

APPENDIX E.

Business Ownership in the Construction and Engineering Industries

About 10 percent of all Oklahoma workers were self-employed in 2008. The engineering industry had a comparable rate of business ownership at approximately 11 percent and the construction industry had a substantially higher rate at about 28 percent. Focusing on these industries, BBC examined business ownership for different race, ethnicity and gender groups in Oklahoma and the nation. This appendix includes both summary statistics and regression models to analyze determinants of business ownership in Oklahoma. “Self-employment” and “business ownership” are used as interchangeable terms in the following discussion.

Business Ownership Rates

Many studies have explored differences at the national level between minority and non-minority rates of business ownership. Although self-employment rates have increased for minorities and women over the years, a number of studies indicate that gender, ethnicity and race continue to affect opportunities for entrepreneurship.¹ The extent to which such individual characteristics may limit ownership opportunities differs across industries and from state to state.

Disparities in rates of business ownership have been considered by state and federal courts when reviewing state DOT implementation of the Federal DBE Program. Any disparities in business ownership rates may be especially important when considering DBE participation goals. For example, research developed for the Illinois Department of Transportation (IDOT) considered disparities in self-employment rates as a factor in adjusting the base figure for the IDOT annual DBE goal.²

BBC used Public Use Micro-sample (PUMS) data from the 1980 and 2000 U.S. Census of Population and the 2008 American Community Survey (ACS) to study business ownership rates in the construction and engineering industries. This appendix presents industry-specific analyses for Oklahoma and the United States.

¹ See, for example, Waldinger, Roger and Howard E. Aldrich. 1990. *Ethnicity and Entrepreneurship*. Annual Review of Sociology. 111-135.; Fairlie, Robert W. and Bruce D. Meyer. 1996. *Ethnic and Racial Self-Employment Differences and Possible Explanations*. The Journal of Human Resources, Volume 31, Issue 4, 757-793.; Fairlie, Robert W. and Alicia M. Robb. 2006. *Why are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families Inheritances, and Business Human Capital*. Forthcoming Journal of Labor Economics.; and Fairlie, Robert W. and Alicia M. Robb. 2006. *Race, Families and Business Success: A Comparison of African-American-, Asian-, and White-Owned Businesses*. Russell Sage Foundation.

² National Economic Research Associates, Inc. 2004. *Disadvantaged Business Enterprise Availability Study*. Prepared for the Illinois Department of Transportation.

Construction industry. Compared to other industries, construction typically has higher rates of business ownership among people working in the industry. In 2008, 10 percent of workers across all Oklahoma industries were self-employed — the business ownership rate in the Oklahoma construction industry was 28 percent. Figure E-1 shows the percentage of workers in the construction industry by race/ethnicity and gender who were self-employed in 1980, 2000 and 2008. It also shows corresponding sample sizes for each percentage shown in the figure.

Figure E-1.
Percentage of workers in the Oklahoma and U.S. construction industry who are self-employed, 1980, 2000 and 2008

Oklahoma	1980	2000	2008	Sample size		
				1980	2000	2008
Race/ethnicity						
African American	10.5 % **	14.0 % **	26.3 %	191	158	34
Hispanic American	5.1 **	8.6 **	15.4 **	79	405	121
Native American	15.9 **	24.4	31.9	327	834	166
Non-Hispanic white	25.5	30.8	30.3	4,473	4,649	960
Gender						
Female	13.6 % **	24.0 %	26.8 %	389	541	111
Male	24.8	28.0	28.0	4,690	5,536	1,176
All individuals	23.9 %	27.6 %	27.9 %	5,079	6,077	1,287
United States						
Race/ethnicity						
African American	9.0 % **	15.2 % **	18.5 % **	24,357	26,736	5,177
Hispanic American	10.6 **	12.2 **	15.3 **	19,590	66,495	19,207
Native American	10.6 **	19.3 **	21.6 **	2,571	7,633	1,515
Non-Hispanic white	19.4	25.4	27.1	281,094	371,025	78,977
Gender						
Female	9.8 % **	16.8 % **	17.6 % **	26,096	46,778	10,820
Male	18.7	23.3	24.2	304,368	433,502	96,217
All individuals	18.0 %	22.6 %	23.6 %	330,464	480,280	107,037

Note: ** Denotes that the difference in proportions between the minority and non-Hispanic white groups (or female and male groups) for the given Census/ACS year is statistically significant at the 95% confidence level.

