APPENDIX G.
Access to Capital for Business Formation and Success

Access to capital is one factor that researchers have examined when studying business formation and success. If race- or gender-based discrimination exists in capital markets, minorities and women may have difficulty acquiring the capital necessary to start, operate, or expand businesses.[1, 2] Researchers have also found that the amount of start-up capital can affect long-term business success, and, on average, minority- and women-owned businesses appear to have less start-up capital than majority-owned businesses and male-owned businesses.[3] For example:

- In 2007, 30 percent of non-Hispanic white male-owned businesses that responded to a national U.S. Census Bureau survey indicated that they had start-up capital of $25,000 or more;[4]
- Only 17 percent of African American-owned businesses indicated a comparable amount of start-up capital;
- Disparities in startup capital were identified for every other minority group except Asian Americans; and
- Nineteen percent of female-owned businesses reported start-up capital of $25,000 or more compared with 32 percent of male-owned businesses (not including businesses that were owned equally by men and women).

Similar research using longitudinal data from 2004 through 2006 found African American-owned firms received significantly lower levels of external startup capital, after controlling for owner and business characteristics, and relied more on owner equity funding. This finding persisted in subsequent years of business operation.[5]

Race- or gender-based discrimination in start-up capital can have long-term consequences, as can discrimination in access to business loans after businesses have already been formed.[6]

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[1] For example, see: Mitchell, Karlyn and Douglas K. Pearce. 2005. "Availability of Financing to Small Firms Using the Survey of Small Business Finances." U.S. Small Business Administration, Office of Advocacy. 57.

[2] Fairlie, Robert W. and Alicia M. Robb. 2010. *Race and Entrepreneurial Success*. Cambridge: MIT Press.

[3] *Ibid.*

[4] Business owners were asked, "What was the total amount of capital used to start or acquire this business? (Capital includes savings, other assets, and borrowed funds of owner(s))." From U.S. Census Bureau, Statistics for All U.S. Firms by Total Amount of Capital Used to Start or Acquire the Business by Industry, Gender, Ethnicity, Race, and Veteran Status for the U.S.: 2007 Survey of Business Owners http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=SBO_2007_00CSCB16&prodType=table.

[5] Robb, Alicia, Fairlie, Robert w. and Robinson, David T. 2009. "Capital Injections among New Black and White Business Ventures: Evidence from the Kauffman Firm Survey." Working Paper. Federal Reserve Bank of Cleveland.

[6] Fairlie, Robert W. and Alicia M. Robb. 2010. *Race and Entrepreneurial Success*. Cambridge: MIT Press.

Appendix G presents information about homeownership and mortgage lending as home equity can be an important source of capital to start and expand businesses. Appendix G also presents information about business loans, assessing whether minorities and females experience any difficulties acquiring business capital.

A. Homeownership and Mortgage Lending

Keen Independent analyzed homeownership and the mortgage lending industry to explore differences across different racial/ethnic and gender groups that may lead to disparities in access to capital.

Homeownership. Wealth created through homeownership can be an important source of capital to start or expand a business.[7] In sum:

- A home is a tangible asset that provides borrowing power;[8]
- Wealth that accrues from housing equity and tax savings from homeownership contributes to capital formation;[9]
- Next to business loans, mortgage loans have traditionally been the second largest loan type for small businesses;[10] and
- Homeownership is associated with an estimated 30 percent reduction in the probability of loan denial for small businesses.[11]

Any barriers to homeownership and home equity growth for minorities or women can affect business opportunities by constraining their available funding. Similarly, any barriers to accessing home equity through home mortgages can also affect available capital for new or expanding businesses. Recent research confirms the importance of homeownership on the likelihood of starting a business, even when examined separately by recent work history (independently examining workers that recently experienced a job loss and those that did not). A strong relationship exists between increases in home equity and entry into self employment for both groups.[12] Keen Independent analyzed homeownership rates and home values before considering loan denial and subprime lending.

It is important to note that the Great Recession depressed homeownership rates, reduced home values and equity in homes, and changed the mortgage finance market. Nationally and in Wisconsin, lower (or negative) equity in a home and tighter lending standards during the Great Recession may

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[7] The housing and mortgage crisis beginning in late 2006 has substantially impacted the ability of small businesses to secure loans through home equity. Later in this appendix, Keen Independent discusses the consequences to small businesses and MBE/WBEs.

[8] Nevin, Allen. 2006. "Homeownership in California: A CBIA Economic Treatise." *California Building Industry Association*. 2.

[9] Jackman, Mary R. and Robert W. Jackman 1980. "Racial Inequalities in Home Ownership." *Social Forces*. 58. 1221-1234.

[10] Berger, Allen N. and Gregory F. Udell. 1998. "The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle." *Journal of Banking and Finance*. 22.

[11] Cavalluzzo, Ken and John Wolken. 2005. "Small Business Loan Turndowns, Personal Wealth and Discrimination." *Journal of Business*. 78:2153-2178.

[12] Fairlie, Robert W. and Harry A. Krashinsky. 2012. "Liquidity Constraints, Household Wealth and Entrepreneurship Revisited. *Review of Income and Wealth*. 58(2).

have limited home equity as a source of capital for many existing or potential business owners. Therefore, the following examination of homeownership and mortgage lending in Wisconsin considers conditions before and after the start of the Great Recession in 2007.

Homeownership rates. Many studies have documented past discrimination in the national housing market. The United States has a history of restrictive real estate covenants and property laws that affect the ownership rights of minorities and women.[13] For example, in the past, a woman's participation in homeownership was secondary to that of her husband and parents.[14]

Keen Independent used 2000 Census and 2008-2012 American Community Survey (ACS) data to examine homeownership rates in Dane County and in the United States. Figure G-1 presents homeownership rates for minority groups and non-Hispanic whites.

Figure G-1. Homeownership rates, 2000 and 2008-2012

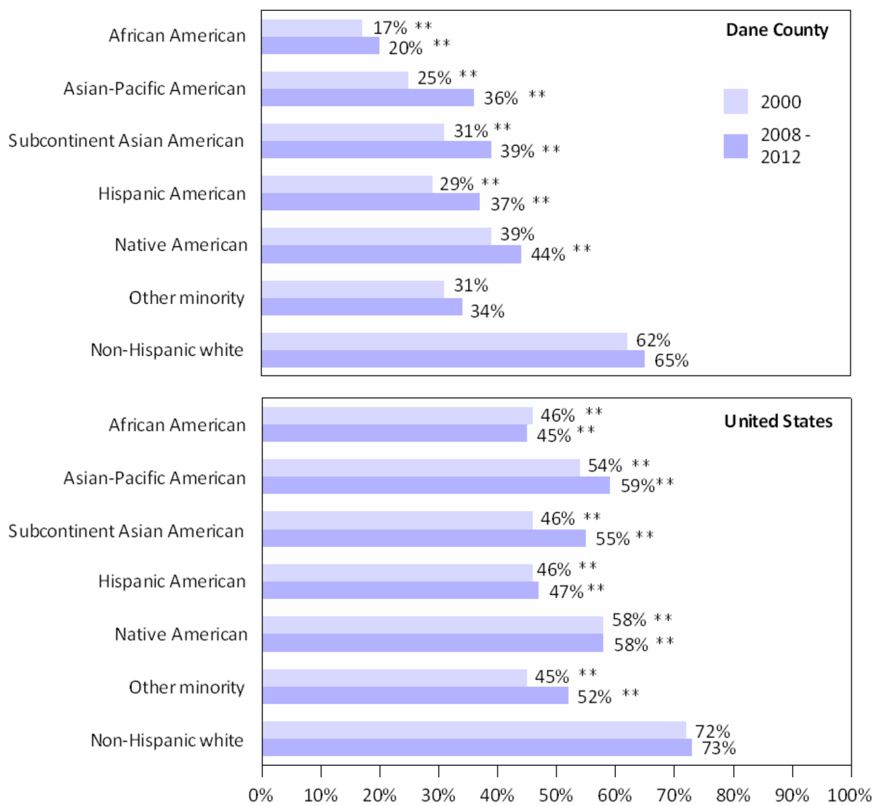
Note:

The sample universe is all households.

*, ** Denote that the difference in proportions from non-Hispanic white for the given year is statistically significant at the 90% or 95% confidence level, respectively.

Source:

Keen Independent Research from 2000 U.S. Census and 2008-2012 ACS data. The raw data extract was obtained through the IPUMS program of the MN Population Center: http://usa.ipums.org/usa/.



As shown in Figure G-1, 62 percent of non-Hispanic white households owned homes in Dane County in 2000. Homeownership rates were much lower for African Americans (17%), Asian-Pacific Americans (25%), Subcontinent Asian Americans (31%), and Hispanic Americans (29%). The homeownership rates in 2000 for Native Americans (39%) and Other minorities (31%) were also

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13 Ladd, Helen F. 1982. "Equal Credit Opportunity: Women and Mortgage Credit." *The American Economic Review*. 72:166-170.

14 Card, Emily. 1980. "Women, Housing Access, and Mortgage Credit." *Signs*. 5:215-219.

lower than that of non-Hispanic whites. Disparities in homeownership rates between racial/ethnic minorities and non-minorities were also apparent in 2008 through 2012:[15]

- Approximately 20 percent of African American households in Dane County owned homes in 2008 through 2012, compared to 65 percent of non-Hispanic white households;
- About 37 percent of Hispanic American households owned homes in 2008 through 2012;
- The homeownership rates in 2008 through 2012 for Subcontinent Asian Americans and Asian-Pacific Americans were 39 percent and 36 percent, respectively; and
- Native American households owned homes at a rate of 44 percent.

In general, rates of homeownership were lower in Dane County than in the nation as a whole.

Lower rates of homeownership may reflect lower incomes for minorities. That relationship may be self-reinforcing, as low wealth puts individuals at a disadvantage in becoming homeowners, which has historically been a path to building wealth. An older study found that the probability of homeownership is considerably lower for African Americans than it is for comparable non-Hispanic whites throughout the United States.[16] Recent research shows that while African Americans narrowed the homeownership gap in the 90s, the first half of the following decade brought little change and the second half of the decade brought significant losses, resulting in a widening of the gap between African Americans and non-Hispanic whites.[17]

Home values. Research has shown homeownership and home values to be direct determinants of available capital to form or expand businesses.[18] Using 2000 Census and 2008 through 2012 ACS data, Keen Independent compared median home values by racial/ethnic group.

Figure G-2 presents results for Dane County and the United States in 2000. In 2000, the median home value of homes owned by non-Hispanic whites in Dane County was approximately $147,000, substantially greater than the median value of homes owned by African Americans ($116,000), Hispanic Americans ($117,000) and Native Americans ($129,000). The median home values for Asian-Pacific Americans ($149,000) and Subcontinent Asian Americans ($145,000) were similar to that of non-Hispanic whites.

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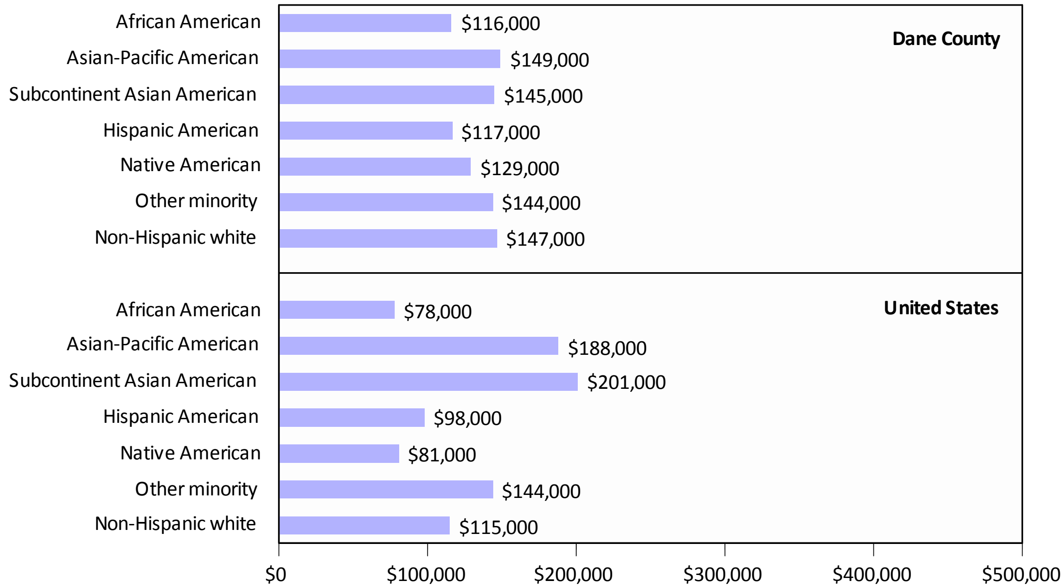
15 Although not presented in this report, the study team also examined homeownership rates for heads of households working in the construction industry. Each minority group in the construction industry had a lower rate of home ownership than non-Hispanic whites in Dane County.

16 Jackman. 1980. "Racial Inequalities in Home Ownership."

17 Rosebaum, E. 2012. "Home Ownership's Wild Ride, 2001-2011." U.S. 2010 Project, Census Brief. New York: Russell Sage Foundation.

18 Fairlie, Robert W. and Harry A. Krashinky. 2006. "Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited." IZA Discussion Paper. No. 2201.

