

Analysis Of International Student Enrollments At A Florida Public University

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ANALYSIS OF INTERNATIONAL STUDENT ENROLLMENTS
AT A FLORIDA PUBLIC UNIVERSITY

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the Department of Educational Research, Technology and Education
in the College of Education
at the University of Central Florida
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ABSTRACT

This study sought to determine if international student admissions at a public university had been affected by the events on September 11, 2001. To accomplish this, an analysis was conducted comparing international and domestic students' application rates, number of acceptances and enrollments for the fall semesters from 1998 through 2004 on data obtained from University of South Florida. The USF population data were also compared to enrollments in the U.S. for the respective years. Analyses on application frequencies and student enrollments comparing colleges of major and regions of origin were also performed.

Generally, although statistical significance was found in many comparisons, the results of the chi square analyses found that no real effects were present, particularly when comparing USF international and domestic student populations. The chi square analyses comparing USF enrollments to the U.S. population from 1998 to 2003 also found no real effect.

The analyses of the proportions of international graduate and domestic student enrollments and applications before and after September 11, 2001, also found no relationship. However, the analyses on world regions found that proportions of students from the Mideast declined from before to after Fall 2001 but other regions increased. Additionally, for graduate students, the proportion of Chinese students declined after 2001. Descriptive statistics indicated that international students majoring in engineering declined after 2001.

The literature review found there were many factors in influencing the international student population in the U.S. including competition from other countries for students, the expense of a U.S education and changes in the U.S. regulations for issuing student visas. In general, the literature supported a decline in the number of overseas students coming to the U.S. to study. While the USF enrollments seemed to be consistent with the literature, no conclusive evidence indicated this decline was a result of the events of September 11, 2001.

Dedicated in memory of my mom, Barbara E. Perkins

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LIST OF ACRONYMS AND ABBREVIATIONS

ACE	American Council on Education
AAU	Association of American Universities
CGS	Council of Graduate Schools
DHS	Department of Homeland Security
GAO	U.S. General Accounting Office
ICE	U.S. Immigration and Customs Enforcement
IIE	Institute of International Education
NAFSA	Association of International Educators
NASULGC	National Association of State Universities and Land-Grant Colleges
9/11	September 11, 2001
SEVIS	Student Exchange and Visitor Information System
U.S.	United States
USF	University of South Florida

CHAPTER 1

INTRODUCTION AND PROCEDURES

Introduction

Until recently, the United States was a leader in attracting and educating international students from around the world (Open Doors, 2003b). From 1960 until 2001, the percentage of international students in the United States grew by 6% or 549,000 students (Heyneman, 2003). Altbach (2004) asserted that foreign students were enticed by the academic reputation of American universities as well as the advancement opportunities available in the United States. Many international students, Altbach contended, came to take advantage of the “large and diverse economy, the willingness of employers to hire well-qualified foreigners, and the high salaries available in many fields, including in academe” (p.3).

However, enrollment surveys in 2003 indicated that foreign student enrollments in the United States might be declining (NAFSA, 2004a) despite the increased number of students studying abroad worldwide (Altbach, 2004). The U.S. foreign student growth rate during that period was less than 1%, one of the lowest since 1983 (Open Doors, 2003b). This decline, according to the *Chronicle of Higher Education* (Mooney & Neelakantan, 2004), was attributed to many factors including the legislated changes in the issuance of student visas after the terrorist attack on September 11, 2001.

A continuing decline in international student enrollments could have an impact on higher education in the U.S as well as the nation itself. According to the Association of American Universities (2002a),

The involvement of international students and scholars in American higher education enhances global understanding, promotes economic development around the world, and fosters the spread of democratic values. Efforts to continue these relationships are in America's long-term strategic and economic interests. (p. 1)

Exposure to foreign students provides an important perspective to collegial life that cannot be duplicated in texts or lectures. To prepare students to be future leaders, it is imperative that educational institutions maintain this essential asset.

Statement of the Problem

According to higher education professional organizations, such as the Association of International Education (NAFSA), Institute of International Education (IIE), and the American Council on Education, the effects of September 11, 2001 on federal policies and international student perceptions have negatively influenced the number of international students enrolling in U.S. colleges and universities (American Council on Education, 2004; NAFSA, 2004a; Open Doors, 2003b). This study endeavored to determine if an analysis of one institution's international student applicant pool before and after Fall 2001 would indicate a decline in international applicants as well as a decline in the number of students who actually began once the university offered admission. To achieve this, international student admissions data from the University of South Florida (USF) was utilized.

In the early 1990s, the University of South Florida, a public research institution in Tampa, Florida, began systematically tracking international student applications (American Council on Education, n.d.). This historical data, prior to September 11, 2001,

and the subsequent data available from the Student Exchange and Visitor Information Tracking System (SEVIS), provided the basic data to conduct this study.

This study sought to: (a) develop a profile of international student admission patterns at USF from 1998-2004; (b) determine if USF international student admissions patterns were statistically different when compared to USF domestic student enrollments and international student enrollments in the U.S; (c) determine if any changes in USF international student admissions patterns since September 11, 2001, supported the concerns found in the review of literature regarding federal policies or student perception; (d) determine if enrollments can be predicted by the year of enrollment.

Clarification of the Problem Statement

Definition of Terms

Accepted students: Applicants who have met university criteria for admissions.

DHS: Acronym for the Department of Homeland Security, a federal agency with oversight for the U.S Immigration and Customs Enforcement (ICE).

Domestic students: Students who applied for admission to the university and did not possess an F-1 visa. For the purposes of this study, this included students who held U.S. citizenship, students who possessed another type of visa, and students who were designated resident aliens according to university records.

Enrollment: Matriculation or beginning classes in the fall semester.

F-1 visa or F-1: Visa issued to a person who wishes to enter the U.S. solely to pursue academic study.

Graduate students: Students who sought admissions to USF as post-baccalaureates including students seeking masters degrees, doctoral degrees and non-degree seeking students. These students' baccalaureate degrees could have been awarded by an overseas or U.S. institution.

ICE: Acronym for the U.S. Immigration and Customs Enforcement, the department with primary responsibility for SEVIS and student visas.

InfoMart: An internet tool that provided USF statistics and other pertinent information to the public.

I-20: Federal document issued by universities to international students indicating that they are eligible to attend the university. Students who are receiving their first I-20 issued by a U.S. institution utilize it to obtain a student visa to enter the United States.

Interest in attending: International students who have submitted an application to the University of South Florida.

International or foreign students: Students who enter the United States with an F-1 student visa.

Matriculation: Students entering USF during the fall semester after being offered admissions by the university.

NAFSA: Acronym for Association of International Educators, the professional organization whose membership primarily consists of international advisors and administrators.

SEVIS: Acronym for Student Education and Visitor Information System. A federal database implemented as a result of regulation changes after September 11, 2001,

and utilized by consular officers, border patrol, universities and various federal agencies to track international students and visitors, providing a more efficient way for various agencies to share information.

September 11, 2001 or 9/11: Benchmark utilized in this study for the purpose of indicating changes in federal policy toward international visitors and students after the terrorist attack on said date.

Undergraduate students: Students who were expected by USF to enroll in 1000 to 4000 level courses. These students included students classified as first time in college (FTIC) and transfers from other colleges and programs. Additionally, the group included students applying from overseas as well as from within the United States.

Assumptions

1. It was assumed that international students included in this study were only those students holding F-1 visas.
2. It was assumed that data analysis of fall international student applications and matriculations represented the enrollment trends of international students at the University of South Florida.
3. It was assumed that university recruitment efforts, or random news events, did not atypically affect either the number of international student applications received for any one fall semester or the number of international students matriculating to USF.
4. It was assumed that university admissions policies in effect for international students were applied consistently throughout the years included in this study.

5. It was assumed the data provided by USF was an accurate indicator of the international student variables contained on the database, including international student demographics, applications, acceptances and subsequent enrollments, during any given term.

6. It was assumed the domestic student population at USF represented typical application and enrollment trends.

7. It was also assumed that the domestic student population at USF was not affected by government policies enacted in response to the events of September 11, 2001.

Significance of the Study

Historically, international students have played a valuable role in higher education and both graduate and undergraduate international students have been recruited by universities for their contribution to the collegiate culture. Predictions for the 21st century, based on enrollment trends for the past forty years, seemed to indicate that enrollment growth of foreign students in the United States would continue to increase (Walker, 2000). However, according to the literature, since Fall 2001 and the subsequent changes in federal policies governing international students, many universities in the United States have been experiencing stagnant or decreasing international student enrollments.

Declining international student enrollment could impact the quality of an institution's academic and student programs. If international students play a significant role in higher education, then it is important for a university to determine enrollment trends to assist in the development of strategies to reverse detected declines, if found..

The University of South Florida had a strong international student program for over a decade. A decline in their international student applications and enrollments could be indicative of a national trend. A comparison of their international student trends prior to 2001 and after 2001 could pinpoint if changes in USF international student numbers were associated with factors related to the enactment of federal policies after the September 11, 2001, attacks or inherent changes due to other factors. Results of this analysis could be utilized in formulating budget and recruitment plans aimed at maximizing international student enrollments at the University of South Florida.

Research Questions

The study endeavored to analyze international student enrollment patterns at the University of South Florida by examining admissions since Fall 1998 and utilizing September 11, 2001, as a benchmark to detect changes in enrollment trends. This benchmark was chosen for its role as the beginning of significant changes in federal policies affecting international students.

Research Questions 1 through 3 examined three stages of admissions - application submissions, acceptances by the university, and matriculations or enrollments – for international students, both graduate and undergraduate. Utilizing the number of domestic students, or those students not classified as F-1, who sought to enter USF in any given year as a point of reference, these questions sought to determine if admissions fluctuations were unique to the international student population. To further determine enrollment patterns, Research Question 4 sought to compare the proportions of USF international students to domestic students each year to the enrollment patterns

established nationally. Research Question 5 sought to analyze international student applications and enrollments before and after Fall 2001. Finally, Research Question 6 endeavored to predict future enrollments at USF based upon post-September 11 student matriculations.

The questions used to guide this study were:

1a. Does the proportion of undergraduate students accepted differ for international students as compared to domestic students each fall semester?

1b. Does the proportion of graduate students accepted differ for international students as compared to domestic students each fall semester?

2a. Based upon the number of applications received, does the proportion of enrollments for international undergraduate students differ from the domestic student population each year?

2b. Based upon the number of applications received, does the proportion of enrollments for graduate international students differ from the domestic student population each year?

3a. For applicants who were accepted, does the proportion of students who enroll differ for undergraduate international students as compared to undergraduate domestic students each year?

3b. For applicants who were accepted, does the proportion of students who enroll differ for graduate international students as compared to graduate domestic students?

4. Does the proportion of international student to domestic student enrollments at USF fit historic enrollment patterns established for the U.S. for each year?
 - 5a. Does the proportion of international student applications for both graduate and undergraduate students differ significantly from before to after September 11, 2001, when compared to the domestic student population?
 - 5b. Does the proportions of international student enrollments for both graduate and undergraduate students differ significantly from before to after September 11, 2001, when compared to the domestic student population?
6. Can undergraduate and graduate international student enrollment at USF be predicted by the year of enrollment, reviewing data since September 11, 2001?

Design of the Study

Background for the Study

The full implementation of SEVIS, an electronic tracking system for foreign students and visitors, in August 2003 required universities enrolling international students to share demographic, academic, and immigration-related information with the federal government (Croom & Bellows, 2002). Prior to the implementation of SEVIS, most university international student offices did not have the impetus or technological capabilities to centralize this data (Croom & Bellows). However, in the early 1990s, administrators at the University of South Florida (USF) recognized the importance of international students to the university's mission and articulated goals related to international students in the university's strategic plan (American Council on Education, n.d.). By 1999, a comprehensive international affairs program had been developed that

combined academics, research and student services into one center (University of South Florida, 2004c). The inclusion of international affairs in the university's strategic plan resulted in increased funding (American Council on Education, n.d.) and a system for monitoring international student applications and enrollments was developed.

Subsequently, by the mid-1990s, USF was systematically tracking much of the international student information later mandated by the implementation of SEVIS in 2003. The study utilized this historical data at USF to address the research questions.

Methodology

Population

The population for this study included all students requiring F-1 visas who applied to the University of South Florida for the fall semesters beginning in 1998 through 2004. The 16,797 applications received for the seven fall semesters provided unduplicated admissions information for 11,821 international students, including 9,408 graduate and 2,413 undergraduate students. The population sample included international student applicants anticipating transferring from colleges within the United States as well as international student applicants applying to USF prior to entering the United States. Graduate or undergraduate student status was self-reported.

Data Collection

Raw data, derived from both graduate and undergraduate international student applications received at the University of South Florida, were obtained from the International Admissions Office for the fall semesters of 1998, 1999, 2000, 2001, 2002, 2003 and 2004. Among other demographic information, the data indicated the admission

decision for each applicant as well as the enrollment status during the respective fall semester.

To utilize as a comparison, summary data for graduate and undergraduate domestic student data were also collected from the University of South Florida's InfoMart website (University of South Florida, 2004b). The data obtained included the total number of applications, admissions and matriculations for all graduate and undergraduate students for the respective fall semesters in the study. Additionally, national enrollment data provided by Open Doors (2004) were also utilized in the analysis of one research question.

Data Analysis

Statistical analysis utilizing SPSS[®] for Windows Version 12.0 and hand computations were performed on data obtained from the International Admissions Office at the University of South Florida. Chi square analyses were used to analyze data gathered for Research Questions 1 through 3 and Research Question 5 utilizing SPSS[®]. The chi square analysis conducted on data gathered for Research Question 4 was computed by hand. Given the dichotomous dependent variable enrollment versus no enrollment, logistic regression was used to answer Research Question 6.

Design Limitations

1. Data collected may not have included students who were admitted as international students but changed their international student status during their tenure at USF.
2. Data for Fall 1998 may not have converted accurately after the university switched to a new student database. Current students and historical data were converted to the new system when the new system became operational. However, some historical data, primarily international students who had changed visa status due to marriage or immigration to the U.S., may not have converted to indicate a student's visa status. This correction had to be done manually.
3. The international student admissions policies have changed since the Fall 2001. This may have resulted in more stringent criteria for international student admissions after Fall 2001.

Organization of the Dissertation

Chapter 1 of this study provided an overview of the components of this study, including a general introduction, the research questions, and research methodology. Chapter 2 provides a review of the background and summarizes the relevant literature for the study. Chapter 3 provides an overview of the methodology and analytical procedures employed. Chapter 4 presents the results of the data analysis for this study. Chapter 5 discusses the results, conclusions and recommendations from the study.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

This chapter provides a review of the literature related to international student enrollments on U.S. campuses. Since the events of September 11, 2001, many components related to international students and U.S. institutions have changed. This review explored the historical background and enrollment trends through the late 1990s. Additionally, the review explored the economic benefits international students provided institutions and their surrounding communities as well as the educational benefits of diversity at an institution. Lastly, the review explored the current issues affecting international student enrollments - competition from other countries, employment opportunities, the expense of an education and U.S. policies affecting international student enrollments.

History

For over a century, universities sought to diversify their student bodies. Cornelius C. Felton, president of Harvard University, recognized the importance of a diverse student body prior to the Civil War and encouraged recruitment of students from diverse backgrounds for the purpose of developing a more challenging educational experience (Rudenstine, 1996). Soon after the Civil War, another Harvard president, Charles W. Eliot, extended the concept of diversifying the campus to include foreign students. Foreign students were significant enough to be included in student statistics by the early 1900s (Bulthuis, 1986).

The continued interest in international students was reflected in the successful establishment of the International Institute of Education (IIE) in 1919 (Goodman, 2004). Its philosophical foundation was the premise that international education was the way to world peace. The Institute's founders were instrumental in changing the immigration laws in 1921 to distinguish international students as temporary visitors, expediting the processing of their admissions to universities. Prior to 1921, students were classified as immigrants, experiencing long delays in processing entrance into the United States and hampering their ability to meet university schedules. Despite the change in status, foreign students remained a rarity on college campuses prior to WWII (Bulthuis, 1986; DeWit, 1995).

According to DeWit (1995) and Burn (1980), the impetus for international student exchanges in the U.S. changed throughout the years, influenced primarily by world events. The events of WWII brought an end to the U.S. isolationism that had prevailed since before WWI (Burn). In 1946, legislators, concerned for national security and foreign policy, passed the Fulbright Act to provide grants and scholarships to students who wished to participate in educational exchanges (DeWit; Wiley, 2001). Lawmakers hoped that the mutual understanding developed through these exchanges would encourage peaceful existence. In 1961, the Act was revised and renamed the Fulbright-Hays Act or the Mutual Educational and Cultural Exchange Act of 1961. Its primary objective continued to be the development of understanding through educational and cultural exchanges (Wiley).

From the end of WWII through the 1980s, American society's attitude, influenced by the Korean and Vietnam Wars, continued to endorse the need for peace and understanding through educational exchanges (DeWit, 1995). Global awareness was further strengthened by the energy crunch of the 1970s, the end of the Cold War, and the rising popularity of the internet (Burn, 1980; Merckx, 2003). Then, in response to the U.S. Civil Rights movement, awareness of diversity issues developed (Burn). Educational institutions reflected this increasing awareness by placing more emphasis on international education (Burn; DeWit).

The interest in international students during the 1980s and 1990s was facilitated by the need to maintain student enrollments. According to Burn (1990), the number of American students reaching traditional college age was declining by 1990. Burn predicted the student enrollment deficit would be partially replaced by the surge in non-traditional students; however, international student enrollments had to be encouraged if institutions were to continue growing. During the 1960s and 1970s, the number of international students quadrupled. However, due to the overall increase in students going to college by the early 1980s, the international student population in the U.S. remained less than 3% of the total student population through 1990, peaking at 4.6% in the 2002-2003 academic year (Open Doors, 2004).

Benefits of a Diverse Student Body

The free exchange of ideas and perspectives encouraged in academia provided opportunities for students to develop understanding, appreciation and tolerance for others (Astin, 1993; Speck & Carmical, 2002; American International Education Foundation,

n.d.; Rudenstine, 1996; Taylor, 1998). Rudenstine wrote of students' exposure to diversity on campus:

A diverse educational environment challenges them to explore ideas and arguments at a deeper level -- to see issues from various sides, to rethink their own premises, to achieve the kind of understanding that comes only from testing their own hypotheses against those of people with other views. Such an environment also creates opportunities for people from different backgrounds, with different life experiences, to come to know one another as more than passing acquaintances, and to develop forms of tolerance and mutual respect on which the health of our civic life depends. (B1)

Exposure to diverse campuses assisted students to mature emotionally as well as develop a sense of civic responsibility according to many research studies (Astin, 1993; Kuh, 1995; Taylor, 1998). In his study, Antonio (2001) discovered that students credited socializing for being the single most influential factor in the development of cultural understanding across ethnicities. Educational experiences found in classroom and extracurricular activities enriched the multicultural experience of college, providing opportunities for friendships to develop (Taylor). Hull, Lemke, and Houang (1977) found that students living away from their home environments reported growth in maturity as well as awareness of other philosophies and cultures. Students, particularly those living with roommates, were found to be more tolerant of others' viewpoints and cultures. Additionally, Astin contended students were more satisfied with their overall collegiate experience when exposed to campus diversity.

