

Diverse Asset Management Project Firm Assessment

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I. Executive Summary

The global asset management industry is vast, with \$71.4 trillion in AUM and \$100 billion in profits in 2015.¹ Despite the potential economic and social benefits of utilizing diverse asset managers, the industry is afflicted by a lack of diversity.² While past research has investigated the representation of women and minorities in asset management positions, there is a distinct lack of literature regarding *ownership* of these asset management firms, a much more elusive statistic to capture. This report aims to provide a first look at diversity in ownership and quantify the level of diverse ownership across a variety of metrics.

For this project, the John S. and James L. Knight Foundation contracted with Professor Josh Lerner (Harvard Business School) and the Bella Research Group to analyze the representation of women- and minority-owned firms in the U.S. asset management industry. Data on firm ownership are compiled across four asset classes: mutual funds, hedge funds, private equity (PE), and real estate. The primary focus of this project is quantifying the number of women-owned and minority-owned firms and funds as well as the amount of assets under management (AUM) for each asset class. The report also examines the characteristics of women- and minority-owned firms compared to other firms in the industry. Where the data allow, we investigate the trends of diverse ownership over time, the performance of diverse firms, and the institutional investors engaged with these firms.

This research relies on a number of publicly-available and commercially-available data sources, as well as some hand-collected data. For mutual funds and hedge funds, we rely on commercial databases (eVestment and Hedge Fund Research, respectively) that contain identifiers for women-owned and minority-owned firms, with this information being self-reported by firms. While these databases do not contain the full universe of all mutual funds and all hedge funds, they represent the most comprehensive sources of data that include information on diverse ownership. Unfortunately, the commercial databases for PE and real estate do not provide information on diverse ownership. Instead, lists of women- and minority-owned PE and real estate firms are assembled from a number of public and proprietary sources and merged with data on fund and firm characteristics from Preqin.

The classification of diverse-owned firms varies slightly across these data sources.³ Typically, firms are considered women-owned or minority-owned if at least 25% of firm ownership is held by women or minority individuals, respectively. Firms may be classified as both women-owned and minority-owned if they have substantial levels of ownership held by women and minorities (e.g., firms with both women and minority owners or firms owned by women who also belong to a racial/ethnic minority group). The definition of “minority” includes racial/ethnic minorities

¹ Boston Consulting Group, “Global Asset Management 2016: Doubling Down on Data,” *report*, July 2016.

² See, for example, (1) Maxey, Daisy, “Where Are the Female Fund Managers?” *The Wall Street Journal*, July 6, 2015; (2) De Avila, Joseph, “NYC Seeks Diversity Among Its Asset Managers,” *The Wall Street Journal*, April 30, 2015.

³ Note that this report uses the term “diverse-owned” to refer more broadly to the group of firms with women ownership *and/or* minority ownership.

(e.g., Hispanic, Black, Asian, and Native American) but does not include other underrepresented groups such as veterans or disabled persons.

The subsets of women- and minority-owned firms from each database are compared to the “universe” of all U.S.-based firms listed in each database to quantify the extent of diverse ownership in each asset class. The results are further broken down by other firm- and fund-level characteristics such as investment focus, firm location, and geographic target. These data are also used to analyze timeline trends, performance, and the mix of institutional investor types. Below, we summarize our overall findings and briefly describe the results for each of these analyses, grouped by asset class. Detailed methodology and results can be found in the body of the report.

Mutual Funds:

This section uses data on institutional mutual funds from the eVestment Traditional Database which includes mutual funds, separately-managed accounts (SMAs), co-mingled funds, and a limited number of exchange-traded funds (ETFs). With these data, we investigate the current state of diversity for this asset class, construct a timeline of diverse managers, analyze the performance of these diverse firms, and describe the types of institutional investors engaged with these firms.

Current State of Diverse Ownership for Mutual Funds: We identify 127 women-owned and 107 minority-owned firms, managing \$406 billion and \$160 billion in AUM. For women, the 127 firms represent 8.8% of firms and 0.9% of total industry AUM. For minorities, these numbers represent 7.4% of firms and 0.3% of total industry AUM.

Timeline of Diverse Ownership for Mutual Funds: We identify diverse firms for every quarter from Q1 2011 through Q2 2016 and find underrepresentation of diverse-owned firms throughout this time period. While there are no distinct trends in the representation of women- or minority-owned firms, funds, or AUM, we do observe an upward trend in the *amount of AUM*. However, for minority-owned firms, this upward trend ends in the middle of 2015, and we see a distinct drop in AUM through Q2 2016. Since the sample size is small, this decline may be explained by the exit (or change in ownership type) of a few large minority-owned firms or funds.

Performance of Diverse-Owned Mutual Funds: As a whole, the evidence suggests that the performance of funds managed by diverse-owned firms is statistically no different than the performance of those managed by non-diverse firms. This analysis examines multiple performance metrics and controls for a number of firm- and fund-level characteristics that may be related to performance (e.g. asset focus, firm size, and fund size). A separate look at the distribution of returns shows that diverse funds often have top-quartile returns, with 25% of women-owned and 28% of minority-owned funds in the top quartile, on average.

