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interrupted countless hours of studying and writing. Further, they never did come to understand the phrases “not now, mommy has homework,” “please don’t put your head on the lap top,” and “no, no, no- you don’t know how to type!” Still, their unconditional love and ability to make me laugh out loud certainly helped keep my sanity in check.

Any successful journey starts long before the actual work takes place. My academic and professional background prepared me well for this undertaking and much gratitude is owed to everyone who has taught me something along the way- faculty, staff, coworkers, colleagues, and students. No amount of gratitude, however, will ever be great enough for my parents who have encouraged me and supported me in all facets of my life. Mom and Dad have always allowed me to be me, taught me to ask questions, challenge ideas, and most importantly believe in myself.

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## **CHAPTER I: INTRODUCTION**

### **Background**

Starting at one post- secondary institution and completing at another is a growing trend as more students begin at community colleges (Flaga, 2002) and as economic factors increasingly affect students' ability to pay for college. With the recent push from the Obama administration for community colleges "to educate an additional five million students by 2020," (Gonzalez, 2009) the rate of transfer is likely to grow.

Bradburn and Hurst (2001) indicated that most students who begin at a community college intend to continue on to earn a bachelor's degree, but McCormick and Carroll (1997) found that only 22 % of community college students in their study successfully moved on to a four year institution. More recent studies suggest the number is higher, though still not the majority of community college students: Cuseo (1998) indicated that only half of all community college students with aspirations of transferring to a four year institution actually went on to do so. A 2000 study from the National Center for Educational Statistics (NCES) indicated that only a third of community college students with the intent to complete a bachelor's degree actually transferred to a four year institution; Berger and Melaney (2001) indicate even fewer.

Students who start at a two year school are less likely to attain a bachelor's degree regardless of their socio-economic status and other background factors. For instance, Falconetti (2008, 2009) found that community college transfer students performed just as well (as measured by GPA) as native students (those who started as freshmen at the four year institution) but dropped out before graduation at higher rates than did native students. Berkner, He, and Cataldi (2002) found that of community college students who transferred to a four year institution, only

13% earned a bachelor's degree within six years. Melguizo, Kienzl, and Alfonso (2011) found no difference in graduation rates between transfers and native students, but pointed out that transfer rates from community colleges to four year institutions was still very low. Rates were even lower for low income and minority students.

Community college transfers are not the only students at risk. Cuseo (1998) found that only half the students in his study "had enrolled full time and continuously at one institution" (p.1). McCormick and Carroll (1997) found that "of the students who began their post-secondary education in the 1989-1990 school year, 45% had enrolled as undergraduates at more than one institution by 1994; one third attended two institutions, and 12% attended three or more institutions" (p. 3). Li (2010), citing Adelman's 1999 study, noted that between 40% and 54% of students attend more than one school and only about half these students attain degrees.

As many as thirty years ago, administrators within higher education recognized "transience as part of American Life" and called for the development of "a systematic, well-articulated design" to help facilitate transfer (Armenio, 1978) among institutions of higher education. Yet, most of the research on transition focused on new freshmen (Flaga, 2002). When seeking information about transfers, a quick search in an academic data base such as ERIC or Academic Search Premier will yield studies that focused on students moving from two year institutions to four year institutions but few that addressed four year to four year transfers. Additionally, most research focused on the barriers that prevent transfer or hinder success.

These barriers include a lack of academic preparation (Hill, 1965; Kissler, 1981), adjustment to larger classes and/or different styles of teaching (Elliot, 1992; Cuseo 1998, 2001; Zamani, 2001), and structural issues like lack of scholarships or financial aid (Zamani, 2001), poorly articulated transfer agreements (Armenio, 1978; Brawer, 1984), and limited or non-

existent orientation programs (Townsend, 2008; McGowan and Gawley, 2006). Low income and minority students seem to be impacted even more, in part because “disproportionately large numbers of underrepresented college students attend community colleges” (Cuseo, 1998, p.2).

In 1965, Hills coined the term “transfer shock” to explain the drop in grades immediately following transfer and the lower overall GPAs, retention rates, and graduation rates than that of students who started as freshmen at four year institutions. He attributed transfer shock to the likeliness that transfers from two year institutions were less well prepared for the academic rigors of four year institutions, though more recent studies have shown this not to be the case (Falconetti, 2008, 2009, Lanaan, 2007). While performance of community college transfer students may have improved, the literature suggests that the phenomenon of transfer shock still exists.

Flaga (2002) concluded that the literature on transfer shock and on transfer student success does not adequately address a student’s non-academic adjustment to the new institution. Historically, success has been measured by GPA, persistence, and degree attainment. These are important aspects of success, but not the only means of assessment. Addressing the transfer student’s social and psychological integration with the new campus is also important. “Adjustment to college life involves more than performing inside of the classroom; there is a wide range of academic and social interactions and outcomes that must be considered in a comprehensive view of the college adjustment process” (Berger & Melaney, 2001, p. 5).

Tinto (1993, 1999) and Astin (1984) both noted the importance of student involvement and engagement in order for learning to take place. Additionally, Pascarella and Terenzini (2005) equate the adjustment to college to that of adjusting to a new culture. Exploration of these non-cognitive factors (such as student development and transition theory) is lacking in the

transfer student literature. Rhine, Milligan, and Nelson (2000) note that “information regarding the social and emotional issues affecting community college student transfer into 4-year institutions is especially lacking” (p. 451).

In addition to the factors listed above (which I have categorized as personal factors), another area in need of further study is what I have termed environmental factors. Very little research exists with regard to timing of transfer, the term in which the student starts at the new institution (spring or fall), or the culture of the “receiving” institution. Culture of the institution is impacted by a number of structural and environmental factors, such as the size of the institution (Calcagno, Bailey, Jenkins, Kienzl & Leinbach, 2008; Li 2010; Pascarella & Ternezini, 2005), whether the institution is transfer friendly, whether it has a teaching or research focus (Cuseo, 2001), and the quality of the instruction (Li, 2010; Pascarella & Terenzini, 2005). These understudied, yet important factors in transfer student success are in part what spurred this study.

Assessing all of the variables that potentially impact transfer student success is, however, very difficult. For example, how does one measure the “culture” of an institution? Further, some data are not readily available to admissions officers who are making admissions decisions. The literature suggests that academic background and other demographic factors impact transfer student success and the literature suggests that there is more to success than just the academic and demographic factors. Thus, the challenge is to create a model that accurately predicts transfer student success using variables that are available at the point of admission and shortly thereafter in order to direct institutional resources toward the transfer students who are most at risk.

### **Purpose of the Study**

The purpose of this study was predominantly exploratory. First, the researcher sought to explore whether there were demographic or behavioral differences between transfers who started in the spring semester and transfers who started in the fall semester. Of particular interest was the timing of the application and admissions process. Thus, the second part of the study explored the association between timing variables and GPA at the transfer institution and timing and academic standing at the transfer institution.

The final part of the study was to test the predictive power of a logistic regression model that used data available at the point of admission and shortly thereafter. Success in this study was defined not only in terms of GPA achieved, but also in terms of academic standing and persistence. Although graduation may be the ultimate definition of student success, graduation cannot be attained unless the student persists in good academic standing. GPA and academic standing through the third term of enrollment was chosen as a measure of student success because the literature on transfer shock suggests that although a transfer student's academic performance drops immediately following transfer, transfer students generally rebound after the first year at the transfer institution (Diaz, 1992). A better understanding of the factors contributing to early success will help assess and inform current transfer student admissions policy and practice, as well as help to direct resources to help mitigate potential pitfalls.

### **Research Questions**

This research project sought to answer the following research questions:

- 1) Is there a difference between spring and fall admits for the following variables: Age, Sex, Race/Ethnicity, First Generation Status, CO Residency Status, College Type,

Number of Colleges Attended, Cumulative Transfer Credits, Cumulative Transfer GPA, Financial Aid Awarded, Orientation Attendance, Application Timing, Admission Timing, and Enrollment Timing?

- 2) Is there an association between timing of application for admission (as measured by the number of days from application to start of term, admission to start of term, and confirmation of enrollment to start of term) and first term, second term, or third term GPA at the transfer institution for either fall or spring starts?
- 3) Are there differences in timing variables for students who are in academic good standing and those who are not for either fall or spring starts?
- 4) How well does a model using the variables identified through this study and through the literature predict transfer shock (defined as a drop in grades upon transferring)?

### **Overview of Project**

Because the literature does not adequately address issues of timing with regard to which term a student transfers (nor is there any research addressing timing of application, performance, or retention for any type of college student) the start term becomes an important aspect to explore. In order to learn more about these two groups (spring and fall transfer students), existing data was analyzed to assess whether there were differences in the basic demographics of prospective transfer students who choose to apply for spring admission and those who apply for fall admission. The timing from application to enrollment was also analyzed in order to assess whether there was a difference between those who apply in spring and those who apply in fall with regard to timing of their application. Then, the association between timing and academic success as defined by GPA, academic standing, and persistence was explored.



## **Significance of the Study**

It is imperative for higher education administrators to understand the transfer process, the transfer student's transition experience, and the factors that lead to a successful transition. Further, administrators need to identify means by which the institution can support transfer students such that their retention and graduation rates equal at least that of "native" students at four year institutions. (The term "native" refers to students who began as freshmen at the institution to which the transfer student transferred). This is especially true if more students are expected to transfer over the next decade and beyond; institutions will want to ensure that they are well equipped to handle the needs of all students.

The importance of this particular study is two-fold: It is intended to add to scholarly research by expanding both the depth and breadth of work related to transfer students, and also to help inform policy and practice such that four year institutions will be better equipped to support transfer student success. Admissions offices, transition and orientation programs, advisors, faculty, and other college and university personnel will hopefully gain a better understanding of the transfer student experience in order to make more well-informed decisions about admissions policies (such as application deadlines), orientation and transition programs, and the appropriation of fiscal and human resources related to transfer student support.

## **Definition of Terms**

For the purpose of this study, and in compliance with the Colorado Department of Higher Education (CDHE), a transfer student was defined as "anyone who has completed more than twelve credits of college level work after high school graduation or the equivalent" (<http://highered.colorado.gov/Publications/Policies/default.html>). The term "native" refers to

students who started as freshmen at the four year institution to which the transfer student transferred. Success was defined in a number of ways, including first, second and third term GPA at the transfer institution, whether or not (and how often) a student was on probation or dismissed from the university, and whether a student retained from the first to second and second to third term of enrollment. Other definitions include:

*Academic Ability:* high school performance, previous college performance, scores on standardized tests, etc

*Academic Background:* type of first institution or institution transferring from, how many terms/credits earned, degree earned, size of institution, etc

*Culture of Receiving Institution:* size, research or teaching focused, transfer friendly/welcoming, number of non-traditional students, etc

*Demographics:* race, class, gender, age, state of residence (CO or non-resident), low income, first generation college student

*Non Cognitive Factors:* Self-Efficacy, Locus of Control, Negotiating skills, Ability to integrate, Ability to connect

*Timing of Transfer:* spring or fall enrollment, before or after earning associate's degree, number of credits or semesters completed before transfer, etc

*Horizontal Transfer:* transferring from a four year institution to another four year institution

*Vertical transfer:* transferring from a two year (or junior) college to a four year institution

*Swirling:* refers to when a student starts at a four year institution, transfers to a two year institution and then transfers to a four year institution

### **Delimitations**

This study included only those students transferring to Colorado State University between spring 2007 and fall 2010 in either the spring or fall term from a United States college or university that could be identified as either a two year or four year regionally accredited

institution. Very few students begin their studies in the summer sessions and the structure of the summer terms is quite different than the fall and spring terms; thus students who started at the transfer institution in the summer term were excluded from this study.

Applicants from non- accredited institutions, such as technical and proprietary schools, were excluded from the study because their experiences and academic preparation may have been different than the majority of transfer students who come from regionally accredited institutions. Applicants with international academic credentials were excluded because educational systems vary greatly by country and, at the time of this study, GPA was not computed for applicants with international academic credentials. The study also excluded applicants who had previously earned a bachelor's degree elsewhere as it was reasonable to conclude that their academic preparation, background, and experiences might differ from those who had not yet earned a bachelor's degree.

### **Limitations and Assumptions**

A limitation of this study is that it uses data from only one institution, and thus some findings may not be representative of all transfer students nor of all institutions which accept transfer students. These findings are not directly generalizable to the transfer student population as a whole. Further, because the study includes data only from students who transferred between the spring of 2007 and the fall of 2010, recent changes in admission policies and orientation programming at the transfer institution may not be reflected in the findings.

Finally, only the cumulative transfer GPA was available for analysis. Thus, if an applicant attended three institutions prior to enrolling at Colorado State University, for example, the GPA accumulated from all three institutions was treated as "the" transfer GPA as was the

GPA from the single institution another student may have attended prior to enrolling at CSU. This is important to note because students who attended more than one college or university prior to transferring to the institution in this study may have completed credits many years before the transfer or may have two (or more) very disparate GPAs from other institutions. The cumulative GPA is a summary of previous work, but not necessarily an indicator of the most recent work completed.

### **Description of the Research Site**

Colorado State University is a large public research institution in the Rocky Mountain Region of the United States. As the Land Grant institution for the state, CSU prides itself on providing access to a high quality education for everyone who meets the admissions standards regardless of their background or financial status. CSU currently has a total enrollment of about 27,000; just over 22,000 are undergraduate students. The institution is looking to grow its undergraduate population to about 30,000 over the next few years and transfer student enrollment plays an important part in reaching this goal.

In 2008, Colorado State University opened a Transfer Student Center. Housed in the same building as the Center for Advising and Student Achievement, the Transfer Student Center is staffed full time by the Office of Admissions and partners with the other offices in the Division of Enrollment and Access (Student Financial Services, the Registrar's Office, and the Access Center) and the Center for Advising and Student Achievement to meet the specific needs of transfer students. This includes providing information about the transfer process, preliminary transfer credit evaluation (before the student is admitted), advising about majors, and a transfer-specific orientation program. Timing of the orientation program offers admitted transfer students

the opportunity to register before many of the incoming freshmen, thus providing transfer students the opportunity to take pre-requisite courses still needed for their major. This is an important measure toward ensuring transfer students can graduate in a timely manner.

More recently, specific efforts have been made to project the number and types of core courses incoming transfer students will need for graduation so as to hold spaces in these courses for transfer students who attend a later orientation. Incoming freshmen have four years to complete their requirements where as a transfer student's time on campus is more compressed; the university wants to ensure that required courses are accessible to incoming transfer students in order to facilitate their progression to upper division courses and a timely graduation.

Although CSU is a research-oriented institution, emphasis is placed on undergraduate education with an eye toward experiential learning. Transfer students are encouraged to participate in a transfer student living-learning community and have the opportunity to join a transfer mentoring program. The mentors are currently enrolled students who transferred to CSU and their role is to connect with new transfer students to show them the ropes and answer questions. The transfer mentors also plan activities to help introduce new transfer students to the surrounding area, helping to incorporate new transfer students into the University and greater Fort Collins communities.

Overall, retention and graduation rates at CSU are good. On average over the last five years, almost 95% of incoming transfer students retained from the first fall to the next spring and almost 85% retained from their first fall to the next fall (Colorado State University Office of Institutional Research, 2011 p 9). Information was not available for spring to spring retention rates. Graduation rates are harder to summarize for transfer students because some students come in with enough credits to graduate in just two semesters while others need as many as six

(or more). Graduation rates for transfer students entering in the fall 2007 cohort for example, were as follows: 20.8% by fall 2010, 37.7% by spring 2011, 50% by fall 2011, 60.1% by spring 2011 (CSU OIR, 2011 p 10).

