Mal-Employment Problems among College-Educated Immigrants in the United States

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Introduction

This paper is the fifth in a series of five research papers that examines the nature of labor force underutilization problems of foreign-born college graduates in the United States.[1] Although all papers in this series have examined labor market underutilization problems across different subgroups of foreign-born college graduates, there has been a special focus on the extent of labor market underutilization among foreign-born college graduates who earned their college degrees from overseas colleges and universities. Workers can encounter impediments to labor market success at different points along their labor market experience, beginning at labor market entry in the form of low levels of labor force participation, after labor market entry in the form of unemployment, and after securing jobs, in the form of involuntary part-time employment and mal-employment.

The first paper in this series examined hourly earnings of immigrant college graduates. Although earnings are not a measure of labor market underutilization, an examination of earnings differentials can shed light on the labor market problem of low earnings among college graduates, which might be attributable partly to labor market underutilization. Our paper on the hourly earnings of college-educated immigrants, *The Earnings of Foreign-Educated College Graduates: An Examination of the Determinants of the Hourly Earnings of College-Educated Immigrants*, found that the mean hourly wage of immigrants with U.S. college degrees was 15 percent higher than that of their counterparts with non-U.S. degrees and 21 percent higher than that of immigrants with college degrees from abroad excluding Canada, the United Kingdom (UK), and Australia.

Our paper on the level of labor force participation among immigrant professionals, *Findings from an Examination of the Labor Force Participation of College-Educated Immigrants in the United States,* found exceptionally high rates of labor force attachment among immigrants with degrees from overseas colleges and universities, with very little evidence of underutilization problems associated with discouragement in participating in the labor market among these individuals. Our analysis of the unemployment problems of foreign-born college graduates (in the paper, *Unemployment Problems among College-Educated Immigrants in the United States)* found that although the unemployment rate of foreign-born college graduates was below 5 percent (4.8%), it was 60 percent higher than that of native-born college graduates (3%), revealing a somewhat elevated unemployment problem among immigrant college graduates relative to their native-born counterparts. The unemployment rate of immigrants with African college degrees was 7.7 percent, or 71 percent higher than that of immigrants with U.S. college degrees (4.5%). Unemployment rates of immigrants with college degrees from six out of nine countries/regions (examined in this paper) were higher than that of immigrants with U.S. degrees. A listing of counties in each world region can be found in Appendix A.

The subject of our fourth paper in this series, *Involuntary Part-Time Employment Problems among College-Educated Immigrants in the United States*, was involuntary part-time employment, which is a form of labor market underutilization as individuals in this status desire full-time positions but are unable

[1] The National Survey of College Graduates (NSCG) identifies the following citizenship and visa status of respondents: 1) citizens—those born in the United States, Puerto Rico, or other U.S. territories and those born abroad of American parents; 2) naturalized citizens—those born abroad who have become U.S. citizens by naturalization; 3) non-citizens with permanent U.S. resident visas (green cards), and 4) non-citizens with temporary U.S. resident visas. We define foreign-born college graduates as naturalized citizens or non-citizens with permanent or temporary U.S. resident visas (listed as categories 2, 3, and 4 above). Our definition of foreign-born is similar to that used by the U.S. Census Bureau. In this paper we use the terms foreign-born and immigrant interchangeably.

to find full-time work. That paper found a high rate of involuntary part-time employment among college-educated immigrants. About 9 percent of all college-educated immigrants were working in part-time jobs, and 27 percent of this group expressed a desire for full-time employment—that is, they were involuntarily working in part-time jobs. The rate of involuntary part-time employment among immigrants with U.S. college degrees was 26 percent, or just 2 percentage points lower than that among immigrants with foreign college degrees (28%). However, a comparison of involuntary part-time employment rates by country or region in which immigrants had earned their most recent college degrees revealed sizable variation ranging from 6 percent among those with Canadian, Australian, or British college degrees and 18 percent among those with Indian college degrees to 36 percent among immigrants with European (excluding UK) or Filipino college degrees and nearly 40 percent among those who had earned their most recent degrees at Chinese colleges or universities.

In this paper, we examine our fourth and final component of job market underutilization among immigrant college graduates—a measure commonly referred to as mal-employment. Mal-employment is a measure of underemployment or underutilization in the labor market. Mal-employment occurs when college graduates are working in occupations in which they do not use the knowledge, skills, and abilities that typically are developed through a college education. For example, college graduates waiting tables or working as receptionists or retail salespersons are mal-employed. As in the previous papers in this series, we examine mal-employment problems among immigrant college graduates with a special focus on those immigrants to the United States who earned their most recent college degrees from institutions located outside the United States.

This paper presents levels and variations in rates of mal-employment by demographic characteristics of college-educated immigrants, including gender, age, marital status, presence of children in the household, and school enrollment status at the time of the National Survey of College Graduates (NSCG); human capital characteristics such as level of college education completed, country in which immigrants earned their most recent college degrees, major field of study of the most recent college degrees, and English language proficiency; and immigration-related traits including the year in which immigrants first entered the United States and the type of visa with which they first entered the United States for more than six months.

The year of entry into the United States provides a way to measure the amount of time immigrants have had to assimilate into their adopted country and its labor market and improve their employment and earnings. As they spend more time in their adopted country, the language and cultural barriers they face in the labor market and lack of social support typically decline. Guerrero and Rothstein (2012) found that language fluency, cultural knowledge, and social support of skilled immigrants influence the efficacy of their job search, which they contend is likely to increase the number of interviews and job offers in the preferred occupation and thereby decrease the risk of underemployment. Year of entry to the United States could therefore be associated with the likelihood of mal-employment.

The type of visa with which an immigrant enters the United States is a measure of the immigrant's initial connection to the U.S. labor market as well as a potential commitment by an employer seeking certain skills and abilities. Immigrants who enter the United States with work visas have jobs when they arrive in this country. Because immigrants with work visas have a stronger connection to U.S. employers that are seeking particular high-end skills, they are more likely to work in college labor market (CLM) occupations and so are less likely to be mal-employed. Entry to the United States with student visas also might be associated with lower rates of mal-employment as these immigrants typically have earned their

most recent college degrees in U.S. colleges or universities, which we have found to be associated with better labor market outcomes than those of immigrants with college degrees earned abroad.

Local labor market conditions may vary from one area of the United States to another, which means that labor market outcomes of workers are likely to vary depending on local economic conditions. Like any other labor market problem, the prevalence of mal-employment varies by the relative supply and demand conditions for college graduates. Poor local labor market conditions mean diminished employment opportunities, which potentially push college graduates to accept employment in non-college labor market jobs that typically are staffed by workers with lower levels of education. Since labor market problems, including mal-employment, typically are related to overall local labor market conditions, we examined the prevalence of mal-employment among immigrant college graduates by their region of residence in the United States.

After a discussion of the definition of mal-employment, including the way in which we measured mal-employment among college-educated immigrants, this paper begins with an examination of some key labor market outcomes among mal-employed immigrant college graduates and their counterparts employed in CLM jobs that utilize the knowledge, skills, and abilities typically developed through a college education. We compare the employment intensity (hours per week, weeks per year, and hours per year) of mal-employed immigrants with those working in college-level jobs. Differences in employment intensity and earnings between these two groups represent some of the potential labor market losses borne by mal-employed immigrant college graduates.

Next, we present a descriptive analysis of the prevalence of mal-employment among different groups of immigrant college graduates. Beginning with a comparison of mal-employment rates of native-born and foreign-born college graduates, the remaining descriptive analysis focuses on the prevalence of mal-employment among different subgroups of foreign-born college graduates. Although the focus is on the country or region of immigrant college degrees, we also present variation in mal-employment rates by demographic characteristics, degree level, English language proficiency, major field of study, and immigration-related traits of year of entry and type of entry visa to the United States.

While the descriptive analysis provides insight into the association between mal-employment and different traits of college-educated immigrants, it does not provide estimates of the independent effect of different traits of immigrant college graduates on the likelihood of mal-employment. Therefore, the next section of the paper presents findings from a multivariate regression analysis designed to provide estimates of the independent impact of different traits of immigrant college graduates on the likelihood of mal-employment. For example, our descriptive analysis finds a gap of 5 percentage points between the mal-employment rate of foreign-born men and women; immigrant women were 5 percentage points more likely to be mal-employed than were men. Was the gap due to the greater difficulty of immigrant women in securing CLM jobs, or was it due to systematic differences between men and women in their demographic, human capital, and immigration-related traits? Multivariate regression analysis allows us to estimate the relationship between mal-employment and gender after statistically controlling for other factors found to be related to the likelihood of mal-employment (demographic traits, degree level, major field of study, country/region of college degree, type of entry visa, etc.). Both descriptive and regression analyses of mal-employment are presented for all college-educated immigrants and separately for male and female immigrants.

Key Findings

- One in four (26%) foreign-born college graduates was mal-employed.
- Mal-employed college-educated immigrants earned $9 or 25 percent less per hour and $20,000 or 28% less per year compared with their counterparts who were not mal-employed.
- The mal-employment rate among immigrant college graduates who had earned their college degrees abroad was 36 percent—twice as high as the mal-employment rate among their counterparts with U.S. college degrees (18%).
- Immigrants with Filipino, African, or Latin American college degrees had the highest rates of mal-employment—50, 47, and 46 percent, respectively; whereas those with Canadian or British college degrees had the lowest rates of mal-employment (14% and 17%, respectively).
- Mal-employment rates among college-educated immigrants were sharply lower among those with higher levels of college education—36 percent among those with only bachelor's degrees, 16 percent among those with master's degrees, and 9 percent and 6 percent, respectively, among those with professional or doctorate degrees.
- The fields in which immigrants had earned their most recent college degrees were associated with different rates of mal-employment, ranging from just 11 percent among computer and information science graduates to 35 percent among those with college degrees in language, arts, and communication fields.

Data Source and Definitions

This paper is based upon the authors' analysis of the 2003 NSCG public use data file. The NSCG database contains responses of a sample of 100,400 U.S. residents who held bachelor's or higher degrees at the time of the 2000 decennial census. The age of the NSCG sample respondents was between 23 and 76 years in 2003. The 2003 NSCG sample was drawn from 2000 decennial census long-form survey respondents with bachelor's degrees or higher. The NSCG database contains nearly 450 variables providing detailed information on level of college educational attainment and school enrollment status, labor market status and job characteristics of employed survey respondents, and their demographic traits, including nativity status and country/region of the world where foreign-born college graduates earned their most recent college degrees. The contents and sample size of the 2003 NSCG provide a rich database that is ideally suited to this study.

The authors identified immigrants as those respondents who were born abroad. Based on answers to questions regarding citizenship, the NSCG classifies all respondents into four categories: 1) native-born U.S. citizen; 2) naturalized U.S. citizen; 3) not a U.S. citizen—permanent U.S. resident, and 4) not a U.S. citizen—temporary U.S. resident. The foreign-born or immigrant population consists of naturalized U.S. citizens and both categories of non-U.S. citizens—permanent and temporary U.S. residents.

The age of respondents included in the 2003 NSCG data ranges between 23 and 76 years. However, the analysis in this paper is restricted to individuals under the age of 65 years. Because of the markedly lower labor force attachment of the 65+ population associated with retirement income compared with the non-elderly, the elderly population was excluded from analyses presented in this paper. The NSCG questionnaire contains questions about respondents' employment status during the survey reference week—the week of October 1, 2003. Respondents were asked to report whether they were working for pay or profit during the survey reference week; those who reported that they were working for pay or profit during the NSCG survey reference week were classified as employed. The mal-employment rate was computed only among employed college graduates. The analysis presented in this paper is restricted to the household population of 23- to 64-year-old college graduate U.S. residents who were employed during the reference week of the 2003 NSCG survey—the week of October 1, 2003.

The NSCG asked all employed respondents to identify their occupation. Respondents to the survey were asked to describe the kind of work they were doing on the job they held during the NSCG reference week and to identify out of a long list of occupation titles the one that best described the work they were doing. Using these data, an occupational code was assigned in the 2003 NSCG public use data file to each respondent for the job he or she held in October of 2003.

This occupational information was used to define mal-employment. Mal-employment is a measure of underemployment or underutilization in the labor market. Mal-employment occurs when college graduates are working in occupations in which they do not use the knowledge, skills, and abilities that typically are developed through a college education (Fogg & Harrington, 2011). For example, college graduates waiting tables or working as receptionists or retail salespersons are mal-employed. A mal-employed college graduate works in a job that is substandard. Mal-employment represents a mismatch between the skill requirements of the job and the education of the worker, wherein the education of the worker substantially exceeds the education and skill requirements of the job. Literature on this subject identifies four measures that are used most frequently to identify overeducation or mal-employment (McKee-Ryan & Harvey, 2011; Feldman, 1996; Groot & van den Brink, 2000; Hartog, 2000). Of these four measures, two are subjective and two are objective. The two subjective measures are based either on reporting by incumbent workers that they are overeducated for their jobs or a comparison of the education of incumbent workers with their assessment of the minimal skill and educational requirements to perform the job. The objective measures include one, called realized matches, in which the education required to perform a job is derived from the mean level of education of incumbent workers in an occupation. The second, called job analysis, is based on a systematic evaluation of the occupation by experts to determine the level of education required to perform the job.

We used the objective method of job analysis to identify a set of occupations that requires a college education to perform job duties in these occupations. Job analysis methodology is considered a superior method of identifying job requirements because of its clarity and objectivity and the detailed information about the occupation upon which the determination is made of the educational requirements to perform work in that occupation (Hartog, 2000). We used findings from a job analysis of each occupation provided in the Occupational Information Network (commonly referred to as the O*NET system) that was developed by the U.S. Department of Labor's Employment and Training Administration. The O*NET, which is the primary source of occupational information in the nation, defines key features of an occupation in the form of standardized, measureable sets of worker-oriented and job-oriented descriptors

that describe the day-to-day aspects of the job and the qualifications and interests of the typical worker in the occupation. The O*NET system has 277 descriptors that provide occupation-specific information about the work tasks, skills, abilities, knowledge areas, work content, and work styles for each of the nearly 1,000 occupations in the Standard Occupational Classification system. The information in the O*NET is based on surveys of incumbent workers, supervisors, and occupational analysts and is regularly updated with ongoing surveys.[2]

The O*NET provides Job Zone classification of each occupation. Based on data gathered from occupational experts and incumbent workers regarding levels of education, experience, and training required to work in each occupation, the O*NET classifies occupations into five levels of the Job Zone system. Each occupation in the O*NET system is assigned one of the five Job Zone levels that define the level of education, experience, job training, and specific vocational training required to perform work in each occupation. Figure 1 contains descriptions of the five Job Zones in the O*NET system (National Center for O*NET Development, 2008). The authors' definition of college labor market occupations includes those with Job Zone classifications of zone 4 or zone 5. After pairing NSCG occupations with O*NET occupations, the authors assigned a Job Zone code to each occupation identified in the NSCG database and defined mal-employed college graduates as those working in occupations with a Job Zone classification of 1, 2, or 3 and CLM-employed college graduates as those employed in occupations with Job Zone classifications of 4 or 5.

A distribution of all foreign-born college graduates who were employed in October 2003 by Job Zone is presented in Figure 2. A total of 3.853 million foreign-born college graduates under age 65 were employed during the reference week of the 2003 NSCG. A distribution by Job Zone of the occupations of these employed immigrant college graduates shows 2 percent working in the lowest-level occupations classified in Job Zone 1, 8 percent working in Job Zone 2 occupations, and 16 percent working in Job Zone 3 occupations. These three groups totaling nearly 1 million (997,000) immigrant college graduates were mal-employed. The mal-employment rate is defined as the *proportion of employed workers* working in non-CLM occupations (Job Zones 1, 2, and 3) during the 2003 NSCG reference week. For example (from Figure 2), 996,932 out of 3,852,487 foreign-employed college graduates were working outside the college labor market during the week of October 1, 2003, yielding a mal-employment rate of 26 percent (996,932 ÷ 3,852,487). The remaining 74 percent were employed in CLM occupations classified as Job Zones 4 or 5.

