A Longitudinal Comparison of International Student Enrollments in 4-Year Institutions of Higher Education in the United States

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Abstract

This longitudinal, non-experimental quantitative study examined enrollments of international students by academic level at U.S. 4-year institutions of higher education over the last decade from the 2001, 2005, and 2011 IPEDS data. The findings were used to draw out trends and patterns of international student mobility to the US in the first decade of the 21st century. The statistically significant differences were observed between undergraduate and graduate enrollments over the three academic years; the US received more international graduate students than undergraduate over the last decade. The overall pattern indicated that more international graduate students were enrolled at U.S. 4-year institutions of higher education over the last decade, but the larger growth rate of the enrollments made undergraduate students become the mobility trend of the decade.

Globally, mobile students comprise an increasingly significant source of diversity on U.S. campuses. The total number of international students studying at U.S. colleges and universities increased by 6% to a high record of 764,495 in the 2011/12 academic year (Open Doors, 2012). This strong increase brings a significant economic impact to the U.S. as “international students contribute over $22.7 billion to the U.S. economy” (Open Doors, 2012, p. 4). Given the high population of international students in the country, it is important to understand trends and patterns of international student mobility to the US. According to Choudaha and Chang (2012), “a better understanding of international student mobility trends and their relationship to the applicant pipeline will help institutions channel their efforts” and “institutions that are strategic, deliberate and informed in their recruitment efforts will maximize the investment in an effective manner” (p. 4).
Even though international enrollments at U.S. institutions of higher education continued to grow over the past decade, the globally mobile student market share of the US has been increasingly declining. Indeed, the US claimed 19% of the world’s 4.1 million international students in 2011. However, because of increased competition and the new emerging markets, a decline is in fact 8% compared to 27% of market share in 2002 (Project Atlas, 2012). This causes a concern of those in the U.S. who worry that the country might be losing its predominant destination in the globally mobile student market. Cost, distance, student visa difficulties, and competition among potential host destinations are the negative influencers that impact U.S. institutions of higher education in their strategies to attract international students. Overall, institutions will likely expect international student growth in upcoming years. Nevertheless, the road ahead for most U.S. institutions of higher education will not be smooth as many of them grapple with challenges in meeting recruitment goals with limited time and tight budgets. This is where a better understanding of international enrollment trends and patterns, on which this study aimed to focus, would help institutions prioritize their resources.

**Statement of the Problem**

The U.S. is often chosen as the number one destination for many young people all over the world when deciding to study abroad (Institute of International Education, 2011). As a result, the number of international students studying at American HEIs has been growing over time. However, the increase in international student education makes competition for international students more intense and complex.

State budget cuts and increasingly global competition for international students are forcing many U.S. colleges and universities to take steps for strategic recruitment efforts in order to attract more international students. According to Choudaha and Chang (2012), “Effective international recruitment practices are dependent more than ever on a deep understanding of student mobility patterns and the decision-making process” (p. 2). Researchers have provided an in-depth understanding of the trends and issues related to international student enrollment and assisted institutional leaders and administrators in making informed decisions and effectively setting priorities. The problem of the study was a longitudinal comparison of international student enrollments by academic level at U.S. 4-year institutions of higher education over the 3 academic years of 2000/01, 2004/05, and 2010/11.

**Purpose of the Study**

The general purpose of this study was to examine enrollments of international students at U.S. 4-year institutions of higher education in the first decade of the 21st century. The specific purpose of the study was to identify whether the differences existed between the enrollments of international undergraduate and graduate students at U.S. 4-year institutions of higher education for the 2000/01, 2004/05, and 2010/11 academic years. A comparison was undertaken for international undergraduate and graduate enrollments for the 3 academic years of 2000/01, 2004/05, and 2010/11 in a longitudinal study. The results of the comparison were used for identifying the trends and patterns of international student mobility in academic level to the US over the last decade.
Significance of the Study

Many host destinations, both traditional and emerging, have developed national-level plans and strategies in order to attract more international students, creating a competitive environment for international student recruitment. While resulting in smaller market shares for the international host countries, it has had the positive effect of bringing more new countries into the field of international higher education, and has also changed the traditional relationship between sending and receiving countries from unidirectional ‘brain drain’ to a more balanced, mutual beneficial exchange (IIE, 2011).

