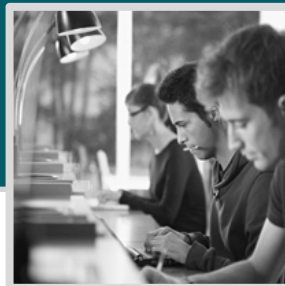


Popular Programs for International Students

June 2014



In the following report, Hanover Research assesses international student demand for degree programs at higher education institutions in Australia, the United States, and the United Kingdom. In particular, the report identifies the most popular fields of study for international students at the undergraduate and graduate levels and assesses international student enrolment trends in these fields. The report also evaluates international student demand for specific program types, and analyses trends in Chinese student participation in international education.

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EXECUTIVE SUMMARY AND KEY FINDINGS

In the following report, Hanover Research assesses international student demand for degree programs at higher education institutions in Australia, the United States, and the United Kingdom. The report is divided into two sections:

- **Section I** assesses international student demand for undergraduate and graduate degree programs in broad educational fields. This section uses recent international student enrolment data from Australia and the United States to comparatively analyse trends in international student demand. Additionally, this section evaluates international student demand for specific degree programs.
- **Section II** analyses variation in international student demand for degree programs in Australia, the United States, and the U.K. according to student region of origin. In addition, this section assesses Chinese student demand for programs in Australia the United States, and discusses factors that may influence Chinese student demand in the coming years.

KEY FINDINGS

- **Overall, business and management degree programs have been the most popular course of study for international students for the last five years, at both the undergraduate and graduate levels.** In Australia, 56.2 percent of all bachelor's degree completions by international students were in the field of "Management and Commerce," as were 58.1 percent of all master's degree completions among international students. In the United States, across all levels of study, enrolments in business and management programs account for 21.8 percent of enrolments by international students.
- **Despite the overall popularity of business and management programs among international students, demand for programs in other fields is growing at a significant rate as international student interests diversify.** Across all Australian higher education institutions, programs in agriculture, environmental and related studies are among the fastest growing at both the undergraduate and graduate levels. Engineering programs and programs in the field of "Society and Culture" are also growing quickly at the undergraduate level. At the graduate level, master's programs in architecture, the natural and physical sciences, and health related programs are the fastest growing fields of study, after agriculture. Notably, although completions in management and commerce increased at a CAGR of 10.5 percent over the last five years at the undergraduate level, at the graduate level completions scarcely increased (0.0 percent CAGR).
- **Many of the programs reviewed in this report are among the most popular fields of study for international students in both Australia and the United States.** Notably, bachelor's degree programs in business, management and biological

- sciences have shown relatively high volumes of completions in recent years. By contrast, bachelor's degrees in the fields of astronomy and youth work/childhood studies have proven less popular among international students. At the graduate level, almost all of the reviewed program types evinced positive growth; in particular, programs in biology and chemistry, computer science and computer systems networking, and law programs for foreign lawyers were the high-volume program types with the greatest growth from 2008 through 2012.
- **Students from China continue to constitute the largest percentage of international students from a single country at institutions in Australia, the U.S. and the U.K.** Although some industry observers predict that Chinese demand for overseas higher education will abate somewhat by 2020, as the domestic supply of colleges and universities increases, enrolments and completions by Chinese students have been increasing since 2008 in all three major English-speaking countries. Moreover, despite the predicted decrease in demand from China, observers note that the international market for higher education will not undergo significant change, and the main English-speaking countries will continue to lead the market.
 - **Although the educational preferences of students from China still largely conform to established norms there are indications that these preferences are becoming more diverse.** Business, engineering, and mathematics and computer sciences remain the most popular fields of study for Chinese students, but experts suggest that more and more students from China are interested in alternative fields, such as the humanities and social sciences. Moreover, the increasingly competitive domestic job market for college graduates in China is likely to impact patterns of demand for undergraduate and graduate programs of study.

SECTION I: POPULAR DEGREE PROGRAMS FOR INTERNATIONAL STUDENTS

This section assesses international student demand for undergraduate and graduate-level degree programs. Specifically, this analysis identifies the most popular fields of study for international students in Australia and the United States over the last five years, and evaluates enrolment trends in bachelor's and master's degree programs in those fields.

TRENDS IN INTERNATIONAL STUDENT PARTICIPATION AT AUSTRALIAN AND U.S. INSTITUTIONS

In order to identify the most popular fields of study for international students, Hanover assesses bachelor's and master's degree program enrolment and completions data for higher education institutions in Australia and the United States. These enrolment and completions data illustrate the rates of participation by international students across various fields and levels of study over the past five years. Where data for all five years in this range are available, Hanover calculates the following three metrics:

- **Compound Annual Growth Rate (CAGR):** CAGR approximates annual growth based on the percentage change between the first and final years in the data series without incorporating yearly variation. It gives an impression of a theoretical, steady growth rate.
- **Average Annual Change (AAC):** AAC indicates the average value of year-to-year numeric changes. It allows for an analysis of both directional trends and volume because programs with very large completions numbers and higher growth will generally have larger AACs.
- **Standard Deviation of Annual Changes (SDAC):** SDAC reflects the consistency of growth over time. A larger standard deviation indicates a trend that is overall less consistent, and may indicate volatility, while a standard deviation of zero would indicate perfectly consistent change. Standard Deviation is a useful metric for better understanding the variance between the AAC and numerical year-to-year changes.

This section primarily relies on two sources for enrolment and completions data reported by higher education institutions in the United States: the Institute for International Education and the National Centre for Education Statistics' (NCES) Integrated Postsecondary Data System (IPEDS). Enrolment and completions data pertaining to international students in Australia are provided by the Australian Government Department of Industry.