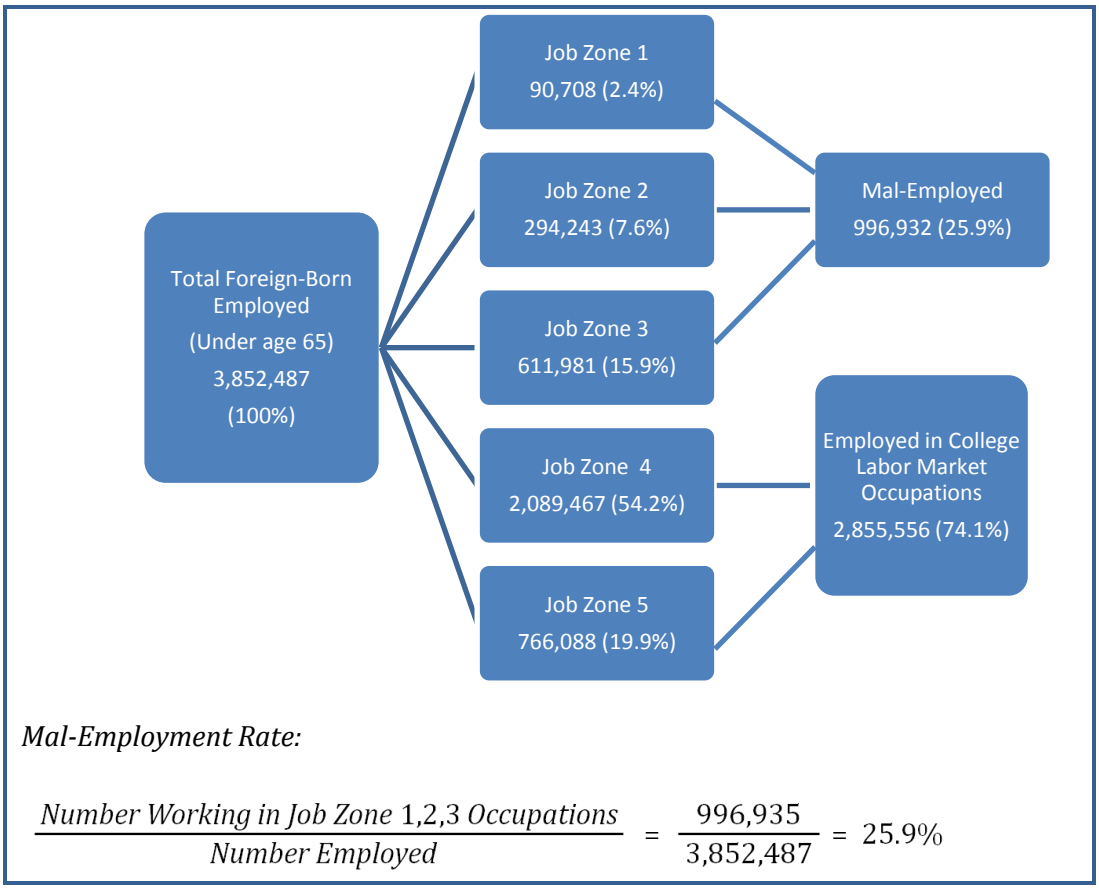
[2] For an overview of O*NET, see: http://www.onetcenter.org/overview.html

Figure 1: O*NET Description of Job Zones

Requirement	Job Zone 1: Little or No Preparation Needed
Overall Experience	No previous work-related skill, knowledge, or experience needed
Job Training	Few days to a few months
Education	May require a high school diploma or GED; some may require a formal training course to obtain a license
Requirement	**Job Zone 2: Some Preparation Needed**
Overall Experience	Some previous work-related skill, knowledge, or experience may be helpful but is usually not needed
Job Training	Few months to one year
Education	Usually require a high school diploma and may require some vocational training or job-related course work
Requirement	**Job Zone 3: Medium Preparation Needed**
Overall Experience	Previous work-related skill, knowledge, or experience required
Job Training	One to two years
Education	Usually require training in vocational schools, related on-the-job experience, or associate's degree; some may require bachelor's degree
Requirement	**Job Zone 4: Considerable Preparation Needed**
Overall Experience	Minimum of two to four years of work-related skill, knowledge, or experience is needed
Job Training	Usually require several years of work-related experience, on-the-job training, and/or vocational training
Education	Usually require four-year bachelor's degree, but some do not
Requirement	**Job Zone 5: Extensive Preparation Needed**
Overall Experience	Extensive skill, knowledge, and experience are needed; many require more than five years of experience
Job Training	May require some on-the-job training, but most of these occupations assume that the person will already have the required skills, knowledge, work-related experience, and/or training
Education	Bachelor's degree is the minimum formal education required; however, many also require graduate school—for example, may require master's degree, and some require Ph.D., M.D., or J.D. (law degree).

Source: National Center for O*NET Development. (2008). *Procedures for O*NET Job Zone assignment*. Raleigh, NC: the Center. Appendix (pp. 11-13). Available from http://www.onetcenter.org/dl_files/JobZoneProcedure.pdf

Figure 2: Definition of Mal-Employment



A Comparison of Labor Market Outcomes of Mal-Employed College Graduates and Those Employed in College Labor Market Jobs

Labor market underutilization in the form of mal-employment is not as visible as the problem of unemployment. Indeed, no regular measure of mal-employment is published in the United States.[3] Although having a job is better than being unemployed, workers who are underemployed in the form of mal-employment or involuntary part-time employment experience sizable negative labor market consequences. In a previous paper (*Involuntary Part-Time Employment Problems among College-Educated Immigrants in the United States*), we found that foreign-born college graduates who worked in part-time jobs but wanted full-time jobs (involuntary part-time employment) had 58 percent fewer annual hours of work and 72 percent lower annual earnings compared with their counterparts who worked in full-time jobs.

[3] In the United Kingdom an annual report is produced on post-college outcomes by major field of study and occupation that provides some insight into the nature of the transition to work from college including measures of employment in "graduate occupations." See: Higher Education Careers Service Unit and the Association of Graduate Careers and Advisory Services. (2012). *What Do Graduates Do?* Manchester, England: HECSU. Available from http://www.hecsu.ac.uk/assets/assets/documents/WDGD_Oct_2012.pdf

Mal-employment has similar negative consequences for college graduates in the form of reduced annual earnings. Even though they are employed, mal-employed college graduates have low earnings and few job-related benefits as they work in jobs outside the college labor market that are typically low-skill and low-wage jobs with few (if any) job-related benefits (Fogg & Harrington, 2011; Morissette & Galarneau, 2004; Hartog, 2000). Working in low-skill and low-wage jobs also means that those who work outside the college labor market do not gather college-level work experience that can enhance their human capital and bolster their long-term employment and earnings. Furthermore, like any other labor market problem, mal-employment and any type of labor market underemployment also have negative impacts on the health and well-being of workers (Friedland & Price, 2003; Mendes, 2011). Underemployed workers are known to have lower levels of job satisfaction (Burris, 1983). Mal-employment also has negative effects on the economy, as the skills and human capital of college graduates are not fully utilized in the labor market, resulting in lost output from underutilization of the productive potential of those active in the labor market.

Table 1 presents findings from our examination of labor market costs of mal-employment among college graduates comparing seven labor market outcome measures for mal-employed foreign-born college graduates with those of their counterparts employed in CLM occupations based on findings from the NSCG.

Our previous paper on involuntary part-time employment found that in 2003 only about 9 percent of immigrant, as well as native-born, college graduates were working in part-time positions. The data presented in Table 1 reveal sizable differences in the share of part-time workers between mal-employed and CLM-employed college graduates. Nearly 12 percent of mal-employed immigrants were working in part-time positions compared with 8 percent among those who were working in CLM jobs. Among native-born college graduates, the part-time employment rate was 15 percent among those who were working outside the college labor market and 9.5 percent among those working in CLM jobs. Among those who did work part-time, involuntary part-time employment was more prevalent among those working in non-CLM jobs than among those working in CLM jobs. Nearly one-third of mal-employed immigrants were working in part-time jobs involuntarily compared with less than one-quarter among their counterparts employed in CLM jobs. Even among native-born college graduates, involuntary part-time employment was more prevalent among those who were mal-employed (16.3% and 13.3%, respectively), albeit the level of involuntary part-time employment and size of the gap between mal-employed and CLM-employed native-born workers were not as large as those among immigrant college graduates.

The intensity of employment—measured by annual hours of work—was somewhat lower among college graduates who were mal-employed than among those who worked in CLM jobs. Immigrant college graduates who were mal-employed worked 141, or 6 percent, fewer hours per year than those who worked in CLM jobs. The gap in mean annual hours of work was somewhat smaller among native-born college graduates (92 hours, or 4 percent). The small gap between the employment intensity of mal-employed and CLM-employed college graduates is not surprising since a large majority of CLM-employed and mal-employed graduates worked in full-time positions. Mal-employed college graduates had slightly lower mean weekly hours and slightly higher mean annual weeks of work than those in CLM jobs. On average, mal-employed college graduates (foreign-born and native-born) worked a 41-hour work week for 50 weeks per year while their counterparts employed in CLM jobs worked a 44-hour work week for 49 weeks per year.

A comparison of hourly earnings of mal-employed and CLM-employed college graduates reveals a sizable wage penalty associated with mal-employment. The gap in hourly earnings between the two groups is the consequence of lower job quality among the mal-employed. In 2003, mean hourly earnings of immigrant mal-employed college graduates (working in occupations classified in O*NET Job Zones 1, 2, or 3) were $24, or nearly $16 lower than the $40 mean hourly earnings of their counterparts who worked in CLM occupations (classified as O*NET Job Zones 4 and 5.). In relative terms, this represents a nearly 40 percent hourly earnings deficit among mal-employed immigrant college graduates compared with their CLM-employed counterparts. Among the native-born, mean hourly earnings of mal-employed college graduates were lower than those of CLM-employed college graduates by $9, or 25 percent.

Table 1: Differences in Labor Market Outcomes of College Graduates under 65 Years Old Employed in CLM Occupations and those Mal-employed, by Nativity Status, 2003

Nativity Status and Economic Outcomes of College Graduates	(A) CLM Employed	(B) Mal-Employed	(C) Absolute Difference (B - A)	(D) Relative Difference (C ÷ A; %)
Foreign-born, under 65:				
Percent working part-time	8.0	11.7	3.7	46.3
Percent of part-time wanting full-time work (involuntary PT)	24.2	32.6	8.4	34.7
Mean annual hours	2,185	2,044	-141	-6.5
Mean weekly hours	44	41	-3	-6.8
Mean annual weeks	49	50	1	2.0
Mean hourly earnings	$39.94	$24.11	-$15.83	-39.6
Mean annual earnings	$74,319	$42,456	-$31,863	-42.9
Native-born, under 65:				
Percent working part-time	9.5	14.6	5.1	53.7
Percent of part-time wanting full-time work (involuntary PT)	13.3	16.3	3.0	22.6
Mean annual hours	2,162	2,070	-92	-4.3
Mean weekly hours	44	41	-3	-6.8
Mean annual weeks	49	50	1	2.0
Mean hourly earnings	$36.09	$27.26	-$8.83	-24.5
Mean annual earnings	$68,660	$49,577	-$19,083	-27.8
All, under 65:				
Percent working part-time	9.4	14.2	4.8	51.1
Percent of part-time wanting full-time work (involuntary PT)	14.4	18.1	3.7	25.7
Mean annual hours	2,164	2,066	-98	-4.5
Mean weekly hours	44	41	-3	-6.8
Mean annual weeks	49	50	1	2.0
Mean hourly earnings	$36.55	$26.85	-$9.70	-26.5
Mean annual earnings	$69,340	$48,651	-$20,689	-29.8

Sharply lower hourly earnings combined with somewhat fewer annual hours of work of mal-employed college graduates yields sharply lower annual earnings. Another outcome examined in Table 1 is 2003 mean annual earnings of immigrant and native-born college graduates by mal-employment status. Despite working intensively during the year, mal-employed college graduates earned a sharply lower annual salary compared with those who worked in CLM occupations. The mean annual earnings of mal-employed immigrants were $42,500, representing about $31,900, or 43 percent, lower earnings than the $74,400 mean annual earnings of CLM-employed immigrant college graduates. The gap in mean annual earnings between mal-employed and CLM-employed native-born college graduates was also large, albeit not as large as that among immigrant college graduates—$49,600 versus $68,700, representing $20,000 or a 28 percent earning penalty from mal-employment.

Mal-employment among college graduates imposes steep labor market costs, particularly in the level of hourly and annual earnings among immigrant as well as native-born college graduates. Among immigrants, compared with CLM-employed college graduates, those who were mal-employed were: 3.7 percentage points (or 46%) more likely to work in part-time jobs; 8.4 percentage points (or 35%) more likely to be employed in part-time positions involuntarily; employed for 141 (or 6.5%) fewer hours per year, and earning $16 (or 40%) less per hour and $31,900 (or 43%) less per year. Among college graduates born in the United States, compared with the CLM employed, those who were mal-employed were: 5.1 percentage points (or 54%) more likely to work in part-time jobs; 3 percentage points (or 23%) more likely to be employed in part-time positions involuntarily, employed for 92 (or 4%) fewer hours per year, and earning $9 (or 25%) less per hour and $20,000 (or 28%) less per year. Underemployment or underutilization of college-educated immigrants in the form of mal-employment is associated with poor overall labor market outcomes and a large earnings penalty.

Mal-Employment among Native-Born and Foreign-Born College Graduates

In this section, we examine the prevalence of mal-employment among non-elderly (under 65) college graduates. Findings in Table 2 are presented for all college graduates and separately for foreign-born and native-born college graduates. Of 31.442 million college graduates under age 65 who were employed at the time of the NSCG reference week, 7.668 million, or 24 percent, were mal-employed—working in occupations outside the college labor market. The prevalence of mal-employment was slightly higher among male than among female college graduates—25 percent versus 23.7 percent. Just under 1 million of the 3.8 million non-elderly employed *immigrant* college graduates were mal-employed in October 2003, yielding a mal-employment rate of 26 percent. Within the group of immigrant college graduates, females were more likely to be mal-employed (29%) than were males (24%). A number of reasons could underlie this gender difference, including different types and levels of college degrees, inability to find CLM jobs with flexible schedules or limited hours needed to accommodate family and child-rearing responsibilities, and differences in entry visas—immigrant women are more likely to enter the United States with temporary dependent visas that place restrictions on the amount they can work, which in turn may restrict their access to CLM employment.

Immigrants who earned college degrees abroad were considerably more likely to be mal-employed than were immigrants with U.S. college degrees. We found that 36 percent of immigrants with foreign college degrees were mal-employed compared with just 18 percent of their counterparts with U.S. college

degrees. In a subsequent section of this paper, we present a detailed discussion on this issue, including variations in the prevalence of mal-employment by country or region in which immigrants earned their college degrees. The gender gap in the prevalence of mal-employment was smaller among U.S.-educated immigrants than among those who were educated abroad. The mal-employment rate of U.S.-educated female immigrants was 1.4 percentage points, or 8 percent, higher than that of their male counterparts (18.7% versus 17.3%), whereas among immigrants educated abroad, the female mal-employment rate was nearly 9 percentage points, or 28 percent, higher than that of males. In contrast, the mal-employment rate among non-elderly native-born college graduates was 24 percent, or 2 percentage points lower than that of their immigrant counterparts.

Table 2: Number and Percent of Mal-Employed Foreign-Born and Native-Born College Graduates (Under 65 Years Old), by Gender, U.S., 2003

Nativity and Gender (Under 65 years old)	Total Employed	Number Mal-employed	Percent Mal-employed
All	31,442,156	7,668,145	24.4
Male	16,692,827	4,174,043	25.0
Female	14,749,329	3,494,102	23.7
Foreign-Born	3,852,487	996,931	25.9
Male	2,173,119	518,932	23.9
Female	1,679,368	477,999	28.5
Foreign-Born, U.S. College Degree	2,178,462	390,191	17.9
Male	1,224,801	212,139	17.3
Female	953,661	178,052	18.7
Foreign-Born, Foreign College Degree	1,674,025	606,740	36.2
Male	948,318	306,793	32.4
Female	725,707	299,947	41.3
Native-Born	27,589,669	6,671,214	24.2
Male	14,519,708	3,655,111	25.2
Female	13,069,961	3,016,103	23.1

Mal-Employment among Immigrant College Graduates: A Descriptive Analysis

This section focuses exclusively on the prevalence of mal-employment among immigrants by their demographic characteristics, school enrollment activities, human capital characteristics, immigration-related characteristics, and region of residence in the United States. Examination of mal-employment by demographic characteristics includes a look at variations in the prevalence of mal-employment by gender (already presented in the previous section), marital status, presence of young children, and disability status. Human capital characteristics include level of college degree, major field of study of most recent college degree, English-speaking proficiency, and country or region in which immigrant college graduates earned their most recent college degrees. Analysis by immigration-related characteristics includes year of entry and type of entry visa into the United States.

Similar to any labor market problem, the incidence of mal-employment among employed college graduates is likely to be influenced by local labor market conditions. The NSCG public use data file does not provide any geographic details regarding place of residence of respondents below the regional level in order to protect respondent confidentiality. Consequently, the NSCG data file restricts geographic coding of responses to broader geographic areas—four regions of the country. Thus, we are limited to this level of geographic detail to reflect variations in labor market conditions across different regions of the nation. We also present the prevalence of mal-employment among immigrants employed full-time (35 hours or more per week) and part-time (fewer than 35 hours per week). As noted above, although the overall rate of part-time employment among immigrant college graduates was low, mal-employed immigrants were much more likely to be employed in part-time jobs (11.7%) than were CLM-employed immigrants (8%), representing a difference of 3.7 percentage points, or 46 percent. Furthermore, one-third of mal-employed immigrants who were employed in part-time jobs expressed a desire for full-time employment, which means they were involuntarily working in part-time positions. Mal-employment is therefore more likely to be prevalent among part-time workers than among full-time workers. College labor market jobs provide college graduates with employment of better *quality* (matched with their education) and opportunities for full-time employment (better *quantity)* for those who want to work full-time.