A diverse student population was essential to encourage communication and peer interaction between different ethnicities (Chang, Astin, & Kim, 2004) since students unfamiliar with other cultures tended to develop stereotypes and misconceptions (Spencer-Rodgers, 2001). Kuh (1995) found that students associated their peer

interactions with improved interpersonal skills, self-awareness, and compassion for others. In his study on cross-cultural sensitivity training, Hull (1972) found that student groups whose members included international students showed significant gains in tolerance for others when compared to groups composed of only domestic students. However, to integrate different philosophies into their decision-making, students needed to have prolonged close exposure to other cultures and beliefs (Antonio, Chang, Hakuta, Kenny, Levin, & Milem, 2004).

Astin (1993) found that students who participated in discussions of racial and multicultural issues with other students reported growth in sensitivity to others as well as overall cognitive gains. Reiff and Kidd (1986) believed such programs should be well-planned and purposeful to maximize the benefits of cultural awareness and mutual understanding. Students with little contact outside their own cultures were particularly affected when exposed to students with differing cultural beliefs (Antonio, 2001).

Other studies were not as positive on the effects of diversity on student development. Taylor (1998) conceded that while exposure to international students could lead to the development of tolerance and acceptance, students entered college with their own preconceived ideas. Spencer-Rodgers (2001) found that domestic students, while attributing many positive personality traits such as hardworking, intelligent and disciplined to international students, negatively attributed English communication difficulties to them. Further studies by McGovern and Spencer-Rodgers (2002) indicated that a deficiency in English communication skills contributed to prejudicial attitudes

toward international students that were not alleviated by social contact. The resolution of these issues should be addressed programmatically (Taylor).

Many developmental researchers (as cited in Chang, Astin, & Kim, 2004) theorized that students, when exposed to different opinions and cultural philosophies, performed one of two cognitive functions: (a) they immediately dismissed the difference as inconsequential or (b) they reevaluated their own values. Complex thinking skills were believed to be enhanced when students reevaluated their beliefs. Other research studies supported these findings (Astin, 1993; Antonio et al., 2004).

Astin (1993) found that peer relationships were essential for the development of complex thinking skills because cognitive dissonance frequently developed from these relationships. Antonio et al. (2004) concluded that differences in opinions stimulated broader perceptions. Additionally, they found that students exposed to diverse opinions were positively affected in their ability to integrate alternative solutions to problem resolutions.

Students' interactions with other cultures may be affected by circumstances such as the size and diversity of the campus, living off campus, and their employment status (Chang et al., 2004). Burn (1990) asserted that the likelihood of exposure to other cultures was limited if students attended campuses with a small number of international students. She maintained that international students were enrolled primarily at large research institutions. In the late 1980s, institutions with at least 1000 international students enrolled almost half of the international student population in the U.S.

In his study, Antonio (2001) found that conditions in academia, namely equal status, lack of competition and supportive administration, were conducive to positive student development in areas of multiculturalism and understanding. Given the opportunities at diverse institutions for multicultural exposure, many research studies, however, have concluded that, in the end, it was the students themselves who controlled their level of involvement and thus their own learning and development, particularly in the areas of multiculturalism (Brook, 2003; Hernandez, Hogan, Hathaway, & Lovell, 1999; Hull et al., 1977). Other studies, though, indicated that global citizenship and goodwill could be fostered through cultural exchanges on campus (NAFSA, 2003; Tomkovick & Al-Khatib, 1996).

Enrollment Trends

Colleges and universities worldwide have recorded a substantial increase in the number of students studying outside their home country (Altbach, 2004). However, a survey, conducted jointly by five major education organizations in February 2004, indicated that colleges and universities in the United States were experiencing a decline in the number of international student applications received for Fall 2003 (American Council on Education, 2004; NAFSA, 2004a). Forty-seven percent of the 250 institutions responding with graduate data indicated a decline in the number of graduate applications from the previous year and, of the institutions surveyed, 59% of the research institutions encountered declines. Conversely, only 14% of the institutions indicated an increase in graduate international student applications while 29% of the respondents

experienced an increase in undergraduate applications. About one third of the institutions reported no change in the number of undergraduate or graduate applications.

This survey supported an enrollment survey released by the Institute of International Education (IIE) in November 2003, which indicated a decline in the popularity of a U.S. education (Open Doors, 2003a). According to the survey, the overall growth rate for foreign student enrollments was less than 1% during the academic year 2002-2003. This rate was the lowest increase since the academic year 1995-1996, and one of the lowest rates since 1983.

Despite the decreases in international student enrollments in the United States, other research indicated that worldwide the number of students studying abroad was increasing significantly (Altbach, 2004). Many countries had higher ratios of international students in their student population than the United States (Heyneman, 2003). The United States, with 547,867 or 3.9% of its student population classified as international students (Open Doors, 2004), was ranked 12th in the world in 2001 (Heyneman). France, Great Britain, Germany, Australia and Switzerland had higher ratios, ranging from 9% for France to 16% for Switzerland. Altbach contended that increases in foreign student enrollments in the United States stopped in 2002-2003.

According to the *Chronicle for Higher Education* (Flores, 2002), a nationwide survey administered by the National Association for College Admissions Counseling indicated that 50% of the respondents attributed the September 11, 2001, terrorist attacks to changes in their admissions trends, including a decline in their international applications. Although the American Council on Education (1999) speculated that the

growth trend in international student enrollments was returning to more reserved enrollment increases of the early 1990s, data from Open Doors (2004) indicated that international student enrollment increased almost 5% in 1999-2000 and 6.4% for two years afterward. Enrollment growth slowed to 0.6% in 2002-2003 and declined 2.4% in 2003-2004.

Economic Benefit

According to NAFSA (2003), international students and their dependents contributed \$12 billion to local and national economies while attending school in the United States. This figure made international student services one of the top five service sector exports (U.S. Department of Commerce as cited in Ashwill, 2003). Even after graduation, international students continued to prefer U.S.-made products after returning to their home countries (NAFSA).

International students also contributed to the economic stability at many universities (Dresch, 1987; Johnson, 2003b). Since the majority of international students paid out-of-state or full tuition, they provided a means to increase revenue while incurring very little additional costs (Ashwill, 2003; Dresch; Hansen, 2002; Lacina, 2002; Tomkovick & Al-Khatib, 1996; NAFSA, 2003). This additional revenue offset the costs for residents attending the university. Additionally, most international students were financed through their personal or family funds and did not receive financial aid (Open Doors, 2004). The extra monies generated by international student tuition often provided scholarships and funding for student programming (Hansen).

Graduate students, in particular, contributed to the university's fiscal well-being. As recently as 1985, some programs, such as graduate engineering, were unable to sustain enrollments without accepting international students (Barber & Morgan, 1988; Goodman, 2004; Johnson, 2003b; Tilghman, 2003). Unlike domestic students, international graduate students experienced limited opportunities to seek lucrative employment outside the university environment so they were often employed as graduate teaching assistants, especially in the science, technology and engineering fields (Dresch, 1987; Tilghman). These employees provided low cost alternatives to additional faculty. Teaching assignments for foreign teaching assistants were frequently less expensive, undergraduate courses. These assignments freed expensive faculty members to conduct research and allowed departments to offer more undergraduate courses. Additionally, according to Dresch, most engineering and technology international graduate students received their undergraduate degrees in their own country; so, they were not competing with high demand undergraduate programs.

Current Influences on Enrollments

Competition from Other Nations

Although U.S. international student enrollments were affected by many factors, one explanation for fluctuations in foreign student enrollments was the recruiting efforts of other countries such as Great Britain, Australia, Canada, Germany, France and Japan (American International Education Foundation, n.d.; NAFSA, 2003) as well as the smaller markets of Singapore, Malaysia and Taiwan (IDP Australia as quoted in Cohen, 2004). Recruiters and government officials in some of those countries recognized the

foreign policy, economic, and educational benefits from the international student market and began challenging the U.S., the number one destination for foreign students, over 15 years ago (American International Education Foundation). Since the events of September 11, 2001, and the subsequent changes in U.S. visa policies, these aggressive recruitment tactics from competing countries successfully increased their foreign student enrollments.

Australian policymakers, in particular, developed plans to generate revenue for individual institutions from international student enrollments. These pro-active, fee-generating practices encouraged recruitment and possibly explained how international education became Australia's third largest export (Marginson, 2002). According to IDP Australia (as cited in Cohen, 2004), Australia's cost of living was more than the United States in 2004; however, tuition remained 60% below the cost of a U.S. education.

India, with a large student population and few institutions, remained a top contributor to international students in the United States (Khandavilli, 2003). However, countries such as the United Kingdom, New Zealand and Australia were increasingly popular as Indian students experienced high costs and visa delays from the U.S.

Targeted recruitment and retention efforts in other countries also influenced the subsequent increase in their countries' international student numbers. Canadian officials credited their foreign student enrollment increases to tougher U.S regulations and their recruitment efforts in the Middle East, Asia, and Latin America (Fine, 2004). One Canadian school's efforts included opening an overseas recruiting office and negotiating

partnerships with foreign universities (Klenk, 2004). On campus, soccer and cricket were incorporated into the university's intramural sports program.

Many countries legislated incentives to attract international students. While the United Kingdom, like the U.S., tightened visa requirements since September 11, 2001, employment regulations for international students were relaxed allowing students to work during their student tenure (Khandavilli, 2003). Additionally, new legislation enabled graduates to retain residence for two years after completing their degree (Galbraith, 2003; Khandavilli; Labi, 2004.) U.S. regulations permitted international students to work on campus only and limited the practical training after completing the degree to one year. Students were also attracted to Great Britain for their one year graduate degrees as opposed to two year programs in the United States (Khandavilli).

Despite the benefits of international students to the United States' economy and global goodwill, very little of the federal budget is targeted to international student recruitment (American International Education Foundation, n.d.). Additionally, according to Open Doors (2004), the federal government provided less than 2% of the financial assistance for international students in 2003-2004. Increased federal funding for international student recruitment and financial aid was recommended by a NAFSA task force (NAFSA, 2003).

Employment Opportunities

Another traditional incentive to study in the United States, employment after graduation, contributed to the growth in other countries' international student populations. Prior to the regulatory changes after 2001, international students frequently

sought employment in the United States after completing their degree, a significant “brain drain” for some developing countries (Arasteh, 1996). International students studying in the U.S. since 2001 found that changes in the immigration laws made lucrative employment in the U.S. difficult to obtain (Anderson, 2004). On the other hand, other countries, such as Canada and Great Britain, with more liberal employment laws exploited the restrictive U.S. employment laws in their recruitment of international students (Mooney & Neelakantan, 2004). Disillusioned, potential students were choosing to apply to other countries where employment was possible after graduation (Anderson; Mooney & Neelakantan).

The U.S. Congress, responding to advocates from higher education and industry, recently passed approval for 20,000 additional work permits to be issued (Gravois, 2004). The designated recipients of these permits were international graduates holding masters and doctorates from U.S. institutions. The law was designed to allay employment concerns from future foreign students and assist in the recruitment of international students.

Expense

The unavailability of adequate financial assistance hindered many qualified students from studying in the U.S (Burn, 1980). Open Doors (2004) reported that nearly 70% of the international students were financed by their personal or family funds in 2003-2004 and institutions funded less than 25% of the students. Graduate international students benefited most from institutional funding, receiving 40% of the funds awarded, while less than 10% of the funding was awarded to international undergraduate students.

Additionally, Open Doors reported the federal government funded less than 2% of the total international student population during the 2003-2004 academic year, primarily in the form of research and teaching assistantships. This funding was equivalent to an increase of 227% from the 2002-2003 academic year when .5% of the international student population was funded by the U.S. government. Merit scholarships offered by institutions and private companies to some international students defrayed costs; however, most scholarships were minimal in comparison to the total cost of a U.S. education (Ashwill, 2003).

Another explanation for declining interest in a U.S. education was the preliminary expenses. Prior to acquiring a student visa to enter the United States, students must pay for any college entrance examinations, transcript evaluations, university application and processing fees, and visa application fees (Kless, 2004; NAFSA, 2003). Additionally, visa issuance fees, set by their home country, were usually required and a fee was added in September 2004 to support the Student and Exchange Visitor Information System or SEVIS (Arnone, 2003b; U.S. Immigration and Customs Enforcement, 2004). These initial costs were incurred without a guarantee that a student visa would be issued (Kless).

As early as the late 1970s, the high cost of a U.S. education skewed the international student population studying in the U.S. by limiting access to the more affluent families in foreign countries (Burn, 1980). Private marketing firms specializing in overseas recruitment contributed to this affluent international student population by strategically targeting the well-to-do (Ashwill, 2003). Financial assistance offered by

some institutions did little to diversify the economic pool of applicants since most financial assistance had to be supplemented with personal or family funds. The lack of adequate financial assistance, in conjunction with rapidly rising tuition and a waning global economy, made an expensive U.S. education unobtainable for many foreign students (Cummings, 2001; Jacobson, 2003; Marginson, 2002; NAFSA, 2003).

Changing U.S. Policies

Student and Exchange Visitor Information System (SEVIS)

The implementation of a national database to track foreign visitors and students originated with the Illegal Immigration Reform and Immigration Responsibility Act of 1996 (Open Doors, 2003a). The Act mandated that the paper-driven system utilized to track international visitors and students for over 50 years be inputted into a national, web-based database to improve access for appropriate governmental entities by January 2003 (Open Doors; U.S. Immigration and Customs Enforcement, n.d.). However, feasibility concerns, particularly from educational organizations, political inertia, and lack of funding helped delay implementation until the terrorist attacks in September 2001 gave urgency to a more streamlined, record-keeping system (Arnone, 2003a; Open Doors). A student visa reform bill passed in November 2001, set timelines for receipt of enrollment verifications as well as required the tracking of additional information on SEVIS including permanent addresses, dates of visa issuances, and changes of status dates (Burd, Hebel, & Morgan, 2002). By January 30, 2003, SEVIS, as the national database became known, was operational, requiring all schools to input international student demographic and student status information onto the system. The governmental

responsibility for the oversight of SEVIS was designated to the U.S. Immigration and Customs Enforcement (ICE), a branch of the Department of Homeland Security (DHS) in March 2003 (Open Doors).

The maintenance of SEVIS was mandated by law to be self-supporting and when fees were proposed, international student advocates voiced concerns that any additional fee would be a hardship, particularly to less affluent international students (Arnone, 2003a; U.S. Immigration and Customs Enforcement, 2004). Nevertheless, fee collection began in September 2004 (U.S. Immigration and Customs Enforcement; U.S. General Accounting Office, 2005b).

International student advocates voiced apprehension that the implementation of SEVIS would adversely affect international student status. Concerns included the ability to access the system, difficulty in updating records, erroneous reports and the administrative expenses incurred for inputting and updating information (Open Doors, 2003a). Since SEVIS became the only source to issue I-20s, the ability to retrieve needed information in a timely manner was a critical concern. Additionally, administrators feared foreign students would be denied entrance to the U.S. or face arrests due to errors in the SEVIS system.

In the beginning, many of these concerns proved to be well-founded (U.S. General Accounting Office, 2004b). Schools reported that data inputted into SEVIS was deleted, forms were printing at other institutions, and network links were either too slow or not operational (Ward, 2003). These errors resulted in miscommunication and inconvenience as students and institutions tried in vain to coordinate admissions efforts.

However, according to a subsequent U.S. General Accounting Office (GAO) report (2005b), technological and administrative changes have been made by the U.S. Immigration and Customs Enforcement administration and the problems experienced by college personnel, particularly delays in responses for questions and inability to access reports, decreased.

Visas

International students wishing to enroll in a U.S. institution faced complex U.S. regulations, particularly since the events of September 11, 2001. According to NAFSA (2003), the U.S. visa policy became increasingly difficult to navigate, and delays were inevitable. Delays in the issuance of visas to foreign students often meant students were unable to meet critical academic deadlines, forcing students to postpone or cancel their studies (Tilghman, 2003; Ward, 2003). In November 2002, an Association of American Universities (AAU) survey found the number of student visa delays nearly doubled in the Fall 2002 from Fall 2001, and the number of student visa denials increased significantly.

Middle Eastern students, particularly Muslim men, and students planning to study some sciences found the visa issuance process especially difficult (Johnson, 2003a, 2003b; Tilghman, 2003). These categories of students were identified by mandate to participate in a more extensive background check, or visa mantis, prior to the issuance of a visa. While not specifically targeting these types of students in her statements, Jacobs (2003), Deputy Assistant Secretary for Visa Services, confirmed in her testimony before the Committee on Science that the visa mantis reviews had increased significantly during 2002 and denials had also increased. According to a GAO report in February 2004, the

response time for settlement of visa matters averaged 67 days once documentation was submitted for review.

A survey of research institutions ascertained that 30% of the visa delays or denials in the fall of 2002 were from Arabic nations (Association of American Universities, 2002b). Males from predominately Muslim and Arabic nations must also be photographed, fingerprinted and interviewed at an immigration office upon their arrival in the United States in addition to their initial interview to obtain a student visa (Jacobson, 2003). Cummings (2001) stated Middle Eastern students were more likely to be concerned for their personal safety while studying in the U.S. In a *Chronicle* article (Jacobson), unnamed Saudi Arabian officials confirmed they discouraged Saudi students from attending U.S. institutions.

Once in the U.S., according to NAFSA (2003), foreign students faced innumerable federal regulations. Even navigation of the rules governing simple necessities, such as obtaining drivers' licenses and issuance of social security cards needed for on-campus employment, were sources of frustration to both international students and their international student advisors (Hebel, 2002; Kless, 2004). To remain in good standing with the ICE, students must also rely on international student advisors to accurately input a multitude of changes, including addresses and student status changes, to SEVIS in a timely manner (Croom & Bellows, 2002).