ENROLMENT AND COMPLETIONS TRENDS AT INSTITUTIONS IN AUSTRALIA

In Australia, the overall number of bachelor's degree completions by international students has increased steadily since the 2008-2009 academic year, at a CAGR of 7.9 percent. That growth has been driven largely by increasing completions in the field of "Management and

Commerce,” which grew at a rate of 10.5 percent between 2009 and 2013, and accounted for 56.2 percent of all bachelor’s degree completions by international students in Australia.

Figure 1.1: International Student Bachelor's Completions by Broad Field of Study, Australia

FIELD	2008	2009	2010	2011	2012	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Agriculture, Environmental and Related Studies	118	125	233	320	374	1,170	33.4%	64.0	38.1
Architecture and Building	816	970	797	911	952	4,446	3.9%	34.0	126.2
Creative Arts	2,738	3,001	3,040	3,414	3,215	15,408	4.1%	119.3	219.8
Education	656	1,041	648	623	506	3,474	-6.3%	-37.5	279.0
Engineering and Related Technologies	2,584	2,589	2,912	3,321	3,466	14,872	7.6%	220.5	156.7
Food Hospitality and Personal Services	100	114	16	24	16	270	-36.8%	-21.0	45.2
Health	4,062	4,653	4,935	5,224	4,921	23,795	4.9%	214.8	323.9
Information Technology	3,257	3,294	3,509	3,380	3,322	16,762	0.5%	16.3	129.0
Management and Commerce	20,769	24,237	27,299	30,319	30,973	133,597	10.5%	2,551.0	1,109.1
Natural and Physical Sciences	2,070	2,048	2,290	2,332	2,387	11,127	3.6%	79.3	98.4
Society and Culture	2,417	2,518	2,919	3,383	3,554	14,791	10.1%	284.3	151.9
Total	39,286	44,279	48,136	52,819	53,292	237,812	7.9%	3,501.5	1,797.1

Source: Australian Government Department of Industry. Combines data for “Bachelor’s Pass,” “Bachelor’s Honours,” and “Bachelor’s Pass” combined.¹

At the master’s level, overall international student degree completions growth has essentially stagnated over the past five years (0.4 percent CAGR), despite strong growth in fields like architecture, agriculture, and the natural sciences. This stagnation is primarily attributable to the decline, since 2010, in the number of international students completing master’s programs in “Management and Commerce.” In sharp contrast to the undergraduate-level trend, degree completions in this field have declined nearly 13 percent since 2010. The overall CAGR for master’s degree completions in these fields was 0.0 percent between 2008 and 2012, and completions actually fell between 2010 and 2012 in this area of study. Because this field accounts for 58.1 percent of all international student master’s degree completions in Australia, its stagnation over five years has a significant impact on the overall rate of growth across all fields. Similarly, the low growth and decline in other high volume fields such as engineering, information technology (-6.7 percent CAGR), and “Society and Culture” have depressed the overall growth rate at the master’s

¹ Data were taken from the tables corresponding to the years 2008-2012: “Award Course Completions for Overseas Students by Level of Course, Broad Field of Education and Gender,” Award Course Completions: Selected Higher Education Statistics Tables, Higher Education Statistics Publications, Australian Government Department of Industry.
<http://www.innovation.gov.au/highereducation/HigherEducationStatistics/StatisticsPublications/Pages/Students.aspx>

level. Figure 1.2, on the next page, shows the international student master's degree completions data for the five most recent academic years in Australia.

Figure 1.2: International Student Master's Completions by Broad Field of Study, Australia

FIELD	2008	2009	2010	2011	2012	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Agriculture, Environmental and Related Studies	268	324	342	375	425	1,734	12.2%	39.3	14.9
Architecture and Building	445	503	583	655	741	2,927	13.6%	74.0	10.5
Creative Arts	824	929	1,113	1,057	949	4,872	3.6%	31.3	118.1
Education	1,804	1,760	2,030	1,945	1,965	9,504	2.2%	40.3	137.8
Engineering and Related Technologies	2,289	2,432	2,757	2,906	2,371	12,755	0.9%	20.5	328.9
Health	1,188	1,109	1,408	1,492	1,447	6,644	5.1%	64.8	148.3
Information Technology	3,671	3,471	4,434	3,919	2,782	18,277	-6.7%	-222.3	762.9
Management and Commerce	20,105	21,445	23,081	22,593	20,132	107,356	0.0%	6.8	1,640.6
Natural and Physical Sciences	731	818	1,077	1,141	991	4,758	7.9%	65.0	145.2
Society and Culture	3,245	3,304	3,422	3,450	3,282	16,703	0.3%	9.3	107.3
Total	34,489	35,938	40,058	39,362	34,984	184,831	0.4%	123.8	3,109.0

Source: Australian Government Department of Industry. Includes data for "Master's by Research" and "Master's by Coursework" combined.²

ENROLMENT AND COMPLETIONS TRENDS AT INSTITUTIONS IN THE UNITED STATES

Although the fields of "Business and Management" and engineering, have remained the most popular fields for international students in the United States in recent years, in terms of enrolment volume, the field that has grown the most since the 2008-2009 academic year is "Intensive English Language." International student enrolments in this field increased at a CAGR of 19.1 percent between 2008-2009 and 2012-2013. Enrolments in "Math and Computer Science," the next fastest growing field, increased at a CAGR of 8.3 percent, as shown in Figure 1.3, on the next page.

² Ibid.

