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By

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ABSTRACT

Objective. To examine the labor market returns on education and the effects of match between degree and job field between Native Americans and their White counterparts. *Methods.* Using logistic and OLS regressions, pooled data from the 2003 and 2010 National Survey of College Graduates is used to examine the effects of match between bachelor's degree and job field on earnings. *Results.* Having a match creates statistically significant differences in on income with those with matches in engineering making 1.26 times as much and those with a match in business making 1.17 times as much as their unmatched counterpart. Notable racial differences are also seen on income within the same match. Interaction effects show that Native Americans and Whites are not getting the same return on education, although the results were not statistically significant, Whites make more than American Indians in the match field of "other", but in the match of engineering, American Indians make statistically significantly more than their White counterparts, with Whites making .894 times less, indicating a higher labor market return for that match field than Whites. *Conclusion.* The results underscore the need for further research on educational returns for Native Americans as many underlying processes such as social and cultural capital, disparities in higher education, and dispersion of earnings throughout fields all may contribute to masking inequalities.

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Introduction

There has been little sociological attention paid to the continuous social and economic poverty of America's oldest racial minority; Native American[1] people in the United States. Being the first group to have been colonized, victims of widespread genocide, and locked into treaties with the U.S. government that are often ignored, American Indians in the United States find themselves disproportionally disadvantaged in almost all facets of life (Debo 1973; Evans-Campbell 2008; Roscigno et al 2015; Smith 2003; Stannard 1992). Recent research shows that education, wages, and health disparities such as HIV, heart disease, liver disease, and diabetes are extreme for American Indian people (Davis 2016; Huyser 2010, 2014; Indian Health Services 2016; Patterson-Silver Wolf 2013; Sakamoto et al. 2000). This comes as no surprise as Native Americans have historically been subjected to genocide, forced cultural assimilation into main stream White culture, resulting in the stripping away of traditional language, clothing, and traditions (Deyhle & Swisher 1997), as well as economic extermination, resulting in atrocious conditions that leave them living in the margins compared to the rest of the United States (Walters 2011). Yet, through extreme poverty and a legacy of colonial trauma, American Indians have maintained a strong racial and ethnic identity, pushing to remember and teach culture and traditions to younger generations, actively resisting and persisting (Wexler 2014).

American Indians were the first racial minority group in the United States and have been and continue to be subjected to extreme oppression. Even with "reparations" granted by the government (Fine-Dare 2002), they still have the worst health and socioeconomic outcomes of

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[1] I use Native American and American Indian interchangeably as there is no one consensus on the racial identification [although "American Indian" may be slightly more preferred among people who identify with this category (Farley 1996, p.212)]

almost any racial group in America (Indian Health Services 2016), and with a few exceptions continued to be ignored in sociological literature. This thesis contributes to the literature by not only looking at the employment status of American Indians including the types of jobs they hold, but also the relation to their educational degree, what they major in, and the effects this may have on income. The study strives to further pull apart the intricate depth of systemic marginalization that Native Americans face, even when having obtained a college degree and employment, which is often thought of a way to achieve upward mobility (Backes et al 2015).

Racial Identity of Native Americans

A major racial distinction of American Indians is that the majority of Native American tribes are formally recognized as groups that hold certain legal statues, rights, and entitlements in concordance with treaties that were established with the U.S. federal and states governments. Yet, to be privy to the entitlements outlined in treaties, or in some cases to live on tribal land or reservations, one must be legally considered American Indian (Edmo 2016; Nagel 1996). A status that has no regulated definition and consistently changes, often shaping to current sociopolitical patterns (Garroutte 2001). The definitions of who qualifies as American Indian is decided at two levels, the federal and tribal governments. It is important to note that these two levels often hold definitions that contradict each other and the federal government has no legal responsibility to match up with the criteria that tribal memberships use to determine citizenship. In fact, a 1978 congressional survey revealed no less than thirty-three different definitions of "Indians" in use in varying pieces of federal legislation (O'Brien 1991).

The differing but distinct racial criteria for those who identify as Native American signifies the unique place within the racial formation of America, also conceptualized as the

process in which socio-historical designations of race are created and continually manipulated (Omi & Winant 2015), as Native Americans are the only racial group that still has legal requirements to "officially" belong to the race. This analysis recognizes the unique positionality of American Indians with college degrees and seeks to produce meaningful results to better the understanding of inequality that Native Americans face.

Current Characteristics of Native Peoples

Today, the estimated U.S. population of American Indians and Alaska Native peoples, both single and multi-race is approximately 5.4 million, around 2 percent of the total U.S population. Of this total, about 48 percent are single race Native American and 52 percent multi-race (U.S. Census Bureau 2014). As of 2016, there are more than 566 federally recognized tribes, with many other tribes currently petitioning for state and federal recognition (Department of the Interior, BIA 2016). According to the 2010 Census, 41% of the American Indian and Alaska Native population lived in the West. Western states contain the largest tribal and federally designated reservation areas.

The overall Native American poverty rate in 2014 was 28.3 percent, the highest of any racial group in the U.S., with the nation as a whole more than ten percent lower at 15.5 percent (U.S. Census Bureau 2014). The majority of, if not all demographic research on American Indians shares common results of lower levels of socioeconomic status compared to non-Hispanic whites, with education, income, and unemployment being the indicators (Farley 1996; Hunt et al 2010; Huyser et al 2010; Huyser 2014; Snipp 1986,1992). Unemployment also holds a direct correlation with poverty levels and health outcomes, with unemployment leading to higher poverty rates resulting in worse health (Bambra, 2011; Dooley et al 1996; Jin et al 1995).

Importance of Education in the Labor Market

The link between educational attainment and eventual labor market outcomes is well known and highly documented; with the amount of education an individual has holding a direct positive effect on socioeconomic status (Jencks 1972, Kao & Thompson 2003). Literature shows that in general, Asians have the highest probability of school progression and completion at every educational level, followed by Whites, Hispanics and Blacks, and then Native Americans (Mare 1995). Choice of college major also affects occupational opportunities and earnings, as well as the chances of pursuing a graduate degree (Arcidiacono 2004, Bedard & Herman 2008, Jacobs 1996). Individuals who major in female dominated fields (i.e. education, health, and social services) tend to make significantly lower wages than those who major in male dominated fields like engineering and math (Roksa 2005). Past research shows that racial minorities students such as African American students are more likely than White students to major in education, humanities, and the social sciences, all fields that end up providing substantially lower incomes than the hard sciences (Thomas 1985), and overall women and students of color are underrepresented in the selection of science majors compared to their White male counter parts (Barber 1995; Mullen, 2001). Blacks are more likely than Whites to choose interdisciplinary and social science majors over hard science fields and Hispanics are more likely to choose arts and humanities, interdisciplinary, or social science majors than their White counter parts over a hard science major (Porter & Umbach 2006). It is also suggested that factors such as family socioeconomic status, academic preparation, cultural capital like the education of parents and style of speech or dress, group values, and institutional factors such as research and teaching of

an educational institution, as well as racism within the institution, may all have direct influence on the choice of college major (Simpson 2001).

Education levels for Native Americans are significantly lower than the U.S. population. The high school graduation rate for this group is 67 percent, which is the lowest of any racial and ethnic group in the U.S., with even lower graduation rates from the Bureau of Indian Education schools sitting at 53 percent, compared to the national average of 80 percent. (Department of Education 2014). In higher education, only five percent of American Indians and Alaska Natives have received graduate or professional degrees and only 13 percent bachelor's degrees. Compared to the United States population as whole, in which 10 percent hold a graduate or professional degree and 29 percent hold a bachelor's degree (U.S. Census 2010), these numbers illustrate the stark reality of not only the educational disparities but also how the cycle of poverty is sustained.

