Who Has a Second-Generation Educational Attainment Advantage?

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Abstract

Educational attainment for the population aged 25 and older has been shown to be higher for the second generation (who have at least one foreign-born parent) when compared to the first-generation foreign born, and in some cases, when compared to the third-and-higher generation (who have native-born parents). However, the size of an educational advantage for the second generation may depend on sex, race, and Hispanic origin. Using pooled data from the 2007 to 2016 Current Population Surveys, this paper examines educational attainment by generational status, race and Hispanic origin, year, sex, and related sociodemographic characteristics. Results show that the second-generation was more likely to attain bachelor's and higher degrees. Overall, a smaller second-generation advantage over the third generation was found for females, Hispanics, and Asians. A larger second-generation advantage over the third generation was found for males, Blacks and Whites. In addition, first-generation Blacks, Asians, and Whites had higher likelihoods of bachelor's degree attainment compared to the third-and-higher generation. For almost all race, gender and generational groups, educational attainment increased to some degree between 2007 and 2016.

Introduction

For many immigrant families, a complex relationship exists between international migration, intergenerational mobility, and educational attainment. Educational opportunity, including the opportunity to provide children with a better education, can be a major reason for immigrating to the United States (Rumbaut, 2005). Educational attainment for second-generation adults (who have at least one foreign-born parent) has been shown to be higher compared to first-generation foreign-born adults, and in some cases, this attainment is higher even than that of the third-and-higher generation (those who have native-born parents) (Trevelyan et al., 2016, Hernandez et al., 2012). However, this educational advantage may not apply uniformly to all members of the second generation.

The existence and size of an educational advantage for the second generation may depend on race, sex, and from what part of the world their parents immigrated (Chiswick and DebBurman, 2004). For example, a smaller second-generation advantage has been observed among children of immigrants from Mexico, compared to children of immigrants from other Latin American countries (Tran and Valdez, 2015). An increased second-generation advantage in achievement has been seen for school-aged children of Asian race (Duong et al., 2016).

As migration flows to the United States have changed, the context of reception upon arrival, and reasons for migration have changed as well. Net migration from Mexico has declined, and net migration from Asia and Africa has increased (Jensen et al., 2015). Analyses of the second-

generation advantage in educational attainment such as those of Chiswick and DebBurman (2004) and Aydemir and Sweetman (2008) need to be updated to reflect these changes.

This paper compares educational attainment by race and Hispanic origin for each generational group. Race and Hispanic origin are strongly associated with world region of birth (for the first generation) and parents' region of birth (for the second generation), and were preferred in this analysis instead of place of birth and parents' place of birth, because race and Hispanic origin can be compared across all generational groups.

The central focus of this paper is discovering whether there is a second generation advantage (defined as a larger percent completing high school and bachelor's degrees relative to the first and third-and higher generations), and if so, whether this second-generation advantage is the same for groups differing by race, Hispanic origin, and gender. Educational attainment for second-generation adults was compared to first-generation adults and third-and-higher generation adults, including differences between second-generation adults with one foreign-born parent and two foreign-born parents. Additionally, trends over time were explored, to see if educational attainment increased uniformly during the years 2007 to 2016 for different generations, race and ethnic groups, and males and females. Age and metropolitan status (residing in a nonmetropolitan area) were included as control variables.

Data

Current Population Survey basic monthly data from March, July, and November of every year were aggregated, for the 10-year time period 2007 through 2016.[1] Reinterviewed households were excluded from the sample in order to reduce standard errors associated with including reinterviews in a regression analysis (Card, DiNardo and Estes, 2000). To do this, only households with a month-in-sample of 1 through 4 were selected, and households with a month-in-sample of 5 through 8 were excluded. Excluding re-interviews reduces the sample size; however, using ten years of data provides enough statistical power to examine educational indicators by different characteristics. Thirty months of data were pooled, for a total sample size of over 1.3 million respondents aged 25 and older.

One limitation of using these data is that the pooled weighted estimates have limited usefulness as numerical estimates and do not represent a true population. The weights in the CPS basic monthly data are created using monthly population estimates, and are intended for use with that month's data only. This is not a problem for the regression analysis, which uses design-effect adjusted normalized mean weights. However, descriptive weighted annual estimates using the CPS basic pooled data (for example, in Figures 1 through 3) should be considered approximate, and therefore are presented in percents or rounded to thousands. The educational attainment rates and percentages obtained with the pooled basic CPS data were similar to those found in the March CPS ASEC data, which does have annual weights that represent a true population.