**Figure 1.3: International Student Enrolments at U.S. Institutions,
by Broad Field of Study, All Tertiary Levels**

FIELD	2008/09	2009/10	2010/11	2011/12	2012/13	CAGR	AAC	STDEV
Agriculture	8,961	10,317	9,888	9,750	10,463	4.0%	375.5	704.7
Business and Management	138,565	145,514	155,769	166,733	178,984	6.6%	10,104.8	1,957.4
Education	18,120	18,299	16,933	17,200	17,011	-1.6%	-277.3	651.5
Engineering	118,980	127,441	135,592	141,285	154,186	6.7%	8,801.5	2,598.5
Fine and Applied Arts	34,854	35,801	37,237	41,710	45,850	7.1%	2,749.0	1,571.5
Health Professions	35,064	32,111	32,526	29,535	31,222	-2.9%	-960.5	2,061.2
Humanities	19,179	17,985	16,263	16,294	17,121	-2.8%	-514.5	1,002.1
Intensive English Language	19,898	22,315	32,306	38,887	39,990	19.1%	5,023.0	3,509.5
Math and Computer Science	56,367	60,780	64,588	71,364	77,560	8.3%	5,298.3	1,224.2
Other Fields of Study	73,011	76,743	75,459	77,252	79,876	2.3%	1,716.3	1,863.8
Physical and Life Sciences	61,699	61,285	63,471	66,007	69,152	2.9%	1,863.3	1,358.8
Social Sciences	57,348	59,865	63,347	66,163	73,274	6.3%	3,981.5	1,840.3
Undeclared	20,944	18,707	19,898	22,315	24,955	4.5%	1,002.8	1,950.1

Source: Institute of International Education³

At the undergraduate level, programs related to business and economics have largely been the most popular over the last five years in the United States for international students. Other notably popular programs include those in biology, electrical engineering, and nursing. Some of the top ten subjects have seen significant growth in the number of bachelor's degree completions between 2008 and 2010. The fields of economics and finance have both seen growth that is near or above a CAGR of 15 percent during this period.

³ Data were taken from the tables corresponding to the years 2009-2013: "International Students: Fields of Study," Open Doors Data, Institute of International Education. <http://www.iie.org/Research-and-Publications/Open-Doors/Data/International-Students/Fields-of-Study>

Figure 1.4: International Student Bachelor’s Completions, Top Ten Fields, U.S.

FIELD	2008	2009	2010	2011	2012	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Bus. Admin. & Mgt., Gen.	5,666	5,356	5,555	6,337	7,274	30,188	6.4%	402.0	494.7
Economics, General	2,426	2,605	2,996	3,742	4,182	15,951	14.6%	439.0	202.6
Finance, General	1,810	2,151	2,416	2,831	3,581	12,789	18.6%	442.8	185.1
Accounting	2,165	2,165	2,474	2,723	3,185	12,712	10.1%	255.0	166.5
Psychology, General	1,494	1,687	1,752	1,742	2,095	8,770	8.8%	150.3	137.7
Biology/Biological Sciences, General	1,403	1,480	1,501	1,672	1,694	7,750	4.8%	72.8	61.1
Business/Commerce, General	1,314	1,382	1,481	1,624	1,648	6,562	5.8%	83.5	43.5
Electrical/Electronics Engr.	1,237	1,165	1,154	1,389	1,617	6,562	6.9%	95.0	138.2
Marketing/Marketing Management, General	1,214	1,107	1,150	1,147	1,287	5,905	1.5%	18.3	88.8
Registered Nursing/Registered Nurse	971	1,173	1,173	1,220	1,266	5,803	6.9%	73.8	76.4
Total	19,700	20,271	21,652	24,427	27,829	113,879	9.0%	2,032.3	1,116.6

Source: IPEDS

At the master’s level, somewhat similar trends are seen to those at the undergraduate level. Business administration and management, electrical engineering, and computer science are—by a significant margin—the most popular fields of study for international students in the United States. Degree completions in business administration and management programs comprised 38.6 percent of all master’s completions by international students between 2008 and 2012. However, despite the high volume of completions in the field, business administration and management master’s programs saw relatively little growth in the number of international student completion. Whereas other business-related fields, like finance and accounting, grew considerably (at 18.5 and 16.8 CAGRs, respectively), degree completions in business administration and management increased at a CAGR of only 1.4 percent, as shown in Figure 1.5.

Figure 1.5: International Student Master’s Completions, Top Ten Fields, U.S.

FIELD	2008	2009	2010	2011	2012	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Bus. Admin. & Mgt., Gen.	12,741	14,051	13,903	13,964	13,475	68,134	1.4%	183.5	679.4
Electrical/Electronics Engr.	4,969	5,884	5,594	5,968	5,933	28,348	4.5%	241	455.5
Computer Science	2,798	3,255	3,070	3,404	3,779	16,306	7.8%	245.3	252.3
Computer & Info. Sciences, Gen.	2,704	2,806	2,575	2,947	2,753	13,785	0.4%	12.3	244.5
Finance, Gen.	1,399	1,696	1,877	2,436	2,754	10,162	18.5%	338.8	137.4
Accounting	1,378	1,626	1,784	2,197	2,564	9,549	16.8%	296.5	100.1
Mechanical Engineering	1,562	1,775	1,767	2,180	2,114	9,398	7.9%	138	189.9
Business/Commerce, Gen.	1,554	1,763	1,696	1,763	1,839	8,615	4.3%	71.3	97.6
Economics, Gen.	1,209	1,211	1,214	1,230	1,348	6,212	2.8%	34.8	48.4
Industrial Engineering	1,004	1,222	1,146	1,282	1,231	5,885	5.2%	56.8	124
Total	31,318	35,289	34,626	37,371	37,790	176,394	4.8%	1,618.0	1,833.5

Source: IPEDS

INTERNATIONAL STUDENT DEMAND FOR SPECIFIC PROGRAMS

National enrolments and completions data collected by Australia and the United Kingdom are not specific enough to identify trends in international student demand beyond general fields of study. In particular, neither country disaggregates international student enrolments or completions at the program level. Thus, in order to assess international student demand for specific academic programs, Hanover uses completions data for institutions of higher education in the United States. These data enable Hanover to assess international student demand trends by specific program type and level of study in

These data, like the completions data used in the previous subsection, are sourced from IPEDS. The NCES uses a taxonomic system of numeric codes to classify higher education academic programs, known as the Classification of Instructional Programs (CIP). All institutions of higher education in the U.S. submit degree completions data, classified by CIP code and academic award level, to IPEDS.