We also examine mal-employment in the context of school enrollment activities of individuals. College graduates engaged in school activities, particularly those enrolled in school on a full-time basis, are less likely to be focused on the job market. Furthermore, immigrants who are enrolled in school on a full-time basis might be legally restricted in the amount of labor market work they can perform, which would likely result in higher rates of part-time employment and therefore higher rates of mal-employment among this group. On the other hand, college graduate immigrants enrolled in school are likely to be pursuing graduate education, which is associated with a reduced likelihood of mal-employment. Furthermore, those enrolled in school have or will have U.S. college degrees.

Marital Status and Presence of Children

In the previous section, we noted a higher mal-employment rate among female immigrants than among males. We now present the incidence of mal-employment among college-educated immigrants by their marital status and the presence of children residing with them in the United States. Labor market outcomes vary systematically with marital status of workers and presence of children, especially young children. In a previous paper in this series on labor force participation (*Findings from an Examination of the Labor Force Participation of College-Educated Immigrants in the United States),* we found that labor force participation was higher among married men and men with children compared with unmarried men and men without children. In contrast, marriage and the presence of children had the opposite effect on labor force participation among women—college-educated immigrant women who were married were less likely to participate in the labor force than were unmarried women. Women with children were considerably less likely to participate in the labor market than were women without children.

Our examination of unemployment rate by marital status and presence of young children (*Unemployment Problems among College-Educated Immigrants in the United States*) found that immigrant males who were married and those with children, especially those with young preschool-aged children, were less likely to be unemployed than their counterparts who were not married and had no children. Among college-educated immigrant women, while the likelihood of unemployment was similar among married and unmarried women, the unemployment rate of women was much higher among those with the youngest (preschool-aged) children compared with those with older children or those with no children.

In another paper in this series (*Involuntary Part-Time Employment Problems among College-Educated Immigrants in the United States*), we examined the labor market underutilization problem of involuntary part-time employment among immigrant college graduates who were employed in part-time jobs and found that groups of immigrants with small shares of part-time workers or, conversely, larger shares of full-time workers (such as men with preschool-aged children) generally had higher rates of involuntary part-time employment. This is because immigrant groups with higher shares of full-time workers represent a stronger desire for full-time work. Therefore, part-time work among these groups (such as fathers of preschool-aged children) is more likely to be involuntary. We found that the rate of involuntary part-time employment was higher among married men and men with young children compared with unmarried men and men without children or with older children. The relationship between marriage and rate of involuntary part-time employment among immigrant women is opposite that seen among males—higher among unmarried women and women without children compared with married women and those with children. Higher rates of part-time employment also were found among college-educated immigrant women who were married and those who had children, particularly of preschool age.

These trends are consistent with the discussion in our first paper in this series, *The Earnings of Foreign-Educated College Graduates*, regarding the basis of labor supply decisions among women and reasons for lower levels of labor supply (lower rate of participation in the labor force and higher rate of part-time employment) among married women and women with children, especially young children. Labor supply decisions of women, particularly married women, are based on their allocation of time between not only labor market work and leisure but also home production of goods and services, which includes caring for children (Becker, 1964). Thus, supplying labor in the labor market and earning a wage are worthwhile for women if the additional earnings can make up for lost leisure time and home production. Marriage and children create more demands for home production, which in turn cause a resulting decline in female labor market participation (Triest, 1990) and a decline in the hours of labor supply and a preference for part-time work among married women and women with young children. Therefore, marriage and the presence of children are likely to suppress female labor supply in the form of lower rates of labor force participation and a lower intensity (hours of work) of labor supply among those who are employed.

Male labor market outcomes, including labor market participation, employment, and earnings, are found to be better among those who are married and those who have children. Research on the earnings of married men and men with children has consistently found that married men earn more than their unmarried counterparts. Even after statistically controlling for other factors that are likely to affect earnings, researchers have found male marriage wage premiums ranging from 10 percent to 50 percent (Lincoln, 2008; Antonovics & Town, 2004). The most common reasons cited for better labor market outcomes of married men and men with children include specialization among married couples wherein married men are responsible for fewer household-related tasks, allowing them to focus on their careers and making them more productive in their jobs. This specialization hypothesis espoused by Gary Becker (1985) might be even more relevant in the case of immigrant families since many come from parts of the world where the local culture places a higher value on wives who are more likely to specialize in household production, leaving more time and resources for the husband to focus on his job. Another commonly cited reason is that the qualities that make married men successful in the labor market are the same qualities that make them more marriageable. Research on this subject is ongoing with no conclusive answer to the reason for better labor market outcomes of married men.

Findings presented in Table 3 reveal that among all college-educated immigrants, the mal-employment rate was somewhat higher among those who were not married (27%) than among those who were married (25.6%). The problem of mal-employment was smaller among married immigrant men than among single men (23% versus 27%), which is further evidence of better labor market outcomes among married men—access to CLM jobs—compared with their single counterparts. Among women, those who were married were slightly more likely to be mal-employed. The household demands on the time of married women may restrict the hours and days they are available to work, which in turn can potentially reduce the number of jobs, including full-time and CLM jobs, to which they have access. Moreover, women are more likely to be the "trailing spouse" who moves for her husband's career.

Immigrants—all, men, and women—who had young (under 6 years old) children were less likely to be mal-employed than were those with school-aged (6-18 years old) children or those without children. The highest mal-employment rates were found among immigrants with school-aged children. Further examination found that immigrants with no children and with preschool-aged children were much more likely to possess college degrees from U.S. colleges or universities (62%) than were immigrants with school-aged children (50%). As noted in an earlier section of this paper, immigrants with U.S. college degrees were only half as likely to be mal-employed as were those with foreign college degrees. Therefore, demographic subgroups of immigrants with larger shares of U.S. college degree holders are expected to have lower mal-employment rates than their counterparts with larger shares of foreign college degree holders.

Table 3: Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Full-Time and Part-Time Employment Status, Marital Status, and Presence of Children,* U.S., 2003

Marital Status and Presence of Children in the Household	Total Number Employed All	Percent Mal-Employed All	Total Number Employed Male	Percent Mal-Employed Male	Total Number Employed Female	Percent Mal-Employed Female
Not Married	742,839	27.2	351,820	27.1	391,019	27.3
Married	3,109,648	25.6	1,821,299	23.3	1,288,349	28.8
With children under 6	954,719	23.0	589,458	21.2	365,261	25.9
With children 6-18	1,136,279	28.7	641,587	26.3	494,693	31.8
With no children	1,475,966	24.3	806,016	22.7	669,951	26.3

*In this paper, immigrants with children are defined as those immigrants with children living with them in the United States.

School Enrollment and Disability Status

Individuals who are enrolled in school are less likely to participate in the labor market, and when they do participate, they supply fewer hours of labor and are more likely to work in part-time positions. The labor supply decision (labor market participation and hours of work) is based on how individuals choose to allocate the finite amount of time available during, say, a week. Among those who are enrolled in school, some of that finite amount of time is devoted to schooling activities and simply is not available for distribution to leisure, labor market work, or home production of goods and services and caring for children. Therefore, enrollment in school has the potential to reduce labor supply of these individuals in the form of lower labor force participation rates and higher rates of part-time employment when those enrolled do work. Immigrants who are enrolled in school might also have restrictions placed upon their

labor market participation by their visa status, including student visas that further restrict their labor market activities and, potentially, their ability to work in full-time positions.

Employment in part-time positions is more likely to occur outside the college labor market. Findings in Table 4 reveal a sharply higher rate of mal-employment among college-educated immigrants in part-time jobs than among those in full-time jobs (34% versus 24%). Similarly, large gaps in mal-employment rates between part-time and full-time-employed workers existed among male and female college-educated immigrants. Thus, the increased likelihood of part-time employment among immigrants enrolled in school means these individuals were more likely to be mal-employed. However, school enrollment among college-educated immigrants might also have an opposite effect on the chance of being mal-employed. College graduate immigrants enrolled in school are more likely to attend graduate school and, therefore, employment among them—particularly among those enrolled full-time who might have visa restrictions on employment—is more likely to be on campus in positions as postdoctoral fellows or graduate research assistants that fall in the category of CLM jobs as they utilize the skills and knowledge acquired through a college education.

Table 4. Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Full-Time/Part-Time Employment Status, School Enrollment Status, and Disability Status, U.S., October 2003

Employment, School Enrollment, and Disability Status	Total Number Employed All	Percent Mal-Employed All	Total Number Employed Male	Percent Mal-Employed Male	Total Number Employed Female	Percent Mal-Employed Female
Total	3,852,488	25.9	2,173,119	23.9	1,679,368	28.5
Full-time employed (35+ hours per week)	3,507,631	25.1	2,089,146	23.4	1,418,485	27.6
Part-time employed (less than 25 hours per week)	344,857	33.8	83,973	35.4	260,883	33.2
Enrolled	328,728	23.9	162,184	21.3	166,544	26.4
Enrolled, working full-time	264,309	22.8	136,854	20.0	127,456	25.7
Enrolled, working part-time	64,420	28.5	25,331	28.2	39,089	28.7
Not enrolled	3,523,758	26.1	2,010,935	24.1	1,512,823	28.7
With disabilities	180,312	37.5	89,972	34.1	90,340	40.9
Without disabilities	3,672,175	25.3	2,083,147	23.4	1,589,029	27.8

It is also likely that some employed school-enrolled immigrants were already working in CLM jobs and pursuing graduate education while they were employed. Indeed in 2003, most immigrant college graduates who were mixing school and work were employed in full-time jobs. Of 328,700 foreign-born college graduates who were mixing school and work in 2003, 264,300 or 80 percent were working in full-time jobs. Therefore, the typical schooling activity among employed immigrants appears to be among those pursuing graduate education while being employed in full-time jobs, which are most likely to be in the college labor market.

Our analysis of NSCG data reveals that immigrant college graduates who were enrolled in school at the time of the 2003 NSCG were somewhat less likely to be mal-employed than those who were not enrolled in school (24% versus 26%). However, within the group of school-enrolled immigrants, those who were working in part-time jobs had a higher rate of mal-employment (29%) in comparison to school-enrolled immigrants employed in full-time jobs (23%) and those who were not enrolled in school (26%).

The differences in mal-employment with respect to school enrollment among male college-educated immigrants followed a pattern similar to those of their female counterparts. Over one-fifth (21%) of employed male immigrants who were enrolled in school held non-CLM jobs (mal-employed) compared with 24 percent among those who were not enrolled in school at the time of the NSCG. Among employed college-educated female immigrants who were enrolled in school, over 26 percent were mal-employed, whereas nearly 29 percent of their counterparts who were not enrolled in school were working in jobs outside the college labor market.

Having a disability has a strong negative impact on an individual's labor market outcomes. Research studies have consistently found sizable differences between labor market outcomes of individuals with and without disabilities. Individuals with disabilities are less likely to participate in the labor market, and when they do, they are more likely to be unemployed; and when they are employed, they are more likely to earn lower wages (Fogg, Harrington, & McMahon, 2010; 2011).

The 2003 NSCG disability measure is somewhat different than that adopted by the Census Bureau in both the American Community Survey and Current Population Survey. The NSCG measure includes as disabled those who report limitation in one of the following four activities: 1) seeing words or letters in ordinary newsprint (with glasses/contact lenses if the respondent usually wears them); 2) hearing what is normally said in conversation with another person (with hearing aid if the respondent usually wears it); 3) walking or using stairs without human or mechanical assistance; and 4) lifting or carrying something as heavy as 10 pounds, such as a bag of groceries (U.S. Department of Commerce, 2003). The NSCG does not include measures of cognitive or emotional limitations in its definition of disabilities. However, unlike the standard census measure, NSCG respondents were asked to rate the difficulty they had with the four activities (seeing, hearing, walking, and lifting) on a five-point scale: none, slight, moderate, severe, unable to do. Individuals were defined as having a disability if they reported having moderate to severe difficulty with any of the four functional areas.

An examination of mal-employment among employed college-educated immigrants by disability status found that in October 2003 there was a mal-employment rate of nearly 38 percent among those with disabilities and a little over 25 percent among those without disabilities, representing a gap of about 12 percentage points. This finding is consistent with findings in earlier papers of large gaps between the other two labor market outcomes—labor force participation and unemployment rates—among college-educated immigrants with and without disabilities. Among employed college-educated immigrant men with disabilities, the share who worked in non-CLM jobs was nearly 34 percent compared with 23 percent among their counterparts without disabilities. Among college-educated immigrant women, the gap between the mal-employment rates of women with and without disabilities was even larger—13 percentage points (41% versus 28%).

Level of College Education

This paper focuses on college graduates, and even within this group, those with higher levels of human capital—higher-level degrees—are expected to have better labor market outcomes. The labor market

experiences of individuals with higher levels of educational attainment generally are better than those of individuals with fewer years of schooling and fewer degrees. In the particular case of access to college labor market jobs, higher levels of education and higher levels of skills and knowledge that come with them are likely to increase access to jobs in CLM occupations. Fogg and Harrington (2011) found sharply lower mal-employment rates among college graduates with doctorate and professional degrees compared with those with master's degrees, and among those with master's degrees compared with those with only bachelor's degrees. We examine the prevalence of mal-employment among immigrant college graduates by level of college degree they earned—bachelor's, master's, doctorate (PhD, DSc, EdD, etc.) or professional degrees (JD, MD, DDS, etc.). Findings are presented for all, male, and female college-educated immigrants in Table 5.

Table 5. Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Educational Attainment, U.S., 2003

Level of College Degree	Total Number Employed All	Percent Mal-Employed All	Total Number Employed Male	Percent Mal-Employed Male	Total Number Employed Female	Percent Mal-Employed Female
Total, Under 65	3,852,487	25.9	2,173,119	23.9	1,679,368	28.5
Bachelor's	2,158,751	35.8	1,132,290	33.8	1,026,460	38.1
Master's	1,123,386	16.2	668,824	16.6	454,561	15.5
Doctorate	298,783	5.7	215,405	5.1	83,378	7.3
Professional	271,568	9.1	156,600	9.1	114,968	9.1

In previous papers on three labor market outcomes—earnings, labor force participation, and unemployment rates—we found that each labor market outcome was closely related to level of college education and improved with higher levels of education. Our examination of mal-employment also finds that the level of college degree is closely related to the prevalence of mal-employment, with the mal-employment rate dropping sharply with higher levels of college education. Nearly 36 percent of immigrants with only bachelor's degrees were mal-employed in October 2003—a rate of mal-employment that was more than twice as high as the rate among immigrants with master's degrees (16%). Immigrants with professional degrees such as an MD or JD, or a doctorate such as a PhD or EdD, had even lower mal-employment rates—just 6 percent among those with doctorate degrees and 9 percent among those with professional college degrees. Similar sharp declines in mal-employment rates by college degree level are apparent among male and female immigrants.

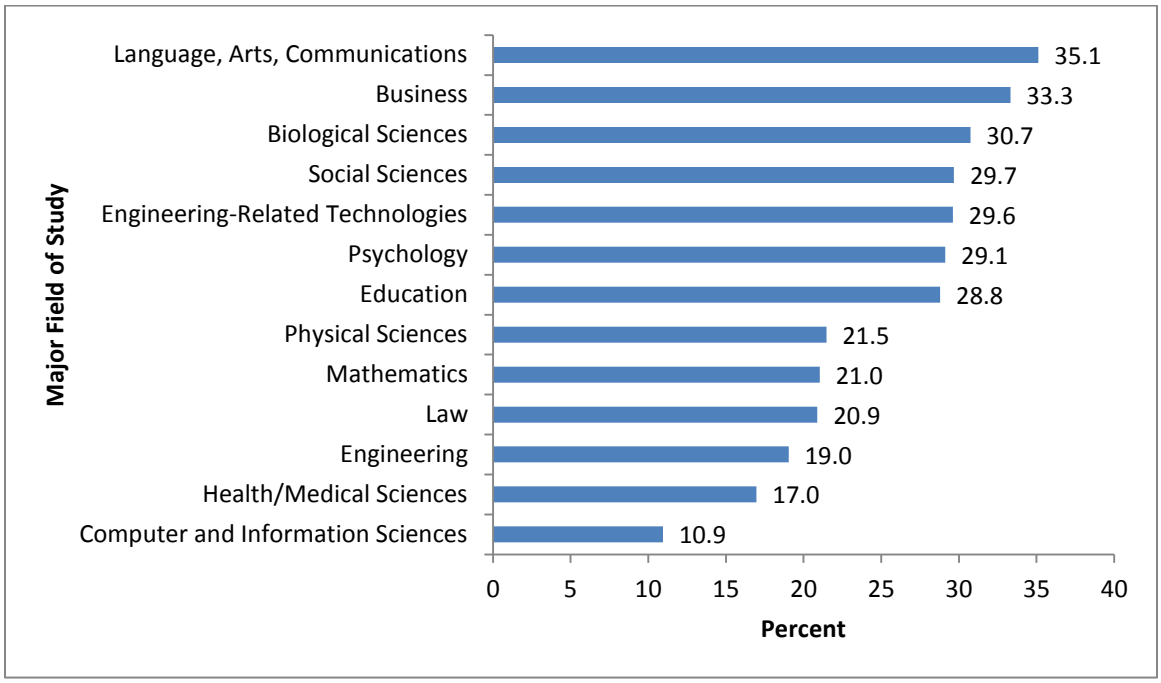
Major Field of Study

Labor market outcomes of college graduates in the American economy vary widely by major field of study (Fogg, Harrington, & Harrington, 2004). The college major often can serve as a measure of the specific set of knowledge, skills, and abilities the graduate acquired in college. Some of the reasons cited for underlying variations in labor market outcomes of college graduates in different major fields are different values assigned by the labor market to different skills and knowledge acquired across majors, differences in demand for particular skills at different times, differences in abilities of students across different majors, differences in non-academic skills such as social skills, and career focus and direction among students from different major fields (Arcidiacono, 2004; Black, Sanders, & Taylor, 2003).