Figure G-2.
Median home values, 2000

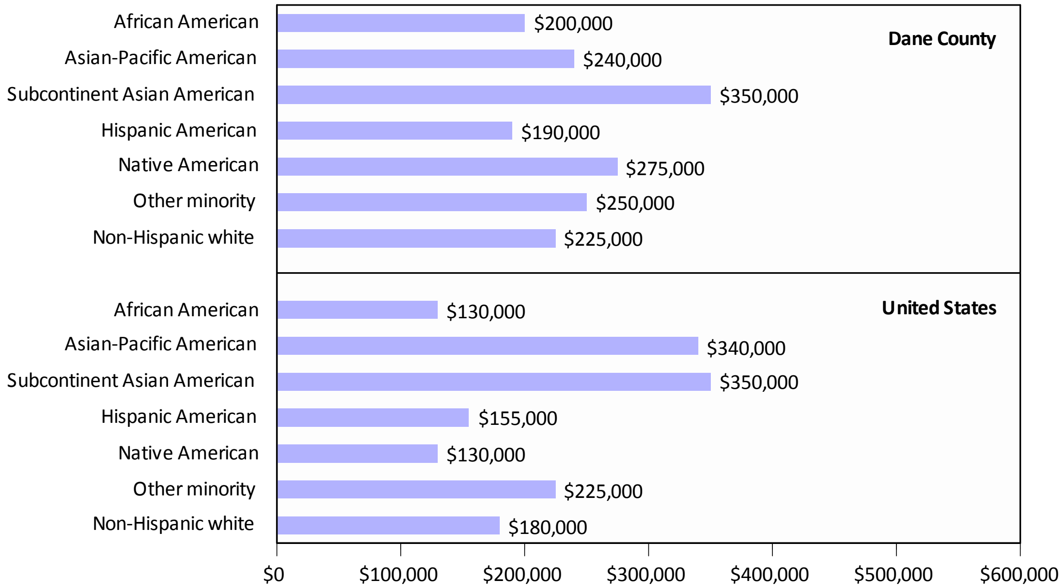


Note: The sample universe is all owner-occupied housing units.

Source: Keen Independent Research from 2000 U.S. Census data. The raw data extract was obtained through the IPUMS program of the MN Population Center: http://usa.ipums.org/usa/.

Figure G-3 presents median home values by racial/ethnic groups in Dane County and the United States based on 2008-2012 ACS data. Similar to 2000 data, African Americans ($200,000) and Hispanic Americans ($190,000) exhibited lower median home values than non-Hispanic whites ($225,000) in Dane County. Median home values for Asian-Pacific Americans ($240,000), Subcontinent Asian Americans ($350,000), Native Americans ($275,000), and Other minorities ($250,000) were higher than non-Hispanic whites in Dane County. Similar trends were evident in the United States as a whole, except for Native Americans, who had lower median home values than non-Hispanic whites.

Figure G-3.
Median home values, 2008-2012



Note: The sample universe is all owner-occupied housing units.

Source: Keen Independent Research from 2008-2012 American Community Survey data. The raw data extract was obtained through the IPUMS program of the MN Population Center: http://usa.ipums.org/usa/.

Mortgage lending. Minorities may be denied opportunities to own homes, to purchase more expensive homes, or to access equity in their homes if they are discriminated against when applying for home mortgages. Therefore, any such discrimination could have lasting effects. In a recent lawsuit, Bank of America paid $335 million to settle allegations that its Countrywide Financial unit discriminated against African American and Hispanic American borrowers between 2004 and 2008. The case was brought by the Securities and Exchange Commission after finding evidence of "statistically significant disparities by race and ethnicity" among Countrywide Financial customers.[19] A 2012 study extrapolated that African American borrowers were offered high-cost loans at a rate exceeding that of identically situated Non-Hispanic whites. There was also evidence indicative of structural discrimination against borrowers categorized as Hispanic and, to a lesser extent, for women. [20] Further, minority-owned businesses experience higher loan denial probabilities and pay higher interest rates than white-owned businesses even after controlling for differences in creditworthiness. [21]

Keen Independent explored market conditions for mortgage lending in Dane County and in the nation as a whole. The best available source of information concerning mortgage lending comes from Home Mortgage Disclosure Act (HMDA) data, which contain information on mortgage loan applications that financial institutions, savings banks, credit unions, and some mortgage companies

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[19] Savage, Charlie. December 22, 2011. "$335 Million Settlement on Countywide Lending Bias." *NYTimes.com*. Available online at http://www.nytimes.com/2011/12/22/business/us-settlement-reported-on-countrywide-lending.html.

[20] Maya Sen. 2012. "Quantifying Discrimination: Exploring the Role of Race and Gender and the Awarding of Subprime Mortgage Loans." Available at SSRN: http://ssrn.com/abstract=1593183.

[21] Robb, Alicia. 2012. "Access to Capital among Young Firms, Minority-owned Firms, Women-owned firms and High-Tech Firms." Small Business Administration.

receive.[22] Those data include information about the location, dollar amount, and types of loans made, as well as race/ethnicity, income, and credit characteristics of all loan applicants. The data are available for home purchases, loan refinances, and home improvement loans.

Keen Independent examined HMDA statistics provided by the Federal Financial Institutions Examination Council (FFIEC) for 2006, 2009, and 2012. Although 2012 provides the most current representation of the home mortgage market, the 2006 data represent market conditions from before the recent mortgage crisis. The 2006 HMDA data include information about 33,000 loan applications in Dane County that about 400 lenders processed. The 2012 HMDA data for the Dane County include information about 45,000 loan applications processed by about 400 lenders.

Mortgage denials. Keen Independent examined mortgage denial rates on conventional loan applications made by high-income households. Conventional loans are loans that are not insured by a government program. High-income applicants are those households with 120 percent or more of the U.S. Department of Housing and Urban Development (HUD) area median family income.[23] Loan denial rates are calculated as the percentage of mortgage loan applications that were denied, excluding applications that the potential borrowers terminated and applications that were closed due to incompleteness.[24]

Figure G-4 presents loan denial results for high-income households in Dane County and the United States in 2006, 2009, and 2012. Data for 2006 show higher denial rates for all groups in Dane County compared with 2012, except for Asian Americans. In 2006, African American, Hispanic American, Native American, and Native Hawaiian and other Pacific Islander high-income applicants all exhibited higher loan denial rates compared with non-Hispanic white applicants. In 2012, loan denial rates remained high for Asian and Hispanic Americans:

- Loan denial rates in 2012 were higher for Asian Americans (8%) and Hispanic Americans (7%) compared with non-Hispanic whites (5%).
- African Americans (4%), Native Americans (0%), and Native Hawaiians and Pacific Islanders (0%) experienced lower rates of denial that non-Hispanic whites.

[22] Financial institutions were required to report 2012 HMDA data if they had assets of more than $41 million ($39 million for 2009 and $35 million for 2006); have a branch office in a metropolitan area; and originated at least one home purchase or refinance loan in the reporting calendar year. Mortgage companies are required to report HMDA if they are for-profit institutions; had home purchase loan originations exceeding 10 percent of all loan obligations in the past year; are located in a Metropolitan Statistical Area (MSA: or originated five or more home purchase loans in a particular MSA); and either had more than $10 million in assets or made at least 100 home purchase or refinance loans in the calendar year.

[23] The median family income in 2012 was about $65,000 for the United States as a whole and $83,000 for Dane County (in 2012 dollars). Median family income for 2006 was $68,000 for the United States as a whole and $72,000 for Dane County (in 2012 dollars). Source: U.S. Department of Housing and Urban Development (HUD) at www.huduser.org.

[24] For this analysis, loan applications are considered to be applications for which a specific property was identified, thus excluding preapproval requests.

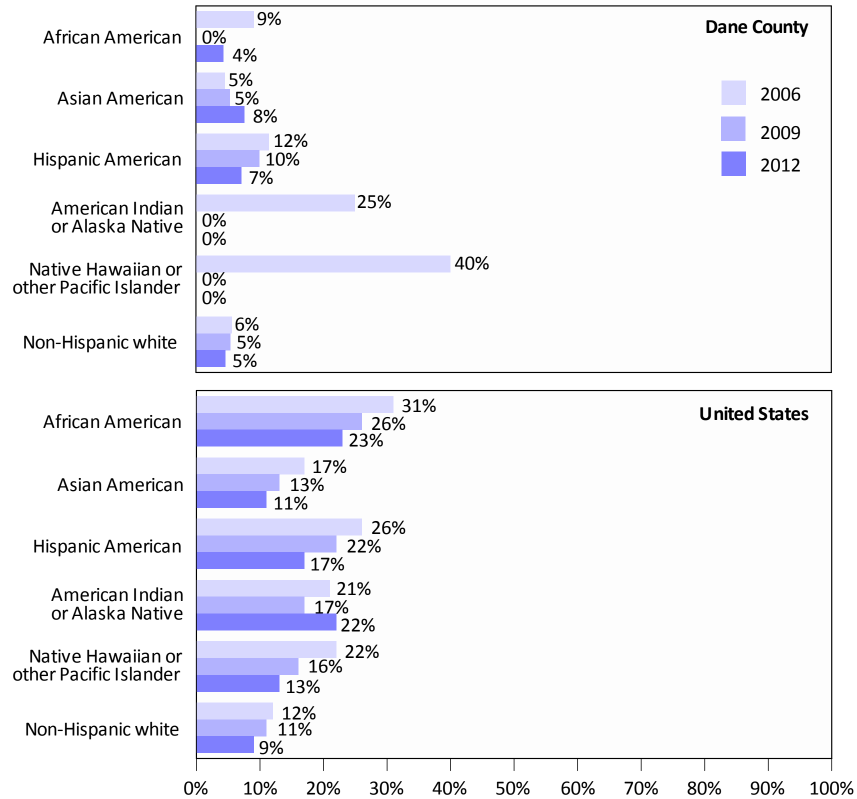
Figure G-4.
Denial rates of conventional purchase loans to high-income households, 2006, 2009, and 2012

Note:

High-income borrowers are those households with 120% or more than the HUD area median family income (MFI).

Source:

FFIEC HMDA data 2006, 2009 and 2012.



Additional research. Several national studies have examined disparities in loan denial rates and loan amounts for minorities in the presence of other influences. For example:

- A study by the Federal Reserve Bank of Boston is one of the most cited studies of mortgage lending discrimination.[25] It was conducted using the most comprehensive set of credit characteristics ever assembled for a study on mortgage discrimination.[26] The study provided persuasive evidence that lenders in the Boston area discriminated against minorities in 1990.[27]

- Analyses based on the Federal Reserve Board's 1983 Survey of Consumer Finances and the 1980 Census of Population and Housing data revealed that minority households were one-third as likely to receive conventional loans as non-Hispanic white households after taking into account financial and demographic variables.[28]

[25] Munnell, Alicia H., Geoffrey Tootell, Lynn Browne and James McEneaney. 1996. "Mortgage Lending in Boston: Interpreting HMDA Data." *The American Economic Review*. 86: 25-53.

[26] Ladd, Helen F. 1998. "Evidence on Discrimination in Mortgage Lending." *The Journal of Economic Perspectives*. 12:41-62.

[27] Yinger, John. 1995. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination*. New York: Russell Sage Foundation, 71.

[28] Canner, Glenn B., Stuart A. Gabriel and J. Michael Woolley. 1991. "Race, Default Risk and Mortgage Lending: A Study of the FHA and Conventional Loan Markets." *Southern Economic Journal*. 58:249-262.

- Findings from a Midwest study indicate a relationship between race and both the number and size of mortgage loans. Data matched on socioeconomic characteristics revealed that African American borrowers across 13 census tracts received significantly fewer loans and of smaller sizes compared to their white counterparts.[29]

However, other studies have found that differences in preferences for Federal Housing Administration (FHA) loans — mortgage loans that the government insures — versus conventional loans among racial and ethnic groups may partially explain disparities found in conventional loan approvals between minorities and non-minorities.[30] Several studies have found that, historically, minority borrowers are far more likely to seek FHA loans than comparable non-Hispanic white borrowers across different income and wealth levels. The insurance on FHA loans protects the lender, but the borrower can be disadvantaged by higher borrowing costs. [31]

Subprime lending. Loan denial is only one way minorities might be discriminated against in the home mortgage market. Mortgage lending discrimination can also occur through higher fees and interest rates. Subprime lending provides a unique environment for such types of discrimination through fees associated with various loan types.

Until the Great Recession, one of the fastest growing segments of the home mortgage industry was subprime lending. From 1994 through 2003, subprime mortgage activity grew by 25 percent per year and accounted for $330 billion of U.S. mortgages in 2003, up from $35 billion a decade earlier. In 2006, subprime loans represented about one-fifth of all mortgages in the United States.[32] With higher interest rates than prime loans, subprime loans were historically marketed to customers with blemished or limited credit histories who would not typically qualify for prime loans. Over time, subprime loans also became available to homeowners who did not want to make a down payment; did not want to provide proof of income and assets; or wanted to purchase a home with a cost above that for which they would qualify from a prime lender.[33] Because of higher interest rates and additional costs, subprime loans affected homeowners' ability to grow home equity and increased their risks of foreclosure.

Although there is no standard definition of a subprime loan, there are several commonly-used approaches to examining rates of subprime lending. Keen Independent used a "rate-spread method" — in which subprime loans are identified as those loans with substantially above-average interest rates — to measure rates of subprime lending in 2006, 2009, and 2012.[34] Because lending patterns and borrower motivations differ depending on the type of loan being sought, the study team

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[29] Leahy, Peter J. 1985. "Are Racial Factors Important for the Allocation of Mortgage Money?: A Quasi-Experimental Approach to an Aspect of Discrimination." *American Journal of Economics and Sociology*. 44:185-196.

[30] Canner. 1991. "Race, Default Risk and Mortgage Lending: A Study of the FHA and Conventional Loan Markets."

[31] Yinger. 1995. Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination. 80.

[32] Avery, Brevoort, and Canner, "The 2006 HMDA Data." Federal Reserve Bulletin, December 2007, pp. A73-A109.

[33] Gerardi, Shapiro, and P. Willen. 2008. "Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosure. *Federal Reserve Bank of Boston*.

[34] Prior to October 2009, first lien loans were identified as subprime if they had an annual percentage rate (APR) that was 3.0 percentage points or greater than the federal treasury security rate of like maturity. As of October 2009, rate spreads in HMDA data were calculated as the difference between APR and Average Prime Offer Rate, with subprime loans defined as 1.5 percentage points of the rate spread or more. KIR identified subprime loans according to those measures in the corresponding time periods.

separately considered home purchase loans and refinance loans. Patterns in subprime lending did not differ substantially between the different types of loans.

Figure G-5 shows the percent of conventional home purchase loans that were subprime in Dane County and the United States, based on 2006, 2009, and 2012 HMDA data. The rates of subprime lending in 2009 and 2012 were dramatically lower overall than in 2006 due to the collapse of the mortgage lending market in the late 2000s.