When analysing IPEDS completions data in terms of student demand for specific program types, as opposed to considering them in terms of student demand for broader fields of study, number of limitations must be taken into account:

- Institutions classify their programs independently, so two programs that are identical in all respects could, hypothetically, be classified under two different CIP codes. Consequently, IPEDS data for a given CIP codes can sometimes fail to capture completions and programs reported under another code.
- Due to international differences in legal education and related credentials, Hanover has omitted Juris Doctor-level completions from its analysis of international student demand for master's programs in Laws. Instead, Hanover has analysed completions for two CIP codes—"Legal Studies, General" and "Programs for Foreign Lawyers"—to illustrate student demand for master's level programs in law.
- The CIP system was revised by IPEDS in 2010. At this point, a number of new CIP categories were introduced while others were renamed or omitted. This reorganization resulted in some institutions re-classifying their degree programs under different or new (often more specific) CIP categories, while others did not. In some cases this shift can falsely suggest a spike or drop in student interest for a certain subject area. Hanover's methodology for collecting and organizing IPEDS data is designed to avoid such misrepresentations.

DEMAND FOR SELECT BACHELOR'S AND MASTER'S DEGREE PROGRAMS

At the undergraduate level, a few of the reviewed program types are among the top ten most popular programs for international students, as identified in the previous subsection. For example, bachelor's programs in business administration and management, the program type that correlates most closely with leadership and management in the CIP system, have been the most popular among international students from 2008 through 2012.

Similarly, undergraduate programs in biology/biological sciences have seen a large number of completions in recent years.

It should also be noted that there were a low volume of completions in certain degree fields, such as bachelor's degrees in youth work and astronomy/atmospheric sciences. Other program types with relatively low numbers of aggregate completions over five years include child development, astronomy and criminology, as Figure 1.6, on the next page, demonstrates.

Figure 1.6: International Student Bachelor's Completions, Specific Fields

FIELD	2008	2009	2010	2011	2012	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Bus. Admin. & Mgt., Gen.	5,666	5,356	5,555	6,337	7,274	30,188	6.4%	402.0	494.7
International Relations and Affairs	735	688	681	740	695	3,539	-1.4%	-10.0	42.9
International/Global Studies	173	236	192	248	264	1,113	11.1%	22.8	42.5
English Lang. & Lit., Gen.	351	345	394	398	431	1,919	5.3%	20.0	22.0
History, Gen.	257	283	272	292	292	1,396	3.2%	8.8	14.9
Political Science and Government, Gen.	743	818	846	1,048	1,059	4,514	9.3%	79.0	74.8
Philosophy	118	126	139	175	194	752	13.2%	19.0	10.6
Youth Services/Administration	0	0	0	0	2	2	N/A	0.5	0.9
Child Development	9	9	13	8	11	50	5.1%	0.5	3.5
Biology/Biological Sciences, Gen.	1,403	1,480	1,501	1,672	1,694	7,750	4.8%	72.8	61.1
Chemistry, General	472	545	565	609	618	2,809	7.0%	36.5	24.6
Physics, Gen.	267	236	241	287	355	1,386	7.4%	22.0	38.0
Astronomy	6	8	6	14	2	36	-24.0%	-1.0	7.3
Atmospheric Sciences and Meteorology, Gen.	2	5	3	2	6	18	31.6%	1.0	2.5
Geology/Earth Science, Gen.	52	60	75	83	78	348	10.7%	6.5	7.2
Criminology	30	40	29	39	47	185	11.9%	4.3	8.8
Total	10,284	10,235	10,512	11,952	13,022	56,005	6.1%	684.5	596.5

Source: IPEDS

At the master's level, demand for several of the reviewed program types places them among the top ten most popular programs for international students. As previously noted, business administration and management programs are the most popular types of master's degree programs among international students. Computing degree programs, such as those in computer science and information sciences, are also highly popular among international students. Likewise, programs in computer networking have become increasingly popular and evince the fastest growth among all programs for which more than 1,000 completions were reported between 2008 and 2012. Notably, the growth rates for the selected individual program types are generally higher than they are for the selected bachelor's programs, as Figure 1.7, on the next page, illustrates.

Figure 1.7: International Student Master's Completions, Specific Fields

FIELD	2008	2009	2010	2011	2012	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Bus. Admin. & Mgt., Gen.	12,741	14,051	13,903	13,964	13,475	68,134	1.4%	183.5	679.4
Legal Studies, Gen.	19	103	40	118	149	429	67.3%	32.5	58.8
Programs for Foreign Lawyers	608	645	700	699	735	3,387	4.9%	31.8	20.4
Biology/Biol. Sciences, Gen.	386	425	446	501	484	2,242	5.8%	24.5	26.8
Chemistry, Gen.	670	645	685	757	800	3,557	4.5%	32.5	35.5
Physics, Gen.	610	550	566	556	638	2,920	1.1%	7.0	51.2
Astronomy	19	14	21	41	19	114	0.0%	0.0	15.5
Atmospheric Sciences and Meteorology, Gen.	22	21	38	19	34	134	11.5%	3.0	14.5
Geology/Earth Science, Gen.	100	130	116	122	162	630	12.8%	15.5	21.0
Comp./Info. Sciences, Gen.	2,704	2,806	2,575	2,947	2,753	13,785	0.4%	12.3	244.5
Computer Science	2,798	3,255	3,070	3,404	3,779	16,306	7.8%	245.3	252.3
Computer Systems Networking and Telecommunications	174	258	291	248	284	1,255	13.0%	27.5	45.5
Total	20,851	22,903	22,451	23,376	23,312	109,506	2.8%	615.3	969.6

Source: IPEDS

POTENTIAL DEMAND FOR GRADUATE CERTIFICATES

In Australia, management and commerce certificate programs—as with bachelor's and master's degree programs—are the most popular graduate certificates among international students. Education, society and culture, and health certificate programs are the next most popular, as indicated by the total number of completions in each program type between 2008 and 2012. Over this five-year period, the number of students enrolling in graduate certificate programs in Australia has increased significantly. Almost 900 more completions were reported in 2012 than were reported in 2008, as Figure 1.8 demonstrates.