According to Choudaha, Chang, & Kono (2013), “The global student mobility landscape is in constant flux and is often influenced by external factors beyond the control of HEIs” (p. 1). Influential forces on international student mobility can come from numerous directions, including “demographics, economic growth and decline, the expansion of local higher education systems, immigration policies and regulatory environments of competing host countries, government-initiated scholarship programs, and emergence of technology” (World Education Services, 2012, p. 6). Student mobility patterns to the US have changed in the decade following the 9/11 terrorist attacks. Due to the changes of student visa procedures and perceptions among global international students that the US had become less welcome to international students, international enrollments at American HEIs experienced a significant decline in the immediate aftermath of the attacks. India, the largest sending country at that time, saw an increase of about 12% in 2002/03. But the next academic year noted an overall downward trend in international student enrollments that lasted until the 2006/07 academic year (IIE, 2011). However, within a decade, that unfortunate story has been turned on its head. Overall enrollments restart their healthy rates of growth. For example, Chinese international student enrollments have been roaring with an average annual growth rate of above 20% since the 2007/08 academic year, and it overtook India to become the number one country of origin for international students in the US (IIE, 2011).

Many of the external factors affecting student mobility cannot be controlled by individual HEIs. For example, state budget cuts for public higher education in the US have made many American HEIs become more active in recruiting international students. However, “while the catalysts to recruit international students are largely external, institutions have often found themselves internally under-prepared for this student shift towards more proactive recruitment” (Choudaha, 2012 as cited in Choudaha et al., 2013, p. 5). Most mobile students from the fastest-growing source countries such as China and Saudi Arabia are fully funded and enrolled at the undergraduate level (WES, 2012). More importantly, the inflow from these countries has come at a time when American public HEIs are looking for alternative revenue streams in order to compensate for post-recession state budget cuts. Consequently, the phenomenon creates a growing trend among American HEIs to focus on recruiting fully funded foreign students in undergraduate programs. That means the recent growing trend in recruiting well-funded international students at the undergraduate level has resulted from the global recession and the budget cuts of state support for higher education in the US. At the same time, many American HEIs don’t have enough internal capacity and preparedness for such a trend to achieve proactive recruitment. Moreover, “insufficient understanding of near-term student mobility trends and effective recruitment practices can be detrimental to their future strategic directions” (Choudaha et al., 2013, p. 3). Naturally, such phenomenon demands research addressing this knowledge gap.
and assist institutions in prioritizing resources and building capacity.

According to WES (2012), the rise of international students at the undergraduate level is predicted as a mobility trend of the upcoming decade of the 21st century. Driven by government supported programs from sending countries, more fully-funded mobile students are going abroad for higher education purposes. About 95% of global international students from China were self-sponsored as reported in 2012 (China Education Online, 2012). In the same year, it was reported that about 65% of total Saudi students studying overseas were funded by Saudi Arabia’s government (Saudi Gazette, 2012). This is a good opportunity for American public HEIs to take advantage of for extra revenue streams to compensate for budget cuts.

For the aforementioned reasons, enrolling well-funded mobile students in associate’s and bachelor’s programs become a growing trend among American HEIs. The development of the middle class in emerging countries, the budget cuts of public HEIs, and the internationalization goals of HEIs in a new era of globalization, are fostering the phenomenon (WES, 2011). By analyzing the data of their study, Choudaha et al. (2013) indicated that undergraduates drive the rise of international students in the US and most of them study business-related disciplines or follow the Intensive English Program (IEP) pathway. For the first time in the history of international student development in the US, the number of international undergraduate students, including 4-year bachelor and 2-year associate students, surpassed the number of graduate students (IIE, 2012).

Almost one in two foreign students studying at American HEIs is from China, India, or South Korea (IIE, 2011). Many HEIs are seeing an over-representation of mobile students from key sending countries. On some American campuses, international students from China constitute more than a half of non-domestic student population. At the University of Iowa, Chinese students comprised more than 70% of international undergraduates in 2010/11 (the University of Iowa, 2011). American HEIs begin to realize the need to free themselves from heavy dependence on only a few large markets. According to McMurtrie (2011), “Risks develop when institutions rely on limited source countries, as there is a greater chance for losing a large share of an institution’s international student population if some incident occurs that halts or slows down the pipeline” (McMurtrie, 2011 as cited in Choudaha & Kono, 2012, p. 5). Choudaha and Kono (2012) proved that an influx of mobile student numbers from some major sending countries might cause unintended negative consequences on campus culture and diversity. An effective way to achieve international recruitment success is to strategically identify and nurture new emerging markets. This strategy is especially important since developing a student pipeline requires different kinds of endeavor, including time and resource intensives.