The President has challenged the campus community to do even better, raising the four year graduation rate to 60% and the six year graduation rate to 80%. It is unclear how this translates into specific year (or term) goals for transfer students, but it is clear that rates are expected to improve for transfer students as well. The university has made a commitment to provide resources (academic, financial, and human) to facilitate transfer student success.

### **Researcher's Perspective**

As an admissions professional since 1997, I have had the opportunity to work with both freshmen and transfer students and to hear tales of triumph and frustration regarding the application process and transition to college. In particular, I have noted added stress and frustration for students starting school in the spring term compared with those in the fall term. I suspect one possible reason for this may be due to the limited amount of time a spring applicant has to complete the application process and prepare for matriculation compared to a fall student.

In June of 2009, Colorado State University released a Transfer Profile and Retention Study that sparked my interest in studying transfer students at CSU. The report produced a lot of data regarding the profile and makeup of the transfer student population at Colorado State, including the fact that students who transferred in the spring performed at and retained at lower rates than those who transferred in the fall (CSU OIR, 2009, p. i). Although these results were not surprising to me (given my previous experiences), I felt they did not tell the whole story: I

wanted to know if there was something different about spring starts that would lead to these lower performance rates and if timing was a piece of the equation.

At many colleges and universities, transfer students proportionately make up more of the spring class than the fall class. For example, at CSU, approximately 25% of the fall class is comprised of transfer students, whereas 82% of the spring class is (CSU OIR, 2009 p. 3). In general, the admissions profession lacks understanding about, and emphasis on, the transfer process. Freshmen initiatives generally take precedence when it comes to planning recruitment travel, publications, and resource allocation. Professional organizations at the local, regional, and national level focus mostly on the high school to college transition. I chose to research transfer students with the goal of adding to the understanding of the transfer student experience and helping emphasize the importance of creating transfer specific policies, procedures, and practices within the institution and in the field of enrollment management.

I have been a student of inquiry my entire life. I want to know why things are the way they are, and explore how they might be different for different groups. My research world view is a mix of positivist and constructionist; both quantitative and qualitative "ways of knowing" best fit me. First, I want to understand what is happening; then I will seek to find out why. As a qualitative study, this project is the first step in understanding. Post doctoral studies will continue to explore "why" from a qualitative and "emerging theory" approach.

## **CHAPTER II: REVIEW OF THE LITERATURE**

### **Introduction**

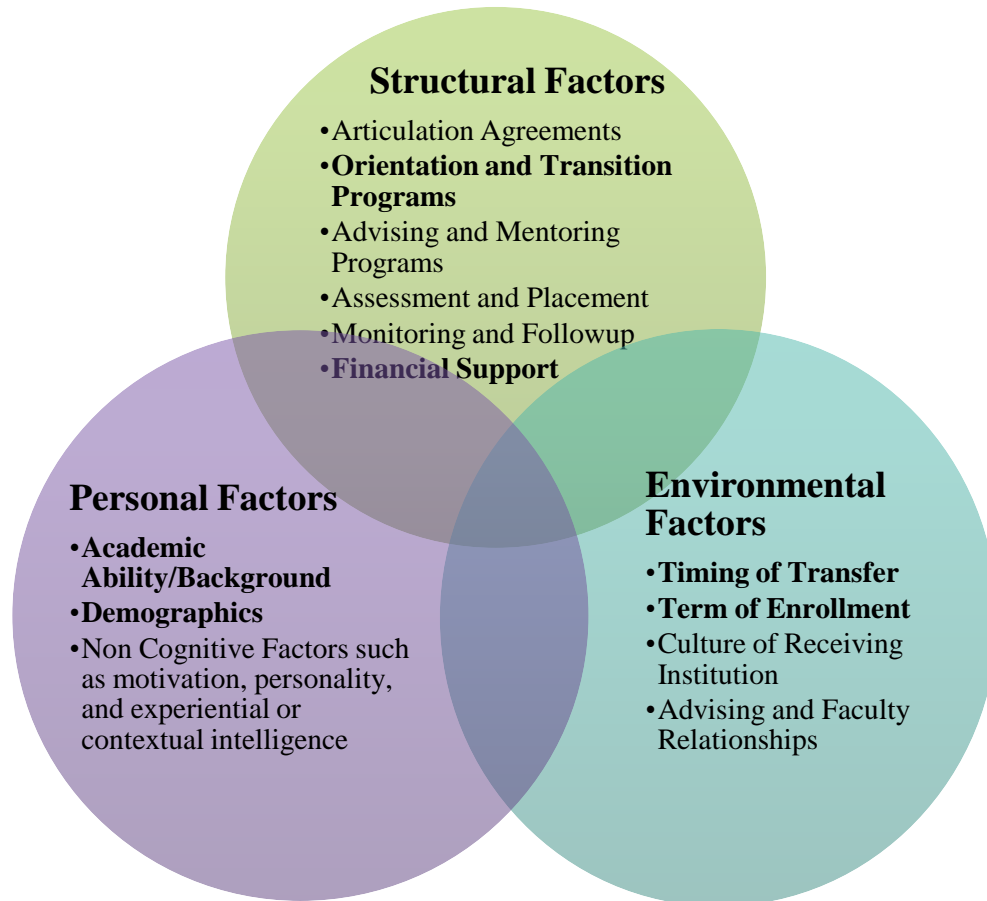
In 1965, Hills coined the term “transfer shock” to explain the drop in grades immediately following transfer, lower overall GPA’s (than that of native students) and lower rates of retention and graduation. He attributed transfer shock to the likeliness that transfers from two year institutions were less well prepared for the academic rigors of four year institutions. Cuseo (1998) noted that this seems more prevalent in transfers entering four-year research institutions rather than heading in to teaching- focused institutions. Sullivan (1999), however, found that the type of institution from which a student transfers (two year or four year) did not impact their likeliness to persist, nor did the number of institutions attended (one or multiple) before transferring to the institution where he conducted his study. More recent research suggests that the challenge may lie in the size of the transfer institution (Calcagno, et al., 2008; Li, 2010, Pascarella & Ternezini, 2005), the quality of instruction (Li, 2010; Pascarella & Terenzini, 2005), or whether the transfer institution is teaching or research focused (Cuseo, 2001).

The literature on transfer shock does not address a student’s non-academic adjustment to the new institution (Flaga, 2002). Historically, success has been measured by GPA, persistence, and degree attainment (Ishitani and McKitrick, 2010). These are important aspects of success, but not the only means of assessment. Addressing the transfer student’s social and psychological integration with the new campus is also important in understanding success (Tinto, 1975; Pascarella & Terenzini, 1991; Laanan, 2001; Pascarella (1997); Townsend & Wilson, 2006). Further, “Diaz (1992) suggested that the majority of transfer students recover from transfer shock



within a year” (Ishitani, 2008, p. 404), therefore it is important to study aspects other than GPA to indicate whether a transfer student has been successful at the transfer institution.

Recent literature has moved toward exploring methods that facilitate transfer and recognizing personal attributes that lead to success. This chapter reviews the various aspects that have been identified as factors that both impede and foster success for transfer students. The factors were categorized into three general areas as illustrated through the concept map in Figure 1, below.



*Figure 1.* Success is more than good grades: The Intersection of Personal, Institutional and Environmental Factors Affecting Transfer Student Transition and Retention. Bolded items were explored in this study.

### **Institutional or Structural Factors**

There are a number of structural factors that impact the ability of a student to successfully transfer from one institution to another. Brawer (1984) identified six areas of student service or programming that could help facilitate transfers from community colleges to four year institutions: articulation, orientation, assessment and placement, counseling and guidance, monitoring, and follow up. Although this study (like most studies of transfer students) focused only on community college transfers, Li (2010), found similar needs for four year to four year transfers, and suggested that transfer friendly/supportive structural factors will enhance the likeliness of transfer student success. Together, these studies demonstrate that there are several factors and types of programs that help lead to success.

It is important to look at these factors in greater detail in order to understand how institutions of higher education can better facilitate successful transfer for all students. It is important, as well, for the two year and four year schools to work together to facilitate successful transfer (Cuseo, 1998; McGowan & Gawley, 2006; Nussbaum, 1997; Townsend, 2008). Rhine, et al (2000) asserted, "Failure of institutions to work together on transfer issues may result in students' failure to complete their degree plans in a timely manner" (p. 444).

### **Articulation Agreements**

In the early 1980's, much of the literature focused on articulation agreements and the formalizing of credit transfer. California, Illinois, Texas, Florida, and other states created very specific programs and plans to help facilitate transfer from two year to four year institutions. These plans included admission guarantees and/or satisfaction of core requirements. Articulation agreements helped students at the two year schools plan their curriculum. It was the

responsibility of both the two year and four year institutions to provide “coordinated, useable, equitable and accountable processes and services” in setting up articulation agreements (Gawley & McGowan, 2006, p. 15).

In addition to articulation agreements that allowed for satisfaction of core requirements, two year schools could also consider enriching their curriculum and making individual courses more transferable in order to help facilitate transfer (Cuseo, 1998, 2001). Successful transfer went beyond just setting up articulation agreements, however, and included partnerships between the two and four year institutions (Brawer, 1984; California Community Colleges, 1994; Cuseo, 1998, 2001; Townsend, 2008; Zamani, 2001):

Two-year colleges can and should partner with the four-year colleges or universities to which the bulk of their students transfer. The partnership can include efforts to develop a joint or co-admission process to facilitate early admissions, and efforts to develop programmatic articulation agreements so that community college students will know while at the two-year school which general education courses are appropriate for their intended major at the four-year school. Programmatic agreements, while time-consuming to develop, are a critical means to lower student frustration over the failure of prior earned credits to count toward their degree. (Townsend, 2008, p.74)

In a study of articulation agreements and coordination between two and four year schools in California, Zamani (2001) identified several partnership programs in various urban areas throughout the country. This study pointed to the growth of Transfer Centers to demonstrate that both two year and four year institutions played a role in creating innovative and successful programs designed to facilitate transfer.

## **Orientation and Transition Programs**

Once the student gains admission into his/her new institution, it is important to help him/her learn about the support services available and introduce him/her to the culture of the institution. Orientation and transition programs help facilitate this, but may not always be aimed at the needs of the transfer student.

Orientation programs provide an opportunity for new students to get to know one another and to form connections with each other, faculty, and staff. Although the incoming transfer students may know how to be college students, they do not necessarily know how to be a student at the specific institution to which they are transferring. Townsend (2008) and Cuseo (1998, 2001) both indicate that it is imperative to have an orientation program designed just for transfer students. Gawley and McGowen (2006) assert that:

Social aspects of the transfer college experience suggest the need for unique services and experiences for college transfer students. Age, maturity and experiential differences between college transfers and incoming high school graduates suggest a need for tailored orientation options for incoming transfers as well as formalized and sustained social arrangements throughout the duration of a transfer student's time at university. (p. 11)

In relation to their transfer experience, the students that Townsend (2008) interviewed suggested it would be helpful to have other transfer students tell them [new transfers] about the campus and what they had done to adjust socially and academically to it. Thus, former transfer students could serve as mentors to new transfer students. Townsend indicated that orientation and advising of new transfer students are very closely tied and should not end when the term begins; they are processes that need to be maintained through mentoring and transition programs.

## **Advising and Mentoring Programs**

Cuseo (1998, 2001) indicated that improving visibility of advising and/or training select academic advisers to work specifically with transfer students would positively impact student success. Townsend (2008) recommended that orientation programs include an opportunity for transfer students to connect with faculty and students in their intended program of study and suggested that institutions may want to consider having a specific residence hall just for transfer students.

McGowan and Gawley (2006) supported the idea of creating transfer specific orientation programs that lead into advising and mentoring programs which would last throughout the school year. “University staff have... successfully implemented a number of pre- and post-admission programs including full-day university information sessions throughout the summer and essay writing skills and study skills workshops offered through the academic year” (p. 11). Special interest groups just for transfers, or living-learning communities could also be useful in helping transfers connect with each other and the institution (Townsend, 2008).

## **Assessment and Placement**

Although several studies (Brawer, 1984; California Community Colleges, 1994; California State Postsecondary Education Commission, 1979, 1980; Cuseo, 1998, 2001) mentioned the need for improved assessment and placement of transfer students, and the need to monitor or follow up with transfer students, none cited any best practices nor offered suggestions on how to implement such programs. Advising and mentoring programs could be seen as a form of monitoring and follow-up, though they were not described as such in the literature. Both Cuseo (1998) and the California Transfer plan (2000) recognized the need for more effective

intuitional research and assessment of orientation, mentoring and other transfer-specific programs to evaluate the effectiveness of such programs.

### **Monitoring**

Brawer (1984) indicated that very few community colleges follow up to check on the progress of their students once they have transferred to the four year institution. One of the community colleges in her study made efforts to survey students about their experiences in transfer and whether they felt well prepared. The head of counseling at another community college worked directly with 300 minority students, coordinating courses for them and connecting with staff at the transfer institution. In a presentation at the 2010 Association of Institutional Research forum, The University of Central Florida's Office of University Analysis and Planning Support reported that monitoring reports were beneficial to the community colleges and the receiving institution because "they provide[d] data to improve articulation from the CC's, provide[d] information regarding enrollment, progression, and graduation of CC students who have transferred to UCF and allow[ed] for comparisons among consortium partner transfers, other transfers, and native First-Time-in-College (FTIC) students" (slide 10).

### **Financial Support**

Several studies (Brawer, 1984; California Community Colleges, 1994; Cuseo, 1998, 2001) suggested that a comprehensive plan for facilitating transfer student's success goes beyond mere articulation agreements and should include financial aid programs. Indeed, financial aid (or lack there of) is a barrier for many transfer students. This is in part due to the fact that many institutions do not have scholarships for transfer students (Cuseo, 1998; Townsend, 2008). Only

the California Community Colleges Memo of Understanding (Nussbaum, 1997) included a specific counseling component as well as a mechanism for assessing the plan.

## **Barriers**

All of the above mentioned programs or plans were designed to help mitigate some of the barriers transfer students face in moving from one institution to another. Although most were designed to facilitate transfer from a two year school to a four year institution, the concepts presented can help facilitate transfer between four year institutions as well.

Better academic preparation, comprehensive, easy to understand articulation agreements, financial aid and academic and social support systems can only benefit new transfer students as they acclimate to their new institutions. Confusion over curriculum and transfer credits and policy and procedural barriers like limited on-campus housing, late registration, additional testing or admission requirements make it difficult for transfer students to be successful (Cuseo, 1998, 2001). Further, community college faculty or counselors may be just as confused as potential transfer students regarding transferable courses, time lines, requirements, etc (McGowan & Gawley, 2006), especially because each four year institution may have its own policies or procedures.

Evidence of the impact of institutional factors is inconclusive at best, and, even when all of the best practices are in place, transfer students may continue to struggle. Some research shows that academic performance variables including high school grade point average, SAT composite scores, transfer grade point average and current university grade point average did not directly affect persistence (Sullivan, 1999). Therefore, in an effort to help better understand what makes some transfers more successful than others, it is helpful to turn to student

development theories and non-cognitive factors when assessing potential transfer students' likeliness to succeed.

### **Personal Factors**

Research on transfer students that takes individual factors into account often focuses on academic ability and demographic characteristics that impeded success. Understanding how these factors contribute to academic success is particularly useful to admissions officers who often have only these variables to consider in the admissions decision. Academic and demographic factors are external to the individual, however, and therefore provide only a limited understanding of the components that lead to successful transition, retention and graduation for transfer students. Of equal importance is understanding characteristics that are internal to the individual.