Figure 1.8: International Student Graduate Certificate Completions, Australia

FIELD	2008	2009	2010	2011	2012	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Natural/Phys. Sciences	23	28	59	39	41	190	15.5%	4.5	18.1
Information Technology	152	79	114	87	153	585	0.2%	0.3	53.9
Engr. & Related Tech.	57	58	87	113	72	387	6.0%	3.8	28.0
Architecture/Building	4	2	19	15	10	50	25.7%	3.7	9.5
Agric., Environ. & Related Studies	11	6	33	28	43	121	40.6%	8.0	13.7
Health	55	51	183	159	152	600	28.9%	24.3	62.7
Education	105	75	198	240	195	813	16.7%	22.5	66.7
Management/Commerce	809	885	1,319	1,372	1,298	5,683	12.5%	122.3	188.8
Society and Culture	67	106	207	188	194	762	30.4%	31.8	45.0
Creative Arts	13	15	48	46	38	160	30.8%	6.3	15.8
Food, Hosp. & Personal Serv.	1	3	0	0	0	4	-100.0%	-0.3	1.8
Total	1,297	1,308	2,267	2,287	2,196	9,355	14.1%	224.8	426.2

Source: Australian Government Department of Industry⁴

⁴ See: "Award Course Completions for Overseas Students by Level of Course, Broad Field of Education and Gender," Award Course Completions: Selected Higher Education Statistics Tables, Higher Education Statistics Publications,

In the United States, the most popular postgraduate certificate programs differ somewhat from those in Australia. In particular, more certificates were awarded in music performance programs than for any other program type. However, programs in business administration and management, the second most popular postgraduate certificate, grew much faster (8.0 percent CAGR) than music performance programs (0.7 percent CAGR). Figure 1.9 shows completions data for the top ten graduate certificate program types at the graduate level.

Figure 1.9: Graduate Certificate Completions, Top Ten Program Types, U.S.

FIELD	2008	2009	2010	2011	2012	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Music Performance, General	141	130	158	172	145	746	0.7%	1.0	21.4
Business Administration and Management, Gen.	89	124	119	139	121	592	8.0%	8.0	20.7
Advanced Legal Research/Studies, Gen.	160	142	-	-	-	302	--	--	--
Mechanical Engineering	21	16	21	164	80	302	39.7%	14.8	81.7
Multi-/Interdisciplinary Studies, Other	67	85	78	43	25	298	-21.8%	-10.5	19.2
Engineering, Other	28	55	192	6	10	291	-22.7%	-4.5	116.2
Economics, Gen.	53	68	48	43	38	250	-8.0%	-3.8	12.4
Elementary Education and Teaching	143	82	4	12	4	245	-59.1%	-34.8	35.7
Theology/Theological Studies	41	34	57	59	43	234	1.2%	0.5	14.5
Finance, Gen.	17	22	15	77	97	228	54.6%	20.0	26.1
Total	760	758	692	715	563	3,488	-7.2%	-49.3	67.6

Source: IPEDS

-Data unavailable

Australian Government Department of Industry.

<http://www.innovation.gov.au/highereducation/HigherEducationStatistics/StatisticsPublications/Pages/Students.aspx>

SECTION II: INTERNATIONAL STUDENT REGIONS AND COUNTRIES OF ORIGIN

This section assesses regional variations in international student demand for tertiary-level programs of study at overseas institutions. The analysis in this section compares international student enrolment data—for higher education institutions in Australia, the United States, and the United Kingdom—to identify trends demand based on students' regional and national origins, with a particular focus on Asia and China.

REGIONAL ENROLMENT TRENDS

Overseas enrolments by students from Asia represent 52 percent of all international student enrolments worldwide.⁵ At higher education institutions in the United States, the percentage of international students from Asia is even higher. At the undergraduate level, students from Asia made up 68.9 percent of all international student enrolments between 2008-2009 and 2012-2013; at the graduate level international students from Asia comprised 58.4 percent of all international student enrolments, as shown in Figure 2.1.

Figure 2.1: International Student Enrolments at U.S. Institutions, by Region of Origin