In Dane County, African American and Hispanic American borrowers were more likely to receive subprime home purchase loans than non-Hispanic whites in all three years (2006, 2009, and 2012). Native American borrowers were also more likely than non-Hispanic whites to receive subprime loans in 2012, and Native Hawaiian or other Pacific Islanders were more likely than non-Hispanic whites to receive subprime loans in 2006.

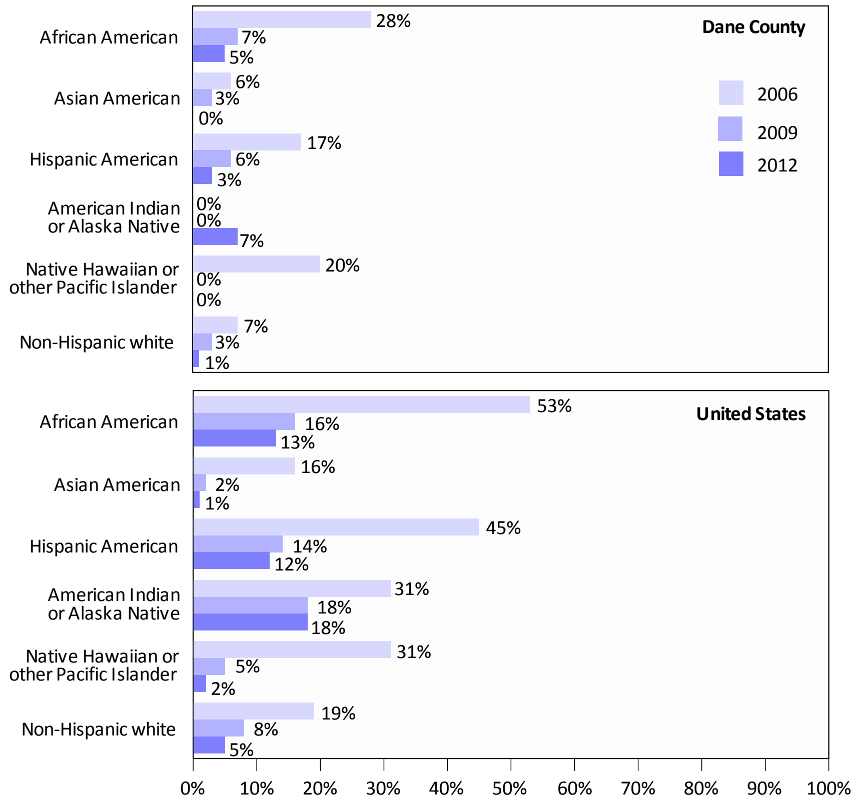
Data for 2006 indicate substantial differences in the percentage of subprime home loans issued to minority groups relative to non-Hispanic whites, with the exception of Asian Americans:

- About 7 percent of home purchase loans issued to non-Hispanic whites were subprime.
- Twenty-eight percent of home purchase loans that were issued to African Americans were subprime.
- Seventeen percent of home purchase loans that were issued to Hispanic Americans were subprime.
- One-fifth (20%) of home purchase loans issued to Native Hawaiians or other Pacific Islanders were subprime.

Figure G-5.
Percent of conventional home purchase loans that were subprime, 2006, 2009, and 2012

Source:

FFIEC HMDA data 2006, 2009 and 2012.



The overall volume of subprime loans in Dane County dropped substantially between 2006 and 2012 and racial/ethnic differences in subprime lending lessened:

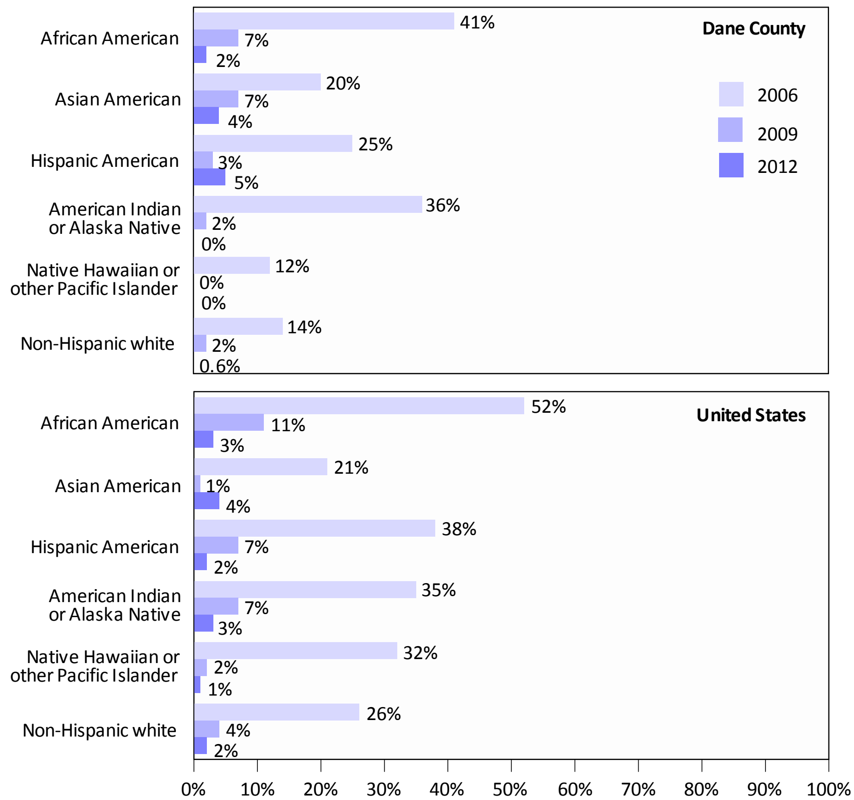
- In 2012, 1 percent of conventional home purchase loans issued to non-Hispanic white borrowers were subprime.
- About 5 percent of home purchase loans issued to African Americans were subprime.
- About 3 percent of home purchase loans issued to Hispanic Americans were subprime.
- About 7 percent of home purchase loans issues to Native Americans were subprime.

Figure G-6 presents the percentage of home refinance loans that were subprime in Dane County and the United States. As with home purchase loans, the rates of subprime lending in 2009 and 2012 were dramatically lower for refinance loans than in 2006 due to the collapse of the mortgage lending market.

Figure G-6.
Percent of conventional refinance loans that were subprime, 2006, 2009, and 2012

Source:

FFIEC HMDA data 2006, 2009 and 2012.



In Dane County, subprime trends for refinance loans were similar to subprime trends for home purchase loans. Compared to non-Hispanic white borrowers, African Americans, Asian Americans, Hispanic Americans, and Native Americans were more likely to receive subprime refinance loans in 2006; Hispanic Americans were more likely to receive subprime refinance loans in 2009; and African Americans and Hispanic Americans were more likely to receive subprime refinance loans in 2012.

In 2006, about 41 percent of refinance loans issued to African Americans, 20 percent of refinance loans issued to Asian Americans, 25 percent of refinance loans issued to Hispanic Americans, and 36 percent of refinance loans issued to Native Americans were subprime compared to only 14 percent of refinance loans issued to non-Hispanic whites.

By 2012, subprime loans made up a much smaller proportion of the total conventional home refinance loans issued in that year (in Dane County and in the United States). The decrease in subprime refinance loans was evident for all racial/ethnic groups but disparities for some minority groups compared to non-Hispanic whites persisted.

- Approximately 2 percent of conventional home refinance loans issued to African American were subprime, compared to 0.6 percent for non-Hispanic white borrowers.
- About 5 percent of home refinance loans issued to Hispanic Americans were subprime — the highest of any racial/ethnic group included in the analysis.
- Asian American (0.4%), Native American (0%), and Native Hawaiian and Other Pacific Islander (0%) borrowers took out subprime home refinance loans at rates lower than the rate for non-Hispanic white borrowers.

Additional research. Some evidence suggests that lenders sought out and offered subprime loans to individuals who often would not be able to pay off the loan, a form of "predatory lending."[35] Furthermore, some research has found that many recipients of subprime loans could have qualified for prime loans.[36] Previous studies of subprime lending suggest that predatory lenders have disproportionately targeted minorities. A 2001 HUD study using 1998 HMDA data found that subprime loans were disproportionately concentrated in African American neighborhoods compared with white neighborhoods, even after accounting for income.[37] For example, borrowers in higher-income African American neighborhoods were six times more likely to refinance with a subprime loan than borrowers in higher-income white neighborhoods. More recent analyses using 2006 HMDA data found that African American borrowers, going to the same lender and displaying similar financial characteristics, were significantly more likely to receive high-cost loans (those with an interest rate more than 3 percent higher than comparable U.S. Treasury instruments) compared to non-Hispanic whites.[38]

Implications of the recent mortgage lending crisis. The turmoil in the housing market since late 2006 has been far-reaching, resulting in the loss of home equity, decreased demand for housing, and increased rates of foreclosure.[39] Much of the blame has been placed on risky practices in the mortgage industry including substantial increases in subprime lending. As discussed above, the number of subprime mortgages increased at an extraordinary rate between the mid-1990s and mid-2000s. Those high-cost, high-interest loans increased from 8 percent of originations in 2003 to 20 percent in 2005 and 2006.[40] The preponderance of subprime lending is important, because

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[35] Department of Housing and Urban Development (HUD) and the Department of Treasury. 2001. HUD-Treasury National Predatory Lending Task Force Report. *HUD*; Carr, J. and L. Kolluri. 2001. Predatory Lending: An Overview. *Fannie Mae Foundation*; and California Reinvestment Coalition, Community Reinvestment Association of North Carolina, Empire Justice Center, Massachusetts Affordable Housing Alliance, Neighborhood Economic Development Advocacy Project, Ohio Fair Lending Coalition and Woodstock Institute, 2008. "Paying More for the American Dream."

[36] Freddie Mac. 1996, September. "Automated Underwriting: Making Mortgage Lending Simpler and Fairer for America's Families." *Freddie Mac*. (accessed February 5, 2007); and Lanzerotti. 2006. "Homeownership at High Cost: Foreclosure Risk and High Cost Loans in California." *Federal Reserve Bank of San Francisco*.

[37] Department of Housing and Urban Development (HUD) and the Department of Treasury. 2001.

[38] Maya Sen. 2012. "Quantifying Discrimination: Exploring the Role of Race and Gender and the Awarding of Subprime Mortgage Loans." Available at SSRN: http://ssrn.com/abstract=1593183.

[39] Joint Center for Housing Studies of Harvard University. 2008. "The State of the Nation's Housing."

[40] *Ibid.*

households repaying subprime loans have a higher likelihood of delinquency or foreclosure. A 2008 study released from the Federal Reserve Bank of Boston found that, "homeownerships that begin with a subprime purchase mortgage end up in foreclosure almost 20 percent of the time, or more than six times as often as experiences that begin with prime purchase mortgages."[41]

Such problems substantially impact the ability of homeowners to secure capital through home mortgages to start or expand small businesses. That issue has been highlighted in statements made by members of the Board of Governors of the Federal Reserve System to the U.S. Senate and U.S. House of Representatives:

- On April 16, 2008, Frederic Mishkin informed the U.S. Senate Committee on Small Business and Entrepreneurship that "one of the most important concerns about the future prospects for small business access to credit is that many small businesses use real estate assets to secure their loans. Looking forward, continuing declines in the value of their real estate assets clearly have the potential to substantially affect the ability of those small businesses to borrow. Indeed, anecdotal stories to this effect have already appeared in the press."[42]

- On November 20, 2008, Randall Kroszner told the U.S. House of Representatives Committee on Small Business that "small business and household finances are, in practice, very closely intertwined. [T]he most recent SSBF indicated that about 15 percent of the total value of small business loans in 2003 was collateralized by 'personal' real estate. Because the condition of household balance sheets can be relevant to the ability of some small businesses to obtain credit, the fact that declining house prices have weakened household balance-sheet positions suggests that the housing market crisis has likely had an adverse impact on the volume and price of credit that small businesses are able to raise over and above the effects of the broader credit market turmoil."[43]

Former Federal Reserve Chairman Ben Bernanke recognized the reality of those concerns in a speech titled "Restoring the Flow of Credit to Small Businesses" on July 12, 2010.[44] Bernanke indicated that small businesses have had difficulty accessing credit and pointed to the declining value of real estate as one of the primary obstacles.

Furthermore, the National Federation of Independent Business (NFIB) conducted a national survey of 751 small businesses in late-2009 to investigate how the recession impacted access to capital.[45,46] NFIB concluded that "falling real estate values (residential and commercial) severely limit small

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[41] Gerardi, Shapiro, and P. Willen. 2008. "Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosure. *Federal Reserve Bank of Boston.*

[42] Mishkin, Frederic. 2008. "Statement of Frederic S. Mishkin, Member, Board of Governors of the Federal Reserve System before the Committee on Small Business and Entrepreneurship, U.S. Senate on April 16."

[43] Kroszner, Randall. 2008. "Effects of the financial crisis on small business." *Testimony before the Committee on Small Business, U.S. House of Representative on November 20.*

[44] Bernanke, Ben. 2010. Restoring the Flow of Credit to Small Businesses. *Presented at the Federal Reserve Meeting Series: Addressing the Financing Needs of Small Businesses on July 12.*

[45] The study defined a small business as a business employing no less than one individual in addition to the owner(s) and no more than 250 individuals.

[46] National Federation of Independent Business (NFIB). 2010. Small Business Credit in a Deep Recession.

business owner capacity to borrow and strains currently outstanding credit relationships." Survey results indicated that 95 percent of small business employers owned real estate and 13 percent held "upside-down" property — that is, property for which the mortgage is worth more than its appraised value.[47]

Another study analyzed the Survey of Consumer Finances to explore racial/ethnic disparities in wealth and how those disparities were impacted by the recession.[48] The study showed that there were substantial wealth disparities between African Americans and whites as well as between Hispanics and whites and that those wealth disparities worsened between 1983 and 2010. High wealth families (the top 20% by net worth) saw their average wealth increase by nearly 120% between 1983 and 2010, while middle-wealth families saw their average wealth go up by only 13%. The lowest wealth families (the bottom 20%) saw their average wealth fall below zero, that is to say that their average debts exceeded their assets. In addition to growing over time, the wealth disparity also grows with age — whites are on a higher accumulation curve than African Americans and Hispanic Americans. The study also reports that the 2007 through 2009 recession exacerbated wealth disparities, particularly for Hispanic Americans. In 2010, Non-Hispanic whites on average had six times the wealth of African Americans and Hispanic Americans. The income gap, by comparison, is much smaller. In 2010, the average income for Non-Hispanic whites was twice that of African Americans and Hispanic Americans. [47]

Opportunities to obtain business capital through home mortgages appear to be limited especially for homeowners with little home equity. Furthermore, the increasing rates of default and foreclosure, especially for homeowners with subprime loans, reflect shrinking access to capital available through such loans. Those consequences are likely to have a disproportionate impact on minorities in terms of both homeownership and the ability to secure capital for business start-up and growth.