Institutional Investor Types for Diverse-Owned Mutual Funds: Based on the most recent data from Q2 2016, we examine the mix of institutional investor types associated with diverse and non-diverse firms. Public funds and corporate clients have the largest amount of AUM invested in women- and minority-owned funds, but these investor types

are heavy investors in mutual funds in general. *Proportionally*, we find that investments from public funds, foundations, endowments, high net worth individuals, and family offices represent a larger share of AUM in a typical women- or minority-owned fund, compared to non-diverse funds.

Hedge Funds:

Using hedge fund data from Hedge Fund Research (HFR), we analyze the current state of diversity in the hedge fund space, construct a timeline of diverse managers, and analyze the performance of these diverse managers. It is important to note that there are a number of hedge fund databases with varying coverage of the hedge fund universe, and our findings for hedge funds represent the analysis of only one database. While this database only covers roughly half of the hedge fund industry, it contains detailed demographic information on firm ownership that is crucial to this report. We have no reason to believe that the characteristics of the hedge funds in our analysis differ in a meaningful way from the universe of all hedge funds, but conclusions drawn from these data should be interpreted cautiously.

Current State of Diverse Ownership for Hedge Funds: Hedge funds suffer from a lack of diversity in ownership, with 4.3% and 8.0% of firms being owned by women and minorities, respectively. These firms control less than 1% of total industry assets.

Timeline of Diverse Ownership for Hedge Funds: We find that since 2010, women- and minority-owned hedge funds have gained representation, but women- and minority-owned firms are still underrepresented in the industry.

Performance of Diverse-Owned Hedge Funds: We find no conclusive evidence that the performance of diverse-owned hedge funds differs significantly from the performance of non-diverse funds. The analysis uses several performance metrics and controls for relevant firm- and fund-level characteristics. Analysis of top-quartile performance shows that 24% of women funds and 28% of minority funds exhibit top-quartile returns, on average.

Private Equity and Real Estate:

Women- and minority-owned firms in PE and real estate are identified using a variety of sources, and ownership data are merged with firm- and fund-characteristic data from Preqin. In using this approach, we inevitably miss a number of diverse-owned firms, particularly in real estate. This may introduce some biases, such as a bias toward larger, better-known diverse firms. While we feel confident in the data coverage of the diverse-owned PE firms, the data coverage for diverse real estate firms is lacking. Given the small sample size of diverse-owned real estate firms and the potential biases in data collection, we are unable to conduct a meaningful analysis of performance or institutional investor types. Therefore, this section focuses on PE, including findings for real estate where available.

Current State of Diverse Ownership for PE: Only 1.9% of PE firms are women-owned, and they manage approximately 1.5% of industry assets. Minority-owned firms represent 3.7% of all PE firms and manage 3.4% of industry assets.

Current State of Diverse Ownership for Real Estate: Of the 889 real estate firms in our dataset, 0.7% are women-owned and 2.0% are minority-owned. Representation is worse when measured by AUM, with women-owned firms controlling 0.3% of total industry AUM and minority-owned firms controlling 1.5% of total industry AUM.

Timeline of Diverse Ownership for PE and Real Estate: There is some evidence of an increase in the representation of women- and minority-owned PE and real estate firms since 2004, in terms of the number of funds raised and the total amount of fundraising dollars. However, diverse groups are still underrepresented, and data issues prevent a more robust analysis.

Performance of Diverse-Owned PE Funds: Among the PE asset managers, there is no significant difference in performance between funds managed by diverse-owned firms and those managed by non-diverse firms. Though we find no evidence of differential performance *on average*, there are a number of top-performing diverse-owned funds—33% of women-owned funds and 20% of minority-owned funds are top quartile. Through careful manager selection, outsized returns are possible with women- and minority-owned PE firms.

Institutional Investor Types for Diverse-Owned PE Funds: We examine the representation of different LP types investing in diverse-owned PE firms compared to their representation in a random sample of PE firms from Preqin. These data show the representation in terms of the *number* of LPs, not in terms of AUM, since such data are not available. We find that foundations and endowments are underrepresented among investors in women- and minority-owned firms, and public pensions are overrepresented in minority-owned firms, on average.

Discussion and Conclusions:

In this report, we offer the first comprehensive look at diverse ownership of asset management firms across several different asset classes. This research on diverse *ownership* complements the existing academic literature on diversity in fund *management*. The limited body of evidence shows that diverse individuals (i.e., women or racial/ethnic minorities) are underrepresented among the population of fund managers and also suggests that diverse managers often perform as well as—or even outperform—market benchmarks.⁴

Our findings regarding *diverse-owned firms* are generally consistent with previous research on *diverse-managed funds* with a few exceptions. We find that diverse-owned firms exhibit strong returns, but they are dramatically underrepresented in every asset class. Quantifying the performance of diverse funds and the current level of diverse ownership is an initial step to understanding and encouraging diversity in asset management. This report represents a

⁴ The body evidence is summarized in the **Related Studies** section below.

preliminary effort to address these questions with the currently available data, and we acknowledge the data limitations that exist in each analysis, especially regarding the identification of diverse-owned firms.

We hope that this report provides the foundation for future inquiry and more robust data collection. Importantly, we highlight the need for data sources with comprehensive and detailed reporting of diverse ownership and diverse management. This demographic information is most notably absent for PE and real estate investment firms. Creating a publicly-available, non-proprietary database with this information should be a top priority for the institutional investment community. It is our hope that this report increases awareness and knowledge of this important topic and encourages enhanced data reporting in the future.

