# Heterogeneity in the Importance of English-Speaking Ability in Determination of Employment Status by Demographic Subgroups in the United States

Afful, Efua Amoonua

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Efua Amoonua Afful

Kansas Department of Labor

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Abstract

Previous literature indicates that language skills are an important determinant of success in the labor market. Using data from the 2012 American Community Survey (ACS) 1-year sample with individual weights in logit estimation, this paper shows that there is heterogeneity in the importance of English-speaking ability by gender, race and education. First, improvement in speaking proficiency in English increases the odds of employment to a point, beyond which there are no additional benefits. Second, females obtain higher benefits than males from enhancing proficiency partly due to the industry distribution of employment by gender. Finally, for proficiency in speaking English to yield substantial employment benefits, one must attain moderate to high educational qualifications. Language remains important as a determinant of success in the labor market.

## I.    Introduction

The United States (U.S.) is a major destination for jobseekers and other individuals (Massey et al., 1993). According to the Migration Policy Institute (MPI), immigrants comprised 7.9% of the population in 1990, 11.1% in 2000, and 12.9% in 2010. In 2012, the U.S. was home to 40,824,600 immigrants or 13% of the population. Immigrants often need to adjust to differences in culture, regulations and language in a new country. Language is of great importance to immigrants, especially those who choose to participate in the labor force. Its significance is based on the premise that communication is one of the essential skills required of potential employees in most occupations.

Previous studies have identified language proficiency as a significant factor in explaining the variation in labor market outcomes (Bloom and Grenier, 1993; Chiswick and Hurst, 2000; Dustmann and Fabbri, 2000; Gonzalez, 2010; Svantesson, 2006; Rendon, 2006; Aldashev, Gernandt and Thomsen, 2009). According to Bloom and Grenier (1993), language is classified as human capital by economists. Employers consider better communication with internal and external customers in the host country's language a productivity marker. Learning a language other than one's native language is costly; it requires investment in the form or formal or informal education. The expected benefits from investment in learning a new language are "nonpecuniary benefits," such as assimilation into society. In the labor market, potential benefits include higher earnings and greater odds of employment. The objective of this paper is to examine how proficiency in speaking English impacts the odds of employment by gender, race and educational attainment in the U.S. This paper contributes to literature by providing results which confirm the hypothesis that heterogeneity exists in the effects of English-speaking ability on employment outcomes based on demographic characteristics.

The dataset used in estimation is the 2012 American Community Survey (ACS) 1-year sample with weights. Employment status is assumed to follow a logistic distribution. Results of

estimation suggest that proficiency in speaking English generates higher employment benefits for females than males, possibly due to the industry distribution of employment. Females tend to be overrepresented in the service sector in which jobs require more extensive communication. Second, there are diminishing returns to improving English-speaking proficiency for women and Asians. An interesting finding is that greater proficiency in speaking English increases the odds of employment until a certain point of proficiency, beyond which the odds fall; this is true for males, Whites, Blacks, other races and individuals with high school education or less. Therefore, while it is expedient to achieve maximum proficiency for various reasons, for the purpose of employment, the optimal is not the maximum level of proficiency for the purpose of employment only. Also, among individuals with some college but no degree or higher, there are consistent increases in odds of employment as English-speaking ability improves, and estimated odds of employment are also very high even for those who speak no English at all. Results by education imply that proficiency in English is very important if one has a good educational background. Estimated coefficients confirm the assumption that the importance of English-speaking ability in determination of employment status differs by demographic subgroups.

Previous studies on labor market assimilation for immigrants demonstrate that fluency in the host country's language helps in assimilation into the labor market. The challenge of assimilation exists in many countries due to high levels of international labor mobility. The following studies cover a number of countries. Bloom and Grenier (1993) examine earnings and employment differentials between Spanish-speaking and English-speaking individuals in the U.S. using census data for 1970, 1980 and 1990 covering those aged 25 years to 64 years. Focusing on results on employment and unemployment only, the authors conclude that while differentials increased between 1970s and 1990s, there is no evidence that the widening differential was due to the changing relative reward to proficiency in English. Spanish-speaking individuals increased in number

especially in the 1980s and had relatively lower levels of education. The underlying implication of their results is that for each sample, there is a positive differential in employment status in favor of English-speaking individuals; however, the differential does not change over time. Another study on immigrants in the U.S. conducted by Chiswick and Hurst (2000) suggest that employment differentials stemming from proficiency in English diminish over time. They examine the impact of English-language proficiency, education, work experience, marital status and other factors on employment and unemployment experiences of men born outside the U.S. using data from the 1990 decennial census. They find that employment and unemployment differentials exist for those who have resided in the U.S. for at most three years with no significant differential for those who have resided in the country beyond three years. The authors conclude that while a differential exists, it is short-term and occurs during the period of adjustment. The definition of short-term is subjective since the period of adjustment may differ by country or group. Svantesson (2006) uses data on immigrants who have attained permanent residency for two and a half years and examines determinants of assimilation in the labor market in Sweden. Proficiency in the host country's language is a significant determinant of employment for women, with no benefits for men. Svantesson's (2006) results address two issues – the subjective nature of the period of adjustment and the possibility of differences in the importance of language for different demographic subgroups.

There are various aspects of proficiency – speaking, writing and reading. The components of proficiency may be correlated as shown by Dustmann and Fabbri (2000). The authors investigate the determinants of non-white immigrant's proficiency in English, and the effect of English proficiency on employment and earnings in the United Kingdom (U.K.). They posit that individuals opt to learn the language of the host country; thus, fluency in the host country's language is endogenously determined. The decision to learn is affected by education, age and the amount of time an immigrant

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has resided in the host country among other factors. Using data from the 1994/95 Family and Working Lives Survey (FWLS) covering individuals aged 16 to 69 matched to the 1991 Population Census, and the Fourth National Survey on Ethnic Minorities (FNSEM) covering individuals aged 16 and over, Dustmann and Fabbri (2000) find that fluency in English creates a 15% to 17% differential in employment probability. It is highly probable that reading and writing skills are correlated with speaking skills. As such, omission of reading and writing skills results in a biased coefficient on speaking skills. When all components of language proficiency are used in estimation, the authors find that writing skills create a 14% differential, speaking skills create a 4% differential and reading skills have no effect on employment probability. Rendon (2006) assesses the impact of language skills on employment in Catalonia as a result of a policy change. The compulsory use of Spanish was abolished in the 1980s, and both natives and immigrants had to achieve proficiency in Catalan. The author found that proficiency in reading and speaking Catalan increased employment probability by 5 percentage points while proficiency in writing increased employment probability by 2 to 6 percentage points.

In other studies, Aldashev, Gernandt and Thomsen (2009) estimate the effect of language on earnings of immigrants in Germany. In correcting selection into employment, they find that that proficiency in the native language enhances employment probability. Gonzalez (2010) investigates the impact of education and language on employment probability and earnings using the 2007 Spanish National Immigrant Survey. Results show that proficiency in Spanish increases the probability of full-time employment, but does not significantly impact earnings.