Redlining. Redlining refers to mortgage lending discrimination against geographic areas associated with high lender risk. Those areas are often racially determined, such as African American or mixed-race neighborhoods.[49] That practice can perpetuate problems in already poor neighborhoods.[50] Most quantitative studies have failed to find strong evidence in support of geographic dimensions of lender decisions. Studies in Columbus, Ohio; Boston, Massachusetts; and Houston, Texas found that racial differences in loan denial had little to do with the racial composition of a neighborhood but rather with the individual characteristics of the borrower.[51] Some studies found that the race of an applicant — but not the racial makeup of the neighborhood — to be an important factor in loan denials.

Studies of redlining have primarily focused on the geographic aspect of lender decisions. However, redlining can also include the practice of restricting credit flows to minority neighborhoods through

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47 "Upside-down property" is defined as a property for which the mortgage is worth more than the property's appraised value.

48 McKernan, Signe-Mary, Caroline Ratcliffe, Eugene Steverle and Sisi Zhang. 2013. "Less Than Equal: Racial Disparities in Wealth Accumulation." Urban Institute.

49 Holloway, Steven R. 1998. "Exploring the Neighborhood Contingency of Race Discrimination in Mortgage Lending in Columbus, Ohio." *Annals of the Association of American Geographers*. 88:252-276.

50 Ladd, Helen F. 1998. "Evidence on Discrimination in Mortgage Lending." *The Journal of Economic Perspectives*. 12:41-62.

51 See Holloway. 1998. "Exploring the Neighborhood Contingency of Race Discrimination in Mortgage Lending in Columbus, Ohio."; Tootell. 1996. "Redlining in Boston: Do Mortgage Lenders Discriminate Against Neighborhoods?"; and Holmes, Andrew and Paul Horvitz. 1994. "Mortgage Redlining: Race, Risk, and Demand." *The Journal of Finance*. 49:81-99.

procedures that are not observable in actual loan decisions. Examples include branch placement, advertising, and other pre-application procedures.[52] Such practices can deter minorities from starting businesses. Locations of financial institutions are important to small business start up, because local banking sectors often finance local businesses.[53] Redlining practices deny that resource to minorities.

In September of 2014, the New York attorney general filed a lawsuit against a regional lender in the Buffalo area, accusing it of violating the Fair Housing Act by denying mortgages to African Americans, regardless of credit. The suit claims the bank created a map that defined a "trade area" within which the bank would offer loans and the area deliberately excluded all predominately African American neighborhoods. Similarly, in May of 2014, the City of Providence, Rhode Island, filed suit against Santander bank, accusing it of refusing to offer mortgages in predominately minority neighborhoods; during the same month, Los Angeles filed suit against JPMorgan Chase, accusing it of both traditional redlining and reverse redlining (steering minorities toward subprime loans).[54]

Steering by real estate agents. Historically, differences in the types of loans that are issued to minorities have also been attributed to "steering" by real estate agents, who serve as an information filter.[55] Despite the fact that steering has been prohibited by law for many decades, some studies claim that real estate brokers provide different levels of assistance and different information on loans to minorities than they do to non-minorities.[56] Such steering can affect the perception of minority borrowers about the availability of mortgage loans.

Gender discrimination in mortgage lending. Comparatively little information is available on gender-based discrimination in mortgage lending markets. Historically, lending practices overtly discriminated against women by requiring information on marital and childbearing status. Perceived risk associated with granting loans to women of childbearing age and unmarried women resulted in "income discounting," limiting the availability of loans to women.[57]

The Equal Credit Opportunity Act (ECOA) in 1973 suspended such discriminatory lending practices. However, certain barriers affecting women have persisted after 1973 in mortgage lending markets. For example, there is some evidence that lenders have under-appraised properties for female borrowers.[58]

B. Access to Business Capital

Barriers to capital markets can have substantial impacts on small business formation and expansion. Several studies have found evidence that start-up capital is important for business profits, longevity, and other outcomes.

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52 Yinger, John. 1995. "Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination." Russell Sage Foundation. New York. 78-79.

53 Holloway. 1998. "Exploring the Neighborhood Contingency of Race Discrimination in Mortgage Lending in Columbus, Ohio."

54 The New York Times, New York Accuses Evans Bank of Redlining. (2014, September 2). Retrieved from http://nytimes.com/2014/09/02/new-york-set-to-accuse-evans-bank-of-redlining/?_php=true&_type=blogs&_php=true&_type=blogs&ref=business&_r=1.

55 Kantor, Amy C. and John D. Nystuen. 1982. "De Facto Redlining a Geographic View." *Economic Geography*. 4:309-328.

56 Yinger. 1995. Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination. 78–79.

57 Card. 1980. "Women, Housing Access, and Mortgage Credit."

58 Ladd, Helen F. 1982. "Equal Credit Opportunity: Women and Mortgage Credit." *The American Economic Review*. 72:166-170.

- The amount of start-up capital is positively associated with small business sales and other outcomes;[59]

- African Americans, Hispanic Americans, and women start their firms with about half the capital that Non-Hispanic whites use; [60]

- Limited access to capital has affected the size of African American-owned businesses;[61, 62] and

- Weak financial capital was identified as a reason that more African American-owned businesses than non-Hispanic white-owned businesses closed over a four-year period.[63]

Bank loans are one of the largest sources of debt capital for small businesses.[64] Discrimination in the application and approval processes of those loans and other credit resources could be detrimental to the success of minority- and women-owned businesses. African Americans and Hispanic American business owners rely disproportionately on owner equity investments and employ less debt from outside sources (banks). As a result they operate with substantially less capital overall (both at startup and in subsequent years) relative to their nonminority counterparts. Women-owned businesses show similar disparities in capital structure by operating with much less capital on average. Previous studies have examined race/ethnicity and gender discrimination in capital markets by evaluating:

- Loan denial rates;
- Loan values;
- Interest rates;
- Business owners' fears that loan applications will be rejected;
- Sources of capital; and
- Relationships between start-up capital and business survival.

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[59] See Fairlie, Robert W. and Harry A. Krashinsky. 2006. "Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited;" and Grown. 1991. "Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies."

[60] Robb, Alicia. 2012. "Access to Capital among Young Firms, Minority-owned Firms, Women-owned Firms and High-Tech Firms." Small Business Administration.

[61] Grown, C. and Bates, T. 1992. "Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies." Journal of Urban Affairs, 14: 25–41.

[62] Fairlie, Robert W. and Alicia M. Robb. 2010. *Race and Entrepreneurial Success*. Cambridge: MIT Press.

[63] Grown, C. and Bates, T. 1992. "Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies." Journal of Urban Affairs, 14: 25–41.

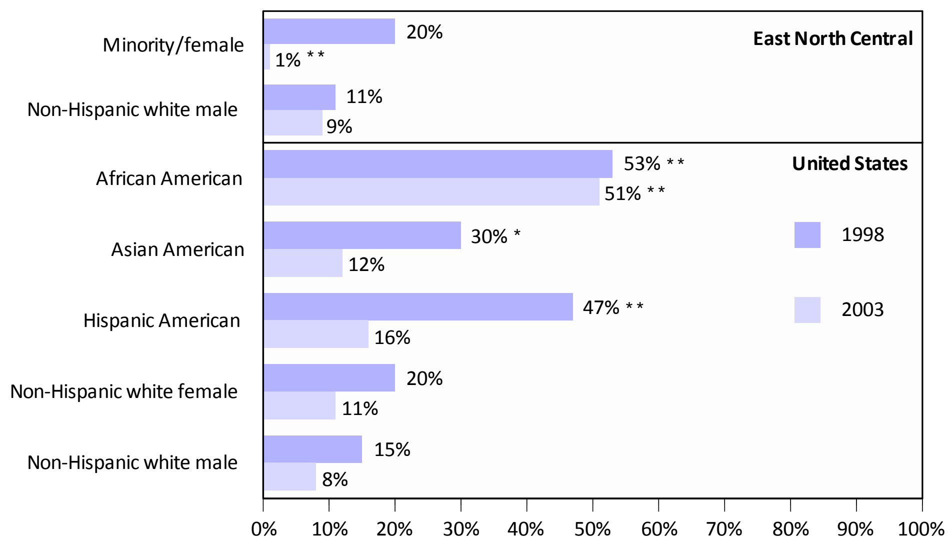
[64] Data from the 1998 SSBF indicates that 70 percent of loans to small business are from commercial banks. This result is present across all gender, race and ethnic groups with the exception of Black Americans, whose rate of lending from commercial banks is even greater than other minorities. See Blanchard, Lloyd, Bo Zhao and John Yinger. 2005. "Do Credit Market Barriers Exist for Minority and Woman Entrepreneurs." *Center for Policy Research, Syracuse University.*

To examine the role of race/ethnicity and gender in capital markets, the study team analyzed data from the Federal Reserve Board's 1998 and 2003 Survey of Small Business Finances (SSBF)—the most comprehensive national source of credit characteristics of small businesses (those with fewer than 500 employees). The survey contains information on loan denial and interest rates as well as anecdotal information from businesses. The samples from 1998 and 2003 contain records for 3,521 and 4,240 businesses, respectively. The study team applied sample weights to provide representative estimates.

The SSBF records the geographic location of businesses by Census Division not by city, county, or state. The East North Central Census Division (referred to here as the *East North Central region*) contains data for Wisconsin, along with Illinois, Indiana, Ohio, and Michigan. The East North Central region is the level of geographic detail of SSBF data most specific to Dane County, and 2003 is the most recent information available from the SSBF because the survey was discontinued after that year.

Loan denial rates. Figure G-7 presents loan denial rates from the 1998 and 2003 SSBFs for the East North Central region and for the United States.[65] National SSBF data for 1998 reveal that African American-, Asian American-, and Hispanic American-owned businesses exhibited loan denial rates considerably higher than that of non-Hispanic white male-owned businesses. In 2003, the loan denial rate for African American-owned businesses (51%) in the United States remained substantially higher than for non-Hispanic white male-owned businesses (8%).

Figure G-7.
Business loan denial rates, 1998 and 2003



Note:

*, ** Denote that the difference in proportions from non-Hispanic white for the given year is statistically significant at the 90% or 95% confidence level, respectively.

Source:

Keen Independent Research from 1998 and 2003 Survey of Small Business Finances.

As shown in Figure G-7, about 20 percent of minority- and women-owned businesses in the East North Central region reported being denied loans in 1998, a larger percentage than the 11 percent of non-Hispanic white male-owned businesses that reported being denied loans. According to 2003 SSBF data, a substantially smaller percentage of minority- and female-owned businesses in the East North Central region were denied loans compared to non-Hispanic white male-owned businesses,

[65] The denial rates represent the proportion of business owners whose loan applications over the previous three years were always denied, compared to business owners whose loan applications were always approved or sometimes approved and sometimes denied.

which was inconsistent with national results for that year. (Loan denial statistics on individual minority groups in the East North Central region are not reported in Figure G-7 due to relatively small sample sizes.)

Other researchers' regression analyses of loan denial rates. Several studies have investigated whether disparities in loan denial rates for different racial/ethnic and gender groups exist after controlling for other factors that affect loan approvals. Findings from those studies include the following:

- Commercial banks are less likely to loan to African American-owned businesses than to non-Hispanic white-owned businesses after statistically controlling for other factors.[66]

- African American, Hispanic American, and Asian American men are more likely to be denied loans than non-Hispanic white men. However, African American borrowers are more likely to apply for loans.[67]

- Disparities in loan denial rates between African American-owned and non-Hispanic white-owned businesses tend to decrease with increasing competitiveness of lender markets. A similar phenomenon is observed when considering differences in loan denial rates between male- and female-owned businesses.[68]

- The probability of loan denial decreases with greater personal wealth. However, accounting for personal wealth does not resolve the large differences in denial rates across African American-, Hispanic American-, Asian American-, and non-Hispanic white-owned businesses. Specifically, information about personal wealth explained some differences between Hispanic- and Asian American-owned businesses and non-Hispanic white-owned businesses, but they explained almost none of the differences between African American-owned businesses and non-Hispanic white-owned businesses.[69]

- Loan denial rates are higher for African American-owned businesses than for non-Hispanic white-owned businesses after accounting for several factors such as creditworthiness and other characteristics. Consistent evidence on loan denial rates and other indicators of discrimination in credit markets was not found for other minorities or for women.[70]

- Women-owned businesses are no less likely to apply or be approved for loans as compared with male-owned businesses.[71]

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[66] Cavalluzzo, Ken, Linda Cavalluzzo and John Wolken. 2002. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey." *Journal of Business.* 75: 641-679.

[67] Coleman, Susan. 2002. "Characteristics and Borrowing Behavior of Small, Women-owned Firms: Evidence from the 1998 National Survey of Small Business Finances." *The Journal of Business and Entrepreneurship.* 151-166.

[68] Cavalluzzo, 2002. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey."

[69] Cavalluzzo, Ken and John Wolken. 2002. "Small Business Turndowns, Personal Wealth and Discrimination." *FEDS Working Paper No. 2002-35.*

[70] Blanchflower, David G., Phillip B. Levine and David J. Zimmerman. 2003. "Discrimination in the Small Business Credit Market." *The Review of Economics and Statistics.* 85:930-943.

[71] Coleman. 2002. "Characteristics and Borrowing Behavior of Small, Women-owned Firms: Evidence from the 1998 National Survey of Small Business Finances."