Previous papers in this series have revealed that job market gains from college degrees appear to be closely associated with the field of study.

At the time of the 2003 NSCG, the mal-employment rates of immigrant college graduates varied widely by major field of study, from 35 percent among humanities majors specializing in language, arts, and communication to just 11 percent among computer and information sciences majors (Figure 3). Many immigrants with college degrees in computer and information sciences had entered the United States with work visas (20%) and nearly 70 percent had earned their most recent college degrees in the United States. Mal-employment rates were also relatively lower among immigrants with degrees in health, engineering, math, law, and physical sciences. Between 17 and 22 percent of immigrants with college degrees in these fields were working outside the college labor market in 2003.

Figure 3: Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Major Field of Study of Most Recent College Degree, U.S., 2003



The knowledge acquired in certain major fields such as computer science, mathematics, or engineering is more readily transferable than knowledge acquired in fields such as business where country-specific knowledge of labor market practices, regulations, and overall culture are important and reduce the transferability of human capital in these fields that was acquired abroad, particularly in countries that are linguistically and culturally dissimilar to the United States (Kler, 2006). One-third of employed immigrants with business degrees were mal-employed in October 2003. Business majors accounted for 25 percent of all employed immigrants and nearly one-third of all mal-employed immigrants. College-educated immigrants with degrees in biological and social sciences, psychology and education, and engineering technologies also faced more restricted access to CLM jobs in the U.S. labor market. About 30 percent of employed immigrant college graduates in these majors were mal-employed in October 2003.

As shown in Table 6, the prevalence of mal-employment varied widely by major field of study among male as well as female college-educated immigrants. Computer and information science majors had the lowest mal-employment rates among male as well as female immigrants, whereas the highest mal-employment rates were

among humanities majors among males and business majors among females. Among male immigrants, those with humanities, education, and psychology degrees were most likely to be mal-employed. These three majors also had the smallest share of all employed immigrant males. Employed foreign-born men with computer, health, engineering, law, physical sciences, and math degrees had between a 9 and 21 percent chance of being mal-employed. The largest number of employed immigrant males had earned their college degrees in engineering and business. These two majors account for more than one half of all employed male immigrants. Similar patterns of mal-employment were found among immigrant women, with low rates among computer science, engineering, and health majors and higher rates among those with college degrees in business, humanities, biological sciences, and engineering-related technologies.

Table 6: Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Major Field of Study of Most Recent College Degree, U.S., 2003

Major Field of Study of Most Recent Degree	Percent Mal-employment All	Percent Mal-employment Males	Percent Mal-employment Females
Total	25.9	23.9	28.5
Computer and Information Sciences	10.9	9.3	13.9
Health/Medical Sciences	17.0	14.1	19.0
Engineering	19.0	19.4	16.8
Law	20.9	19.1	23.2
Mathematics	21.0	21.0	21.1
Physical Sciences	21.5	19.6	25.1
Education	28.8	35.2	26.7
Psychology	29.1	34.7	27.1
Engineering-Related Technologies	29.6	29.4	30.5
Social Sciences	29.7	30.6	28.8
Biological Sciences	30.7	26.7	34.7
Business	33.3	29.4	38.5
Language, Arts, Communications	35.1	35.4	34.9
Major Field of Study of Most Recent Degree	**Total Number Employed All**	**Total Number Employed Males**	**Total Number Employed Females**
Total	3,852,487	2,173,119	1,679,368
Computer and Information Sciences	250,173	160,762	89,410
Health/Medical Sciences	527,852	216,902	310,950
Engineering	631,263	546,520	84,743
Law	81,086	45,687	35,398
Mathematics	82,148	47,352	34,795
Physical Sciences	153,605	102,482	51,122
Education	209,315	51,983	157,333
Psychology	107,266	28,906	78,361
Engineering-Related Technologies	67,824	55,038	12,787
Social Sciences	212,509	100,292	112,216
Biological Sciences	228,455	113,311	115,143
Business	962,349	551,250	411,099
Language, Arts, Communications	306,868	127,850	179,018

Country or Region of College Degree

Our earlier paper examining hourly wages found that the country in which an immigrant earned a college degree influences the degree of transferability of the education and skills acquired prior to immigration to the United States. Schooling and work experience acquired in the source countries of immigrants are typically valued less in the host country than education and work experience acquired in the host country (Kaushal, 2011; Ferrer & Riddell, 2008). The acceptance by U.S. employers of measures of human capital (degrees and skills certifications) that are acquired abroad determines the labor market pathways of immigrants in the United States. According to the immigrant assimilation model (Akresh, 2008), the imperfect portability of human capital acquired in different countries to the labor market in the United States (or any destination country) means that immigrants typically experience an initial downward trend in their labor market outcomes. However, after spending some time in the United States, immigrants' labor market experiences and overall socioeconomic position tends to improve as they accumulate U.S.-specific experiences and skills (such as language fluency, social and job contacts, and familiarity with business cultures and practices) that are necessary to succeed in the U.S. labor market (Akresh, 2008; Batalova, Fix, & Creticos, 2008; Chiswick, 1978).

Immigrants therefore typically experience a U-shaped trajectory in their labor market experiences, with the depth of the U's trough determined by the degree of transferability of skills, education, and experience acquired prior to immigration (Chiswick, Lee, & Miller 2005; Duleep & Regets, 1999). Chiswick and Miller (2009) have stated that some immigrants' human capital has greater international transferability than that of others. For example, individuals from countries that are linguistically, socially, and economically more similar to the United States are likely to assimilate more quickly into the U.S. labor force and to experience less labor market downgrading than their peers with more dissimilar origins. Among immigrants who lack U.S. schooling, labor market outcomes are expected to be better for immigrants with schooling from highly developed countries and where English is an official language (Bratsberg & Ragan, 2002). Research studies on the transferability of source country human capital among immigrants in Canada and Australia consistently found better host country labor market outcomes among immigrants with education from English-speaking countries (Kler, 2006; Morissette & Galarneau, 2004, Chapman & Iredale, 1993).

Some studies attribute inferior host country labor market outcomes of immigrants with college degrees or credentials from some source countries to the quality of education in those source countries. In their study of reasons underlying differential U.S. labor market returns to education of immigrants from different countries, Bratsberg and Terrell (2002) found that quality of the educational systems in the source countries of immigrants accounted for most of the difference in their earnings in the U.S. labor market. They utilized measures such as pupil-teacher ratios, relative teacher wages, expenditures per pupil, years of mandatory schooling, etc., to produce an index of educational quality in the source country of immigrants. Mattoo, Christina, and Neagu (2008) studied the effect of source country characteristics including quality of education on access to college market jobs among U.S. immigrants. They concluded that after controlling for other attributes of source countries such as entry visa type, English language instruction, and Gross Domestic Product (GDP) per capita, the quality of higher education in immigrants' source countries affected their likelihood of securing employment in CLM occupations in the United States. Sweetman (2004) used international test scores to represent quality of education in source countries of immigrants in Canada and found better outcomes in the Canadian labor market for immigrants from countries with better-quality education.

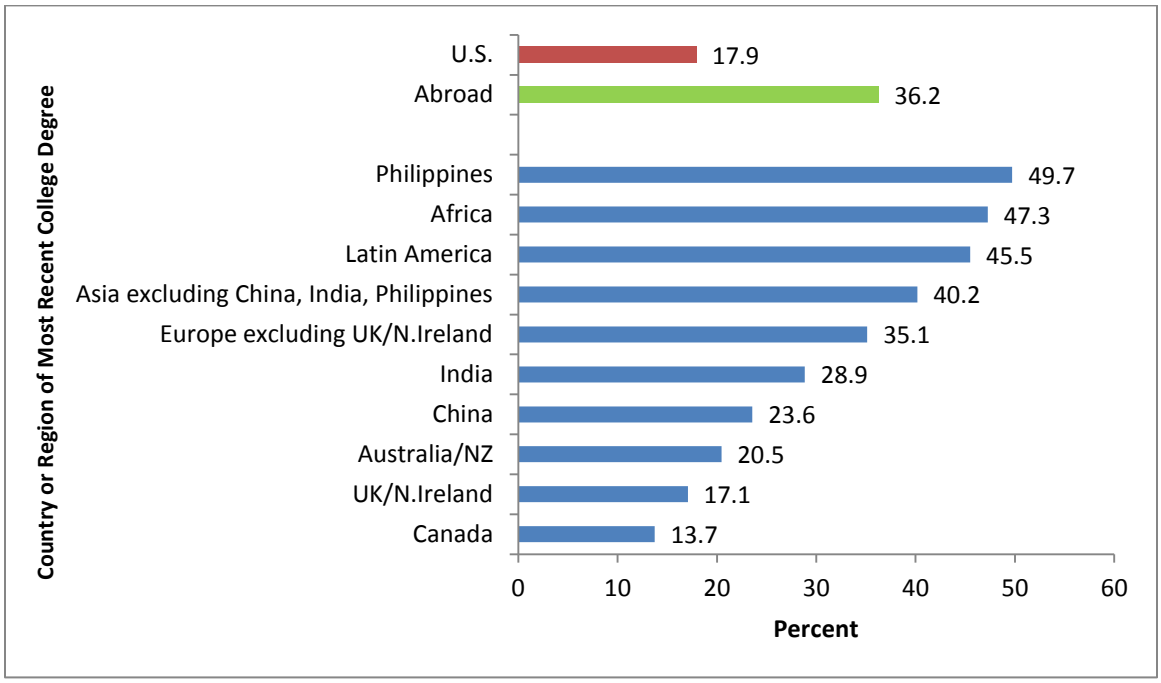
In the first paper in this series, we noted sharp differences in hourly earnings of employed immigrants by country or region of their college degrees. In 2003, immigrants with British and Canadian college degrees earned $40 and $36 per hour while those with U.S. or Australian college degrees earned $33 per hour. In contrast, the hourly wage of immigrants with college degrees earned in Latin American countries was just under $21, while those with Filipino and African college degrees earned $27 per hour. Even after statistically controlling for all other variables known to affect hourly earnings, such as education, English-speaking proficiency, work experience, college major field of study, type of entry visa, and demographic traits, sizable statistically significant differences remained in hourly earnings of immigrants by country or region of college degree. Other papers in this series also found that labor market outcomes of labor force participation rate, unemployment rate, and involuntary part-time employment rate varied by country or region of immigrants' college degrees, with outcomes being inferior among immigrants with non-U.S. degrees from regions and countries across the world, except Canada, the UK, and Australia.

In this section we present findings from our examination of the association between the prevalence of mal-employment among college-educated immigrants and the country in which they earned their most recent college degrees—again based on findings of the NSCG. Findings are presented in Figure 4 and Table 7. Immigrants with non-U.S. college degrees were two times as likely to be mal-employed than were immigrants with U.S. college degrees (36% versus 18%). A comparison of mal-employment rates of immigrants from different regions and countries found mal-employment rates over 40 percent among immigrants with college degrees from the Philippines (50%), Africa (47%), Latin America (46%), and Asia excluding India, China, and the Philippines (40%). Mal-employment rates were also high among immigrants with European (excluding UK/Northern Ireland) college degrees (35%). The likelihood of mal-employment was at 29 percent among immigrants with Indian college degrees and 24 percent among those with college degrees from China. Canadian, British, and Australian college degrees were associated with lower mal-employment rates in the U.S. labor market—14, 17, and 21 percent, respectively. As noted at the beginning of this section, human capital (college degree and work experience) acquired in these countries might be more readily transferable to the United States because of cultural and linguistic similarities between these countries. Furthermore, many immigrants from these countries enter the United States with work visas, meaning that they emigrated to the United States to work because of job offers (most likely in the college labor market) that they consider to be attractive enough to emigrate to this country. Also likely is the better ability of U.S. employers to assess the quality of human capital acquired in these countries and the better reputation in the United States of the quality of human capital acquired in these locations.

An examination of mal-employment rates by country or region of college degree separately among male and female immigrants (Table 7) found similar trends as that among all immigrants. Male immigrants with foreign college degrees were twice as likely to be mal-employed as those with U.S. college degrees (32% versus 17%). In October 2003, over 53 percent of male immigrants with college degrees from the Philippines, 47 percent of men who earned their college degrees in Africa, and 42 percent of Latin American degree holders were working in jobs that did not utilize the skills, knowledge, and abilities that generally are acquired with a college education. At the lower end were male immigrants with Canadian, Chinese, and British college degrees, with mal-employment rates of 12.5, 13.5, and 15 percent, respectively. The low mal-employment rate among Chinese-educated immigrant men is somewhat surprising. Since male immigrants with college degrees from China accounted for just 1 percent of all male immigrant college graduates in 2003, we cannot perform a detailed examination to understand

reasons underlying their low mal-employment rate. However, we examined certain traits of male immigrants with Chinese college degrees compared with all male immigrants in 2003 and found among Chinese-educated male immigrants above average shares of entry with work visas (24% versus 15%) and student visas (49% versus 30%), doctorate degrees (19% versus 10%), and scientists—biological, physical and health sciences—(50% versus 20%)—traits associated with greater access to CLM jobs. The mal-employment rate among male immigrants with Australian or Indian college degrees was 22 percent.

Figure 4: Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Country or Region of Most Recent College Degree, U.S., 2003



The likelihood of mal-employment among female immigrants with foreign college degrees was 41 percent—2.2 times as high as the 19 percent mal-employment rate among their U.S.-educated counterparts. Nearly half (48% to 50%) of immigrant women who had earned their college degrees in Latin America, Africa, the Philippines, and Asia (excluding China, India, and the Philippines) were mal-employed at the time of the NSCG in October 2003. Four out of ten immigrant women with Indian college degrees, and one out of three with Chinese or European (excluding UK/Northern Ireland) college degrees were working in non-CLM jobs at the time of the NSCG in October 2003. British college degreed immigrant women had a slightly higher mal-employment rate (24%) than that of their counterparts from the other two English-speaking countries (Canada and Australia). Canadian and Australian college degrees among immigrant women were associated with greater access to CLM jobs; only 16-18 percent of employed women with degrees from these countries were mal-employed.

Table 7: Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Country or Region of Most Recent College Degree, U.S., 2003

Country/Region of Recent Degree	Percent Mal-employment All	Percent Mal-employment Males	Percent Mal-employment Females
Total	25.9	23.9	28.5
Immigrants with U.S. college degrees	17.9	17.3	18.7
Immigrants with foreign college degrees	36.2	32.4	41.3
Philippines	49.7	53.1	47.8
Africa	47.3	46.6	48.4
Latin America	45.5	41.9	50.3
Asia excluding India, China, Philippines	40.2	34.2	48.2
Europe excluding UK/Northern Ireland	35.1	36.5	32.9
India	28.9	21.8	40.3
China	23.6	13.5	32.3
Australia/NZ	20.5	21.9	17.6
UK/N. Ireland	17.1	15.1	24.1
Canada	13.7	12.5	15.5
Country/Region of Recent Degree	**Total Number Employed All**	**Total Number Employed Males**	**Total Number Employed Females**
Total	3,852,487	2,173,119	1,679,368
Immigrants with U.S. college degrees	2,178,462	1,224,801	953,661
Immigrants with foreign college degrees	1,674,025	948,318	725,707
Philippines	293,275	106,721	186,553
Africa	57,104	35,609	21,495
Latin America	235,908	134,823	101,085
Asia excluding India, China, Philippines	223,573	128,339	95,233
Europe excluding UK/Northern Ireland	296,522	186,202	110,321
India	280,478	173,998	106,480
China	60,954	28,312	32,641
Australia/NZ	20,378	13,445	6,934
UK/N. Ireland	100,813	78,748	22,065
Canada	103,313	61,203	42,110

Immigrants with college degrees earned abroad experienced considerably higher rates of mal-employment than did their U.S.-educated counterparts. Among all college-educated immigrants, only those with Canadian and British college degrees had lower mal-employment rates than immigrants with U.S. college degrees. Although the level of mal-employment was higher among employed immigrant women than among men, patterns by country of college education were quite similar. Among male immigrants, those with college degrees from Canada, China, and the UK had lower rates of mal-employment than did their U.S.-educated counterparts. Among immigrant women, only those with Canadian and Australian college

degrees had lower rates of mal-employment than those of women who had earned their most recent college degrees in the United States. The differences in mal-employment rates of immigrants from different countries might vary for a variety of reasons. Findings from our regression analysis presented in subsequent sections of this paper will provide insights into the independent effect of country or region of college degree, after statistically controlling for other factors, on the likelihood of mal-employment among employed college-educated immigrants.