REGION	2008/09	2009/10	2010/11	2011/12	2012/13	FIVE YEAR TOTAL	CAGR	AAC	STDEV
Undergraduate									
Sub-Saharan Africa	21,058	20,059	19,496	18,335	16,999	57,245	-5.2%	-1,014.8	1,183.7
Asia	150,850	156,056	172,133	186,739	205,986	1,029,007	8.1%	13,784.0	5,228.8
Europe	36,489	32,231	31,318	32,359	33,612	159,378	-2.0%	-719.3	2,210.7
Latin America	38,195	34,414	34,573	34,081	34,894	101,972	-2.2%	-825.3	1,767.8
North Africa & Middle East	14,044	15,200	17,800	23,976	32,088	79,267	22.9%	4,511.0	2,768.0
North America	14,581	13,942	13,456	12,866	13,395	59,210	-2.1%	-296.5	479.8
Oceania	2,697	2,523	2,743	2,694	3,008	7,329	2.8%	77.8	197.2
Total	277,914	274,425	291,519	309,336	339,982	1,493,408	5.2%	15,517.0	12,225.9
Graduate									
Sub-Saharan Africa	11,802	12,094	12,248	11,970	9,131	94,233	-6.2%	-667.8	1,271.1
Asia	199,051	201,734	204,402	207,974	215,846	871,764	2.1%	4,198.8	2,152.1
Europe	34,026	32,943	32,288	30,831	29,290	166,009	-3.7%	-1,184.0	350.7
Latin America	20,903	21,376	20,111	19,793	19,789	176,157	-1.4%	-278.5	635.4
North Africa & Middle East	10,860	12,302	14,358	17,084	24,663	103,108	22.8%	3,450.8	2,426.3
North America	13,259	12,019	11,685	11,265	10,982	68,240	-4.6%	-569.3	390.3
Oceania	1,424	1,412	1,479	1,512	1,502	13,665	1.3%	19.5	32.8
Total	291,325	293,880	296,571	300,429	311,203	1,493,176	1.7%	4,969.5	3,389.3

Source: Institute of International Education.⁶ *Beginning with Open Doors 2013, the Africa region was changed to Sub-Saharan Africa and North Africa was grouped with the Middle East to create a Middle East & North Africa region. Bermuda has been moved from North America to the Caribbean."

⁵ Lawton, W. et. al. "Horizon Scanning: What Will Higher Education Look Like in 2020?," Observatory on Borderless Higher Education, September 2013, pp-15-17. http://www.obhe.ac.uk/documents/view_details?id=934

⁶ Data were taken from the tables corresponding to the years 2009-2013: "International Students: Academic Level and Place of Origin," Open Doors Data, Institute of International Education. <http://www.iie.org/Research-and-Publications/Open-Doors/Data/International-Students/By-Academic-Level-and-Place-of-Origin>

At Australian institutions, Chinese, Indian, and Malaysian students accounted for 48.3 percent of all international student enrolments from 2007 through 2011. Chinese students alone accounted for 30.6 percent of international student enrolments over this time period. Moreover, Chinese enrolments grew considerably, at a CAGR of 17.5 percent, whereas Indian enrolments decreased significantly from 2007 through 2011, at a CAGR of -13.4 percent. Figure 2.2 shows Australian enrolment data for Chinese, Indian, and Malaysian international students. Outside of these top three institutions, other interesting trends are evident. While Vietnam was not among the top ten countries sending international students to Australia in 2007, it sent the fourth most in 2011, with almost double the number of Vietnamese students studying in Australia in 2011 (10,967) than in 2008 (5,190). Other states that have seen a notable increase in students in Australia over this time period include South Korea and Indonesia. Conversely, the United States is no longer within the top ten countries sending international students to Australia, despite sending the fourth highest number of students in 2007.

Figure 2.2: International Student Enrolments, Top Three Asian Countries, Australia

COUNTRY	2007	2008	2009	2010	2011	FIVE YEAR TOTAL	CAGR	AAC	STDEV
China	51,145	56,603	69,290	75,558	97,423	350,019	17.5%	11,569.5	6,570.8
India	27,586	26,062	26,398	19,238	15,507	114,791	-13.4%	-3,019.8	2,790.4
Malaysia	15,640	18,349	19,831	15,687	17,973	87,480	3.5%	583.3	2,764.6
Subtotal	94,371	101,014	115,519	110,483	130,903	552,290	8.5%	9,133.0	9,529.1
Total International	202,448	223,508	245,593	230,595	242,351	1,144,495	4.6%	9,975.8	14,969.6

Source: Source: Institute of International Education, Australia Education International⁷

Similarly six of the top ten non-EU countries that send the most international students to higher education institutions in the U.K. are Asian. Combined they accounted for 48.6 percent of international student enrolments from 2008-2009 through 2012/2013. The top two sending countries, China and India, together accounted for 34.7 percent of all international student enrolments over the same time period. As is the case in Australia, enrolments by Indian students have decreased markedly (-10.0 percent CAGR), while the number of enrolments by Chinese students at U.K. institutions has increased rapidly since the 2008-2009 academic year. At a CAGR of 15.5 percent, the growth in Chinese student enrolments trails only the growth in enrolments by Saudi Arabian students (16.0 percent CAGR). However, the much higher volume of Chinese students that attend higher education institutions in the U.K. makes the growth in Chinese enrolments a much more significant phenomenon. Figure 2.3, on the next page, shows U.K. international student enrolment data for the top ten non-EU countries.

⁷ "International Students in Australia - Top 10 sending places of origin and percentage of total international student enrollment," Project Atlas-Australia, Institute of International Education. <http://www.iie.org/en/Services/Project-Atlas/Australia/International-Students-In-Australia>

Figure 2.3: International Student Enrolments, All Higher Education Programs, Top Ten Non-EU Countries, U.K.