Source: BBC Research & Consulting from 1980 and 2000 U.S. Census 5% sample and 2008 ACS Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

The following analysis focuses on business ownership rates in the Oklahoma construction industry in 2000 and 2008.

Business ownership rates in 2000. In 2000, approximately 31 percent of non-Hispanic whites working in the Oklahoma construction industry were self-employed (in incorporated or unincorporated businesses). Rates of business ownership for African Americans, Hispanic Americans, and Native Americans working in the construction industry in Oklahoma were lower than non-Hispanic whites.

- In 2000, about 14 percent of African Americans were self-employed, less than one-half the rate for non-Hispanic whites (a statistically significant difference).
- Roughly 9 percent of Hispanic Americans working in the construction industry in Oklahoma were self-employed, less than one-third the rate for non-Hispanic whites (also statistically significant).
- Native Americans owned construction industry businesses at a lower rate (24%) compared to non-Hispanic whites, but this difference is not statistically significant.

There were too few Asian-Pacific Americans and Subcontinent Asian Americans in the 2000 PUMS data to analyze business ownership rates in the Oklahoma construction industry.

Women owned businesses in Oklahoma at a rate of 24 percent compared to 28 percent for men. This difference is not statistically significant.

Similar differences in business ownership rates were found for the nation in 2000.

Changes in business ownership rates in Oklahoma since 2000. The 2008 ACS shows increases in business ownership rates since 2000 for most race/ethnicity groups in the Oklahoma construction industry; the rate of business ownership for non-Hispanic whites remained relatively stable.

- In 2008, the rate of business ownership among Native American construction workers in Oklahoma was similar to that for non-Hispanic white workers.
- The business ownership rate for women in the construction industry was nearly 27 percent in 2008, close to the rate observed for males.
- However, the self-employment rate for Hispanic Americans in the Oklahoma construction industry (15%) was still about one-half the rate for non-Hispanic whites (a statistically significant difference).

There are considerably fewer workers for each race/ethnic/gender group in the 2008 ACS dataset for Oklahoma compared to 2000 Census data, which limits the ability to accurately compare business ownership rates in 2008. For example, because there were only 34 African American construction workers in Oklahoma in the 2008 ACS data, one must be cautious in analyzing business ownership rates for this group for that year.

Engineering industry. Figure E-2 reports self-employment rates for people working in the engineering industry in Oklahoma and the nation. Because of small sample sizes for workers in the Oklahoma engineering industry, BBC combined minority groups when analyzing business ownership rates. Small sample sizes in the 2008 ACS precluded BBC from reporting 2008 results for Oklahoma.

Business ownership rates in 2000. In 2000, about 16 percent of non-Hispanic whites working in the Oklahoma engineering industry owned their businesses. About 4 percent of minorities working in the Oklahoma engineering industry in 2000 were self-employed (a statistically significant difference compared to non-Hispanic whites). The differences between minority and non-minority business ownership rates seen in Oklahoma in 2000 are larger than found for the nation as a whole.

During the same year, approximately 8 percent of females owned their own businesses compared to 16 percent of males in the Oklahoma engineering industry (not a statistically significant difference).

Figure E-2.
Percentage of workers in the engineering industry who are self-employed, Oklahoma and the U.S., 1980, 2000 and 2008

Oklahoma	1980	2000	2008	Sample sizes		
				1980	2000	2008
Race/ethnicity						
Minority	3.8 % **	3.9 % **	NA	26	67	NA
Non-Hispanic white	14.6	16.1	NA	288	351	NA
Gender						
Female	2.9 % **	8.4 %	NA	68	87	NA
Male	16.7	15.5	NA	246	331	NA
All individuals	13.7 %	14.0 %	NA	314	418	NA
United States						
	1980	2000	2008	Sample sizes		
	1980	2000	2008	1980	2000	2008
Race/ethnicity						
Minority	7.5 % **	7.8 % **	7.3 % **	3,196	9,401	3,063
Non-Hispanic white	15.8	14.2	13.3	25,673	48,820	13,892
Gender						
Female	4.5 % **	7.5 % **	7.9 % **	6,090	15,190	4,444
Male	17.7	15.1	13.6	22,779	43,031	12,511
All individuals	14.9 %	13.2 %	12.1 %	28,869	58,221	16,955

Note: "Minority" includes African Americans, Hispanic Americans, Asian Pacific Americans, Subcontinent Asian Americans, Native Americans and other minority groups. Sample sizes for these race/ethnicity groups were too small to analyze individually.

The data presented in this table include all business owners in the engineering industry. The study team was unable to restrict the population to specific occupations due to small sample sizes.