A common underlying valid assumption in the studies discussed is that there is a demand for fluency in the host country's language as part of a set of determinants of productivity for job applicants. The next section presents a model in which employers make choices among potential

employees using productivity markers which include English-speaking ability. Results are discussed in Section III. Section IV concludes the paper.

## II.    Model and Data

For simplicity, assume the existence of two factors of production, labor, $l$, and capital, $k$, which are combined to produce output, $q$, in a process represented by the transformation function,

$$q = f(k,l) \; ; \; q > 0, k > 0, l > 0 \tag{1}$$

with no corner solutions; labor services are required at each level of production but it cannot be used alone. Hiring an extra unit of labor increases output by

$$\frac{\partial q}{\partial l} = \alpha > 0 \tag{2}$$

Restrict the marginal benefit, $\alpha$, to a positive number to indicate that total product is rising and less than optimum - recruiting additional labor benefits the employer. Marginal product may be higher or lower than the efficiency of labor. Capital and labor cost $\rho$ and $\omega$, respecitively. Total cost, $c$, is a linear function of the inputs,

$$c = \omega l + \rho k \tag{3}$$

Assume that wage decisions are made before additional labor is hired Employers already know the marginal cost of labor to be,

$$\frac{\partial c}{\partial l} = \omega > 0 \tag{4}$$

In equilibrium, the marginal benefit derived from hiring an additional employee is equal to the marginal cost or wage,

$$\frac{\partial q}{\partial l} = \alpha = \frac{\partial c}{\partial l} = \omega \tag{5}$$

Before an applicant is hired, employers cannot observe $\alpha$. Hiring decisions are based on expected marginal productivity, $\left(\frac{\partial q}{\partial l}\right)^* = \alpha^*$. Expected marginal productivity is calculated based on observed productivity markers including but not limited to education, experience and communication skills, and personal characteristics. Under normative assumptions, personal characteristics should not be determinants of recruitment; however, statistical and non-statistical discrimination occur. For immigrants, communication skills include not just than the ability to effectively listen and convey information - it must be done in English. Immigrants from non-English-speaking countries have varying levels of English-speaking ability which affect their communication skills. I assume that lower levels of English-speaking ability signal to employers that expected marginal product of labor is lower than that associated with individuals with higher levels of English-speaking ability. Employment probability, $\varepsilon$, is conditioned on the relationship between marginal product and marginal cost. If upon evaluation of all productivity markers, employers estimate that the expected marginal product is equal to or greater than the marginal cost, the applicant is hired, otherwise, the applicant is rejected;

$$Prob(\varepsilon) = \begin{cases} 1 & if \quad \left(\frac{\partial q}{\partial l}\right)^* \geq \frac{\partial c}{\partial l} \equiv \alpha^* \geq \omega \\ 0 & if \quad \left(\frac{\partial q}{\partial l}\right)^* < \frac{\partial c}{\partial l} \equiv \alpha^* < \omega \end{cases} \tag{6}$$

Assume that $\varepsilon$ follows the logistic distribution,

$$Prob(\varepsilon = 1|X) = \frac{e^{X'\beta}}{1+e^{X'\beta}} \tag{7}$$

where $X$ is a matrix of explanatory variables and $\beta$ is a vector of coefficients. I estimate the logistic regression function,

$$Prob(\varepsilon = 1|X) = f(\mathbf{E}, \mathbf{A}, \gamma, \mathbf{\Gamma}, \mathbf{Y}, \mu, \mathbf{Z}, \delta, \mathbf{\Lambda}) \tag{8}$$

In equation (8), $X$ is includes the following:

**E** = a matrix of dummies representing levels of English-speaking ability

**A** = a matrix of age dummies

$\gamma$ =1 if an individual is male, 0 otherwise

**Γ** = a matrix of dummies representing levels of educational attainment

**Y** = a matrix of dummies representing race

$\mu$ = 1 if an individual is married, 0 otherwise

**Z** = a matrix of dummies representing citizenship status

$\delta$ = 1 if an individual is disabled, 0 otherwise

**Λ** = a matrix of regional dummies

Data are from the 2012 ACS 1-year Public Use Microdata Sample (PUMS) file on individuals aged 16 years and over. Person weights are applied to each observation. The ACS survey asks individuals how well they speak English. Responses include "Very Well," "Well," "Not Well" and "Not at All." Those who indicate that they speak English very well include natives of the U.S., immigrants from other English-speaking countries and immigrants from non-English-speaking countries who have achieved fluency in English. Distinctions are not made by these categories within the group that speaks English very well under the assumption that the effect of fluency on employment probability does not differ by citizenship. If native and non-native applicants possess similar levels of fluency, they are given similar treatment.

Table 1 summarizes statistics by level of fluency in English.[1] Employment probability increases with improvement in fluency in English only up to the level at which individuals speak English well. Those who speak English well have a higher employment probability than those who speak English very well. The differential suggests that speaking English well is adequate to ensure

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[1] Summary statistics by gender, race and educational attainment are presented in the Appendix.

success in employment in the labor market; there may be no additional benefits to speaking English very well.

Table 1: Summary Statistics by English-speaking Ability

| Variable | Not at All | Not Well | Well | Very Well |
|---|---|---|---|---|
| Employment Probability | 87.30% | 89.73% | 91.03% | 89.93% |
| Male | 60.08% | 59.87% | 58.88% | 52.69% |
| Race | | | | |
|   White | 56.62% | 51.37% | 47.41% | 54.51% |
|   Black | 1.82% | 3.51% | 5.75% | 6.38% |
|   Asian | 7.90% | 15.69% | 24.20% | 18.97% |
|   Other | 33.66% | 29.43% | 22.64% | 20.14% |
| Education | | | | |
|   Less than High School | 71.79% | 52.57% | 27.14% | 12.04% |
|   High School | 19.47% | 27.01% | 27.81% | 21.65% |
|   Some College and Associate's Degree | 5.69% | 11.84% | 22.73% | 31.51% |
|   Bachelor's Degree | 2.41% | 6.38% | 14.46% | 20.48% |
|   Master's Degree | 0.39% | 1.41% | 5.29% | 9.45% |
|   Professional Degree | 0.19% | 0.55% | 1.23% | 2.64% |
|   Doctorate Degree | 0.06% | 0.25% | 1.34% | 2.23% |
| Age Group | | | | |
|   16 to 24 | 11.89% | 8.53% | 9.79% | 19.56% |
|   25 to 54 | 75.33% | 77.89% | 76.82% | 70.63% |
|   55 and over | 12.78% | 13.58% | 13.39% | 9.81% |
| Citizenship | | | | |
|   Native | 2.89% | 8.09% | 15.83% | 51.26% |
|   Naturalized | 6.71% | 21.21% | 38.10% | 27.64% |
|   Not a Citizen | 90.41% | 70.70% | 46.08% | 21.10% |
| Disability | 4.99% | 4.60% | 3.78% | 3.99% |
| Married | 53.15% | 59.66% | 62.00% | 50.72% |
| Region | | | | |
|   Midwest | 8.04% | 10.80% | 11.91% | 11.86% |
|   Northeast | 15.45% | 18.58% | 20.69% | 20.13% |
|   South | 36.17% | 33.29% | 31.52% | 32.94% |
|   West | 40.34% | 37.33% | 35.88% | 35.07% |

Males are over-represented at lower levels of fluency. Males account for 52.69% of those who speak English very well and 60.08% of those who do not speak English at all. There are differences in racial distribution between levels of fluency in English. White individuals comprise 56.62% of those who do not speak English at all, higher than proportions for other groups. A key reason is that Hispanic Whites are included in Whites. There are many Hispanic immigrants in the U.S. mostly from South America some of whom do not speak English at all. According the MPI, immigrants from the Americas (North and South) accounted for 39.50% of all immigrants in the U.S. in 2012. Blacks and Asians are relatively over-represented at higher levels of fluency. Proportions of other races decrease with rising levels of fluency.