The report is organized as follows: we first discuss the previous work that has been done on this topic in the **Related Studies** section. We then step through the specifics of the data sources and the creation of each dataset in the **Data Sources** section; the casual reader may wish to skip this section. In the **Methodology and Results** section, we describe and present results for all analyses, organized by asset class. At the beginning of each asset class, we give a brief summary of key results followed by a more in-depth discussion for each individual analysis. The summaries for each asset class should be sufficient to understand the major points of this report. The **Conclusion** section summarizes the key results and takeaways. Summary statistics and regression output for the performance analyses are available in the attached **Appendix**.

II. Related Studies

A limited number of studies examine diversity in asset management and the performance of diverse funds. These studies include a mix of academic journal articles, reports/white papers, and news articles, and they look almost exclusively at diversity of fund *managers*, not *owners*.

The biggest barrier to research is the lack of data on diversity, as most data sources do not collect this information. Some researchers have used proxy methods to look at *gender* diversity, by identifying fund managers with female first names or female prefixes (e.g. “Miss,” “Ms.,” and “Mrs.”), but classifying *racial/ethnic* diversity is more difficult. Therefore, the bulk of the research has been on female managers, not minority managers; the few studies that focus on racial/ethnic diversity have very limited sample sizes.

Previous efforts are also skewed in terms of asset class. Most studies focus on hedge funds or mutual funds, particularly when examining performance. There are a handful of studies that investigate private equity, but those analyzing performance are hindered by small and potentially biased samples of diverse firms. For real estate, there has been virtually no research on the extent of diversity or the performance of diverse real estate funds. The rest of this section details prior literature by asset class; we first review studies that investigate the number and demographics of diverse funds and then discuss any available performance studies.

Mutual Funds

A report from Morningstar documents the lack of female managers in its commercial database of mutual funds.⁵ Women account for 9.4% of all portfolio managers, and most of those women are part of mixed-gender teams. **Only 2% of mutual funds and assets are run exclusively by women**, while 78% of funds and 74% of assets are managed exclusively by men. The report examines performance over a ten-year period, though there are only 37 female managers continuously running funds for this period. Exclusively male- and female-run funds exhibit very similar performance, with mixed-gender teams having slightly better performance. Note that the analysis does not control for fund or firm-level characteristics such as fund expense ratio or firm size, which may be related to performance; indeed, the authors observe that women tend to manage more costly niche funds, and mixed-gender teams are more common at larger firms.

Three academic articles further investigate the performance and investments in women-owned or women-managed mutual funds. These studies observe that gender, generally, has little or no effect on performance, but women experience significantly lower inflows into their funds.

The most recent evidence comes from Niessen-Ruenzi and Ruenzi (2015), who examine net inflows for U.S. equity mutual funds for years 1992 through 2009.⁶ Fund- and manager-level data on mutual funds come from the Morningstar Direct and Morningstar Principia databases. The Morningstar data include a field for manager name, which the authors use to identify

⁵ Laura Pavlenko Lutton and Erin Davis, “Morningstar Research Report: Fund Managers by Gender,” online report, June 2015.

⁶ Alexandra Niessen-Ruenzi and Stefan Ruenzi, “Sex Matters: Gender Bias in the Mutual Fund Industry,” working paper, February 2015.

manager gender. They link fund- and manager-characteristics from Morningstar with performance data from the Center for Research in Securities Prices (CRSP) Survivor-Bias-Free Mutual Fund database.

Niessen-Ruenzi and Ruenzi use regression analyses to determine gender effects on fund inflows. They include an indicator for gender as well as interactions between: (1) fund manager gender and lagged fund performance and (2) fund manager gender and lagged performance squared. They also control for lagged fund performance, fund size, fund risk, turnover, and expense ratio. Regression results show that female-managed funds have lower inflows, and this effect persists after controlling for fund-level demographics. As predicted, funds with poor past performance receive fewer investments, but the total effect of past performance differs by gender. The coefficients on the interaction terms indicate that female-managed funds with low performance experience further reductions in inflows compared to male-managed funds with similar performance. In other words, women-managed funds experience an additional penalty for low performance. The effect of gender is even greater at the high end of performance, where high-performing female-managed funds receive significantly smaller capital inflows than high-performing male-managed funds, on average. The magnitude of the difference between high-performing male-managed and female-managed funds is greater than the difference between low-performing male-managed and female-managed funds. **Essentially, the highest performing funds with female management would receive greater inflows of investments to the fund, if they were run by men.**

Niessen-Ruenzi and Ruenzi also conduct a controlled experiment to understand why women-managed funds receive fewer investments. Participants are presented with two S&P 500 index funds, disguised as Fund A and Fund B, and are asked to allocate 100 units of investment between the two funds. A female manager and male manager are randomly assigned between the two funds and everything else presented to the participants is held constant. Thus, any difference in overall levels of investment between male- and female-managed funds is due to the name and implied gender of the manager. In this experimental setting, the authors find significantly smaller inflows to female-managed funds versus male-managed funds, consistent with their empirical evidence of the mutual fund industry.