English Language Proficiency

Proficiency in the English language is a valued human capital trait in the U.S. labor market. Chiswick and Miller (1992) consider English language proficiency to be the most basic form of human capital in the U.S. labor market. While all aspects of English language proficiency—reading, writing, speaking, and understanding English—are important to the labor market success of immigrants, Carnevale, Fry, and Lowell (2001) found that understanding English is the most important English ability in the U.S. labor market and that the positive labor market impact of English reading, writing, and speaking ability among immigrants is contingent upon their ability to understand spoken English.

Most studies on the effect of English language ability of immigrants on their labor market success use the self-reported English-speaking ability of respondents to the decennial census long-form survey. Our measure of the English language proficiency of NSCG respondents also is based on self-reported English-speaking ability of immigrant college graduates. However, because the NSCG does not provide data on English language proficiency of respondents and the NSCG sample was drawn from college graduates in the 2000 decennial census, we used the 2000 decennial census data to obtain this information. We measured the average English language proficiency of non-elderly college-educated immigrants from 168 countries from the decennial census and used this measure to represent the English-speaking ability of non-elderly, college-educated immigrants from each of the same 168 countries in the NSCG. The mean English language proficiency of the immigrant group of non-elderly college graduates in the workforce ranged between 3.06 to 4.96 on the following 1-5 scale of English-speaking proficiency: 1= does not speak English; 2= bilingual, speaks a non-English language and speaks English "not well"; 3=bilingual, speaks a non-English language and speaks English "well" 4=bilingual, speaks a non-English language and speaks English "very well"; 5 = speaks only English.

We classified all college-educated immigrants in the labor force at the time of the 2003 NSCG into two groups by their English-speaking proficiency. The first group of immigrants was from countries with average English-speaking proficiency of non-elderly college graduates at the time of the 2000 decennial census between 3.06 and 3.99. This level represents a "speaks English well" level of English-speaking proficiency, and we refer to this group as "English rating well." The other group consisted of immigrants from countries where the average English-speaking proficiency of non-elderly college graduates was at or above 4.0. This level represents a "speaks English very well" level of English-speaking proficiency. We refer to this group as "English rating very well."

Findings from an examination of the prevalence of mal-employment among immigrant college graduates by their English-speaking proficiency are presented in Table 8. The prevalence of mal-employment was lower among better English speakers. The mal-employment rate among employed immigrants who spoke English "very well" was 21 percent, or 6 percentage points lower than the 27 percent among those who spoke English "well." Among male immigrants, one-quarter of those in the "English rating well" group were mal-employed, whereas their counterparts in the "English rating very well" group were somewhat

less likely (21%) to be mal-employed. Female college-educated immigrants who spoke English "very well" had a 22 percent likelihood of mal-employment, whereas those who spoke English just "well" had a substantially higher likelihood of mal-employment (30%). Knowledge of the English language is important in the U.S. labor market. Foreign-born college graduates with better English language proficiencies have better labor market outcomes, including better access to CLM jobs, than do their counterparts with poor English-speaking skills.

Table 8: Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by English-Speaking Proficiency,* U.S., 2003

English-Speaking Proficiency	Percent Mal-employed All	Percent Mal-employed Male	Percent Mal-employed Female
Speaks well (3.06-3.99)	27.2	24.8	30.3
Speaks very well (4-4.96)	21.4	21.0	22.0
English-Speaking Proficiency	**Total Number Employed All**	**Total Number Employed Male**	**Total Number Employed Female**
Speaks well (3.06-3.99)	2,955,060	1,647,776	1,307,285
Speaks very well (4-4.96)	897,427	525,342	372,084

*Scale: 3.06-3.99: speaks English well; 4-4.96: speaks English very well.

Type of Entry Visa to the United States

Type of visa or class of admission provides information about some unobservable characteristics of immigrants associated with the legal criteria under which they migrated. An immigrant who enters the United States with a work visa is less likely to make a downward transition into the U.S. labor market. Foreign-born college graduates who enter the United States with work visas base their migration decisions in part on job offers from employers and typically are expected to leave the United States if they become unemployed. Such migrants are expected to be at a considerably lower risk of mal-employment (Green, Kler, & Leeves, 2007). Migrants who enter the United States with student visas are more likely to have U.S. degrees and therefore earn credentials that can potentially lead to a lateral/upward transition to the U.S. labor market after completing their education in the United States. In contrast, individuals who enter as permanent residents or as dependents of U.S. residents, citizens, or other U.S. temporary visa holders have a less explicit link between their decisions to move to the United States and employment. Rather, their migration decisions are influenced by the prior immigration of their sponsoring relatives. Therefore, they may have less-transferable labor market skills (Akresh, 2008).

Every legal immigrant enters the United States with a visa. The 2003 NSCG questionnaire asks foreign-born respondents to identify the type of visa they held when they first visited the United States for six months or longer. Respondents were asked to select from one of the following: permanent U.S. resident visa (colloquially known as a green card), temporary U.S. resident visa for work (e.g., H-1B, L-1A, L-1B, etc.), temporary U.S. resident visa for study or training (e.g., F-1, J-1, H-3, etc.), temporary U.S. resident visa as dependent of another person (e.g., F-2, H-4, J-2, K-2, etc.), or temporary U.S. resident visa for any

other reason. The last category includes any other temporary U.S. resident visas such as visas granted to religious workers, asylees, refugees, etc.

As shown in Table 9, college-educated immigrants who entered the United States with work or student visas were less likely to be mal-employed. At the time of the NSCG in October 2003, 15 percent of employed immigrants who had entered the United States with work visas and 17 percent of those who had entered with student visas were mal-employed—rates lower than those of immigrants in any of the remaining three entry visa categories. Immigrants who enter the United States with work visas arrive here with the express purpose of employment and have jobs of their choice waiting for them. In addition, employers who sponsor these individuals for work visas typically must show that the jobs require skills and training. Therefore, these immigrants are less likely to work in occupations outside the college labor market. College graduate immigrants who enter the United States with student visas most likely enter the labor market with U.S. college degrees and are therefore less likely to be mal-employed. In contrast, the rate of mal-employment was 28 percent among immigrants who entered the United States with dependent visas, 32 percent among those with green cards, and 37 percent among those with other types of visas such as religious workers, refugees, asylees, and the like.

Table 9: Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Type of Entry Visa to the United States, U.S., 2003

Type of Entry Visa	Total Number Employed All	Percent Mal-Employed All	Total Number Employed Males	Percent Mal-Employed Males	Total Number Employed Females	Percent Mal-Employed Females
Permanent U.S. resident	1,638,572	31.8	834,399	31.9	804,173	31.6
Temporary work	491,089	15.3	331,496	12.7	159,594	20.8
Temporary student	967,952	16.6	658,630	14.4	309,322	21.3
Temporary dependent	420,191	27.8	156,571	27.6	263,620	27.9
Temporary other	334,684	37.1	192,023	37.8	142,659	36.0

The prevalence of mal-employment among employed male and female college-educated immigrants also varied systematically by type of visa with which they first entered the United States. Those who entered with work visas were least likely to be mal-employed—14 percent among males and 21 percent among females. Student visas were associated with low mal-employment rates among male and female immigrants—14 percent among males and 21 percent among females. Among the remaining three visa categories, the likelihood of mal-employment among male and female immigrants was about the same as that among all immigrants.

Year of Entry to the United States

The 2003 NSCG gathered data on the year in which immigrant respondents first entered the United States for a stay of six months or more. The six-month period ensures that the year of first entry records first entry with temporary or permanent resident visas and not with tourist or non-resident visas. The authors separated all immigrants into two groups: recent immigrants and established immigrants. For this paper, recent immigrants are defined as those who entered the United States after 1990. The remaining immigrants (those who entered in 1990 or earlier) are referred to as established immigrants. Immigrants

who have been in the United States for only a few years (generally 10 or 15 years) have been regarded by many researchers as recent immigrants (Lo, Want, Anisef, Preston, & Basu, 2010; Chapman & Bernstein, 2003; Douglas-Hall & Koball, 2004).

Among college-educated immigrants under 64 years old who were employed at the time of the 2003 NSCG, 32 percent had entered the United States after 1990. As shown in Table 10, the share of recent immigrants among employed male immigrants was higher than that among employed female immigrants (34% versus 29%). Recent immigrants were more likely to be mal-employed than were established immigrants who had had more time to assimilate (28% versus 25%). Male and female immigrants had similar mal-employment rate gaps between recent and established immigrants. Nearly 26 percent of recent male immigrants were mal-employed in October 2003 compared with 23 percent of established immigrants. Among women, the mal-employment rate was 31 percent among recent immigrants and 27 percent among established immigrants.

Table 10: Mal-Employment Rates among Recent (entered after 1990) and Established (entered 1990 or earlier) Employed Foreign-Born College Graduates Under 65 Years Old, by Gender, U.S., 2003

Recent/Established Immigrant Status	Percent Mal-employed All	Percent Mal-employed Male	Percent Mal-employed Female
Total	25.9	23.9	28.5
Recent immigrants	28.0	25.8	31.3
Established immigrants	24.9	22.9	27.3
Recent/Established Immigrant Status	**Total Number Employed All**	**Total Number Employed Male**	**Total Number Employed Female**
Total	3,852,487	2,173,119	1,679,368
Recent immigrants	1,223,326	734,168	489,158
Established immigrants	2,629,161	1,438,951	1,190,210
Percent recent immigrants	31.8	33.8	29.1

Region of Residence

The labor market outcomes of workers are influenced by both their personal characteristics, particularly their human capital traits, as well as overall labor market conditions in the area in which they reside. Local labor markets in which they reside have an impact on labor market outcomes of college graduates by influencing their chances of employment, employment in full-time jobs, and employment in CLM occupations. For example, workers who reside in strong labor markets in which the number of job vacancies equals or exceeds the number of unemployed job seekers will find a much greater quantity and quality of employment opportunities compared with those in areas that are characterized by high unemployment and low volumes of job vacancies. Among employed college graduates, those who reside in strong labor markets will be less likely to experience employment in non-CLM jobs. Furthermore, the quality of employment opportunities was found to vary by geographic region. Some geographic areas have an industry mix that is tilted toward high-level occupational staffing patterns. The presence of such an industry mix provides more CLM employment opportunities (and, therefore, a lower risk of mal-employment) for college graduates residing in the area compared with those who live in areas with an industry mix that has more jobs in lower-level non-CLM occupations.

The NSCG does provide some limited information on residence of workers, but because of confidentiality concerns, the residence of respondents is provided only at a broad multistate regional level. The NSCG data file identifies the region in which the respondent resided at the time of the Survey. We utilized four regions (Table 11) to examine prevalence of mal-employment among college-educated immigrants living in these regions at the time of the 2003 NSCG. Appendix B contains a list of states that make up each of the four regions, which we used to partially account for differences in labor market conditions across the nation.

Table 11: Mal-Employment Rates among Employed Foreign-Born College Graduates Under 65 Years Old, by Region of Residence in the United States, October 2003

Region of Residence	Total Number Employed All	Percent Mal-Employed All	Total Number Employed Males	Percent Mal-Employed Males	Total Number Employed Females	Percent Mal-Employed Females
Northeast	1,021,372	23.7	565,952	21.9	455,419	25.9
Midwest	559,411	25.4	332,632	23.3	226,778	28.4
West	1,207,042	27.6	665,748	25.5	541,294	30.2
South	1,052,237	26.5	598,289	24.6	453,949	29.0

The prevalence of mal-employment among foreign-born college graduates varied moderately across the four major regions of the nation. The Northeast region had the lowest mal-employment rate (24%), while the West region had the highest rate (28%). The mal-employment rate among college-educated immigrants in the remaining two regions stood at one quarter in the Midwest region and 27 percent in the South. The prevalence of mal-employment across regions among men and women followed the same pattern—lowest in the Northeast region and highest in the West region. Mal-employment rates of men and women who lived in the South and Midwest were, respectively, the second and third highest of the four regions.

Summary of Findings from Descriptive Analysis

Our examination of mal-employment rates among employed college graduates found sizable variations by demographic traits; human capital characteristics, including degree level and major field of study; English language proficiency; type of visa; year of entry to the United States; country or region of world where immigrants had earned their most recent college degrees; and region of residence in the United States at the time of the 2003 NSCG. The mal-employment rate was 26 percent among all foreign-born college graduates who were employed in October 2003, 24 percent among men, and nearly 29 percent among women. Gaps in the mal-employment rates were not large by demographic traits of immigrants, including marital status, presence of children, or school enrollment status. The only exception was disability status—immigrants with disabilities were considerably more likely to be mal-employed than were those without disabilities (38% versus 25%). Mal-employment rates among college-educated immigrants were sharply lower among those with higher levels of college education—varying from 36 percent among those with only bachelor's degrees to 9 percent and 6 percent, respectively, among those with professional or doctorate degrees.

The fields in which immigrants had earned their most recent college degrees were associated with different rates of mal-employment, ranging from just 11 percent among computer and information science

graduates to 35 percent among those with college degrees in language, arts, and communication fields. Immigrant college graduates who had earned their college degrees abroad were two times as likely to be mal-employed as were those who had earned their college credentials in the United States. Immigrants with Filipino, African, or Latin American college degrees had the highest rates of mal-employment—50, 47, and 46 percent, respectively. In contrast, foreign-born college graduates with Canadian or British college degrees had a low incidence of mal-employment (14% and 17%, respectively).

The discussion in the descriptive section of this paper revealed that the likelihood of mal-employment varied by immigrant-specific traits such as English language proficiency, type of entry visa, and year of entry to the United States. Better English language proficiency was associated with lower mal-employment rates. College-educated immigrants who entered the United States with work or student visas were considerably less likely to be mal-employed than were those with dependent visas, other types of temporary visas, or those who had entered the United States with green cards. Immigrants who enter the United States with work visas arrive here with a direct and explicit connection to employers and have jobs of their choice waiting for them. Unsurprisingly, those entering the United States with work visas are less likely to work in occupations outside the college labor market. College graduate immigrants who enter the United States with student visas most often enter the U.S. labor market with college degrees from American colleges or universities and are therefore less likely to be mal-employed. Immigrants who had arrived in the United States more recently were modestly more likely to be mal-employed than were established immigrants who had had a longer time to assimilate into the U.S. labor market.

The prevalence of mal-employment among foreign-born college graduates varied moderately across the four major regions of the nation. The Northeast region had the lowest mal-employment rate (24%), while the West region had the highest rate (28%). The differences may be attributable to the industry-mix in different parts of the country, which in turn determines the quality of employment opportunities in the region. Differences in mal-employment by region may also be attributable to the composition of college-educated immigrants in different parts of the country. Regions with immigrant traits associated with higher mal-employment—such as college degrees from Latin America, the Philippines, or Africa or with only bachelor's degrees—can be expected to have higher mal-employment rates than those regions where immigrants have higher-level college degrees or are more likely to have U.S. college degrees.

Multivariate Regression Analysis of the Likelihood of Mal-Employment among Employed Foreign-Born College Graduates

The descriptive section of this paper includes a detailed discussion of the ways in which different traits of college-educated immigrants may affect their likelihood of mal-employment. In this section, we present estimates of the independent impact of each of these variables on the probability of mal-employment using multivariate regression analysis. The logistic regression models we employed allow measurement of the independent effect of each of these key variables on the probability of mal-employment after statistically controlling for other variables included as explanatory variables in the regression models. The explanatory variables include the following:

- Traditional human capital—educational attainment and major field of study (used to measure type of human capital)

- Human capital pertinent to immigrants—country or region in which immigrants earned their most recent college degrees and English language proficiency
- Immigration-related variables—class of admission (type of visa) and year of first entry to the United States. The year of entry identifies recently entered immigrants, who are more likely to be underutilized in the labor market and generally have poorer labor market outcomes, since they have had a shorter time to assimilate.
- Demographic controls—demographic variables that are known to influence labor market outcomes, including gender, marital status, presence of young children, disability status, and school enrollment status at the time of the NSCG.
- Residence in the United States at the time of the NSCG. The likelihood of all labor market outcomes and labor market problems, including mal-employment, are influenced by the strength of the local labor market. Although the NSCG does not provide state or local geographic detail of the residence of respondents, it does provide data on the U.S. regions in which respondents resided at the time of the Survey. We include region of residence of immigrants at the time of the 2003 NSCG as an explanatory variable in the regressions to statistically control for and measure the effect of regional U.S. labor markets on the likelihood of mal-employment among employed immigrant college graduates.

The regressions were estimated for immigrant college graduates under age 65 who were employed at the time of the NSCG—the week of October 1, 2003. We estimated the regression equations for all college-educated immigrants and separately for male and female college-educated immigrants. Complete output from the estimated regression models is presented in Appendix C.