Among those who do not speak English very well, 71.79% have less than high school education. About 19.47% have high school diplomas or equivalent degrees. Less than 1% of them have master's, professional and doctoral degrees. Still, the statistics show that there are individuals who have attained very high levels of education, most certainly in their home countries, but have decided to migrate to a country in whose language they have no speaking proficiency. It is possible that they can read and write English and are well suited for positions which require high levels of education but do not involve much oral communication in English. Among those who do not speak English very well, about 79.58% have high school education or less and less than 1% have professional and doctoral degrees. In comparison with those who do not speak English at all, there is a higher proportion of individuals with some college education or higher. Among those who speak English very well, there is a somewhat even distribution among those with less than high school education, high school diplomas and some college – between 22.73% and 27.81%. About 16.46% have bachelor's degrees and 7.86% have advanced degrees. For those who speak English very well, only 33.69% have high school education or less. Approximately 51.99% have some college or bachelor's degrees and 14.32% have advanced degrees.

Individuals aged 25 to 54 years account for between 70.63% and 77.89% of all groups. As expected, approximately 97.12% of those who do not speak English at all are either naturalized citizens or non-citizens of the U.S. The percentage of people who are disabled range from 3.78% for those who speak English well to 4.99% for those who do not speak English at all. In each group, more than half of the sample is married. Those who do not speak English at all are underrepresented in the Midwest region and slightly overrepresented in the South and West regions. In all samples, the distribution of the population is skewed towards the South and West regions.

The next section presents and discusses results of logit regressions of English-Speaking ability on employment status by demographic groups.

III.    Results

*Full Sample*

In discussion of the results, I refer to the following groups that describe levels of English-speaking ability:

Group A: those who do not speak English at all

Group B: those who do not speak English well

Group C: those who speak English well

Group D: those who speak English very well

There are no constants in any of the models. Instead, coefficients are estimated for all four groups, each represented by a dummy, and coefficients are in log odds. Coefficients mentioned in odds ratios are exponentiated. Results for the full sample and by gender are presented in Table 2. In the full sample, the log odds of employment increase from group A to B to C; however, the log odds decrease from 1.99 to 1.95 as one moves from group C to D, lower than that for group B, 1.97.

Table 2: Results for Full Sample and Gender

| Variable | Full Sample | Male | Female |
|---|---|---|---|
| Eng: None | 1.8487*** | 1.9504*** | 1.9436*** |
| | (0.0223) | 0.0310 | 0.0318 |
| Eng: Not Well | 1.9698*** | 2.0093*** | 2.0991*** |
| | (0.0189) | 0.0258 | 0.0270 |
| Eng: Well | 1.9876*** | 1.9747*** | 2.1717*** |
| | (0.0176) | (0.0238) | (0.0253) |
| Eng: Very Well | 1.9467*** | 1.8907*** | 2.1947*** |
| | (0.0158) | (0.0211) | (0.0228) |
| Male | 0.1535*** | | |
| | (0.0074) | | |
| Race: Black | -0.4864*** | -0.5452*** | -0.4187*** |
| | (0.0154) | (0.0221) | (0.0214) |
| Race: Asian | -0.0447*** | -0.1295*** | 0.0666*** |
| | (0.0113) | (0.0162) | (0.0157) |
| Race: Other | -0.0700*** | -0.0400*** | -0.1137*** |
| | (0.0089) | (0.0123) | (0.0129) |
| Educ: <High School | -0.2258*** | -0.2037*** | -0.2875*** |
| | (0.0101) | (0.0137) | (0.0151) |
| Educ: Some Coll/Assoc | 0.2286*** | 0.2293*** | 0.2088*** |
| | (0.0104) | (0.0146) | (0.0149) |
| Educ: Bachelor's | 0.4762*** | 0.5239*** | 0.4097*** |
| | (0.0132) | (0.0191) | (0.0183) |
| Educ: Master's | 0.6742*** | 0.7916*** | 0.5365*** |
| | (0.0197) | (0.0291) | (0.0270) |
| Educ: Professional | 0.9540*** | 1.1097*** | 0.7952*** |
| | (0.0383) | (0.0557) | (0.0527) |
| Educ: Doctorate | 1.1737*** | 1.2745*** | 1.0355*** |
| | (0.0461) | (0.0594) | (0.0728) |
| Age: 16 to 24 | -0.6339*** | -0.5897*** | -0.6877*** |
| | (0.0096) | (0.0131) | (0.0141) |
| Age: 55 and over | -0.0088 | -0.2396*** | 0.2235*** |
| | (0.0118) | (0.0161) | (0.0175) |
| Citizenship: Naturalized | 0.3161*** | 0.3444*** | 0.2610*** |
| | (0.0108) | (0.0152) | (0.0152) |
| Citizenship: Not | 0.1767*** | 0.3500*** | -0.0481*** |
| | (0.0101) | (0.0141) | (0.0144) |
| Disability | -0.6525*** | -0.6971*** | -0.5928*** |
| | (0.0140) | (0.0196) | (0.0202) |
| Married | 0.2883*** | 0.4954*** | 0.0867*** |
| | (0.0080) | (0.0114) | (0.0114) |
| Region: Northeast | -0.0279* | -0.0201 | -0.0383* |
| | (0.0143) | (0.0200) | (0.0206) |
| Region: South | 0.1190*** | 0.1499*** | 0.0734*** |
| | (0.0134) | (0.0187) | (0.0194) |
| Region: West | -0.1309*** | -0.1423*** | -0.1194*** |
| | (0.0129) | (0.0179) | (0.0187) |

***, ** and * represent 1%, 5% and 10% levels of significance, respectively. Standard errors are in parentheses below coefficients. Models are estimated by logit. The dependent variable is a dummy which equals 1 if an individual is employed, 0 otherwise.

The lower odds of employment associated with the highest level of proficiency suggests that there are no additional employment benefits to speaking English very well over not speaking English very well, or speaking English well. A plausible reason could be that, on average, information conveyed to customers does not require maximum proficiency in speaking English. There is demand for different levels of proficiency; the maximum may be required for jobs in the communications field and the minimum may be required in occupations with very easy tasks and no communication with customers. However, the ability to speak English well is adequate in obtaining employment, on average.