In addition, the authors test for implicit gender bias in investing and link this to investment decisions. They utilize an implicit association test (IAT) which measures how fast participants match stereotypical grouping of words (e.g. men and finance) versus non-stereotypical pairings (e.g. women and finance). Niessen-Ruenzi and Ruenzi find that participants with greater bias contribute significantly less to women-managed funds in the experimental investment task, controlling for participant-level characteristics such as gender, college major, financial literacy, and investment experience. Results indicate that implicit bias explains, in large part, the reduced inflows to female-managed funds.

Two older research studies also use the Morningstar database of mutual funds but limit their analysis to different sub-asset classes; their results are consistent with empirical findings from Niessen-Ruenzi and Ruenzi (2015). The first, from Atkinson, Baird, and Frye (2003), limits the

sample to all taxable fixed income funds that were at least five years old.⁷ They identify 72 female-managed funds within this sample and find no difference between female- and male-managed fixed income funds in terms of performance or risk. Despite the similarities in performance, female-managed funds have significantly lower inflows than male-managed funds. This effect is significant for the first year of a fund and for pooled inflows over the tenure of a fund. The second study, from Bliss and Potter (2002), looks only at mutual funds that focus on domestic and international equity.⁸ Using regression models, they too find no evidence that performance is significantly different between male and female mutual fund managers.

In summary, there is no prior evidence that female mutual fund managers are less competent than their male peers. **Despite the fact that they are just as good at generating returns for their investors, female managers see significantly lower inflows into their funds.** Experimental evidence suggests that implicit bias on the part of investors may partially explain the reluctance to invest with female-managed mutual funds.

As mentioned above, the identification of minority managers is relatively more difficult compared to the identification of female managers, so the majority of past research has been on gender diversity in asset management. Unfortunately, for mutual funds, we do not know of any reports or academic papers that examine racial/ethnic diversity in the industry.

Hedge Funds

Several reports use data from Hedge Fund Research (HFR) to identify diverse funds and compare their performance to industry benchmarks. For example, a report by Barclays Capital identifies 170 diverse firms (women- *or* minority-owned) in the HFR database as of March 2011.⁹ These firms managed approximately 300 funds and \$48 billion, which represented 3.3% of all funds and 2.4% of total AUM.

The Barclays report also examines the performance of diverse-owned hedge funds. Performance indices are constructed for diverse single-manager hedge funds and diverse funds of hedge funds, using HFR data from April 2006 through March 2011. These indices are compared to similarly constructed indices for non-diverse single-manager hedge funds and non-diverse funds of funds (FoFs). The Barclays report finds **stronger performance for diverse funds in terms of absolute and risk-adjusted returns**. It also calculates up- and down-capture ratios and finds that **diverse firms significantly outperform the hedge fund industry in both up and down markets**.

“Women in Alternative Investments,” a report from KPMG (formerly published by Rothstein Kass), also finds strong performance for the subset of women-owned or -managed funds in

⁷ Stanley M. Atkinson, Samantha Boyce Baird, and Melissa B. Frye, “Do Female Mutual Fund Managers Manage Differently?” *The Journal of Financial Research* 26(1): 1-18, Spring 2003.

⁸ Richard T. Bliss and Mark E. Potter, “Mutual Fund Managers: Does Gender Matter?” *Journal of Business and Economic Studies* 8(1): 1-17, 2002.

⁹ Barclays Capital, “Affirmative Investing: Women and Minority Owned Hedge Funds,” online report, June 2011.

HFR's database.¹⁰ This annual report identifies women-owned *or* women-managed funds (n = 60-82 funds, depending on the year of the report), and develops a performance index for this subset of funds. **Results show that women-owned or -managed hedge funds consistently outperform industry benchmarks** (e.g. HFRX Global Hedge Fund Index). In addition, the report finds that women-owned or -managed funds have superior risk-adjusted returns, stronger performance during downturns, and lower drawdowns compared with all hedge funds.

These reports utilize performance and risk metrics that are aggregated across the sample of diverse firms and several years of data. This provides a high-level view of how diverse hedge funds' performance compares to relevant industry benchmarks. However, these types of analyses do not control for confounding factors such as fund size, structure, and strategy.

A recent academic paper by Aggarwal and Boyson (2016) uses regression models to analyze performance of female-managed hedge funds, controlling for a number of fund-level characteristics.¹¹ The authors rely on hedge fund data from Thomson-Reuters for years 1994 through 2013 and include both active and dead funds. They identify female managers with "Miss," "Ms.," or "Mrs." in the prefix field; for managers with no prefix listed, they check first names for distinctly female names. They identify 244 funds that are managed exclusively by women and 195 funds with both male and female managers; together, these funds represent only 4.6% of all hedge funds in the Thomson-Reuters universe.

Regression analyses of hedge fund performance control for manager gender, AUM, fund age, fund structure, and fund strategy. They also control for fund survivorship since "survivor bias" is a well-known artifact of hedge fund data that distorts performance metrics.¹² Data collection is biased toward surviving funds, which are also the strongest performing funds, so performance metrics are likely biased upward by these "survivors." Performance of both the diverse and non-diverse firms is likely affected by survivor bias, but this becomes problematic if the rate of survival is related to diversity or other confounding factors. Econometric methods controlling for whether a firm survives can partially disentangle this bias.

In regression models that do not control for firm survival, Aggarwal and Boyson observe no statistical differences in performance between female-managed and male-managed funds. When controlling for survivorship, however, they find that female-managed funds significantly *outperform* male-managed funds.