For many people from disadvantaged and minority families, obtaining a college degree is a thought to be guaranteed way to achieve upward mobility (Backes et al 2015; Issacs, 2007; Haskins et al., 2009), as monetary awards for college degrees have grown in the U.S. labor market. Although minimal, labor market research regarding match between schooling and jobs shows that workers who are mismatched earn less than their adequately matched workers counterparts that hold the same amount of schooling and also shows that individuals who graduate with majors that focus on general skills, like liberal arts, have a higher likelihood of mismatch (Robst 2007). When including all levels of education, the chance of mismatch is higher for Whites and Asians than Blacks and Native Americans. But, the likelihood of mismatch decreases with the higher the degree above a bachelors that one holds (Robst 2007),

potentially implying that the found race effect may switch due to Whites making up the majority of graduate degrees (U.S Department of Education 2012). Yet, it is not only majors that influence income but the type of educational institution attended as well. Based off of the Carnegie classification of institutions, individuals from larger research institutions earn significantly more than their counterparts from liberal arts colleges. It was also shown that there are labor market benefits from graduating from a graduate degree granting and/or research institution compared to liberal art colleges (Monks 2000).

Although bleak, the above data shows that some Native Americans do earn college degrees. Yet, even when controlling for age, gender, education, metropolitan status, and region of residence, American Indians still have considerably greater chances of being in poverty (Huyser et al 2014). Meaning that even when an a Native American and a non-Hispanic White both have college degrees, are from the same place, same age, and same gender, the Native American will make less, resulting in higher chances of poverty. Research also shows that Native American poverty does not waiver in the face of labor market opportunities (Davis et al 2016), with individuals struggling to climb out of poverty even when employed, due to firing and promotion discrimination practices (James et al.1994). Income data from the American Community Survey shows that although the median wage for all workers with a bachelor's degree or higher was $51,035 the median wage for Native Americans with a bachelor's degree or higher was only $41, 263 (American Community Survey 2008-2012). Exemplifying the reality that labor market outcomes are not the same for racial minorities and Whites even with matching qualifications, perhaps illustrating differential treatment by race in the U.S. labor market (Betrand & Mullainathan 2004).

This thesis seeks to further understand why American Indian and Alaska Native peoples do not experience the same returns on education that Whites experience. I will do this through focusing on an important and understudied intersection of Native people – college graduates. I will examine what types of institutions Natives attend, type of bachelor's degree major received, and type of current employment. I will examine what factors predict confluence between bachelor's degree field and current job field. I will finally examine the effect of having a match between the field of bachelor's degree and current job field on income. The research questions for this analysis are as follows:

Research Question 1: What are the characteristics of Native Americans with bachelor's degrees?

Sub Question 1: What type of institution was attended?

Sub Question 2: What are the fields of majors by race?

Sub Question 3: What are the fields of employment by race?

Research Question 2: Compared to whites, are Native Americans employed in the same field of study as their bachelor's degree?

Hypothesis 1: I hypothesize that Native Americans will be working more in their same field of major.

Hypothesis 2: I hypothesis that Native Americans will be working in more social science fields than hard math and science fields.

Research Question 3: How does having a match between your major and job affect income?

Hypothesis 3*:* I hypothesize that having a match between major and job will affect income differently depending on the field of major and job, with fields like engineering and math earning higher incomes and fields like education and social sciences earning less.

Data and Methods

Data

The data for this paper was pooled from the 2003 and 2010 National Survey of College Graduates (NSCG). This survey is funded and administered by the National Science Foundation and has been conducted since the 1970s. The 1993, 2003, and 2010 cycles of the NSCG supply reporting of the United States college educated population as of the survey reference date. In addition to those years, the NSCG has been conducted biennially or triennially from 1990-99 and 2000-09. The sample population consists of individuals who are living in the United States during the survey reference week, hold at least one bachelor's degree, and are 21 and over and under the age of 76. The survey also has a specific focus on individuals who in science and engineering fields.

The 2003 survey obtained its sample from the 2000 decennial census long from respondents who marked they held a bachelor's degree or higher in any academic field of study. The 2003 NSCG survey respondents served as the sample source for the 2006 and 2008 NSCG. The 2010 survey used a dual frame sample design where a part of the sample came from the 2009 American Community Survey respondents and other half came from the respondents of the 2008 NSCG survey, meaning some of them may be the same respondents as the 2003 NSCG. It was necessary to use two years of the survey data as to have a large enough sample size of Native American respondents. The NSCG examines characteristics of employed college

educated individuals such as occupation, salary, work activities, the relationship of degree field and occupation and basic demographic information. The survey includes college graduates from all academic backgrounds, making it ideal in the analysis of the relationship between college education and job opportunities. Although a great data source, the National Survey of College Graduates is only administered to those who are not institutionalized, excluding the college educated who are incarcerated.

Methods

Analyses

In order to ensure that the analysis was ran on people who had the same level, number, and type of degree, the sample was limited to those who had only earned one bachelor's degree, with all others being dropped. It is also important to note that all questions were answered and self-reported by the respondents themselves. Descriptive statistics of proportion were ran for gender, race, type of institution, region, and match. In addition to that, descriptive statistics of mean and standard deviation were calculated for age and log earnings. Cross tabulations between bachelor's degree field and job field were also computed for both Native Americans and Whites. A logistic regression was ran on the dependent variable of match. Models one and two of the logistic regression, include all people who were unemployed or not in the labor force, where models three and four dropped and excluded those who were unemployed or not in the labor force. Lastly, an OLS regression was ran on the dependent variable of log earnings. A probability weight was used in which all analysis was run under.

Measures

One of the dependent variables for this analysis was "match" which is if the field of study for the individual's bachelor's degree matched that the field of their job. This variable was

created with the variables of bachelor's degrees and job type. The degree and job variables were created by categorizing the 132 options for job and the 139 options for degree into corresponding categories. The appendix holds all possible options provided by the survey. Those degrees and jobs working with computer and information, math, statistics and the like were placed into the "math" categories. Fields such as forestry and conservation scientists, agriculture, biological scientists, postsecondary teachers in biological sciences, and food science were placed in the "life" category for life sciences. Degrees and jobs pertaining to geology, physics, astronomy, chemistry, space, oceanography, and earth science were labeled in the "physics" options. "Social science" jobs and degrees include political science, psychology, sociology, economics, and anthropology. Jobs and degrees pertaining to architecture, civil engineering, chemical engineering, electrical, industrial and mechanical engineering, biomedicine engineering, marine, mining, nuclear, sales, petroleum, and all other engineering were categorized as "engineering". "Medicine" fields and degrees included diagnosing/treating practitioners, RN's, pharmacists, dieticians, therapists, physicians, health technicians, and medicine and health service managers. "Education" included all jobs and fields of teachers and postsecondary teachers of a non-science subject as well as educational and vocational counselors. The "business" degree and job field included managerial work and studies, administrative, accounting, auditing, financial specialists, insurance, sales, securities, real estate and business degrees. "Business finance" was specifically for accounting fields. The "arts and other" categorization for both degree and job included things such as art studies/jobs, library works, food studies and preparation, music, construction, protective services (firefighting and police) and all other occupations. Law studies and lawyers and judges were placed in the "law" category.

An independent variable was created for the OLS regression interaction effects, from the variable of match, called “match1”. This variable consisted of the categories, “unmatched” which was all respondents who did not have a match, “match engineering”, “match business”, “match education”, and all other matches coded into a “match other” category. The matches of engineering, business, and education were chosen as they are in the top match fields for Whites and American Indians in this analysis. The second dependent of variable of income was analyzed through log earnings. In order to regulate for the highly positive skew, the log transformation is applied to that the actual dependent variable utilized in the analysis is log earnings (Petersen 1989).

The main independent variable was race of the respondent (racem1), which only included self-identified single race Native Americans and single race Whites, all other races were dropped. Race was measured by asking the respondent what their racial background was, with the choices of American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, Asian, Black or African-American, or White (see appendix for survey question). The respondent was able to choose all racial categories that they self-identified with. The other independent variables were region that the respondent is from, coded into the categories of west, south, midwest, and northeast. Type of educational institution attended (Carnegie) was also included coded off the Carnegie classification (research, doctorate, comprehensive, liberal, medical, buslaweng, and other), age, and gender. Age was ranged from 21 to 76 years of age and gender was asked off the western binary gender system of female/male.