- There are possible disparities in loan denial rates based on race/ethnicity and gender even after accounting for other factors. African American-owned businesses showed the highest probabilities of loan denial. Hispanic American- and Asian American-owned businesses also showed relatively high rates of loan denial.[72]

- A recent study using Kauffman Firm Survey data found that African- and Hispanic-owned firms had a lower probability of loan approval than non-Hispanic white-owned firms in 2007, 2008, 2009 and 2010 even after accounting for firm and owner characteristics. In 2010, Asian-owned firms were also less likely to be approved. Women-owned firms had a lower likelihood of loan approval than male-owned firms, but only for 2008.[73]

Regression model for denial rates. The Keen Independent study team conducted its own analysis of the SSBF by developing a model to explore the relationship between loan denial and the race/ethnicity and gender of business owners while statistically controlling for other factors. As discussed above, there is extensive literature on business loan denials that provides the theoretical basis for the regression models. Many studies have used probit econometric models to investigate the effects of various owner, business, and loan characteristics on the likelihood of loan denial. The standard model that the study team used includes three general categories of variables:

- The owner's demographic characteristics (including race and gender), credit, and resources (14 variables);

- Business characteristics and credit and financial health (29 variables); and

- The environment in which the business and lender operate and characteristics of the loan (19 variables).[74]

Keen Independent developed two models, one for the 1998 SSBF and one for the 2003 SSBF, using those standard variables. After excluding a small number of observations where the loan outcome was imputed, the 1998 national sample included 931 businesses that had applied for a loan during the three years preceding the 1998 SSBF and the East North Central region included 116 such businesses. The 2003 national sample included 1,897 businesses that had applied for a loan during the three years preceding the 2003 SSBF and the East North Central region included 319 such businesses.

[72] CRA International. 2007. "Measuring Minority- and Woman-Owned Construction and Professional Service Firm Availability and Utilization." *Prepared for Santa Clara Valley Transportation Authority.*

[73] Robb, Alicia. 2012. "Access to Capital among Young firms, Minority-owned Firms, Women-owned Firms, and High-tech Firms." U.S. Small Business Administration.

[74] See, for example, Blanchard, Lloyd; Zao, Bo and John Yinger. 2005. "Do Credit Barriers Exist for Minority and Women Entrepreneurs?" *Center for Policy Research, Syracuse University.*

Given the relatively small sample sizes for the East North Central region and the large number of variables in the model, the study team included all U.S. businesses in the model and estimated any East North Central region effects by including regional control variables — an approach commonly used in other studies that analyze SSBF data.[75] The regional variables include an indicator variable for businesses located in the East North Central region and interaction variables that represent businesses owned by minorities or women that are located in the East North Central region.[76]

Figure G-8 presents the marginal effects from the probit model predicting loan denials from 1998 SSBF data. The results from the model indicate that a number of race- and gender-neutral factors significantly affect the probability of loan denial. Those effects include the following:

- Being an older business owner is associated with an increased likelihood of loan denial;
- Having a four-year college degree is associated with a decreased likelihood of loan denial;
- More equity in the business owner's home — if he or she is a homeowner — is associated with a decreased likelihood of loan denial;
- Being a business that filed for bankruptcy in the past seven years or that has been delinquent in business transactions is associated with an increased likelihood of loan denial;
- Being a business owner who filed for bankruptcy in the past seven years or has had a judgment against him or her is associated with an increased likelihood of loan denial;
- Being a family-owned business is associated with an increased likelihood of loan denial;
- Having an existing line of credit, an existing mortgage, or existing vehicle or equipment loans is associated with a decreased likelihood of loan denial;
- Having outstanding loans from stockholders is associated with a higher likelihood of loan denial;
- Being in the construction industry is associated with an increased likelihood of loan denial;
- Being in highly concentrated industry segments (as measured by the Herfindahl index) is associated with an increased likelihood of loan denial; and
- Applying for business mortgage applications, vehicle and equipment loan applications, and loans for other purposes is associated with a decreased likelihood of loan denial.

[75] Blanchflower, David G.; Levine, Phillip B. and David J. Zimmerman. 2003. "Discrimination in the Small-Business Credit Market." *The Review of Economics and Statistics*. 85(4): 930-943; NERA Economic Consulting. 2008. "Race, Sex, and Business Enterprise: Evidence from the City of Austin." *Prepared for the City of Austin, Texas*; and CRA International. 2007. "Measuring Minority- and Woman-Owned Construction and Professional Service Firm Availability and Utilization. *Prepared for Santa Clara Valley Transportation Authority.*

[76] KIR also considered an interaction variable to represent businesses that are both minority- and female-owned but the term was not significant in 1998 or 2003.

Figure G-8.
Likelihood of business loan denial (probit regression) in the U.S. in the 1998 SSBF,
Dependent variable: loan denial

Variable	Marginal effect	Variable	Marginal effect	Variable	Marginal effect
Race/ethnicity and gender		**Firm's characteristics, credit and financial health**		**Firm and lender environment and loan characteristics**	
African American	0.280 **	D&B credit score = moderate risk	0.088	Partnership	0.021
Asian American	0.036	D&B credit score = average risk	0.107	S corporation	-0.019
Hispanic American	0.217 **	D&B credit score = significant risk	0.056	C corporation	-0.032
Native American	0.063	D&B credit score = high risk	0.064	Construction industry	0.107 **
Female	-0.008	Total employees	0.000	Manufacturing industry	0.020
East North Central region	-0.052	Percent of business owned by principal	0.000	Transportation, communications and utilities industry	0.075
African American in East North Central region	0.567 **	Family-owned business	0.066 **	Engineering industry	0.112
Female in East North Central region	-0.032	Firm purchased	-0.032	Other industry	0.042
		Firm inherited	0.016	Herfindahl index = .10 to .18	0.387 **
Owner's characteristics, credit and resources		Firm age	-0.002	Herfindahl index = .18 or above	0.378 **
Age	0.002 *	Firm has checking account	0.033	Located in MSA	0.008
Owner experience	0.001	Firm has savings account	-0.021	Sales market local only	0.017
Less than high school education	0.060	Firm has line of credit	-0.125 **	Loan amount	0.000
Some college	-0.017	Existing capital leases	-0.012	Capital lease application	-0.021
Four-year degree	-0.059 **	Existing mortgage for business	-0.045 *	Business mortgage application	-0.066 **
Advanced degree	-0.046	Existing vehicle loans	-0.069 **	Vehicle loan application	-0.097 **
Log of Home Equity	-0.009 **	Existing equipment loans	-0.053 **	Equipment loan application	-0.074 **
Bankruptcy in past 7 years	0.310 **	Existing loans from stockholders	0.106 **	Loan for other purposes	-0.041 *
Judgement against in past 3 years	0.252 **	Other existing loans	-0.019		
Log of net worth excluding home	0.001	Firm used trade credit in past year	-0.032		
Owner has negative net worth	-0.029	Log of total sales in prior year	0.001		
		Negative sales in prior year	0.085		
		Log of cost of doing business in prior year	0.000		
		Log of total assets	0.005		
		Negative total assets	-0.043		
		Log of total equity	0.013		
		Negative total equity	0.195		
		Firm bankruptcy in past 7 years	0.211 *		
		Firm delinquency in business transactions	0.243 **		

Note: * Statistically significant at 90% confidence level.
** Statistically significant at 95% confidence level.

For ease of interpretation the marginal effects of the probit coefficients are displayed in the figure. Significance is calculated using t-statistics from the probit coefficients associated with the marginal effects.

"Native American or other minority" and "Mining industry" perfectly predicted loan outcome and were excluded from the final regression.

Source: Keen Independent Research analysis of 1998 SSBF data.

After statistically controlling for race- and gender-neutral influences, the study team observed that businesses owned by African Americans and Hispanic Americans were more likely to have their loans denied than other businesses. The indicator variable for the East North Central region was not statistically significant. However, the interaction term for African Americans in the East North Central region was statistically significant. That result indicates that the probability of loan denials for African Americans within the East North Central region is significantly different from the U.S. as a whole after controlling for other factors.

The study team simulated loan approval rates for minority groups with statistically significant disparities (i.e., African American- and Hispanic American-owned businesses, and African American-owned businesses in the East North Central region) by comparing observed loan approval rates with simulated loan approval rates.[77] "Loan approval" means that a business owner always or at least sometimes had his or her business loan applications approved over the previous three years. "Rates" of loan approval represent the percentage of businesses that received loan approvals (always or sometimes) during that time period.

The probit modeling approach allowed for simulations of loan approval rates for those groups as if they had the same probability of loan approval as similarly situated non-Hispanic white male-owned businesses. To conduct those simulations, Keen Independent took the following steps:

1. Keen Independent performed a probit regression analysis predicting loan approval using only non-Hispanic white male-owned businesses in the dataset.[78]
2. The study team then used the coefficients from that model and the mean characteristics of African American- and Hispanic American-owned businesses (including the effects of a business being in the East North Central region) to estimate the probability of loan approval of such groups.

The results of those simulations yielded estimates of loan approval rates for non-Hispanic white-owned businesses who shared the same characteristics of African American- and Hispanic American-owned businesses, and African American-owned businesses in the East North Central region. Higher simulated rates indicate that, in reality, African American- and Hispanic American-owned businesses are less likely to be approved for loans than similarly-situated non-Hispanic white male-owned businesses. Figure G-9 shows those simulated loan approval rates ("benchmark") in comparison to the actual approval rates observed in the 1998 SSBF. The disparity index was calculated by taking the actual loan approval rate for each group and dividing it by each group's benchmark, and then multiplying the result by 100. Values less than 100 indicate that, in reality, the group is less likely to be approved for a loan than what would be expected for similarly-situated non-Hispanic white male-owned businesses — in other words that race/ethnicity affects the likelihood of those groups being approved for loans.

[77] The approval rate is equal to one minus the denial rate.

[78] That version of the model excluded the race/ethnicity and gender indicator variables, because the value of all of those variables would be the same (i.e., 0).

Figure G-9.
Comparison of actual loan approval rates to simulated loan approval rates, 1998

Group	Loan approval rates Actual	Benchmark	Disparity index (100 = parity)
African American	46.4%	75.2%	62
Hispanic American	53.7%	75.8%	71
African American - East North Central Region	22.6%	89.9%	25

Note: Actual approval rates presented here and denial rates in Figure G-7 do not sum to 100% because some observations were excluded from the probit regression.

"Loan approval" means that a business owner always or at least sometimes had his or her business loan applications approved over the previous three years.

Source: Keen Independent Research analysis of 1998 NSSBF data.

Based on 1998 SSBF data, the actual loan approval rate for African American-owned businesses was 46 percent. Model results showed that African American-owned businesses would have an approval rate of about 75 percent if they were approved for loans at the same rate as similarly-situated non-Hispanic white male-owned businesses (disparity index of 62). Similarly, Hispanic American-owned businesses would have an approval rate of about 76 percent if they were approved for loans at the same rate as similarly-situated non-Hispanic white male-owned businesses, compared with the actual loan approval rate of 54 percent (disparity index of 71). Additionally, African American-owned businesses in the East North Central region would have an approval rate of approximately 90 percent if they were approved for loans at the same rate as similarly-situated non-Hispanic white male-owned businesses. Their approval rate of 23 percent yields a disparity index of 25.

Keen Independent also conducted a regression analysis with 2003 SSBF data.[79] As in the 1998 regression analysis, the dependent variable represents whether business' loan applications over the past three years were always denied. Figure G-10 presents the marginal effects from the 2003 probit model predicting loan denial. In the 2003 model, the following race- and gender-neutral factors significantly affected the probability of loan denial:

- Being a business owner who filed for bankruptcy in the past seven years is associated with an increased likelihood of loan denial;
- Being a business with a high risk credit score is associated with an increased likelihood of loan denial;
- Being an inherited business or older business is associated with a decreased likelihood of loan denial;
- Having an existing line of credit or savings account is associated with a decreased likelihood of loan denial;

[79] The 2003 SSBF contains multiple implicates (five copies of each record) to better address the issue of missing values. The values of all reported variables remain constant across the five implicates, but the values of imputed variables may differ. Only 1.8 percent of all values was missing and has been imputed. Keen Independent's regression analysis is performed on the first implicate.

- Having existing loans (other than mortgage, vehicle, equipment or stockholder loans) is associated with an increased likelihood of loan denial;
- Being an S corporation is associated with an increased likelihood of loan denial;
- Being in the transportation, communications, and utilities industry is associated with an increased likelihood of loan denial;
- Location in metropolitan areas is associated with an increased likelihood of loan denial; and
- Applying for business mortgages, vehicle loans and loans for "other" purposes is associated with a deceased likelihood of loan denial.

After statistically controlling for race- and gender-neutral influences, the study team observed that businesses owned by African Americans were more likely to have their loans denied than other businesses. Figure G-10 also indicates that although there is little or no overall influence of business owner gender on rates of business loan denial.

Figure G-10.
Likelihood of business loan denial (probit regression) in the U.S. in the 2003 SSBF,
Dependent variable: loan denial

Variable	Marginal effect
Race/ethnicity and gender	
African American	0.224 **
Asian American	-0.009
Hispanic American	0.001
Native American	0.034
Other minority	0.051
Female	0.009
East North Central region	0.007
African American in East North Central region	-0.035
Owner's characteristics, credit and resources	
Age	0.000
Owner experience	0.001
Some college	-0.002
Four-year degree	-0.001
Advanced degree	-0.022
Log of Home Equity	0.001
Bankruptcy in past 7 years	0.094 *
Judgement against in past 3 years	0.016
Log of net worth excluding home	0.000

Variable	Marginal effect
Firm's characteristics, credit and financial health	
D&B credit score = moderate risk	-0.022
D&B credit score = average risk	0.027
D&B credit score = significant risk	0.012
D&B credit score = high risk	0.048 **
Total employees	0.000
Percent of business owned by principal	0.000
Family-owned business	-0.019
Firm purchased	0.000
Firm inherited	-0.039 **
Firm age	-0.001 *
Firm has checking account	-0.042
Firm has savings account	-0.023 **
Firm has line of credit	-0.095 **
Existing capital leases	-0.002
Existing mortgage for business	0.011
Existing vehicle loans	0.014
Existing equipment loans	-0.011
Existing loans from stockholders	0.018
Other existing loans	0.028 *
Firm used trade credit in past year	-0.010
Log of total sales in prior year	0.004
Log of cost of doing business in prior year	-0.008
Log of total assets	-0.001
Log of total equity	0.000
Negative total equity	0.018
Firm bankruptcy in past 7 years	-0.025
Firm delinquency in business transactions	0.020

Variable	Marginal effect
Firm and lender environment and loan characteristics	
Partnership	0.006
S corporation	0.027 *
C corporation	0.032
Construction industry	0.031
Manufacturing industry	0.027
Transportation, communications and utilities	0.211 **
Finance, insurance and real estate industries	0.000
Engineering industry	0.012
Other industry	0.011
Herfindahl index = .10 to .18	0.006
Herfindahl index = .18 or above	0.031
Located in MSA	0.023 *
Sales market local only	0.015
Loan amount	0.000
Capital lease application	-0.013
Business mortgage application	-0.034 **
Vehicle loan application	-0.056 **
Equipment loan application	-0.021
Loan for other purposes	-0.023 *

Note: * Statistically significant at 90% confidence level.
** Statistically significant at 95% confidence level.