[1] For more information on the Current Population Survey sample design and methodology, please visit https://www.census.gov/programs-surveys/cps/technical-documentation/methodology.html.

An additional limitation is the lack of data on characteristics we would hypothesize to be associated with educational attainment. For example, the CPS does not directly measure adult respondents' parental socioeconomic status, including parental education, income, or wealth. The CPS also does not measure English-speaking ability. It would be desirable to include these in future research on the educational attainment of the second generation.

Methods

All analyses were restricted to adults age 25 and older. Five mutually exclusive race and Hispanic origin groups were used: Hispanic (respondents of any race with Hispanic origin), White (defined as non-Hispanic White only), Black (defined as non-Hispanic Black only), Asian (defined as non-Hispanic Asian only), and non-Hispanic Other (includes non-Hispanic two or more races and other races). Descriptive statistics are shown for educational attainment from 2007 to 2016 by generational status for Hispanics, Whites, Blacks and Asians, as well as males and females of all races. The non-Hispanic Other category made up only 1 percent of the first generation and 2 percent of the second generation, and is not included in the figures and tables due to small sample size.

Logistic regression models are presented, which predict the likelihood that an individual will have high school or higher degree attainment, or a bachelor's or higher degree attainment. Logistic regression was employed to predict the probability that educational attainment outcomes will occur as a function of several predictor variables. Four models are presented with different sets of predictors, seeking a maximum likelihood prediction of a binomial response for both high

school (or equivalent) degree completion, and bachelor's degree completion. The first model looked at generation status (first, second with one foreign-born parent, or second with two-foreign-born parents, with third generation as a reference). The first model also included interactions between year and first generation, and year and second generation, in order to evaluate whether the second-generation education advantage has become larger between 2007 and 2016. The second model controlled for demographic characteristics: age, race, sex, and metropolitan area residence (metropolitan or nonmetropolitan). Age was expected to have a nonlinear effect on educational attainment, and a wide range of ages (25 to 85) were included, so an age-squared term was included in the estimating equation. The third model added interactions between generation and race and Hispanic origin. The fourth model added interactions between year, generation, and race and Hispanic origin.

Weights

Design effect adjusted normalized weights were created and used in the regression analyses. Normalized weights were created by dividing the raw weights by the mean of the raw weights. Due to the multi-stage design of the CPS, these normalized weights were then divided by the design effect specific to the year and race group (White, Hispanic, or other), to create design-effect adjusted normalized weights.

Results

A timeline of educational attainment over the years 2007 to 2016 (Figure 1) shows that the percent of the second generation aged 25 and older who attained at least a bachelor's degree and

at least a master's degree has been higher than the first and third-and higher generations. The first generation had lower high school completion rates than the second and third generations.

"Foreign-born" is abbreviated as "FB" in Figures 2a, 2b, 3a, and 3b, when describing the birthplace of parents of the second generation. Figures 2a and 3a compare the percent of the population aged 25 and older that attained at least a high school or bachelor's degree, respectively, by sex, race, Hispanic origin group, and generational status. The generational pattern for Hispanics closely mirrored the trend for the total population, which is in part due high Hispanic representation (46 percent of the first generation and 32 percent of the second generation). Among Whites, who made up 20 percent of the first generation and 50 percent of the second generation, the foreign born had the highest rate of bachelor's degree completion. Among Blacks, the second generation with two foreign-born parents had the highest bachelor's degree attainment.

Figures 2b and 3b show the percentage point change between 2007 and 2016 for these groups in attainment of high school and bachelor's degrees, respectively. Hispanics had the largest gains in high school degree attainment between 2007 and 2016. Whites and Blacks who were foreign born had large (over 10 percentage points) gains in bachelor's degree attainment between 2007 and 2016.

Regression Model 1

Model 1 shows the main effects of generation and year in predicting attainment of high school and bachelor's degrees. The likelihood of the second generation with one foreign-born parent

having at least a high school degree was not different from the third generation (omitted or reference category). The second generation with two foreign-born parents were less likely to have at least a high school degree, and the first generation was the least likely. The second generation with one foreign-born parent had the highest likelihood of bachelor's degree attainment, followed by the second generation with two foreign-born parents. The third generation and the first generation were less likely to attain a bachelor's degree, and were not statistically different from each other. The trend over time was positive for all generations in both high school and bachelor's attainment. The increase in likelihood of attainment over time was larger for the second generation than for the third generation, for both high school and bachelor's attainment. Compared to the third generation, the first generation saw less of an increase over time in the likelihood of high school attainment, and was not statistically different in terms of bachelor's attainment.