The primary objective of the multivariate regression analysis is to estimate the independent effects of the explanatory variables on the probability of mal-employment among college-educated immigrants who were working at the time of the 2003 NSCG. The multivariate regression equations for all, male, and female college-educated immigrants were estimated with a dependent variable representing the mal-employment status of employed immigrants at the time of the 2003 NSCG taking on the value of 1 if the individual immigrant was mal-employed (working in a non-CLM job) and 0 if the immigrant was working in a CLM job (not mal-employed). We have estimated logistic regression models that are considered appropriate in cases of dichotomous dependent variables (taking on the value 1 or 0; Greene, 2008; Kmenta, 1986).

The estimated coefficients in the logistic regression models are difficult to interpret because they measure the impact of a change in an explanatory variable on the log of odds. The coefficients simply indicate the direction and relative strength of the explanatory variables on the outcome of mal-employment. The computer program (STATA) we used to estimate these regression models provides several measures to interpret logistic regression coefficients. We provide two of these additional measures for each explanatory variable that enable us to better interpret the impact of each explanatory variable on the probability of mal-employment among college-educated immigrants. The first measure is the ratio of odds, which measures the regression-adjusted ratio of the odds of mal-employment of the group represented by the explanatory variable (for example, the variable "male" that represents males) to the odds of mal-employment of the reference group (females). The second measure is the marginal effect for

each explanatory variable, which measures the marginal effect of the change in an explanatory variable (at the mean value of all explanatory variables) on the probability of mal-employment.

An example is provided here to illustrate the three measures. The negative and statistically significant coefficient of the explanatory variable "master's" (in Table 12) should be interpreted to mean that immigrants with master's degrees are likely to have a lower regression-adjusted probability of mal-employment than are immigrants in the reference group—those with bachelor's degrees. Other than that, the coefficient (-0.774) is difficult to interpret. The estimated ratio of odds for the "master's" explanatory variable (in Table 12) is .461. This means that the regression-adjusted odds of mal-employment among immigrants with master's degrees were less than one half (.46) of the odds of mal-employment among immigrants with bachelor's degrees. The estimated marginal effect for the "master's" explanatory variable is -.100. This means that after statistically controlling for other variables known to influence mal-employment (that are included in the regression model), the regression-adjusted probability of mal-employment among employed immigrants with master's degrees is expected to be 10 percentage points lower than that of their counterparts with bachelor's degrees.

Findings from our regression analysis of mal-employment among college-educated immigrants who were working at the time of the 2003 NSCG are presented in five separate tables (Tables 12-16), each containing one of the following five sets of explanatory variables: traditional human capital measures, human capital measures pertaining to immigrants, immigration-related variables including class of admission (visa type) and year of entry to the United States, demographic traits, and the four regions of residence. Although we present findings for each set of explanatory variables separately, all of these explanatory variables were included in the regression models we estimated.[4]

Level of Education and Major Field of Study

Table 12 contains estimated regression findings for the effect of the level of education and major field of study on the likelihood of mal-employment among all, male, and female college-educated immigrants who were employed at the time of the NSCG in October 2003. The coefficients of each level of education—master's, doctorate, and professional degree—were negative and statistically significant among all immigrants, which means that after adjusting for all other explanatory variables included in the regression, the likelihood of mal-employment among immigrants with master's, doctorate, or professional degrees was lower than that of immigrants with only bachelor's degrees (reference group). Compared with immigrants with only bachelor's degrees, the regression-adjusted likelihood of mal-employment was estimated to be 10, 26, and 19 percentage points, respectively, lower among those with master's, doctorate, and professional college degrees. Even after controlling for other variables in the regression, postgraduate credentials are expected to increase the access of college-educated immigrants to employment in CLM occupations and decrease the labor market problem of mal-employment among these individuals.

Findings for male and female immigrants presented in Table 12 also indicate sizable, statistically significant regression-adjusted effects of additional education on the probability of mal-employment. Although additional college education was estimated to increase access to CLM jobs and therefore lower the risk of mal-employment among male as well as female immigrants, the effect of education on mal-

[4] Tabulations in the regression section of this paper contain the following regression results for all variables: coefficients, ratio of odds, marginal effect, and statistical significance at .01, .05, and .10 levels. However, the discussion will focus only on findings that meet at least the .05 level of statistical significance; $p<.05$.

employment was estimated to be larger among female immigrants. After statistically controlling for other variables included in the regression, the mal-employment rate of employed immigrants with master's degrees was estimated to be 7 percentage points lower among male immigrants and 14 percentage points lower among female immigrants. Among immigrants with doctorate degrees, the regression-adjusted likelihood of mal-employment was estimated to be sharply lower than that of immigrants with only bachelor's degrees by 24 percentage points among male immigrants and 29 percentage points among their female counterparts. Having a professional college degree (JD, MD, etc.) was estimated to reduce the likelihood of mal-employment among male and female immigrants by 16 and 25 percentage points, respectively, relative to that of their counterparts with only bachelor's degrees.

As noted in the descriptive section above, access to CLM jobs varied widely by major field of college study of immigrants. Immigrants with college degrees in the fields of computer and information sciences, health sciences, and engineering had the lowest rates of mal-employment (11% to 19%), whereas their counterparts with college degrees in the humanities and business had the highest mal-employment rates (33% to 35%). The regression analysis estimates the relationship between college major and mal-employment of employed immigrant college graduates after statistically controlling for the effect on mal-employment of other variables that are included in the regression equation. According to findings from the regression analysis presented in Table 12, immigrants with college degrees in computer and informational sciences, health and medical sciences, engineering, physical sciences, mathematics, and education had a lower regression-adjusted likelihood of mal-employment than did their counterparts who had majored in the humanities (reference group). Immigrants with college degrees in these fields were estimated to be between 6 and 15 percentage points less likely to be mal-employed than were humanities majors. The coefficients of the remaining six major fields of study in Table 12 did not meet the .05 level of statistical significance, meaning that the regression-adjusted likelihood of mal-employment among graduates in these fields was similar to that of the reference group—those majoring in the humanities.

Regression findings on the links between college major and the likelihood of mal-employment among male and female immigrants are presented in Table 12. Similar to the findings for all employed immigrants, separate regressions for immigrant men and women found that those with college degrees in computer and information sciences, engineering, health and medical sciences, and physical sciences had a lower regression-adjusted likelihood of mal-employment than did humanities majors. Regression-adjusted estimates of mal-employment rate gaps between employed immigrants with college degrees in these majors and the reference group (humanities majors) were somewhat different among male and female immigrants. Education majors were estimated to have a lower regression-adjusted mal-employment rate than were humanities majors among female immigrants. The coefficient of education major field of study in the regression estimated for male immigrants was not statistically significant, meaning that the regression-adjusted mal-employment rate of male immigrants with college degrees in education was no different from that of the reference group (humanities majors). Although the mathematics regression coefficient met the .05 level of statistical significance in the regression estimated for all employed immigrants, when measured separately for male and female immigrants, it failed to meet the threshold of statistical significance.

Table 12: Regression-Adjusted Effect of Educational Attainment and Major Field of Study on Probability of Mal-Employment among College-Educated U.S. Immigrants Under 65 Years Old Employed in October 2003[a]

Educational Attainment/ Major Field of Study	Coefficient[b] All	Ratio of Odds All	Marginal Effect All	Coefficient[b] Male	Ratio of Odds Male	Marginal Effect Male	Coefficient[b] Female	Ratio of Odds Female	Marginal Effect Female
Master's	-0.774***	0.461	-0.100	-0.632***	0.532	-0.073	-0.952***	0.386	-0.140
Doctorate	-2.007***	0.134	-0.259	-2.053***	0.128	-0.238	-1.936***	0.144	-0.286
Professional	-1.493***	0.225	-0.192	-1.365***	0.255	-0.158	-1.718***	0.179	-0.253
Bachelor's (reference group)	--	--	--	--	--	--	--	--	--
Computer/ information sciences	-1.178***	0.308	-0.152	-1.367***	0.255	-0.159	-0.912***	0.402	-0.135
Mathematics	-0.492**	0.612	-0.063	-0.467	0.627	-0.054	-0.529	0.589	-0.078
Biological sciences	0.030	1.031	0.004	0.035	1.036	0.004	0.072	1.075	0.011
Physical sciences	-0.529***	0.589	-0.068	-0.453**	0.636	-0.053	-0.635**	0.530	-0.094
Psychology	-0.136	0.873	-0.018	0.084	1.087	0.010	-0.167	0.846	-0.025
Social sciences	-0.133	0.876	-0.017	-0.144	0.866	-0.017	-0.089	0.915	-0.013
Engineering	-0.855***	0.425	-0.110	-0.864***	0.422	-0.100	-0.954***	0.385	-0.141
Health/ medical sciences	-0.882***	0.414	-0.114	-0.931***	0.394	-0.108	-0.812***	0.444	-0.120
Education	-0.455***	0.635	-0.059	-0.181	0.834	-0.021	-0.474**	0.623	-0.070
Engineering-related technologies	-0.300	0.740	-0.039	-0.328	0.721	-0.038	-0.197	0.821	-0.029
Business	-0.126	0.881	-0.016	-0.260	0.771	-0.030	0.056	1.058	0.008
Law	-0.086	0.918	-0.011	-0.491	0.612	-0.057	0.523	1.686	0.077
Arts, Language, & Comm. (Humanities; reference group)	--	--	--	--	--	--	--	--	--

[a] Other explanatory variables in the regression model include region/country of most recent college degree, English-speaking proficiency, type of entry visa, recent immigrant status, gender, marital status, presence of young children, school enrollment status, disability status, and U.S. region of residence in 2003 (dependent variable: mal-employment status; 1=mal-employed, 0=not mal-employed).
[b] Statistical significance: *** .01 level, ** .05 level, * .10 level

Country/Region of College Degree and English Language Proficiency

According to the descriptive analysis presented earlier in this paper, employed immigrants with foreign college degrees were twice as likely to be mal-employed as their counterparts with U.S. college degrees.

A comparison of mal-employment rates of immigrants with college degrees from different countries revealed wide variation, ranging from nearly 50 percent among immigrants with Filipino college degrees to 14 percent among immigrants with Canadian college degrees.

The regression-adjusted effects of region or country in which immigrants earned their most recent degrees on the likelihood of mal-employment are presented in Table 13. The reference group was immigrants with U.S. college degrees, and the coefficients, odds ratios, and marginal effects presented in Table 13 measure the independent (regression-adjusted) effect of country or region of college degree of immigrants on the likelihood of mal-employment.

Findings presented in Table 13 reveal that even after statistically controlling for the effects of other variables in the regression, the region or country of the college degree of a college-educated U.S. immigrant was found to be closely related to the likelihood of mal-employment. Regression-adjusted, employed immigrants with African, Filipino, and Latin American college degrees were found to be 16 to 18 percentage points more likely to be mal-employed than immigrants with U.S. college degrees. The regression-adjusted mal-employment rates of immigrants with college degrees from Europe (excluding UK/Northern Ireland) and Asia (excluding China, India, and the Philippines) were estimated to be 13 to 14 percentage points higher and those with Indian college degrees were about 9 percentage points higher than those of their counterparts with U.S. college degrees. Estimated coefficients of variables representing Canadian, British, Australian, and Chinese degrees did not meet the .05 level of statistical significance, meaning that the regression-adjusted likelihood of mal-employment among immigrants with college degrees from these countries was no different from that of their counterparts with U.S. college degrees (reference group).

The lower rates of mal-employment among immigrants with Canadian and British and, to a certain extent, Australian college degrees were likely due to better recognition among U.S. employers of college credentials from those countries; similarities between language, culture, and labor market practices in these countries and those in the United States; and higher rates of entry with work visas among immigrants from these countries. The lower rate of mal-employment among immigrants with college degrees from China was a surprising finding.[5] Upon further examination of the 2003 NSCG data, we found that immigrants with Chinese college degrees who were employed had disproportionately high shares of workers who had entered the United States with student visas (43% versus 25% among all employed immigrants) and who were enrolled in school at the time of the 2003 NSCG (15% versus 7% among all employed immigrants). It appears that many immigrants who had earned their most recent degrees from China may already have possessed some U.S. college education, albeit not degrees (given that their most recent college degrees were from China), and were in the process of earning U.S. college credentials, which was evident in their high rates of enrollment in school while residing in the United States at the time of the 2003 NSCG. This finding warrants further examination of the pathways into the U.S. labor market of immigrants with college degrees earned in China.

[5] It should be noted that the lower mal-employment rate among immigrants with Chinese college degrees was entirely due to the lower rate among male immigrants with college degrees from China—14 percent compared with 32 percent among their female counterparts (see Table 7).

Table 13: Regression-Adjusted Effect of Country/Region of Most Recent College Degree and English-Speaking Proficiency on Probability of Mal-Employment among College-Educated U.S. Immigrants Under 65 Years Old Employed in October 2003[a]

Region/Country of Most Recent Degree/English-Speaking Proficiency	Coefficient[b] All	Ratio of Odds All	Marginal Effect All	Coefficient[b] Male	Ratio of Odds Male	Marginal Effect Male	Coefficient[b] Female	Ratio of Odds Female	Marginal Effect Female
Canada	-0.098	0.907	-0.013	-0.054	0.948	-0.006	-0.156	0.856	-0.023
Europe:									
UK/N. Ireland	0.143	1.154	0.019	0.041	1.041	0.005	0.386	1.471	0.057
Europe excluding UK/N. Ireland	1.092***	2.979	0.141	1.160***	3.190	0.135	0.961***	2.615	0.142
Australia/NZ	0.328	1.389	0.042	0.797	2.220	0.093	-0.334	0.716	-0.049
Asia:									
India	0.728***	2.070	0.094	0.509***	1.664	0.059	1.061***	2.888	0.157
China	0.485*	1.624	0.063	-0.002	0.998	0.000	0.756**	2.129	0.112
Philippines	1.383***	3.985	0.178	1.399***	4.052	0.162	1.378***	3.967	0.203
Rest of Asia	1.010***	2.746	0.130	0.907***	2.477	0.105	1.154***	3.172	0.170
Africa	1.417***	4.123	0.183	1.300***	3.670	0.151	1.522***	4.579	0.225
Latin America (Mexico, N. & S. America, Caribbean)	1.252***	3.498	0.161	1.097***	2.995	0.127	1.420***	4.136	0.209
U.S. (reference group)	--	--	--	--	--	--	--	--	--
Speaks English very well	-0.016	0.984	-0.002	-0.009	0.991	-0.001	-0.006	0.994	-0.001
Speaks English well (reference group)	--	--	--	--	--	--	--	--	--

[a] Other explanatory variables in the regression model include educational attainment, major field of study, type of entry visa, recent immigrant status, gender, marital status, presence of young children, school enrollment status, disability status, and region of U.S. residence in 2003 (dependent variable: mal-employment status: 1=mal-employed, 0=not mal-employed).

[b] Statistical significance: *** .01 level, ** .05 level, * .10 level

Findings of regression-adjusted mal-employment rate estimates of immigrants with college degrees from different countries and regions abroad by gender reveal that male as well as female immigrants with college degrees from the Philippines, Africa, Latin America, Europe (excluding UK/Northern Ireland), and Asia (excluding China, India, and the Philippines) had a much higher regression-adjusted likelihood of mal-employment than did their U.S.-educated counterparts. After statistically controlling for all other variables in the regression that are known to affect the likelihood of mal-employment among U.S. immigrants, the regression-adjusted likelihood of mal-employment among male and female immigrants with college degrees from Canada, the UK, and Australia was estimated to be no different from that of their counterparts with U.S. degrees. Among employed male immigrants, there also was no regression-adjusted difference in the likelihood of mal-employment between those with college degrees from China

compared with immigrant men with U.S. college degrees. Among employed female immigrants, those with college degrees from China had an 11 percentage point higher regression-adjusted likelihood of mal-employment than did their U.S.-educated counterparts.

The effect of English language proficiency on mal-employment of college-educated immigrants was measured in our regression equation with a variable that represented immigrants from countries of the world where 23- to 64-year-old college graduates on average rated themselves as speaking English very well. The regression findings for this variable represent the likelihood of mal-employment among immigrant college graduates from these countries (where college grads rate themselves as speaking English "very well") relative to their counterparts from countries where college graduates rate themselves as speaking English just "well." In our descriptive analysis, we found some differences in the mal-employment rates of college-educated immigrants by English-speaking proficiency, but after statistically controlling for other variables that are known to affect the likelihood of mal-employment among immigrants, the regression-adjusted likelihood of mal-employment among employed college-educated immigrants from countries where college graduates rate themselves as speaking English "very well" is expected to be no different from that of the reference group (immigrants from countries where college graduates rate themselves as speaking English "well"). The coefficient of this variable was not statistically significant in regression equations that we estimated for all, male, and female immigrant college graduates.