** Denotes that the difference in proportions between the minority and non-Hispanic white groups (or female and male groups) for the given Census/ACS year is statistically significant at the 95% confidence level.

Source: BBC Research & Consulting from 1980 and 2000 U.S. Census 5% sample and 2008 ACS Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

Changes in business ownership rates in Oklahoma since 2000. While Figure E-2 does not include 2008 rates, analysis of these data indicates that ownership rates for non-Hispanic whites and males in the Oklahoma engineering industry continued to exceed those for minorities and females, respectively. This is consistent with trends in the national engineering industry, in which business ownership rates for minorities (7%) and females (8%) continued to be significantly lower in 2008 than those of non-Hispanic whites (13%) and males (14%).

Potential causes of differences in business ownership rates. Researchers have examined whether there are disparities in business ownership rates after consideration of other personal characteristics such as education and age. A number of studies have found that disparities in business ownership still exist when accounting for such neutral factors:

- Some studies have found that access to financial capital is a strong determinant of business ownership. Researchers have consistently found a positive relationship between start-up capital and business formation, expansion and survival.³ One study found that housing appreciation measured at the MSA level is a positive determinant of becoming self-employed.⁴ Unexplained differences still exist, however, when controlling for these factors.⁵
- Education has positive effects on the probability of business ownership in most industries. However, findings from multiple studies indicate that minorities are still less likely to own a business than their non-minority counterparts with the same levels of education.⁶
- Intergenerational links affect one's likelihood of self-employment. One study found that experience working for a self-employed family member increases the likelihood of business ownership for minority groups.⁷
- Studies have found that time since immigration and assimilation into American society are important determinants of self-employment, but unexplained differences in minority-business ownership still exist when accounting for these factors.⁸

³ See Lofstrom, Magnus and Chunbei Wang. 2006. *Hispanic Self-Employment: A Dynamic Analysis of Business Ownership*. Working paper, Forschungsinstitut zur Zukunft der Arbeit (Institute for the Study of Labor).; and Fairlie, Robert W. and Alicia M. Robb. 2006. *Race, Families and Business Success: A Comparison of African-American-, Asian-, and White-Owned Businesses*. Russell Sage Foundation.

⁴ Fairlie, Robert W. and Harry A. Krashinsky. 2006. Liquidity Constraints, Household Wealth and Entrepreneurship Revisited.

⁵ Lofstrom, Magnus and Chunbei Wang. 2006. *Hispanic Self-Employment: A Dynamic Analysis of Business Ownership*. Working paper, Forschungsinstitut zur Zukunft der Arbeit (Institute for the Study of Labor).

⁶ See Fairlie, Robert W. and Bruce D. Meyer. 1996. *Ethnic and Racial Self-Employment Differences and Possible Explanations*. The Journal of Human Resources, Volume 31, Issue 4, 757-793; and Butler, John Sibley and Cedric Herring. 1991. *Ethnicity and Entrepreneurship in America: Toward an Explanation of Racial and Ethnic Group Variations in Self-Employment*. Sociological Perspectives. 79-94.

⁷ See Fairlie, Robert W. and Alicia M. Robb. 2006. *Race, Families and Business Success: A Comparison of African-American-, Asian-, and White-Owned Businesses*. Russell Sage Foundation; and Fairlie, Robert W. and Alicia M. Robb. 2006. *Why are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital*. Forthcoming Journal of Labor Economics.

A number of researches have determined that race, ethnicity and gender can affect opportunities for business ownership, even when taking account of other personal characteristics such as education, age and familial ties. To further examine this possibility, BBC developed multivariate statistical models to explore patterns of business ownership in Oklahoma. These models estimate the effect of race/ethnicity and gender on the probability of self-employment.

Business Ownership Regression Analysis

An extensive body of literature examines whether race- and gender-neutral factors such as access to financial capital, education, age, and family characteristics (e.g., marital status) help explain differences in business ownership. This subject has also been examined in other disparity studies. Prior studies in Minnesota⁹ and Illinois¹⁰ have conducted econometric analyses investigating whether disparities in business ownership among race/ethnicity and gender groups in the combined construction and engineering industry remain after controlling for other personal characteristics. These studies have incorporated probit econometric models using PUMS data from the 2000 Census and have been among materials submitted to courts in subsequent litigation concerning state implementation of the Federal DBE Program.