Males are more likely to be employed than females. Labor force participation for females is interrupted for childbirth and child care (Fogli and Veldkamp, 2007). Relatively frequent breaks in labor force participation create gaps in employment history which is assumed to signal less employability; it may not decrease their human capital but employers do not have knowledge of their skills and assume that interruption of employment is associated with loss of skills.

Blacks, Asians and other races are less likely to be employed than Whites. The differentials could be due to occupational preferences of the unemployed population or unobserved factors such as differences in job search intensity or discrimination (statistical or intentional).

The odds of being employed increase with higher levels of education. The odds of being employed with a doctorate degree is 3.23 times higher than that for a high school graduate, 1.96 times higher for a master's degree holder, 1.61 times higher for one who has completed a bachelor's degree and 1.26 times higher for an individual who has either an associate's degree or some college education. Employers prefer individuals with higher levels of human capital and the results reflect their preference.

Individuals in the prime working age group are more likely to be employed than those aged 16 to 24 years or 55 years or over. Younger people may have fewer years of work experience and

possibly less education than those in the prime working age group, hence the lower odds of being employed. There are several factors which create the negative differential between the base age group those 55 years or older. For instance, while it is safe to assume that older people have more experience which influences productivity positively, without continuing education, skills become relatively dated and not as useful to employers.

Naturalized citizens and non-citizens are more likely to be employed than natives. Non-citizens who enter the country legally with work visas must be employed to remain in the country. The condition reduces their reservation wages and they accept a wide range of jobs to satisfy visa requirements. It is worthy to note that immigrants may not be able to work in positions that make full use of their previously acquired skills. According to Chiswick and Hurst (2000), immigrants are not able to wholly transfer their skills to new labor markets and have relatively imperfect information about the labor market in comparison with natives. Better job matching does not equate working in desired occupations or the absence of underemployment.

The log odds of being employed are 0.65 lower for the disabled. Employers incur accommodation costs when they hire some disabled individuals. Tax benefits provided to employers are intended to offset the costs. If employers expect the net benefit from hiring disabled workers to be negative or lower than the net benefit from hiring non-disabled individuals[2], disabled applicants will be rejected. The differential could also be partially attributable to employers' assumptions about productivity differentials between the disabled and the non-disabled.

Married individuals have higher odds of employment than unmarried individuals. Lower employment odds are estimated for those in the Northeast and West relative to those in the Midwest. Individuals in the South have higher odds of being employed than individuals in the Midwest. Regional dummies capture geographical differences in odds of employment.

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[2] Assume that employers incur recruitment and training costs in hiring all individuals; hiring the disabled comes with additional costs which is compensated by taxpayers.

*Gender*

In Table 2, the log odds of being employed increase from group A to B, then decrease from B to C and C to D for males. For females, the log odds of being employed consistently increase with fluency in English. Figure 1 is a representation of the results for each group by gender and shows the trend of the likelihood of employment.

## Figure 1: Likelihood of Employment by Gender
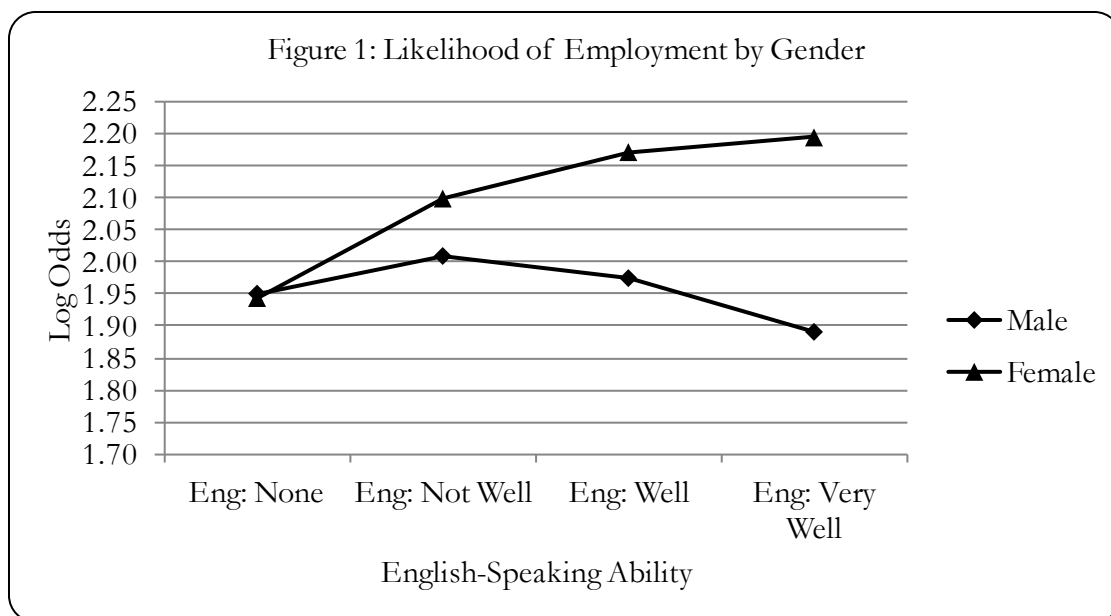
English-speaking ability seems to be more important as a determinant of employment for females than males. Industry distribution could explain a portion of the differential. Females tend to be overrepresented in service jobs which require routine and effective communication with customers. Based on data from the Current Employment Statistics (CES), in 2012, women employees accounted for 22.22% of employment in the goods-producing sector and 53.79% of employment in the service-providing sector. A likely reason for the distribution is that the physically demanding nature of jobs in the goods-producing sector may not attractive to some females - the goods-

producing sector includes construction, manufacturing, mining, logging, agriculture, forestry, fishing and hunting. Figure 1 provides evidence of diminishing returns to proficiency in English for females. The difference in log odds from group A to B is 0.16. The differential decreases to 0.07 from B to C, and decreases further to 0.02 from C to D.

*Race*

Results by race are presented in Table 3 with the trend of employment odds by fluency shown in Figure 2. Among Whites, the odds of being employed for group A are 6.68 and increase to 7.39 for group B. There is a small increase to 7.41 for group C and a lower result for group D. A similar trend is estimated for Blacks; the odds of being employed increase by 1.07 times from Group A to B, and 1.23 times from group B to C, but decrease by 1.01 times from group C to D. Progress in English-speaking ability pays off until one can speak English well with no additional benefits beyond this level. Other races benefit by moving from group A to B. There are no additional benefits beyond group B. One would like to believe that proficiency in speaking English is one of the most important characteristics that employers seek in applicants and that higher proficiency is always better; however, maximum proficiency is not the optimum for Whites, Blacks and other races. Among Asians, higher levels of English-speaking ability increase employment probability with diminishing returns similar to the result estimated for females. The odds of being employed increase by 1.37, 1.18 and 1 when one moves from group A to B, B to C and C to D, respectively.