For ease of interpretation the marginal effects of the probit coefficients are displayed in the figure. Significance is calculated using t-statistics from the probit coefficients associated with the marginal effects.

"Less than high school education," "Negative sales in prior year" and "Mining industry" perfectly predicted loan outcome and were excluded from the final regression; "Owner has negative net worth" and "Negative total assets" dropped because of colinearity.

Source: Keen Independent Research analysis of 2003 SSBF data.

The study team also simulated approval rates from the 2003 SSBF results using the same approach as it used for the 1998 results. Figure G-11 presents actual and simulated ("benchmark") approval rates for African American-owned businesses, the sole minority group with statistically significant disparities in loan approval in the 2003 data. Simulated approval rates indicated that African American-owned businesses are approved at 72 percent of the rate observed for similarly-situated non-Hispanic white male-owned businesses (i.e., non-Hispanic white male-owned businesses with the same demographic, credit, and financial health; lender environment; and loan characteristics of African American-owned businesses).

Figure G-11.
Comparison of actual loan approval rates to simulated loan approval rates, 2003

Group	Loan approval rates Actual	Benchmark	Disparity index (100 = parity)
African American	49.1%	68.4%	72

Note: Actual approval rates presented here and denial rates in Figure G-7 do not sum to 100% because some observations were excluded from the probit regression.

"Loan approval" means that a business owner always or at least sometimes had his or her business loan applications approved over the previous three years.

Source: Keen Independent Research analysis of 2003 NSSBF data.

Applying for loans. Fear of loan denial can be a barrier to business credit in the same way that actual loan denial presents a barrier. The SSBF includes a question that gauges whether a business owner did not apply for a loan due to fear of loan denial. Figure G-12 presents the percentage of businesses that reported needing credit but did not apply for loans because of fears of denial based on data from the 1998 and 2003 SSBF.

In 1998 and 2003, African American- and Hispanic-owned businesses were more likely than non-Hispanic white male-owned businesses to forgo applying for loans due to a fear of denial. Non-Hispanic white women-owned businesses were also more likely to forgo applying for loans due to a fear of denial. In the East North Central region in both 1998 and 2003, fear of denial was greater for minority- and women-owned businesses than for non-Hispanic white male-owned businesses. This difference was statistically significant in 2003 but not in 1998, potentially due to smaller sample sizes in 1998.

Other researchers' regression analyses of fear of denial. Other studies have identified factors that influence the decision to apply for a loan, such as business size, business age, owner age, and educational attainment. Accounting for those factors can help in determining whether race/ethnicity or gender of the business owner explain whether the owner did not apply for a loan due to fear of loan denial.

Results indicate that African American and Hispanic American business owners are significantly less likely to apply for loans due to fear of denial.[80]

[80] Cavalluzzo, 2002. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey."

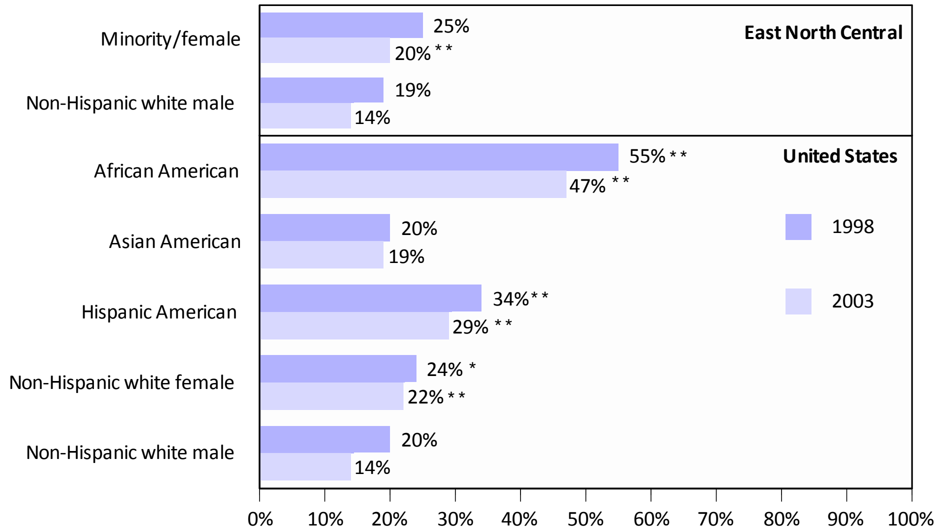
Figure G-12. Businesses that needed loans but did not apply due to fear of denial, 1998 and 2003

Note:

** Denotes that the difference in proportions from non-Hispanic white male-owned businesses is statistically significant at the 95% confidence level.

Source:

Ken Independent Research from 1998 and 2003 Survey of Small Business Finances.



- After statistically controlling for educational attainment, there were no differences in loan application rates between non-Hispanic white, African American, Hispanic American, and Asian American male business owners.[81]

- African American-owned businesses were more likely than other businesses to report being seriously concerned with credit markets and were less likely to apply for credit in fear of loan denial.[82]

- A Small Business Administration study found that African American- and Hispanic American-owned firms were less likely to apply for credit when needed for fear of having the loan application denied than non-Hispanic white-owned firms in 2007, 2008, 2009 and 2010 after accounting for firm and owner characteristics. Women-owned firms were less likely than male-owned firms to apply for loans for fear of denial in 2008, 2009 and 2010.[83]

- A study that used a probit econometric model to investigate businesses that did not apply for loans for fear of denial revealed possible race-based differences in not applying for loans for fear of denial. Results indicated that African American- and Hispanic American-owned businesses are more likely to not apply for loans out of fear of being denied. In addition, results for businesses located in the East North Central region did not differ significantly from national results.[84]

Regression model for fear of denial. The Keen Independent study team conducted its own econometric analysis of fear of denial by developing a model to explore the relationships between fear of denial and the race/ethnicity and gender of business owners while statistically controlling for other factors, based on SSBF data. The model was similar to the probit regression for likelihood of

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[81] Coleman, Susan. 2004. "Access to Debt Capital for Small Women- and Minority-Owned Firms: Does Educational Attainment Have an Impact?" *Journal of Developmental Entrepreneurship.* 9:127-144.

[82] Blanchflower et al., 2003. Discrimination in the Small Business Credit Market.

[83] Robb, Alicia. 2012. "Access to Capital among Young firms, Minority-owned Firms, Women-owned Firms, and High-tech Firms." U.S. Small Business Administration.

[84] CRA International. 2007. "Measuring Minority- and Woman-Owned Construction and Professional Service Firm Availability and Utilization. *Prepared for Santa Clara Valley Transportation Authority.*

denial except that the fear of denial regression includes business owners who did not apply for a loan and excludes loan characteristics. After excluding a small number of observations where fear of denial was imputed, the 1998 national sample included 3,523 businesses and the East North Central region included 485 such businesses. The 2003 national sample included 4,169 businesses and the East North Central region included 650 such businesses. In both 1998 and 2003, East North Central region effects are modeled using regional control variables in the national model.[85]

Figure G-13 presents the marginal effects from the 1998 probit regression model predicting the likelihood that a business needs credit but will not apply due to fear of loan denial. The results from the model indicate that a number of race- and gender-neutral factors significantly affect the probability of forgoing application for a loan due to fear of denial. Factors that are associated with an increased likelihood of not applying for a loan due to fear of loan denial include:

- The owner filing for bankruptcy in the past seven years or having had a judgment against the business;
- Having an average, significant, or high risk credit score;
- Having an existing mortgage, existing vehicle loans, existing loans from stockholders, or other existing loans;
- Higher total assets; and
- Having delinquency in business transactions or filing for bankruptcy in the past seven years.

Factors that are associated with a decreased likelihood of not applying for a loan due to fear of loan denial include:

- More equity in the business owner's home — if he or she is a homeowner — and more business owner net worth;
- If the business owner has negative net worth;
- If the business was acquired through a purchase;
- Having an older business;
- Having a savings account or a line of credit; and
- More sales in the prior year (but also negative sales in the prior year).

After statistically controlling for race- and gender-neutral influences, the study team observed that African American-owned businesses were more likely to forgo applying for a loan due to fear of denial.

[85] Again, the study team considered an interaction variable to represent businesses that are both minority and female, but the term was not significant in 1998 or 2003.

Figure G-13.
Likelihood of forgoing a loan application due to fear of denial (probit regression) in the U.S. in the 1998 SSBF,
Dependent variable: needed a loan but did not apply due to fear of denial

Variable	Marginal effect	Variable	Marginal effect	Variable	Marginal effect
Race/ethnicity and gender		**Firm's characteristics, credit and financial health**		**Firm and lender environment and loan characteristics**	
African American	0.262 **	D&B credit score = moderate risk	0.081	Partnership	-0.006
Asian American	0.004	D&B credit score = average risk	0.105 **	S corporation	-0.009
Hispanic American	0.034	D&B credit score = significant risk	0.169 **	C corporation	0.031
Native American	0.064	D&B credit score = high risk	0.208 **	Mining industry	-0.087
Female	0.026	Total employees	0.000	Construction industry	-0.033
East North Central region	-0.029	Percent of business owned by principal	0.000	Manufacturing industry	0.001
African American in East North Central region	-0.057	Family-owned business	0.017	Transportation, communications and utilities	0.052
Asian American in East North Central region	0.019	Firm purchased	-0.069 **	Finance, insurance and real estate industries	-0.035
Hispanic American in East North Central region	0.139	Firm inherited	0.006	Engineering industry	0.000
Female in East North Central region	-0.025	Firm age	-0.002 *	Other industry	-0.033
		Firm has checking account	0.048	Herfindahl index = .10 to .18	0.000
Owner's characteristics, credit and resources		Firm has savings account	-0.047 **	Herfindahl index = .18 or above	0.016
Age	-0.001	Firm has line of credit	-0.062 **	Located in MSA	0.043 **
Owner experience	0.001	Existing capital leases	0.036	Sales market local only	-0.018
Less than high school education	0.073	Existing mortgage for business	0.107 **		
Some college	-0.004	Existing vehicle loans	0.047 **		
Four-year degree	-0.015	Existing equipment loans	0.031		
Advanced degree	-0.032	Existing loans from stockholders	0.099 **		
Log of home equity	-0.007 **	Other existing loans	0.068 **		
Bankruptcy in past 7 years	0.331 **	Firm used trade credit in past year	0.015		
Judgement against in past 3 years	0.099 **	Log of total sales in prior year	-0.022 **		
Log of net worth excluding home	-0.033 **	Negative sales in prior year	-0.164 **		
Owner has negative net worth	-0.167 **	Log of cost of doing business in prior year	-0.002		
		Log of total assets	0.020 **		
		Negative total assets	0.110		
		Log of total equity	-0.010		
		Negative total equity	-0.005		
		Firm bankruptcy in past 7 years	0.574 **		
		Firm delinquency in business transactions	0.236 **		

Note: * Statistically significant at 90% confidence level.
** Statistically significant at 95% confidence level.

For ease of interpretation the marginal effects of the probit coefficients are displayed in the figure. Significance is calculated using t-statistics from the probit coefficients associated with the marginal effects.

Source: Keen Independent Research analysis of 1998 SSBF data.

Figure G-14 presents the marginal effects from the 2003 probit model predicting the likelihood that a business needs credit but will not apply for a loan due to fear of denial. The results from the model indicate that a number of race- and gender-neutral factors significantly affect the probability of forgoing application for a loan due to fear of denial. Factors that are associated with an increased likelihood of not applying for a loan due to fear of loan denial include:

- The owner filing for bankruptcy or having had a judgment against them;
- Having a significant or high risk credit score;
- A larger percentage of business owned by the principal owner;
- Having an existing mortgage; existing vehicle or equipment loans; existing loans from stockholders; or other existing loans;
- Higher cost of doing business in the prior year;
- Having been delinquent in business transactions or filing for bankruptcy in the past seven years; and
- Location in a metropolitan area.

Factors that are associated with a decreased likelihood of not applying for a loan due to fear of loan denial include:

- Being older and having a four-year college degree;
- More equity in the business owner's home — if he or she is a homeowner — and more business owner net worth;
- Having an older business;
- More sales in the prior year (but also negative sales in the prior year); and
- Having a local (as opposed to regional, national or international) sales market.

After statistically controlling for race- and gender-neutral influences, the study team observed that African American- and Hispanic American-owned businesses were more likely to forgo applying for a loan due to fear of denial. In the East North Central region, Asian American- and Hispanic American-owned businesses were less likely to fear denial than other businesses.