Results

Descriptive Statistics

The descriptive statistics for all variables are shown in Table 1. The relative sample sizes for the racial categories closely mirror their representation in the U.S. population. Specifically, Whites make up the majority of the sample (i.e., 99.46 percent) with singe race Native Americans making up the rest of the sample (i.e., .54 percent.) The average age of the sample is 43 years old and 49.05 percent of the sample is male and 50.95 percent is female. The majority of attended a comprehensive institution (i.e., 33.30 percent) and the bulk of the sample is from the south (i.e., 31.63 percent). Out of the whole sample, only 36.96 percent had a match between their major field and employment field and the mean log earnings were 10.81.

The descriptive statistics of major, job field, institution, and region for respondents by race are shown in Table 2. The mass of the Native Americans and Whites majored in social science fields (i.e., 23.01 percent and 22.5 percent.) The second most popular fields of major for Natives and Whites is business (i.e., 19.8 percent and 18.8 percent). In looking at jobs fields, the mass of Native Americans work in a business field (i.e., 42.1 percent), which is the same for Whites (45.8 percent). The art and other categories such as art studies/jobs, library works, food studies and preparation, music, construction, protective services (firefighting and police) and all other occupations is the second largest job field for both races as well (i.e. 25.68% and 19.03%). Both samples had majority numbers from the south region and both had majority numbers attending research and comprehensive institutions.

Below, Table 3 and Table 4 present a crosstab of degree field and job field for both Native American and Whites. Table 3 shows the biggest match groups for American Indians is that of "medicine" (i.e. 76.36 percent), "business" (i.e. 68.25 percent), and "engineering" (i.e.

55.9 percent). Table 4 demonstrates that the biggest match groups for Whites is “medicine” (77.215), “business” (i.e. 69.53 percent), and “math” (i.e. 56.04 percent). These tables demonstrate that Whites and American Indians have similar top matching fields, exemplifying the particular focus that the NSCG has on surveying those in the science and engineering workforce.

Table 1: Descriptive Statistics

	Proportion	Median	Mean	Standard Deviation
Match	36.96	-	-	-
Age	-	-	43.26	12.03
Male	49.05	-	-	-
Native only	47.53			
White only	49.06			
Log Earnings	-	-	10.81	.882
Race		-	-	-
White only	99.46			
Native only	.54			
Carnegie		-	-	-
Research	31.81	-	-	-
Doctorate	14.61	-	-	-
Comprehensive	36.30	-	-	-
Liberal	13.28	-	-	-
Medical	.51	-	-	-
Buslaweng	.44	-	-	-
Other	3.05			
		-	-	-
Region				
West	22.20	-	-	-
South	31.63			
Midwest	26.05	-	-	-
Northeast	20.13			
		-	-	-
N	45,983			

Source: National Survey of College Graduates (2003, 2010)

Table 2: Table of Proportions by Race

	Native	White
Bachelor's Degree Field		
Bachelor's social sciences	23.01%	22.5%
Bachelor's math	3.55%	4.16%
Bachelor's life sciences	5.98%	5.36%
Bachelors physics	1.87%	1.66%
Bachelor's engineering	6.95%	9.45%
Bachelor's medicine	8.01%	6.60%
Bachelor's education	19.39%	12.75%
Bachelor's business	19.84%	18.83%
Bachelor's business finance	2.69%	8.77%
Bachelor's arts and other	8.66%	9.37%
Bachelor's law	.05%	.54%
Job Field		
Job social sciences	.64%	.36%
Job math	3.62%	7.91%
Job life sciences	2.01%	1.13%
Job physics	1.11%	.58%
Job engineering	6.25%	4.89%
Job medicine	8.23%	8.02%
Job education	10.31%	10.54%
Job business	42.09%	45.83%
Job business finance	.06%	1.45%
Job arts and other	25.68%	19.03%
Job law	0	.27%
Carnegie		
Research	36.17%	31.78%
Doctorate	9.61%	14.64%
Comprehensive	41.27%	36.27%
Liberal	11.33%	13.29%
Medical	1.14%	.51%
Buslaweng	.13%	.44%
Other	.35%	3.07%
Region		
West	28.02%	22.16%
South	38.91%	31.59%
Midwest	22.30%	26.07%
Northeast	10.78%	20.18%
N for each racial group	413	45,570
N	45,983	

Source: National Survey of College Graduates (2003, 2010)

Table 3: Cross Tabulation Table of Job and Degree field for American Indians in Percentages

Job Field **Bachelor's Degree Field**

	BA Social	**BA Math**	**BA Life**	**BA Physics**	**BA Engineer**	**BA Medicine**	**BA Education**	**BA Business**	**BA Business fin**	**BA Art/Others**	**BA Law**
job social	2.49% (2)	0	0	0	0	0	0	.24% (1)	0	0	0
Job math	.18% (1)	48.43% (12)	1.16% (2)	5.42 (2)	15.78% (6)	0	.43% (1)	2.21% (6)	0	0	0
Job life	0	0	24.82% (18)	0	0	.49% (1)	0	1.92% (1)	0	0	0
Job physic	.29% (1)	0	.92% (1)	49.33% (15)	0	.28 (1)	0	0	0	0	0
Job engineer	.52% (2)	0	3.17% (1)	0	55.9% (43)	7.63% (1)	3.25% (1)	0	19.67% (1)	0	0
Job medicine	2.84% (4)	0	20.86% (4)	3.92% (1)	0	76.36% (15)	.98% (2)	0	0	0	0
Job education	11.19% (21)	.67% (1)	3.43% (3)	5.68% (2)	2.95% (2)	2.84% (1)	38.48% (37)	0	0	5.07% (5)	0
Job business	37.81% (38)	16.69% (3)	43.81% (9)	35.65% (3)	17.69% (11)	11.85% (6)	2.02% (11)	68.25% (24)	7.53% (9)	53.93% (6)	100% (1)
Job business fin	.21% (1)	0	0	0	0	0	0	0	0	0	0
Job art/other	44.48% (40)	34.3% (1)	1.83% (2)	0	7.68% (8)	.55% (1)	36.65% (12)	27.38% (18)	5.04% (1)	41.00% (14)	0
Job law	0	0	0	0	0	0	0	0	0	0	0
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: National Survey of College Graduates (2003, 2010)

*The percentages are weighted and the numbers in parentheses are unweighted frequencies given to demonstrate raw data sample sizes and possible skew.

Table 4: Cross Tabulation Table of Job and Degree field for Whites in Percentages

Job Field **Bachelor's Degree Field**

	BA Social	BA Math	BA Life	BA Physics	BA Engineer	BA Medicine	BA Education	BA Business	BA Business fin	BA Art/Others	BA Law
job social	1.00% (297)	.33% (17)	.34% (27)	.41% (8)	.17% (21)	.15% (7)	0 (9)	.23% (49)	0 (4)	.24% (12)	1.80% (5)
Job math	4.21% (802)	56.04% (2,497)	5.44% (264)	11.76% (253)	18.51% (2,062)	1.24% (80)	1.65% (175)	5.94% (716)	2.96% (197)	4.89% (277)	1.46% (9)
Job life	.27% (64)	0 (3)	14.17% (1,116)	3.88% (137)	.22% (39)	.86% (67)	.25% (15)	.17% (29)	0 (1)	.67% (9)	0 (1)
Job physic	0 (42)	0 (9)	2.53% (297)	20.23% (974)	.38% (58)	.11% (17)	0 (11)	0 (9)	0 (1)	0 (10)	0 (0)
Job engineer	.35% (94)	2.35% (128)	2.21% (140)	8.86% (246)	42.07% (6,959)	.27% (20)	.37% (42)	1.08% (185)	.15% (14)	1.37% (72)	.93% (5)
Job medicine	4.20% (347)	.47% (19)	15.34% (418)	5.14% (61)	.65% (40)	77.21% (2.271)	2.29% (102)	2.26% (93)	.43% (11)	3.25% (93)	3.08% (7)
Job education	7.28% (723)	6.38% (259)	5.13% (247)	5.07% (88)	1.15% (108)	2.43% (91)	50.88% (1,914)	2.45% (138)	.63% (37)	12.19% (380)	.57% (4)
Job business	50.42% (4,457)	24.98% (665)	31.29% (978)	30.42% (356)	24.62% (1.765)	12.44% (378)	27.45% (857)	69.53% (3,255)	84.18% (1,525)	35.02% (784)	48.72% (68)
Job business fin	1.17% (104)	1.57% (31)	.88% (18)	.35% (5)	.14% (13)	.59% (16)	1.30% (34)	2.74% (75)	4.01% (51)	1.41% (26)	0 (0)
Job art/other	30.44% (2.461)	7.66% (182)	22.58% (656)	13.82% (149)	11.97% (696)	4.69% (157)	15.69% (564)	15.4% (748)	7.48% (146)	40.45% (968)	38.85% (49)
Job law	.57% (66)	.13% (2)	0 (2)	0 (1)	.12% (6)	0 (0)	0 (2)	.16% (3)	0 (1)	.45% (8)	4.52% (7)
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: National Survey of College Graduates (2003, 2010)
*The percentages are weighted and the numbers in parentheses are unweighted frequencies given to demonstrate raw data sample sizes and possible skew.