Changing policies and interpretations of regulations also contributed to difficulties once students were attending classes. For example, students from Mexico and Canada, who until 2002 were allowed to attend U.S. institutions part-time, were required

to obtain student visas and attend full-time due to a policy interpretation change (Payne, 2002). Since the interpretation had been effective immediately in the middle of a semester, Canadian and Mexican students who maintained their residence in their own countries and crossed the U.S. border to attend classes were particularly hampered if they were not already enrolled full-time. Changing interpretations, as well as delays caused by visa renewals, often discouraged international students from leaving the U.S. prior to achieving their educational goals due to concerns re-entrance to the States would be denied (Goodman, 2004; Kless, 2004; Ward, 2003).

Visa issuance delays and denials of visas promoted the image abroad that foreign students were not welcome to the U.S. (Ward, 2003). When combined with concerns of violating one of the myriad of regulations and misgivings about the tracking of their private information in a governmental database, many foreign students may have decided to attend school in a more student-friendly country (Jacobson, 2003; Open Doors, 2003a). According to Johnson (2003b), negative anecdotal stories have a cumulative effect and the resulting public relations may influence international student enrollments for several years.

Reform Efforts

Agendas from higher education organizations such as NAFSA, ACE, and AAU have promoted changes in policies initiated after September 11, 2001, governing international students in the United States. Members have written letters to government officials, spoken before Congressional committees and published statements on organizational websites. In March 2003, at the urging of representatives from higher

education organizations, the House Committee on Science requested a GAO inquiry into delays in the completion of visas *mantis*, visas requiring in-depth scrutiny, investigations and the consequences of restrictive security on research and U.S. leadership in the sciences (U.S. House Committee on Science, 2003). Less than 3% of the student visa applications required visa *mantis* investigations (Harty, 2004).

The GAO report, released in February 2004, acknowledged the work that had been done toward reducing backlogs but urged the State Department to continue efforts to reduce the time for visa *mantis* investigations. Coordinating efforts with the Department of Homeland Security and the Federal Bureau of Investigations was encouraged. Specific recommendations included clarifying which students required visa *mantis* investigation, communicating qualifying criteria to government personnel at the point of contact, integrating reporting systems to improve interagency communications, and establishing benchmarks and performance goals for processing visa applications (U.S. General Accounting Office, 2004a). A follow-up GAO report (2005a) concluded that the visa *mantis* process had shortened to as little as 15 days for processing and notification, a sharp decline from the nearly three months recorded in October 2003. These improvements were attributed to improved staffing, directed guidance to consular offices, clarification of responsibilities between departments, an electronic tracking system and fewer redundant clearances.

Higher education organizations also put pressure on federal government officials to intervene on behalf of all international students. In a letter to Secretary of State Colin Powell, the presidents of the American Council on Education (ACE), Association of

American Universities (AAU), Council of Graduate Schools (CGS) and the National Association of State Universities and Land-Grant Colleges (NASULGC) expressed several concerns about the effects of the issuance of visas to international students and urged the State Department to seek a visa system that “was secure, timely, efficient, transparent, and predictable” (Hasselmo, Magrath, Stewart & Ward, 2003, p.1). Additionally, NAFSA members encouraged the State Department to rectify deficiencies in the current policies by providing policy guidance to agencies, focusing scarce resources on select groups, creating a visa process that is efficient, user friendly, and predictable as well as providing appropriate funding (NAFSA, 2004b).

According to government officials, the issuance of student visas declined 18% from September 11, 2001 through 2003 (Harty, 2004). However, the number of issuances of student visas increased by 1% from January to October, 2004. To expedite the issuance of routine student visas, consular offices were directed to give top priority to student visa applications (Powell, 2004). Officials maintained that denials of routine applications were not due to security concerns but to the visa applicant’s inability to convince consular personnel during their required interview that furthering their education was the sole purpose for entering the United States (Harty, 2003). Consular personnel were mandated to deny a visa if the visa applicant could not prove his eligibility for nonimmigrant status. Harty (2004) maintained that most routine F-1 visa applications not requiring additional scrutiny were issued within two days. Despite the optimistic outlook from governmental officials, the results from a Fall 2004 survey indicated 40% of the schools, experiencing a decrease in fall undergraduate student

enrollments, specified visa delays and denials as the primary cause. Only 29% of the schools experiencing declining graduate enrollments attributed them to visa issues (NAFSA, 2004c).

Summary

International students have contributed to the diversity and economy of local universities and communities for over 50 years. Issues affecting the international student population included competition for foreign student enrollments from other countries, employment opportunities and the expense of an education in the U.S. Additionally, U.S. policies governing international students, particularly relating to the issuance of visas, have tightened since the terrorist attacks in September 2001, affecting perceptions and enrollments of international students.

This literature review provided an overview of the studies and issues related to international student enrollments and provided a background for the analysis of enrollments at the University of South Florida. The methodology and procedures utilized for this study are explored in Chapter 3.

CHAPTER 3

METHODOLOGY AND PROCEDURES

Introduction

Data were collected from the University of South Florida's International Admissions Office for the past seven years and analyzed to investigate if international student enrollment numbers had changed since Fall 2001; and, if enrollment trends for international students could be established. This chapter provides an overview of the methodology and procedures utilized for this investigation.

Statement of the Problem

The effects of September 11, 2001, on federal policies and international student perceptions may have influenced the number or quality of international student applicants at USF as well as the number of international students who were able to begin once they had been accepted. This study sought to: (a) develop a profile of international student admission patterns at USF from 1998-2004; (b) determine if USF international student admissions patterns were unique from enrollments in the United States.; (c) determine if any changes in international student admissions patterns since September 11, 2001, supported the concerns found in the review of literature regarding federal policies or student perception; (d) determine if future international student enrollments at USF can be predicted.

Population

The raw data obtained in spring 2005 for this study consisted of admissions records information from 16,797 applications to the University of South Florida for the Fall Semesters 1998, 1999, 2000, 2001, 2002, 2003 and 2004, inclusively. The population was limited to all student applicants required by law to possess an F-1 student visa and included international student applicants transferring from colleges within the United States as well as international student applicants applying to USF prior to entering the United States. Graduate or undergraduate student status was self-reported.

Data Collection

International student admissions data for F-1 students, both graduate and undergraduate, were solicited from the International Admissions Office at the University of South Florida in November 2004. Raw data were received in spring 2005 in Microsoft Excel format. Table 24 in Appendix A summarizes the raw data received from the University of South Florida.

After downloading the data onto SPSS[®] for Windows Version 12.0, the raw data were analyzed for duplicate cases. Since personally identifiable information such as social security or student identification numbers had not been included in the database, the variables utilized to determine duplicate data were *term of entry*, *date of birth*, *gender*, *academic level*, and *nation of origin*. As an added precaution, to avoid omitting data unnecessarily, duplicate files were checked visually for accuracy. This visual check secured six additional cases for this analysis. The total unduplicated data included in this analysis were 11,821 cases, consisting of 9,408 graduate international student applicants

and 2,413 undergraduate international student applicants. The data for each applicant indicated the admissions decision and enrollment status for the respective fall semesters as well as miscellaneous demographic information.

To utilize as a comparison, graduate and undergraduate domestic student data were collected from the University of South Florida's InfoMart website (University of South Florida, 2004b). The data obtained entailed the total number of applications, admissions and matriculations for all graduate and undergraduate students for the respective fall semesters in the study. Since the student totals obtained from the website included the international student numbers, the respective number of international students was subtracted from the InfoMart information to provide headcounts for two distinctive USF groups, domestic students and international students. These two groups formed the basis for the variable *student status*, which was utilized throughout the study.

National enrollment data provided by Open Doors (2004) was also utilized in this study. This data provided the proportion of international students to domestic students nationwide and was utilized in the analysis for Research Question 4.

Research Questions

The study endeavored to analyze if international student enrollment patterns at the University of South Florida were affected after September 11, 2001, by examining USF international student admissions fluctuations since Fall 1998 and comparing them to the admissions fluctuations for USF domestic students. The September 11, 2001, benchmark was chosen for its role as the beginning of significant changes in federal policies affecting international students. USF domestic applicant population was utilized as a

point of reference since federal policies governing international students should not have affected the USF domestic student applicants. Other concerns discussed in the literature review, such as rising tuition and employment, could have had an effect on domestic applicants as well as international applicants.

By comparing the proportions of international student applications, acceptances, and matriculations in any given fall semester to the respective classifications for domestic applicants, Research Questions 1 through 3 endeavored to determine if fluctuations in admissions patterns differed between international and domestic students. Research Question 4 attempted to determine the extent to which international student enrollments at USF corresponded with U.S. international student enrollment data as published by Open Doors (2004). To further determine any changes in enrollment patterns, Research Question 5 compared USF international student applications and enrollments to the USF domestic student population before and after Fall 2001. Finally, Research Question 6 endeavored to predict enrollments at USF based upon post-September 11 student matriculations. The specific questions utilized to guide this study were:

1a. Does the proportion of undergraduate students accepted differ for international students as compared to domestic students each fall semester?

1b. Does the proportion of graduate students accepted differ for international students as compared to domestic students each fall semester?

2a. Based upon the number of applications received, does the proportion of enrollments for international undergraduate students differ from the domestic student population each year?

2b. Based upon the number of applications received, does the proportion of enrollments for graduate international students differ from the domestic student population each year?

3a. For applicants who were accepted, does the proportion of students who enroll differ for undergraduate international students as compared to undergraduate domestic students each year?

3b. For applicants who were accepted, does the proportion of students who enroll differ for graduate international students as compared to graduate domestic students?

4. Does the proportion of international student to domestic student enrollments at USF fit historic enrollment patterns established for the U.S. for each year?

5a. Does the proportion of international student applications for both graduate and undergraduate students differ significantly from before to after September 11, 2001, when compared to the domestic student population?

5b. Does the proportion of international student enrollments for both graduate and undergraduate students differ significantly from before to after September 11, 2001, when compared to the domestic student population?

6. Can undergraduate and graduate international student enrollments at USF be predicted by the year of enrollment, reviewing data since September 11, 2001?

Data Analysis

Statistical analyses utilizing SPSS[®] for Windows Version 12.0 were performed on raw data obtained from the International Admissions Office at the University of South

Florida. Frequencies and percentages were utilized to develop a profile of admissions patterns. Chi square analyses were utilized to analyze differences in proportions for Research Questions 1 through 5. Hand computations were utilized to complete the analysis for Research Question 4. Given the dichotomous dependent variable, enrollment versus no enrollment, logistic regression was used to answer Research Question 6.

To prepare the unduplicated raw data obtained from USF for analysis, 13 variables were recoded. The variable *term of entry* was the basis for three recoded variables. First, the years were recoded into corresponding numbers from one through seven, 1998 equaling the numeral 1, to develop the variable *year*. Additional recodes were for the variables *after 2001* and *before/after compare*. For the variable, *after 2001*, only the years 2002 through 2004 were utilized. The *before/after compare* recode changed the years prior to 2001 to numeral 1 and the years after 2001 to numeral 2.

The variables *admitted* and *enrolled* were recoded into the variables, *admit status* and *enrollment status*, utilizing the numbers 0 for the negative category and 1 for the positive category. Other dichotomous recoded variables were *gender*, *academic status* and *student status*.

Some variables were recoded to summarize the data into meaningful demographic information, including age, majors and nation of origin. To obtain ages, the raw data, date of birth, was first converted into birth years and ages in Microsoft Excel. Then, after importing into SPSS[®], visual bander was utilized to create ten equal categories of age ranges. The 163 majors were condensed to nine categories representing eight USF colleges and centers plus one miscellaneous category for non-degree seeking or

undecided students. The categories were architecture, arts and sciences, business administration, education, engineering, health sciences, visual and performing arts, non-degree seeking or undeclared major, and marine sciences, numbered respectively beginning with the numeral 1. These categories were further recoded to create the variables *compare major graduate* and *compare major undergraduate*. The *compare major graduate* variable contained the most frequently represented categories for international student graduates at USF: business, engineering, health sciences and arts and sciences. The *compare major undergraduate* variable contained the most frequently represented undergraduate categories: business, engineering, non-degree seeking and arts and sciences. The *nation of origin* variable was recoded into 16 categories establishing the variable *world region*, as well as a second variable named *visa status*, containing 18 categories.

Three databases were utilized to complete this study. The first database was the primary database developed from the raw data and contained the variables discussed previously. The database developed to complete Research Questions 1 through 3 included the variables *year* and *academic level* from the original database. Additionally, seven new variables were employed. Four of the new variables contained dichotomous categories and the rest of the variables contained appropriate frequencies. The new variables with two categories were *student status* (categories were international and domestic), *application/accepted* (categories were accepted and not accepted), *applied/enrolled* (categories were applied/enrolled and applied/not enrolled), and *accepted/enrolled* (categories were accepted/enrolled and accepted/not enrolled).

A second database developed to complete Research Question 5 contained the variables *academic level*, *student status*, *years* and *compare years* from the previous databases. Additionally, variables were employed to provide frequencies for the *number of applications*, *number of acceptances*, and the *number of enrolled* students.

To complete the analysis for Research Questions 1 through 3, the database was divided utilizing the variable *student status*. A two-way contingency table analysis using crosstabs was then performed for each of the three questions. Bonferroni correction was applied to the alpha level to compensate for the risk of Type I error; therefore, results of the analysis were reviewed at a more conservative alpha of .007.

Cases for Research Question 1 were weighted in the SPSS[®] crosstabs analysis utilizing the variable *frequency applied/accepted*. An analysis was then performed by year between the variables, *student status* and *applied/accepted*. For Research Question 2, the data were weighted according to the variable *frequency application/enrolled*. The analysis was then performed by year between the variables *student status* and *application enrolled*. Research Question 3 was similarly weighted using the variable *frequency accepted/enrolled*, and then the variables *student status* and *accepted/enrolled* were compared by year.

Chi square goodness of fit was the analysis utilized for Research Question 4. Summary information regarding domestic student enrollments from USF's InfoMart (2004a), an internet tool that provided USF statistics to the public, and summary data from the international database utilized in this study were compared to the historical national data available from Open Doors (2004). Hand computations were completed to

determine the chi statistic and phi for each year. The critical value was obtained from a standard chi square statistical table of critical values (Shavelson, 1996) and was set at 7.87. Bonferroni correction was again applied to the alpha level to compensate for the risk of Type I error when the analysis was interpreted.

Two-way contingency tables were used to complete the analysis for Research Question 5. As in Research Questions 1 through 3, the data were first split by the variable *academic level*. For Research Question 5a, the data were weighted by the variable *number applications*, prior to running the crosstabs analysis on the variables, *student status* and *before/after 2001*. For Research Question 5b, the analysis was weighted by the variable *number enrolled*.

A pairwise comparison was done as a follow-up for the contingency table analysis for Research Question 5. Cases corresponding to the two years being analyzed were selected utilizing the “If condition” in SPSS[®]. Then, each of the years was compared utilizing the appropriate variable either *number applications* or *number enrolled*, to weight the analysis.

To determine the results of Research Question 6, a logistic regression analysis was completed. After splitting the original database by the variable *student status*, this analysis was completed utilizing the variable *after 2001* and the variable *enrollment status*.

Summary

Raw data containing information on the status of applications for F-1 students were received from the University of South Florida to determine if fluctuations in

international student applicants could be detected. The data were for the fall semesters beginning in 1998 through 2004, inclusively. Admissions, acceptance, and matriculation data were also gathered for domestic students to use in comparison to the admissions, acceptances and matriculation rates of international students during the respective fall semesters. Additionally, historic summary data on nationwide enrollments were obtained to compare enrollment proportions to USF enrollments.

Two databases were developed to provide appropriate data to complete the chi square analyses guided by four of the six research questions. A third database was utilized in the analysis of information for the logistic regression required for Research Question 6. The goodness of fit chi square for Research Question 4 was completed utilizing hand computations.

Chapter 3 provided the preliminary background and methodology utilized to complete this study. The discussion of the analysis conducted to complete this study is summarized in Chapter 4.

CHAPTER 4

ANALYSIS OF THE DATA

Introduction

This study sought to: (a) develop a profile of international student admission patterns at USF from 1998-2004; (b) determine if USF international student admissions patterns were statistically different when compared to USF domestic student enrollments and international student enrollments in the United States; (c) determine if any changes in USF international student admissions patterns since September 11, 2001, supported the concerns found in the review of literature regarding federal policies or student perception; (d) determine if enrollments can be predicted by the year of enrollment. Six research questions were developed to guide this study.

To conduct this study, raw data were collected from the International Student Admissions Office at the University of South Florida for the fall semesters beginning in 1998 through 2004. Comparative data were obtained from published USF student enrollment information. To compare USF enrollment proportions to national data, information was utilized from Open Doors (2004). This chapter provides a demographic profile of the international student data and presents an analysis of the data relevant to the research questions.

Demographic Characteristics

The basis for this analysis was raw data from 16,797 international student applications at the University of South Florida for the fall semesters from 1998 through 2004. The raw data provided demographic and admissions information for 11,821

unduplicated applicants, 9,408 graduates and 2,413 undergraduates, that comprised the population sample for this study. International students were defined as students required by law to show proof of an F-1 student visa to enroll in classes at the university.

Table 1

Frequency and Percent of Graduate International Student Demographic Characteristics

Demographics	Frequency	Percentage
Age*		
19 – 23	361	3.8%
24 – 28	4,110	43.7%
29 – 33	3,307	35.2%
34 – 38	1,121	11.9%
39 – 43	281	3.0%
44 – 48	108	1.1%
49 – 53	47	0.5%
54 – 58	19	0.2%
59+	9	0.1%
Gender*		
Male	5,980	63.6%
Female	3,301	35.1%
Unknown	127	1.3%
Degree Program		
Masters	6,012	63.9%
Ph.D.	3,379	35.9%
Ed.D.	9	0.1%
Au.D	5	0.1%
Specialist	3	0.0%

*Demographic information such as birth-date and gender was not available for all applicants.

Table 1 provides demographic information for the graduate international students included in the study population. Over 50% of the international graduate student applicants were ages 24 to 38 and the group was predominately male, $n = 5,980$. Additionally, the majority of the students were seeking master's degrees.