In order to promote new channels of mobile students, many American HEIs have been branching out with their recruitment activities for accessing new emerging markets as well as minor providers (Wilhelm, 2011). Academic preparedness and financial resources are the differences among international student segments according to a recent study by WES Research and Advisory Services (WES/RAS). The study report stressed the significance of understanding various mobile student segments in order to set up a successful recruitment strategy. Likewise, a deep understanding of the features of different sending countries is also important since emerging markets present untapped potential (WES Research and Advisory Services, 2012).

Many American HEIs start to look for international students from a larger range of sending countries when attempting to diversify their student bodies. For this, they have not only
to discover new emerging countries in the global mobile student market, but also balance recruitment opportunities with the potential risks and uncertainties from new markets. However, when paying more interest in recruiting mobile students from new emerging markets, American HEIs often identify target countries based on anecdotal evidence. This method, according to Choudaha et al. (2013), is neither efficient nor cost-effective. The aforementioned study has identified four key emerging markets of globally mobile students and offered near-term strategies to guide American HEIs how to successfully nurture these markets. These markets showing the highest recruitment potential for American HEIs, due to level of importance, are Saudi Arabia, Brazil, Vietnam, and Turkey. According to the study recommendations, American HEIs should increase their near-term recruitment efforts in these four emerging markets.

There is no magic formula for achieving sustainable international student enrollment growth, especially in the unpredictable environment of globalization. According to WES (2013), “Each recruitment strategy has its own promises and challenges, and yields varying measures of success” (p. 15). But the results from the research on international enrollment trends will bring to light international student enrollment experiences for American HEIs that may assist them in making their international student recruitment responsive.

### Research Questions

The following research questions provided focus and direction for this study:

1. Does a difference exist among the overall enrollments of international students at U.S. 4-year institutions of higher education for the 2000/01, 2005/05, and 2010/11 academic years?
2. Does a difference exist between the enrollments of international undergraduate and graduate students at U.S. 4-year institutions of higher education across the 2000/01, 2004/05, and 2010/11 academic years?
3. What are the trends and patterns of international student mobility to the US in the first decade of the 21st century?

### Hypotheses

This study examined the following null and alternate research hypotheses. A confidence level of $p < 0.05$ was used for all statistical analyses.

The study utilized the following research hypotheses in support of Research Question 1:

1. Ho1: There is no significant difference ($p > .05$) among the overall enrollments of international students at U.S. 4-year institutions of higher education for the 2000/01, 2004/05, and 2010/11 academic years.
2. Ha1: There is a significant difference ($p < .05$) among the overall enrollments of international students at U.S. 4-year institutions of higher education for the 2000/01, 2004/05, and 2010/11 academic years.
The study utilized the following research hypotheses in support of Research Question 2:

3. Ho2: There is no significant difference ($p > .05$) between the enrollments of international undergraduate and graduate students at U.S. 4-year institutions of higher education for the 2000/01, 2004/05, and 2010/11 academic years.

4. Ha2: There is a significant difference ($p < .05$) between the enrollments of international undergraduate and graduate students at U.S. 4-year institutions of higher education for the 2000/01, 2004/05, and 2010/11 academic years.

Method of Procedure

The longitudinal examination of international student enrollments data was guided by the following questions: (1) Does a difference exist among the overall enrollments of international students at U.S. 4-year institutions of higher education for the 2001, 2005, and 2011 academic years? (2) Does a difference exist between the enrollments of international undergraduate and graduate students at U.S. 4-year institutions of higher education across the 2001, 2005, and 2011 academic years? (3) What are the trends and patterns of international student mobility to the US in the first decade of the 21st century? This study utilized descriptive, one-way repeated measures analysis of variance (ANOVA), and mixed between- and within-subjects ANOVA statistical analyses to investigate the significant differences in international student enrollments by academic level.