BBC used similar probit regression models to predict business ownership from multiple independent or “explanatory” variables.¹¹ Independent variables include:

- Personal characteristics potentially linked to the likelihood of business ownership (age, age-squared, marital status, number of children and elderly people in the household, English-speaking ability and disability status);
- Indicators of educational attainment;
- Measures and indicators related to personal financial resources and constraints (home ownership, home value, monthly mortgage payment, dividend and interest income and additional household income from a spouse or unmarried partner); and
- Variables representing the race/ethnicity and gender of the individual.

⁸ See Fairlie, Robert W. and Bruce D. Meyer. 1996. *Ethnic and Racial Self-Employment Differences and Possible Explanations*. The Journal of Human Resources, Volume 31, Issue 4, 757-793; and Butler, John Sibley and Cedric Herring. 1991. *Ethnicity and Entrepreneurship in America: Toward an Explanation of Racial and Ethnic Group Variations in Self-Employment*. Sociological Perspectives. 79-94.

⁹ National Economic Research Associates, Inc. 2000. *Disadvantaged Business Enterprise Availability Study*. Prepared for the Minnesota Department of Transportation.

¹⁰ National Economic Research Associates, Inc. 2004. *Disadvantaged Business Enterprise Availability Study*. Prepared for the Illinois Department of Transportation.

¹¹ Probit models estimate the effects of multiple independent or “predictor” variables in terms of a single, dichotomous dependent or “outcome” variable — in this case, business ownership. The dependent variable is binary, coded as “1” for individuals in a particular industry who are self-employed; “0” for individuals who are not self-employed. The model enables estimation of the probability that a worker in a given estimation sample is self-employed. The study team excluded observations where the Census Bureau had imputed values for the dependent variable, business ownership.

BBC developed two separate models using 2000 PUMS data:

- A probit regression model for the Oklahoma construction industry, which included 5,155 observations; and
- A probit regression model for the West South Central (WSC) region engineering industry, which included 5,448 observations.

The engineering industry model differs slightly in form from the construction industry model as it examines a larger geographic area. Due to the small sample size for the Oklahoma engineering industry, BBC developed a model using observations from the four states which comprise the WSC region: Arkansas, Louisiana, Oklahoma and Texas. All WSC region workers are included in the model and any Oklahoma effects are estimated by including state-level control variables. (BBC used a similar approach when analyzing SSBF data on business credit in Appendix G.) The state-level variables included an indicator variable for Oklahoma workers as well as “interaction” terms for minorities and women living in the state.

Results specific to the Oklahoma construction industry. Figure E-3 presents the coefficients and t-statistics for the 2000 probit model for individuals working in the Oklahoma construction industry.

The model indicates factors important to predicting the probability of business ownership in this industry:

- Older individuals are more likely to be business owners in the Oklahoma construction industry, but this marginal effect declines for the oldest individuals;
- More children living in the household increases the likelihood of being self-employed;
- Home ownership and higher home values are both associated with greater likelihood of business ownership; and
- Speaking English well increases construction industry workers’ probability of self-employment.

Even after controlling for neutral factors, statistically significant disparities in rates of business ownership remain for African Americans, Hispanic Americans, Native Americans and women working in the Oklahoma construction industry.

Figure E-3.
Oklahoma construction industry business ownership model, 2000

Variable	Coefficient	t-statistic
Constant	-2.9958	-8.83 **
Age	0.0578	4.82 **
Age-squared	-0.0004	-3.06 **
Married	0.0973	1.58
Disabled	0.0692	0.93
Number of children in household	0.0743	3.13 **
Number of people over 65 in household	0.0586	0.73
Owns home	0.1622	2.48 **
Home value (\$000s)	0.0002	4.64 **
Monthly mortgage payment (\$000s)	-0.0065	-0.78
Interest and dividend income (\$000s)	0.0002	0.59
Income of spouse or partner (\$000s)	0.0000	-0.06
Speaks English well	0.5504	2.38 **
Less than high school education	0.0345	0.56
Some college	0.0830	1.42
Four-year degree	-0.0451	-0.41
Advanced degree	0.0578	0.28
African American	-0.4839	-3.19 **
Hispanic American	-0.3850	-3.09 **
Native American	-0.1251	-1.75 *
Other minority group	0.4482	1.56
Female	-0.3257	-3.87 **

Note: *,** Denote statistical significance at the 90% and 95% confidence levels, respectively.

Source: BBC Research & Consulting based on analysis of 2000 Census 5% Public Use Micro-sample data.