Regression Model 2

Model 2 shows the effect of controlling for race, Hispanic origin, age, and sex. Second generation effects became more significantly positive. Overall, there was a positive effect of increasing age and being female on attainment. Compared to Whites (the omitted reference category), Asians had a higher likelihood of attainment, while Hispanics and Blacks had lower attainment probabilities.

Regression Model 3

By adding interactions of sex, race, and Hispanic origin with generation, model 3 shows that the generational effects in attainment differed by race, Hispanic origin and sex, and illuminates the descriptive results seen in Figures 2a and 3a.

Compared to the third-generation reference group, second-generation Whites (with either one or two foreign-born parents) had higher likelihoods of both high school completion and bachelor's degree attainment. Hispanics had a smaller second-generation advantage over the third generation than Whites in attainment of both high school and bachelor's degrees. Blacks had a larger second-generation advantage than Whites in attainment of both high school and bachelor's degrees. Second-generation Asians had a smaller advantage over the third generation than second-generation Whites for bachelor's attainment, but had no second-generation advantage for high school attainment.

First-generation attainment also differed by race and Hispanic origin. First-generation Hispanics were less likely to have either a high school diploma or bachelor's degree than the third generation. However, first-generation Blacks, Asians, and Whites had higher likelihoods of bachelor's degree attainment compared to the third generation. Of these groups, the first-generation advantage over the third generation was largest for Blacks and smallest for Asians. For Whites, the first generation had a lower probability of high school attainment than either the second or the third generation, but a higher probability of bachelor's degree attainment than

either the second or the third generation. This finding highlights the variability in educational attainment in the foreign-born population, even within race and Hispanic-origin group.

Overall, females were more likely to have a high school degree than males. However, the difference between males and females was smaller in the first generation and second generation than in the third generation. Third-generation females had a higher likelihood of bachelor's attainment than males, but first-generation and second-generation females had a lower likelihood of bachelor's attainment than males in the ten-year pooled sample.

Regression Model 4

Model 4 adds interactions of sex, race, and Hispanic origin with generation and year, and compares trends over time for different groups by generational status. The increase in high school graduation likelihood over time was lower for first-generation Blacks, Asians and Hispanics relative to the third generation, than was the increase among first-generation Whites relative to the third generation. The increase in high school graduation likelihood over time was also lower for second-generation Asians and Hispanics relative to the third generation, than was the increase among second-generation Whites and Blacks relative to the third generation. For bachelor's degree attainment, first-generation Hispanics and second-generation Asians had a lower increase over time compared to first and second-generation Whites, relative to the third generation.

Conclusions

Compared to the third generation, there was a significant overall second-generation advantage in educational attainment. However, generational patterns of educational attainment were not homogenous across different race and gender groups. Overall, a smaller second-generation advantage over the third generation was found for females, Hispanics, and Asians. A larger second-generation advantage over the third generation was found for males, Blacks and Whites.

The change in educational attainment between 2007 and 2016 differed across race and Hispanic origin groups for high school and for bachelor's attainment. Hispanics of all generations had larger increases in high school attainment than other race and generational groups. However, for almost all race and generational groups, educational attainment increased to some degree between 2007 and 2016.

References

Aydemir, Abdurrahman and Arthur Sweetman, 2008. "First and Second Generation Immigrant Educational Attainment and Labor Market Outcomes: A Comparison of the United States and Canada." *Research in Labor Economics*, 27: 215-70.

Card, David, John DiNardo and Eugena Estes, 2000. "The More Things Change: Immigrants and the Children of Immigrants in the 1940s, the 1970s, and the 1990s." in *Issues in the Economics of Immigration*, G.J. Borjas (Ed.), Chicago UP: Chicago, pp. 227-69.

Chiswick, Barry R. and Noyna DebBurman, 2004. "Educational Attainment: Analysis by Immigrant Generation." *Economics of Education Review*, 23: 361-379.

Duong, Mylien T., et al., 2016. "Generational Differences in Academic Achievement Among Immigrant Youths: A Meta-Analytic Review." *Review of Educational Research*, 86:33-41.