For example, Wang (2009) found that gender and educational background affect the likeliness of attainment of a baccalaureate degree (women and those who had a better academic preparation in high school were more likely to succeed) and that self concept and perceived locus of control also affected successful transfer.

### **Academic Ability**

Academic information has proven to be reliable in predicting persistence and degree attainment (Berger and Malaney, 2003; Ishitani, 2008; Rhine et al. 2000; Piland 1995). Porchea, Allen, Robbins and Phelps (2010) note that academic preparation directly affects first year performance; therefore it also impacts retention and transfer behavior. Rhine et al. (2000) cite several studies indicating that high school and community college achievement is a reliable



indicator of a student's potential to earn a bachelors degree and that academic success as measured by credits attained and GPA earned predicts student persistence and completion of a bachelor's degree. Other research shows that academic performance variables, including high school grade point average, SAT composite scores, transfer grade point average and current university grade point average, did not directly affect persistence (Sullivan, 1999) even though Rhine et al. (2000) and Porchea et al. (2010) both found academic preparation to be strong predictors of retention and degree attainment.

### **Academic Background**

Li (2010) found that students who changed institutions with no break in enrollment had a 33.4% lower probability of attaining a bachelor's degree than did students who continued at their first institution with no breaks in enrollment. Students who stopped out in between changing schools had even lower probabilities of graduating with a bachelors degree whether they switched to another school (71.2% lower odds) or returned to their initial school (70% lower odds) (Li, 2010).

### **Demographic Factors**

Many studies have indicated that personal factors such as age, gender, socio-economic status, first generation status, and race or ethnicity impact a student's likeliness to succeed, especially as it relates to two year college students transferring to a four year institution and graduating with a bachelor's degree. Porchea et al. (2010), found that older students were less likely to transfer, but more likely (than younger students) to earn a two year degree. Li (who studied four year to four year transfers) found that older students were 2.5% less likely to earn a

degree. Porchea et al. (2010) and Ishitani (2008a, 2008b) indicate that first generation students were more likely to end their higher education studies before attaining a degree, although more recently, Ishitani and McKittrick (2010) found that older students in their study scored higher on academic achievement measures and surmised that older students might be more academically motivated and excepting of academic challenges.

Several researchers and national studies have indicated that members of racial and ethnic minority groups are much less likely to earn bachelor's degrees. Li (2010) pointed out specifically that Eimers and Mullen (1997) found when "credit and GPA were held constant, minority students were less likely to graduate than white or Asian Americans" (p. 213). Porchea et al. (2010) indicated that African American and Hispanic students had lower academic achievement and that "completion rates for minority and low SES students were lower at the community colleges" they studied. Li (2010) also found that Hispanic students were about 11% less likely to graduate than white students, though outcomes based on socio economic status did not change much when other variables were held constant. Although several studies, including Porchea et al. (2010), and Li (2010) have been able to demonstrate the impact of family income or socio economic status, others have found these variables not to be predictive of success (Melguizo et al., 2011).

Mixed results and inconclusive evidence in all of these areas suggest there is more at play than simply academic preparation and demographic variables when assessing a student's likeliness to attend college, retain, and persist to graduation. Recent studies have begun to look at non-cognitive factors such as personality, motivation, social integration, and extracurricular involvement as it pertains to student success.

## **Non Cognitive Factors**

Non cognitive factors are defined as those variables that measure motivation, personality, non-academic activities, and experiential or contextual intelligence (Sedlacek, 2003). Often, these variables can be better predictors of success than can standardized tests, especially for students of color or other under-represented populations (Sedlacek, 2003). Earlier, Sedlacek (1982) concluded that the following non-cognitive variables contributed to a minority student's ability to succeed: A positive self-concept; understanding and dealing with racism; a realistic self-appraisal; having long-range goals over short-term or immediate needs; availability of a strong support person; successful leadership experience; and demonstrated community service.

Others have taken their cue from this research to better understand what factors contribute to the success of transfer students. Using social learning theory and/or student development theory to inform their research, recent works have revealed a list of attributes that contribute to the success of transfer students, most of which were studies of community college students transferring to four year institutions.

Porchea et al. (2010) indicated that students with greater motivation were more likely to attain an associate's degree and transfer on to a four year school. They also cited several studies that indicated that various psychosocial factors (self-esteem, social competence, and social support) impact college outcomes; some even have predictive strength comparable to academic factors.

Li (2010) found that social integration was positively associated with degree attainment (and that SES, academic preparation, first year GPA, and financial factors were not statistically significant influences). Social integration, or extracurricular involvement, also predicted transfer

readiness in Johnson's (2006) study of student involvement and Bryant's (2007) study of community college students intending to transfer.

Berger and Malaney (2001) assert that students who were informed about, and were actively preparing for transfer, had higher grades after transferring and were more satisfied with the experience. Wang (2009) found that perceived locus of control is a significant factor in predicting persistence when community college students transfer to four year institutions and explains:

Rooted in social learning theory (Lefcourt, 1981, 1982, 1983; Rotter, 1966, 1975), the concept of locus of control attempts to explain a person's sense of control (internal locus of control) or lack of control (external locus of control) over his or her environment.

Locus of control as a psychological construct is often studied in conjunction with academic outcomes (Pascarella & Terenzini, 1991; Perry, 1991). Substantial evidence has highlighted the importance of internal locus of control for the academic development and outcomes of college students (Gifford et al. 2006; Grimes 1997; Martin & Bowman 1985). (Wang, 2009, p. 573)

Wang (2009) also found that academic achievement at four-year institutions was related to self-concept and to perceived value of education in addition to external factors such as gender, race, ethnicity, community college GPA, and social involvement. This would suggest there are a multitude of variables to consider when assessing potential student success.

Ling (2006) suggested that acknowledging student development is an important factor in learning how to counsel transfer students and asserted that transfer students cannot all be treated the same. Ling's study indicated that there is a need to assess the student's self-efficacy in order

to best advise and counsel him/her for success at the transfer institution. Self-efficacy is defined as a person's belief in his or her ability to succeed in a particular situation. People with a strong sense of self-efficacy view challenging problems as tasks to be mastered, develop deeper interest in the activities in which they participate, form a stronger sense of commitment to their interests and activities, and recover quickly from setbacks and disappointments (Bandura, 1997).

Indeed, the students interviewed in Gawley and McGowen's (2006) study suggested that prospective transfer students were more likely to succeed if they took responsibility for preparing themselves for their new institution by learning what services were available to them and by approaching faculty with questions. Their subjects were currently enrolled university students reflecting on their transition from college (two year institution) to university. The key, then, would be to learn how to help prospective students reach this point of self-efficacy in order to be able to take on the challenges of transfer.

One barrier that prospective transfer students face in reaching a level of self-efficacy that would facilitate their transition is an ill-defined or lack of identity. Gawley and McGowan (2006) found that:

Many of the college transfer students described a process of identity construction when describing their entry into university. They already have the label of 'college transfer' which ascribes them with certain characteristics. These identity experiences dealt mainly with age, maturity and the occupation of physical space. (p. 11)

The students faced many ambiguities about where they belong in the university community because they could not identify with the first year students nor did they feel they belonged with the upper class continuing students.

Using consequential transition theory (Beach, 1999) as a lens, Flaga (2002) provided a framework for understanding how transfer students experience transition and found that successful academic, social, and physical transition depends on and is affected by learning resources, connecting, familiarity, negotiating, and integrating. Flaga explained that “Transition is a socialization process that occurs over time. At some point, the transition feels “over” in the student’s mind” (p. 47) and he or she moves on to another phase. In other words:

By utilizing learning resources, students are able to connect. After students connect, they are more familiar with the environment due to their interactions. Familiarity is related to becoming socialized and comfortable within the environment and understanding norms and values within the academic, social and physical environments [at the new institution]. (p. 47)

Getting transfer students to utilize resources can be difficult. This author’s own research (unpublished) indicates that although the transfer students interviewed were aware of services available to them, many did not take advantage of the opportunity because they felt that had already “been there, done that” (personal communication during interviews conducted for a qualitative research class, October, 2009). McGowan and Gawley (2006) noted that the staff they interviewed reported “that college transfer students rarely ask for information about social events and clubs on campus; instead, college transfer students want to know where their classes are going to be.... Students ask questions about very specific issues like logging in to email, registering, etc.” (pp. 8-9). Once the “house-keeping” items are out of the way, transfers may be at a loss as to next steps or how to integrate socially on campus.

Transfer students often indicate that they are focused on their studies or too “self involved” to worry about connecting socially on campus (Gawley & McGowan, 2006; McGowan & Gawley, 2006; Orlick, unpublished). “Being relatively older, more mature and being considerate of the costs of further postsecondary education, some college transfer students deliberately reduce their social activities as they become more committed to the completion of their university degrees” (Gawley & McGowan, 2006, p. 11).

Transfer students may feel they are (or, they may actually be) more mature than new first year students, and may feel they are able to navigate the transfer process and handle whatever they encounter at their new institution because they have already been college students. In many ways, however, “They’re much more needy than high school students in a way, like, because they don’t have a way of GETTING this information” (transfer student interview quote in McGowan & Gawley, 2006, p. 9).

It takes a great deal of planning, effort, and collaboration to provide the services that will benefit students who transfer. Cobian (2009) conducted a case study of a Transfer Success program in California designed to address students’ academic, emotional, and social needs and found that students succeeded through both personal initiative and faculty support. The structured services of the program helped the students gain a greater sense of integration to the campus. The success of this program was due in part to collaboration between the community colleges and the four year institution to which the students transferred.

Other researchers (Kissler et al, 1981; Townsend, 2008) have asserted, as well, that it is the responsibility of faculty and staff at both the two year and four year institutions to help transfer students understand the process and determine their “fit.” If the culture of the receiving

institution is not one that emphasizes or supports transfer students, then it may be difficult for faculty and staff to provide such support, or they may not even know how to do so.

Taken in conjunction, these findings suggested that the difficulty in transfer, or the “shock” students experienced, was likely due to culture or environment rather than academic preparation or the type of institution (two year or four year) from which the student is transferring. Gawley and McGowen (2006) suggested this may be due to the more autonomous learning environment of the university. The students Berger and Malaney (2001) interviewed indicated that (at the university) they had more work to do (compared to the two- year college) and it was expected that the work would be done outside of class. Berger and Malaney also indicated that students who were more socially engaged were more satisfied with their transfer experience, but may not have been performing as well academically. Still, they concluded that social integration is key to student success. Li (2010), Rhine et al. (2010) and Porchea et al. (2000) came to similar conclusions.

### **Environmental Factors**

The intersection of what the student needs and how the institution provides these services lies in the environmental factors that are prevalent in both the sending and receiving institutions. Most of the research pertaining to persistence and degree attainment does not take institutional environment into account (Calcagno et al., 2008). Students who transfer move not only from one academic level to another, but from one institutional culture to another (Prager, 1988). Therefore, it is imperative for faculty and administrators to understand the culture from which the student comes and the culture to which the student is heading in order to best assist the student who is transferring.



Environmental factors may include such things as faculty-student relationships, advising practices, or class size. Additionally, it is important to note the timing of the student's transfer, including number of credits earned, when the student begins the transfer admissions application process, and to which term the student is seeking admission, in order to best advise the potential transfer student about what to expect in the process.

### **Academic Background & Receiving Institution**

Sullivan (1999) found that the type of institution from which a student transfers (two year or four year) did not impact their likeliness to persist, nor did the number of institutions attended (one or multiple institutions) before transferring to the institution in his study. Calcagno et al. (2008), however, found that large institutional size had a negative impact on the attainment of community college students. Higher numbers of part time faculty also hindered degree attainment for this group. Cuseo's (2001) study looked only at transfers from two year to four year institutions, but he found that those transferring to research institutions experienced more "transfer shock" than those transferring to a teaching- oriented institution. The students transferring to the research institution were also more critical of their academic preparation from the community college.

In assessing whether a student is ready to transfer, or in advising that student on where to transfer, it may help to consider the student's "fit" with the institution and their ability to adapt to a new or different culture. "Part of the academic difficulty that transfer students face with their transition stems from an initial lack of understanding and "fit" in their new environment. Over time, as they learn about and negotiate with the environment, they can better succeed within it" (Flaga, 2002, p. 28).

## **Timing of Transfer**

A number of studies indicated that success of transfer students (as measured by GPA and persistence to degree) is independent of whether the student earned an associate's degree. Only one study (Sullivan, 1999) found that the number of transferable credits earned at the time of admission was directly proportional to the likeliness of the transfer student to persist. Ishitani and McKittrick (2010) found that community college transfer students who entered the four year institution with sophomore or junior standing differed significantly from native students and transfer freshman in their levels of engagement on campus. Recent research at Colorado State University found that students (both freshmen and transfers) who started in the spring term retained at a much lower rate than did students who started in the fall term (Committee, 2009; Research, 2009). No research has been conducted on why this may be the case.

## **Term of Enrollment**

In a comparative study that explored the differences between fall and spring (or, mid-year) transfer students who were entering a large, public, four-year institution from community college, Peska (2009) found differences between the groups in regards to social and personal adjustment. Follow up interviews with some of the participants in the study showed that “mid-year transfer students perceived their adjustment as harder than experienced by students who started in the fall (p. ii) and that mid-year transfers were “less aware of institutional resources designed to aid in adjustment (p. 207). Peska noted that “mid-year transfer students [actually] adjust[ed] better to the academic competitiveness of the research site and had a more positive registration/advising adjustment than fall transfer students” (p. 207).

## **Timing of Application Process**

Countless searches in academic databases yielded no results for studies exploring timing of the application process (when the applicant applies, is admitted, and confirms their intent to enroll relative to the start of the academic term). Conversations with colleagues at two other public (though not research-oriented) institutions resulted in anecdotal evidence of “late” applicants struggling with academic success and yielded general consensus that the later a prospective student initiates the application or admission process the greater the concern on the part of administrators for student success.

## **Advising and Faculty Relationships**

As mentioned in both the institutional factors and personal factors sections above, the opportunity for new transfer students to connect with faculty and/or advisors is one mechanism to facilitate successful transfer. McGowen and Gawley (2006) cite Poisel and Stinard’s 2005 study in which they indicated “that university staff are key partners in helping college transfer students manage the transition from the college system to the university system and can play an important role in student retention and program completion” (p. 1). Thile and Matt (1995) studied freshman, but their findings are still relevant: Students who (as part of a pilot program for ethnic minorities) interacted with student mentors and a faculty mentor throughout the academic year [emphasis added]... performed better than the university-wide average, and their drop-out rates were reduced.

Relationships between advisors and faculty at both the two year and four year institutions is important, as it allows the two year college faculty to prepare their students and the four year

faculty to feel confident that their counterparts at community colleges are preparing students well (Townsend, 2008). Preparation relates not only to academics but also to cultural expectations.

Gawley and McGowen (2006) indicated that the students they interviewed were surprised that faculty at the university were approachable, although they felt the interaction was different and less friendly than at the (two year) college from which they transferred (pp. 8-9). This suggests that faculty at the two year institutions could better prepare their students for what to expect at four year institutions with regards to student-faculty relationships. And, four year institutions could be more forthcoming about expectations.