The probit modeling approach allows for simulation of business ownership rates for minorities and females if they had the same probability of self-employment as similarly situated non-Hispanic whites and males, respectively. To conduct this next step in the analysis, BBC performed a probit regression predicting business ownership using only non-Hispanic white construction workers in the dataset.¹² BBC then applied the coefficients from this version of the model to the mean characteristics of minorities in the 2000 Census dataset to estimate the probability of business ownership in the absence of any race/ethnic differences in the likelihood of self-employment. BBC performed these calculations for only those groups with statistically significant disparities in business ownership (as shown in Figure E-3). BBC constructed a similar model for just men (who are non-Hispanic white) to predict business ownership rates for non-Hispanic white women.

¹² This version of the model excludes the race/ethnicity indicator variables since the value for all of those variables would be the same.

Figure E-4 shows these simulated (“benchmark”) business ownership rates, comparing them to the actual, observed mean probability of business ownership for African Americans, Hispanic Americans, Native Americans and white females. Similar simulation approaches have been incorporated in other disparity studies reviewed by the courts.

Figure E-4.
Comparison of actual construction business ownership rates in Oklahoma to simulated rates, 2000

Group	Self-employment rate		Disparity index (100 = parity)
	Actual	Benchmark	
African American	14.2%	26.4%	54
Hispanic American	9.3%	15.9%	59
Native American	24.4%	28.2%	86
White female	22.0%	35.6%	62

Note: As the benchmark figure can only be estimated for records with an observed dependent variable, comparison is made with only this subset of the sample. For this reason, actual self-employment rates may differ slightly from those in Figure E-1.

Source: BBC Research & Consulting from statistical models of 2000 Census of Population data.

The actual rate of self-employment for African Americans in 2000 is 54 percent of what is predicted after controlling for other characteristics (disparity index of 54). These results suggest that there were about one-half as many African American-owned construction businesses in Oklahoma as one would anticipate if African American workers owned businesses at the same rate as similarly situated non-Hispanic whites.¹³ There are also appear to be considerably fewer Hispanic American-owned businesses than would be expected based on business ownership rates for non-Hispanic whites with a similar demographic profile.

The disparity between actual and “benchmark” self-employment rates was smaller for Native Americans working in the Oklahoma construction industry in 2000 (disparity index of 86).

Comparing actual self-employment rates of non-Hispanic white women with a benchmark based on business ownership rates of non-Hispanic white men, there were about 62 percent as many white female-owned businesses as would be expected. (To focus on the effects of gender, BBC’s analysis compares actual and predicted rates for non-Hispanic white women.)

¹³ The actual comparison is between African American men and non-Hispanic white men. Results for other minority groups also compare the rates for minority men and non-Hispanic white men.

Results specific to the Oklahoma engineering industry. Factors associated with self-employment may differ between the construction and engineering industries. Therefore, BBC developed a separate business ownership model for the engineering industry. Due to small sample sizes for Oklahoma, the study team used 2000 Census data from the West South Central region (which includes Oklahoma) to develop this model.

Figure E-5 presents results from the 2000 WSC engineering model.

Figure E-5.
West South Central engineering industry business ownership model, 2000

Variable	Coefficient	t-statistic
Constant	-3.4192	-7.59 **
Age	0.0583	3.77 **
Age-squared	-0.0003	-1.92 *
Married	-0.0965	-1.35
Disabled	-0.1859	-1.90 *
Number of children in household	0.0747	2.76 **
Number of people over 65 in household	0.0871	1.17
Owns home	0.0890	1.04
Home value (\$000s)	0.0014	5.16 **
Monthly mortgage payment (\$000s)	-0.1059	-2.02 **
Interest and dividend income (\$000s)	0.0021	1.26
Income of spouse or partner (\$000s)	0.0011	1.55
Speaks English well	0.0207	0.07
Less than high school education	0.2564	1.41
Some college	0.1394	1.48
Four-year degree	0.3690	3.99 **
Advanced degree	0.3469	3.22 **
African American	-0.5808	-3.02 **
Hispanic American	-0.2301	-2.14 **
Native American	0.1314	0.45
Other minority group	-0.5488	-3.50 **
Female	-0.2194	-3.05 **
Native American in Oklahoma	-0.5502	-1.21
Female in Oklahoma	-0.1488	-0.56
Oklahoma	0.0937	0.85

Note: **, * Denote statistical significance at the 90% and 95% confidence levels, respectively.

Interaction terms representing African Americans, Hispanic Americans and other minorities in Oklahoma were dropped from the model due to small sample sizes.

Source: BBC Research & Consulting based on analysis of 2000 Census Public Use Microdata Sample.