Hernandez, Donald J., Nancy A. Denton, Suzanne Macartney, and Victoria L. Blanchard, 2012. "Children in immigrant families: Demography, policy, and evidence for the immigrant paradox." Coll, Cynthia García (Ed); Marks, Amy Kerivan (Ed). (2012). *The immigrant paradox in children and adolescents: Is becoming American a developmental risk?* (pp. 17-36). American Psychological Association, Washington, DC.

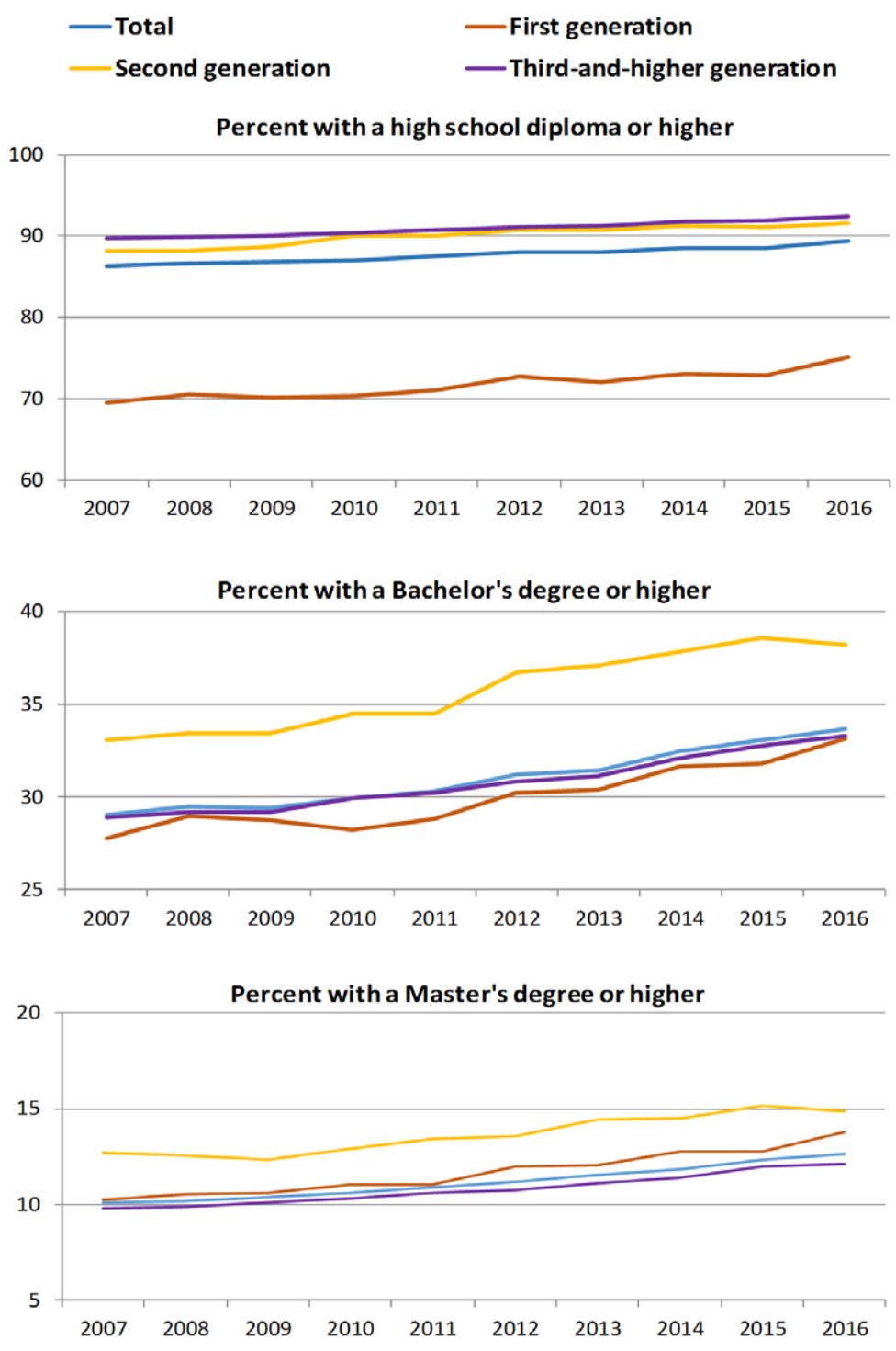
Jensen, Eric B., Anthony Knapp, C. P. Borsella, and Kathleen Nestor, 2015. "The Place-of-Birth Composition of Immigrants to the United States." Poster presented at the annual meeting of the Population Association of America, San Diego, CA, April 30 - May 2, 2015.