The authors further investigate what causes hedge funds to fail. Small fund size and poor past performance predict failure for both male- and female-managed funds. Being a female-managed fund or being open to new investment¹³ is not significantly tied to failure *per se*, but the

¹⁰ KPMG, "Breaking Away: The path forward for women in alternatives," online report, September 2015; Meredith Jones, "Women in Alternative Investments: A Marathon, Not a Sprint," online report for Rothstein Kass Institute, December 2013; Meredith Jones, "Women in Alternative Investments: Building Momentum in 2013 and Beyond," online report for Rothstein Kass Institute, December 2012.

¹¹ Rajesh Aggarwal and Nicole M. Boyson, "The Performance of Female Hedge Fund Managers," *Review of Financial Economics* 29: 23-26, 2016.

¹² Mila Getmansky, Peter A. Lee, and Andrew W. Lo, "Hedge Funds: A Dynamic Industry in Transition," working paper, July 28, 2015.

¹³ In other words, funds that have not yet reached their desired scale in terms of AUM.

combination of being female-managed and open to new investment is a significant predictor of failure.

Together, these results suggest that **female-managed funds may struggle to raise capital, but those female-managed funds that can raise sufficient capital, and survive, are actually outperforming** the surviving funds that are male-managed. These results correspond with survey results and anecdotal evidence regarding women in the hedge fund industry. For example, women in senior management positions are surveyed every year for the report “Women in Alternative Investments,” and they commonly cite access to capital as a primary challenge.¹⁴ Interestingly, these **female fund managers indicate that raising capital is more important for success than is exceptional fund performance.**

In summary, the evidence shows that hedge funds with diverse management have been successful and often outperform non-diverse hedge funds. There is greater evidence in terms of gender diversity, with multiple reports documenting the strong performance of women-managed funds. Nonetheless, it is clear that women still have a difficult time raising capital, and this severely affects their ability to run a successful fund. No previous work has looked specifically at racial/ethnic diversity in hedge funds; however, the report from Barclays Capital¹⁵ groups together women- and minority-managed firms, finding stronger absolute and risk-adjusted returns for firms with diverse management compared to relevant market benchmarks.

Private Equity

Recent reports demonstrate the **low representation of women and minorities in PE, especially within venture capital (VC) firms.** Much of the diversity data is hand-collected since it is difficult to identify women and minority managers using any of the commercially-available PE databases.

A report from Preqin quantifies the representation of senior-level women in its commercial PE database.¹⁶ In North America, women represent just 10.5% of senior employees in PE, as of 2016. Another report from *Pensions & Investments* also uses Preqin data and evaluates gender diversity in PE for several job titles.¹⁷ According to this report, in 2014, women held 16.5% of investment professional roles, 11.7% of senior management roles, and 6.5% of partner or managing partner positions in global private equity.

The extent of manager diversity is reportedly even worse in the VC industry. *The Information* worked with the venture firm Social + Capital to quantify diversity in VC.¹⁸ They classify the gender and race/ethnicity for all senior-level investment professionals (n = 522) at 71 of the

¹⁴ KPMG, “Breaking Away: The path forward for women in alternatives,” online report, September 2015; Meredith Jones, “Women in Alternative Investments: A Marathon, Not a Sprint,” online report for Rothstein Kass Institute, December 2013; Meredith Jones, “Women in Alternative Investments: Building Momentum in 2013 and Beyond,” online report for Rothstein Kass Institute, December 2012.

¹⁵ Barclays Capital, “Affirmative Investing: Women and Minority Owned Hedge Funds,” online report, June 2011.

¹⁶ Preqin, “Women in Private Equity,” online report, March 2016.

¹⁷ Arleen Jacobius, “Private Equity is Changing, But Still a Man’s World,” *Pension & Investments*, April 6, 2015.

¹⁸ Peter Schulz, “Future List: The Venture Capital Firms Best Positioned for the Future,” *The Information*, October 6, 2015; Peter Schulz, “Introducing *The Information*’s Future List,” *The Information*, October 2015.

biggest U.S. VC firms, finding that only 8.6% of senior venture capitalists were women. They found that Hispanics and African-Americans are also dramatically underrepresented in VC, comprising 1.3% and less than 1% of all senior venture capitalists, respectively.

Richard Kerby utilizes a similar method to identify black investors for a *TechCrunch* article.¹⁹ He looks at nearly 2,000 investment professionals at 200 VC firms and finds that African-Americans make up only 1.5% of them.

Given the difficulty of identifying diverse private equity and venture capital (PEVC) firms, it follows that analyzing the performance of diverse PEVC firms is even more difficult. In the academic literature, we know of only one performance study, which considers only the subset of VC firms. Two additional reports have attempted to address the question of performance for diverse PEVC firms, but they are limited by very small sample sizes.

A working paper from Gompers, Mukharlyamov, Weisburst, and Yuhai (2014) investigates gender effects in VC and the mechanisms of effect. Gompers *et al.* compile data on VC investments from 1975 to 2003, including financing by round, investment location, industry, investment outcome, and a list of all VC firms and individuals on the board of directors.²⁰ The authors hand-collect data on gender, education, and work experience for every investor in this dataset. They also assign ethnicity using a name-matching algorithm.²¹ They identify 212 female venture capitalists who represent 6.1% of all venture capitalists. They determine the success of each investment by whether or not the investment leads to an initial public offering (IPO).