COUNTRY	2008/09	2009/10	2010/11	2011/12	2012/13	FIVE YEAR TOTAL	CAGR	AAC	STDEV
China	47,035	56,990	67,325	78,715	83,790	333,855	15.5%	9,188.8	2,432.6
India	34,065	38,500	39,090	29,900	22,385	163,940	-10.0%	-2,920.0	5,631.2
Nigeria	14,380	16,680	17,585	17,620	17,395	83,660	4.9%	753.8	985.9
United States	14,345	15,060	15,555	16,335	16,235	77,530	3.1%	472.5	347.0
Malaysia	12,695	14,060	13,900	14,545	15,015	70,215	4.3%	580.0	543.2
Hong Kong	9,600	9,945	10,440	11,335	13,065	54,385	8.0%	866.3	537.7
Saudi Arabia	5,205	8,340	10,270	9,860	9,440	43,115	16.0%	1,058.8	1,534.1
Pakistan	9,610	9,815	10,185	8,820	7,185	45,615	-7.0%	-606.3	900.7
Canada	5,350	5,575	5,905	6,115	6,190	29,135	3.7%	210.0	90.6
Thailand	4,675	5,505	5,945	6,235	6,180	28,540	7.2%	376.3	317.6
All other	94,355	100,290	101,915	103,205	103,100	502,865	2.2%	2,186.3	2,259.5
Total (all UK HEIs)	251,310	280,760	298,110	302,680	299,970	1,432,830	4.5%	12,165.0	12,294.4

Source: Higher Education Statistics Agency⁸

TRENDS IN CHINESE STUDENT DEMAND FOR OVERSEAS EDUCATION

Despite strong overall enrolment growth in recent years, some experts suggest that demand from Asian students for overseas programs of study may lessen within the next decade. According to a report from the Observatory on Borderless Higher Education (OBHE), the percentage of Asian students enrolled overseas is projected to decrease by 2020.⁹ The OBHE report notes that increases in the number of domestic higher education opportunities, “a sharp decrease in the size of the 18-24 age cohort in key countries such as China,” and “growing outbound mobility ratios in Latin America and Africa” as factors that will contribute to the expected decrease in the percentage of international students from Asian countries.¹⁰ However, despite the projected decrease—part of an overall slow-down in demand for international higher education—the OBHE report suggests that the international market for higher education “will not change significantly by 2020” with G20 countries continuing to dominate: “the main English-speaking exporting countries along with Germany, France, and Japan will maintain their leading positions.”¹¹

In China, the domestic higher education market is growing rapidly. The Chinese government “is using large subsidies to educate tens of millions of young people as they move from farms to cities,” dramatically increasing the number of domestic higher education

⁸ “Table 6-Top ten non-EU countries of domicile in 2012/13 for student enrolments on HE courses by location of HE institution and country of domicile 2008/09 to 2012/13,” *Statistical First Release 197*, Higher Education Statistics Agency. <http://www.hesa.ac.uk/content/view/1897/239/#non-uk>

⁹ Lawton, W. et. al. “Horizon Scanning: What Will Higher Education Look Like in 2020?” Observatory on Borderless Higher Education, September 2013, pp-15-17. http://www.obhe.ac.uk/documents/view_details?id=934

¹⁰ Ibid.

¹¹ Ibid.

opportunities.¹² In the last decade, China has quadrupled “its output of college graduates” and “now produces eight million graduates a year from universities and community colleges,” although questions persist about the quality of instruction at many higher education institutions in the country.¹³

The increasing number of university graduates in China has led to much greater competition in the labour market for positions that require a university degree. Some observers suggest that increasing number of graduates, in combination “with the Chinese economy downshifting in the past year to a slower growth rate, the country faces a glut of college graduates with high expectations and limited opportunities.”¹⁴ Already, “unemployment among recent graduates” has increased to 16 percent—four times the normal rate—and wage premiums for university graduates have decreased 19 percent.¹⁵ Moreover, a recent study indicates that, compared to the 94 million university graduates China is expected to produce by 2020, only 46 million positions that require a college degree will become available.¹⁶ According to the Hu Yifan of the Peterson Institute for International Economics,

The increasing difficulty for college graduates in the job market is caused by multiple factors, including distorted job expectations toward openings at the public sector and SOEs, structural labour mismatch across sectors and regions, and a larger mismatch between the national education system and labour demand.¹⁷

In particular, with regard to the larger mismatch, for the last decade “the excess of college-educated workers has created a structural mismatch in the labour market leading to an oversupply of college graduates and a shortage of vocational and technical school graduates.”¹⁸ However, although it is clear that the supply of college graduates exceeds the domestic demand in China, the ramifications of this imbalance with regard to Chinese student demand for overseas higher education remains uncertain. This is especially true with respect to the fields of study and the academic levels of specific degree programs currently popular with Chinese students studying in Australia and the United States.

In keeping with broader trends in international student demand—which, it should be noted, are heavily influenced by Chinese students studying overseas—by far the most popular field of study for Chinese students in Australia is business and management. More than 64,500 Chinese students, across all levels of tertiary study, enrolled in programs in business and

¹² Bradsher, Keith. “Next Made-in-China Boom: College Graduates,” *The New York Times*, January, 16, 2013. <http://www.nytimes.com/2013/01/17/business/chinas-ambitious-goal-for-boom-in-college-graduates.html?pagewanted=1>

¹³ *Ibid*

¹⁴ *Ibid*.

¹⁵ Huang, Yukon and Canyon Bosler. “China’s Dangerous Graduate Glut” *Bloomberg View*, May 13, 2014. <http://www.bloombergview.com/articles/2014-05-13/china-s-dangerous-graduate-glut>

¹⁶ Song, Sophie. “Future Of Chinese College Graduates Is Bleak: More Than Half Will Have To Take Blue-Collar Jobs By 2020,” *International Business Times*, June, 10, 2013. <http://www.ibtimes.com/future-chinese-college-graduates-bleak-more-half-will-have-take-blue-collar-jobs-2020-1298875>

¹⁷ Hu, Yifan. “Oversupply of College Graduates? Structural Mismatch!,” *China Economic Watch*, Peterson Institute for International Economics, July 10, 2013. <http://blogs.piie.com/china/?p=2876>

¹⁸ *Ibid*.

management in 2011, or 66 percent of all enrolments by Chinese students. As Figure 2.4 demonstrates, engineering was the next most popular field of study, but enrolments in the field accounted for only 7.8 percent of all enrolments by Chinese students in Australia.