## **CHAPTER III: METHODS**

### **Population and Sampling Procedures**

This study used existing data available to me through the Office of Admissions at Colorado State University (a large, public, research institution in the Rocky Mountain region of the United States). The population of interest was all transfer students who started at Colorado State University in a spring or fall term. Very few students began their studies in the summer session and the structure of the summer terms was quite different than the structure of fall and spring terms at Colorado State; thus summer starts were excluded from this study. Per the state of Colorado Department of Higher Education, “transfer student” was defined as someone who has completed more than 12 college level credits after high school graduation or earning a GED.

The accessible sample included all students who transferred to Colorado State between fall 2007 and spring 2010. The data were sorted and cleaned to include only those students who transferred to CSU in either the spring or fall term from a United States college or university that could be identified as a regionally accredited two year, four year, vocational, or proprietary school. This resulted in an actual sample of 10,451 applicants; 6,868 admitted students; and 4,924 enrolled students. The three fall cohorts were analyzed as one group, “fall transfers,” and compared with the three spring cohorts analyzed as one group called “spring transfers.”

The decision to use data from only one institution was mostly a decision of convenience. Further, it was hoped that results from the study could potentially help inform retention efforts at the institution. Although findings using data from only one institution may not be generalizable to other transfer student populations, “research reporting on individual students and individual institutions enhance[s] the total understanding of persistence and departure because policy

initiatives have a greater impact and [are] more relevant when reporting from a single institutional perspective” (Metz, 2002, p.16).

### **Data Collection Procedure and Reliability**

A data set of applicants for admission was obtained from stored data in the Office of Admissions at Colorado State University. Using student ID numbers, these data were matched with data from the Registrar’s Office and the Office of Institutional Research in order to have appropriate pre- and post- enrollment data for each participant. The matching was conducted by a staff member in the Office of Institutional Research and supplied to the researcher with the ID numbers stripped in order to protect the identity of the transfer students in the study.

The data set was screened to ensure there were data points for each variable for each participant and that scores/answers for each variable were within expected limits. Although some data points were missing on some cases, analyses showed that the group of cases with missing data did not differ in any significant way with regard to demographics, academic background and preparation, or pre-enrollment variables from those who had data for all data points. It was assumed the data provided were accurate, though noted that existing data may not have been collected in the same manner as the researcher would have designed had the data collection been conducted as part of the study.

### **Variables Explored**

The data set retrieved from the Office of Admission’s archives included demographic information (such as age, sex, race/ethnicity, first generation status, state of residency), the application date, the admission decision date, the student’s confirmation of enrollment date, number of previous institutions attended, the name of the last institution attended, number of

credits complete and in progress at the time of application, and cumulative GPA from all previous institutions attended.

Post-admission, pre-enrollment data (like FAFSA filing dates, type of financial aid awarded, and attendance at orientation) for the 4,924 enrolled students were obtained through the Office of Institutional Research by matching student ID numbers from the existing database. GPA and academic standing for each term the student was enrolled at Colorado State University, each student's cumulative GPA, and academic status at the time of the study were obtained from the Registrar's Office in the same manner. Each independent variable was associated with one of three categories: demographic, pre-admission, or pre-enrollment. Tables 1 and 2 list the variables included in the data set as well as several new variables created to aid in the analysis of the data.

Three timing variables were created by subtracting the date of a particular activity (application, admission, confirmation of enrollment) from the start date of each term of interest (fall 2007 through spring 2010). Start date for each term was obtained through review of archived University calendars. These variables were created in order to test the theory that transfer students starting in the spring might have less time to prepare for their transfer than those starting in the fall; less time to prepare might mean more difficulty acclimating at the new institution and thus a potentially increased risk of "transfer shock."

Table 1

*Description of independent attribute variables used in the study*

Variable	Level	Category
Age at start	Continuous	Demographic
Sex	Male, female	Demographic
Ethnicity*	Hispanic, Non-Hispanic	Demographic
Race*	Asian/Pacific Islander, African-American/Black, Caucasian	Demographic
Residency	Resident of Colorado, Non-Resident	Demographic
First Generation Status	First Generation, Not First Generation	Demographic
College Type	Two year, Four year	Pre-admission
Number of Colleges Attended	Continuous	Pre-admission
Cum. Transfer Credits Completed	Continuous	Pre-admission
Cumulative Transfer GPA	Continuous	Pre-admission
Entry Term	Fall, Spring	Pre-admission
Entry Year	2007, 2008, 2009, 2010	Pre-admission
Application Timing (Days from submission of appl. to start of term)	Continuous	Pre-admission
Admission Timing (Days from admission to start of term)	Continuous	Pre-enrollment
Confirmation Timing (Days from confirmation of enrollment to term)	Continuous	Pre-Enrollment
Orientation Status	Attended, Did Not Attend	Pre-enrollment
Filed a FAFSA	Yes, No	Pre-enrollment
Financial Aid Awarded	Yes, No	Pre-enrollment
Aid Count	Continuous	Pre-enrollment

\*Data were coded to match the Federal Reporting Standards for Race and Ethnicity



Table 2

*Description of dependent variables from the data set and variables created for the study*

Variables	Levels	Category
Academic Standing- Term 1	Good Standing, Not Good Standing	Post- enrollment
Academic Standing- Term 2	Good Standing, Not Good Standing	Post- enrollment
Academic Standing- Term 3	Good Standing, Not Good Standing	Post- enrollment
First Term GPA	Continuous	Post- enrollment
Second Term GPA	Continuous	Post- enrollment
Third Term GPA	Continuous	Post- enrollment
Ever on Probation 1	Yes, No	
Ever on Probation 2	Yes, No	
Ever Dismissed	Yes, No	
Ever Stop Out	Yes, No	
Enrolled 3 terms	Yes, No	
Enrolled 3 consecutive	Yes, No	

The dichotomous academic standing variables were created based on the initial academic standing variables. Good standing remained one value; “Probation 1,” “Probation 2,” and “Academically Dismissed” were combined to create the other value. This recoding was necessary in order to have dichotomous outcome variables for the logistic regression.

Additionally, variables were created to assess whether a subject in the study had ever been on probation. The variables were created through an “if/then” recoding statement such that anyone who had ever had a term in which they ended in a “first probation” status received a 1 (yes) for the variable “ever been on probation 1”. The same procedure was used to create the variables “ever been on probation 2” and “ever been dismissed.” A variable called “ever stop out” was created to indicate if there had been a break in enrollment without the student having been dismissed. A variable noting whether the student had been enrolled for three terms indicated if

the student had, in fact, completed three terms of work regardless of “stop out” status and another variable indicated if those three terms of enrollment were consecutive.

### **Research Questions**

The research questions in this study included the following:

- 1) Is there a difference between spring and fall admits for the following variables: Age, Sex, Race/Ethnicity, First Generation Status, CO Residency Status, College Type, Number of Colleges Attended, Cumulative Transfer Credits, Cumulative Transfer GPA, Financial Aid Awarded, Orientation Attendance, Application Timing, Admission Timing, and Enrollment Timing?
- 2) Is there an association between timing of application for admission (as measured by the number of days from application to start of term, admission to start of term, and confirmation of enrollment to start of term) and first term, second term, or third term GPA at the transfer institution for either fall or spring starts?
- 3) Are there differences in timing variables for students who are in academic good standing and those who are not for either fall or spring starts?
- 4) How well does a model using the variables identified through this study and through the literature predict transfer shock (defined as a drop in grades upon transferring)?

### **Research Design**

This quantitative research study was designed to explore what differences (if any) exist between students who transfer in the fall term and students who transfer in the spring term and to explore whether there is a correlation between timing of the application process and academic success. In order to do this, fall and spring transfer students were compared (via *t*-tests and chi

square analysis) on a number of demographic, pre-admission, and pre-enrollment related variables. Table 1 lists all of the variables, their level of measurement and the category to which each belongs (demographic, pre-admission, or pre-enrollment). Table 2 lists the dependent variables.

In addition to comparing the spring and fall transfer groups, bivariate correlation was used to assess whether there was an association between the timing of the application process and first, second, or third term GPA. A series of *t*-tests were used to assess whether students in good academic standing differed from those not in good academic standing relative to the timing of the admission process. For both of these analyses, fall and spring transfers were analyzed separately to learn if spring transfers differed from fall transfers on any of these measures.

With the knowledge gained through the initial exploratory portion of this study, logistic regression was used to test how well academic success of transfer students can be predicted using data that are available from the application for process and pre-enrollment activity. The intention was to be able to predict good academic standing, but because it was found that most students were in good academic standing, the model was used to predict drop in first term GPA (relative to cumulative transfer GPA) as a measure of “transfer shock,” instead.

The predictive model utilized variables that addressed all three areas of transfer student success: personal, institutional, and environmental, and that were available at the time the student began their enrollment at the institution. These variables were chosen for the model because they are part of the typical data collected during the admission process and are readily available to enrollment management staff. Further, using data that are available before the student enrolls helps faculty, staff, and administrators know which students might need additional support

before they are identified through a failed first semester or other struggles. Targeting retention efforts to those most likely to need it makes good use of limited financial and human resources.

The first three terms were chosen as a measure of student success because there is evidence that transfer shock is temporary; students generally recover within a year of transferring (Diaz, 1992). Testing the model's predictive ability of immediate success and longer term success may provide additional guidance regarding the allocation of retention efforts and resources. Graduation was not used as a means of defining success for two reasons: First, transfer students come in with a wide range of credits and requirements already complete. It is virtually impossible to predict the exact number of terms required for graduation for an incoming transfer student until credit evaluation and degree audits are completed. Whereas it is reasonable to conclude that an incoming freshman will graduate in four years (or eight semesters) it might take as few as two semesters for a transfer student to graduate or as many as eight. Second, graduation implies that the terms leading up to graduation were successfully completed, so it becomes important to study those terms first.

Logistic regression was chosen as the statistical method by which to create a predictive model because logistic regression allows the researcher to predict the outcome of a dichotomous variable from a set of predictor variables (Field, 2009; Gliner, Morgan, & Leech, 2009; Leech, Barrett, & Morgan, 2011). In other words, logistic regression creates a model that predicts the probability of an outcome (in this case, a drop in GPA) occurring. Start term (fall or spring) then becomes part of the model instead of being used as the identifier by which groups are compared.

The use of logistic regression in higher education research is not new (Cabrera, 2001) and is particularly well suited to research questions that utilize both dichotomous and continuous independent (or predictor) variables (Leech et al., 2011,). Using statistical analysis software

(such as SPSS) makes it fairly easy to enter all of the predictor variables into one model and to assess how each variable (or group of variables) impacts the model's ability to correctly predict the outcome. Logistic regression requires that the observations are independent from one another and that the independent variables are linearly related without being too highly correlated (collinear). Accuracy of predictions increases with sample size (Field, 2009; Gliner et al., 2009; Leech et al., 2011). This dataset included a very large sample and both continuous and dichotomous variables, making logistic regression a good choice for the analysis.

### **Data Analysis**

Using SPSS, descriptive statistics were run for each variable, including checking for skewness and kurtosis when appropriate. This was a necessary first step so that relevant differential inferential statistics could be run. In this sample, the distribution for age, number of colleges previously attended before transferring, and cumulative credits completed before transferring were all skewed (skewness= 2.75, 1.4, and 1.29, respectively). Skewed data violates one of the assumptions for a *t*-test, thus, the Mann-Whitney U was used instead.

Differential inferential statistics were used to answer the first research question regarding differences between spring and fall transfer students and the third research question regarding differences in timing between students in good academic standing and those who were not in good academic standing after one, two, or three semesters. The split files command in SPSS was used to ascertain if spring and fall transfers differed on the timing measures.

Using regression, Spearman's rho was calculated to assess whether there was an association between each of the timing variables (application, admission, confirmation of enrollment) and GPA in term 1, term 2 and term 3. It was appropriate to use Spearman's rho

because the GPA variables were skewed. Once again, the split files command in SPSS was used to ascertain if the association was different for spring and fall transfers.

Logistic regression was used to answer the fourth research question. Co-linearity was checked, and found not to have been violated; assumptions of independence of observations and linear relationship of the variables were checked and met. Fourteen variables were part of the full model which was used to assess the predictive ability for all applicants and for fall transfers and spring transfers separately. A scaled down model was also created using only the variables that significantly impacted the predictive ability of the model for spring and for fall transfers.

## **CHAPTER IV: RESULTS**

### **Description of the Data Set**

The sample for this study included transfer students who chose to enroll at Colorado State University between the fall of 2007 and the spring of 2010. A total of 4,924 cases were evaluated. The N for each variable below includes all 4,924 cases, unless otherwise noted.

#### **Demographics**

Age of the enrolled transfer students at the start of each person's first term ranged from 17 to 56 years of age; the median age was 20.64 years old and the mean was 22.15. The distribution of age was skewed toward younger ages (skewness = 3.162), with the mid 50% between 19.56 and 22.25 years of age. Forty-eight percent of the sample identified themselves as female; 52% male. Pursuant to Federal regulations regarding the reporting of race and ethnicity, applicants must indicate whether they consider themselves to be of Hispanic origin or not and then indicate to which racial group they belong. Applicants were allowed to check more than one box with regard to race and had the opportunity to self-identify as multi-racial or multi-ethnic. The majority of transfer students in this sample (93.2%) indicated they were not of Hispanic origin. A majority (84.3%) also identified their race to be White/Caucasian. Others identified as Black (2.4%), Asian or Pacific Islander (2.3%) or Native American (.9%). The remaining 10.1% did not report their race or indicated that they did not wish to respond.

For the purpose of data analysis, the small number of transfer students who identified themselves as Black, Asian, Native American, of Hispanic descent, or any combination of these were grouped together into one variable called racial/ethnic minority which described 13% of the

sample. This also allowed for the creation of a dichotomous variable for the logistic regression analysis.

Most of the transfer students in this sample (81.9%) were residents of Colorado. The remaining 18.1%, which included residents of states other than Colorado and people whose residency was either unknown or classified as “other” were considered non-residents. This group included people (such as veterans or children of veterans) who received the benefit of in-state tuition, but whose permanent residence was not in Colorado. The proportion of resident/non-resident in this sample was representative of the total undergraduate student body at Colorado State University during the time frame from which these data were drawn.

About one third of the sample (33.9%, N= 4920) was classified as first generation. This proportion of first generation students was slightly higher than the proportion of first generation undergraduates unrolled at Colorado State University during the period from which this data was gathered (average of 26% from fall 2008 through fall 2010). At the time these data were collected, Colorado State University defined a first generation student as one whose parent(s) had not graduated from a four year institution.

### **Academic Background**

About half (48.3%) of the students in this sample last attended a four year institution before transferring to CSU and 48.7% last attended a two year institution prior to transferring. The remaining 2.9% attended a school that grants both associate and bachelor degrees. Because there was no way to know whether these applicants were enrolled in a program intended to lead to a two year or four year degree, students who last attended institutions which grant baccalaureate degrees were grouped together. Thus, 2,524 (51.3%) of the transfer students in



this sample last attended a baccalaureate degree granting institution and 2,398 (48.7%) last attended an associate degree granting institution before transferring to Colorado State University. Almost all (99.3%) of the 2,381 students who transferred from an associate level degree granting institution were attending a community college.

The majority of this sample (89.8%) last attended a public institution before transferring to CSU. The remaining 10.2% last attended either a private not-for-profit institution (9.4%), a for-profit institution (.5%), or a military institution (.2%), all of which were grouped together and considered not public institutions. The number of institutions attended before transferring to Colorado State ranged from one to nine. The majority of transfer students attended one (39.5%) or two (35.1%) institutions previously; the average number of institutions attended is two. Only 134 (2.72%) attended more than four institutions before transferring to Colorado State University.