Type of Visa and Recent Immigration Status

The descriptive analysis presented in this paper found that the prevalence of mal-employment among employed college-educated immigrants varied systematically by type of visa with which immigrants first entered the United States. Those who had entered with work visas or student visas were much less likely to be mal-employed than were those who had entered with dependent visas or green cards or other types of temporary visas. Findings from our regression analysis of mal-employment presented in Table 14 contain estimates of the regression-adjusted differences in the likelihood of mal-employment between employed immigrants with different types of entry visas compared with the reference group consisting of immigrants who had entered the United States as permanent residents (with green cards). Even after statistically controlling for other variables included in the regression, immigrants who had entered the United States with temporary work visas were expected to be 15 percentage points less likely to be mal-employed than were those who had entered with green cards as permanent residents (reference group).

The regression-adjusted likelihood of mal-employment among college-educated immigrants who were employed in 2003 and who had entered the United States with student visas was nearly 3 percentage points lower than that of the reference group (those who had entered the United States with green cards). The regression-adjusted likelihood of mal-employment among foreign-born college graduates who had entered the United States with dependent visas or other types of temporary visas was no different from that of the reference group. The regression equation estimated for male immigrants reflects the findings for all immigrants. Male immigrants who had entered the United States with work visas or student visas had a lower regression-adjusted likelihood of mal-employment compared with the reference group, whereas those who had entered the United States with dependent visas or other types of temporary visas had the same regression-adjusted likelihood of mal-employment as the reference group. Among female immigrants, the regression-adjusted likelihood of mal-employment was lower than that of the reference group among women who had entered the United States with work visas and the same as that of the

reference group (women with green card entry) among women with other types of entry visas, including student visas.

Entry to the United States with work visas and to a lesser extent (only among male immigrants) with student visas is expected to increase access to CLM jobs. As noted earlier in this paper, the migration decision of immigrants with college degrees who enter the United States with work visas is partly based on their access to jobs that match their education and skills. In the case of college graduates, this means they already have offers for jobs that meet the work visa standards before they enter the United States. Immigrants who enter the United States with student visas are more likely to earn U.S. college degrees, which is likely to increase their access to CLM jobs and reduce their likelihood of mal-employment.

Table 14: Regression-Adjusted Effect of Type of Entry Visa to the United Status and Recent Immigrant Status on Probability of Mal-Employment among College-Educated U.S. Immigrants Under 65 Years Old Employed in October 2003[a]

Entry Visa/Recent Immigrant Status	Coefficient[b] All	Ratio of Odds All	Marginal Effect All	Coefficient[b] Male	Ratio of Odds Male	Marginal Effect Male	Coefficient[b] Female	Ratio of Odds Female	Marginal Effect Female
Temporary visa: Employment	-1.181***	0.307	-0.152	-1.347***	0.260	-0.156	-0.902***	0.406	-0.133
Temporary visa: Student	-0.192**	0.825	-0.025	-0.367***	0.693	-0.043	0.078	1.081	0.012
Temporary visa: Dependent	-0.067	0.935	-0.009	-0.055	0.947	-0.006	-0.055	0.947	-0.008
Temporary visa: Other	-0.016	0.984	-0.002	0.011	1.011	0.001	-0.068	0.934	-0.010
Permanent resident visa (reference group)	--	--	--	--	--	--	--	--	--
Recent immigrant (after 1990)	0.149*	1.161	0.019	0.201*	1.223	0.023	0.082	1.085	0.012
Established immigrant (entry in 1990 or earlier; reference group)	--	--	--	--	--	--	--	--	--

[a] Other explanatory variables in the regression model include educational attainment, major field of study, region/ country of most recent college degree, English-speaking proficiency, gender, marital status, presence of young children, school enrollment status, disability status, and U.S. region of residence in 2003 (dependent variable: mal-employment status: 1=mal-employed, 0=not mal-employed).
[b] Statistical significance: *** .01 level, ** .05 level, * .10 level

The length of time spent by an immigrant in his/her adopted host country is likely to have influenced the individual's market experiences at the time of the NSCG. Recently entered immigrants had spent less time in the United States and therefore had had less time to assimilate than those who entered earlier and spent more time in this country. We have defined as recent entrants those college-educated immigrants who entered the United States after 1990 (between 1991 and October 2003 when the NSCG was conducted). Immigrants who had entered the United States in 1990 or earlier are defined as "established immigrants." Findings from our regression analysis of college-educated immigrants presented in Table 14 reveal that the coefficient of the recent immigrant variable (among all employed immigrants and

separately among male and female employed immigrants) was small and not measured with enough precision to meet the .05 level of statistical significance. According to these findings, the regression-adjusted likelihood of mal-employment among all, male, and female college-educated immigrants who had entered the United States between 1991 and 2003 (recent immigrants) was not statistically different from that of their counterparts who had entered the United States in 1990 or earlier.

Demographic Characteristics

The descriptive analysis presented in the first part of this paper revealed differences in the prevalence of mal-employment among college-educated immigrants by their demographic characteristics. Immigrant women were more likely to be mal-employed than were immigrant men (29% versus 24%). The link between marital status and mal-employment was different among male and female immigrants. The mal-employment rate of male immigrants was lower among those who were married (23%) than among those who were not married (27%); whereas among female immigrants marriage was associated with somewhat lower access to CLM jobs—29 percent of married immigrant women were mal-employed compared with 27 percent of those who were unmarried. Immigrants with disabilities were more likely to be mal-employed than were those without disabilities, and school enrollment among college-educated immigrants was associated with a lower rate of mal-employment.

We included all of these variables representing traits of immigrant college graduates as demographic controls in our regression analysis. The regression-adjusted effects of these demographic traits on the likelihood of mal-employment for all college-educated immigrants and separately for males and females are presented in Table 15. The findings reveal that after statistically controlling for all variables included in the regression equation, the likelihood of mal-employment was estimated to be similar among male and female immigrants. This means that the differences in mal-employment rates between male and female college-educated immigrants are attributable to differences in other demographic, human capital, and immigration-related traits that are included as explanatory variables in the regression equation.

Findings from regression equations estimated for all immigrants and separately for male and female immigrants reveal no statistically significant difference between the regression-adjusted likelihood of mal-employment by marital status, presence of preschool-aged children (under age 6), and school enrollment status of college-educated immigrants. The descriptive analysis presented in this paper revealed only modest differences in the prevalence of mal-employment among these groups of immigrants. The absence of statistically significant differences in the regression-adjusted likelihood of mal-employment among these demographic subgroups of immigrants means that the modest differences in their mal-employment rates are likely attributable to differences in human capital or immigration-related characteristics that are included in the regression equation.

Table 15: Regression-Adjusted Effect of Selected Demographic Characteristics on Probability of Mal-Employment among College-Educated U.S. Immigrants Under 65 Years Old Employed in October 2003[a]

Demographics	Coefficient[b] All	Ratio of Odds All	Marginal Effect All	Coefficient[b] Male	Ratio of Odds Male	Marginal Effect Male	Coefficient[b] Female	Ratio of Odds Female	Marginal Effect Female
Male	0.059	1.061	0.008	--	--	--	--	--	--
Female (reference group)	--	--	--	--	--	--	--	--	--
Married	-0.112	0.894	-0.015	-0.176	0.838	-0.020	-0.044	0.957	-0.007
Not married (reference group)	--	--	--	--	--	--	--	--	--
Preschool-aged children	-0.023	0.978	-0.003	-0.037	0.964	-0.004	0.016	1.016	0.002
No preschool aged children (reference group)	--	--	--	--	--	--	--	--	--
Enrolled in school	-0.149	0.862	-0.019	-0.261	0.770	-0.030	-0.004	0.996	-0.001
Not enrolled (reference group)	--	--	--	--	--	--	--	--	--
With disabilities	0.390***	1.476	0.050	0.400**	1.491	0.046	0.368**	1.445	0.054
Without disabilities (reference group)	--	--	--	--	--	--	--	--	--

[a] Other explanatory variables in the regression model include educational attainment, major field of study, region/ country of most recent college degree, English-speaking proficiency, type of entry visa, recent immigrant status, and U.S. region of residence in 2003 (dependent variable: mal-employment status: 1=mal-employed, 0=not mal-employed).
[b] Statistical significance: *** .01 level, ** .05 level, * .10 level

The disability status of college-educated immigrants also was included in the regression equation as a demographic control because a wide range of research has found a negative impact of disability on labor market outcomes. People with disabilities are less likely to participate in the labor force, and when they do participate in the labor force, they are more likely to be unemployed. When employed, individuals with disabilities are less likely to have access to higher quality jobs and are more likely to have lower earnings and fewer hours of work than workers without disabilities. According to the descriptive analysis presented in this paper, the mal-employment rate of college-educated immigrants was considerably higher among college-educated immigrants with disabilities (37.5%) than among those without disabilities (25%). Disability was associated with a higher mal-employment rate among male as well as female immigrants. Regression findings presented in Table 15 reveal that among all, male, and female college-

educated immigrants there was a statistically significant difference between the regression-adjusted likelihood of mal-employment among those with and without disabilities. After statistically controlling for all variables included in the regression equation, immigrants with disabilities (all, male, and female) were 5 percentage points more likely to be mal-employed than were their counterparts without disabilities.

Region of Residence in the United States

The region of residence of workers is expected to affect their labor market outcomes. Our descriptive analysis of the prevalence of mal-employment by U.S. region of residence of immigrants at the time of the NSCG found moderate variation across the four major regions of the nation. Immigrants who lived in the Northeast region in 2003 had the lowest mal-employment rate (24%) while those who lived in the West region had the highest mal-employment rate (28%). The mal-employment rate among college-educated immigrants in the remaining two regions was about 25 percent in the Midwest and 27 percent in the South. The prevalence of mal-employment across regions among men and women followed the same pattern.

Our regression findings presented in Table 16 reveal that after controlling for other variables included in the regression models that are known to affect mal-employment among college-educated immigrants, there was no statistically significant difference in the regression-adjusted likelihood of mal-employment of immigrants by U.S. region of residence in 2003. The modest differences that did exist in the prevalence of mal-employment of immigrants by region and were measured in the descriptive analysis of this paper are likely due to systematic differences in the human capital and immigrant-related characteristics of immigrants residing in different regions of the country. After statistically controlling for these traits, there was no statistically significant link between region of residence in the U.S. and likelihood of mal-employment among college-educated immigrants.

Table 16: Regression-Adjusted Effect of U.S. Region of Residence on Probability of Mal-Employment among College-Educated U.S. Immigrants Under 65 Years Old Employed in October 2003[a]

U.S. Region	Coefficient[b] All	Ratio of Odds All	Marginal Effect All	Coefficient[b] Male	Ratio of Odds Male	Marginal Effect Male	Coefficient[b] Female	Ratio of Odds Female	Marginal Effect Female
Northeast	-0.139	0.870	-0.018	-0.216*	0.806	-0.025	-0.040	0.961	-0.006
Midwest	0.017	1.017	0.002	0.022	1.022	0.003	0.000	1.000	0.000
West	-0.055	0.946	-0.007	-0.046	0.955	-0.005	-0.055	0.947	-0.008
South (reference group)	--	--	--	--	--	--	--	--	--

[a] Other explanatory variables in the regression model include educational attainment, major field of study, region/country of most recent college degree, English-speaking proficiency, type of entry visa, recent immigrant status, gender, marital status, presence of young children, school enrollment status, and disability status (dependent variable: mal-employment status: 1=mal-employed, 0=not mal-employed).
[b] Statistical significance: *** .01 level, ** .05 level, * .10 level

Summary of Findings from Multivariate Regression Analysis

Regression analysis of the independent effect of human capital characteristics on the likelihood of mal-employment among college-educated immigrants found sizable and statistically significant independent effects. Compared with immigrants with only bachelor's degrees, the regression-adjusted likelihood of mal-employment was estimated to be 10, 26, and 19 percentage points lower among those with master's, doctorate, and professional college degrees, respectively. Immigrants with degrees from certain major fields of study were less likely to be mal-employed, even after statistically controlling for other variables in the regression equation. According to findings from the regression analysis, immigrants with college degrees in computer and information sciences, health and medical sciences, engineering, physical sciences, mathematics, and education were between 6 and 15 percentage points less likely to be mal-employed than were humanities majors (the reference group). The regression-adjusted likelihood of mal-employment among immigrants with college degrees from other fields of study was similar to that of humanities majors.

Sizable gaps in the likelihood of mal-employment were found across countries/regions where college degrees of immigrants were awarded. Employed immigrants with African, Filipino, and Latin American college degrees were found to be 16 to 18 percentage points more likely to be mal-employed than were immigrants with U.S. college degrees; similarly, the likelihood of mal-employment among immigrants with college degrees from Europe (excluding UK/Northern Ireland) and Asia (excluding China, India, and the Philippines) were estimated to be 13 to 14 percentage points higher, and among those with Indian college degrees, about 9 percentage points higher than their counterparts with U.S. college degrees. In contrast, we found that the regression-adjusted likelihood of mal-employment among immigrants with Canadian, British, Australian, and Chinese degrees was no different from that of their counterparts with degrees earned from U.S. colleges and universities.

The lower mal-employment among immigrants with Chinese degrees was entirely due to the greater access to college labor market jobs among male college graduates with Chinese college degrees. Among Chinese-degreed men, the mal-employment rate was 14 percent compared with 32 percent among their female counterparts. Immigrants with Chinese college degrees also had disproportionately high shares of workers who had entered the United States with student visas (43% versus 25% among all employed immigrants) and were enrolled in school at the time of the 2003 NSCG (15% versus 7% percent among all employed immigrants). It appears that many immigrants who had earned their most recent degrees from China already may have possessed some U.S. college education, albeit not degrees (given that their most recent college degrees were from China), as they were in the process of earning U.S. college credentials, which is evident from their high rates of school enrollment in the United States in 2003. This finding warrants further examination of the pathways into the U.S. labor market of immigrants with college degrees earned in China.

Regression-adjusted findings regarding entry visas and the likelihood of mal-employment support descriptive findings that the prevalence of mal-employment among employed college-educated immigrants varied systematically by type of visa with which they first entered the United States. Compared with immigrants who had entered the United States with green cards, the regression-adjusted likelihood of mal-employment was estimated to be 15 percentage points lower among those who had entered the United States with work visas, 3 percentage points lower among immigrants who had entered with student visas, and not statistically different among those who had entered the United States with dependent visas or other types of temporary visas.

Although our descriptive analysis found that immigrant women with foreign degrees had higher mal-employment rates compared with men (29% versus 24%), the regression analysis revealed that the likelihood of mal-employment was similar among male and female immigrants. This means that the differences in mal-employment rates between male and female college-educated immigrants are attributable to differences in other demographic, human capital, and immigration-related traits that are included as explanatory variables in the regression equation.

Although the descriptive analysis revealed modest differences in the prevalence of mal-employment by demographic characteristics of immigrants, including marital status, presence of preschool-aged children, and school enrollment status of college-educated immigrants, the regression analysis found no statistically significant difference in the likelihood of mal-employment among these individuals. The absence of statistically significant differences in the regression-adjusted likelihood of mal-employment among these demographic subgroups of immigrants means that the modest differences in mal-employment rates are likely attributable to differences in human capital or immigration-related characteristics that are included in the regression analysis. Disability status was the only demographic trait with a regression-adjusted difference in the likelihood of mal-employment. After statistically controlling for all variables included in the regression, immigrants with disabilities were estimated to be 5 percentage points more likely to be mal-employed than were their counterparts without disabilities.