Table 3: Results by Race

| Variable | White | Black | Asian | Other |
|---|---|---|---|---|
| Eng: None | 1.8988*** | 1.3390*** | 1.7195*** | 1.6217*** |
| | (0.0299) | (0.1108) | (0.0653) | (0.0431) |
| Eng: Not Well | 2.0000*** | 1.4081*** | 2.0373*** | 1.7798*** |
| | (0.0255) | (0.0752) | (0.0521) | (0.0381) |
| Eng: Well | 2.0031*** | 1.5639*** | 2.2010*** | 1.7767*** |
| | (0.0236) | (0.0675) | (0.0506) | (0.0360) |
| Eng: Very Well | 1.9862*** | 1.5589*** | 2.2047*** | 1.6656*** |
| | (0.0209) | (0.0627) | (0.0487) | (0.0312) |
| Male | 0.1560*** | 0.0213 | 0.0315* | 0.2382*** |
| | (0.0102) | (0.0290) | (0.0183) | (0.0150) |
| Educ: <High School | -0.1966*** | -0.3256*** | -0.1463*** | -0.3138*** |
| | (0.0138) | (0.0427) | (0.0314) | (0.0187) |
| Educ: Some Coll/Assoc | 0.2298*** | 0.2377*** | 0.1109*** | 0.2729*** |
| | (0.0142) | (0.0383) | (0.0293) | (0.0207) |
| Educ: Bachelor's | 0.4751*** | 0.5118*** | 0.3436*** | 0.5420*** |
| | (0.0184) | (0.0507) | (0.0296) | (0.0353) |
| Educ: Master's | 0.7005*** | 0.6810*** | 0.5164*** | 0.8135*** |
| | (0.0279) | (0.0775) | (0.0383) | (0.0679) |
| Educ: Professional | 0.8862*** | 0.8682*** | 0.9788*** | 0.8897*** |
| | (0.0515) | (0.1436) | (0.0733) | (0.1289) |
| Educ: Doctorate | 1.1808*** | 0.7906*** | 1.1744*** | 1.0421*** |
| | (0.0661) | (0.1822) | (0.0758) | (0.1871) |
| Age: 16 to 24 | -0.5971*** | -0.7670*** | -0.7083*** | -0.6377*** |
| | (0.0131) | (0.0372) | (0.0298) | (0.0178) |
| Age: 55 and over | 0.0115 | 0.1336*** | -0.1346*** | 0.0553** |
| | (0.0160) | (0.0491) | (0.0251) | (0.0281) |
| Citizenship: Naturalized | 0.1622*** | 0.4195*** | 0.3037*** | 0.5053*** |
| | (0.0143) | (0.0401) | (0.0302) | (0.0236) |
| Citizenship: Not | 0.1111*** | 0.0536 | 0.0230 | 0.4015*** |
| | (0.0141) | (0.0356) | (0.0301) | (0.0209) |
| Disability | -0.6580*** | -0.6885*** | -0.7489*** | -0.5879*** |
| | (0.0189) | (0.0526) | (0.0420) | (0.0273) |
| Married | 0.3208*** | 0.2253*** | 0.2884*** | 0.2501*** |
| | (0.0110) | (0.0324) | (0.0217) | (0.0160) |
| Region: Northeast | -0.0185 | 0.1893*** | -0.0445 | -0.0839*** |
| | (0.0198) | (0.0537) | (0.0356) | (0.0295) |
| Region: South | 0.0939*** | 0.0935* | 0.1118*** | 0.1946*** |
| | (0.0178) | (0.0515) | (0.0364) | (0.0289) |
| Region: West | -0.1688*** | 0.0768 | -0.1537*** | -0.0687** |
| | (0.0175) | (0.0631) | (0.0325) | (0.0265) |

***, ** and * represent 1%, 5% and 10% levels of significance, respectively. Standard errors are in parentheses below coefficients. Models are estimated by logit. The dependent variable is a dummy which equals 1 if an individual is employed, 0 otherwise.

Figure 2: Likelihood of Employment by Race
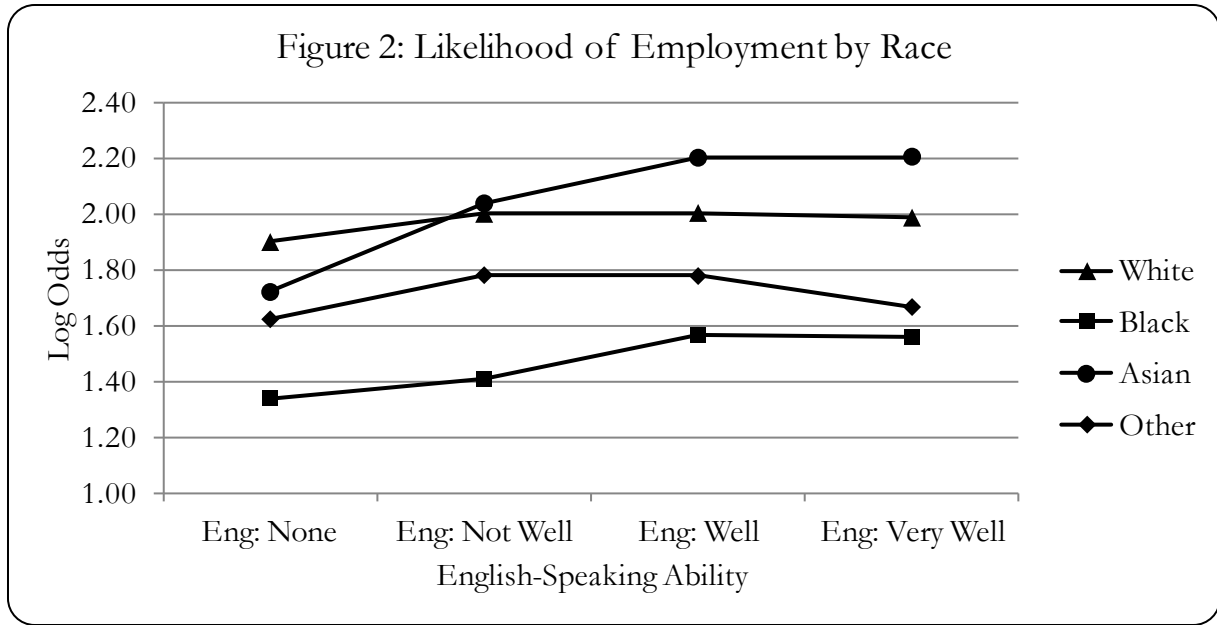
*Education*

Tables 4 and 5 present results by education. Among those who have less than high school education, the odds of being employed increase from one stage of proficiency to another only until group C. Speaking English very well does not increase the odds of employment over not speaking English at all. The highest log odds of employment by English-speaking ability, 1.63, are less than any estimated log odds of employment recorded for the rest of the samples. Overall, odds of employment are low with less than high school education regardless of the level of speaking proficiency. Among those with a high school diploma, the log odds of employment for group A are 1.69, increase to 1.86 for group B, and 1.98 for group C. The odds for group D are lower for that for group C but higher than that for group B. With an associate's degree, the log odds of employment increase steadily as one makes improvement in proficiency. A similar trend is observed for bachelor's degree holders in Figure 3a and those with doctorate and professional degrees in Figure 3b.