Table 2

Frequency and Percent of Undergraduate International Student Demographic Characteristics

Demographics	Frequency	Percentage
Age*		
< = 18	4	0.2%
19 – 23	488	20.2%
24 – 28	1,263	52.3%
29 – 33	449	18.6%
34 – 38	132	5.5%
39 – 43	37	1.5%
44 – 48	19	0.8%
49 – 53	8	0.3%
54 – 58	8	0.3%
59+	1	0.0%
Gender*		
Male	1179	48.9%
Female	1215	50.4%
Unknown	19	0.8%
Admission/Transfer Status		
Florida Community College – Lower Level	61	2.5%
Returning USF Student	68	2.8%
Second Baccalaureate	116	4.8%
First-time in College (FTIC)	222	9.2%
Other than Florida Community College – Lower Level	452	18.7%
Florida Community College – Upper Level (AA degree)	507	21.0%
Other than Florida Community College – Upper Level	987	40.9%

*Demographic information such as birth-date and gender was not available for all applicants

Table 2 indicates that the majority of undergraduate students were between the ages of 24 to 28. Undergraduate students were almost evenly split between genders with women, $n = 1,215$, slightly more numerous than men, $n = 1,179$. The majority of

undergraduate student applicants were classified as upper-level transfers, either from a Florida public community college, $n = 507$, or other college, $n = 987$. Students designated as upper-level transfers from a Florida community college were transferred under a state-mandated articulation agreement allowing students earning an Associate of Arts degree from a Florida public community college to transfer to a state university (Articulation Between Universities, Community Colleges, and School Districts, 2005). Upper-level transfers from out-of-state institutions, private colleges or without an Associate of Arts degree from a Florida public community college were categorized as *Other than Florida Community College - Upper-Level*.

The 100 graduate and 64 undergraduate programs found in the sample population were summarized by college or center in Table 3. Those students who did not declare a major or who were admitted to the university on a temporary basis, such as foreign exchange or transient students, were classified as non-degree seeking or undeclared major. The eight colleges and centers at USF included Visual and Performing Arts, Architecture, Education, Arts and Sciences, Business Administration, Engineering, Marine Sciences, and Health Sciences Center (University of South Florida, 2004a)

The College of Engineering, which included the Computer Science Department, housed the most popular majors for graduate students ($n = 4,665$). Almost 50% of the international graduate student applications indicated majors within that college. Additionally, the College of Engineering was identified as the college of choice for over 20% of the total undergraduate student applications ($n = 497$). Only the College of Business was more popular with undergraduates, over 30% of the applicants ($n = 777$)

designated a major within the college. For graduate students, the Health Science Center which included the Colleges of Medicine, Nursing, Public Health and Physical Therapy, was the second most popular area. However, less than 16% of the graduate student sample ($n = 1,485$) designated a major within Health Sciences.

Table 3

Frequency and Percent of International Students by Academic Level and College

Academic Level and College	Frequency	Percentage
Graduate International Students		
Engineering	4,665	49.6%
Health Sciences	1,485	15.8%
Arts & Sciences	1,411	15.0%
Business Administration	1,234	13.1%
Education	298	3.2%
Marine Science	113	1.2%
Architecture	93	1.0%
Non-degree seeking or undeclared major	55	0.6%
Visual & Performing Arts	54	0.6%
Undergraduate International Students		
Business Administration	777	32.2%
Engineering	497	20.6%
Non-degree seeking or undeclared major	454	18.8%
Arts & Sciences	445	18.4%
Health Sciences	111	4.6%
Education	79	3.3%
Visual & Performing Arts	38	1.6%
Architecture	12	0.5%

Non-degree seeking or undeclared major category included exchange and transient students.

The sample population for this study included international student applicants from approximately 215 countries worldwide. Table 4 presents a summary of the

frequencies of applicants' designated countries of origin, grouped into fourteen regions. The groupings were based upon three factors: geographic location according to *The World FactBook* (U.S. Central Intelligence Agency, 2004), numbers of applicants from a geographic region such as China or India, and loosely, on political issues, particularly in reference to visa issuances. For instance, Cuba, a close geographic neighbor of the U.S. as well as an island in the Caribbean, is distinguished in this study from other Caribbean islands due to the State Department's designation as a country that sponsors terrorism (U.S. Department of State, 2003). Students wishing to apply for an F-1 visa from a country designated as sponsoring terrorism, currently Cuba, Iran, Iraq, Syria, Libya, North Korea, and Sudan, were mandated to undergo a visa mantis investigation.

The data indicated that almost 75% of the graduate applicants possessed visas from China or India ($n = 2,767$, $4,112$, respectively) while less than 5% of the undergraduate applicants (China, $n = 46$; India, $n = 66$) were from those countries. The majority of undergraduate international students were from the Caribbean ($n = 609$) and Europe ($n = 576$).

Table 4

Frequency and Percent of International Students by Academic Level and Region

Academic Level and Region	Frequency	Percentage
Graduate International Students		
India	4,112	43.7%
China	2,767	29.4%
Europe	621	6.6%
Asia	471	5.0%
South America	303	3.2%
Caribbean	256	2.7%
Middle East	250	2.7%
Africa	247	2.6%
Canada and Mexico	133	1.4%
Southeast Asia	130	1.4%
Israel	22	0.2%
Central America	19	0.2%
Australia and New Zealand	8	0.1%
Cuba	4	0.0%
Undergraduate International Students		
Caribbean	609	25.2%
Europe	576	23.9%
South America	257	10.7%
Middle East	214	8.9%
Asia	191	7.9%
Africa	140	5.8%
Canada and Mexico	125	5.2%
India	66	2.7%
Southeast Asia	65	2.7%
China	46	1.9%
Central America	32	1.3%
Israel	19	0.8%
Australia and New Zealand	13	0.5%
Cuba	4	0.2%

Some of the country of origin data were missing or incomplete.

Table 5

Frequency and Percent of International Student Applicants by Academic Level and Visa Scrutiny

Academic Level and Region	Frequency	Percentage
Graduate International Students		
India	4,112	43.7%
China	2,767	29.4%
Asia	372	4.0%
Visa Waiver Countries	369	3.9%
Europe	335	3.6%
Middle East and North Africa*	325	3.5%
South America	303	3.2%
Caribbean	256	2.7%
Africa	177	1.9%
Canada and Mexico	133	1.4%
Southeast Asia	119	1.3%
Other than Middle East*	30	0.3%
Israel	22	0.2%
Central America	19	0.2%
Cuba*	4	0.0%
Undergraduate International Students		
Caribbean	609	25.2%
Visa Waiver Countries	491	20.3%
Middle East and North Africa*	263	10.9%
South America	257	10.7%
Europe	170	7.0%
Canada and Mexico	125	5.2%
Asia	112	4.6%
Africa	94	3.9%
India	66	2.7%
Southeast Asia	60	2.5%
China	46	1.9%
Central America	32	1.3%
Israel	19	0.8%
Other than Middle East*	9	0.4%
Cuba*	4	0.2%

Some of the country of origin data were missing or incomplete.

* Denotes known regions requiring increased visa scrutiny.

Table 5 presents the applicants' region of origin primarily divided by the level of scrutiny given to their visa applications. These categories were arbitrary to some degree because final authority for the level of visa scrutiny for any visa applicant was given to the consular officer (Harty+, 2004). However, citizens applying for visas from some countries were mandated by the State Department to undergo visa mantis processing of their visa applications (U.S. Bureau of Consular Affairs, n.d.a). For example, student applicants from the Mideast and North Africa, particularly, Sudan, Iran and Iraq, were already required to undergo the visa mantis processing of their visa applications. However, as a result of changes in federal regulations since September 11, 2001, males from the Middle Eastern and North African countries of Morocco, Saudi Arabia and Egypt, were added to the list for increased security measures when applying for visas (U.S. Department of State, 2003). Students from these countries were also subject to additional requirements once in the U.S. (Nolo, 2002). This rationale was utilized to group students from the Mideast and North Africa into one category in Table 5.

While most of the countries of concern were located in the Middle East or North Africa, a few, primarily North Korea, Bangladesh and Indonesia, were located in Southeast Asia (U.S. Central Intelligence Agency, 2004). Students from these countries were included in the category, *Other Than Middle East*. Since Israel, although located in the Middle East, was not designated on the list for increased scrutiny, students from that region were listed alone.

The category, *Visa Waiver Countries*, consisted primarily of European countries as well as Australia and New Zealand. Although students from these countries were

required to obtain an F-1 visa, citizens of these countries were not required to obtain visitor visas prior to entering the U.S (U.S. Bureau of Consular Affairs, n.d.c). Therefore, students from these countries should represent the least scrutinized group applying for student visas.

Research Question 1

1a. Does the proportion of undergraduate students accepted differ for international students as compared to the proportions domestic students each fall semester?

1b. Does the proportion of graduate students accepted differ for international students as compared to the proportions of domestic students each fall semester?

Two, two-way contingency table analyses were conducted to assess whether or not the proportion of international students accepted differed from the domestic population accepted for each fall semester from 1998 to 2004. Separate contingency tables were done for undergraduate and graduate students. The two variables tested for each year in the two contingency tables were *student status* with two categories (domestic or international) and *acceptance rate* with two categories (applied/accepted or applied/not accepted). Tables 6 and 7 provide summaries for the analyses.

The analysis found statistically significant differences between the proportions of acceptances for undergraduate international and domestic students for most of the semesters analyzed; however, very little effect was found. Table 6 summarizes the results. The largest effects were Fall 1998 ($\phi = .046$) and Fall, 1999 ($\phi = .048$). According to Green & Salkind (2005), a weak effect was considered to be $\phi \leq .10$. The proportions of undergraduate international students who were accepted or not

accepted for Fall 1998 were 1.6% and 3.1% and for Fall 1999 were 1.7% and 3.3%, respectively.

Table 6

Comparisons of Undergraduate International and Domestic Student Acceptances by Year

Year	n	df	χ^2	p	phi	International student proportions		Domestic student proportions	
						Accepted	Not accepted	Accepted	Not Accepted
1998	14,584	1	30.68	<.001	.046	1.6%	3.1%	98.4%	96.9%
1999	15,964	1	36.04	<.001	.048	1.7%	3.3%	98.3%	96.7%
2000	18,925	1	7.83	.005	.020	2.3%	1.7%	97.7%	98.3%
2001	20,010	1	24.23	<.001	.035	1.6%	2.7%	98.4%	97.3%
2002	21,472	1	0.05	.831	.001	1.7%	1.7%	98.3%	98.3%
2003	24,234	1	4.47	.035	.014	1.2%	1.5%	98.8%	98.5%
2004	26,049	1	42.13	<.001	.040	1.6%	0.7%	98.4%	99.3%

The results of the two-way contingency table analysis conducted to investigate Research Question 1b are shown in Table 7. There were statistically significant differences between the acceptance rates for international and domestic graduate students for every semester except Fall 2002, $\chi^2 (1, n = 7,802) = 1.51, p = .219, \text{phi} = .014$. The best relationship was a weak to moderate relationship found in Fall 2001 ($\text{phi} = .164$). All other relationships were weak.

Table 7

Comparisons of Graduate International and Domestic Student Acceptances by Year

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
						Accepted	Not accepted	Accepted	Not Accepted
1998	6,388	1	67.10	<.001	.102	21.3%	13.5%	78.7%	86.5%
1999	6,424	1	9.57	.002	.039	20.3%	23.5%	79.7%	76.5%
2000	6,214	1	54.27	<.001	.093	28.4%	20.4%	71.6%	79.6%
2001	7,516	1	203.14	<.001	.164	14.7%	5.1%	85.3%	94.9%
2002	7,802	1	1.51	.219	.014	25.5%	26.8%	74.5%	73.2%
2003	7,916	1	66.45	<.001	.092	18.0%	26.0%	82.0%	74.0%
2004	7,309	1	101.44	<.001	.118	16.9%	9.0%	83.1%	91.0%

Research Question 2

2a. Based upon the number of applications received, does the proportion of enrollments for international undergraduate students differ from the domestic student population each year?

2b. Based upon the number of applications received, does the proportion of enrollments for graduate international students differ from the domestic student population each year?

Two-way contingency table analyses were conducted to determine if the proportion of enrollments for international students differed from domestic student enrollments based upon the number of applications received each semester. Graduate students were compared on a separate contingency table from undergraduate students. The two variables tested for each year in the two contingency tables were *student status* with two categories (domestic or international) and *enrollment* with two categories (applied/enrolled or applied/not enrolled). Tables 8 and 9 summarize the results of these analyses.

The analysis between undergraduate international or domestic student enrollments, as shown in Table 8, indicated that statistically significant differences were found for almost every semester. However, according to the effect size (ϕ), there was little relationship between the variables in any given semester. The largest effect size (ϕ) was found in Fall 2001, $\phi = .057$.

Table 8

Comparisons of Undergraduate International and Domestic Student Enrollments Based Upon Applications Received

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
						Enrolled	Not Enrolled	Enrolled	Not Enrolled
1998	14,584	1	11.05	.001	.028	1.5%	2.3%	98.5%	97.7%
1999	15,964	1	33.04	<.001	.045	1.3%	2.6%	98.7%	97.4%
2000	19,925	1	17.95	<.001	.030	1.4%	2.3%	98.6%	97.7%
2001	20,010	1	65.96	<.001	.057	1.0%	2.6%	99.0%	97.4%
2002	21,472	1	18.97	<.001	.030	1.2%	2.0%	98.8%	98.0%
2003	24,234	1	3.39	.066	.012	1.1%	1.4%	98.9%	98.6%
2004	26,049	1	0.72	.396	.005	1.3%	1.2%	98.7%	98.8%

The two-way contingency table analysis for graduate domestic and international students indicated that the proportions of international and domestic graduate student enrollments based on the application numbers differed significantly every semester. Additionally, a weak to moderate relationship in four of seven semesters, Fall 2000 ($\phi = .128$), Fall 2001 ($\phi = .122$), Fall 2002 ($\phi = .145$), and Fall 2003 ($\phi = .188$) was shown. Fall 1998 ($\phi = .081$) and Fall 1999 ($\phi = .095$) indicated a weak effect also. The proportions of graduate international students who were accepted or not accepted and

indicated a weak to moderate effect ranged from 15% through 30%. Table 9 summarizes the results of the analysis.

Table 9

Comparisons of Graduate International and Domestic Students Enrollments Based Upon Applications Received

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
						Enrolled	Not Enrolled	Enrolled	Not Enrolled
1998	6,388	1	41.72	<.001	.081	10.6%	18.1%	89.4%	81.9%
1999	6,751	1	60.83	<.001	.095	13.4%	23.1%	86.6%	76.9%
2000	6,214	1	101.04	<.001	.128	14.7%	27.1%	85.3%	72.9%
2001	7,516	1	112.03	<.001	.122	15.2%	6.9%	84.8%	93.1%
2002	7,802	1	164.78	<.001	.145	15.0%	29.9%	85.0%	70.1%
2003	7,914	1	278.61	<.001	.188	8.8%	27.5%	91.2%	72.5%
2004	7,309	1	17.82	<.001	.049	9.6%	13.2%	90.4%	86.8%

Research Question 3

3a. For applicants who were accepted, does the proportion of students who enroll differ for undergraduate international students as compared to undergraduate domestic students each year?

3b. For applicants who were accepted, does the proportion of students who enroll differ for graduate international students as compared to graduate domestic students?

Two-way contingency table analyses for graduate and undergraduate students were conducted to determine if the proportion of international students enrolling after being accepted differed when compared to the domestic student population. The two variables analyzed for each year were *student status* with two categories (international or

domestic) and *accepted and enrolled* with two categories (accepted/enrolled or accepted/not enrolled).

For undergraduate students, a statistically significant difference was found for five semesters as shown in Table 10. While statistical significance was found in the analysis for most years, the phi statistic indicated very weak relationships for each of the years. The highest effect size was found in Fall 2000, $\phi = .073$. The proportion for enrolled and not enrolled international students for the Fall 2000 was 1.4% and 3.6%, respectively.

Table 10

Comparisons of Undergraduate International and Domestic Student Enrollments Based Upon Acceptances

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
						Enrolled	Not Enrolled	Enrolled	Not Enrolled
1998	10,680	1	0.83	.364	.009	1.5%	1.8%	98.5%	98.2%
1999	12,123	1	14.15	<.001	.034	1.3%	2.2%	98.7%	97.8%
2000	12,053	1	63.53	<.001	.073	1.4%	3.6%	98.6%	96.4%
2001	14,072	1	50.12	<.001	.060	1.0%	2.5%	99.0%	97.5%
2002	14,231	1	26.47	<.001	.043	1.2%	2.3%	98.8%	97.7%
2003	15,482	1	0.65	.420	.006	1.1%	1.3%	98.9%	98.7%
2004	14,945	1	10.76	.001	.027	1.3%	2.0%	98.7%	98.0%

Statistical analysis for the graduate international and domestic students found that, with the exception of Fall 2001, $\chi^2 (1, n=2,896) = .76, p = .383, \phi = .016$, the proportion of international students who were accepted and enrolled differed significantly from the domestic population. Additionally, the phi statistic indicated a moderate to strong relationship for three of the semesters analyzed, Fall 2000 ($\phi = .361$), Fall 2002

(phi = .309), and Fall 2003 (phi = .322). The proportions for the categories of enrolled or not enrolled were Fall 2000, 14.7% and 47.7%; Fall 2002, 15% and 42.7%; and Fall 2003, 8.8% and 34.6%, respectively. Fall 1998 (phi = .264) and Fall 2004 (phi = .268) indicated a weak to moderate relationship. The proportions for those years were Fall 1998, 10.6% and 32.2%, and Fall 2004, 9.6% and 30.7%, respectively. Table 11 summarizes the results for the analysis.

Table 11

Comparisons of Graduate International and Domestic Student Enrollments Based Upon Acceptances

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
						Enrolled	Not Enrolled	Enrolled	Not Enrolled
1998	2,531	1	176.26	<.001	0.264	10.6%	32.2%	89.4%	67.8%
1999	2,686	1	80.93	<.001	0.174	13.4%	27.4%	86.6%	72.6%
2000	2,735	1	356.14	<.001	0.361	14.7%	47.7%	85.3%	52.3%
2001	2,896	1	0.76	.383	0.016	15.2%	14.0%	84.8%	86.0%
2002	3,052	1	290.69	<.001	0.309	15.0%	42.7%	85.0%	57.3%
2003	2,885	1	298.53	<.001	0.322	8.8%	34.6%	91.2%	65.4%
2004	2,983	1	214.65	<.001	0.268	9.6%	30.7%	90.4%	69.3%

Research Question 4

Does the proportion of international student to domestic student enrollments at USF fit historic enrollment patterns established for the U.S. for each year?

Utilizing historic national statistics from Open Doors (2004), a chi square goodness of fit test was conducted for the years Fall 1998 through Fall 2003 to determine if the proportion of international students at USF fit the historic patterns for international students established throughout the U.S. each year. No national data for international

student enrollments were available for Fall 2004; therefore, no valid comparison could be made for that semester. The calculations for the chi square were done by hand computations. Bonferroni correction was applied to the alpha level to compensate for the risk of Type I error; therefore, the results were reviewed at a more conservative alpha of .007. A standard chi square statistical table was utilized to determine that the critical value of χ^2 was approximately 7.88 with a statistical significance level of $p < .007$ (Shavelson, 1996). The results of the analysis are summarized in Table 12.