Rumbaut, Ruben G., 2005. "Turning points in the transition to adulthood: Determinants of educational attainment, incarceration, and early childbearing among children of immigrants." *Ethnic and Racial Studies*, 28(6), pp. 1041-1086.

Tran, Van C. and Nicol M. Valdez, 2015. "Second-Generation Decline or Advantage? Latino Assimilation in the Aftermath of the Great Recession." *International Migration Review*, August 14, 2015.

Trevelyan, Edward, Christine Gambino, Thomas Gryn, Luke Larsen, Yesenia Acosta, Elizabeth Grieco, and Darryl Harris, 2016. U.S. Census Bureau Report P23-214, *Characteristics of the U.S. Population by Generational Status: 2013*. U.S. Government Printing Office, Washington, DC.

Figure 1. Educational attainment by generation for the population aged 25 and older: 2007 to 2016



Source: U.S. Census Bureau, Current Population Survey 2007 - 2016.

Note: Universe is the civilian noninstitutionalized population of the United States, plus Armed Forces members who live in housing units - off post or on post - with at least one other civilian adult. 'First generation' refers to those who are foreign born; 'second generation' refers to those with at least one foreign-born parent; 'third-and-higher generation' includes those with two U.S. native parents. Educational attainment is measured in years of school completed, not attended.

Figure 2a. Percent with a High School Degree or Higher by Race, Hispanic Origin, and Generation - 2016

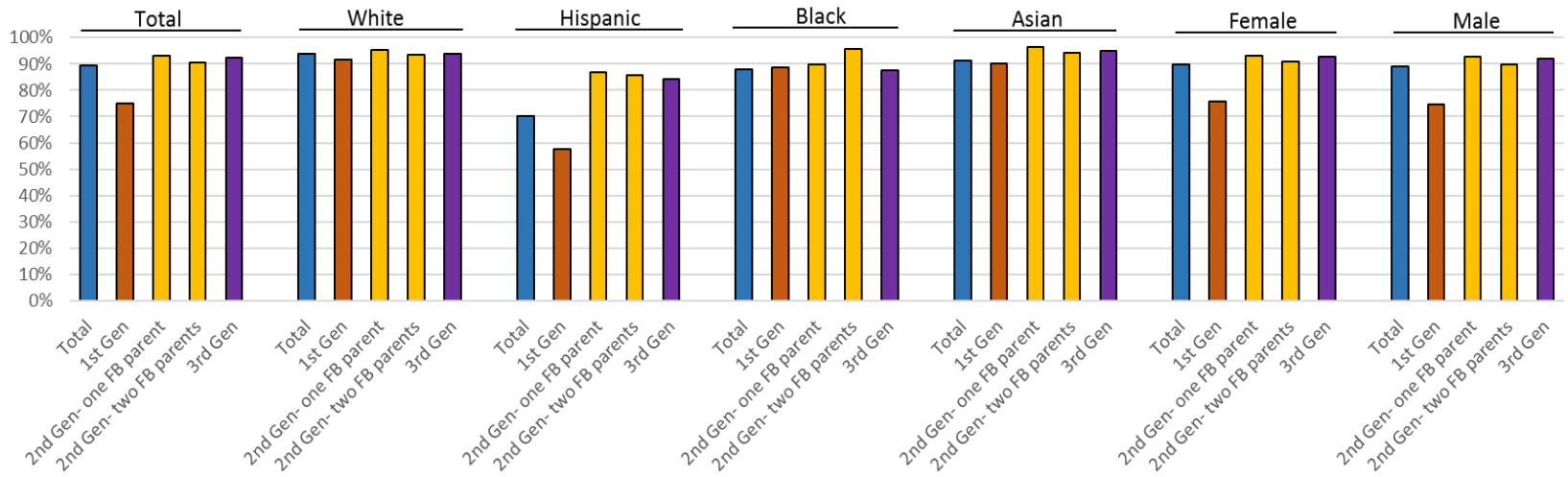


Figure 2b. Change in Percent with a High School Degree or Higher between 2007 and 2016