Table 4: Results by Education

| Variable | Less than High School | High School Diploma or Equivalent | Some College or Associate's Degree | Bachelor's Degree |
|---|---|---|---|---|
| Eng: None | 1.3846*** | 1.6891*** | 1.9955*** | 2.2595*** |
| | (0.0337) | (0.0442) | (0.0669) | (0.1011) |
| Eng: Not Well | 1.5921*** | 1.8591*** | 2.0524*** | 2.2834*** |
| | (0.0313) | (0.0353) | (0.0378) | (0.0526) |
| Eng: Well | 1.6332*** | 1.9824*** | 2.1896*** | 2.5557*** |
| | (0.0311) | (0.0329) | (0.0328) | (0.0457) |
| Eng: Very Well | 1.3832*** | 1.9170*** | 2.2497*** | 2.7003*** |
| | (0.0273) | (0.0288) | (0.0280) | (0.0389) |
| Male | 0.3194*** | 0.0949*** | 0.0064 | 0.1224*** |
| | (0.0134) | (0.0145) | (0.0145) | (0.0212) |
| Race: Black | -0.6585*** | -0.4953*** | -0.4083*** | -0.3177*** |
| | (0.0326) | (0.0305) | (0.0269) | (0.0439) |
| Race: Asian | -0.0903*** | -0.0324 | -0.0018 | 0.0771*** |
| | (0.0250) | (0.0249) | (0.0220) | (0.0258) |
| Race: Other | -0.1027*** | -0.0501*** | -0.0766*** | -0.0228 |
| | (0.0143) | (0.0168) | (0.0181) | (0.0358) |
| Age: 16 to 24 | -0.6777*** | -0.5980*** | -0.4875*** | -0.6147*** |
| | (0.0173) | (0.0178) | (0.0181) | (0.0348) |
| Age: 55 and over | 0.0291 | 0.1001*** | 0.0247 | -0.2026*** |
| | (0.0212) | (0.0253) | (0.0245) | (0.0302) |
| Citizenship: Naturalized | 0.6396*** | 0.3704*** | 0.2202*** | -0.0001 |
| | (0.0235) | (0.0217) | (0.0197) | (0.0278) |
| Citizenship: Not | 0.4592*** | 0.2220*** | -0.0142 | -0.2019*** |
| | (0.0193) | (0.0193) | (0.0195) | (0.0292) |
| Disability | -0.5700*** | -0.6780*** | -0.6655*** | -0.6749*** |
| | (0.0238) | (0.0276) | (0.0276) | (0.0467) |
| Married | 0.2144*** | 0.3429*** | 0.3347*** | 0.2615*** |
| | (0.0144) | (0.0159) | (0.0164) | (0.0227) |
| Region: Northeast | -0.0232 | 0.0145 | -0.0295 | -0.0666* |
| | (0.0273) | (0.0285) | (0.0283) | (0.0388) |
| Region: South | 0.1129*** | 0.1164*** | 0.1542*** | 0.0871** |
| | (0.0248) | (0.0266) | (0.0266) | (0.0379) |
| Region: West | -0.1869*** | -0.1415*** | -0.1094*** | -0.0798** |
| | (0.0238) | (0.0258) | (0.0255) | (0.0370) |

\*\*\*, \*\* and \* represent 1%, 5% and 10% levels of significance, respectively. Standard errors are in parentheses below coefficients. Models are estimated by logit. The dependent variable is a dummy which equals 1 if an individual is employed, 0 otherwise.
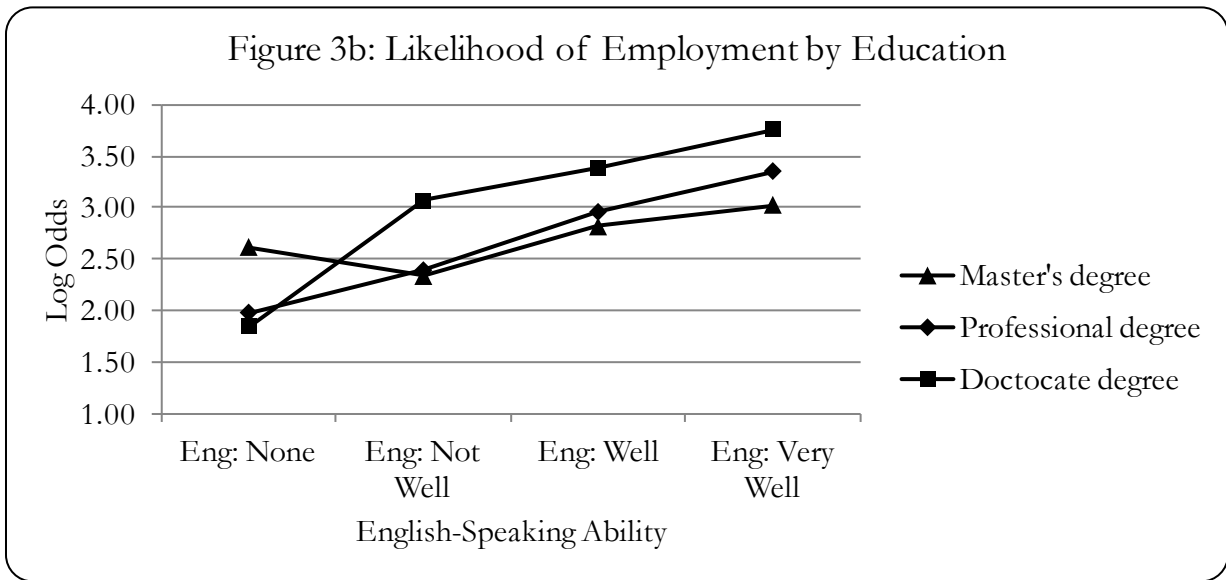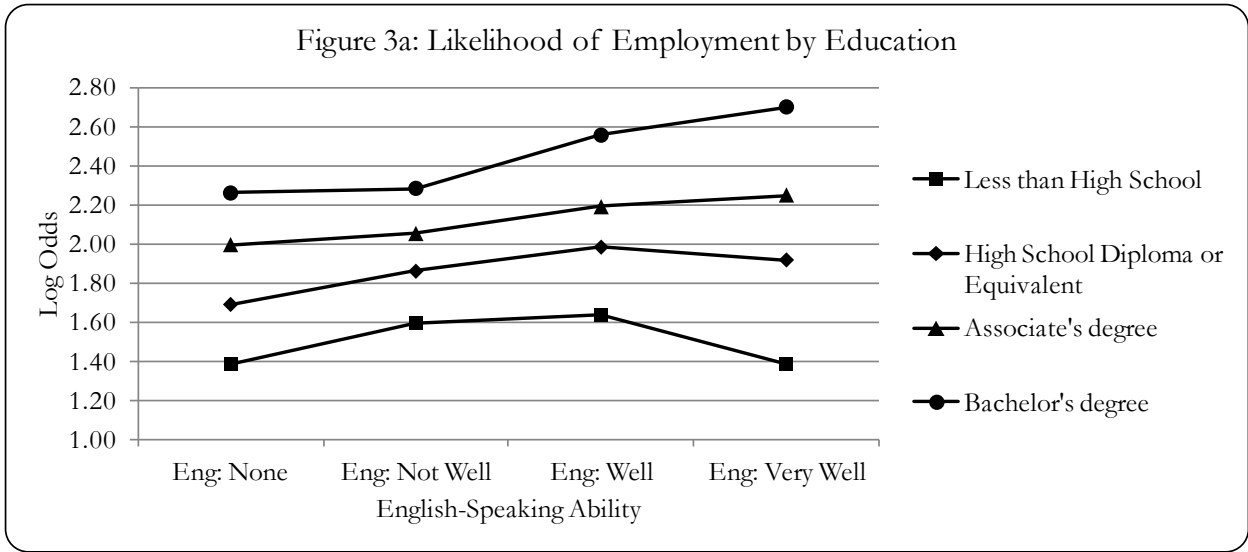
The implication is that at higher levels of education, proficiency is greatly appreciated by employers; this enhances the degree of job-matching.