Gompers *et al.* find that female venture capitalists are somewhat less successful in terms of going public, so the authors use regressions to understand the factors contributing to the underperformance of female venture capitalists. Regression models control for industry and year as well as a number of investor characteristics including ethnicity, education, and work experience. Despite controlling for these demographic characteristics, the gender effect persists.

The authors next test a model that includes the performance track records for: (1) the investor, (2) their firm, and (3) any co-investors on the deal. They find that all three prior success variables have a positive effect on performance. In other words, investments are more likely to be successful if the investor, firm, and co-investors have a track record of success. However, these factors do not explain why women venture capitalists are less successful, as the indicator for female investors is still significant and negative.

Next, Gompers *et al.* include interactions between gender and each prior success variable. Results from this regression model show that women, in particular, do not always benefit from the track record of their colleagues; only the women at firms with other female venture capitalists benefit from the prior success of their firm. In fact, the results suggest that the inability

¹⁹ Richard Kerby, "Why are There So Few Black Investors?" *TechCrunch*, March 10, 2015.

²⁰ Paul A. Gompers, Vladimir Mukharlyamov, Emily Weisburst, and Yuhai Xuan, "Gender Effects in Venture Capital," working paper, May 2014.

²¹ William R. Kerr and William F. Lincoln, "The Supply Side of Innovation: H-1B Visa Reforms and U.S. Ethnic Invention," *Journal of Labor Economics* 28(3): 473-508, July 2010.

of most female venture capitalists to capture firm-level benefits can explain, in large part, their underperformance.

In addition, the authors conduct a survey of women in VC to further elucidate these mechanisms. Results show that **most women in VC feel like they do not receive as much formal or informal feedback as their male peers**. Gompers *et al.* divide the sample by whether or not there are other female venture capitalists at the firm. They find that the women at larger firms with other women feel less disadvantaged compared to their male peers, and these findings are consistent with their empirical results.

A 2012 report by the National Association of Investment Companies (NAIC), the trade group for diverse-owned and -managed PE firms, examines performance of its member firms.²² This report compiles data for 14 firms for years 1998 through 2011, and it measures NAIC firms' performance compared to PE industry benchmarks. NAIC firms are younger and have lower AUM. In terms of performance, NAIC firms are upper quartile for almost every year of the study. This evidence demonstrates that **some diverse firms are performing very well compared to the PE industry as a whole**. However, the sample size is small, and the firms are all sourced from a trade association, which may introduce some biases in the types of firms that are included. For these reasons, it is difficult to tell whether these results are indicative for all diverse-owned and diverse-managed PE firms.

The 2013 publication of "Women in Alternative Investments" examines performance for a very limited sample of women-owned or -managed PE firms.²³ The report was only able to obtain performance data for six women-owned or -managed PE firms. Performance of these firms is stronger than the industry performance benchmark, but it is difficult to glean much from these results since the sample size is so limited.

Real Estate

From previous research, we know very little about the diversity of real estate firms and even less about their performance. One report from Preqin utilizes data on the 37,000 staff and 3,300 firms in its commercial database of real estate investment firms.²⁴ Preqin reports that 22% of employees in real estate investment firms are women, but only 9% of senior positions are held by women. For investment roles, there is even less gender diversity: women represent 11% of all investing positions and only 5% of senior investing positions.

Workplace Diversity

Our study contributes to several lines of academic research, including diversity in the workplace and more specifically, diversity in financial services and asset management. In that vein, **the**

²² National Association of Investment Companies, "The Financial Return of NAIC Firms: Minority and Diverse Private Equity Managers and Funds Focused on the U.S. Emerging Domestic Market," online report, September 2012.

²³ Meredith Jones, "Women in Alternative Investments: A Marathon, Not a Sprint," online report for Rothstein Kass Institute, December 2013.

²⁴ Preqin, "Women in Private Real Estate," online report, *Real Estate Spotlight* 10(3): 6-7, May 2016.

literature on diverse work environments has shown that gender, racial, and ethnic diversity can have positive effects on team dynamics and team performance. For instance, Hoogendoorn, Oosterbeek and van Praag conduct a field experiment of undergraduate students in business studies who must develop a start-up as part of their curriculum.²⁵ They observe that gender-diverse teams perform better than non-diverse teams in terms of sales and profits. Another study by Badal and Harter finds that business units with greater gender diversity exhibit stronger financial performance.²⁶ A study by Orlando Richard examines racial diversity in the banking industry, finding that racial diversity adds value to the firm, as measured by firm productivity, return on equity, and market performance.²⁷

III. Data Sources

We draw on a number of databases for this project, each specializing in a different asset class. For some of these databases, we can classify diverse-owned firms in a systematic and comprehensive way, but others do not report diversity information at all. In the latter case, we hand-compile lists of diverse-owned firms from a number of public and proprietary sources.

The databases also provide a number of firm- and fund-level characteristics, which we incorporate into our analyses to understand the demographic differences between diverse and non-diverse firms and funds (e.g. size, strategy, and geography). Some of the databases have historical data, performance data, and information on investor types, which we utilize to examine the timeline of diverse asset managers, the performance of these managers, and the institutional investor types engaged with diverse firms. We detail the additional data acquired for these three additional avenues of analysis, where available.