Table 12

Comparisons of USF International Enrollments to National Trends

Year	<i>n</i>	<i>df</i>	χ^2	<i>phi</i>	<i>Proportion of USF international students</i>	<i>Proportion of U.S. international students</i>
1998	6,764	1	2.56	.0004	3.2%	3.6%
1999	7,594	1	2.35	.0003	3.5%	3.8%
2000	8,967	1	0.44	.0000	3.8%	3.9%
2001	9,799	1	16.82	.0017	3.5%	4.3%
2002	10,133	1	15.54	.0015	3.8%	4.6%
2003	10,746	1	87.76	.0082	2.5%	4.3%

Percentages for the U.S. international student population from Open Doors (2004).

The analysis indicated that the USF enrollment patterns fit the enrollment patterns established throughout the U.S. for Fall 1998, $\chi^2 (1, n = 6,764) = 2.56, p < .007, \phi = .0004$; Fall 1999, $\chi^2 (1, n = 7,594) = 2.35, p < .007, \phi = .0003$; and Fall 2000, $\chi^2 (1, n = 8,967) = .44, p < .007, \phi = .0004$. However, the effect size indicated no relationship for any given year. This would indicate that the USF international enrollment patterns were not different from the patterns established in the U.S. for the respective semesters.

Research Question 5

5a. Do the proportions of international student applications for both graduate and undergraduate students at USF differ significantly from before to after September 11, 2001, when compared to the domestic student population?

5b. Do the proportions of international student enrollments for both graduate and undergraduate students at USF differ significantly from before to after September 11, 2001, when compared to the domestic student population?

Two-way contingency table analyses for graduate and undergraduate students were conducted to determine if the proportion of international students applying and the proportion of international students enrolling differed from the domestic student population proportions before and after Fall 2001. The two variables analyzed for the research questions were *student status* with two categories (international or domestic) and *before/after comparison* with two categories (before 2001 and after 2001). To improve comparability, Fall 2001 student applications and enrollments for international and domestic were not included in this analysis. The semesters included in the before 2001 were the fall semesters of 1998, 1999 and 2000. The after 2001 category included the fall semesters 2002, 2003, and 2004.

To answer Research Question 5a, the data were first split utilizing the variable *academic level* (graduate and undergraduate) and the frequency variable utilized to weight cases in SPSS® was the *number of applications*. To answer Research Question 5b, the data were split utilizing the variable *academic level* (graduate or undergraduate) and weighted by the frequency variable *number of enrollments*.

The two-way contingency table analysis for Research Question 5a comparing the proportions of applications for international and domestic students found that the

proportions for undergraduate international student applications differed significantly from the domestic student population from before to after Fall 2001, $\chi^2 (1, n = 121,228) = 77.93, p < .001, \phi = .025$. The effect size, however, indicated little to no relationship between the variables. The proportions of international students before to after September 11, 2001, were 2.1% and .1.4%, respectively. The results of this analysis were summarized on Table 25 in Appendix B.

Follow-up pairwise comparisons were conducted on the undergraduate international and domestic student application rate to evaluate the differences within the years being analyzed. Bonferroni correction was applied to the alpha level to compensate for the risk of Type I error; therefore, the results were reviewed at a more conservative alpha of .007. For this evaluation, the data from Fall 2001 was included. The results of the pairwise comparisons are shown in Table 13.

Table 13

Comparisons of Application by Year for Undergraduate Students

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
1998 to 1999	30,548	1	0.29	.591	.003	2.0%	2.1%	98.0%	97.9%
1999 to 2000	34,889	1	0.26	.612	.003	2.1%	2.0%	97.9%	98.0%
2000 to 2001	38,935	1	0.51	.477	.004	2.0%	1.9%	98.0%	98.1%
2001 to 2002	41,482	1	3.32	.068	.009	1.9%	1.7%	98.1%	98.3%
2002 to 2003	45,706	1	10.85	.001	.015	1.7%	1.3%	98.3%	98.7%
2003 to 2004	50,283	1	1.00	.318	.004	1.3%	1.2%	98.7%	98.8%

The comparisons conducted on the undergraduate applications indicated the only categories to differ significantly were Fall 2002 to Fall 2003, $\chi^2 (1, n = 45,706) = 10.85, p$

= .001, phi = .015. However, the phi statistic indicated there was little effect (phi = .015).

The analysis conducted on graduate international and domestic students indicated there were no significant differences between the proportions of applications for graduate international students and domestic students from before to after September, 2001, $\chi^2 (1, n = 42,053) = .142, p = .706, \text{phi} = .002$. The proportions of international student applicants to domestic student applicants from before to after 2001 were both nearly 21.0%. Table 26 in Appendix B summarizes the results of this analysis.

Follow-up pairwise comparisons were conducted to determine if any differences in the proportions of graduate applications could be found between the years. As in the undergraduate pairwise comparisons, Fall 2001 was included in the graduate analysis. Table 14 indicates the results of the pairwise comparisons.

While the analysis found statistically significant differences between most of the individual years, the strongest effect sizes were found between Fall 2000 to Fall 2001, $\chi^2 (1, n = 13,730) = 589.43, p < .001, \text{phi} = .207$ and Fall 2001 to Fall 2002, $\chi^2 (1, n = 15,318) = 804.05, p < .001, \text{phi} = .229$. Both of these comparisons indicated weak to moderate relationships between the proportions of international and domestic applications. Additionally, Fall 2003 to Fall 2004, indicated a weak relationship (phi=.141).

Table 14

Comparisons of Applications by Year for Graduate Students

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
1998 to 1999	12,812	1	63.24	<.001	.070	16.6%	22.2%	83.6%	77.8%
1999 to 2000	12,638	1	5.34	.021	.021	22.2%	23.9%	77.8%	76.1%
2000 to 2001	13,730	1	589.43	<.001	.207	23.9%	8.8%	76.1%	91.2%
2001 to 2002	15,318	1	804.05	<.001	.229	8.8%	26.3%	91.2%	73.7%
2002 to 2003	15,718	1	21.59	<.001	.037	26.3%	23.1%	73.7%	76.9%
2003 to 2004	15,225	1	304.47	<.001	.141	23.1%	12.2%	76.9%	87.8%

The two-way contingency table analysis for Research Question 5b comparing the proportions of enrollments for international and domestic students found no statistically significant difference between the proportions of undergraduate international student enrollments and the proportions for undergraduate domestic students. The results of the analysis were $\chi^2(1, n = 44,639) = 2.82, p = .093, \text{phi} = .008$. The proportions of international student enrollments before to after Fall 2001 were 1.4% and 1.2%, respectively. Table 27 in Appendix B summarizes the results.

Follow-up pairwise comparisons on the year to year enrollments of undergraduate international and domestic students also found no statistically significant differences between enrollments from year to year. Table 15 indicates the results of the pairwise comparisons.

Table 15

Comparisons of Enrollments by Year for Undergraduate Students

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
1998 to 1999	11,725	1	1.12	.290	.010	1.5%	1.3%	98.5%	98.7%
1999 to 2000	13,606	1	0.22	.620	.004	1.3%	1.4%	98.7%	98.6%
2000 to 2001	15,454	1	5.84	.020	.019	1.4%	1.0%	98.6%	99.0%
2001 to 2002	16,326	1	2.09	.140	.011	1.0%	1.2%	99.0%	98.8%
2002 to 2003	17,136	1	0.16	.690	.003	1.2%	1.1%	98.8%	98.9%
2003 to 2004	17,300	1	0.93	.340	.007	1.1%	1.3%	98.9%	98.7%

The two-way contingency table analysis comparing the proportions of graduate international students to domestic student enrollments differed significantly from before to after 2001, $\chi^2(1, n = 9,918) = 8.51, p = .004, phi = .029$. However, the results indicated there was very little relationship ($phi = .029$). The results of this analysis are summarized on Table 28 in Appendix B.

Table 16

Comparisons of Enrollments by Year for Graduate Students

Year	<i>n</i>	<i>df</i>	χ^2	<i>p</i>	<i>phi</i>	International student proportions		Domestic student proportions	
1998 to 1999	2,633	1	4.85	.030	.043	10.6%	13.4%	89.4%	86.6%
1999 to 2000	2,955	1	0.98	.320	.018	13.4%	14.7%	86.6%	85.3%
2000 to 2001	3,312	1	0.16	.690	.007	14.7%	15.2%	85.3%	84.8%
2001 to 2002	3,606	1	0.02	.880	.002	15.2%	15.0%	84.8%	85.0%
2002 to 2003	3,743	1	34.00	<.001	.095	15.0%	8.8%	85.0%	91.2%
2003 to 2004	3,799	1	0.66	.420	.013	8.8%	9.6%	91.2%	90.4%

Follow-up pairwise comparisons on the graduate student enrollment data indicated statistically significant differences between the proportions of graduate

international student enrollments and domestic students for Fall 2002 to Fall 2003, χ^2 (1, $n = 3,743$) = 34.14, $p \leq .001$, $\phi = .095$. Additionally, the effect size ($\phi = .095$) indicated a weak relationship between the proportions of enrollments. The proportions of international student enrollments for Fall 2002 and Fall 2003 were 15% and 8.8%, respectively. Table 16 provides the results for the pairwise analysis.

Research Question 6

6. Can undergraduate and graduate international student enrollment at USF be predicted by the year of enrollment, reviewing data since September 11, 2001?

A logistic regression analysis was conducted to determine if enrollment at USF could be predicted based on the year of enrollment, reviewing data since September 11, 2001. Separate logistic regression were conducted for graduate and undergraduates students. Enrollment was a dichotomous dependent variable (enrolled = 1, did not enroll = 0). A dummy coded predictor was created for each year of enrollment (Fall 2002, 2003 and 2004) with 2004 serving as the reference level or comparison group. For example, students who enrolled in Fall 2002 were coded as the number 1 and students who enrolled in all other semesters were coded as the number 0.

Table 17 highlights the results of the logistic regression conducted for the undergraduate students. The Hosmer and Lemeshow Goodness-of-Fit test ($\chi^2 = .00$, $df = 2$, $p = 1.0$), with a statistical significance of more than .05, indicated that the model fit the data well. However, the likelihood ratio test (-2LL) indicated that the model may not be an improvement over the unconditional model (i.e., the intercept only model with no predictors), ($\chi^2 = 4.13$, $df = 2$, $p = .13$).

Only one year was a statistically significant predictor for enrolling (Fall 2002). The log of the odds of a student enrolling at USF was negatively related to the year of enrollment for students who enrolled during Fall 2002 ($p = .045$). The odds of .717 indicated that for a one unit increase in the predictor (i.e., not enrolling during Fall 2002 = 0 to enrolling during Fall 2002 = 1) the odds of enrolling at USF are multiplied by .717. This is a 28% decrease ($1 - .717 = .283$), holding other predictors constant. In other words, students were statistically less likely to enroll if they were accepted during Fall 2002 as compared to that of students who were accepted in 2004, the reference year.

Table 17

Logistic Regression for Undergraduate Enrollment

Predictor	β	SE	Wald	df	p	Exp(β) (odds ratio)
Constant	-0.642	0.118	29.691	1	<.001	.526
Year of enrollment			4.097	2	.129	
Fall 2003	-0.122	0.168	0.529	1	.467	.885
Fall 2002	-0.333	0.166	4.003	1	.045	.717
Test			χ^2	df	p	R ²
Overall model evaluation						
-2 Log likelihood			4.13	2	.127	
Goodness-of-fit test						
Hosmer and Lemeshow Test			0.00	1	1.000	
Nagelkerke R Square						.006

Table 18 summarizes the results of the logistic regression for the international graduate students. The Hosmer and Lemeshow Goodness-of-Fit test ($\chi^2 = .00$, $df = 1$, $p = 1.0$) with a statistical significance of more than .05, indicated that the model fit the data

well. The likelihood ratio test (-2LL) indicated that the model may not be an improvement over the unconditional model ($\chi^2 = 72.37, df = 2, p = 1.0$).

Table 18

Logistic Regression for Graduate Enrollments

Predictor	β	SE	Wald	df	p	Exp(β) (odds ratio)
Constant	-1.338	0.082	263.827	1	<.001	.262
Year of Enrollment			71.855	2	<.001	
Fall 2003	-0.986	0.116	71.855	1	<.001	.373
Fall 2002	-0.494	0.104	22.422	1	<.001	.610

Test	χ^2	df	p	R ²
Overall model evaluation	72.37	2	<.001	
-2 Log likelihood				
Goodness-of-fit test	0.00	1	1	
Hosmer and Lemeshow Test				
Nagelkerke R Square				0.028

Both years were statistically significant predictors for enrolling (Fall 2002 and 2003). The log of the odds of a student enrolling at USF were negatively related to the year of enrollment for graduate students who enrolled during the Fall 2002 ($p \leq .001$) as well as Fall 2003 ($p \leq .001$). For Fall 2002, the odds of .610 indicated that for a one unit increase in the predictor (not enrolling during Fall 2002 = 0 to enrolling during Fall 2002 = 1) the odds of enrolling at USF were multiplied by .610. This was a 39% decrease ($1 - .610 = .39$), holding other predictors constant. In other words, students were statistically less likely to enroll if they were accepted during Fall 2002 as compared to students who were accepted in 2004, the reference year. If students registered in 2003, their odds of

enrolling at USF were multiplied by .373, or approximately a 63% decrease ($1 - .373 = .627$), holding other predictors constant. Again, this indicated that students were statistically less likely to enroll if they were accepted during Fall 2003 as compared to students who were accepted in 2004.

Additional Research Questions

The review of the literature indicated that international student enrollments were declining (Mooney & Neelakantan, 2004; NAFSA, 2004a; Open Doors, 2004). However, the research questions guiding this study were unable to obtain a clear indication that USF's enrollment patterns were consistent with the literature. The literature also indicated that international students who chose to pursue certain majors, particularly engineering and some sciences, were subject to increased scrutiny of their visa applications (U.S. General Accounting Office, 2005a; Ward, 2003). Additionally, more visa scrutiny was afforded students originating from certain regions of the world (U.S. Department of State, 2003). The literature suggested that students subjected to the increased scrutiny could feel unwelcome in the U.S. and, as a consequence, decide to pursue a degree elsewhere (Johnson, 2003b). Therefore, additional research questions were developed to explore if there were patterns of decline at USF based upon international students who met the criteria requiring additional precautions.

The additional research questions were developed to explore if international students at USF who were pursuing certain majors or from specific regions of the world were affected by the events of September 11, 2001. Areas of concern were students pursuing majors associated with the Technology Alert List, a list of sensitive technology-

based areas such as nuclear technology, chemical engineering and biotechnology (U.S. Bureau of Consular Affairs, n.d.b); students seeking visas from nations suspected of harboring terrorism (U.S. Bureau of Consular Affairs, n.d.a) and students from predominately Muslim countries who were required to register upon entering the U.S. (Nolo, 2002).

Research Question 7 sought to ascertain if the proportions of international student applications or student enrollments from regions of the world differed from before to after Fall 2001. Research Question 8 attempted to explore if international students applications or enrollments differed based upon the selected major.

The sample utilized in the analysis for Research Question 7 was the most frequently listed regions of the world based upon visa scrutiny as summarized in Table 5. To be as inclusive as possible, eight countries, 94% of the graduate international student applicants, were included in the analysis for graduate students and, due to the low frequencies for most regions, five countries, 74% of the undergraduate student applicants, were utilized for the analysis of undergraduate students. The eight regions included as categories in the variable, *world region based on visa scrutiny - graduate*, were India, China, Asia, Visa Waiver Countries, Europe, Mideast and North Africa, and South America. For undergraduate students, the variable *world region based on visa scrutiny - undergraduate*, included Caribbean, Visa Waiver Countries, Mideast, South America, and Europe.

The most popular majors for international students were included in Research Question 8. Variables in this research question were based on the frequencies

summarized in Table 3. The variable for graduate students, *grad major*, included the top four colleges or centers as categories (business, engineering, health sciences, and arts and sciences). This variable represented almost 93% of the graduate applicants from 1998 to 2004. For undergraduates, the variable *undergrad majors*, contained four categories (business, engineering, non-degree, and arts and sciences), representing the majors for 90% of the international undergraduate students.

Research Question 7

7a. Do the proportions of international student applicants, both graduate and undergraduate, from selected regions of the world, differ significantly from before to after September 11, 2001?

7b. Do the proportions of international student enrollments, both graduate and undergraduate, from selected regions of the world, differ significantly from before to after September 11, 2001?

Two-way contingency table analyses for graduate and undergraduate students were conducted to determine if the proportion of international students applying and the proportion of international students enrolling from selected regions of the world differed before to after Fall 2001. The two variables analyzed for the research questions for graduate students were *world region based on visa scrutiny - graduate*, with eight categories (India, China, Asia, visa waiver countries, Europe, Mideast and North Africa, and South America) and the variable *compare year*, with two categories (before 2001 and after 2001). The variable utilized to compare undergraduate applications and enrollments was *world region based on visa scrutiny - undergraduate*, with five categories (Caribbean, visa waiver countries, Mideast and North Africa, South America, and Europe) and the variable *compare year* with two categories (before 2001 and after 2001).

To improve comparability, Fall 2001 student applications and enrollments for international students were not included in this analysis. The semesters included in the before 2001 category were the fall semesters of 1998, 1999 and 2000. The after 2001 category included the fall semesters 2002, 2003, and 2004. The findings for the chi square tests of association analyses conducted for Research Question 7 are provided on Tables 29 through 36 in Appendix B.

To complete the analysis for Research Question 7a, the data was first filtered utilizing the “If condition” in SPSS[®] and the variable *academic level* (graduate and undergraduate). Two analyses, one for graduate and a separate analysis for undergraduates, were completed. Both analyses were weighted by the variable *frequency of applications*. For Research Question 7b, the process was repeated; however, the data were weighted by the variable *enroll status*.

The results of the two-way contingency table analysis for Research Question 7a comparing the proportions of international graduate student applications from regions of the world before to after Fall 2001 are shown on Table 29 in Appendix B. The analysis found that the proportions for graduate international student applications differed significantly from before to after Fall 2001, $\chi^2(7, n=8,232) = 190.28, p < .001, \text{phi} = .152$. The effect size indicated a weak to moderate relationship between the variables. The proportions of students from China as well as the proportion of students from the predominately Muslim countries in the category, Mideast and North Africa, declined from before to after Fall 2001 (China proportions = 39%, 26%, respectively; Mideast and

North Africa proportions = 3.7%, 3.4%, respectively). Table 19 provides a summary of the proportions of graduate student applications by region.