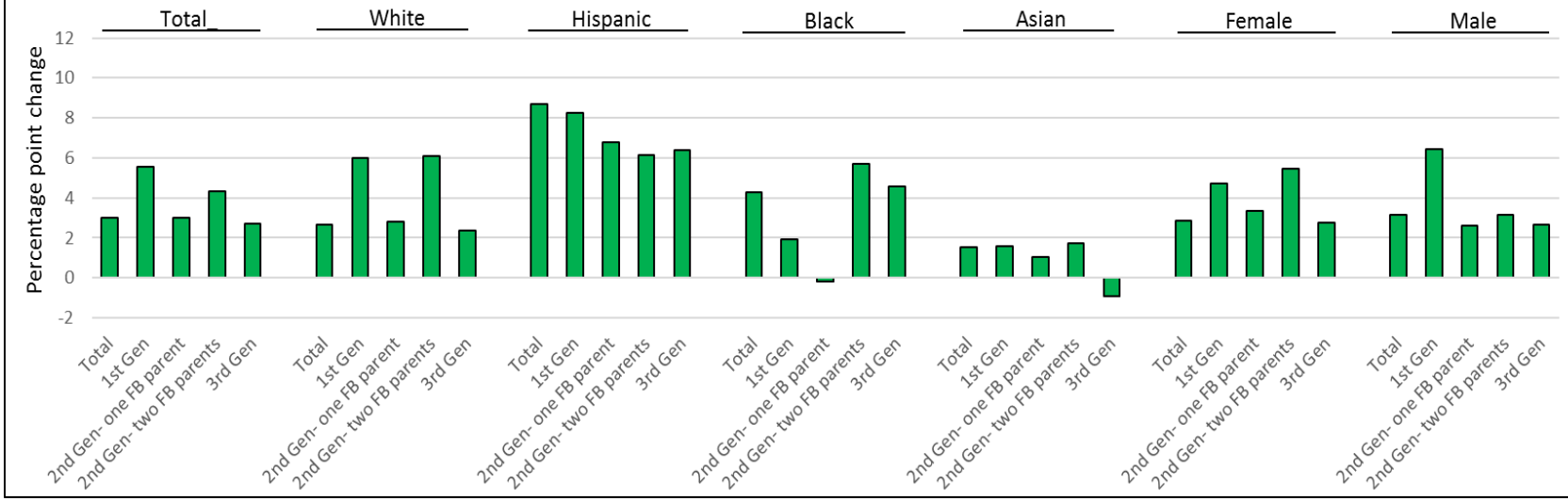


Figure 3a. Percent with a Bachelor's Degree by Race, Hispanic Origin, and Generation - 2016