Figure 2.4: Chinese Student Enrolments at Australian Institutions, by Broad Field of Study, 2011

FIELD	2011
Business and Management	64,569
Engineering	7,581
Mathematics and Computer Sciences	5,378
Social Sciences	4,841
Fine and Applied Arts	4,642
Health Professions	3,469
Other/Unspecified Subject Areas	2,906
Physical and Life Sciences	2,156
Education	1,120
Agriculture	761
Total	97,423

Source: Institute of International Education, Australia Education International¹⁹

*Note that 2011 is the only year for which data are available.

As is more broadly true of the international student enrolments at Australian institutions, Chinese students participate in higher education in greater numbers at the undergraduate, degree-seeking level than at the graduate level. As shown in Figure 2.5, 51.7 percent of Chinese students in Australia in 2011 were enrolled at the undergraduate, degree-seeking level, as opposed to 33 percent enrolled at the graduate, degree-seeking level.

Figure 2.5: Chinese Student Enrolments at Australian Institutions, by Level of Study, 2011

LEVEL	2011
Undergraduate Degree-seeking International Students	50,410
Undergraduate Non-degree-seeking International Students	12,825
Graduate Degree-seeking International Students	32,173
Graduate Non-degree-seeking International Students	2,015
Total	97,423

Source: Institute of International Education, Australia Education International²⁰

*Note that 2011 is the only year for which data are available.

¹⁹ "International Students in Australia-Field of study information for the top 10 places of origin," Project Atlas-Australia, Institute of International Education. <http://www.iie.org/en/Services/Project-Atlas/Australia/International-Students-In-Australia>

²⁰ Ibid.

Similarly to Australia, business and management, engineering, and mathematics/computer science programs in the United States attract more Chinese students than any other fields of study. However, at higher education institutions in the United States, business and management is not nearly the dominant choice for Chinese students that it is in Australia. In 2011, 27.5 percent of Chinese students in the United States enrolled in business and management programs, compared to the aforementioned 66 percent of Chinese students in Australia. As Figure 2.6 illustrates, though, business and management has been increasing in popularity among Chinese students in the United States; in 2013, 29 percent of Chinese students enrolled in such a program.

Figure 2.6: Chinese Student Enrolments at U.S. Institutions, by Broad Field of Study

FIELD	2010	2011	2012	2013
Business/Management	24.3%	27.5%	28.7%	29.0%
Education	1.9%	2.1%	1.7%	1.7%
Engineering	20.2%	19.2%	19.6%	19.2%
Fine/Applied Arts	2.8%	3.4%	3.8%	4.9%
Health Professions	2.1%	2.0%	1.5%	1.3%
Humanities	1.1%	1.2%	1.3%	1.0%
Intensive English	4.9%	4.3%	2.8%	3.2%
Math/Computer Science	10.7%	10.6%	11.2%	11.2%
Physical/Life Sciences	12.6%	11.5%	9.9%	8.8%
Social Sciences	6.7%	7.0%	7.7%	8.2%
Other*	10.1%	8.9%	9.6%	9.0%
Undeclared	2.6%	2.3%	2.2%	2.5%
Total Students	127,628	157,558	194,029	235,597

Source: Institute of International Education²¹

* "Includes primarily agriculture, communications, law, general studies and multi/interdisciplinary studies."²²

Although most Chinese students enrol in undergraduate and graduate programs in business, management, and the STEM fields, research suggests that there may be a growing interest in alternative fields of study, such as the humanities and the social sciences. Indeed, Figure 2.6 does show an increasing interest among Chinese students in social sciences and fine/applied arts programs in the United States. Some observers suggest that Chinese graduate students are increasingly interested in a "more diverse mix of fields" and that "many students in Hong Kong and Mainland China seeking opportunities and options to study business, law, architecture and the humanities."²³

Moreover, Ann White, the director for Hong Kong-China at the Institute of International Education (IIE), notes that at education fairs the IIE has been "seeing clear trends among undergraduates that include a move away from the undergraduate "default" majors of accounting, business and engineering, with emerging interest in humanities, and rising

²¹ Data were taken from the tables corresponding to the years 2010-2013: "International Students: Fields of Study by Place of Origin," Open Doors Data, Institute of International Education. <http://www.iie.org/Research-and-Publications/Open-Doors/Data/International-Students/Fields-of-Study-Place-of-Origin>

²² Ibid.

²³ White, Ann. "Chinese Students' International Study: Factors Feeding the Decision Process," World Education News and Review, February 1, 2011. <http://wenr.wes.org/2011/02/wenr-januaryfebruary-feature/>

awareness of community colleges as pathways.”²⁴ White suggests that “Chinese students, and their very influential parents, are becoming more confident that they no longer need purely ‘vocational’ study paths,” such as business or engineering, and that “students from China are becoming comfortable with the humanities at the undergraduate and graduate levels.”²⁵

According to the British Council’s Education Intelligence Unit, there have been notable shifts in the patterns of Chinese student demand. Although Chinese students are “still most likely to study business administration and engineering and technology at overseas universities,” growth in these areas has slowed.²⁶ At the same time, there has been stronger growth in the number of “students from China wanting to study mass communication and documentation, and creative arts and design.”²⁷ A 2011 report indicated that²⁸

- Students from China saying they want to study mass communication has risen by 81% since 2008 (“the third most popular choice for Chinese students wanting to study overseas, rising from 8th most popular in 2006-07”);
- Prospective Chinese students wanting to study creative arts has risen by 54% during the same period; and
- Architecture, building and planning has seen 35% growth in interest from China in the last two years.

²⁴ Ibid.

²⁵ Ibid.

²⁶ Sharma, Yojan. “GLOBAL: What international students want to study,” University World News, March 20, 2011. <http://www.universityworldnews.com/article.php?story=20110318130504251>

²⁷ Ibid.

²⁸ Bullet points quoted from: Ibid.

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