General Data Limitations

At this point, it is worth mentioning several of the data limitations and potential biases that may be present in all of the databases consulted for this project. The first, backfill bias, occurs when a fund starts contributing to a database and reports its past performance.²⁸ Only funds with strong historical performance have incentives to report retroactive data. Sometimes, a firm will have multiple funds and will selectively report only the funds with strong returns. Therefore, “backfilling” will overstate the overall level of performance in the database and will make it look as though most funds perform very well in their early years. Survivorship bias is another well-documented bias in commercial databases and occurs when lower performing funds are closed

²⁵ Sander Hoogendoorn, Hessel Oosterbeek, and Mirjam van Praag, “The Impact of Gender Diversity on the Performance of Business Teams: Evidence from a Field Experiment,” *Management Science* 59(7): 1514-1528, July 2013.

²⁶ Sangeeta Badal and James K. Harter, “Gender Diversity, Business-Unit Engagement, and Performance,” *Journal of Leadership & Organizational Studies* 21(4): 354-365, November 2014.

²⁷ Orlando C. Bloom, “Racial Diversity, Business Strategy, and Firm Performance: A Resource-Based View,” *Academy of Management Journal* 43(2): 164-177, April 2000.

²⁸ Mila Getmansky, Peter A. Lee, and Andrew W. Lo, “Hedge Funds: A Dynamic Industry in Transition,” working paper, July 28, 2015.

by the asset management firm, leaving only high performing funds.²⁹ Then, the overall level of performance is biased upwards by the “survivors” that remain in the database.

Furthermore, data providers rely largely on voluntary reporting by the funds, and there are a number of factors that may influence a fund’s decision to contribute data to a provider. For example, funds that underperform have less incentive to make their performance data public, which biases the overall level of performance upward in most databases. Similarly, funds that are accepting new capital or firms that are raising a new fund may report data as a way of advertising, particularly if recent performance has been strong. However, anecdotally, some of the top hedge funds that are closed to new assets will not bother reporting to databases.

Finally, biases can result from the burden of reporting. There are a number of commercial databases for each asset class, and many small firms may not have the resources to report to all of them. Most databases do not represent the full universe of funds, and they may be biased toward larger firms

Despite these data concerns, we accept the data sources as given. Throughout this report, we acknowledge the flaws in the data and, where possible, provide robustness checks to mitigate concerns of these data biases influencing the report’s primary findings.

Industry Employment Data

The U.S. Equal Employment Opportunity Commission (EEOC) maintains data on the racial and gender composition of the American workforce, broken down by industry and year. We identify relevant industries using the five-digit industry codes from the North American Industry Classification System (NAICS).³⁰ We aggregate the data for three industry groups in this analysis:

- Portfolio Management.
- Open End Investment Funds.
- Other Financial Vehicles.

For the years 2004 through 2006, the employment numbers are broken into nine different job groups, and we focus on the “Officials & Managers” category for these years. Starting in 2007, the “Officials & Managers” category is split into “Executive/Senior Level Officials & Managers” and “First/Mid-Level Officials & Managers.” We focus on the “Executive/Senior Level” category for later years.

It is important to note that because the EEOC data are less granular than the asset class categories used in the rest of our analysis, these data are particularly noisy. For example, in addition to closed-end investment funds, the “Other Financial Vehicles” category includes collateralized mortgage obligations, real estate investment trusts, profit-sharing funds, and other

²⁹ Rajesh K. Aggarwal and Philippe Jorion, “Hidden Survivorship in Hedge Fund Returns,” *Financial Analysts Journal* 66(2): 69-74, March 2010.

³⁰ For more information on NAICS classifications, please see:
<http://www.laworks.net/downloads/lmi/naicsoverview.pdf>.

vehicles irrelevant to the analysis in this project. Because of this, we include the EEOC data as an additional indicator of overall *employment* trends to complement the *ownership* analysis, rather than as the primary focus of this report.

Mutual Funds Data

For mutual funds, we utilize the Traditional Database from eVestment, a leading commercial data provider for institutional investors that is frequently used for academic research.³¹ This database covers more than 40,000 active and inactive investment vehicles including mutual funds, separately managed accounts (SMAs), comingled trust funds, and exchange-traded funds (ETFs); together, mutual funds and SMAs comprise the vast majority of data points (85.4%). The database collects quarterly data on firms and funds, including firm- and fund-level AUM, fund performance, fund strategy, and firm location. Importantly, eVestment also provides firm-reported data on the percentage of firm ownership held by women and the following racial/ethnic minority groups: African-American, Asian, and Hispanic. Quarterly data on diversity are available starting Q1 2011.