Figure G-14.
Likelihood of forgoing a loan application due to fear of denial (probit regression) in the U.S. in the 2003 SSBF,
Dependent variable: needed a loan but did not apply due to fear of denial

Variable	Marginal effect	Variable	Marginal effect	Variable	Marginal effect
Race/ethnicity and gender		**Firm's characteristics, credit and financial health**		**Firm and lender environment and loan characteristics**	
African American	0.198 **	D&B credit score = moderate risk	-0.007	Partnership	-0.002
Asian American	0.060	D&B credit score = average risk	0.042	S corporation	0.011
Hispanic American	0.073 *	D&B credit score = significant risk	0.050 *	C corporation	0.014
Native American	0.012	D&B credit score = high risk	0.108 **	Construction industry	0.037
Other minority	0.142	Total employees	0.000	Manufacturing industry	-0.011
Female	0.030	Percent of business owned by principal	0.001 **	Transportation, communications and utilities	-0.046
East North Central region	-0.009	Family-owned business	-0.010	Finance, insurance and real estate industries	0.049
African American in East North Central region	-0.070	Firm purchased	-0.009	Engineering industry	-0.024
African American in East North Central region	-0.091 **	Firm inherited	-0.034	Other industry	0.013
Hispanic American in East North Central region	-0.100 **	Firm age	-0.003 **	Herfindahl index = .10 to .18	-0.014
Native American in East North Central region	0.028	Firm has checking account	0.008	Herfindahl index = .18 or above	0.016
Female in East North Central region	0.034	Firm has savings account	0.015	Located in MSA	0.049 **
		Firm has line of credit	-0.004	Sales market local only	-0.059 **
Owner's characteristics, credit and resources		Existing capital leases	0.033		
Age	-0.002 **	Existing mortgage for business	0.050 **		
Owner experience	0.001	Existing vehicle loans	0.029 *		
Less than high school education	0.046	Existing equipment loans	0.041 *		
Some college	0.001	Existing loans from stockholders	0.074 **		
Four-year degree	-0.038 **	Other existing loans	0.107 **		
Advanced degree	-0.022	Firm used trade credit in past year	0.016		
Log of home equity	-0.005 **	Log of total sales in prior year	-0.021 **		
Bankruptcy in past 7 years	0.224 **	Negative sales in prior year	-0.091 *		
Judgement against in past 3 years	0.271 **	Log of cost of doing business in prior year	0.012 *		
Log of net worth excluding home	-0.024 **	Log of total assets	0.005		
		Log of total equity	-0.007		
		Negative total equity	-0.033		
		Firm bankruptcy in past 7 years	0.200 *		
		Firm delinquency in business transactions	0.145 **		

Note: * Statistically significant at 90% confidence level.
** Statistically significant at 95% confidence level.

For ease of interpretation the marginal effects of the probit coefficients are displayed in the figure. Significance is calculated using t-statistics from the probit coefficients associated with the marginal effects.

"Mining industry" perfectly predicted loan outcome and was excluded from the regression; "Owner has negative net worth" and "Negative total assets" dropped because of colinearity.

Source: Keen Independent Research analysis of 2003 SSBF data.

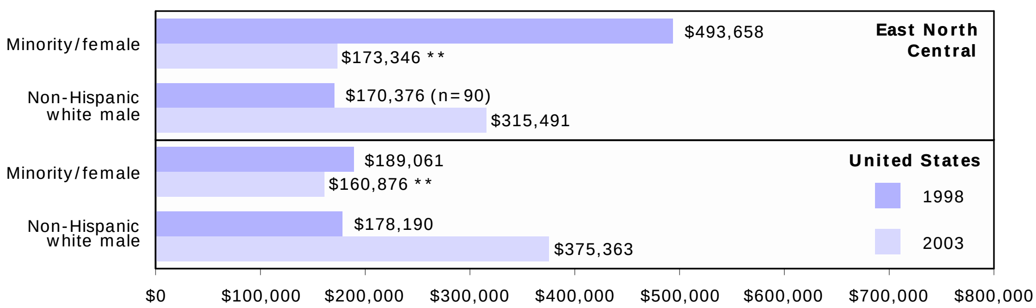
Loan values. The study team also considered average loan values for businesses that received loans. Results from the 1998 and 2003 SSBFs for mean loan values issued to different racial/ethnic and gender groups are presented in Figure G-15.

Comparisons of loan amounts between non-Hispanic white male-owned businesses and minority- and women-owned businesses indicated the following:

- In 1998, minority- and women-owned businesses in the East North Central region were issued loans worth more, on average, than loans issued to non-Hispanic white male-owned businesses although this difference was not significant. In 2003, minority- and women-owned businesses in the East North Central region were issued loans worth significantly less, on average, than loans issued to non-Hispanic white male-owned businesses.

- In 2003, national results showed that minority- and women-owned businesses were issued loans that were worth, on average, less than half the loan amount issued to non-Hispanic white male-owned businesses. However, national 1998 data suggest that minority- and women-owned businesses were issued loans that were worth slightly more, on average, than loans issued to non-Hispanic white male-owned businesses.

Figure G-15.
Mean value of approved business loans, 1998 and 2003



Note: *, ** Denote that the difference in proportions from non-Hispanic white male-owned businesses is statistically significant at the 90% or 95% confidence level, respectively.

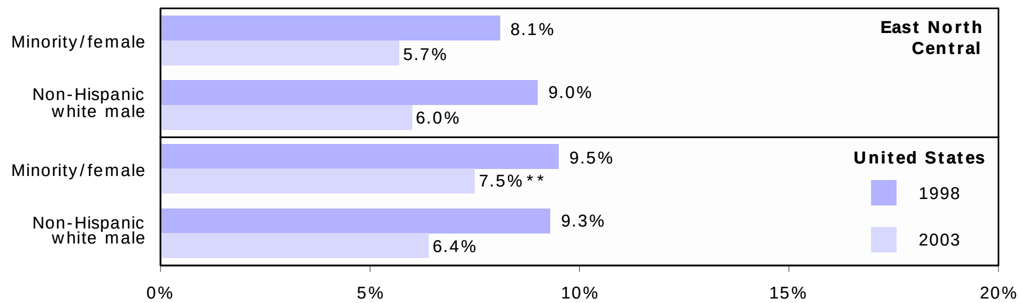
Source: Keen Independent Research from 1998 and 2003 Survey of Small Business Finances.

Previous national studies have found that African American-owned businesses are issued loans that are worth less than loans issued to non-Hispanic white-owned businesses with similar characteristics. Examinations of construction companies in the United States have also revealed that African American-owned businesses are issued loans that are worth less than loans issued to businesses with otherwise identical characteristics.[86]

[86] Grown. 1991. "Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies."

Interest rates. Based on 1998 and 2003 SSBF data, Figure G-16 presents the average interest rates on commercial loans by the race/ethnicity of business owners. In 1998 and 2003, on average, minority- and women-owned businesses in the East North Central region were issued loans with similar interest rates to loans issued to non-Hispanic white male-owned businesses. The overall pattern in the East North Central region for loan interest rates was similar to that found in the United States in 1998. In 2003, however, minority and women-owned businesses were issued loans with significantly higher interest rates than non-Hispanic white male-owned businesses in the United States as a whole.

Figure G-16.
Mean interest rate for business loans, 1998 and 2003



Note: *, ** Denote that the difference in proportions from non-Hispanic white male-owned businesses is statistically significant at the 90% or 95% confidence level, respectively.

Source: Keen Independent Research from 1998 and 2003 Survey of Small Business Finances.

Other researchers' regression analyses of interest rates. Previous studies have investigated differences in interest rates across race/ethnicity and gender while statistically controlling for factors such as individual credit history, business credit history, and Dun & Bradstreet credit scores. Findings from those studies include the following:

- Hispanic American-owned businesses had significantly higher interest rates for lines of credit in places with less credit market competition. However, the study found no evidence that African American- or female-owned businesses received higher rates.[87]

- Among a sample of businesses with no past credit problems, African American-owned businesses had significantly higher interest rates on approved loans than other groups.[88]

- On a national level, African American- and Hispanic American-owned businesses pay a higher interest rate for loans than non-Hispanic white-owned businesses after statistically controlling for other factors. The study did not find any additional differences between minority- and non-minority-owned businesses located in the East North Central region.[89]

Regression model for interest rates in the SSBF. The Keen Independent study team conducted a regression analysis of interest rates using data from both the 1998 and the 2003 SSBF's in order to explore the relationships between interest rates and the race/ethnicity and gender of business owners while statistically controlling for other factors. Keen Independent developed a linear regression

[87] Cavalluzzo. 2002. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey."

[88] Blanchflower. 2003. "Discrimination in the Small Business Credit Market."

[89] CRA International. 2007. "Measuring Minority- and Woman-Owned Construction and Professional Service Firm Availability and Utilization. *Prepared for Santa Clara Valley Transportation Authority.*

model using the same control variables as the likelihood of denial model along with additional characteristics of the loan received, such as whether the loan was guaranteed, if collateral was required, the length of the loan, and whether the interest rate was fixed or variable.

After excluding a small number of observations where the interest rate was imputed, the 1998 national sample included 796 businesses that received a loan in the past three years, and the East North Central region included 105 such businesses. The 2003 national sample included 1,739 businesses that received a loan in the past three years, and the East North Central region included 301 such businesses. Again, East North Central region effects are modeled using regional control variables.[90]

Figure G-17 presents the coefficients from the 1998 linear model. The results from the regression model indicate that a number of race- and gender-neutral factors are significantly associated with the interest rates that businesses received, including the following factors:

- Location in the East North Central region is associated with lower interest rates;
- Being a business owner with less than a high school education is associated with higher interest rates;
- Having existing loans (other than vehicle or equipment loans or loans from stockholders) is associated with higher interest rates;
- Negative sales in the prior year are associated with lower interest rates;
- An increase in a business' total equity is associated with lower interest rates as is having negative equity;
- Having a line of credit is associated with lower interest rates;
- Being a firm that has been delinquent in business transactions is associated with an increased likelihood of loan denial;
- Capital leases are associated with higher interest rates; and
- Collateral requirements are associated with lower interest rates.

[90] Keen Independent considered an interaction variable to represent businesses that are both minority and female but the term was not significant in 1998 or 2003.

Figure G-17.
Interest rate (linear regression) in the U.S. in the 1998 SSBF,
Dependent variable: interest rate on most recent approved loan

Variable		
Race/ethnicity and gender		
Constant	15.253	**
African American	1.261	
Asian American	0.232	
Hispanic American	-0.373	
Native American	-0.736	
Female	-0.316	
East North Central region	-0.738	**
African American in East North Central region	-1.467	
Asian American in East North Central region	0.127	
Hispanic American in East North Central region	1.173	
Female in East North Central region	0.261	
Owner's characteristics, credit and resources		
Age	0.000	
Owner experience	-0.018	
Less than high school education	1.217	**
Some college	-0.247	
Four-year degree	0.081	
Advanced degree	0.029	
Log of home equity	-0.051	
Bankruptcy in past 7 years	1.047	
Judgement against in past 3 years	0.153	
Log of net worth excluding home	-0.051	
Owner has negative net worth	-0.103	

Variable	Coefficient	
Firm's characteristics, credit and financial health		
D&B credit score = moderate risk	-0.351	
D&B credit score = average risk	-0.237	
D&B credit score = significant risk	-0.235	
D&B credit score = high risk	0.416	
Total employees	0.002	
Percent of business owned by principal	0.004	
Family-owned business	0.351	
Firm purchased	-0.306	
Firm inherited	-0.016	
Firm age	0.001	
Firm has checking account	0.013	
Firm has savings account	0.336	
Firm has line of credit	-0.386	*
Existing capital leases	0.027	
Existing mortgage for business	0.115	
Existing vehicle loans	-0.203	
Existing equipment loans	-0.087	
Existing loans from stockholders	0.258	
Other existing loans	0.561	**
Firm used trade credit in past year	-0.202	
Log of total sales in prior year	-0.198	
Negative sales in prior year	-3.074	*
Log of cost of doing business in prior year	0.022	
Log of total assets	0.043	
Negative total assets	2.044	
Log of total equity	-0.186	**
Negative total equity	-2.387	**
Firm bankruptcy in past 7 years	-0.610	
Firm delinquency in business transactions	0.500	*

Variable	Coefficient	
Firm and lender environment and loan characteristics		
Partnership	0.063	
S corporation	0.267	
C corporation	0.264	
Mining industry	-0.253	
Construction industry	-0.095	
Manufacturing industry	0.043	
Transportation, communications and utilities indus	0.149	
Finance, insurance and real estate industries	-0.458	
Engineering industry	-0.222	
Other industry	-0.423	
Herfindahl index = .10 to .18	-0.462	
Herfindahl index = .18 or above	-0.148	
Located in MSA	-0.085	
Sales market local only	-0.166	
Approved Loan amount	0.000	
Capital lease application	1.202	**
Business mortgage application	-0.325	
Vehicle loan application	-0.470	
Equipment loan application	-0.072	
Loan for other purposes	-0.497	
Loan guaranteed	0.102	
Collateral required	-0.402	*
Length of loan (months)	-0.002	
Fixed rate	0.054	

Note: * Statistically significant at 90% confidence level.
** Statistically significant at 95% confidence level.
Coefficients are presented in percentage form.

Source: Keen Independent Research analysis of 1998 SSBF data.

After statistically controlling for race- and gender-neutral influences, the study team did not observe any differences between minority- and female-owned businesses and non-Hispanic white-owned businesses in loan interest rates.

Figure G-18 presents the coefficients from the 2003 model. The results from the regression model indicate that a number of race- and gender-neutral factors are significantly associated with interest rates, including the following factors:

- Location in the East North Central region is associated with lower interest rates;
- Increased net worth for the owner — excluding the owner's home — is associated with a lower interest rate;
- High risk credit scores are associated with higher interest rates;
- An increase in a business' total equity is associated with higher interest rates as is having negative equity;
- Being in the transportation, communications, and utilities industry is associated with higher interest rates;
- Being in highly concentrated industry segments (as measured by the Herfindahl index) is associated with higher interest rates;
- Higher costs of doing business in the previous year are associated with lower interest rates;
- Vehicle loans are associated with lower interest rates;
- Collateral requirements and guarantee loans are associated with lower interest rates;
- Longer loans are associated with lower interest rates; and
- Fixed-rate loans are associated with higher interest rates.

After statistically controlling for race- and gender-neutral influences, the study team observed that African American-owned businesses received substantially higher interest rates than non-Hispanic white-owned businesses (about 3.5 percentage points higher). However, being an African American-owned business in the East North Central region was associated with substantially lower interest rates (about 4.0 percentage points lower). Hispanic American-owned businesses received higher interest rates than non-Hispanic white-owned businesses (about 1.3 percentage point higher).