Number of credits completed at the time of application ranged from 3 to 285 credits with a mean of 53.51 and a median of 50 credits (thus, the distribution had a slightly positively skew). The middle 50% of the enrolling transfer students completed between 28 and 71 credits before transferring to CSU. Cumulative GPA from all completed prior to transferring ranged from 1.5 to 4.0, with a mean cumulative GPA of 3.05. The middle 50% of the enrolling transfer students had a cumulative transfer GPA between 2.7 and 3.4.

### **Pre-Enrollment Data**

Just over three quarters (3,756 or 76.3%) of the students in this sample filed a FAFSA (Free application for Federal Student Aid) and 72% (3,543) of the sample (90.8 % of FAFSA filers) received some sort of financial aid. This aid could have come in the form of a scholarship

(18.7% of the entire sample, 21.9% of FAFSA filers), work-study awards (5.5% of the entire sample, 6.8% of FAFSA filers), Federal Pell Grants (37.6% of the entire sample, 49.3% of FAFSA filers); loans (61.8% of the entire sample, 80.2% of FAFSA filers), or other grants, such as state, institutional, or private grants (47.3% of the entire sample, 62% of FAFSA filers). Total percentages exceed 100% because students may receive more than one type of financial aid. About half of the sample (51.9%) received more than one type of aid. On average, the 3,543 students who received financial aid received two types. Just over one third (34.9%) of the students who received aid received three different types of aid.

Just over half (2,825 or 57.4%) of the transfer students in this sample attended an orientation program at CSU before enrolling.

### **Timing variables**

Just over 73% of the applicants (N=4924) started in the fall (25.5% in 2007, 22.5% in 2008, and 24.7% in 2009) and 26.7% started in the spring (10.3% in 2008, 7.9% in 2009, and 9.0% in 2010). In all, about 450 new transfer students started each spring term and about 1,200 transfer students started each fall term.

Timing of application, admission, and enrollment in relation to the start date of the term was an important piece of this research project. The number of days from application to the start of the term ranged from 412 days before the start of the term to 13 days after the start of the term. The middle 50% of this sample applied between 92 and 187 days (three to six months) before the start of the term. The number of days from admission to the start of the term ranged from 341 days before the start of the term to 14 days after the start of the term. The middle 50% of all applicants applied between 60 and 143 days (two to four and one half months) before the

start of the term. The number of days from confirmation of enrollment (accepting the offer of admission) to the start of the term ranged from 340 days before the start of the term to 22 days after the start of the term. The middle 50% of all applicants confirmed their intent to enroll at CSU between 47 and 121 days (one and one half to almost four months) before the start of the term.

Clearly, some students applied, were admitted, and enrolled after the term had already begun. University policy at the time of the study allowed students to register for classes as late as two and a half weeks into the term. The number of new transfer students in this group was extremely small; only four new students (of the almost 12,000 applicants and over 6,000 admits from which these 4,924 enrollees came) were admitted and enrolled after the term began. Additionally, 23 students confirmed their intent to enroll on or after the day the term started (most within the first week of classes) even though they had been admitted as many as 41 days prior to the start of the term. None of these “post-term start” transfer students attended an orientation program.

### **Research Question Results**

**Question 1: Is there a difference between spring and fall admits for the demographic, academic background, pre-enrollment, or timing variables?**

**Demographic variables:** The average age of spring starts (23 years old) was slightly higher than that of fall starts (21.8 years old) and although the difference was significant ( $Z = -7.20, p < .01$ ), the strength of this relationship was small ( $r = .102$ ). The Mann-Whitney U test was used to assess statistical significance, as the age variable was skewed. There were no other demographic variables for which there was a statistically significant difference between the

spring and fall starts. In other words, the proportion of males and females, racial and ethnic minority students, Colorado residents, and first generation students, were the same in both the spring and fall groups.

**Academic background:** Academic background differed slightly for transfer students who started in the spring and those who start in the fall but the strength of the relationship between the variables was very weak. Fall starts were less likely to have attended more than one college before transferring (59.4% compared to 63.6%). This difference was significant ( $X^2=7.19$ ,  $df\ 1$ ,  $p < .01$ ), but the relationship was much smaller than would typically be found ( $\Phi=.07$ ). The weakness of this difference was perhaps best illustrated by looking at the difference of the average number of colleges attended before transferring: 1.96 for fall transfers and 2.04 for spring transfers who enrolled at Colorado State during the study period.

There was no significant difference between fall and spring transfers with regards to the last institution attended having been a baccalaureate degree granting institution (51.8% of fall starts; 49.8% of spring starts) or whether that institution was a public institution (90% for fall starts; 89.5% for spring starts). In other words, each term transfer students were as likely to come from a two year institution as they were a four year institution, and most transfer students each term transfer from another public institution to Colorado State.

On average, transfer students who began in the fall have fewer credits upon transfer than transfer students who began in the spring (51.57 compared to 59.45). This difference was significant ( $t = -7.31$ ,  $df\ 4773$ ,  $p < .01$ ), but the effect size was small ( $d = -.24$ ). Difference in cumulative transfer GPA yielded similar results: On average, fall transfer students had a slightly higher GPA (3.07) than that of spring transfer students (3.02). Again, although the difference

was significant ( $t = 3.08$ ,  $df$ , 4773,  $p < .01$ ) the effect size was much smaller than would be typically expected ( $d = .11$ ).

**Pre- Enrollment Variables:** There were some significant differences between the groups with regard to receiving scholarship money and attending orientation. Fall enrolls were more likely to receive scholarship money than were spring enrolls (19.9% compared to 15.4%;  $X^2 = 12.45$ ,  $df$  1,  $p < .01$ ) but the effect size was weak ( $\Phi = .05$ ). There were no significant differences with regard to other types of financial aid received (72.1% of fall enrolls; 71.9% of spring enrolls) and both groups were just as likely to file a FAFSA (76.2% of fall enrolls and 76.4% of spring enrolls). Fall enrolls were much more likely to attend an orientation program (62.6% compared with 43% of spring enrolls;  $X^2 = 150.65$ ,  $df$  1,  $p < .01$ ), though the association was weak ( $\Phi = .18$ ).

**Timing Variables:** The only area in which there was some strength to the association of the significant differences between the two groups was on the timing variables. On average, fall starts applied earlier and thus were admitted earlier and were able to confirm their attendance earlier than spring starts. On average, fall applicants applied 154.27 days, or about 5 months, before the start of the term. For spring applicants the average was 115.16 days, which was fewer than four months, before the start of the term. This difference was significant ( $t = 20.319$ ,  $df$  4922,  $p < .01$ ) and the relationship was moderately stronger than what would be typically expected ( $d = .69$ ).

Fall applicants were also admitted with more time between the admit date and the start of the term (111.47 days, compared with 81.11 days for spring) and confirm their intent to enroll with more time between their decision to attend and the start of the term (95.71 days compared to 63.15 days for spring). These differences were significant ( $t = 18.10$ ,  $df$  4922,  $p < .01$  for admits;

$t = 21.22$ ,  $df 4922$ ,  $p < .01$  for confirmation of enrollment) and the relationship was moderately stronger than what would be typically expected ( $d = .59$  and  $.70$ , respectively). Table 3 displays the difference of means test for the timing variables and their related measures of association.

Table 3

*Comparison of spring and fall enrolls on timing of application, admission, and confirmation of intent to enroll*

Variable	M	SD	$t$	$df$	$p$	$d$
Days from Application to Start of Term			20.32	4922	<.01	.69
Spring	115.16	50.39				
Fall	154.27	62.8				
Days from Admission to Start of Term			18.10	4922	<.01	.59
Spring	81.11	49.46				
Fall	111.47	52.99				
Days from Confirm to Start of Term			21.22	4922	<.01	.70
Spring	63.15	44.90				
Fall	95.71	48.59				

N=3,609 for fall starts and 1,315 for spring starts

In summary, there really was no difference between spring and fall transfers with regard to demographic characteristics, academic background, or financial aid awarded. Fall enrolls were more likely to attend an orientation program, but the effect size of the difference between the two groups was very small. The true difference between these groups existed with the timing variables; fall applicants allowed themselves much more time from the start of the process (application) to the start of the term. Because their applications arrived earlier, they also were

admitted with more time between the admit date and the start of the term. Fall starts confirmed their intent to enroll with one full month more until the start of the term than spring admits.

### Clarification Questions

Before running statistical tests for the second and third research questions, analyses were conducted to assess whether there was, for this particular sample, any differences in GPA and academic standing for the first three terms of enrollment. The results, shown in Tables 4 and 5 below, indicate that the differences were not in the direction expected given previous research conducted at Colorado State University which showed that students who started in the spring term generally did not perform as well and graduated at lower rates than students who started in the fall term (CSU OIR, 2009; CSU OIR, 2011). Effect size, however, was negligible. This suggests that for this sample, transfer students who started in the spring and transfer students who started in the fall performed about the same during their first three terms of enrollment.

Table 4

*Comparing mean GPA for spring and fall enrolls during first three terms of enrollment*

Variable	Fall Starts	Spring Starts	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Term 1 GPA Average	2.78	2.85	-2.71	4922	<.01	-.088
Term 2 GPA Average	2.77	2.80	-1.175	4537	= .240	n/a
Term 3 GPA Average	2.82	2.89	-2.512	4119	<.05	-.089

Table 5

*Comparing percentages in good academic standing for first three terms and percentages ever on probation or dismissed within the first three terms by spring and fall enrollment*

Variable	Fall Starts	Spring Starts	$X^2$	$df$	$p$	$\Phi$
Term 1 Good Academic Standing	80.7%	84.6%	9.56	1	< .01	-.044
Term 2 Good Academic Standing	84.5%	88.4%	10.26	1	< .01	-.048
Term 3 Good Academic Standing	90.7%	92.7%	4.01	1	< .05	-.03
Ever on Probation	26.3%	21.8%	10.24	1	< .01	-.046
Ever Academically Dismissed	5.6%	3.3%	10.82	1	< .01	-.047

During this analysis, it became clear that measuring first term GPA and academic standing was not the most accurate measurement of “transfer shock;” nor were subsequent terms of GPA a measurement of recovery from transfer shock. Transfer shock is defined, in part, as the drop in grades immediately after transferring from one institution to another (Hills, 1965). Therefore, it becomes important to measure the change in GPA from the cumulative transfer GPA to the first term GPA. Per the literature, “recovery” can be thought of as whether the student is in good academic standing after three terms (Diaz, 1992). In other words, even if a student’s GPA dropped upon transferring, if he or she was enrolled and was in good academic standing by the end of three terms one can assume, in a very broad sense that the student was successfully completing their work and progressing toward graduation.



Given this revelation, four sub- research questions were asked to further explore if there were differences between the spring and fall groups with regard to transfer shock:

- a. Additional Question: Are fall or spring transfer students more likely to have a drop in GPA?
- b. Additional Question: Are spring or fall admits more likely to recover?
- c. Additional Question: Is there an association between timing and change in GPA upon transferring?
- d. Additional Question: If there is an association between timing and change, does it differ for transfer students who begin in the spring and those who begin in the fall?

#### **Additional Question 1a**

To measure the difference in first term GPA relative to the cumulative transfer GPA, a variable was calculated by subtracting the first term GPA from the cumulative GPA for each person. On average, spring transfers' GPA dropped .18 grade points and fall transfers dropped .29 grade points. The difference was significant ( $t = 4.26, df = 4773, p < .001$ ), but the effect size was very weak ( $d = .14$ ). Although the drop in GPA for fall transfer students was greater, a cross tabulation of drop in GPA (a yes/no recoding of GPA change) showed that fall starts were less likely to have a drop in GPA ( $X^2 = 60, df = 1, p < .001$ ). The effect size was smaller than what would be typically expected ( $\Phi = .11$ ).

#### **Additional Question 1b**

Transfer students who started in the fall were more likely to recover than those who started in the spring ( $X^2 = 4.01, df = 1, p < .05$ ), however, the effect size of this relationship was very weak ( $\Phi = -.03$ ). Of those transfer students whose GPA did drop in the first term relative to

the cumulative transfer GPA, there was a significant difference in the likelihood that they would recover ( $X^2 = 148$ ,  $df = 1$ ,  $p < .001$ ). Eighty-six percent of students whose GPA dropped and who were enrolled for a second term were in good standing by term three, compared with 97% of students whose GPA did not drop, although the effect size was weak ( $\Phi = -.189$ ). Results were similar when the sample was split into spring and fall, as shown in Table 6, below.

Table 6

*Results for crosstabulation of recovery (good academic standing by third term of enrollment) and drop in GPA for first term of enrollment relative to cumulative transfer GPA for both spring and fall transfers*

Term 3 good standing by GPA drop term 1	N	$X^2$	$df$	$p$	$\Phi$
All	4127	148.00	1	<.001	-.19
Spring	1086	24.25	1	<.001	-.15
Fall	3041	121.23	1	<.001	-.20

### Additional Questions 1c and 1d

Correlations were run to assess whether there was an association between timing and the amount the first term GPA deviated from the cumulative transfer GPA. Results indicated that there were no significant correlations between timing and change in GPA. This was confirmed by producing scatter plots for each of the timing variables with the change in GPA for term one (relative to the cumulative transfer GPA) for the group overall and separately for spring and fall starts. No clear pattern emerged for any of the scatterplots.

Although no truly significant differences were found between the groups with regard to GPA or academic standing over the first three terms, nor were there true differences found for changes in GPA or likeliness to recover, statistics were run to address the second and third

research questions in order to assess whether there were differences in academic performance based on timing of the application, admission, and confirmation of enrollment.

**Question 2: Is there an association between timing of application for admission and first term, second term, or third term GPA at the transfer institution for either fall or spring starts?**

Research question two sought to explore the association between timing variables and academic performance as measured by first term, second term, and third term GPA at the transfer institution. The GPA variables were slightly skewed (Term 1 GPA skewness= 1.01, Term 2 GPA skewness= 1.11, and Term 3 GPA skewness= 1.17), which violated the assumption of normality for Pearson's Correlation. Thus, the Spearman's rho statistic was calculated for each of the pairs and found to be statistically significant for each when run for the entire sample. Almost all of the pairings were statistically significant for each of the timing variables when split for the spring and fall transfer groups, as well. As shown in Table 7, below, however, the effect sizes ( $r^2$  values) were so weak as to be considered negligible.

Scatterplots were created to help visualize the association between the timing variables and first, second, and third term GPA. As expected, results displayed very weak positive relationships between GPA and timing for each variable pair for the sample overall and for the spring and fall groups when assessed separately.