The sampling population of the study was international undergraduate and graduate students enrolled at U.S. 4-year institutions of higher education for the 2001, 2005, and 2011 academic years. Student enrollments for 12-month unduplicated headcounts were selected for each of the three academic years. Descriptive statistics for international student enrollments were gathered from public archival data, the Integrated Postsecondary Education Data System (IPEDS; 2013). Of 2,088 institutions selected for the study, 1,620 offered both graduate and undergraduate programs, 468 offered only undergraduate programs.

The participating institutions were selected according to the category of degree granting. Only institutions granting baccalaureate degrees or higher were included in the study. Three data files of All Student Total, Undergraduate, and Graduate including institutions, academic years, and variables were obtained.

Limitations

The following limitations were used for the study:

1. The conclusion of this study could not necessarily be generalized to apply to the international students of other academic levels than undergraduates and graduates studying in 4-year bachelor, master, and doctoral programs.

2. The information used in this study was limited to the self-reported data to IPEDS from U.S. 4-year institutions of higher education that participate in the federal student financial aid programs.
3. The dichotomous classification of undergraduate and graduate students might disguise differences within a particular group. For instance, international undergraduate students in this study did not include students studying for Associate’s degrees at U.S. junior colleges.

**Delimitations**

The following delimitation was used for the study:

1. The information used in this study was limited to the data provided by IPEDS Data Center.
2. The study included only the international undergraduate and graduate students studying at U.S. 4-year colleges and universities.
3. The study did not include the international students studying 2-year associate and non-degree programs at U.S. junior and community colleges.

**Summary of Findings**

The *All Student Total* data file was used for testing the statistical significance of the hypothesis for Research Question 1. A one-way repeated measures ANOVA design was utilized because the subject of international student enrollments was measured on the same continuous scale on the three academic years. The hypothesis for Research Question 1 was tested at a significance of $p < .05$ by performing a one-way repeated measures ANOVA. Wilks’ Lambda, a multivariate test of significance, showed a statistically significant effect [$Wilk's \lambda = .913, F(2, 1618) = 77.21, p < .001, \eta^2 = .087$] for academic years. This suggested that there was a change in international student enrollments over the three academic years and rejected the null hypothesis for Research Question. *Pairwise Comparisons* compared each pair of academic years and indicated that each of the differences between the pairs of years was significant at the .05 level. The multiple comparisons were conducted using *Bonferroni* and indicated that international student enrollments were increasing regularly over the last decade. The trend of international student enrollments is displayed in Figure 1.
A mixed between- and within-subjects ANOVA design was utilized to analyze the data for Research Question 2 because there were two independent variables: a between-subjects variable – undergraduate and graduate and a within-subject variable – three academic years. The hypothesis for Research Question 2 was tested at a significance of $p < .05$ by performing a mixed between- and within-subjects ANOVA. In Multivariate Tests table, Wilks’ Lambda revealed a statistically significant effect [Wilks’ $\lambda = .936$, $F (2, 3,705) = 127.414$, $p < .001$, $\eta^2 = .064$] for academic years. This suggested that there was a change in international student enrollments at undergraduate and graduate levels across the three academic years. Test of Between-Subject Effects revealed a statistically significant difference [$F (1, 3,706) = 14.94$, $p < .001$, $\eta^2 = .004$] between undergraduate and graduate levels. This meant there was a significant difference in international enrollments between undergraduate and graduate students, and the null hypothesis for Research Question 2 failed to be accepted. The trends and patterns of international student enrollments at U.S. 4-year institutions of higher education are illustrated in Figure 2.
The trends and patterns of international student mobility to the U.S. in the first decade of the 21st century were drawn from the analysis results of Research Questions 1 and 2. The findings from Research Questions 1 and 2 led to the conclusion that international student mobility to the U.S. was increasing regularly in the first decade of the 21st century with the downward trend in the second half of the decade. The overall pattern from the beginning until the end of the first decade of the 21st century seemed that the U.S. received more international graduate students. However, the rise of international student enrollments at the undergraduate level in the latter half of the decade overtook the graduate level to become the trend of international student mobility to the U.S. in the first decade of the 21st century.