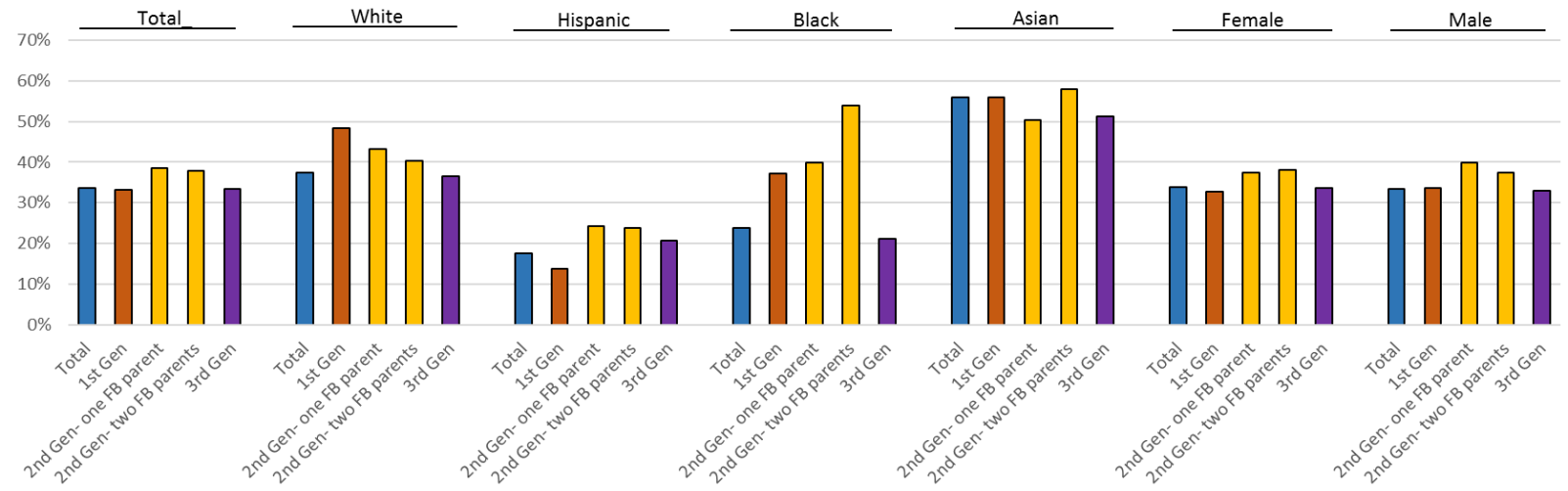
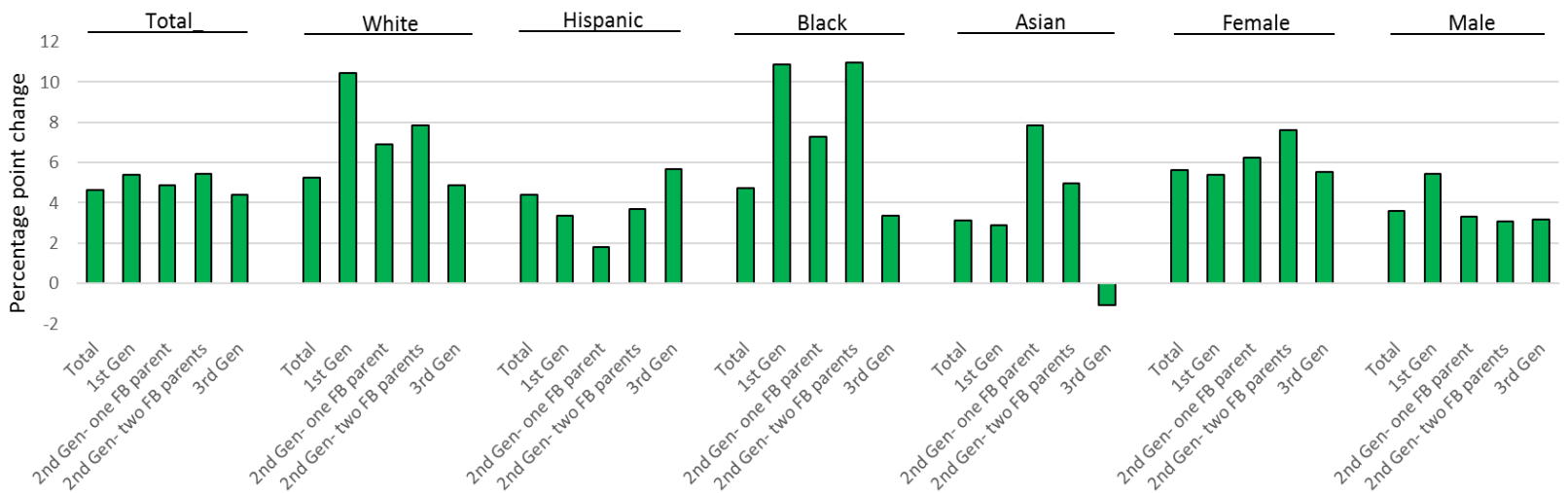


Figure 3b. Change in Percent with a Bachelor's Degree or Higher between 2007 and 2016



Logistic Regression Estimates Predicting Degree Attainment by Generation and Selected Demographic Characteristics