The following neutral factors are important in predicting business ownership for the engineering industry in the West South Central region in 2000 (and are statistically significant):

- Older individuals are more likely to be business owners, but as with the construction industry, this marginal effect declines for the oldest individuals;
- Having more children in the household increases the probability of business ownership;
- Individuals who have a disability are less likely to be self-employed;
- Higher home values (for homeowners) are associated with a greater likelihood of business ownership;
- Larger mortgage payments are associated with lower rates of self-employment; and
- Having a four-year or advanced degree increases the likelihood of owning a business.

After accounting for neutral factors, the WSC engineering model indicates statistically significant disparities in the business ownership rates for African-Americans, Hispanic Americans, other-race minorities and females working in engineering.

The indicator variable for Oklahoma and the interaction terms for minority- and female-workers are not statistically significant. This result implies that the probabilities of business ownership for minorities and females (and non-minorities) within the state are not significantly different from the region as a whole.¹⁴

As with the construction industry, BBC simulated engineering business ownership rates for different race/ethnicity and gender groups in the WSC engineering industry. Figure E-6 shows simulated self-employment rates and compares them to the actual, observed mean probability of business ownership for groups showing statistically significant differences.

Figure E-6.
Comparison of actual engineering business ownership rates to simulated rates, West South Central region, 2000

Group	Self-employment rate		Disparity index (100 = parity)
	Actual	Benchmark	
African American	3.1%	9.7%	32
Hispanic American	6.3%	9.5%	66
Other minority	5.4%	15.0%	36
White female	9.5%	12.6%	75

Note: As the benchmark figure can only be estimated for records with an observed dependent variable, comparison is made with only this subset of the sample. For this reason, actual self-employment rates may differ slightly from those in Figure E-2.

Source: BBC Research & Consulting from statistical models of 2000 Census of Population data.

¹⁴ Where sample sizes were very small, interaction terms for minority groups for the Oklahoma engineering industry have been excluded from the model.

Results suggest that in the West South Central region (which includes Oklahoma):

- African Americans experience large disparities in business ownership rates in the engineering industry. About 32 percent as many African Americans were owners of engineering firms in the region compared to what would be predicted if African Americans owned firms at the same rate as similarly situated non-Hispanic whites.
- If they owned businesses at the same rate as similarly situated non-Hispanic whites, other-race minorities would have a self-employment rate nearly three times the observed rate of 5 percent.
- The observed business ownership rate for Hispanic Americans was roughly two-thirds the expected rate if Hispanic Americans owned businesses at the same rate as similarly situated non-Hispanic whites.
- BBC identified similar disparities in business ownership for white women working in engineering within the West South Central region. The disparity index of 75 indicates that white women working in the industry own engineering firms at three-quarters the rate of similarly situated white men.

Consistent with other research, the statistical modeling indicates that race, ethnicity and gender appear to affect rates of business ownership even after controlling for neutral factors.

Summary of Business Ownership in the Construction and Engineering Industries

At the time of this report, the 2000 Census provides the most extensive data business ownership data for the construction and engineering industries. Unless otherwise noted, this summary focuses on these data, which provide the highest level of accuracy and detail.

In 2000, disparities in business ownership were present in the Oklahoma construction industry:

- The business ownership rate for African Americans was less than one-half that of non-Hispanic whites.
- Hispanic Americans owned businesses at a rate less than one-third that of non-Hispanic whites.
- Lower business ownership rates existed for Native Americans compared to non-Hispanic whites and for women compared to men, although these differences are not statistically significant.

Note that there is some evidence of convergence in business ownership rates between minority and non-minority workers in the Oklahoma construction industry. This narrowing may also be occurring for women and men. As the U.S. Census Bureau collects additional data for recent years, one can further explore whether disparities in business ownership rates in the Oklahoma construction industry are still apparent.

Disparities were also found in the Oklahoma engineering industry in 2000:

- The business ownership rate for minorities was one-fourth the rate for non-Hispanic whites.
- Women working in the engineering industry were less likely to be self-employed than men, but the difference was not statistically significant.

BBC used probit regression models to investigate the presence of race/ethnicity and gender disparities in business ownership in Oklahoma after accounting for the effects of neutral factors. Statistically significant disparities in business ownership rates were found in the Oklahoma construction industry for African Americans, Hispanic Americans, Native Americans and women. BBC identified statistically significant disparities in ownership rates for engineering in the West South Central region for African Americans, Hispanic Americans, “other minority” groups and women.