Regression Results for Prediction of Match

Logistic and OLS regressions are being used for this analysis. A first logistic regression was run with the first two models that include individuals who are unemployed or not in the labor force. The first model is simply the variable of race on the dependent variable of match. The results from both the first model show that race alone is not holding a significant effect. The second model ran utilizes all covariates. The independent variables of gender, race, regions, and types of educational institutions were regressed on the dependent variable of match. The same

logistic regressions were run for models three and four but those without a job or not in the labor force were dropped, so it only includes individuals who are employed. Models three and four closely mirror model one and two, with no significant results of race regressed on match alone, and no significant results of race when ran in the full model with all other variables. The logistic regression coefficients and odds ratios predicting match between education field and job field are shown in Table 5.

Differences can be seen between the variables through interpreting the odds ratios from the full model regressions in both models two and four as the coefficients do not greatly vary. In both models two and four, the difference in the obtainment of match between Natives and Whites, is that Whites have eighth tenths the odds of having a match compared to Natives. Models two and four also show that the variable gender is statistically significant and shows us that males have 1.1 times the odds on average than females of obtaining a match between their bachelor's degree and their job field. As predicted, the type of educational institution has a statistically significant effect, with every type of institution except that of liberal having statistically significant greater odds of achieving a match compared to their counterparts attended a research university for both models two and four.

Table 5: Logistic Regression Coefficients & Odds Ratios Predicting Match between Education Field and Job Field

	Model 1		**Model 2**		**Model 3**		**Model 4**	
	b	Odds Ratio	b	Odds Ratio	b	Odds Ratio	b	Odds Ratio
Race								
White Only	-.202	.817	-.232	.792	-.165	.847	-.184	.831
Male			.133**	1.14			-.111**	.894
Age			-.023***	.976			-.004*	.995
Region								
South			.187**	1.20			.207***	1.23
Midwest			.207***	1.23			.176**	1.19
Northeast			.036	1.03			.000	1.00
Carnegie								
Doctorate			.225***	1.25			.216**	1.24
Comprehensive			.186***	1.20			.146**	1.15
Liberal			.097	1.10			.097	1.10
Medical			1.68***	5.41			2.09***	8.15
Buslaweng			.488**	1.62			.490**	1.63
Other			.595***	1.81			.720***	2.05
Constant-.707**			.038	1.03	-.383	.681	-.377	.685
N	61,122		61,122		45,983		45,983	

Source: National Survey of College Graduates (2003, 2010)

+ p<.1, * p<.05, ** p<.01, *** p<.001

*Model 1 and 2 include all those without a job or not in the labor force. Model 3 and 4 exclude those without a job or not in the labor force.

Regression Results for Log Earnings

An OLS regression was ran on the dependent variable of log earnings. The OLS regression coefficients as well as the exponentiated form and standard errors for prediction for log earnings are shown in Table 6. The results show that having a match between degree field and field of employment have a significant effect on income compared to those without a match. Those with a match in engineering are making 1.26 times as much as those without a match. Those with a match in business make 1.17 times more. The match field that makes less is that of

education, making .789 times less than their unmatched counterpart. Other significant variables include that of gender, with males making 1.52 times as much as their female counterpart, the variable of region with those from the Midwest making .935 less than those from the West and those from the Northeast making 1.07 times . The type of school attended matters as well with those who attended a comprehensive or liberal art institution making .888 and .870 times less than those who attended a research institution and those in the "other" category of type of institution making .752 times less. The regression shows that race is statistically significant with unmatched whites making 1.12 times as much as their unmatched Native American counterparts.

Interaction Effect Between Race and Match1 on Log Earnings

In model two in Table 6, the same OLS regression was ran again but with an added interaction effect between race and the match1 variable. It shows the OLS coefficients as well as their exponentiated form and standard errors for the interaction between race and match1. In the match field of business Whites make 1.13 times ($e^{(-.0080561+.115798)} = e^{(.1238541)}=1.1318$) as much as their Native counterpart and in the match field of education, they make 1.03 ($e^{(-.0812133+.115798)} = e^{(.0345847)} = 1.0351$) times as much as their American Indian counterpart when controlling for all other variables, yet neither of these are significant. In all other match fields, Whites make 1.27 times ($e^{(.1287643+.155798)} = e^{(.2445623)}=1.2770$) as much as Native Americans. This interaction effect only yielded one statistically significant result, which was that at a bachelor's degree level American Indians seem to be having more of a return on their match between their engineering degree and engineering job field than Whites. The significant result from this regression surprisingly shows that within the match of engineering, Whites make .894

($e^{(-.2275359 + .115798)} = e^{(-.01117379)} = .8942$) times less their as Native Americans counterpart. This potentially suggests that achieving a match in this field at the bachelor's degree level could help reduce income inequality between these two groups.

Table 6: OLS Regression Coefficients Predicting Log Earnings

	Model 1	**Model 2**
	b/exp	b/exp
Match1		
Match Engineering	.233/1.26***	.459/1.58***
	(.016/.020)	(.096/.152)
Match Business	.161/1.17***	.169/1.18
	(.028/.033)	(.182/.215)
Match Education	-.236/.789***	-.155/.855
	(.039/.031)	(.087/.074)
Match Other	.0579/1.05*	-.070/.932
	(.019/.020)	(.197/.184)
Match1##White Only		
Match Engineering		-.227/.796*
		(.097/.077)
Match Business		-.008/.991
		(.185/.183)
Match Education		-.081/.921
		(.095/.088)
Match Other		.128/1.13
		(.198/.225)
Male	.424/1.52***	.424/1.52***
	(.017/.026)	(.017/.026)
Age	.007/1.007***	.007/1.007***
	(.000/000)	(.000/000)
Race		
White only	.117/1.12*	.115/1.12*
	(.052/.058)	(.058/.)065
Region		
South	-.013/.986	-.013/.986
	(.024/.022)	(.022/.022)
Midwest	-.066/.935**	-.066/.935**
	(.024/023)	(.024/.023)
Northeast	.068/1.07**	.068/1.07**
	(.025/.026)	(.025/.026)
Carnegie		
Doctorate	-.046/.954	-.046/.954
	(.025/.024)	(.025/.024)
Comprehensive	-.118/.888***	-.118/.888***
	(.020/.018)	(.020/.018)
Liberal	-.139/.870***	-.139/.870***
	(.025/.021)	(.025/.021)
Medical	.023/.934	.024/.934
	(.064/066)	(.064/.066
Buslaweng	.012/1.01	(.012/1.01
	(.068/.069)	(.068/.069)
Other	-.284/.752***	-.284/.752***
	(.049/.036)	(.049/.036)
Constant	10.24/27.04	10.20/27.09
N	45,983	45,983

Source: National Survey of College Graduates (2003, 2010) Key: coefficients/exponentiated form (standard errors)

+ p<.1, * p<.05, ** p<.01, *** p<.001

Discussion and Conclusion

General Summary of Major Findings

Due to the minimal amount of sociological literature on Native Americans as well as a lack of research on the labor market outcomes of American Indians who have earned a college degree, this research analyzed the racial differences of obtaining a match between degree and job field as well as the effects of matches on earnings. The results demonstrated significant differences in having a match on income as well as notable racial differences on income within the same match. At a bachelor's degree level, Native Americans are more likely to achieve a match although there is no significant racial difference and the effects of having a match are significantly positive for income except for the exception of the match field of "education". The interaction effects showed that Native Americans and Whites are not getting the same return on education, as although the results were not statistically significant, Whites make more than American Indians in the match field of "other", yet in the match field of "engineering, American Indians make statistically significantly more than their White counterparts, indicating a higher labor market return for that match field than Whites.