**Discussion**

The three academic years of 2001, 2005, and 2011 were selected for the study because they were important milestones of international student development in the U.S. There were two major occurrences that had impacted international higher education in the country; one was the 9/11 terrorist attacks in 2001 that caused some serious changes in the process and experience for students interested in attending U.S. colleges and universities and another was the global economic recession initiated in 2007 that had affected institutions of higher education throughout the country, resulting in major reductions in funding, resources, and course offerings.

The results of the study indicated a larger growth rate of international enrollments at U.S. 4-year institutions of higher education from 2001 to 2005 than from 2005 to 2011. According to the important occurrences in the decade, does it mean the global economic recession affected international student enrollments more seriously than the 9/11 terrorist attacks?
According to the existing literature, the 9/11 terrorist attacks altered the face of U.S. international higher education. This caused a significant impact on student mobility into the U.S.

Due to tightening procedures for student visas and a concern among foreign students that the U.S. was a less welcoming destination, the rate of international student growth flattened in 2003. The total number of international students decreased by 2.4% in 2004 – the largest rate of reduction was seen in over three decades (U.S. Government Accounting Office [GAO], 2009). In the January 2003 report, National Association for Foreign Student Advisers (NAFSA) now known as Association of International Educators, stressed the importance of a “highly visible campaign” to dismiss global perceptions that the US did not welcome or value international students (NAFSA, 2003, p. 10). Since then, the number of international students had rebounded, not only because institutions had made efforts to reach out to international students but also because the U.S. government had streamlined student visa procedures and expanded investment in EducationUSA advising services globally. Vigorous public diplomacy efforts assured internationals students that the U.S. welcomed them to its shores (Goodman & Gutierrez, 2011). As a result, in 2009 international student enrollments saw a strong positive increase of 7.7% over the previous year – the largest rate of growth since the early 1980s (Open Doors, 2011).

Looking at the impact of the 9/11 terrorist attacks, many scholars suggested the US was facing a decrease in international student recruitment. However, this study seemed to challenge this theory because it showed a healthy growth rate of international enrollments in the 9/11 aftermath. The results of the study contributed to supporting the fact that the efforts made by U.S. institutions and government in attracting more foreign students to the US defeated the impacts of the 9/11 attacks on U.S. international higher education in the first half of the decade. It has been noted that over the past decade tuition and fees have been increased in both public and private institutions (Wellman, Desrochers, & Lenihan, 2008). According to American faculty and staff, rising costs remained the number one factor to limit the number of globally mobile students to the US (Gutierrez, Bhandari, & Obst, 2009). Cost was considered the number one barrier to being able to study overseas, regardless of destinations (Chow, 2011). Verbi and Lasanowski (2007) believed that the cost for studying abroad, including tuition and accommodation was the most significant factor for international students to choose one country over others. Despite those issues the global economic recession did not seem to affect student mobility into the US because sending countries continued to report growth in the number of students they were sending abroad (Toh, 2009).

Aforementioned explanations seem not enough for answering the question why the second half of the first decade of the 21st century experienced a slower growth rate of international enrollments. The literature revealed that the major factor driving the narrow growth rate of international enrollments was a global competition for international students. Global competition for international student seems fiercer and more vigorous over time, as reflected by the significant changes in the global market share of the top host destination countries, such as the US, the UK, Germany, France, Australia, and Canada (World Education Services [WES], 2007). As a result, the US, the UK, and Australia have experienced a decline in international enrollments in the late 2000s (Institute of International Education [IIE], 2011). Indeed, the increase of international enrollments in the US was primarily driven by extremely large growth rate of the mobile student population from China. However, in the late 2000s China, with ambition to become potential host destinations in the region, has expanded their higher education capacity. This not only provides more opportunities for their own students in the country but also
attracts an increasing number of foreign students to their shores (Bhandari & Blumenthal, 2011). Consequently, China becomes the third largest host destination for international students — behind only the US and UK according to the 2012 report of Project Atlas.