Table 19

Graduate Student Applications and Enrollments from Selected World Regions Before/After 2001

	India	China	Asia	Visa Waiver	Europe	Mideast/ N.Africa	South America	Caribbean
Applications								
Before 2001	39.4%	39.4%	3.6%	4.0%	3.3%	3.7%	3.9%	2.6%
After 2001	51.6%	26.4%	4.8%	4.2%	3.9%	3.4%	2.8%	3.0%
Enrollments								
Before 2001	40.7%	16.8%	5.8%	10.9%	4.9%	5.5%	10.7%	4.7%
After 2001	47.1%	8.6%	4.8%	14.5%	9.1%	3.1%	6.6%	6.2%

Table 30 in Appendix B summarizes the results of the two-way contingency table analysis comparing the proportions of international undergraduate student applications, categorized by regions of the world. The findings for the analysis also indicated that applications from the regions differed significantly from before to after Fall 2001, $\chi^2(4, n=1,482) = 18.34, p = .001, \phi = .111$. The effect size indicated a weak to moderate effect. The proportions of applications from the Mideast and North Africa indicated a decrease from 16% of the applicants to 12% after Fall 2001. Table 20 provides a summary of the proportions of undergraduate student applications by region of the world.

Table 20

Undergraduate Students Enrollments and Applications from Selected World Regions Before/After 2001

	Caribbean	Visa Waiver	Mideast/ N.Africa	South America	Europe
Applications					
Before 2001	35.8%	26.9%	16.4%	12.1%	8.8%
After 2001	31.2%	29.8%	11.8%	18.3%	8.9%
Enrollments					
Before 2001	27.8%	43.3%	11.3%	11.3%	6.2%
After 2001	17.3%	57.7%	6.5%	14.2%	4.2%

As a follow-up, the selected world regions were further separated into low, medium and high levels of visa scrutiny. The category visa waiver countries consisted of students from all countries that participated in the visa waiver program. The countries participating were primarily European countries but also included Australia and New Zealand. This category represented the low visa scrutiny measure for both international undergraduate and graduate student levels.

The category Mideast and North Africa represented the high visa scrutiny measure for both undergraduate and graduate levels. As discussed previously, the countries within this category were on the governmental lists of either supporters of terrorism or the list of countries whose students were mandated to register once in the U.S. (Nolo, 2002; U.S. Bureau of Consular Affairs, n.d.a).

The third category differed for graduate and undergraduate students. For undergraduates, the category representing a low to medium level visa scrutiny was the

category western hemisphere, which included all countries in North, South and Central Americas as well as the Caribbean, except Cuba. This group represented a wide variety of majors as well as the majority of undergraduate international students. For graduate students, the category India and China represented the medium level visa scrutiny. A large proportion of the students from these countries were majoring in engineering and computer science; and, according to the literature, students majoring in technology and engineering field were subject to increased visa scrutiny (U.S. General Accounting Office, 2004a).

For graduate international students, the variables *graduate region of the world follow-up* with three levels (visa waiver countries, India and China, and Mideast and North Africa) and *compare year* with two levels (before 2001 and after 2001) were compared for this follow-up analysis. For undergraduate international students, the variable *undergraduate region of the world follow-up* with three levels (western hemisphere, visa waiver countries, and Mideast and North Africa) and *compare year* with two levels (before 2001 and after 2001) were compared. Bonferroni correction was applied to the alpha level to compensate for the risk of Type I error; therefore, results of the follow-up analysis were reviewed at a more conservative alpha of .013.

The follow-up two-way contingency table analysis comparing the proportions of international graduate student applications from low, medium and high visa scrutiny regions of the world before to after Fall 2001 indicated there were no statistically significant difference before to after Fall 2001, $\chi^2 (2, n = 7,075) = .705, p = .703, \phi =$

.010. Additionally, the effect size (phi) was a very weak relationship. Table 32 in Appendix B summarizes the results.

For undergraduate students, the follow-up two-way contingency table analysis comparing the proportions of international student applications from low, medium and high visa scrutiny regions of the world before to after Fall 2001 also indicated there were no statistically significant differences before to after Fall 2001, $\chi^2 (2, n = 1,492) = 6.854$, $p = .032$, $\phi = .068$. Table 31 in Appendix B summarizes the results for this analysis.

For Research Question 7b, two-way contingency table analyses were conducted to compare the proportions of graduate and undergraduate enrollments from selected regions before to after 2001. The graduate analysis indicated that a statistically significant difference was found between the proportions of graduate enrollments before to after from selected world regions, $\chi^2 (7, n = 1,093) = 37.46$, $p < .001$, $\phi = .185$. The phi value again indicated a weak to moderate relationship. Table 33 in Appendix B presents the results of this analysis.

The proportions of graduate international student enrollments from before to after Fall 2001 are summarized in Table 19. The proportions of students from South America, the Mideast and North Africa, and the proportions of students from China declined in enrollments (South America proportions = 11%, 7%, respectively; Mideast proportions = 6%, 3%, respectively; China proportions = 17%, 9%, respectively).

The two-way contingency table analysis to compare the proportion of undergraduate international student enrollments from regions of the world before to after Fall 2001 found that the proportions of undergraduate international student enrollments

also differed significantly from before to after Fall 2001, $\chi^2 (4, n = 454) = 14.65, p \leq .005, \phi = .180$. The effect size was also considered weak to moderate. Table 34 in Appendix B provides the results of this analysis.

The proportions of undergraduate international student enrollments from before to after Fall 2001 are summarized in Table 20. The proportion of students from the Mideast and North Africa declined almost 50% from 11.3% of the international population prior to 2001 to 6.5% after 2001. The proportions of undergraduate students from countries designated as participating in the visa waiver program increased from 43% before 2001 to 58% after 2001.

Follow-up two-way contingency table analyses were also completed comparing the proportions of international graduate and undergraduate enrollments from low, medium and high visa scrutiny regions before to after Fall 2001. The contingency table analysis completed for graduate students indicated that when the Bonferroni correction was applied, there was no statistically significant difference before to after Fall 2001, $\chi^2 (2, n = 804) = 6.43, p = .04, \phi = .089$. Additionally, the effect size (ϕ) indicated a very weak relationship. The results are summarized in Table 36 in Appendix B.

For undergraduate students, the follow-up two-way contingency table analysis indicated there was a statistically significant difference from before to after Fall 2001, $\chi^2 (2, n = 474) = 9.53, p = .009, \phi = .142$ when comparing the proportions of international student enrollments from low, medium, and high visa scrutiny regions. The effect size (ϕ) indicated a weak to moderate relationship between the variables. Table 35 in Appendix B summarizes the results of the analysis.

Research Question 8

8. Based upon enrollments, does the proportion of selected majors within a chosen region of the world for both graduate and undergraduate international students differ from before to after Fall 2001?

Two-way contingency table analyses for graduate and undergraduate students were conducted to determine if the proportion of majors differed from before to after Fall 2001 based upon international student enrollments for selected world region. The variables analyzed for the research questions for graduate students were *graduate region of the world* with eight categories (India, China, Asia, visa waiver countries, Europe, Mideast and North Africa, and South America), the variable *compare year*, with two categories (before 2001 and after 2001) and the variable *compare majors* with four categories (business, engineering, health sciences, and arts and sciences). The variable utilized to compare undergraduate applications and enrollments were *undergrad region of the world* with five categories (Caribbean, visa waiver countries, Mideast and North Africa, South America, and Europe), the variable *compare year* with two categories (before 2001 and after 2001) and the variable *undergrad majors* with four categories (business, engineering, health sciences, and arts and sciences). To improve comparability, Fall 2001 student enrollments for international students were not included in this analysis. The semesters included in the before 2001 category were the fall semesters of 1998, 1999 and 2000. The after 2001 category included the fall semesters 2002, 2003, and 2004. To begin the analysis, the data were first filtered, utilizing the variable *academic level* (graduate and undergraduate) and weighted by the variable *enroll status*.

Because there were many cells with observed counts less than five, a chi square test of association using graduate data was not possible. Therefore, the results were interpreted in terms of descriptive statistics only. Table 21 summarizes the frequency and proportions found in the two-way contingency table analysis for Research Question 8 which compared the proportions of international graduate student enrollments from regions of the world and selected majors before to after Fall 2001.

For graduate students, some majors, such as engineering, provided proportional changes that might be consistent with the literature review. The proportion of students from India, majoring in engineering, dropped from 79% prior to 2001 to 67% after 2001. Students from India, majoring in Arts and Sciences, almost doubled from before to after (6.3%, 11.2%, respectively). The proportion of students from China studying engineering grew from 35% before 2001 to 40%; however, the total number of Chinese students studying at USF actually dropped in half ($n = 82, 44$, respectively). The total number of graduate students from the Mideast and North Africa also dropped almost 40% ($n = 26, 16$, respectively). The proportions of enrollments in the engineering major for students from Europe increased from 5% to 37% before to after 2001 ($n = 1, 14$, respectively.) Other proportional increases were the total number of students from visa waiver countries which increased almost 30% ($n = 36, 50$, respectively).

Table 21

Comparisons of Frequencies for Selected Graduate Majors and Regions

Regions	Business		Engineering		Health Sciences		Arts & Sciences		
	<i>n</i>	Percentage	<i>n</i>	Percentage	<i>n</i>	Percentage	<i>n</i>	Percentage	
India									
Before 2001	25	12.1%	163	78.7%	6	2.9%	13	6.3%	
After 2001	36	13.4%	179	66.5%	24	8.9%	30	11.2%	
China									
Before 2001	11	13.4%	29	35.4%	16	19.5%	26	31.7%	
After 2001	8	18.2%	18	40.9%	3	6.8%	15	34.1%	
Asia									
Before 2001	3	12.0%	13	52.0%	1	4.0%	8	32.0%	
After 2001	6	23.1%	6	23.1%	1	3.8%	13	50.0%	
Visa Waiver Countries									
Before 2001	21	58.3%	4	11.1%	1	2.8%	10	27.8%	
After 2001	20	40.0%	6	12.0%	4	8.0%	20	40.0%	
Europe									
Before 2001	6	30.0%	1	5.0%	2	10.0%	11	55.0%	
After 2001	11	28.9%	14	36.8%	1	2.6%	12	31.6%	
Mideast and North Africa									
Before 2001	8	30.8%	9	34.6%	2	7.7%	7	26.9%	
After 2001	4	25.0%	7	43.8%	1	6.3%	4	25.0%	
South America									
Before 2001	10	21.7%	13	28.3%	21	45.7%	2	4.3%	
After 2001	4	12.5%	13	40.6%	10	31.3%	5	15.6%	
Caribbean									
Before 2001	7	41.2%	2	11.8%	1	5.9%	7	41.2%	
After 2001	7	25.9%	3	11.1%	5	18.5%	12	44.4%	

The frequencies and proportions in Table 22 represent the undergraduate international student analysis of selected majors from before and after Fall 2001 by regions of the world. Because there were many cells with observed counts less than five, a chi square test of association using undergraduate data was not possible. Therefore, the results were interpreted in terms of descriptive statistics only.

The analysis for the undergraduate international students found very few changes evident in the proportions. However, one of the largest declines in frequency was students majoring in engineering from the Mideast and North Africa. The proportion of Mideast and North African students majoring in engineering prior to 2001 was 56% of that category. After 2001, the proportion of students majoring in engineering was 20%.

Table 22

Comparisons of Undergraduate Student Frequencies for Selected Majors and Regions

Regions	Business		Engineering		Non-Degree		Arts & Sciences	
	<i>n</i>	Percentage	<i>n</i>	Percentage	<i>n</i>	Percentage	<i>n</i>	Percentage
Caribbean								
Before 2001	26	56.5%	8	17.4%	4	8.7%	8	17.4%
After 2001	21	53.8%	6	15.4%	5	12.8%	7	17.9%
Visa Waiver Countries								
Before 2001	9	11.0%	9	11.0%	63	76.8%	1	1.2%
After 2001	32	22.2%	7	4.9%	97	67.4%	8	5.6%
Mideast and North Africa								
Before 2001	9	40.9%	12	54.5%	1	4.5%	0	0.0%
After 2001	10	66.7%	3	20.0%	1	6.7%	1	6.7%
South America								
Before 2001	10	47.6%	5	23.8%	4	19.0%	2	9.5%
After 2001	13	39.4%	7	21.2%	10	30.3%	3	9.1%
Europe								
Before 2001	7	63.6%	2	18.2%	1	9.1%	1	9.1%
After 2001	7	63.6%	0	0.0%	3	27.3%	1	9.1%

Summary

This chapter presented an analysis of data from Fall 1998 through Fall 2004 for 11,821 international student applicants. This data were obtained from the International Student Admissions Office at the University of South Florida, Tampa, FL. An

examination was made to determine if proportions of international graduate and undergraduate students' acceptances and enrollments differed from the proportions for the domestic student population at USF. Additional analysis was conducted to determine if the proportions of USF international and domestic student enrollments matched the enrollment patterns in the U.S. for a six-year period.

Comparisons were also conducted to determine if any differences could be detected before and after Fall 2001, Research Questions 5, 7, and 8. Research Question 5 sought to determine if differences could be detected between USF international and domestic students' proportions of applications and enrollments. Research Question 7 attempted to determine if differences in the proportions of applications and enrollments of international students could be detected if regions of the world, divided by the scrutiny afforded visa applications, were compared. Research Question 8 sought to determine if differences could be detected when majors were compared by regions of the world. Finally, a logistic regression was conducted to determine if future international student enrollments could be predicted utilizing the data for the years since Fall 2001.

Chapter 5 provides a summary and discussion of the findings. In addition, the study conclusions, implications and recommendations for future research will be discussed.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Statement of the Problem

This study sought to: (a) develop a profile of international student admission patterns at USF from 1998-2004; (b) determine if USF international student admissions patterns were statistically different when compared to USF domestic student enrollments and international student enrollments in the United States; (c) determine if any changes in international student admissions patterns since September 11, 2001, supported the concerns found in the review of literature regarding federal policies or student perception; (d) determine if future international student enrollments at USF could be predicted.

Methodology

Raw data for 16,797 international student applications were obtained from the University of South Florida International Admissions Office for the fall semesters from 1998 through 2004. Admissions information from the University of South Florida was sought for analysis because international student admissions had been tracked prior to the implementation of SEVIS. The USF raw data provided demographic and admissions information for 11,821 unduplicated applicants, 9,408 graduates and 2,413 undergraduates, comprising the sample for this study.

To establish patterns of admissions and enrollments, the international student population at USF was compared to the relevant USF domestic student population. These application, acceptance and enrollment numbers were obtained from the USF InfoMart website (University of South Florida, 2004b). National enrollment data

comparing the number of international students to domestic students was acquired from Open Doors (2004).

Discussion of the Findings

The data from the University of South Florida were analyzed in response to the six research questions that guided this study. A discussion of the findings for each of the questions follows.

Research Question 1

1a. Does the proportion of undergraduate students accepted differ for international students as compared to domestic students each fall semester?

1b. Does the proportion of graduate students accepted differ for international students as compared to domestic students each fall semester?

Chi squares and effect sizes for each year were computed for both graduate and undergraduate students. Bonferroni correction was applied to the alpha level to compensate for the risk of Type I error. The chi square analysis indicated significance at $p \leq .007$ for the majority of fall semesters for both graduate and undergraduate students. Finding significance indicates there was a difference found between the proportion of acceptances for international students and the proportion of acceptances for domestic students. However, due to the large sample sizes, the effect size (phi) was given stronger emphasis in detecting any practical relationships.

The undergraduate student analysis for this research question did not find effect sizes (phi) large enough to denote any relationships. This would indicate that proportions found in the undergraduate international student population were similar to the proportions associated with the domestic undergraduates.

Significant but weak relationships were found in five of the seven years analyzed for graduate students. However, only two of the years, Fall 2003 and Fall 2004, fell after the benchmark of Fall 2001 that was used in this study and could be considered when analyzing the influence 9/11 had on USF international student applicants.

Research Question 2

2a. Based upon the number of applications received, does the proportion of enrollments for international undergraduate students differ from the domestic student population each year?

2b. Based upon the number of applications received, does the proportion of enrollments for graduate international students differ from the domestic student population each year?

Chi square analysis and effect sizes (ϕ) were used to determine if the proportions of enrollments for international graduate and undergraduate students differed from the domestic population. As in Research Question 1, almost all of the years analyzed reflected a statistical significance level less than .007. However, at the undergraduate level, very weak relationships, as shown by ϕ , were indicated between the international student and domestic student proportions despite statistical significance being found.

Enrollments for the graduate students, on the other hand, indicated a weak to moderate relationship for every year beginning in 1999, particularly in 2002 and 2003. Fall 2004, though, showed very little relationship between the proportions of enrollments for international students and enrollments for domestic students. However, the proportion of international graduate student enrollments between Fall 2002 and Fall 2003 dropped almost 50%, which could be indicative of falling international student

enrollments as implied by the literature. A leveling off and slight increase in the Fall 2004 international student proportions, while not supporting a continued decline in international student matriculations, also did not provide strong support that a declining enrollment trend, as indicated by the literature and the previous years' statistics, could be reversing.

Research Question 3

3a. For applicants who were accepted, does the proportion of students who enroll differ for undergraduate international students as compared to undergraduate domestic students each year?

3b. For applicants who were accepted, does the proportion of students who enroll differ for graduate international students as compared to graduate domestic students?

Research Question 3 attempted to discern if international students who were accepted at USF matriculated in the same proportions as the domestic student population. Unlike the group of applicants in Research Question 2, this group of applicants, i.e. those who were accepted, was a more defined group, having met the admissions criteria to become a student at USF. If the proportions of accepted international students matriculating were different from domestic students, particularly if the differences occurred after Fall 2001, a stronger argument might be made that international students were being hampered from attending, possibly due to policies enacted after the events of September 11, 2001.

Once again, the chi square analysis conducted to compare undergraduate and graduate student proportions indicated a statistically significant difference between international student proportions and domestic student proportions. However, for the

undergraduate population, the effect size (ϕ) indicated very weak relationships. When graduate students were compared, the effect size (ϕ) indicated moderate to strong relationships in the proportions for 2002, 2003, and 2004.