Implications and Possible Explanations

The data confirms other research that shows that across the board, Whites have higher earnings than American Indians. Yet, when examining the return on specific types of education and jobs, the data at first glance presents a picture of perhaps a move towards lowering income inequality between Native Americans and Whites. The first regression demonstrates that having a match also tells us that there is no significant racial difference between American Indians and

Whites on achieving a match, yet that having a match does have significant effects on income depending on what field the match is in. Although the data shows that baseline, regardless of match, Whites make significantly more than Natives, a notable result in this analysis is that American Indians are making statistically significantly amount more in the match field of engineering compared to their White counterparts. A surface level scan of this could potentially indicate a reversed race effect to what the literature normally suggests of American Indians getting paid less. But, when considered in the broader picture the finding becomes much more complex.

The first point to consider is that many people do not even achieve a match between their degree and job field at a bachelor's degree level. Table 1 showed that only 37 percent of the sample had a match. With the rates of college attending American Indians being considerably lower than Whites, it may be that at a bachelor's degree level, Whites are less concerned with achieving a match after college than Natives. This could be due to potential plans to move continue on to graduate school or higher socioeconomic status's that allow them to have more flexibility with their degree and job choice. Research suggests that low income students like American Indian students, may be under more pressure to find jobs immediately after college as they cannot turn to their families to help pay of loans or rent, whereas students with more affluent parents made sure that they successfully moved into a solid career path, regardless of academic or financial choices (Armstrong and Hamilton 2013, Witteveen and Atewell 2017).

Research also shows that even larger than the gap in achievement of bachelor's degrees between Native Americans and Whites, is the achievement of graduate degrees. In 2012, .6 percent of engineering bachelor's degrees were awarded to American Indians or Alaska Natives while 60.2 percent were awarded to Whites (National Science Foundation 2012). Only .4 of

master's degrees in engineering were earned by Native Americans in 2012, while 45.4 percent were awarded to Whites, and at a doctoral level, only .2 percent of Doctoral engineering degrees were awarded to Natives in 2012 compared to the 45 percent provided to Whites (National Science Foundation 2012). The number of American Indians earning graduate degrees in engineering is sparse compared to that of Whites. One possible explanation for Native American engineers making significantly more could be that at a bachelor's degree level, they choose engineering fields that will allow them to make a meaningful income with only a four year degree, whereas the White engineers who make significantly more are found to have graduate degrees. Suggesting that if adding in graduate degrees, the race finding in this analysis would switch.

The significance of Native American engineering income as well as the lack of significance for other matches effects of incomes may also be explained by the dispersion of types of jobs in these different match fields. Civil engineers make significantly less than aerospace engineers (US Department of Labor 2015) and the field of "business" in this analysis includes everything from administrative business, to insurance sales and real estate. The range of types of jobs within these fields is vast and has stark economic differences. The differing distribution of types of jobs in the differing match fields may be potentially masking economic inequality felt by American Indians.

Limitations and Future Research

Although the National Survey of College Graduates is a desirable data set to work with for analyses of education and employment, it does not come without limitations. Using this data set meant that my racial group of single race American Indians was a self-identified sample and did not include any information of enrolled tribal membership of the participants. The sample

also does not include information about if participants live on a reservation or off, and future research must include more specific geographic variables such as an urban or rural variable for the sample.

This analysis also did not include a focus on gender, and although women have surpassed men in college graduation rate, they still have lower numbers in the workforce and receive lower pay for the same jobs compared to men (U.S. Department of Education 2016). Future research should include models that look not only at racial differences of return on education between Natives and Whites, but include gender specific models as well. In addition to gender, another model should include both multi-race and single race American Indians, as although mixed race American Indians seem to have slightly better outcomes in the labor force (Wise et al 2017), there are still significant differences between Whites and mixed race Natives.

Future research should also expand this type of analysis to include graduate degrees, both masters and doctoral levels to more fully understand the returns on education between Native Americans and Whites. A time variable that could account for how long participants had been out of college and in the workforce, would also be useful for this analysis to account for the effects of time after graduation and in the labor force on earnings.

Conclusion

In conclusion, the first hypothesis tested was confirmed as American Indians are working more than Whites in the same field of study as their bachelor's degree, but these findings were not significant. I was unable to reject the null hypothesis of the second part of the first hypothesis, as Native Americans were not working more in social science fields than hard math and science fields for this analysis. And, the third hypothesis was supported as the effects of

match on income did vary depending on what field the match was in, with fields like engineering making statistically significantly more money than those without a match and those with a match in education making less than their unmatched counterparts. An unexpected result was that American Indians with a match in engineering make statistically significantly more money Whites with an engineering match, and although Whites make more than Natives in the "other" match category, it was not significant.

Prior research has suggested that closing the educational gap between Native Americans and Whites could be one way to help close the socioeconomic disparities between the two groups. This research shows that at a base level regardless of match, Whites are still making significantly more than American Indians even when controlling for education level, age, region, and type of institution attended. But, this analysis also demonstrates that when American Indians earn a bachelor's degree and then gain employment in that same field, that it may possibly contribute to closing the income gap. Yet, it may also just be the result of the widening gap between Native Americans and Whites in graduate school rates as well a disguise of social and cultural capital accumulation for Whites that American Indians do not have.

Considering the sizable amount of discussion regarding Native American poverty in the media as well as the blatant numbers to back it up (Kristoff 2012; Peralta 2014; Reagan 2014), one would expect there to be more sociological literature addressing the issue. What is needed is a plethora of research to facilitate the slow process of policy and social change needed for Native American people. This research indicates the complex processes that are college education, job obtainment, and the effects of the two on income. There are clear undercover processes at play that this research was not able tease out and additional future is clearly needed to better

understand the sociological circumstances of American Indians who achieve bachelor's degree and obtain a match and the effects of this comparatively. This analysis is important to further the conversation on Native American inequities as well as to further the understanding of educational choices and the labor market returns those choices generate for them.

References

Arcidiacono, Peter. 2004. Ability sorting and the returns to college major. *Journal of Econometrics* 121 (1-2): 343-75.

Backes, B., Holzer, H. J., & Velez, E. D. (2015). Is it worth it? Postsecondary education and labor market outcomes for the disadvantaged. *IZA Journal of Labor Policy*, *4*(1), 1-30.

Bambra, C. (2011) Work, Worklessness and the Political Economy of Health. Oxford University Press, Oxford

Barber, L. A. (1995). U.S. women in science and engineering, 1960-1990: Progress toward equity? *Journal of Higher Education, 66*(2), 213-234.

Bedard, Kelly, and Douglas Herman. 2008. Who goes on to graduate/professional school? The importance of economic fluctuations, undergraduate field, and ability. *Economics of Education Review 27* (2): 197-210.

Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. *The American Economic Review*,*94*(4), 991-1013.

Crenshaw, K., Gotanda, N., Peller, G., & Thomas, K. (Eds.). (1995). Critical race theory: The key writings that formed the movement. New York : New Press.