Looking at overall patterns from the 1950s until the end of the 20th century, the US had historically received more international undergraduate students than graduate ones, but the latter took over from 2002 to 2011 (Open Doors, 2012). Compared to graduate figures, undergraduate enrollments in the US jumped 37% between 2004 and 2012 while the increase was 10% for graduate enrollments over the same timeframe (IIE, 2012). Driven by government supported programs from sending countries, more well-funded mobile students are going abroad for higher education purposes. For example, about 95% of global international students from China were self-sponsored (China Education Online, 2012) and about 65% of total Saudi students studying overseas were funded by Saudi Arab’s government (Saudi Gazette, 2012). As a result, enrolling well-funded mobile students in bachelor’s programs becomes a growing trend among U.S. institutions of higher education. The budget cuts for public institutions and the internationalization goals of both public and private institutions in a new era of globalization are fostering the phenomenon (WES, 2012). By analyzing the data of their study, Choudaha et al. (2013) indicated that “growth in international enrollments in the US is driven by younger, financially and technologically empowered students at the undergraduate level” (p. 15). In contrast, the growth rate of self-directed graduate students is decreasing at most U.S. institutions of higher education (WES/Research & Advisory Services [RAS], 2012). It is predicted that internationalization and expansion of student bodies on American campuses will be mainly dependent on the undergraduate level.

**Conclusion**

This study has demonstrated that globally, mobile students comprise an increasingly significant source of diversity on U.S. campuses. Indeed, there is no magic formula for achieving sustainable international student enrollment growth, especially in the unpredictable environment of internationalization and globalization. According to WES (2013), “Each recruitment strategy has its own promises and challenges, and yields varying measures of success” (p. 15). The results from this study, focusing on international enrollment trends and patterns, will bring to light international student recruitment experiences for U.S. 4-year institutions of higher education that might help them in making their international student recruitment responsive.

The results of the study indicated that international student enrollments at U.S. 4-year institutions of higher education continued to grow over the past decade. Overall, U.S. institutions might expect international student growth in upcoming years. Nevertheless, the road ahead for most institutions will not be smooth as globally mobile student demands might not concentrate on the key host destinations as in the past. This study brought some implications for practicing international recruitments at U.S. colleges and universities, such as looking for a larger range of sending countries and paying increasing attention on undergraduate market.

Almost one in two foreign students studying at U.S. colleges and universities is from China, India, or South Korea (IIE, 2011). This situation leads to an over-representation of mobile students from several key sending countries. U.S. Institutions of higher education need to free themselves from heavy dependence on only a few large markets. Choudaha and Kono (2012)
proved that an influx of mobile student numbers from some major sending countries might cause unintended negative consequences on campus culture and diversity. According to McMurtrie, “Risks develop when institutions rely on limited source countries, as there is a greater chance for losing a large share of an institution’s international student population if some incident occurs that halts or slows down the pipeline” (McMurtrie, 2011 as cited in Choudaha & Kono, 2012, p. 5). An effective way for U.S. institutions to achieve successful international recruitments is to strategically identify and nurture new emerging markets. However, when paying more interest to recruiting mobile students from new emerging markets, they seem to identify target countries based on anecdotal evidence. This method, according to Choudaha and Kono, is neither efficient nor cost-effective. Their study has identified the four key emerging markets of globally mobile students, listed in the level of importance, are Saudi Arabia, Brazil, Vietnam, and Turkey. They also offered near-term strategies for successfully nurturing these markets. According to their study recommendations, U.S. institutions of higher education should increase their near-term recruitment efforts in these four emerging markets.

This study proved that enrolling mobile students in bachelor’s programs became a growing trend of international student mobility to the U.S. in the first decade of 21st century. According to Choudaha et al. (2013), “today’s growth in international enrollment in the US is driven by younger, financially and technologically empowered students at the undergraduate level” (p. 15). In contrast, the results of this study found that the growth rate of self-directed graduate students experienced some downward trend. Proactive U.S. colleges and universities need to respond effectively to the rise of well-funded international students at undergraduate level by developing strategies mapped to student needs and understanding this new segment of undergraduate students because “their mobility patterns and preferences are also distinct from international graduate students” (Choudaha et al., 2013, p. 15). Therefore, U.S. institutions should not simply extend the practices designed for recruiting graduate students to this emerging segment of international undergraduates.

Although the U.S. market share of global international students experienced a decline over the past decade, the US remains the best destination for the greatest number of foreign students, and has sufficient capacity to attract increasing number of world’s mobile students in its large and diverse higher education system. A major reason the US is considered the greatest potential destination for globally mobile students is because international students made up only less 4% of the total enrollments in U.S. colleges and universities whereas this ratio in the UK and Australia was 13% and 24% (IIE, 2012).

References