Table 5: Results by Education continued

| Variable | Master's Degree | Professional Degree | Doctorate Degree |
|---|---|---|---|
| Eng: None | 2.6168*** | 1.9789*** | 1.8445*** |
| | (0.2613) | (0.3152) | (0.4687) |
| Eng: Not Well | 2.3340*** | 2.3908*** | 3.0678*** |
| | (0.0992) | (0.1883) | (0.2774) |
| Eng: Well | 2.8161*** | 2.9573*** | 3.3875*** |
| | (0.0789) | (0.1682) | (0.2107) |
| Eng: Very Well | 3.0265*** | 3.3539*** | 3.7605*** |
| | (0.0689) | (0.1421) | (0.1824) |
| Male | 0.3356*** | 0.3154*** | 0.3478*** |
| | (0.0376) | (0.0753) | (0.0969) |
| Race: Black | -0.3532*** | -0.3884** | -0.7826*** |
| | (0.0761) | (0.1522) | (0.1899) |
| Race: Asian | 0.0618 | 0.2182** | 0.2057** |
| | (0.0428) | (0.0934) | (0.1037) |
| Race: Other | -0.0073 | 0.1330 | -0.1113 |
| | (0.0707) | (0.1427) | (0.2013) |
| Age: 16 to 24 | -0.6917*** | -0.7817*** | 0.2741 |
| | (0.1025) | (0.2632) | (0.6815) |
| Age: 55 and over | -0.2140*** | -0.0902 | -0.3474*** |
| | (0.0462) | (0.1032) | (0.1107) |
| Citizenship: Naturalized | -0.1933*** | 0.0238 | -0.2689** |
| | (0.0478) | (0.1014) | (0.1295) |
| Citizenship: Not | -0.3164*** | -0.3939*** | -0.1805 |
| | (0.0513) | (0.0952) | (0.1388) |
| Disability | -0.7627*** | -1.0476*** | -0.9368*** |
| | (0.0810) | (0.1571) | (0.2240) |
| Married | 0.1923*** | 0.3682*** | 0.1109 |
| | (0.0408) | (0.0817) | (0.1065) |
| Region: Northeast | -0.0343 | -0.2323* | -0.2557* |
| | (0.0631) | (0.1372) | (0.1529) |
| Region: South | 0.0275 | -0.1548 | 0.0692 |
| | (0.0629) | (0.1334) | (0.1499) |
| Region: West | -0.1218** | -0.3721*** | -0.3660** |
| | (0.0609) | (0.1306) | (0.1441) |

***, ** and * represent 1%, 5% and 10% levels of significance, respectively. Standard errors are in parentheses below coefficients. Models are estimated by logit. The dependent variable is a dummy which equals 1 if an individual is employed, 0 otherwise.

An exception is noted for master's degree holders. The transition from group A to group B decreases the log odds of employment from 2.62 to 2.33; beyond group B, increasing proficiency results in greater chances of employment.

**Figure 3a: Likelihood of Employment by Education**



- Less than High School
- High School Diploma or Equivalent
- Associate's degree
- Bachelor's degree

**Figure 3b: Likelihood of Employment by Education**



- Master's degree
- Professional degree
- Doctocate degree

Jobs that require advanced levels of education entail complicated tasks with results that must often be communicated to customers who are short of in-depth knowledge in fields of expertise that are essential in generating such output. The process of transforming technical information into that which is easily comprehensible to a non-technical audience necessitates advanced speaking proficiency in English. The highest odds of employment by English-speaking ability are estimated

for holders of master's, professional and doctorate degrees who speak English very well, and doctorate degree holders who speak English well.

A limitation of this paper is that the classification of level of English-speaking ability is subjective. Individuals who participate in the ACS choose one of four levels of proficiency based on their own evaluation. What may be classified as speaking English well by one person may be classified as not speaking English well by another person. Thus, there could be an upward or downward bias in estimates. The only classification that is free from bias is the level at which individuals do not speak English at all.

IV.    Conclusion

Communication skills are important in executing many job functions. Consequently, proficiency in English is one of the productivity markers that employers consider in evaluation of job applicants. Generally, immigrants from countries in which English is not a native or an official language tend to encounter difficulties in finding jobs. Empirical studies have shown that lower proficiency in the language of the host country generates lower probabilities of employment. Nevertheless, it is possible to obtain employment without maximum proficiency.  There are some jobs that do not require extensive communication with the public. As such, speaking proficiency in English may not present similar employment benefits for all labor force participants. These results provide information about employment. It must be noted that language remains highly important in the labor market. Higher language proficiency increases earnings (Casale and Posel, 2010; Miller and Chiswick, 1999; Budria and Swedberg, 2012). Additionally, individuals have a wider pool of jobs for which they qualify if they have high speaking proficiency in English.

This paper has shown that for the purpose of obtaining employment, proficiency in speaking English does not have a homogenous effect; there are differences by gender, race and education. Nevertheless, English-speaking ability remains important as a determinant of success in the labor market.