Collins, Patricia Hill and Sirma Bilge. 2016. Intersectionality. Malden, MA: Policy Press.

Crenshaw, Kimberle. 1991. "Mapping the Margins: Intersectionality, Identity Politics, and Violence Against Women of Color." *Stanford Law Review, 43*(6):1241-1299.

Debo, Angie. 1973. *And Still the Waters Run: The Betrayal of the Five Civilized Tribes*. Princeton, NJ: Princeton University Press.

Deyhle, D., & Swisher, K. (1997). Research in American Indian and Alaska Native education: From assimilation to self-determination. *Review of research in education, 22*, 113-194.

Devoe, J.F and Darlinc-Churchhill. K.E. (2008). Status and Trends in the Education of American Indians and Alaska Natives. Washington, DC: U.S. Department of Education National Center for Education Statistics. (NCES 2008-084)

Dickson, L. (2010). Race and Gender Differences in College Major Choice. *The Annals Of The American Academy Of Political And Social Science*, *627*(1), 108-124.

Dooley, David. (2003) Unemployment, underemployment, and mental health: conceptualizing employment status as a continuum *Am. J. Community Psychol*., 1–2 ,pp. 9–20

Edmo, S.-a. (2016). *American Indian identity : Citizenship, membership, and blood* (Native America: yesterday and today; Native America (Praeger Publishers)). Santa Barbara, California: Praeger, an imprint of ABC-CLIO, LLC.

Evans-Campbell, T. (2008). Historical Trauma in American Indian/Native Alaska Communities. *Journal Of Interpersonal Violence*, *23*(3), 316-338.

Fine-Dare, K. S. (2002). *Grave injustice: the American Indian repatriation movement and NAGPRA*. U of Nebraska Press.

Garroutte, E. M. 2001. "The Racial Formation of American Indians: Negotiating legitimate identities within tribal and federal law," *The American Indian Quarterly*, *25*(2), 224-239.

Goyette, K. A., & Mullen, A. L. (2006). Who Studies the Arts and Sciences? Social Background and the Choice and Consequences of Undergraduate Field of Study. *Journal Of Higher Education*, *77*(3), 497-538.

Haskins, Ron et al. 2009. Promoting Economic Mobility by Increasing Postsecondary Education. The Pew Trusts, Washington DC

Huyser, K. R., Sakamoto, A., & Takei, I. (2010). The Persistence of Racial Disadvantage: The Socioeconomic Attainments of Single-Race and Multi-Race Native Americans. *Population Research And Policy Review : In Cooperation With The Southern Demographic Association (SDA)*, *29*(4)

Huyser, K. R., Takei, I., & Sakamoto, A. (2014). Demographic factors associated with poverty among American Indians and Alaska Natives. *Race and Social Problems*, *6*(2), 120-134.

Isaacs, Julia. 2007. Economic Mobility of Families across Generations. Policy Brief, Center on Children and Families, the Brookings Institution. J

Jacobs, Jerry A. 1995. "Gender and Academic Specialties: Trends among Recipients of College Degrees in the 1980s." *Sociology of Education 68*:81–89.

James, K., Willie W., Lovato C., and Byers, S. (1994). Barriers to Workplace Advancement Experience by Native Americans. Washington, DC: Glass Ceiling Commission, U.S. Department of Labor

Jencks C. 1972. Inequality, a Reassessment of the Effect of Family and Schooling in America. New York: Basic Books

Jin R., Shah, C., Svoboda, T. (1995) The impact of unemployment on health: a review of the evidence *Can. Med. Assoc. J., 153 (5)* p. 529

Kao, G., & Thompson, J. (2003). Racial and Ethnic Stratification in Educational Achievement and Attainment. *Annual Review of Sociology, 29*, 417-442.

Mare RD. 1995. Changes in educational attainment and social enrollment. In *State of the Union: America in the 1990'*2

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: correlates of financial success as a central life aspiration. *Journal of personality and social psychology*, *65*(2), 410.

Keene, S. E. (2008). Higher Education and the "American Dream": Why the Status Quo Won't Get Us There. *Change: The Magazine Of Higher Learning, 40*(6), 65-68.

Kristoff, Nicholas D. 2012. "Poverty's Poster Child." *New York Times* http://www.nytimes.com/2012/05/10/opinion/kristof-povertys-poster-child.html. Retrieved on November 3rd, 2016

Matsuda, M., Lawrence, C., Delgado, R., & Crenshaw, K. (Eds.). (1993). Words that wound : Critical race theory, assaultive speech, and the First Amendment. Boulder, CO : Westview Press.

Monks, J. (2000). The returns to individual and college characteristics: Evidence from the National Longitudinal Survey of Youth. *Economics of Education Review, 19*(3), 279-289.

Mullen, A. L. (2001). Gender, race and the college science track: An analysis of field concentrations and institutional selectivity. *Journal of Women and Minorities in Science and Engineering, 7,* 287-302.

Nagel, J. (1996). *American Indian ethnic renewal : Red power and the resurgence of identity and culture.* New York: Oxford University Press. http://site.ebrary.com.libproxy.unm.edu/id/10278587

National Science Foundation, National Center for Science and Engineering Statistics; data from Department of Education, National Center for Education Statistics: Integrated Postsecondary Education Data System Completions Survey 2012

O'Brian S. (1991) "Tribes and Indians: With Whom Does the United States Maintain a Relationship?" *Notre Dame Law Review 66*: 1481.

Omi, Michael and Howard Winant. 2015. Racial Formation in the U.S. Third Edition. New York: Routledge

Patterson-Silver Wolf, D. A., VanZile-Tamsen, C., Black, J., Billiot, S. M., & Tovar, M. (2013). A Comparison of Self-reported Physical Health and Health Conditions of American

Indian/Alaskan Natives to Other College Students. *Journal Of Community Health : The Publication For Health Promotion And Disease Prevention*, *38*(6)

Peralta, K. (2014). Native Americans Left Behind in the Economic Recovery. *U.S. News* http://www.usnews.com/news/articles/2014/11/27/native-americans-left-behind-in-the-economic-recovery. Retrieved November 3rd, 2016.

Petersen, T. (1989). The earnings function in sociological studies of earnings inequality. Research in
Social Stratification and Mobility, 8, 221–250.

Porter, S. R., & Umbach, P. D. (2006). College major choice: An analysis of person–environment fit. *Research in Higher Education*, *47*(4), 429-449.

Regan, S. (2014). 5 Ways The Government Keeps Native Americans In Poverty. *Forbes* http://www.forbes.com/sites/realspin/2014/03/13/5-ways-the-government-keeps-native-americans-in-poverty/#1977d9166cc6. Retrieved November 3rd, 2016.

Robst, J. (2007). Education and job match: The relatedness of college major and work. *Economics Of Education Review*, *26*(4), 397-407.

Roksa, J. (2005). Double Disadvantage or Blessing in Disguise? Understanding the Relationship Between College Major and Employment Sector. *Sociology Of Education*, *78*(3), 207-232.

Roscigno, Vincent J., Julia Miller Cantzler, Salvatore J. Restifo, and Joshua Guetzkow. 2015. "Legitimation, State Repression, and the Sioux Massacre at Wounded Knee." *Mobilization* **20**: 17–40.

Simpson, J. (2001). Segregated by Subject: Racial Differences in the Factors Influencing Academic Major between European Americans, Asian Americans, and African, Hispanic, and Native Americans. *The Journal of Higher Education*, *72*(1), 63-100.

Smith, A. (2007). Soul wound: The legacy of Native American schools. *Amnesty International Magazine*.

Snipp, C. M. (1989). *American Indians: The first of this land*. New York, NY: Russell Sage Foundation.

Snipp, C. M. (1992). Sociological perspectives on American Indians. *Annual Review of Sociology*, *18*, 351–371.