Table 7

*Correlation of Timing Variables with First, Second, and Third Term GPAs*

Pairing	N	Spearman's Rho	<i>p</i>	<i>r</i> <sup>2</sup>
Application Timing- Term 1 GPA All	4924	.038	.008	.001
Application Timing- Term 1 GPA Spring	1315	.041	.134	n/a
Application Timing- Term 1 GPA Fall	3609	.062	<.000	.004
Application Timing- Term 2 GPA All	4539	.033	.025	.001
Application Timing- Term 2 GPA Spring	1169	.088	.003	.008
Application Timing- Term 2 GPA Fall	3370	.036	.035	.001
Application Timing- Term 3 GPA All	4121	.034	.027	.001
Application Timing- Term 3 GPA Spring	1082	.043	.160	n/a
Application Timing- Term 3 GPA Fall	3039	.060	.001	.004
Admit Timing- Term 1 GPA All	4924	.112	<.000	.013
Admit Timing- Term 1 GPA Spring	1315	.087	.002	.000
Admit Timing- Term 1 GPA Fall	3609	.146	<.000	.021
Admit Timing- Term 2 GPA All	4539	.104	<.000	.011
Admit Timing- Term 2 GPA Spring	1169	.124	<.000	.028
Admit Timing- Term 2 GPA Fall	3370	.119	<.000	.014
Admit Timing- Term 3 GPA All	4121	.102	<.000	.010
Admit Timing- Term 3 GPA Spring	1082	.088	.004	.008
Admit Timing- Term 3 GPA Fall	3039	.135	<.000	.017
Confirmation Timing- Term 1 GPA All	4924	.114	<.000	.013
Confirmation Timing- Term 1 GPA Spring	1315	.101	<.000	.010
Confirmation Timing- Term 1 GPA Fall	3609	.149	<.000	.022
Confirmation Timing- Term 2 GPA All	4539	.104	<.000	.000
Confirmation Timing- Term 2 GPA Spring	1169	.106	<.000	.011
Confirmation Timing- Term 2 GPA Fall	3609	.127	<.000	.016
Confirmation Timing- Term 3 GPA All	4121	.098	<.000	.010
Confirmation Timing- Term 3 GPA Spring	1082	.089	.003	.008
Confirmation Timing- Term 3 GPA Fall	3039	.136	<.000	.018

**Question 3: Are there differences in timing variables for students who were in academic good standing and those who were not for either fall or spring starts?**

Question three explored whether there were differences in timing variables for students who were in academic good standing and those who were not. The analysis was run in two ways; first, an independent sample *t*-test was run to assess whether there was a difference in mean number of days for all three timing variables (Application, Admission, and Confirmation of enrollment) for each of the academic standing variables (good standing or not good standing for term one, two, and three) . Second, using quartiles, each of the timing variables were recoded into a nominal variable with the values of “early,” “on time,” and “late” so that cross tabulations could be run for the timing variables with the academic standing variables. The middle 50% were considered “on time,” the lowest 25% were considered “late” and the highest 25% were considered “early.” Once again, analyses were conducted for the overall sample and then separately for spring and fall starts.

When analyzing the output for the sample overall, transfer students who were in good academic standing after one term were admitted and confirmed their intent to enroll more than one week earlier (9.3 days for admit; 8.7 days for confirm) than those who were not in good standing; differences in mean number of days for application timing was not statistically significant. Although significant differences were found for admit date ( $t = 4.696$ ,  $df\ 4922$ ,  $p < .001$ ) and for confirm date ( $t = 4.726$ ,  $df\ 4922$ ,  $p < .001$ ), the effect size was very small ( $d = .175$  and  $.176$ , respectively). Significant timing differences, but small effect sizes were found for those in good academic standing after two terms ( $t = 4.349$ ,  $df\ 928$ ,  $p < .001$ ,  $d = .791$  for admit date and  $t = 3.949$ ,  $df\ 933$ ,  $p < .001$ ,  $d = .162$  for confirm date) and three terms ( $t = 3.561$ ,  $df\ 443$ ,  $p < .001$ ,  $d = .191$  for admit date and  $t = 3.326$ ,  $df\ 449$ ,  $p = .001$ ,  $d = .176$  for confirm date) as well.

When split by fall and spring start, some differences emerged. For fall starts, there were significant differences for all three terms; for spring starts, only the second term academic standing was significantly different. Once again, the effect sizes remained very small, or lower than what would be considered typical.

Fall transfer students who were in good academic standing after one term, on average, applied 6.5 days earlier, were admitted 13 days earlier, and confirmed their intent to enroll 11.7 days earlier than those who were not in good standing ( $t = 2.453$ ,  $df\ 3607$ ,  $p < .05$  for application date;  $t = 5.884$ ,  $df\ 3607$ ,  $p < .001$  for admit date and  $t = 5.748$ ,  $df\ 3607$ ,  $p < .001$  for confirm date). The strength of the relationship between admit timing and term one academic standing and confirmation timing and term one academic standing increased slightly, but the effect size for all three timing variables was small ( $d = .104$  for application timing,  $.249$  for admit timing, and  $.244$  for confirmation timing). This same pattern emerges for academic standing in terms two and three for fall starts, as well, although only the admit date and confirmation of enrollment date were statistically significant:  $t = 4.724$ ,  $df\ 3368$ ,  $p < .001$ ,  $d = .23$  for admit date; and  $t = 4.517$ ,  $df\ 3368$ ,  $p < .001$ ,  $d = .22$  for confirm date for term two, and  $t = 4.465$ ,  $df\ 354$ ,  $p < .001$ ,  $d = .27$  for admit date and  $t = 4.256$ ,  $df\ 352$ ,  $p < .001$ ,  $d = .257$  for confirm date for term three.

For the spring group, the difference in academic standing was significant only for term two. On average, spring starts who were in good academic standing after two terms applied 9.3 days earlier, were admitted 8.9 days earlier and confirmed their intent to enroll 7.5 days earlier than did those who were not in good academic standing after two terms. Once again, although the differences were statistically significant ( $t = 2.033$ ,  $df\ 1167$ ,  $p < .05$  for application date;  $t = 1.978$ ,  $df\ 1167$ ,  $p < .05$  for admit date; and  $t = 2.095$ ,  $df\ 188$ ,  $p < .05$  for confirm date), the effect

size was weak ( $d = .19, .184$ , and  $.18$ , respectively). The cross tabulation results in Table 8 below help illustrate the weakness of the relationship a little more succinctly than do the  $t$ -tests.

Table 8

*Crosstabulations for Academic Standing and Timing Variables for Entire Sample*

Pairs	N	$X^2$	$df$	$p$	$\Phi$
Term 1 standing by on time application	4924	3.58	3	.311	.027
Term 1 standing by on time admission	4924	28.45	3	<.001	.076
Term 1 standing by on time confirmation	4924	23.42	3	<.001	.069
Term 2 standing by on time application	4539	1.58	4	.812	.019
Term 2 standing by on time admission	4539	20.05	4	<.001	.066
Term 2 standing by on time confirmation	4539	11.09	4	.026	.049
Term 3 standing by on time application	4127	1.69	4	.793	.02
Term 3 standing by on time admission	4127	11.67	4	.020	.053
Term 3 standing by on time confirmation	4127	7.97	4	.093	.044

In summary, application timing was not as impactful as admit timing or confirmation of enrollment timing. Generally, though, it appeared that the more time between admission and the start of term, the better a student does. It could be difficult to draw conclusions or to see the strength of the relationship for a few reasons. First, there were several academic standing categories (good standing, probation1, probation 2, and dismissed) that were collapsed into a dichotomous variable. Second, academic standing in general encompasses a wide range of performance. At most institutions, GPAs of 2.00 to 4.00 are considered good academic standing.

Finally, a term GPA might not be in the range of good academic standing, but the cumulative GPA may be high enough for the student to be considered in good academic standing.

**Question 4: How well does a model using the variables identified through this study and through the literature predict transfer shock, as measured by a drop in first term GPA?**

The final research question sought to discover whether a model could be constructed to predict academic standing of transfer students after one, two, and three semesters. Because most of the transfer students in this study were in good academic standing each term (82% after one term, 85.5% of those enrolled after two terms, and 91.3% of those enrolled after three terms) and because “good standing” encompasses such a wide array of grade point averages, creating a model to predict good standing was deemed less useful than creating a model that predicted the likeliness of GPA to drop in the first term relative to the cumulative transfer GPA. Studying a drop in GPA more closely fits with the definition of transfer shock, as well.

The initial intent for the logistic regression was to use results from the first three research question, coupled with knowledge gained from the literature, to inform construction of the model. As noted above, there were some statistically significant differences between spring and fall starts, but no *one* variable seemed to explain much of the variance, nor were the relationships between any of the variables particularly strong. Additionally, the intention was to enter each of the demographic, pre-admission, and pre-enrollment groups of variables in blocks. No one variable or category of variables seemed to make a large impact on success, however, and because the literature suggested that a combination of many factors contributed to the likeliness of transfer student success, the logistic regression model created for this study included all of the variables as one block.



Due to multicollinearity, only one of the timing variables could be used in the model. The variable measuring days from confirmation of intent to enroll to the start of school was chosen because it was significant in a number of areas and also because the student has some control over this timing. Although an applicant may not control the timing of when an offer of admission is made, the admitted student does control when he or she accepts the offer of admission and confirms his or her intent to enroll at the transfer institution. Application date is controlled by the prospective student as well, but even if the applicant applies early, he or she may not be admitted early and therefore the student loses some control during the process. Therefore, using the variable measure timing from confirmation of intent to enroll to the start of the term was the most logical choice for the model.

Logistic regression was conducted to assess how well the predictor variables could predict that a transfer student's GPA would drop (relative to cumulative transfer GPA) for the first term of enrollment. Assumptions for independence of observations and linear relations to the logit (or, log odds) were checked and met. The zero block of the regression model, which included only the constant, showed that if one were to just guess whether or not a transfer student's first term GPA would drop compared to the cumulative transfer GPA, one would be right 59.9% of the time.

When all 14 predictor variables (Age at Start, Sex, CO Residency, First Generation Status, Minority Status, Baccalaureate Institution, Number of Prior Colleges Attended, Cumulative Transfer Credits, Cumulative Transfer GPA, Entry Term, Number of Days from Confirmation to Start, Filing a FAFSA, Aid Count, and Orientation Attendance) were added to the model, the ability to predict whether or not the transfer student's GPA dropped in the first term compared to the cumulative transfer GPA increased to 65.3% ( $X^2 = 486.83$ ,  $df = 15$ ,  $N =$

4754,  $p < .001$ ). The model was better at predicting whether the GPA would drop (83.2%) than not drop (38.7%). Table 9 presents the odds ratios for each of the variables.

Odds ratios are used to express the odds of an event occurring for one group compared with another. “An odds ratio of 1 [sic] would indicate that the odds of a particular outcome are equal in both groups” (Field, 2009 p 790). Essentially, odds ratios can be thought of as an effect size measure that helps the researcher understand the strength of the relationship between the two variables. Commonly used when both variables are dichotomous, “there are no agreed-upon standards for what represents a large ratio because the ratio may approach infinity if the outcome is very rare or very common...” (Leech et al., 2011 p 135). The discussion below illustrates how odds ratios are interpreted.

As age increased, the odds of a transfer student’s first term GPA dropping (relative to the cumulative transfer GPA) decreased by .96 (per each year increase). The odds of GPA dropping also decreased if the transfer student last attended a baccalaureate degree granting institution before transferring to Colorado State (.782). With each additional college attended before transfer, the odds of the term one GPA dropping relative to cumulative transfer GPA decreased by .853 and with each additional college credit earned before transferring the odds dropped by .996. Each additional day between confirmation of enrollment and the start of the term decreased the odds of GPA dropping by .997. Receiving more types of financial aid also decreased the odds of GPA dropping (.850).

Table 9

*Logistic Regression Predicting Likelihood of First Term GPA to Drop Relative to Cumulative Transfer GPA*

Variable	<i>B</i>	SE	Odds Ratio	<i>p</i>
Age at Start	-.040	.008	.960	<.001
Sex (male is the reference group)	.108	.064	1.114	.093
Residency (CO resident is reference group)	.119	.081	1.127	.138
First Generation (not first gen is reference group)	.340	.069	1.405	<.001
Minority (non-minority is the reference group)	.447	.097	1.563	<.001
Baccalaureate Institution (yes is reference group)	-.246	.067	.782	<.001
Public Institution (public is the reference group)	.016	.110	1.016	.887
Number of Prior Colleges Attended	-.159	.031	.853	<.001
Cumulative Transfer Credits	-.004	.001	.996	<.001
Cumulative Transfer GPA	1.102	.070	3.01	<.001
Entry Term (fall is reference group)	.238	.076	1.27	.002
Number of days from confirmation of attendance to start of term	-.003	.001	.997	<.001
FAFSA (filed is reference group)	.293	.096	1.341	.002
Aid Count (number of types of aid)	-.163	.031	.850	<.001
Orientation (attended is reference group)	-.029	.066	.972	.664
Constant	-1.544	.305	.213	<.001

The odds of GPA dropping increased (by 1.41) if the transfer student was a first generation college student or if the transfer student was a member of a racial or ethnic minority group (1.56). Starting in the fall term and filing a FAFSA were also positively associated with the odds of GPA dropping (1.269 and 1.34, respectively). The higher the cumulative transfer

GPA the more likely GPA was to drop upon transfer (3.010). Although this odds ratio seemed to contribute most to the model, this statistic may be misleading, as the GPA of new students who transferred with very high GPAs may have nowhere to go but down and a drop in GPA may not truly signal academic difficulty or cause for concern.

For example, 1082 cases in this dataset had a cumulative transfer GPA of 3.5 or higher. Of this group, 71.6% dropped in GPA. The middle 50% dropped by .217 to .883 points. Thus, even those in the 75<sup>th</sup> percentile of the GPA drop distribution for this particular subset of the sample were still in good academic standing. When the starting GPA is this high, a drop in GPA would have to be more than 1.5 points to put the student in academic jeopardy. Only eighty (or 7%) of the students in this subset were in this situation.

As noted above, the majority of transfer students in this sample who were still enrolled after three terms were in good academic standing (91.3%, N=4127), thus a logistic regression was not conducted to try and predict the likeliness that a student would be in good standing within three terms because no model would be able to improve upon these odds. Although the percentage of students in good academic standing by term three was lower when the entire sample was included (76.5%), predicting enrollment at three terms was also deemed an inaccurate measure of academic achievement because some of the students not enrolled did not fail out nor were they on academic probation when they stopped out.

In order to determine if the predictive ability of the model worked any better for spring or fall admits, the logistic regression was repeated using the split file feature of SPSS. The variable “fall start” was removed from the analysis, as this was the variable that was used to split the file. At the zero block, the model was better at predicting a drop in first term GPA relative to the cumulative transfer GPA for fall starts (61.4%, N=1167 ) than for spring starts (55.1%, N=3587).

Adding all of the predictor variables increased the predictive power of the model by 6.3 percent, to 66% for the fall and by nine percent, to 64.1 %, for the spring starts. Although the overall predictive ability of the fall model was slightly higher than the spring model, the predictive variables had a greater impact in determining the odds of GPA dropping for spring starts than for fall starts because adding those variables improved the model for the spring more than for the fall. The set of variables that significantly contributed to the model differed between the spring and fall groups. Table 10 compares the odds ratios for each variable for spring and fall starts.

Neither sex nor residency were significant for either group, but the p value for the fall group was much lower than the p value of the spring group for both variables (.064 compared to .930 for sex, and .051 compared to .841 for residency). Note that the p value for residency for the fall group was very close to the .05 cut point for statistical significance. Although the remaining variables were either significant for both groups or were not significant for either group, for the significant variables, there were variations in the odds ratios between spring and fall transfers. For example, first generation status and belonging to a racial or ethnic minority group had a greater impact on the odds of GPA dropping for the spring transfers than for the fall transfers (1.54 compared to 1.36 and 1.64 compared to 1.54, respectively). The opposite was true for cumulative transfer GPA (2.92 for spring compared to 3.02 for fall) and for filing a FAFSA (1.28 for spring compared to 1.51 for fall).