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**APPENDIX**

Table A1: Summary Statistics for Full Sample and Gender

| Variable | Full Sample | Male | Female |
|---|---|---|---|
| Employment Probability | 89.96% | 90.48% | 89.30% |
| English Speaking Ability | | | |
|   Not at All | 6.32% | 6.83% | 5.69% |
|   Not Well | 16.47% | 17.72% | 14.89% |
|   Well | 20.74% | 21.96% | 19.22% |
|   Very Well | 56.47% | 53.49% | 60.20% |
| Race | | | |
|   White | 52.65% | 53.33% | 51.81% |
|   Black | 5.49% | 5.00% | 6.10% |
|   Asian | 18.82% | 17.60% | 20.34% |
|   Other | 23.04% | 24.07% | 21.76% |
| Education | | | |
|   Less than High School | 25.62% | 29.27% | 21.06% |
|   High School | 23.67% | 24.51% | 22.61% |
|   Some College and Associate's Degree | 24.82% | 22.19% | 28.11% |
|   Bachelor's Degree | 15.77% | 13.97% | 18.03% |
|   Master's Degree | 6.69% | 6.38% | 7.08% |
|   Professional Degree | 1.85% | 1.85% | 1.85% |
|   Doctorate Degree | 1.58% | 1.82% | 1.28% |
| Age Group | | | |
|   16 to 24 | 15.23% | 15.03% | 15.48% |
|   25 to 54 | 73.41% | 73.87% | 72.83% |
|   55 and over | 11.36% | 11.10% | 11.68% |
| Citizenship | | | |
|   Native | 33.74% | 31.17% | 36.97% |
|   Naturalized | 27.43% | 25.37% | 30.00% |
|   Not a Citizen | 38.83% | 43.47% | 33.03% |
| Disability | 4.11% | 3.93% | 4.35% |
| Married | 54.69% | 56.96% | 51.85% |
| Region | | | |
|   Midwest | 11.45% | 11.57% | 11.31% |
|   Northeast | 19.70% | 19.01% | 20.55% |
|   South | 32.90% | 33.53% | 32.12% |
|   West | 35.95% | 35.89% | 36.01% |

Table A2: Summary Statistics by Race

| Variable | White | Black | Asian | Other |
|---|---|---|---|---|
| Employment Probability | 90.17% | 86.48% | 92.58% | 88.16% |
| English Speaking Ability | | | | |
|   Not at All | 6.80% | 2.09% | 2.66% | 9.24% |
|   Not Well | 16.07% | 10.53% | 13.73% | 21.03% |
|   Well | 18.68% | 21.74% | 26.68% | 20.38% |
|   Very Well | 58.46% | 65.63% | 56.94% | 49.35% |
| Male | 56.34% | 50.71% | 52.02% | 58.10% |
| Education | | | | |
|   Less than High School | 26.53% | 15.28% | 11.28% | 37.73% |
|   High School | 25.03% | 22.98% | 15.02% | 27.79% |
|   Some College and Associate's Degree | 25.48% | 34.59% | 21.42% | 23.74% |
|   Bachelor's Degree | 14.05% | 17.22% | 30.24% | 7.55% |
|   Master's Degree | 5.79% | 6.98% | 14.61% | 2.21% |
|   Professional Degree | 1.82% | 1.71% | 3.45% | 0.64% |
|   Doctorate Degree | 1.31% | 1.23% | 3.97% | 0.34% |
| Age Group | | | | |
|   16 to 24 | 15.80% | 15.22% | 9.49% | 18.62% |
|   25 to 54 | 72.45% | 74.09% | 75.89% | 73.41% |
|   55 and over | 11.75% | 10.69% | 14.62% | 7.97% |
| Citizenship | | | | |
|   Native | 41.61% | 28.70% | 10.91% | 35.60% |
|   Naturalized | 21.95% | 34.02% | 52.13% | 18.19% |
|   Not a Citizen | 36.44% | 37.28% | 36.95% | 46.21% |
| Disability | 4.44% | 4.70% | 2.44% | 4.60% |
| Married | 54.07% | 46.37% | 67.31% | 47.77% |
| Region | | | | |
|   Midwest | 11.87% | 11.50% | 11.99% | 10.06% |
|   Northeast | 17.41% | 32.71% | 22.16% | 19.81% |
|   South | 37.81% | 45.11% | 22.92% | 26.93% |
|   West | 32.91% | 10.69% | 42.93% | 43.20% |

Table A3: Summary Statistics by Education (1)

| Variable | Less than High School | High School | Some College and Associate's Degree | Bachelor's Degree |
|---|---|---|---|---|
| Employment Probability | 86.71% | 88.67% | 90.02% | 93.44% |
| English Speaking Ability | | | | |
| Not at All | 17.72% | 5.20% | 1.45% | 0.97% |
| Not Well | 33.78% | 18.79% | 7.86% | 6.66% |
| Well | 21.97% | 24.37% | 19.00% | 19.03% |
| Very Well | 26.53% | 51.64% | 71.70% | 73.35% |
| Male | 63.54% | 57.61% | 49.74% | 49.27% |
| Race | | | | |
| White | 54.51% | 55.67% | 54.07% | 46.90% |
| Black | 3.27% | 5.33% | 7.65% | 5.99% |
| Asian | 8.28% | 11.94% | 16.24% | 36.08% |
| Other | 33.93% | 27.06% | 22.04% | 11.02% |
| Age Group | | | | |
| 16 to 24 | 16.24% | 18.43% | 21.85% | 7.34% |
| 25 to 54 | 72.10% | 71.27% | 68.27% | 80.35% |
| 55 and over | 11.66% | 10.30% | 9.89% | 12.31% |
| Citizenship | | | | |
| Native | 20.09% | 35.87% | 47.66% | 34.27% |
| Naturalized | 18.38% | 24.29% | 28.76% | 38.08% |
| Not a Citizen | 61.54% | 39.83% | 23.58% | 27.66% |
| Disability | 5.15% | 4.24% | 4.45% | 2.80% |
| Married | 53.84% | 51.31% | 48.08% | 60.63% |
| Region | | | | |
| Midwest | 10.87% | 10.90% | 10.97% | 12.08% |
| Northeast | 15.34% | 20.53% | 18.62% | 23.39% |
| South | 33.99% | 34.11% | 32.79% | 30.89% |
| West | 39.80% | 34.46% | 37.62% | 33.64% |

Table A4: Summary Statistics by Education (2)

| Variable | Master's Degree | Professional Degree | Doctoral Degree |
|---|---|---|---|
| Employment Probability | 95.05% | 96.29% | 97.17% |
| English Speaking Ability | | | |
|   Not at All | 0.37% | 0.66% | 0.23% |
|   Not Well | 3.48% | 4.90% | 2.58% |
|   Well | 16.41% | 13.76% | 17.60% |
|   Very Well | 79.74% | 80.68% | 79.59% |
| Male | 53.06% | 55.64% | 64.17% |
| Race | | | |
|   White | 45.56% | 51.87% | 43.45% |
|   Black | 5.72% | 5.07% | 4.28% |
|   Asian | 41.10% | 35.13% | 47.28% |
|   Other | 7.62% | 7.93% | 4.99% |
| Age Group | | | |
|   16 to 24 | 1.59% | 0.91% | 0.32% |
|   25 to 54 | 84.29% | 81.70% | 82.32% |
|   55 and over | 14.12% | 17.39% | 17.36% |
| Citizenship | | | |
|   Native | 29.21% | 32.72% | 19.91% |
|   Naturalized | 36.91% | 41.24% | 37.57% |
|   Not a Citizen | 33.88% | 26.05% | 42.52% |
| Disability | 2.50% | 2.37% | 2.09% |
| Married | 70.51% | 71.29% | 77.09% |
| Region | | | |
|   Midwest | 14.14% | 14.54% | 15.62% |
|   Northeast | 25.73% | 25.25% | 25.65% |
|   South | 30.47% | 32.16% | 30.40% |
|   West | 29.66% | 28.05% | 28.33% |