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Appendix A: Countries in World Regions

REGION	COUNTRIES	
Canada	Canada	
United Kingdom/ Northern Ireland	United Kingdom, not specified England Scotland	Wales Northern Ireland
Rest of Europe	Albania Austria Belgium Bulgaria Czechoslovakia Denmark Finland France Germany, not specified Greece Hungary Iceland Ireland Italy Luxembourg Malta Netherlands Norway Poland Portugal Azores Islands Romania Spain Sweden	Switzerland Yugoslavia Europe, not specified Southern Europe, not specified Czech, Rep. of Slovakia Serbia-Montenegro Slovenia Macedonia Bosnia-Hercegovina Croatia USSR Estonia Latvia Lithuania Moldova Belarus [Byelarus] Russia Kazakhstan Armenia Azerbaijan Georgia Uzbekistan Ukraine Turkemnistan
India	India	
China	China	
Philippines	Philippines	
Rest of Asia	Afghanistan Bahrain Bangladesh Myanmar [formerly Burma] Cambodia Cyprus Hong Kong Indonesia Iran Iraq Israel Japan Jordan	Korea, not specified South Korea Kuwait Laos Lebanon Macao Malaysia Nepal Pakistan Saudi Arabia Singapore Sri Lanka

Rest of Asia (cont)	Syria	Vietnam
	Taiwan	Yemen, Peoples Democratic Republic
	Thailand	Yemen, Unified [1991 and after]
	Turkey	Middle East, not specified
Central and South America and the Caribbean	Belize	Netherlands Antilles
	Costa Rica	St. Kitts-Nevis
	El Salvador	St. Lucia
	Guatemala	St. Vincent and the Grenadin
	Honduras	Trinidad and Tobago
	Mexico	Caribbean, not specified
	Nicaragua	West Indies, not specified
	Panama	Argentina
	Central America, not specified	Bolivia
	Antigua and Barbuda	Brazil
	Aruba	Chile
	Bahamas	Colombia
	Barbados	Ecuador
	Cuba	Guyana
	Dominica	Paraguay
	Dominican Republic	Peru
	Grenada	Surinam
	Haiti	Uruguay
	Jamaica	Venezuela
		South America, not specified
Africa	Algeria	Senegal
	Angola	Sierra Leone
	Cameroon	South Africa
	Congo	Sudan
	Egypt	Tanzania
	Ethiopia	Tunisia
	Ghana	Uganda
	Ivory Coast	Zaire
	Kenya	Zambia
	Liberia	Zimbabwe
	Libya	Africa, not specified
	Madagascar	Central Africa, not specified
	Morocco	Eastern Africa, not specified
	Mozambique	Western Africa, not specified
	Nigeria	Southern Africa, not specified
	Rwanda	
Australia/ New Zealand	Australia	
	Fiji	
	New Zealand	
	Tonga	
	Western Samoa	
	Oceania, not specified	

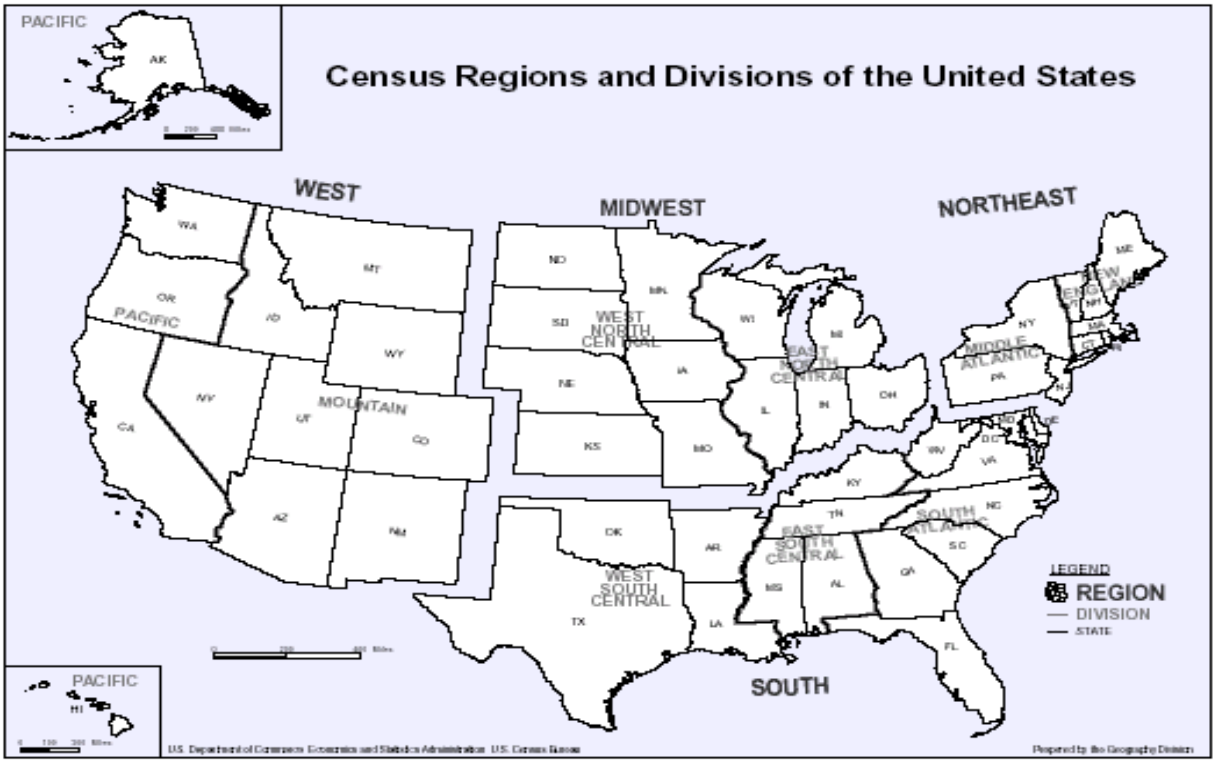
Appendix B: States Included in the Four Regions of the United States

NORTHEAST
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont
New Jersey
New York
Pennsylvania

MIDWEST
Illinois
Indiana
Michigan
Ohio
Wisconsin
Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

WEST
Alaska
California
Hawaii
Oregon
Washington
Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

SOUTH
Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia
Alabama
Kentucky
Mississippi
Tennessee
Arkansas
Louisiana
Oklahoma
Texas



Appendix C: Findings from Logistic Regression Analysis of Mal-Employment among Foreign-Born College Graduates in the United States

ALL IMMIGRANTS UNDER AGE 65 EMPLOYED IN OCTOBER 2003

Variables	Coefficient	Robust Std. Error	Z	P>|Z|	95% Conf. Interval	95% Conf. Interval	Marginal Effect
Male	0.059	0.069	0.860	0.391	-0.076	0.194	0.0076
Entered the U.S. Between 1991 and 2003	0.149	0.078	1.910	0.056	-0.004	0.302	0.0192
Speaks English very well	-0.016	0.082	-0.200	0.842	-0.176	0.144	-0.0021
Master's degree	-0.774	0.075	-10.360	0.000	-0.921	-0.628	-0.0997
Doctorate degree	-2.007	0.163	-12.320	0.000	-2.326	-1.687	-0.2585
Professional degree	-1.493	0.200	-7.460	0.000	-1.885	-1.100	-0.1922
Computer science	-1.178	0.191	-6.170	0.000	-1.552	-0.804	-0.1517
Mathematics	-0.492	0.246	-2.000	0.045	-0.973	-0.010	-0.0633
Biological sciences	0.030	0.155	0.200	0.844	-0.273	0.334	0.0039
Physical sciences	-0.529	0.172	-3.070	0.002	-0.866	-0.192	-0.0681
Psychology	-0.136	0.205	-0.670	0.506	-0.537	0.265	-0.0175
Social sciences	-0.133	0.159	-0.830	0.405	-0.445	0.180	-0.0171
Engineering	-0.855	0.128	-6.660	0.000	-1.107	-0.604	-0.1102
Health sciences	-0.882	0.150	-5.890	0.000	-1.175	-0.588	-0.1135
Education	-0.455	0.161	-2.820	0.005	-0.770	-0.139	-0.0586
Engineering-related technologies	-0.300	0.219	-1.370	0.170	-0.730	0.129	-0.0387
Business	-0.126	0.118	-1.080	0.282	-0.357	0.104	-0.0163
Law	-0.086	0.283	-0.300	0.761	-0.640	0.468	-0.0111
Degree from Canada	-0.098	0.246	-0.400	0.691	-0.579	0.384	-0.0126
Degree from UK/Northern Ireland	0.143	0.245	0.580	0.559	-0.337	0.624	0.0185
Degree from Europe ex. UK/Northern Ireland	1.092	0.119	9.210	0.000	0.859	1.324	0.1406
Degree from India	0.728	0.131	5.560	0.000	0.471	0.984	0.0937
Degree from China	0.485	0.274	1.770	0.077	-0.052	1.022	0.0625
Degree from the Philippines	1.383	0.123	11.270	0.000	1.142	1.623	0.1781
Degree from Asia ex. China, India, & Philippines	1.010	0.128	7.870	0.000	0.758	1.262	0.1301
Degree from Africa	1.417	0.218	6.510	0.000	0.990	1.843	0.1825
Degree from Latin America	1.252	0.149	8.400	0.000	0.960	1.544	0.1613
Degree from Australia/New Zealand	0.328	0.498	0.660	0.510	-0.649	1.305	0.0423
Work visa	-1.181	0.127	-9.300	0.000	-1.430	-0.932	-0.1521
Student visa	-0.192	0.089	-2.160	0.031	-0.366	-0.018	-0.0247
Dependent visa	-0.067	0.096	-0.700	0.487	-0.256	0.122	-0.0086
Other visa	-0.016	0.117	-0.140	0.889	-0.245	0.213	-0.0021
Married	-0.112	0.082	-1.370	0.170	-0.272	0.048	-0.0145
With preschool-aged children	-0.023	0.079	-0.290	0.774	-0.178	0.132	-0.0029
Enrolled in school	-0.149	0.202	-0.740	0.461	-0.544	0.246	-0.0191
With disabilities	0.390	0.122	3.200	0.001	0.151	0.629	0.0502
Northeast	-0.139	0.084	-1.640	0.100	-0.304	0.027	-0.0179
Midwest	0.017	0.105	0.160	0.875	-0.190	0.223	0.0021
West	-0.055	0.083	-0.660	0.506	-0.219	0.108	-0.0071
Constant	-0.520	0.141	-3.690	0.000	-0.797	-0.244	--

Logistic regression:
Dependent variable: 1=Mal-Employed, 0=Not Mal-Employed
Number of observations = 16,391
Wald chi2(39) = 981.340
Prob > chi2 = 0.000
Log pseudolikelihood = -7,976.600
Pseudo R2 = 0.149

MALE IMMIGRANTS UNDER AGE 65 EMPLOYED IN OCTOBER 2003

Variables	Coefficient	Robust Std. Error	Z	P>|Z|	95% Conf. Interval	95% Conf. Interval	Marginal Effect
Entered the U.S. between 1991 and 2003	0.201	0.105	1.920	0.055	-0.004	0.406	0.023
Speaks English very well	-0.009	0.107	-0.080	0.933	-0.219	0.201	-0.001
Master's degree	-0.632	0.100	-6.320	0.000	-0.828	-0.436	-0.073
Doctorate degree	-2.053	0.204	-10.090	0.000	-2.452	-1.654	-0.238
Professional degree	-1.365	0.286	-4.780	0.000	-1.925	-0.805	-0.158
Computer science	-1.367	0.244	-5.600	0.000	-1.845	-0.888	-0.159
Mathematics	-0.467	0.323	-1.450	0.148	-1.099	0.166	-0.054
Biological sciences	0.035	0.229	0.150	0.878	-0.414	0.484	0.004
Physical sciences	-0.453	0.231	-1.960	0.049	-0.905	-0.001	-0.053
Psychology	0.084	0.314	0.270	0.790	-0.532	0.699	0.010
Social sciences	-0.144	0.238	-0.610	0.544	-0.611	0.322	-0.017
Engineering	-0.864	0.168	-5.130	0.000	-1.194	-0.534	-0.100
Health sciences	-0.931	0.243	-3.840	0.000	-1.407	-0.456	-0.108
Education	-0.181	0.279	-0.650	0.515	-0.728	0.365	-0.021
Engineering-related technologies	-0.328	0.263	-1.250	0.212	-0.842	0.187	-0.038
Business	-0.260	0.167	-1.550	0.121	-0.588	0.069	-0.030
Law	-0.491	0.399	-1.230	0.219	-1.274	0.292	-0.057
Degree from Canada	-0.054	0.349	-0.150	0.878	-0.738	0.631	-0.006
Degree from UK/Northern Ireland	0.041	0.315	0.130	0.898	-0.577	0.658	0.005
Degree from Europe ex. UK/Northern Ireland	1.160	0.153	7.590	0.000	0.860	1.460	0.135
Degree from India	0.509	0.184	2.770	0.006	0.149	0.870	0.059
Degree from China	-0.002	0.516	0.000	0.996	-1.013	1.008	0.000
Degree from the Philippines	1.399	0.179	7.820	0.000	1.049	1.750	0.162
Degree from Asia ex. China, India, & Philippines	0.907	0.166	5.480	0.000	0.583	1.232	0.105
Degree from Africa	1.300	0.273	4.760	0.000	0.765	1.835	0.151
Degree from Latin America	1.097	0.201	5.450	0.000	0.702	1.492	0.127
Degree from Australia/New Zealand	0.797	0.605	1.320	0.188	-0.389	1.984	0.093
Work visa	-1.347	0.160	-8.420	0.000	-1.660	-1.033	-0.156
Student visa	-0.367	0.115	-3.200	0.001	-0.591	-0.142	-0.043
Dependent visa	-0.055	0.147	-0.370	0.710	-0.344	0.234	-0.006
Other visa	0.011	0.153	0.070	0.944	-0.290	0.311	0.001
Married	-0.176	0.112	-1.580	0.115	-0.395	0.043	-0.020
With preschool-aged children	-0.037	0.105	-0.350	0.727	-0.242	0.169	-0.004
Enrolled in school	-0.261	0.279	-0.940	0.348	-0.807	0.285	-0.030
With disabilities	0.400	0.172	2.320	0.020	0.063	0.736	0.046
Northeast	-0.216	0.114	-1.890	0.059	-0.440	0.008	-0.025
Midwest	0.022	0.135	0.160	0.870	-0.243	0.287	0.003
West	-0.046	0.113	-0.410	0.685	-0.267	0.175	-0.005
Constant	-0.307	0.193	-1.590	0.113	-0.686	0.072	--

Logistic regression:
Dependent variable: 1=Mal-Employed, 0=Not Mal-Employed
Number of observations = 10,409
Wald chi2(38) = 577.280
Prob > chi2 = 0.000
Log pseudolikelihood = -4,281.240
Pseudo R2 = 0.157

FEMALE IMMIGRANTS UNDER AGE 65 EMPLOYED IN OCTOBER 2003

Variables	Coefficient	Robust Std. Error	Z	P>|Z|	95% Conf. Interval	95% Conf. Interval	Marginal Effect
Entered the U.S. between 1991 and 2003	0.082	0.117	0.700	0.485	-0.147	0.311	0.012
Speaks English very well	-0.006	0.124	-0.050	0.959	-0.250	0.237	-0.001
Master's degree	-0.952	0.114	-8.380	0.000	-1.175	-0.729	-0.140
Doctorate degree	-1.936	0.280	-6.920	0.000	-2.484	-1.387	-0.286
Professional degree	-1.718	0.292	-5.890	0.000	-2.290	-1.146	-0.253
Computer science	-0.912	0.300	-3.040	0.002	-1.501	-0.324	-0.135
Mathematics	-0.529	0.372	-1.420	0.155	-1.257	0.200	-0.078
Biological sciences	0.072	0.206	0.350	0.726	-0.332	0.476	0.011
Physical sciences	-0.635	0.267	-2.380	0.017	-1.158	-0.112	-0.094
Psychology	-0.167	0.269	-0.620	0.534	-0.694	0.359	-0.025
Social sciences	-0.089	0.210	-0.420	0.672	-0.500	0.322	-0.013
Engineering	-0.954	0.237	-4.030	0.000	-1.419	-0.490	-0.141
Health sciences	-0.812	0.193	-4.200	0.000	-1.190	-0.433	-0.120
Education	-0.474	0.201	-2.360	0.018	-0.867	-0.080	-0.070
Engineering-related technologies	-0.197	0.393	-0.500	0.616	-0.967	0.573	-0.029
Business	0.056	0.162	0.350	0.730	-0.261	0.373	0.008
Law	0.523	0.366	1.430	0.153	-0.194	1.239	0.077
Degree from Canada	-0.156	0.333	-0.470	0.639	-0.808	0.496	-0.023
Degree from UK/Northern Ireland	0.386	0.335	1.150	0.250	-0.271	1.043	0.057
Degree from Europe ex. UK/Northern Ireland	0.961	0.185	5.200	0.000	0.599	1.324	0.142
Degree from India	1.061	0.191	5.550	0.000	0.686	1.436	0.157
Degree from China	0.756	0.341	2.220	0.026	0.088	1.423	0.112
Degree from the Philippines	1.378	0.172	8.030	0.000	1.042	1.714	0.203
Degree from Asia ex. China, India, & Philippines	1.154	0.202	5.710	0.000	0.758	1.550	0.170
Degree from Africa	1.522	0.365	4.170	0.000	0.806	2.237	0.225
Degree from Latin America	1.420	0.223	6.360	0.000	0.982	1.858	0.209
Degree from Australia/New Zealand	-0.334	0.753	-0.440	0.657	-1.810	1.141	-0.049
Work visa	-0.902	0.208	-4.330	0.000	-1.310	-0.494	-0.133
Student visa	0.078	0.139	0.560	0.575	-0.195	0.351	0.012
Dependent visa	-0.055	0.129	-0.420	0.672	-0.309	0.199	-0.008
Other visa	-0.068	0.179	-0.380	0.704	-0.420	0.283	-0.010
Married	-0.044	0.117	-0.380	0.705	-0.274	0.185	-0.007
With preschool-aged children	0.016	0.121	0.130	0.894	-0.220	0.252	0.002
Enrolled in school	-0.004	0.279	-0.020	0.988	-0.552	0.543	-0.001
With disabilities	0.368	0.174	2.120	0.034	0.027	0.708	0.054
Northeast	-0.040	0.124	-0.320	0.747	-0.282	0.202	-0.006
Midwest	0.000	0.167	0.000	0.998	-0.327	0.328	0.000
West	-0.055	0.123	-0.450	0.655	-0.295	0.186	-0.008
Constant	-0.730	0.197	-3.710	0.000	-1.116	-0.344	--

Logistic regression:
Dependent variable: 1=Mal-Employed, 0=Not Mal-Employed
Number of observations = 5,982
Wald chi2(38) = 437.740
Prob > chi2 = 0.000
Log pseudolikelihood = -3,643.352
Pseudo R2 = 0.147