Table 10

*Logistic Regression Predicting Likelihood of First Term GPA to Drop Relative to Cumulative Transfer GPA Split by Spring and Fall Term*

Variable	<i>B</i>	SE	Odds Ratio	<i>p</i>
Age at Start- Spring	-.204	.014	.977	.078
Age at Start- Fall	-.047	.010	.954	<.001
Sex (male is the reference group)- Spring	.011	.128	1.011	.930
Sex (male is the reference group)- Fall	.138	.074	1.148	.064
Residency (CO resident is reference group)- Sp	-.033	.164	.968	.841
Residency (CO resident is reference group)- Fall	.181	.093	1.199	.051
First Gen (not first gen is reference group)- Sp	.431	.135	1.539	.001
First Gen (not first gen is reference group)- Fall	.304	.081	1.355	<.001
Minority (non is the reference group)- Spring	.492	.197	1.636	.012
Minority (non is the reference group)- Fall	.434	.112	1.543	<.001
Baccalaureate Inst (yes is reference group)- Sp	.015	.138	1.015	.914
Baccalaureate Inst (yes is reference group)- Fall	-.333	.078	.717	<.001
Public Inst (public is the reference group)- Sp	.186	.229	1.204	.418
Public Inst (public is the reference group)- Fall	-.035	.127	.966	.784
Number of Prior Colleges Attended- Spring	-.156	.061	.856	.010
Number of Prior Colleges Attended- Fall	-.164	.036	.848	<.001
Cumulative Transfer Credits- Spring	-.008	.002	.992	.001
Cumulative Transfer Credits- Fall	-.003	.001	.997	.029
Cumulative Transfer GPA- Spring	1.071	.142	2.917	<.001
Cumulative Transfer GPA- Fall	1.106	.081	3.021	<.001
Number of days from confirmation of attendance to start of term- Spring	-.005	.001	.995	.001
Number of days from confirmation of attendance to start of term- Fall	-.003	.001	.997	.001
FAFSA (filed is reference group)- Spring	.414	.199	1.513	.038
FAFSA (filed is reference group)- Fall	.249	.110	1.283	.024
Aid Count- Spring	-.193	.064	.825	.002
Aid Count Received- Fall	-.152	.035	.859	<.001
Orientation (attended is reference group)- Spring	.010	.131	1.01	.939
Orientation (attended is reference group)- Fall	-.053	.077	.949	.496
Constant- Spring	-1.74	.158	.176	.003
Constant- Fall	-1.205	.355	.300	.001

Approximate  $t$ -scores were calculated using the formula  $B_1 - B_2 / \sqrt{(SE_1^2 + SE_2^2)}$  which compares the odds ratios and standard errors for the spring group (1) with the fall group (2). Results show that there was an interaction effect of enrollment term (fall or spring) with age ( $t = 9.13, p < .001$ ) having attended a baccalaureate degree granting institution ( $t = -2.01, p < .05$ ), and number of cumulative transfer credits completed ( $t = 2.24, p < .05$ ). This suggests that age, attending a four year institution, and number of cumulative transfer credits completed impacted the likeliness of GPA dropping differently for spring and fall starts. “When a model has interaction term(s) of two predictor variables, it attempts to describe how the effect of a predictor variable depends on the level/value of another predictor variable” (UCLA Academic Technology Services, pp 9-10).

Because of the differences between the groups, the logistic regression was rerun for each group separately, with the variables that were not significant removed from the model. In both cases, the predictive ability of the model decreased from when all variables were included, but the difference was very small.

For the spring transfer group, the predictive variables first generation, racial/ethnic minority, number of colleges previously attended, cumulative transfer credits, cumulative transfer GPA, days from confirmation of enrollment to start of term, filing a FAFSA and the aid type score were entered together as one block. Independently, minority status and filing a FAFSA did not significantly contribute to the predictive ability of the model. Together, all of the variables contributed to the model significantly and the model was able to correctly predict a drop in GPA 63.7% of the time, compared to 61.4% when all fourteen the variables were used. As was the case with the full model, the scaled down model was better at predicting a drop in GPA (74.7% correct) than no drop in GPA (50.3% correct).

For the fall transfer group, the predictive variables age at start, first generation, racial/ethnic minority, transferring from a baccalaureate degree granting institution, number of colleges previously attended, cumulative transfer credits completed, cumulative transfer GPA, days from confirmation of enrollment to start of term, filing a FAFSA and the aid type score were entered together as one block. Independently, days from confirmation of enrollment to start of term and filing a FAFSA did not significantly contribute to the predictive ability of the model. Together, all of the variables contributed to the model significantly and the model was able to correctly predict a drop in GPA 65.9% of the time, compared to 66% when all of the variables were used. As was the case with the full model, the scaled down model was better at predicting a drop in GPA (86% correct) than no drop in GPA (33.9 % correct).

In summary, results for each of the four research questions and the sub-questions asked as part of research question one have mixed results. While there were some significant relationships between variables and some differences between the spring and fall transfers, with the exception of some timing variables, most of the connections were weak at best. Chapter five discusses the findings and implications of this study and also addresses recommendations for further research.



## **CHAPTER V: DISCUSSION**

### **Discussion**

At the surface, it may seem like this study did not yield much in the way of practical or useful findings. In fact, the results of this study tell us a lot. This study sought to discover what differences exist between spring and fall transfer students. The answer to this question, for this sample, was very little. Yet, previous research at this institution and others imply that there was a difference in the academic performance of spring and fall transfer students (CSU OIR, 2009; Colorado State University, Undergraduate Affairs Data Analysis Committee, 2009; CSU OIR, 2011; Peska, 2009) and a difference in how well those students integrate (Peska, 2009). The results of this study suggest that any differences that exist were very small and the differences could not be attributed to any particular demographic characteristics, academic background or preparation, nor to pre-enrollment behavior variables that were measured. It is reasonable to think, then, that there must be something in the experience of starting in the spring or the fall that impacts student success.

### **Exploring differences between spring and fall transfer students**

The literature suggests that demographic characteristics and academic background impact student success. Therefore, it was surprising to find that there were no differences between spring and fall transfer students with regard to the demographic makeup of the groups nor were there differences in academic background and preparation. It was expected that these would be key factors in the difference in performance between the groups, especially because previous

research at the University found that students who started in the spring generally did not perform as well and persisted and graduated at lower rates than those who started in the fall.

Pre-enrollment behavior was expected to be another key factor impacting student success. The literature shows, for example, that receipt of financial aid significantly impacts retention (Cuseo, 1998; Townsend, 2008) as does attending an orientation program (Brawer, 1984; Cuseo, 1998, 2001; Gawley and McGowen, 2006; Li, 2010; Townsend, 2008). There was not a statistically significant difference in the percentages of spring and fall transfer students who attended an orientation program. There also were no differences in the percentages of students in each group who filed a FASFA or received some type of financial aid. Although there were small differences in the type of aid spring and fall transfers received, the differences were not statistically significant. There also was no difference in the percentage of incoming transfer students who received Pell Grants, an indication of being low-income.

That there were no statistically significant differences between the spring and fall transfers on these demographic and pre-enrollment variables does not suggest that these variables have no impact on academic success. It merely indicates that any performance differences between spring and fall transfer students was most likely not due to different group characteristics. In other words, had this study found that one group had a higher proportion of first generation or low income students, differences in performance could have been attributed to the differences in group make-up. That no differences were found (except a very slight difference in average age) suggests there was something else at play impacting transfer student success.

## **The Impact of Timing**

Timing variables are the least researched area related to transfer student success. Based on 15 years of experience working with prospective students and observing the added stress spring transfers seem to exhibit, timing was expected to make a significant impact on transfer student academic success. Although there were statistically significant differences between the spring and fall transfers on the timing variables measured, these differences were not strongly correlated with academic performance. Therefore, all that can be concluded is that for this sample, timing was different for spring and fall transfers. In order to ascertain what impact (if any) timing has on the transfer experience additional research needs to be conducted.

Timing was related to whether or not a student was enrolled for at least three consecutive terms. Although not being enrolled is not always a reflection of academic trouble, continuous enrollment is positively correlated with academic success and graduation rates (Li, 2010). About one third (31.7% for spring and 34.2% for fall) of the 4,924 students in this study were not enrolled for at least three consecutive terms. A dichotomous variable, on time confirmation, was created to assess whether not being “on time” was significantly related to not being enrolled for three consecutive terms. On time was defined as anyone whose time from confirmation of intent to enroll until the start of the term was greater than or equal to the 60<sup>th</sup> percentile of the CONF2START distribution (94 or more days before the start of the term).

On-time confirmation did have an impact on the likeliness that a transfer student would be enrolled for three consecutive terms although the effect size was very small ( $X^2 = 23.04$ ,  $df = 1$ ,  $p < .001$ ,  $\Phi = .068$ ). What’s more interesting is that the impact was opposite for fall and spring starts, as illustrated in Figures 2 and 3, below.

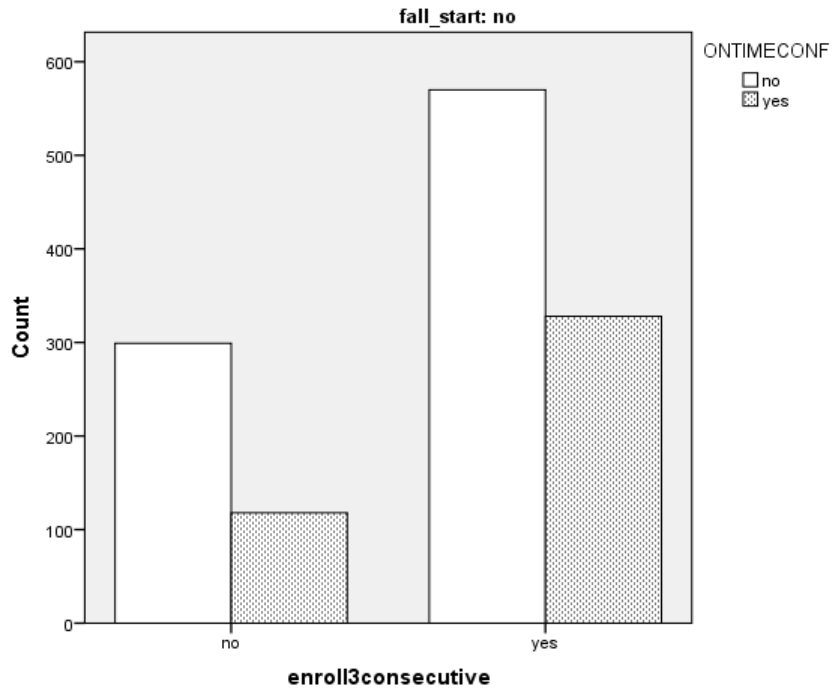


Figure 2. Clustered Bar Chart Showing On Time Confirmation by Enrollment for Three Consecutive Terms for Spring Transfer Students.

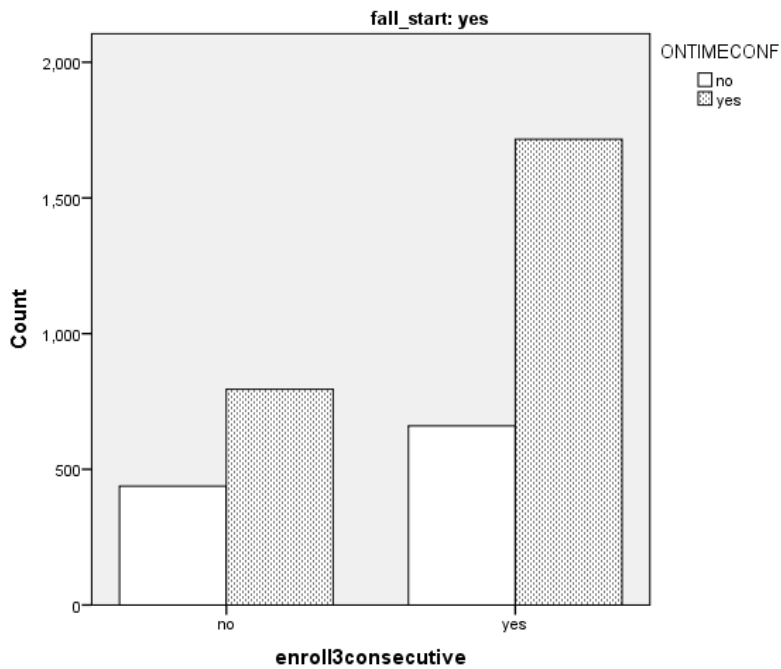


Figure 3. Clustered Bar Chart Showing On Time Confirmation by Enrollment for Three Consecutive Terms for Fall Transfer Students.

Confirming one's intent to enroll "on time" meant a fall student was much more likely to be enrolled for three consecutive terms, but "on time" spring starts were much less likely to be enrolled for three consecutive terms. It is unclear why this difference occurred or exists.

Perhaps the impact was not the same because the group of students who started in the spring generally were students who applied, were admitted, and confirmed their intent to enroll with less time until the start of term overall. This would be especially true for those who chose to transfer in the spring immediately following enrollment at another institution in the fall.

Whereas students who transfer in the fall generally have about three months between finishing at the original institution before starting at the transfer institution, prospective transfer students who are currently enrolled elsewhere are trying to wrap up and complete work at one institution while trying to plan and get started at another. Therefore, the difference displayed in the graph above may be indicative of the fact that there was more variance for the group starting in the fall than there was for the group starting in the spring. In general, spring transfers have a shorter amount of time for planning, therefore, there may be no difference between "late" applicants and "on time" applicants because there was not as wide a range of time between the two.

Note that the range of days for the three timing variables (application to start of term, admission to start of term, and confirmation of enrollment to start of term) were greater for the middle fifty percent of the fall applicants than the middle fifty percent of the spring applicants (87 days for application, 83 days for admission, and 72.5 days for confirmation, compared with 63 days for application, 57 days for admission, and 39 days for confirmation, respectively). The standard deviation for the timing variables were also greater for fall (63, 53, and 48 compared to 50, 49 and 45). There was much more variability on the timing variables for the fall group.

Results from this study suggested that timing impacts enrollment. Institutional success is measured, in part, by persistence and retention rates. If students who start and complete the admission process later don't retain as well as those who start the process earlier, the institution may want to adjust practices or reallocate resources to provide additional outreach to students who are "late" in the process. Or, the institution may wish to create application deadlines which allow for more time between when admissions decisions are made and when the term starts.

There were no measures included in this study to help explain why "late" applicants did not persist at the same rates as "early" or "on time" applicants. It is possible that the "late" students have not thought through their options as clearly/succinctly as "early" or "on time" students or, it might suggest a lack of planning on the part of the student. Students who miss the application deadline and appeal to the CSU admissions office for a deadline extension or exception often express that they were unaware of deadlines, had not really been thinking about what they would do next term or thought they would be attending school elsewhere and did not have a backup plan.

It is also possible that "late" applicants don't retain as well because they did not have enough time to explore campus, learn about available resources, or connect with faculty, staff, and other new students before classes started. Students who plan far enough in advance give themselves enough time to visit the campus, talk with faculty and staff, and attend orientation programs. They might also engage in social networking sites (like admitted student Facebook pages) which provide them the opportunity to connect to other new students before coming to campus or starting classes.

It appears that timing plays a different role for fall transfers than it does for spring transfers and that timing does seem to be one factor among many that impact a transfer student's

experience at the transfer institution. Further, as will be discussed in the next section, the logistic regression models were different for fall and spring transfers and the variable measuring the number of days from confirmation of enrollment to the start of term significantly contributed to the model, suggesting that timing did have an impact even if it was not directly related to GPA. There needs to be additional inquiry into the impact timing has on the transfer student experience in order to fully understand the implications of this study.