Figure G-18.
Interest rate (linear regression) in the U.S. in the 2003 SSBF,
Dependent variable: interest rate on most recent approved loan

Variable		
Race/ethnicity and gender		
Constant	10.591	**
African American	3.525	**
Asian American	0.494	
Hispanic American	1.262	**
Native American	-0.607	
Other minority	-1.049	
Female	-0.016	
East North Central region	-0.769	**
African American in East North Central region	-3.998	**
Asian American in East North Central region	-0.579	
Hispanic American in East North Central region	-1.092	
Female in East North Central region	-0.561	
Owner's characteristics, credit and resources		
Age	-0.010	
Owner experience	0.006	
Less than high school education	0.483	
Some college	0.416	
Four-year degree	-0.248	
Advanced degree	-0.461	
Log of home equity	0.006	
Bankruptcy in past 7 years	0.194	
Judgement against in past 3 years	0.015	
Log of net worth excluding home	-0.124	*

Variable	Coefficient	
Firm's characteristics, credit and financial health		
D&B credit score = moderate risk	0.086	
D&B credit score = average risk	-0.035	
D&B credit score = significant risk	0.048	
D&B credit score = high risk	0.640	*
Total employees	-0.002	
Percent of business owned by principal	0.001	
Family-owned business	-0.560	
Firm purchased	-0.048	
Firm inherited	0.080	
Firm age	-0.011	
Firm has checking account	0.742	
Firm has savings account	0.022	
Firm has line of credit	-0.006	
Existing capital leases	0.221	
Existing mortgage for business	0.100	
Existing vehicle loans	0.314	
Existing equipment loans	0.467	
Existing loans from stockholders	0.256	
Other existing loans	0.411	
Firm used trade credit in past year	0.212	
Log of total sales in prior year	-0.124	
Negative sales in prior year	-1.623	
Log of cost of doing business in prior year	-0.156	*
Log of total assets	-0.144	
Log of total equity	0.199	**
Negative total equity	2.312	**
Firm bankruptcy in past 7 years	-0.192	
Firm delinquency in business transactions	-0.102	

Variable	Coefficient	
Firm and lender environment and loan characteristics		
Partnership	-0.498	
S corporation	-0.218	
C corporation	-0.151	
Mining industry	0.089	
Construction industry	-0.491	
Manufacturing industry	-0.069	
Transportation, communications and utilities indus	1.483	**
Finance, insurance and real estate industries	0.020	
Engineering industry	0.486	
Other industry	0.549	*
Herfindahl index = .10 to .18	0.283	
Herfindahl index = .18 or above	0.549	*
Located in MSA	0.160	
Sales market local only	-0.120	
Approved Loan amount	0.000	
Capital lease application	0.904	
Business mortgage application	0.356	
Vehicle loan application	-1.242	**
Equipment loan application	-0.241	
Loan for other purposes	-0.239	
Loan guaranteed	-0.387	*
Collateral required	-0.902	**
Length of loan (months)	-0.004	**
Fixed rate	1.223	**

Note: * Statistically significant at 90% confidence level.
** Statistically significant at 95% confidence level.
"Owner has negative net worth" and "Negative total assets" dropped out of the regression because of colinearity.

Source: Keen Independent Research analysis of 2003 SSBF data.

Small business lending after the Great Recession. The financial landscape has changed substantially since the beginning of the Great Recession. Bank lending fell significantly from the end of 2008 through 2010. Data from the Federal Reserve show commercial and industrial loans and leases peaked at $1.6 trillion at the end of 2008 and fell to $1.2 trillion by the end of 2010, a decline of about 25 percent.[91] Similar analyses show commercial and industrial loans and leases of less than $1 million fell about 22 percent at the end of 2012 relative to second quarter of 2007.[92]

Bank tightening of lending standards has been greater for small businesses in recent years. While net tightening (percentage of banks tightening standards minus the percentage loosening standards) was positive for small and large loans in 2008 through 2010, in 2011 and 2012 positive net tightening existed only for small business loans. This tightening of the lending markets may have several effects on small businesses, including fewer startups as well as slower economic and employment growth for those already in existence. Longer term trends in small business financing may exacerbate recent economic disturbances. Data from the Federal Deposit Insurance Corporation (FDIC) show the share of all nonfarm, nonresidential loans of less than $1 million has been declining since 1995.[93]

Characteristics of small businesses loans after the Great Recession. Research shows characteristics of small business loans have changed. The average small business loan has more than doubled since 2005, to about $425,000. Qualitative research suggests this trend toward larger loans may be due to a greater push for profit maximization in the banking industry.[94] This may affect some minority business owners, particularly African American business owners. About 80 percent of African Americans that apply for SBA loans seek $150,000 or less.[95]

Characteristics of small businesses after the Great Recession. Characteristics of small businesses have also changed considerably since 2007. Significantly fewer small businesses reported "good" cash flow in 2013 compared to 2007 (48 and 65 percent, respectively). Small business delinquencies have risen and consequently, more lending requires collateral. About 90 percent of small business lending in 2013 required some collateral, up from 84 percent in 2007. During this same period, the decline in housing prices nationwide has weakened owner net equity and made collateral requirements more difficult to meet.[85]

Small business lending by race/ethnicity. In fiscal year 2013, the U.S. Small Business Administration (SBA) administered about 23 billion in loans. Loans to African American business owners represented 382 million or 1.7 percent of the total, a substantial decline from 2008, when SBA allocated about 8 percent of total loan value to African American business owners. Hispanic American business owners received 4.7 percent of the loan total in 2013, relatively unchanged from 4.5 percent of the loan total in 2009.[88]

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91 U.S. Board of Governors of the Federal Reserve System. 2014. "H.8 Assets and Liabilities of Commercial Banks in the United States." Accessed Jun 15, 2014 from FRASER, http:fraser.stlouisfed.org/publication/.

92 Ann Marie Wiersch and Scott Shane. 2013. "Why Small Business Lending Isn't What It Used to Be." Economic Commentary. Federal Reserve Bank of Cleveland.

93 Ibid.

94 CIT Group, once SBA's top lender, no longer administers SBA loans. Other banks, including Bank of America, have significantly reduced SBA lending.

95 Ruth Simon and Tom McGinty. 2014. "Loan Rebound Misses Black Businesses." *The Wall Street Journal*. 14 March 2014.

Results from Keen Independent 2014 availability interviews with firms in the Dane County construction industry. At the close of the 2014 availability interviews conducted as part of the disparity study, the study team asked questions regarding potential barriers or difficulties the firm might have experienced in the Madison marketplace. The series of questions was introduced with the following statement: "Finally, we're interested in whether your company has experienced barriers or difficulties associated with starting or expanding a business in your industry or with obtaining work. Think about your experiences within the past seven years as you answer these questions." Respondents were then asked about specific potential barriers or difficulties.

For each potential barrier, the study team examined whether responses differed between minority- or women-owned firms and majority-owned firms. Figure G-19 on the following page presents results for questions related to access to capital, bonding and insurance.

Access to lines of credit and loans. The first question was, "Has your company experienced any difficulties in obtaining lines of credit or loans?" As shown in Figure G-19, only 7 percent of MBEs and WBEs reported difficulties in obtaining lines of credit or loans. Only 6 percent of majority-owned firms reported similar difficulties.

Receiving timely payment. The need for business credit is, in part, linked to whether firms are paid for their work in a timely manner. In the availability interviews, Keen Independent asked, "Has your company experienced any difficulties receiving payment in a timely manner?" Figure G-19 shows that, regardless of ownership, about four out of ten firms have experienced difficulties receiving payment in a timely manner.

C. Bonding and Insurance

Bonding is closely related to access to capital. Some national studies have identified barriers regarding MBE/WBEs and access to surety bonds for public construction projects.[96]

High insurance requirements on public sector projects may also represent a barrier for certain construction and engineering-related firms attempting to do business with government agencies. Keen Independent examined this issue as well.

Bonding. To research whether bonding represented a barrier for Dane County businesses, Keen Independent asked firms completing availability interviews:

- "Has your company obtained or tried to obtain a bond for a project?"
- [and if so] "Has your company had any difficulties obtaining bonds needed for a project?"

Figure G-19 presents these results from the 2014 availability interviews. About 57 percent of MBEs and WBEs and 54 percent of majority-owned firms had obtained or tried to obtain a bond for a project. Among those firms, it was nearly unanimous that none had reported experiencing difficulties obtaining bonds needed for a project, regardless of ownership.

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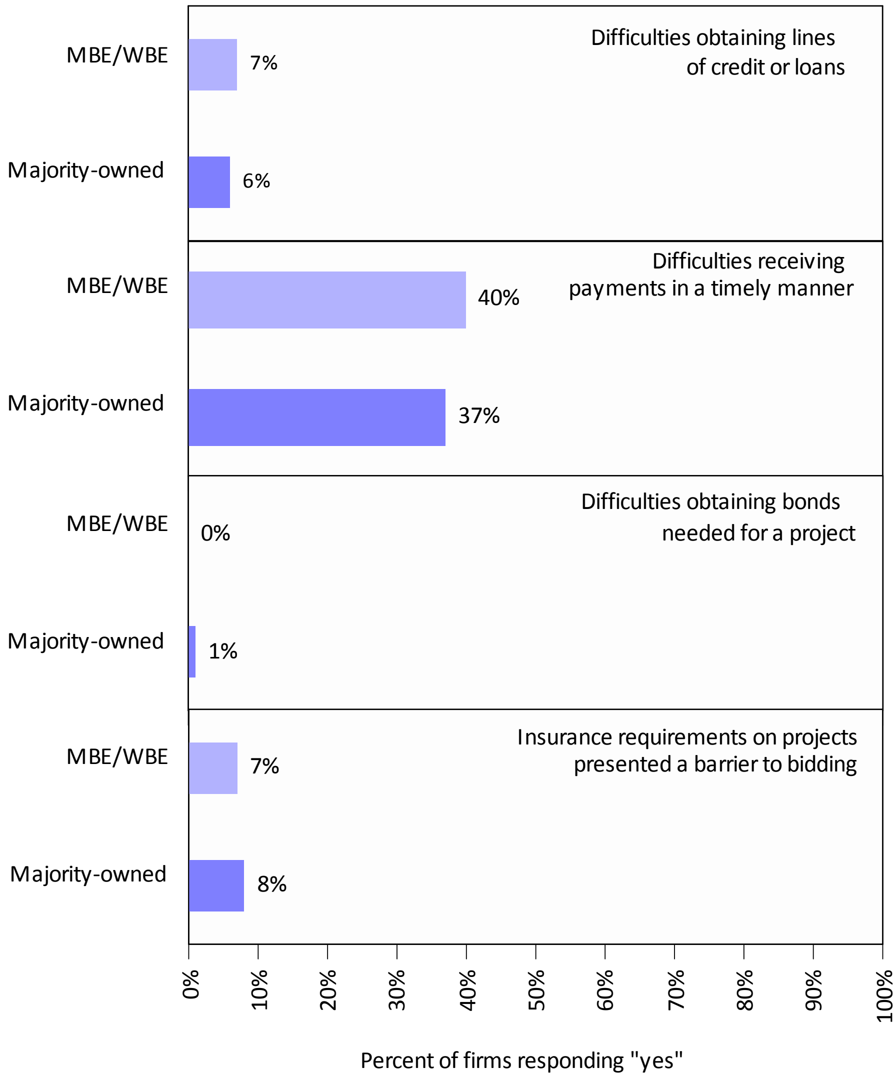
[96] For example, Enchautegui, Maria E. et al. 1997. "Do Minority-Owned Businesses Get a Fair Share of Government Contracts?" *The Urban Institute:* 1-117, p. 56.

Figure G-19.
Responses to 2014 availability interview questions concerning loans, timely payments, bonding and insurance, Dane County MBE/WBE and majority-owned firms



Note: "WBE" represents white women-owned firms, "MBE" represents minority-owned firms and "Majority-owned" represents non-Hispanic white male-owned firms.

Source: Keen Independent Research from 2014 Availability Interviews.

Insurance. The study team also examined whether minority- and women-owned firms were more likely than majority-owned firms within the study area to report that "insurance requirements represented a barrier to bidding" (see Figure G-19).

About 7 percent of MBEs and WBEs and 8 percent majority-owned firms indicated that insurance requirements on projects have presented a barrier to bidding.

D. Summary

There is evidence that minorities and women continue to face certain disadvantages in accessing capital that is necessary to start, operate, and expand businesses. Capital is required to start companies, so barriers accessing capital can affect the number of minorities and women who are able to start businesses. In addition, minorities and women start business with less capital (based on national data). A number of studies have demonstrated that low levels of wealth among African Americans and Hispanics contribute to lower business creation rates relative to their representation in the U.S. population. The amount of startup capital is a strong predictor of business success. [97] Key results include the following:

- Home equity is an important source of funds for business start-up and growth. Fewer African Americans, Hispanic Americans, and Native Americans in Dane County own homes compared with non-Hispanic whites. Those African Americans, Hispanic Americans, and Native Americans who do own homes tend to have lower home values than non-Hispanic whites.

- Asian-Pacific Americans and Subcontinent Asian Americans are also less likely to own homes in Dane County compared with non-Hispanic whites. However, those who do own homes tend to have similar or higher home values.

- High income Asian Americans and Hispanic Americans applying for home mortgages in Dane County have been more likely than non-Hispanic whites to have their applications denied.

- African American, Hispanic American, and Native American mortgage borrowers in Dane County have been more likely than non-Hispanic whites to be issued subprime loans.

- There is evidence that African American and Hispanic American business owners were more likely to have been denied business loan applications than similarly situated non-minorities. Results for the East North Central region appear consistent with national results.

- Among business owners who reported needing business loans, there is evidence that African Americans and Hispanic Americans are more likely to forgo applying for loans due to fear of denial than similarly-situated non-minorities. In the East North Central region in 2003, Asian American and Hispanic American business owners were also more likely to forgo applying for loans due to fear of denial than other business owners.

- There is evidence from 2003 that African American and Hispanic American business owners receiving business loans paid higher interests rates than similarly-situated non-minorities. In the East North Central region, it appeared that African American-owned businesses paid lower interest rates than other businesses.

[97] Robb, Alicia. 2012. "Access to Capital among Young Firms, Minority-owned Firms, Women-owned firms and High-Tech Firms." Small Business Administration