Stannard, D.E.(1992). American holocaust: The conquest of the New World. New York: Oxford University Press

Stetser, M. and Stillwell, R. (2014) U.S. DEP'T OF EDUC., NAT'L CTR. FOR EDUC. STAT., PUBLIC HIGH SCHOOL FOUR-YEAR ON-TIME GRADUATION RATES AND EVENT DROPOUT RATES: SCHOOL YEARS 2010-11 AND 2011-12 10 (available at http://nces.ed.gov/pubs2014/2014391.pdf

Thomas, G. E. (1985). College major and career inequality: Implications for Black students. *The Journal of Negro Education, 54*(4), 537-547.

Tierney, W. G. (1992). *Official Encouragement, Institutional Discouragement: Minorities in Academe--The Native American Experience. Interpretive Perspectives on Education and Policy [Series]*. Ablex Publishing Corp

U.S. Department of Education, National Center for Education Statistics. (2012). *The Condition of Education 2012 (NCES 2012-045), Table A-47-2.*

U.S. Department of Education, National Center for Education Statistics. (2016). *Status and Trends in the Education of Racial and Ethnic Groups 2016 (NCES 2016-007),* Degrees Awarded

United States Census Bureau, *Selected Population Profile in the United States: 2015 American Community Survey 1-year Estimates*, (U.S. Department of Labor, 2015)

United States Census Bureaus, U.S. Department of Commerce, *2010-2012 Amer. Community Survey 3-year estimates,* (Nov. 14, 2013) http://www.census.gov/acs/www/data_documentation/2012_release

Walters, K. L., Mohammed, S. A., Evans-Campbell, T., Beltrán, R. E., Chae, D. H., & Duran, B. (2011). Bodies don't just tell stories, they tell histories. *Du Bois Review: Social Science Research on Race*, *8*(01), 179-189.

Wexler, L. (2014). Looking across three generations of Alaska Natives to explore how culture fosters indigenous resilience. *Transcultural psychiatry*, *51*(1), 73-92.

Appendix A: NSCG Survey Questions for Race, Job Field, and Degree Field

RACE

What is your race?
Mark one or more.
1 American Indian or Alaska Native –
2 Native Hawaiian or other Pacific Islander
3 Asian
4 Black or African American
5 White

JOB FIELD

A18.Using the JOB CATEGORY list on pages 15-16, choose the code that best describes the principal job you held during the week of October 1, 2010.

FIELD OF STUDY

Using the FIELD OF STUDY list on
D8. pages 17-18, choose the code that best describes the major field of study and second major (if any) for this degree

(National Survey of College Graduates 2003, 2010)

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JOB CATEGORY

If you cannot find the code that best describes your job, use the "OTHER" code under the most appropriate broad category. If none of the codes fit your job, use Code 500.

• **Biological/Life Scientists**	021 Agricultural and food scientists 022 Biochemists and biophysicists 023 Biological scientists (e.g., botanists, ecologists, zoologists) 024 Forestry and conservation scientists	025 Medical scientists (excluding practitioners) 026 Technologists and technicians in the biological/life sciences 027 OTHER biological and life scientists
• **Clerical/Administrative Support Occupations**	031 Accounting clerks and bookkeepers 032 Secretaries, receptionists, typists	033 OTHER administrative (e.g., record clerks, telephone operators)
• **Clergy/Other Religious Workers**	040 Clergy and other religious workers	
• **Computer Occupations** *Also consider 173 Operations research analysts, including modeling*	*** Computer engineers – *also consider 087 Computer engineers – hardware and 088 Computer engineers – software* 051 Computer & information scientists, research 052 Computer network architect 053 Computer programmers (business, scientific, process control) 054 Computer support specialists 055 Computer system analysts	056 Database administrators 057 Information security analysts 058 Network and computer systems administrators 059 Software developers – applications and systems software 060 Web developers 061 OTHER computer and information science occupations
• **Consultants**	*Find the category on page 15 or 16 that comes closest to your field of consulting and select the code*	
• **Counselors**	070 Counselors (Educational, vocational, mental health and substance abuse) *Also consider 236 Psychologists, including clinical*	
• **Engineers/Architects** *Also consider 100 to 104 under Engineering Technologists, Technicians and Surveyors*	081 Architects 082 Aeronautical/aerospace/astronautical engineers 083 Agricultural engineers 084 Bioengineers or biomedical engineers 085 Chemical engineers 086 Civil, including architectural/sanitary engineers 087 Computer engineers – hardware 088 Computer engineers – software 089 Electrical and electronics engineers	090 Environmental engineers 091 Industrial engineers 092 Marine engineers and naval architects 093 Materials and metallurgical engineers 094 Mechanical engineers 095 Mining and geological engineers 096 Nuclear engineers 097 Petroleum engineers 098 Sales engineers 099 OTHER engineers
• **Engineering Technologists/ Technicians/Surveyors**	100 Electrical, electronic, industrial, and mechanical technicians 101 Drafting occupations, including computer drafting 102 Surveying and mapping technicians	103 OTHER engineering technologists and technicians 104 Surveyors, cartographers, photogrammetrists
• **Farmers/Foresters/Fishermen**	110 Farmers, foresters and fishermen	
• **Health Occupations**	111 Diagnosing/treating practitioners (e.g., dentists, optometrists, physicians, psychiatrists, podiatrists, surgeons, veterinarians) 112 Registered nurses, pharmacists, dieticians, therapists, physician assistants, nurse practitioners	236 Psychologists, including clinical – *Also consider 070 Counselors* 113 Health technologists and technicians (e.g., dental hygienists, health record technologists/technicians, licensed practical nurses, medical or laboratory technicians, radiological technicians) 114 OTHER health occupations
• **Lawyers/Judges**	120 Lawyers, judges	
• **Librarians/Archivists/Curators**	130 Librarians, archivists, curators	
• **Managers and Supervisors, First-Line**	*Find the category on page 15 or 16 that best describes the occupation of the people you manage and select the code*	
• **Managers, Top-level Executives/Administrators**	141 Top-level managers, executives, administrators (e.g., CEO/COO/CFO, president, district manager, general manager, legislator, chancellor, provost)	
• **Managers, Other** *People who manage other managers*	142 Computer and information systems managers 143 Engineering managers 144 Medical and health services managers 145 Natural sciences managers 146 Education administrators (e.g., registrar, dean, principal) 147 OTHER mid-level managers	

JOB CATEGORY (Continued)

• **Management-Related Occupations** *Also consider 141 to 147 under Managers, Other*	151	Accountants, auditors, and other financial specialists	153	OTHER management related occupations
	152	Personnel, training, and labor relations specialists		
• **Mathematical Scientists**	171	Actuaries	174	Statisticians
	172	Mathematicians	175	Technologists and technicians in the mathematical sciences
	173	Operations research analysts, including modeling	176	OTHER mathematical scientists
• **Physical Scientists**	191	Astronomers	195	Oceanographers
	192	Atmospheric and space scientists	196	Physicists, except biophysicists
	022	Biochemists and biophysicists	197	Technologists and technicians in the physical sciences
	193	Chemists, except biochemists		
	194	Geologists, including earth scientists	198	OTHER physical scientists
• **Research Associates/ Assistants**	*Find the category on page 15 or 16 that comes closest to your research field and select the code*			
• **Sales/Marketing Occupations**	200	Insurance, securities, real estate, and business services	202	Sales occupations – retail (e.g., furnishings, clothing, motor vehicles, cosmetics)
	201	Sales occupations – commodities except retail (e.g., industrial machinery/equipment/ supplies, medical and dental equip./supplies)	203	OTHER marketing and sales occupations
• **Service Occupations, Except Health** *Also consider 111 to 114 under Health Occupations*	221	Food preparation and service (e.g., cooks, waitresses, bartenders)	223	OTHER service occupations, except health (e.g., probation officers, human services workers)
	222	Protective services (e.g., fire fighters, police, guards, wardens, park rangers)		
• **Social Scientists**	231	Anthropologists	236	Psychologists, including clinical – *Also consider 070 Counselors*
	232	Economists		
	233	Historians	237	Sociologists
	235	Political scientists	238	OTHER social scientists
• **Social Workers**	240	Social workers		
• **Teachers—Precollege**	251	Pre-kindergarten and kindergarten	255	Secondary – other subjects
	252	Elementary	256	Special education – primary and secondary
	253	Secondary – computer, math, or sciences	257	OTHER precollegiate area
	254	Secondary – social sciences		
• **Teachers/Professors—Postsecondary**	271	Agriculture	283	History
	272	Art, Drama, and Music	286	Mathematics and Statistics
	273	Biological Sciences	287	Health and Related Sciences
	274	Business, Commerce, and Marketing	288	Physical Education
	275	Chemistry	289	Physics
	276	Computer Science	290	Political Science
	277	Earth, Environmental, and Marine Science	291	Psychology
	278	Economics	293	Sociology
	279	Education	297	OTHER Natural Sciences
	280	Engineering	298	OTHER Social Sciences
	281	English	299	OTHER Postsecondary fields
	282	Foreign Language		
• **Teachers—Other**	300	OTHER teachers and instructors (e.g., private tutors, dance or flying instructors, martial arts instructors)		
• **Writers/Editors/Public Relations Specialists/Artists/ Entertainers/Broadcasters**	010	Writers, editors, public relations specialists, artists, entertainers, broadcasters		
• **Other Professions**	401	Construction and extraction occupations	403	Precision/production occupations (e.g., metal workers, woodworkers, butchers, bakers, assemblers, printing occupations, tailors, shoemakers, photographic process)
	402	Installation, maintenance, and repair occupations		
			405	Transportation and material moving occupations
• **OTHER OCCUPATIONS**	500	**OTHER OCCUPATIONS (Not Listed)**		