### **Predicting Success**

As noted in the findings section, while exploring the variables in this data set, it became clear that attempting to predict good academic standing was not a worthy endeavor for this sample because most of the students in the sample remained in good academic standing throughout the period of their academic career that was covered in this study. Thus the focus changed to creating a model to help predict a drop in GPA, or “transfer shock.” Measuring “transfer shock” in this manner, however, proved to be extremely limiting. Many transfer students experienced a drop in grades upon transferring, but the drop did not necessarily inhibit their ability to be academically successful. The drop may have been as little as two tenths of a grade point or, the drop may have been larger, yet the student remained in good academic standing.

A better approach might be to measure how much a GPA drops and at what level the decrease begins to impact future success. This could help faculty and staff more succinctly target students who are in most need of assistance or support. Institutional Researchers at Colorado State University have recently started using quality points as a measure of success, as this figure takes into account both the GPA and credits earned. Another approach might be to

extract only the students whose GPA dropped enough to put them in an academic probationary status and test a model for predictive ability of this phenomenon occurring.

Dropouts, stop outs, and further transfer happen even with good academic performance, so when using retention as a measure of success, one must consider more than just grades. Further, ending one's academic career at one institution to begin at another does not necessarily indicate a lack success on either the student's or the institution's part. There is a need to collect more data regarding student's decisions to stop out, drop out, or transfer in order to better understand (or define) success as measured by retention rates. The National Clearinghouse data could be used to track whether someone who stopped attending the institution in the study enrolled elsewhere or stopped attending school altogether. Such follow up could not be conducted in this study because there were no unique identifiers (such as Social Security Number) for the individuals within the sample.

### **Comparing this Study with Other Recent Transfer Student Studies**

It is important to assess how the results of this study differed from other studies of transfer students, and also to explore why these differences may exist. As noted in the literature review, previous research has yielded mixed results with regard to the factors facilitating or hindering academic success for transfer students. Despite the mixed results, generally one can conclude that there are a variety of factors that impact academic success and that these factors can be broken down into three main categories- Structural, Personal, and Environmental. This study was not intended to measure, nor did it measure, whether these variables impacted student success. Rather, based on the premise that spring and fall transfers differ in their academic success (as measured by GPA and academic standing), this study was designed to explore



whether there were differences between the two groups relative to these factors. It was expected that the composition of each group would be different and therefore would explain the difference in performance between spring and fall transfers. Not only was there no difference in the composition of the two groups, there also was no difference in the performance of the two groups. This was a surprise given the previous institutional research conducted by the institution (CSU OIR 2009, 2011; CSU Data Analysis Committee, 2009).

Although the sample for this study was drawn from the population of transfer students at the same institution, the results of this study differed from the results of both the 2009 and 2011 studies conducted by Colorado State University's Office of Institutional Research. This may be because the samples were different. The Transfer Profile and Retention Study (June, 2009) conducted at Colorado State University focused on the 2007-2008 cohorts and included historical data on transfers dating back to 1991. The sample in this study included the 2007-2008 cohort as well as students who began their studies later, after the CSU study was published. Changes made by the institution as a result of that study (such as modifying orientation content or timing), availability of scholarships aimed specifically at transfer students, or varying degrees of housing availability specifically for transfer students over the three year time span from which this sample was drawn, all may have impacted student performance and thus resulted in different findings between the two studies.

The types of transfer students included in each study also differed, as the current study did not include students transferring from non-US institutions of higher education and limited the subjects included to only those who met the Colorado Commission of Higher Education's definition of transfer (one with more than 12 credits complete after high school graduation or earning a GED). The 2009 CSU study defined transfers "as students admitted to Colorado State

University with some credits from other two-year and four-year colleges after they graduate from high school,” and the 2011 study included only those transfer students who entered CSU between 2009 and 2010 as full time students (CSU OIR, 2009; CSU OIR, 2011).

Additionally, the United States (and most of the world) experienced a particularly devastating recession in the time between the two studies, thus the demographics of the students included in each study may have changed in the time between the two studies. There may have been income differences between each of the cohorts (although chi square tests show no statistically significant difference in percentages receiving Pell Grants- an indication of low income- for the 07-08, 08-09 or 09-10 cohorts).

Enrollment patterns at Colorado State differed between the cohorts: The 07-08 cohort was more likely than the other two to be consecutively enrolled for three terms ( $X^2 = 14.11$ ,  $df = 2$ ,  $p = .001$ ). The impact was statistically significant for the fall group only, however, and the effect size was once again quite small ( $\Phi = .054$ ). Differences in enrollment patterns prior to transferring (such as continuously enrolling and transferring from one institution to another, versus having taken time off to enter the work force and then returning to school when economy lead to layoffs and loss of employment) were not measured.

The results of this study also differed from an earlier study conducted by the author (Orlick, unpublished) who drew the samples for both studies from the same population. Although not yet published at the time this dissertation was being written, the initial study found statistically significant differences in graduation rates of spring and fall transfer students. A logistic regression model that was created as part of that study was able to accurately predict likeliness of graduation 77.5% of the time. The model more accurately predicted the likeliness of graduating (88.9% correct) than not graduating (66.4% correct); spring transfers were about

half as likely to graduate as were the fall transfers. The effect size in the initial study quite weak ( $\Phi = .011$ ) as well.

One of the differences between the current study and the first study is that the first study was limited to students who were transferring 60 or more credits. Because transfer students are a very diverse population, it may make more sense when studying transfer students to more narrowly define the group one chooses to study. For example, Peska (2009) was able to compare spring and fall transfers by limiting the study to include only those students who transferred from a community college; Davis (2010) compared transfers from two year and four year institutions by limiting the sample to first time transfer students “who most resembled the characteristics of the traditional native student population” and excluded “[d]istance learners, military students, international students, and students over the age of 29... in order to create a sample with characteristics similar to the traditional college student” (p. 51). Both yielded more distinct results than this study.

### **Limitations to this Study**

A number of items that could help illustrate differences in transfer student success were not measured in this study. For example, there is no objective measure for strength of curriculum that can be included in a quantitative model to assess the work a transfer student has already completed or the work attempted upon transferring. In fact, strength of curriculum might be nearly impossible to assess because the courses required for one program differ from another. While an elementary education major may consider quantum mechanics a very difficult course, an electrical engineering major might consider art history to be the most challenging course he or

she completed. This does not mean the strength of one curriculum is greater or more difficult than the other, it just means the curriculums are different.

Additionally, this study utilized only some variables from each of the three main categories. Only two (orientation and financial support) of the six structural factors were measured. No information was available from the existing database that was used to measure whether a student participated in a program with an articulation agreement, for example. Environmental factors, such as culture of the receiving institution and faculty-student relationships, were not measured nor were personal factors, such as level of motivation, personality, or contextual intelligence. Collectively, the literature suggests that all these factors are important to student success. Yet, these variables are not available at the time staff members are making an admissions decision or advising transfer students on which classes to take in their first term.

Some of the data for these variables could be collected during or after the student completes his/her application for admission. For instance, when processing the application, data entry staff could enter into the student information system whether or not a student has earned an associate's degree or participated in an articulated two-plus-two program. Non-cognitive factors such as motivation or self-efficacy could be evaluated through application materials or through assessments administered during or before orientation programs.

The way in which some variables were measured was also a limitation in this study. Using cumulative transfer credits in aggregate does not inform the researcher if a student was pursuing previous work at a full time or part time level, nor does it indicate the level of coursework (introductory or advanced; core curriculum or major-specific) already completed. It could be useful to look at which courses transferred or how many credits toward a degree were

awarded, but this information is not always readily available at the time a student begins their studies, especially if the student has yet to declare, or changes, his or her major. Using cumulative transfer GPA is also limiting because it does not allow assessment of the most recent GPA, how long ago that particular GPA was earned, whether there were different GPAs at different types of institutions, or different GPAs over time.

### **Implications**

It was expected that this study would have identified timing factors that could be built into policies to help mitigate some of the stress spring transfer students experience during the transition process. Not only would the student have more time to mentally prepare, the institution would have more time to help the student prepare- earlier registration, for example could mean better course selection. Earlier orientation programs might mean more time for faculty and staff to connect students with the people and resources that will help facilitate their success. For example, transfer students who begin their studies in the fall have the opportunity to attend orientation programs during June or July, leaving time for follow up and questions before school begins. Those starting in the spring might not have the opportunity to attend an orientation until just before school starts, limiting time for reflection and exploration before diving into the semester. Those fortunate enough to attend an orientation program earlier, for example in November, might be limited in their ability to think about and plan for “what’s next” because they need to return to and complete their studies at their current institution or because once they process the information received during orientation, they are attempting to connect with faculty and staff during times when the institution is closed for winter holidays.

Brawer (1984), Cuseo (1998, 2001), Gawley & McGowen (2006), Li (2010), and

Townsend (2008) all noted that orientation programs can significantly impact a student's ability to acclimate to the new institution and can help the student transition. Cuseo (1998), McGowan & Gawley (2006), Nussbaum (1997), Rhine et al (2000) and Townsend (2008) all recommended partnerships between the faculty at both two year and four year institutions. The aforementioned ideas are all structural changes that a receiving institution can make; more research is needed to know how administrators can help affect cultural change. Perhaps the answer lies in providing "better" information to students during orientation and welcome programs to prepare them for the challenges that lie ahead. Or, at a minimum, help spring transfer students set realistic expectations of what the coming weeks and months will bring. It is not enough to just say welcome. Administrators, faculty and staff also need to tell students what to expect and how to navigate the challenges that are uniquely present for spring transfer students.

In 1965, Hills made a plea to admissions professionals to be more discerning in evaluating transfer applications and noted that only demonstrated outcomes would indicate whether the the student would be successful. According to Hills, performing at a passing level (i.e. 2.0) at a junior college did not necessarily equate to success at a four year institution. Much of what he cited as problems are not as great an issue any longer due to articulation agreements, for example, which have ensured similar course content and level of instruction. The role of admission and enrollment management professionals in the successful transition of transfer students, however, is so much more than a simple GPA calculation. Administrators, faculty, and staff need to understand the different aspects that impact the transfer student experience and work together to create the structural and environmental supports to help facilitate transfer student success.

As the number of students transferring from two year to four year colleges (or between four year colleges) increases, there's a need to learn how to integrate all the aspects that lead to academic and social success for transfer students. A recent report published by the Pell Institute (Smith, Miller, Abby, & Bermeo, 2009) regarding successful transfer programs in Texas provides a framework on which all institutions can build a successful transfer program. It underscores the importance of creating a multifaceted plan of action that involves all areas of the institution in order to create a student-centered transfer culture.

It was my hope that this study would provide data and findings to help inform policy related to application deadlines and admissions practices. While this study fell short of that goal, it does open the door for further exploration to better understand the experience of the transfer student, how that experience may differ by term and whether there are additional opportunities for institutions to facilitate transfer student success. Understanding the limited practical implications of the findings in this study is key to informing decision making and directing further research. While several of the findings were statistically significant (which is not unusual in a study with a large sample), the fact that almost all the significant differences had small or very small effect sizes indicates that some of the results in this study have very little practical purpose.

### **Directions for Further Research**

There is a need for qualitative research to better understand the experience of students who start in the spring and to assess how it may differ from experiences of students who begin their studies in the fall. Transfer students represent a very diverse group. Studying the process of transferring is extremely complex, as is studying retention and student success. These

combined factors suggest that perhaps it is time to move from studying “what” happens to transfer students vis-a-vis quantitative studies relying on grades, academic standing, and graduation rates and instead ask “why” it is happening. Observations over a fifteen year career in admissions suggest that spring transfer students do experience more difficulty throughout the transfer admission process and during the first few semesters at the transfer institution. This difficulty includes quantitatively measurable factors such as credits completed or grades earned. It also includes factors which are not always so easily quantified, such as learning the new institution’s culture, navigating the new institution’s systems, expectations from faculty and other students, and even just finding one’s way around campus.

As noted above, more data needs to be collected and utilized. Future research should consider a means by which to measure the strength of the curriculum at both the sending and receiving institution, for instance. Notation of whether the student transferred immediately after attending another institution (or if there was a break between enrollments), whether the student was studying part time or full time at the transfer institution, whether the student studied part time or full time at the receiving institution and whether the student was following an articulated transfer plan should also be recorded. Methods such as event history modeling could assist in gaining a better understanding of student performance over time both before and after transferring and might also be useful in understanding the impact of timing on the transfer experience. Event history modeling

... analyzes departure behaviors that are unique to specific time periods..., estimates effects of variables such as semester grade point averages (GPAs) that change over time... [and] allows researchers to select different types of departure, such as dropout,



academic dismissal, and transfer without creating a separate dataset for each type of departure. (Ishitani, 2008b p. 111)

The use of event history modeling allows for an assessment of what happens over time rather than limiting a study to one snapshot or outcome.

Because most of the students in this study attended only one institution prior to transferring to Colorado State, only the last institution attended was categorized (two-year or four-year; public or private). Future research may wish to code whether a student previously attended only two-year, only four-year, or a mixture of both institutions.

Narrowing the sample population by programs of study, areas of interest, or college (within the university) might help focus the results more and help to tease out potential differences in curriculum, culture of the department, or style of instruction. Similarly, narrowing the focus to a defined range of credit hours transferred in, such that transfers with sophomore standing (for example) could be studied separately from other levels of transfer students. Undoubtedly, a student transferring in at the freshman level, with only 15 credits complete has different needs, and experiences the transfer process differently, than one who has completed 90 credits and transfers in as a senior.

Areas for further exploration include timing and student satisfaction levels or timing and student engagement levels. Peska (2009) suggested that spring starts may have a lack of awareness of available campus resources because orientation programs are often not conducted in the spring. Something as uncontrollable as the weather (many parts of North America have cold and snowy or rainy weather in January, when spring terms start) may prevent students from engaging in activities or connecting each other as readily as in the fall when the weather is pleasant and invites outside activities. Additionally, outside the campus environment, there is

more hype (like “Back to School” sales) around the start of the school year in fall than in the spring.

In Fort Collins, where this study was conducted, the fall semester coincides with a number of social and community events that simply do not occur at the start of the spring semester. This includes campus activities such as departmental and campus wide new student welcome programs and the President’s Fall address, where faculty, staff, and students gather together for a picnic to hear the president speak about the “state” of the university. In 2012, Tony Frank, president of Colorado State University declared that the Fall Address was his favorite speech to give each year, in part because of

...the timing – the hum of creativity and the buzz of energy that comes from having a new semester underway. Despite the hint of fall in the air and our knowledge of an upcoming winter, fall has the feel of life on a university campus, and President Yates knew that and captured it when he started these Fall Addresses 15 years ago... as a way to bring us all together at the start of the year to celebrate our successes, reflect on our challenges, and to look to a path forward as a community. (Frank, 2012 p. 1)

There is no such address at the start of the spring semester in January, nor is there a four-day, campus-wide welcome program for new students as there is each August. There are no barbeques sponsored by various student groups and no bazaars on the plaza outside the student center- it’s cold outside! Any such activities that do exist have a “welcome back” flavor to them, rather than a “getting started” theme.

With such little focus on January being a term in which school starts, faculty and staff may not be conscious of the fact that there are new students in the classroom who are not familiar with the institutional culture or simply don’t know where to find resources or how things

work. Social integration was positively correlated with degree attainment (Li, 2010) and with transfer readiness (Bryant, 2007; Johnson, 2006).

If opportunities to connect with others at the university and the community at large is limited in the spring, then so are the opportunities for spring starts to thrive. More work needs to be done to understand the difference between transfers who start in the spring term and those who begin in the fall term and the institutional practices that may or may not affect students differently at different times. As more studies add to the literature on transfer student success, it will be important to explore if (and how) these variables interact with one another.

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