With the exception of Fall 2004, the statistical findings for graduate students mirrored the findings for Research Question 2. However, in this research question, the effect size (ϕ) indicated a stronger relationship between the groups than did the effect size (ϕ) in Research Question 2. The stronger relationship can be explained since all of the applicants being compared in Research Question 3 met the criteria to enter the university. In the analysis conducted for Research Question 2, some applicants met the admissions criteria; some did not.

To explore Research Question 3 further, focus should be directed to the proportions of international students who were categorized as accepted, but did not enroll. If international students were experiencing difficulties arriving to attend school, the frequency and proportion of international students in the category would be increasing since Fall 2001. The analysis in Table 10 indicated, however, that the proportion of graduate international students who were accepted, but did not enroll, when compared to the domestic population, was lower after Fall 2001. Additionally, percentages derived as a result of the two-way contingency table analysis indicated that, with the exception of Fall 2000 and Fall 2001, the graduate international student category accepted, not enrolled, was consistently between 65% and 75% as shown in Table 23. Table 23 also indicates that undergraduate international students proportions for the category accepted, not enrolled were lower after 2001 than before. These findings

seemed to suggest the differences found in the analysis for this research question cannot be attributed to the events since September 11, 2001.

Table 23

Frequency and Percent of Students Accepted/Enrolled and Accepted/Not Enrolled

	International Students				Domestic Students			
	Accepted, Enrolled		Accepted, Not Enrolled		Accepted, Enrolled		Accepted, Not Enrolled	
	<i>n</i>	Percentage	<i>n</i>	Percentage	<i>n</i>	Percentage	<i>n</i>	Percentage
Graduate								
1998	135	25.0%	406	75.0%	1,139	57.2%	852	42.8%
1999	182	33.4%	363	66.6%	1,177	55.0%	964	45.0%
2000	234	14.7%	543	47.7%	1,362	69.6%	596	30.4%
2001	260	61.2%	165	38.8%	1,456	58.9%	1,015	41.1%
2002	283	36.3%	496	63.7%	1,607	70.7%	666	29.3%
2003	163	31.3%	357	68.7%	1,690	71.5%	675	28.5%
2004	186	36.9%	318	63.1%	1,760	71.0%	719	29.0%
Undergraduate								
1998	84	48.0%	91	52.0%	5,406	51.5%	5,099	48.5%
1999	81	38.6%	129	61.4%	6,154	51.7%	7,268	61.7%
2000	103	37.9%	169	62.1%	7,268	61.7%	169	62.1%
2001	79	34.5%	150	65.5%	8,004	57.8%	5,839	42.2%
2002	100	41.7%	140	58.3%	8,143	58.2%	5,848	41.8%
2003	102	54.5%	85	45.5%	8,791	57.5%	6,504	42.5%
2004	110	45.8%	130	54.2%	8,297	56.4%	6,408	43.6%

Research Question 4

4. Does the proportion of international student to domestic student enrollments at USF fit historic enrollment patterns established for the U.S. for each year?

A chi square goodness of fit analysis was hand calculated to compare historic enrollment patterns to enrollment patterns at USF from Fall 1998 through Fall 2003. Nationwide data were not available for Fall 2004. As in Research Questions 1 through 3, although significance was found, there was no relationship indicated for any year. This

would indicate that USF international student enrollment patterns were not different than the national patterns. Fluctuations within USF's international enrollments fit the national pattern.

Research Question 5

5a. Does the proportion of international student applications for both graduate and undergraduate students differ significantly from before to after September 11, 2001, when compared to the domestic student population?

5b. Does the proportion of international student enrollments for both graduate and undergraduate students differ significantly from before to after September 11, 2001, when compared to the domestic student population?

For these research questions, the analysis compared the proportions of international and domestic student applications, and then enrollments, prior to Fall 2001 to the proportions of international and domestic students afterward. When comparisons were made utilizing applications, very little relationship was found for either the graduate or the undergraduate comparisons. When comparing enrollments, a weak relationship was found between the proportions of graduate international student enrollments and the proportions of domestic students. This would indicate that international student enrollments proportions did not reflect the domestic student proportions.

To check the results further, pairwise comparisons were conducted between the individual years for both applications and enrollments at the graduate and undergraduate level. Undergraduate relationships for both applications and enrollments were very weak with the highest $\phi = .019$.

The analysis of graduate applications found weak to moderate relationships between the fall semesters 2000 to 2001, 2001 to 2002, and 2003 to 2004. However, the

comparisons of the proportions of graduate student enrollments found very weak relationships between the international and domestic student population with the exception Fall 2002 to 2003. A weak relationship existed for that year.

The findings for this research question seemed to indicate that fluctuations within undergraduate international student applications reflected the general application patterns of domestic students before and after September 11, 2001. Enrollments for undergraduate international students also seemed to reflect the enrollment patterns of the undergraduate domestic population.

For graduate students, the pairwise comparisons of applications between domestic and international students found weak to moderate relationships in three comparisons. Two comparisons, Fall 2001 to Fall 2002 and Fall 2003 to 2004, occurred after the fall 2001 benchmark. A review of the summary data in Table 24 in Appendix A indicated that a substantial increase in international applicants occurred between Fall 2001 and Fall 2002. Between Fall 2003 and Fall 2004, a substantial decrease in international student applicants occurred. These changes may explain the weak to moderate relationship in the pairwise comparisons of applications for those years.

Due to the short elapsed time between the benchmark year and this study, the findings for the pairwise comparisons for graduate applicants must be considered inconclusive. The possibility existed, according to the literature review, that the fluctuation found in Fall 2003 to Fall 2004 pairwise analysis of international and domestic student applications was indicative of a trend of decreasing international student applications when compared to domestic applications; or, the fluctuation could signify

that international student applications were returning to more normal proportions after an application surge in Fall 2002.

The pairwise comparisons for graduate enrollments did not support corresponding fluctuations between domestic and international student matriculations, indicating no practical relationships between Fall 2001 to Fall 2002 and Fall 2003 to Fall 2004. The only graduate enrollment comparison indicating a relationship was a somewhat weak relationship ($\phi = .095$) between Fall 2002 and Fall 2003. Therefore, unless the domestic enrollments were also affected by the events of September 11, 2001, international student enrollments before and after Fall 2001 could be considered normal fluctuations based upon the data available for this study.

Research Question 6

6. Can undergraduate and graduate international student enrollment at USF be predicted by the year of enrollment, reviewing data since September 11, 2001?

Logistic regression analysis was conducted to determine if international student enrollments could be predicted based on the year of acceptance (Fall 2002, Fall 2003, Fall 2004). The analysis indicated that both graduate and undergraduate enrollments were predictable. For undergraduate students, only one year, Fall 2002, proved to be a statistically significant predictor for enrolling. The odds of enrolling if an undergraduate student was accepted during Fall 2002 were 28% less likely as compared to being accepted in Fall 2004.

The analysis conducted on international graduate student data indicated that both Fall 2002 and Fall 2003 were statistically significant predictors of enrollment. The odds

of enrolling if a graduate student were accepted during Fall 2002 were 39% less likely as compared to being accepted in Fall 2004 and the odds of enrolling if a student were accepted Fall 2003 were 63% compared to being accepted in Fall 2004, if all other predictors were constant.

Due to the short elapsed period of time since September 11, 2001, the predictive powers of these results should be viewed with caution. As the literature review indicated, the past three years have been wrought with changes in policies governing international students, economic concerns, and other educational opportunities that might adversely influence the stability of international student enrollments at USF.

Research Question 7

7a. Does the proportion of international student applicants, both graduate and undergraduate, from selected regions of the world, differ significantly from before to after September 11, 2001?

7b. Does the proportion of international student enrollments, both graduate and undergraduate, from selected regions of the world, differ significantly from before to after September 11, 2001?

Chi square analysis and effect sizes (ϕ) were used to determine if the proportions of applications and the proportions of enrollments for both international graduate and undergraduate students differed from before to after Fall 2001 when selected regions of the world were utilized in the comparisons. Factors considered for categorizing world regions were countries on the federal government's list as a country suspected of harboring terrorist, countries whose students were required to register with the federal government after 9/11, countries who participated in the visa waiver program,

geographic location, and the number of students represented at USF. Regions with the largest student representations were selected for analysis.

The analyses for Research Question 7a indicated there were statistically significant differences in the proportions of applications at both the graduate and undergraduate levels when regions of the world were compared. Additionally, the effect size (ϕ) indicated weak to moderate relationships in the analyses. The weak to moderate effect sizes (ϕ) suggested that changes in both graduate and undergraduate applications may be related to 9/11. The analyses also indicated that the proportions of applications found in the category, Mideast and North Africa, had decreased from before to after Fall 2001.

Follow-up analyses limiting the before and after comparisons to categories representative of three visa scrutiny levels, low, medium and high, were also performed on the applications for graduate and undergraduate international students. The categories utilized for graduate students were visa waiver countries, representing low level visa scrutiny; a combination of India and China to represent medium level visa scrutiny; and the category Mideast and North Africa to represent high level visa scrutiny. The follow-up analysis for undergraduate students duplicated the graduate categories with the exception of the medium level visa scrutiny. For the undergraduates, the category western hemisphere consisting of North, Central and South Americas and the Caribbean (excluding Cuba which was on the list of countries suspected of harboring terrorist) represented the medium level visa scrutiny.

The undergraduate and graduate student follow-up analyses on application frequencies found no statistically significant difference between the groups when Bonferroni correction was applied at .013. Additionally, the effect sizes (phi) for graduate and undergraduates indicated there was no practical relationship between the before to after comparisons of low, medium and high levels of visa scrutiny when the chosen variables were compared.

The analyses conducted to determine if the proportions of enrollments for graduate and undergraduate students had changed since Fall 2001 also indicated statistically significant differences from before to after Fall 2001 as well as a weak to moderate effect size (phi). The analyses also suggested that enrollments for both graduate and undergraduate international students had shown some effect that may be related to 9/11. The analysis further suggested that the proportions of enrollments from the Mideast and North Africa as well as China had declined.

Follow-up analyses limiting the before to after comparisons to categories representative of three visa scrutiny levels, low, medium and high, were also performed on the enrollments for graduate and undergraduate international students. The categories utilized mirrored those utilized for Research Question 7a with the exception that variables were weighted by the variable *enroll status* prior to analysis being conducted.

The graduate student follow-up analysis found no statistically significant difference between the three categories when enrollments were considered. Additionally, the effect size (phi) for graduate international students indicated there were no practical relationships between the before to after comparisons.

The undergraduate student follow-up analyses, on the other hand, found there was a significant difference between the before to after comparisons. A weak to moderate relationship was also found indicating that undergraduate international student enrollments were slightly changed from before to after Fall 2001.

Research Question 8

8. Based upon enrollments, does the proportion of selected majors within a chosen region of the world for both graduate and undergraduate international students differ from before to after Fall 2001?

In reviewing descriptive statistics, the proportions and frequencies in the crosstabulations provided some support for the literature which indicated that international student enrollments, particularly in majors such as engineering, were declining (Altbach, 2004). This decline in U.S. international student enrollments in engineering and technical fields was attributed to increased visa application scrutiny and denials (Goodman, 2004; Johnson, 2003b; U.S. House Committee on Science, 2003).

Summary and Conclusions

The analyses for Research Questions 1 through 3 and Research Question 5 in this study were unable to provide statistical evidence that international admissions patterns changed at USF due to factors related to September 11, 2001. At best, the results for these questions were inconclusive, particularly for international graduate applicants. The strongest evidence, found in the discussion of students who were accepted, but not enrolled for Research Question 3, seemed to indicate that the rate of enrollments for accepted graduate students had been steady since before 2001 and had not fluctuated in

the three years following Fall 2001. Additionally, the year to year analysis of graduate enrollments conducted in Research Question 5, indicated a weak relationship for only one year since Fall 2001. However, the analysis comparing USF's new student enrollments to nationwide historical enrollment data indicated that USF new student enrollments were following nationwide trends which appeared to slow or decline after September, 2001 (Open Doors, 2003b, 2004).

On the other hand, the results for Research Question 7 indicated that, if selected regions of origin were analyzed, the proportion of international student applications, both graduate and undergraduate students, from most regions rose from before to after Fall 2001. A notable exception, however, was the proportion of international students originating from predominately Muslim countries which declined from before to after Fall 2001. Subsequently, the proportion of enrollments declined for graduate and undergraduate students from the Mideast and North Africa also. This finding supported the literature review which indicated that Middle Eastern and North African students, predominately Muslim strongholds, were refraining from attending U.S. institutions after 2001 (Association of American Universities, 2002a; Jacobson, 2003).

The nationwide decline in Middle Eastern student applications and enrollments through 2003 was offset by increases in applications from other countries according to Jacobson (2003). The results of this study seemed to support this trend. The study found the proportions of USF applications and enrollments from countries participating in the visa waiver program, a program that would result in the least scrutiny of visas, increased from before to after Fall 2001. Although this study found a weak to moderate

relationship existed statistically, these results lend some support to a conclusion that international student applications and enrollments at USF were affected by the events of 9/11.

The analysis may have been inconclusive for Research Questions 1 through 3 and 5 due to the relatively short elapsed time since the actual implementation of policies after September 11, 2001. Many policies affecting students, such as the registration of men from the Middle East and North Africa (Nolo, 2002), became effective during 2002. Beginning in February 2003, the implementation of SEVIS affected new students entering the U.S.; however, students already attending U.S. schools may not have been impacted until as late as August (U.S. General Accounting Office, 2004b). For practical purposes, this left less than two years to establish enrollment patterns. Although Research Questions 1 through 3 and 5 utilized the USF domestic population, which should not have been affected by most governmental policies enacted since September 11, as a stable measurement for comparison, frequency fluctuations in the international student enrollments since 2001 may have influenced the analysis.

An examination of the demographics of the USF undergraduate international student population could also provide another explanation for the inability of the four research questions to find conclusive statistical evidence of the consequences of September 11, 2001, on USF student admissions. First, there was demographic evidence that the majority of USF's undergraduate students may have been entering the university from another college in the U.S. Almost 65% ($n= 1555$) of the undergraduate students in the sample were classified as either upper level transfers ($n= 987$) or Florida community

college transfers ($n= 568$). Data were not available to accurately determine the percentage of students transferring from within the U.S. and categorized in the upper-level group, *Other Undergraduate Transfers - Upper Level*; however, many, if not most, were. Additionally, another 68 students were classified as returning USF students which also might indicate that they were returning to USF from within the United States. Since many of the policy difficulties in the literature review involved prospective students and their initial entrance into the U.S., it would seem reasonable that students already in the U.S. would be less affected by changing policies than those students trying to enter the U.S. for the first time. Categories utilized to classify graduate students in the raw data were not conducive to such inferences; therefore, this theory could not apply when considering graduate applicants.

A second influence on the undergraduate sample may have been the comparatively small sample size of 2,413 or an average of 317 applicants per year. With so few students, relatively small fluctuations in applicants could influence acceptance and enrollment characteristics from year to year. This, combined with the relatively short passage of time, may have made conclusive evidence unobtainable for the analysis of undergraduate international students.

Another explanation for the lack of conclusive evidence of the effect of September 11, 2001, on overall enrollments was that other factors were responsible, or partially responsible, for any international student enrollment declines at USF. Several factors were discussed in the literature review for this study including expense of a U.S. education, recruitment competition from both U.S. and overseas higher education

institutions, and available employment opportunities. Assuming tuition and competition increased yearly, factors such as expenses and competition would seem to be involved in declining enrollments if USF experienced a steady decrease in applications and subsequent enrollments. Employment opportunities or lack thereof, as discussed in the literature review, would also result in a corresponding decrease in applications and enrollments; however, since additional elements, such as the economy and changing federal regulations, also influenced the availability of employment, that factor would have more unpredictable outcomes on applications and enrollments.

Implications and Recommendations

Although this study found inconclusive evidence, in general, that the University of South Florida's post-September 2001 international student enrollments were declining, the results of some of these analyses when viewed in conjunction with the literature indicated that international student enrollments could be declining or stagnant. To maintain their international student enrollments, the university should consider taking the necessary steps to reverse declines or recharge stagnant enrollments.

According to Thackaberry and Liston (1986), to appropriately serve international students, institutions should provide admissions personnel specifically trained to address international student concerns, trained advisers and other support systems, and financial assistance. A survey by the Council on Graduate Schools (Brown & Doulis, 2005) indicated that many schools had changed their policies to assist international students' admissions. These included establishing call centers, increasing the availability of information and applications online and notifying international students of admissions

decisions as quickly as possible. While the USF administration acknowledged the importance of international students to the university's mission in the early 1990s and increased funding at that time (American Council on Education, n.d.), it may be necessary to expend more funds to overcome a stagnant or declining enrollment.

To assist international students with financial burdens, USF should develop a targeted financial assistance plan. Universities such as the University of Texas – Austin considered refunding the SEVIS fees (Eye on Students, 2004). Others utilized teaching assistantships (Barber & Morgan, 1988) as well as scholarships and other on campus employment (Ashwill, 2003). Early notification of financial awards was also used as a low-cost and effective tool to attract international applicants (Brown & Doulis, 2005).

USF could also explore ways to further enhance their recruiting options. According to the literature review, foreign universities credited their successful recruitment of international students to advertising, education events, internet marketing and persistently pursuing potential students who expressed interest in their schools (Mooney & Neelakantan, 2004). Some U.S. schools established partnerships with overseas universities or hired recruiters to visit potential overseas students (Ashwill, 2003). Additionally, admissions decisions were made in a timely manner allowing students the necessary time to apply for and obtain their F-1 visa, even if a visa review were needed (Brown & Doulis, 2005).

According to the literature review, students and families were frequently apprehensive about the response they will receive once in the U.S. (Cummings, 2001). Marketing strategies designed to overcome this apprehension might improve international

student enrollments at USF. These campaigns could target overseas markets as well as domestic markets by utilizing newspapers, magazines and the internet.

Recommendations for Further Research

Future research needs became apparent as the data for this study was analyzed.

The recommendations are as follows.

1. This study needs to be repeated after a more appropriate time has elapsed, perhaps in 2006. A 5 year period would allow post-September 11 application and enrollment patterns to be better established as well as provide some time for government policies to exert influence on enrollments. However, if government policies continue to be revised and implemented, a 10 year period may need to be utilized.

2. A similar study could be completed by expanding the population of prospective international students to encompass applicants for the state universities in Florida or selected universities nationwide. This would indicate if the enrollment patterns found in this study were limited to USF enrollments or if the patterns were reflective of institutions within the state or country.

3. A study could be conducted to determine if profiles could be developed for international students who enroll and international students who are accepted but do not enroll. Information derived from this type of study would provide conclusive evidence if governmental policies implemented after 9/11 were affecting international student enrollments in the U.S. More importantly, if institutions identified student issues preventing enrollment outside the purview of the federal government, budgeting dollars could be targeted to address the concerns.