	High School				Bachelor's			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Intercept	1.853	1.539	1.440	1.439	-1.116	-0.997	-1.056	-1.056
	[0.015]	[0.035]	[0.036]	[0.036]	[0.009]	[0.023]	[0.024]	[0.024]
First generation (foreign-born)	-1.222**	-0.747**	-0.206**	-0.547**	-0.024	0.135**	0.534**	0.405**
	[0.025]	[0.028]	[0.037]	[0.068]	[0.022]	[0.024]	[0.031]	[0.046]
Second generation, one foreign-born parent	-0.017	0.317**	0.449**	0.319**	0.197**	0.282**	0.405**	0.357**
	[0.049]	[0.051]	[0.064]	[0.081]	[0.031]	[0.032]	[0.039]	0.046]
Second generation, two foreign-born parents	-0.395**	0.149**	0.297**	0.17*	0.134**	0.274**	0.385**	0.339**
	[0.049]	[0.051]	[0.064]	[0.081]	[0.031]	[0.033]	[0.040]	[0.046]
Year	0.04**	0.047**	0.046**	0.046**	0.027**	0.029**	0.028**	0.028**
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Year*Firstgen	-0.009**	-0.011**	-0.009**	0.021**	0.003	0.003	0.003	0.015**
	[0.002]	[0.002]	[0.002]	[0.006]	[0.002]	[0.002]	[0.002]	[0.004]
Year*Secondgen	0.012**	0.012**	0.009*	0.021**	0.007**	0.009**	0.006*	0.010**
	[0.004]	[0.004]	[0.004]	[0.006]	[0.003]	[0.003]	[0.003]	[0.003]
Hispanic		-1.798**	-1.387**	-1.387**		-1.419**	-1.046**	-1.046**
		[0.009]	[0.013]	[0.013]		[0.009]	[0.013]	[0.013]
Black		-0.848**	-0.945**	-0.945**		-0.791**	-0.851**	-0.851**
		[0.009]	[0.01]	[0.010]		[0.007]	[0.008]	[0.008]
Asian		0.040*	0.346**	0.346**		0.469**	0.634**	0.634**
		[0.016]	[0.075]	[0.075]		[0.010]	[0.031]	[0.031]
Age		0.052**	0.052**	0.052**		0.023**	0.023**	0.023**
		[0.001]	[0.001]	[0.001]		[0.001]	[0.001]	[0.001]
Age^2		-0.001**	-0.001**	-0.001**		-0.000**	-0.000**	-0.000**
		[0.000]	[0.000]	[0.000]		[0.000]	[0.000]	[0.000]
Nonmetropolitan		-0.663**	-0.641**	-0.641**		-0.803**	-0.796**	-0.796**
		[0.008]	[0.008]	[0.008]		[0.006]	[0.006]	[0.006]
Female		0.132**	0.179**	0.179**		-0.011**	0.019**	0.019**
		[0.006]	[0.007]	[0.007]		[0.004]	[0.005]	[0.005]
Firstgen*Female			-0.148**	-0.148**			-0.163**	-0.163**
			[0.013]	[0.013]			[0.012]	[0.012]
Secondgen*Female			-0.121**	-0.121**			-0.104**	-0.104**
			[0.024]	[0.024]			[0.015]	[0.015]
Firstgen*Hispanic			-0.883**	-0.525**			-0.826**	-0.732**
			[0.022]	[0.070]			[0.019]	[0.062]
Firstgen*Black			0.455**	1.030**			0.173**	0.118
			[0.029]	[0.114]			[0.021]	[0.083]
Firstgen*Asian			-0.579**	-0.151			-0.294**	-0.007
			[0.078]	[0.114]			[0.034]	[0.064]
Secondgen*Hispanic			-0.202**	0.025			-0.0794**	0.144
			[0.028]	[0.101]			[0.023]	[0.078]
Secondgen*Black			0.471**	0.661*			0.565**	0.359*
			[0.075]	[0.310]			[0.038]	[0.159]
Secondgen*Asian			-0.690**	-0.340			-0.269	-0.189
			[0.089]	[0.201]			[0.039]	[0.099]
Year*Firstgen*Hispanic				-0.032**				-0.008
				[0.006]				[0.005]
Year*Firstgen*Black				-0.051**				0.005
				[0.010]				[0.007]
Year*Firstgen*Asian				-0.038**				-0.025**
				[0.007]				[0.005]
Year*Secondgen*Hispanic				-0.020*				-0.019**
				[0.009]				[0.006]
Year*Secondgen*Black				-0.017				0.017
				[0.026]				[0.013]
Year*Secondgen*Asian				-0.031*				-0.007
				[0.016]				[0.008]
Observations	1,340,740	1,340,740	1,340,740	1,340,740	1,340,740	1,340,740	1,340,740	1,340,740

Source: Current Population Survey, pooled basic monthly data from March, July and November 2007-2016.
Note: Estimates are shown under each model number, with standard errors in brackets. For Generation, reference group = third generation. For Race and Hispanic origin, reference group=Non-Hispanic White alone.
* significant at 0.05; ** significant at 0.01.