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FIELD OF STUDY

If you cannot find the code that best describes your field of study, use the "OTHER" code under the most appropriate broad category. If none of the codes fit your field of study, use Code 995.

• **Agricultural Business and Production**	601 Agricultural economics – *Also consider 655 Business and managerial economics and 923 Economics*	602 OTHER agricultural business and production
• **Agricultural Sciences**	605 Animal sciences 606 Food sciences and technology – *Also consider 638 Nutritional sciences*	607 Plant sciences – *Also consider 633 Botany* 608 OTHER agricultural sciences
• **Architectural/Environmental Design**	610 Architectural/environmental design *Also consider 723 Architectural engineering*	
• **Biological/Life Sciences**	631 Biochemistry and biophysics 632 Biology, general 633 Botany – *Also consider 607 Plant sciences* 634 Cell and molecular biology 635 Ecology 636 Genetics, animal and plant 637 Microbiological sciences and immunology 638 Nutritional sciences – *Also consider 606 Food sciences and technology*	639 Pharmacology, human and animal – *Also consider 788 Pharmacy* 640 Physiology and pathology, human and animal 641 Zoology, general 642 OTHER biological sciences
• **Business Management/ Administrative Services**	651 Accounting 652 Actuarial science – *Also consider 841 Applied mathematics and 843 Operations research* 653 Business administration and management 654 Business, general 655 Business and managerial economics – *Also consider 601 Agricultural economics and 923 Economics*	656 Business marketing/marketing management 657 Financial management 658 Marketing research 843 Operations research 659 OTHER business management/ administrative services
• **Communication**	661 Communication, general 662 Journalism	663 OTHER communication
• **Computer and Information Sciences**	671 Computer and information sciences, general 672 Computer programming 673 Computer science – *Also consider 727 Computer and systems engineering*	674 Computer systems analysis 675 Data processing 676 Information services and systems 677 OTHER computer and information sciences
• **Conservation and Natural Resources**	680 Environmental science or studies 681 Forestry sciences	682 OTHER conservation and natural resources
• **Criminal Justice/Protective Services**	690 Criminal justice/protective services – *Also consider 922 Criminology*	
• **Education**	701 Education administration 702 Computer teacher education 703 Counselor education and guidance 704 Educational psychology 705 Elementary teacher education 706 Mathematics teacher education 707 Physical education and coaching	708 Pre-school/kindergarten/early childhood teacher education 709 Science teacher education 710 Secondary teacher education 711 Special education 712 Social science teacher education 713 OTHER education
• **Engineering** *Also consider 751 to 754 under Engineering-Related Technologies*	721 Aerospace, aeronautical, astronautical/ space engineering 722 Agricultural engineering 723 Architectural engineering 724 Bioengineering and biomedical engineering 725 Chemical engineering 726 Civil engineering 727 Computer and systems engineering – *Also consider 673 Computer science* 728 Electrical, electronics and communications engineering 729 Engineering sciences, mechanics and physics 730 Environmental engineering 731 Engineering, general	732 Geophysical and geological engineering 733 Industrial and manufacturing engineering – *Also consider 752 Industrial production technologies* 734 Materials engineering, including ceramic and textile sciences 735 Mechanical engineering 736 Metallurgical engineering 737 Mining and minerals engineering 738 Naval architecture and marine engineering 739 Nuclear engineering 740 Petroleum engineering 741 OTHER engineering

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FIELD OF STUDY (Continued)

• **Engineering-Related Technologies** *Also consider 721 to 741 under Engineering*	751	Electrical and electronics technologies	753	Mechanical engineering-related technologies
	752	Industrial production technologies – *Also consider 733 Industrial and manufacturing engineering*	754	OTHER engineering-related technologies
• **Languages, Linguistics, Literature/Letters**	760	English language, literature and letters	772	OTHER foreign languages and literature
	771	Linguistics		
• **Health and Related Sciences**	781	Audiology and speech pathology	787	Nursing (4 years or longer program)
	782	Health services administration	788	Pharmacy – *Also consider 639 Pharmacology, human and animal*
	783	Health/medical assistants		
	784	Health/medical technologies	789	Physical therapy and other rehabilitation/ therapeutic services
	785	Medical preparatory programs (e.g., pre-dentistry, pre-medical, pre-veterinary)	790	Public health (including environmental health and epidemiology)
	786	Medicine (e.g., dentistry, optometry, osteopathic, podiatry, veterinary)	791	OTHER health/medical sciences
• **Home Economics**	800	Home economics		
• **Law/Prelaw/Legal Studies**	810	Law/prelaw/legal studies		
• **Liberal Arts/General Studies**	820	Liberal arts/general studies		
• **Library Science**	830	Library science		
• **Mathematics and Statistics**	841	Applied mathematics – *Also consider 843 Operations research and 652 Actuarial science*	843	Operations research – *Also consider 841 Applied mathematics and 652 Actuarial science*
	842	Mathematics, general	844	Statistics
			845	OTHER mathematics
• **Parks, Recreation, Leisure, and Fitness Studies**	850	Parks, recreation, leisure, and fitness studies		
• **Philosophy, Religion, Theology**	861	Philosophy of science	862	OTHER philosophy, religion, theology
• **Physical Sciences**	871	Astronomy and astrophysics	875	Geology
	872	Atmospheric sciences and meteorology	876	Geological sciences, other
	631	Biochemistry and biophysics	877	Oceanography
	873	Chemistry, except biochemistry	878	Physics, except biophysics
	874	Earth sciences	879	OTHER physical sciences
• **Psychology**	891	Clinical psychology	894	General psychology
	892	Counseling psychology	895	Industrial/Organizational psychology
	704	Educational psychology	896	Social psychology
	893	Experimental psychology	897	OTHER psychology
• **Public Affairs**	901	Public administration	903	OTHER public affairs
	902	Public policy studies		
• **Social Work**	910	Social work		
• **Social Sciences and History**	921	Anthropology and archaeology	925	History of science
	620	Area and ethnic studies	926	History, other
	922	Criminology – *Also consider 690 Criminal Justice/Protective Services*	927	International relations
			928	Political science and government
	923	Economics – *Also consider 601 Agricultural economics and 655 Business and managerial economics*	910	Social work
			929	Sociology
			930	OTHER social sciences
	924	Geography		
• **Visual and Performing Arts**	941	Dramatic arts	943	Music, all fields
	942	Fine arts, all fields	944	OTHER visual and performing arts
• **OTHER FIELDS**	995	**OTHER FIELDS (Not Listed)**		