4. A study could be conducted to determine if international student characteristics such as gender, age, and country of origin influenced the selection of an institution or the successful completion of a degree. Developing a profile of students who would be most interested in attending an institution would assist institutions in targeting recruiting efforts and budget dollars.

5. A study could be conducted to determine the marketing strategy that yields the best quality as well as quantity of international students for an institution. Such a study would produce information an institution could utilize to target scarce marketing resources insuring budget dollars were utilized effectively and efficiently.

APPENDIX A

INTERNATIONAL STUDENT SUMMARY DATA TABLE

Table 24

Summary Table of International Student Raw Data

Year	1998	1999	2000	2001	2002	2003	2004
Graduate							
Applications	1,601	2,071	2,036	896	3,021	2,621	1,335
Admitted	767	718	1,009	530	981	609	694
Enrollments	197	242	305	341	361	211	260
Undergraduate							
Applications	411	426	492	529	462	477	419
Admitted	246	266	344	308	296	286	310
Enrollments	114	105	121	106	120	145	131

APPENDIX B
CHI SQUARE TABLES

Table 25

Comparison of Undergraduate Student Applications Before/After Fall 2001

		Student Status		
		International	Domestic	Total
Before 2001	Count	1,020	48,453	49,473
	Expected Count	826.4	48,646.6	49,473.0
	% within Before/After Comparison	2.1%	97.9%	100.0%
	% within Student Status	50.4%	40.6%	40.8%
	% of Total	0.8%	40.0%	40.8%
After 2001	Count	1,005	70,750	71,755
	Expected Count	1,198.6	70,556.4	71,755.0
	% within Before/After Comparison	1.4%	98.6%	100.0%
	% within Student Status	49.6%	59.4%	59.2%
	% of Total	0.8%	58.4%	59.2%
Total	Count	2,025	119,203	121,228
	Expected Count	2,025.0	119,203.0	121,228.0
	% within Before/After Comparison	1.7%	98.3%	100.0%
	% within Student Status	100.0%	100.0%	100.0%
	% of Total	1.7%	98.3%	100.0%

Chi-Square Tests

	Value	<i>df</i>	Asymp. Sig. (2-sided)
Pearson Chi-Square	77.93	1	0.000

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.025	0.000

Table 26

Comparison of Graduate Student Applications Before/After Fall 2001

		Student Status		
		International	Domestic	Total
Before 2001	Count	3973	15053	19026
	Expected Count	3957.4	15068.6	19026.0
	% within Before/After Comparison	20.9%	79.1%	100.0%
	% within Student Status	45.4%	45.2%	45.2%
	% of Total	9.4%	35.8%	45.2%
After 2001	Count	4774	18253	23027
	Expected Count	4789.6	18237.4	23027.0
	% within Before/After Comparison	20.7%	79.3%	100.0%
	% within Student Status	54.6%	54.8%	54.8%
	% of Total	11.4%	43.4%	54.8%
Total	Count	8747	33306	42053
	Expected Count	8747.0	33306.0	42053.0
	% within Before/After Comparison	20.8%	79.2%	100.0%
	% within Student Status	100.0%	100.0%	100.0%
	% of Total	20.8%	79.2%	100.0%

Chi-Square Tests

	Value	<i>df</i>	Asymp. Sig. (2-sided)
Pearson Chi-Square	0.14	1	0.706

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.002	0.706

Table 27

Comparison of Undergraduate Student Enrollments Before/After Fall 2001

		Student Status		
		International	Domestic	Total
Before 2001	Count	268	18,828	19,096
	Expected Count	248.1	18,847.9	19,096.0
	% within Before/After Comparison	1.4%	98.6%	100.0%
	% within Student Status	46.2%	42.7%	42.8%
	% of Total	0.6%	42.2%	42.8%
After 2001	Count	312	25,231	25,543
	Expected Count	331.9	25,211.1	25,543.0
	% within Before/After Comparison	122.1%	122.1%	122.1%
	% within Student Status	122.1%	122.1%	122.1%
	% of Total	122.1%	122.1%	122.1%
Total	Count	580	44,059	44,639
	Expected Count	580.0	44,059.0	44,639.0
	% within Before/After Comparison	1.3%	98.7%	100.0%
	% within Student Status	100.0%	100.0%	100.0%
	% of Total	1.3%	98.7%	100.0%
Chi-Square Tests				
		Value	<i>df</i>	Asymp. Sig. (2-sided)
Pearson Chi-Square		2.82	1	0.093
Symmetric Measures				
		Value	Approx. Sig.	
Nominal by Nominal		Phi	0.008	0.093

Table 28

Comparison of Graduate Student Enrollments Before/After Fall 2001

		Student Status		
		International	Domestic	Total
Before 2001	Count	551	3678	4229
	Expected Count	504.4	3724.6	4229.0
	% within Before/After Comparisor	13.0%	87.0%	100.0%
	% within Student Status	46.6%	42.1%	42.6%
	% of Total	5.6%	37.1%	42.6%
After 2001	Count	632	5057	5689
	Expected Count	678.6	5010.4	5689.0
	% within Before/After Comparisor	11.1%	88.9%	100.0%
	% within Student Status	53.4%	57.9%	57.4%
	% of Total	6.4%	51.0%	57.4%
Total	Count	1183	8735	9918
	Expected Count	1183.0	8735.0	9918.0
	% within Before/After Comparisor	11.9%	88.1%	100.0%
	% within Student Status	100.0%	100.0%	100.0%
	% of Total	11.9%	88.1%	100.0%

Chi-Square Tests

	Value	<i>df</i>	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.51	1	0.004

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.029	0.004

Table 29

Comparisons of Graduate Applications by World Regions Before/After Fall 2001

	India	China	Asia	Visa Waiver Countries	Europe	Mid East and N. Africa	South America	Caribbean	Total	
Before 2001 Count	1,465	1,462	135	149	123	137	146	98	3,715	
Expected Count	1,712.6	1,197.3	159.3	152.5	134.9	130.4	122.8	105.2	3,715.0	
% within Compare year	39.4%	39.4%	3.6%	4.0%	3.3%	3.7%	3.9%	2.6%	100.0%	
% within Graduate Visa Compare	38.6%	55.1%	38.2%	44.1%	41.1%	47.4%	53.7%	42.1%	45.1%	
% of Total	17.8%	17.8%	1.6%	1.8%	1.5%	1.7%	1.8%	1.2%	45.1%	
After 2001 Count	2,330	1,191	218	189	176	152	126	135	4,517	
Expected Count	2,082.4	1,455.7	193.7	185.5	164.1	158.6	149.2	127.8	4,517.0	
% within Compare year	51.6%	26.4%	4.8%	4.2%	3.9%	3.4%	2.8%	3.0%	100.0%	
% within Graduate Visa Compare	61.4%	44.9%	61.8%	55.9%	58.9%	52.6%	46.3%	57.9%	54.9%	
% of Total	28.3%	14.5%	2.6%	2.3%	2.1%	1.8%	1.5%	1.6%	54.9%	
Total Count	3,795	2,653	353	338	299	289	272	233	8,232	
Expected Count	3,795.0	2,653.0	353.0	338.0	299.0	289.0	272.0	233.0	8,232.0	
% within Compare year	46.1%	32.2%	4.3%	4.1%	3.6%	3.5%	3.3%	2.8%	100.0%	
% within Graduate Visa Compare	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
% of Total	46.1%	32.2%	4.3%	4.1%	3.6%	3.5%	3.3%	2.8%	100.0%	
Chi-Square Tests										
	Value				<i>df</i>		Asymp. Sig. (2-sided)			
Pearson Chi-Square	190.283				7		0.000			
Symmetric Measures										
	Value				Approx. Sig.					
Nominal by Nominal	Phi	0.152			0.000					

Table 30

Comparisons of Undergraduate Applications by World Regions Before/After Fall 2001

		Caribbean	Visa Waiver	MidEast	S. America	Europe	Total
Before 2001	Count	260	195	119	88	64	726
	Expected Count	242.8	206.0	102.0	110.9	64.3	726.0
	% within Compare year	35.8%	26.9%	16.4%	12.1%	8.8%	100.0%
	% within visa status	52.5%	46.4%	57.2%	38.9%	48.9%	49.1%
	% of Total	17.6%	13.2%	8.0%	5.9%	4.3%	49.1%
After 2001	Count	235	225	89	138	67	754
	Expected Count	252.2	214.0	106.0	115.1	66.7	754.0
	% within Compare year	31.2%	29.8%	11.8%	18.3%	8.9%	100.0%
	% within visa status	47.5%	53.6%	42.8%	61.1%	51.1%	50.9%
	% of Total	15.9%	15.2%	6.0%	9.3%	4.5%	50.9%
Total	Count	495	420	208	226	131	1480
	Expected Count	495.0	420.0	208.0	226.0	131.0	1480.0
	% within Compare year	33.4%	28.4%	14.1%	15.3%	8.9%	100.0%
	% within visa status	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	33.4%	28.4%	14.1%	15.3%	8.9%	100.0%
Chi-Square Tests							
		Value		<i>df</i>		Asymp. Sig. (2-sided)	
Pearson Chi-Square		18.340		4		0.001	
Symmetric Measures							
				Value		Approx. Sig.	
Nominal by Nominal		Phi		0.111		0.001	

Table 31

Undergraduate Application Comparisons by Level of Visa Scrutiny Before/After Fall 2001

		W.Hemisphere	Visa Waiver Countries	Mideast and N. Africa	Total
Before 2001	Count	418	195	119	732
	Expected Count	423.9	206.1	102.0	732.0
	% within Compare year	57.1%	26.6%	16.3%	100.0%
	% within Visa Compare Followup	48.4%	46.4%	57.2%	49.1%
	% of Total	28.0%	13.1%	8.0%	49.1%
After 2001	Count	446	225	89	760
	Expected Count	440.1	213.9	106.0	760.0
	% within Compare year	58.7%	29.6%	11.7%	100.0%
	% within Visa Compare Followup	51.6%	53.6%	42.8%	50.9%
	% of Total	29.9%	15.1%	6.0%	50.9%
Total	Count	864	420	208	1492
	Expected Count	864.0	420.0	208.0	1492.0
	% within Compare year	57.9%	28.2%	13.9%	100.0%
	% within Visa Compare Followup	100.0%	100.0%	100.0%	100.0%
	% of Total	57.9%	28.2%	13.9%	100.0%
Chi-Square Tests					
		Value	<i>df</i>	Asymp. Sig. (2-sided)	
Pearson Chi-Square		6.854	2	0.032	
Symmetric Measures					
		Value		Approx. Sig.	
Nominal by Nominal		Phi	0.068	0.032	

Table 32

Graduate Application Comparisons by Level of Visa Scrutiny Before/After Fall 2001

		Visa Waiver Countries	India and China	Mideast and North Africa	Total
Before 2001	Count	149	2,927	137	3,213
	Expected Count	153.5	2,928.3	131.2	3,213.0
	% within Compare year	4.6%	91.1%	4.3%	100.0%
	% within Graduate Visa Compare Followup	44.1%	45.4%	47.4%	45.4%
	% of Total	2.1%	41.4%	1.9%	45.4%
After 2001	Count	189	3,521	152	3,862
	Expected Count	184.5	3,519.7	157.8	3,862.0
	% within Compare year	4.9%	91.2%	3.9%	100.0%
	% within Graduate Visa Compare Followup	55.9%	54.6%	52.6%	54.6%
	% of Total	2.7%	49.8%	2.1%	54.6%
Total	Count	338	6,448	289	7,075
	Expected Count	338.0	6,448.0	289.0	7,075.0
	% within Compare year	4.8%	91.1%	4.1%	100.0%
	% within Graduate Visa Compare Followup	100.0%	100.0%	100.0%	100.0%
	% of Total	4.8%	91.1%	4.1%	100.0%
Chi-Square Tests					
		Value	<i>df</i>	Asymp. Sig. (2-sided)	
Pearson Chi-Square		0.705	2	0.703	
Symmetric Measures					
		Phi	Value	Approx. Sig.	
Nominal by Nominal		Phi	0.010	0.703	

Table 33

Comparisons of Graduate Enrollments by World Regions Before/After Fall 2001

		India	China	Asia	Visa Waiver Countries	Europe	Mid East and N. Africa	South America	Caribbean	Total
Before 2001	Count	209	86	30	56	25	28	55	24	513
	Expected Count	226.2	63.8	27.2	65.7	36.6	21.6	43.6	28.2	513.0
	% within Compare year	40.7%	16.8%	5.8%	10.9%	4.9%	5.5%	10.7%	4.7%	100.0%
	% within Graduate Visa Compare	43.4%	63.2%	51.7%	40.0%	32.1%	60.9%	59.1%	40.0%	46.9%
	% of Total	19.1%	7.9%	2.7%	5.1%	2.3%	2.6%	5.0%	2.2%	46.9%
After 2001	Count	273	50	28	84	53	18	38	36	580
	Expected Count	255.8	72.2	30.8	74.3	41.4	24.4	49.4	31.8	580.0
	% within Compare year	47.1%	8.6%	4.8%	14.5%	9.1%	3.1%	6.6%	6.2%	100.0%
	% within Graduate Visa Compare	56.6%	36.8%	48.3%	60.0%	67.9%	39.1%	40.9%	60.0%	53.1%
	% of Total	25.0%	4.6%	2.6%	7.7%	4.8%	1.6%	3.5%	3.3%	53.1%
Total	Count	482	136	58	140	78	46	93	60	1093
	Expected Count	482.0	136.0	58.0	140.0	78.0	46.0	93.0	60.0	1093.0
	% within Compare year	44.1%	12.4%	5.3%	12.8%	7.1%	4.2%	8.5%	5.5%	100.0%
	% within Graduate Visa Compare	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	44.1%	12.4%	5.3%	12.8%	7.1%	4.2%	8.5%	5.5%	100.0%
Chi-Square Tests										
				Value	<i>df</i>		Asymp. Sig. (2-sided)			
Pearson Chi-Square				37.463	7		0.000			
Symmetric Measures										
				Value		Approx. Sig.				
Nominal by Nominal				Phi		0.185				0.000

Table 34

Comparisons of Undergraduate Enrollments by World Regions Before/After Fall 2001

		Undergrad visa status					
		Caribbean	Visa Waiver	MidEast	South America	Europe	Total
Before 2001	Count	54	84	22	22	12	194
	Expected Count	42.3	100.0	16.7	25.2	9.8	194.0
	% within Compare year	27.8%	43.3%	11.3%	11.3%	6.2%	100.0%
	% within Undergrad visa status:	54.5%	35.9%	56.4%	37.3%	52.2%	42.7%
	% of Total	11.9%	18.5%	4.8%	4.8%	2.6%	42.7%
After 2001	Count	45	150	17	37	11	260
	Expected Count	56.7	134.0	22.3	33.8	13.2	260.0
	% within Compare year	17.3%	57.7%	6.5%	14.2%	4.2%	100.0%
	% within Undergrad visa status:	45.5%	64.1%	43.6%	62.7%	47.8%	57.3%
	% of Total	9.9%	33.0%	3.7%	8.1%	2.4%	57.3%
Total	Count	99	234	39	59	23	454
	Expected Count	99.0	234.0	39.0	59.0	23.0	454.0
	% within Compare year	21.8%	51.5%	8.6%	13.0%	5.1%	100.0%
	% within Undergrad visa status:	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	21.8%	51.5%	8.6%	13.0%	5.1%	100.0%
Chi-Square Tests							
		Value	<i>df</i>				Asymp. Sig. (2-sided)
Pearson Chi-Square		14.65	4				.005
Symmetric Measures							
				Value			Approx. Sig.
Nominal by Nominal		Phi	.180				.005

Table 35

Undergraduate Enrollment Comparisons by Level of Visa Scrutiny Before/After Fall 2001

		Western Hemisphere	Visa Waiver Countries	Mideast and North Africa	Total
Before 2001	Count	96	84	22	202
	Expected Count	85.7	99.7	16.6	202.0
	% within Compare year	47.5%	41.6%	10.9%	100.0%
	% within Undergrad Visa Compare Followup	47.8%	35.9%	56.4%	42.6%
	% of Total	20.3%	17.7%	4.6%	42.6%
After 2001	Count	105	150	17	272
	Expected Count	115.3	134.3	22.4	272.0
	% within Compare year	38.6%	55.1%	6.3%	100.0%
	% within Undergrad Visa Compare Followup	52.2%	64.1%	43.6%	57.4%
	% of Total	22.2%	31.6%	3.6%	57.4%
Total	Count	201	234	39	474
	Expected Count	201.0	234.0	39.0	474.0
	% within Compare year	42.4%	49.4%	8.2%	100.0%
	% within Undergrad Visa Compare Followup	100.0%	100.0%	100.0%	100.0%
	% of Total	42.4%	49.4%	8.2%	100.0%
Chi-Square Tests					
		Value	<i>df</i>	Asymp. Sig. (2-sided)	
Pearson Chi-Square		9.530	2	0.009	
Symmetric Measures					
		Value		Approx. Sig.	
Nominal by Nominal		Phi	0.142	0.009	

Table 36

Graduate Enrollment Comparisons by Level of Visa Scrutiny Before/After Fall 2001

		Visa Waiver Countries	India and China	Mideast and North Africa	Total
Before 2001	Count	56	295	28	379
	Expected Count	66.0	291.3	21.7	379.0
	% within Compare year	14.8%	77.8%	7.4%	100.0%
	% within Graduate Visa Compare Followup	40.0%	47.7%	60.9%	47.1%
	% of Total	7.0%	36.7%	3.5%	47.1%
After 2001	Count	84	323	18	425
	Expected Count	74.0	326.7	24.3	425.0
	% within Compare year	19.8%	76.0%	4.2%	100.0%
	% within Graduate Visa Compare Followup	60.0%	52.3%	39.1%	52.9%
	% of Total	10.4%	40.2%	2.2%	52.9%
Total	Count	140	618	46	804
	Expected Count	140.0	618.0	46.0	804.0
	% within Compare year	17.4%	76.9%	5.7%	100.0%
	% within Graduate Visa Compare Followup	100.0%	100.0%	100.0%	100.0%
	% of Total	17.4%	76.9%	5.7%	100.0%
Chi-Square Tests					
		Value	<i>df</i>	Asymp. Sig. (2-sided)	
Pearson Chi-Square		6.432	2	0.040	
Symmetric Measures					
		Value		Approx. Sig.	
Nominal by Nominal		Phi	0.089	0.040	

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