We use eVestment data through Q2 2016 and restrict the data to U.S.-based asset managers. This group is comprised of approximately 2,400 firms and their 19,000 funds. The dataset includes a limited number of firms based in Puerto Rico and the Virgin Islands, which we consider part of the U.S. in this analysis. We make several other restrictions and adjustments to construct the relevant “universe” for analysis:

- To examine the current state of diversity, we are interested in the level of diverse ownership among *current* asset managers. Therefore, we restrict the data to *active* funds for the snapshot analysis.
- For 99.97% of these funds, the asset class is listed as Equity, Fixed Income, or Balanced/Multi-Asset. The remaining 0.03% of funds are listed as Alternatives or Real Estate. We disregard these data points since these two asset classes make up such a small proportion of the eVestment universe and are covered by other sections of this report.
- We drop the small number of fund of funds (FoFs), since any AUM with FoFs will be double counted if the fund investments are also in the dataset.
- We group firms into U.S. regional categories: Northeast, South, Midwest, and West. These four regional categories are based on the office address of the firm, using the U.S. Census Bureau state regional categories and grouping Puerto Rico and the Virgin Islands with the South.³²

³¹ See, for example: Jennifer Bender, P. Brett Hammond, and William Mok, “Can Alpha Be Captured by Risk Premia?” *Journal of Portfolio Management* 40(2): 18-29, Winter 2014.

³² The regions are defined as follows. **Northeast:** Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont. **South:** Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virgin Islands, Virginia, Washington, DC, West Virginia. **Midwest:** Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota, North Dakota, Wisconsin. **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

After these restrictions, the universe of current U.S.-based asset managers for our analysis of mutual funds includes about 1,450 firms and 11,000 funds.³³ From this universe, we have identified subsets of women- and minority-owned firms with substantial (25-49%) or majority ownership (50+%) in Q2 2016. For some analyses, we combine the substantial and majority ownership subsets and examine all women-owned firms with 25+% ownership (n = 127 firms in Q2 2016) or all minority-owned firms with 25+% ownership (n = 107 firms in Q2 2016). Please note that there may be some overlap between the subsets of women- and minority-owned firms, since firms can have significant levels of ownership by both women and minorities (e.g., firms with both women and minority owners or firms owned by women who also belong to a racial minority group).

For the performance and timeline analysis, we use quarterly data starting in Q1 2011, the first quarter that diverse ownership is reported, through Q2 2016. For each quarter, we identify all active funds and firms.³⁴ The dataset includes approximately 260,000 fund-quarter observations and 35,000 firm-quarter observations. Among the active funds and firms each quarter, we identify funds and firms with women ownership (25+% or minority ownership (25+%)). Again, for any given quarter, there may be some overlap between the categories of women-owned and minority-owned firms, as these are not mutually exclusive definitions.

For the timeline analysis, we find the number of funds and firms for both diverse categories for each quarter, as well as the total AUM with women- and minority-owned firms.³⁵ For the performance analysis, we also use this same dataset to analyze the effect of diverse ownership on quarterly returns.³⁶ We develop a number of regression models which evaluate performance, controlling for ownership type as well as other relevant variables that may be correlated with performance. These regressions include only those fund-quarter observations with non-missing data for performance, firm and fund characteristics, and ownership type.

³³ We found a limited number of data errors in the dataset which we attempted to correct. Three firms reported very early years for firm's year founded; firm websites did not corroborate the dates, so we changed these outliers to the years specified by the websites. We also observed five relatively young firms that were managing a single fund and listed unusually high AUM. We used firm websites to check these figures. In four cases, we found that the AUM value listed in eVestment and the AUM reported in other sources were several orders of magnitude different. By cross-checking the numbers, it appears that these firms reported AUM in USD instead of million USD, which is how eVestment lists AUM. For these four firms, we adjusted AUM by dividing by one million. For one additional firm with an outlier AUM, we could not find an AUM figure using other sources. In this case, we calculated the median AUM for all firms founded in the same year (excluding this particular firm), and replaced the outlier with this median.

³⁴ We identify funds that were active at the time of download on August 25, 2016 and assume these funds are active for Q2 2016. For Q1 2011 through Q1 2016, we assume funds are active for all quarters until the listed inactive date. If no inactive date is provided, then we only keep fund-quarter observations that have non-missing values for either fund AUM or fund returns.

³⁵ Firm AUM is reported to eVestment in millions of dollars (USD), but there are a number of outlier AUM values that appear to be reported in dollars, sometimes just for one or two quarters. We drop AUM data for firm-quarter observations where the reported quarterly AUM is three orders of magnitude (i.e., 1,000 times) greater than the AUM value for any of the two previous or two future quarters. We do not, however, drop cases where AUM in two previous or future quarters was listed as zero. We assume that a jump from zero AUM to a much larger number is indicative of a new fund.

³⁶ Quarterly returns are self-reported by fund managers to eVestment. Approximately, 85% of returns in this dataset are reported gross of fees and 15% are reported as net of fees.

The analysis of investor types relies on fund-level AUM data by client type as of Q2 2016. These data describe the types of clients with capital invested with each asset manager. The table below provides eVestment definitions for each investor type AUM variable, which are reported in million USD.³⁷

| Investor Type | eVestment Definition of AUM by Investor Type |
|----------------------------|---|
| Corporate | Sum of assets managed for corporations, regardless of account type (i.e., Defined Benefit, Defined Contribution). |
| Public Fund | Sum of assets managed for public fund clients regardless of account type. |
| Superannuation | Sum of assets for Superannuations, which are government-regulated investment strategies designed to provide a person with an income upon their retirement. Superannuation schemes are commonly found in Australia and New Zealand. |
| Union/Multi-Employer | Sum of assets managed for union or multi-employer fund clients regardless of account type. |
| Foundations & Endowments | Sum of assets managed for a client whose assets, funds, or property are donated to an institution, individual, or group as a source of income. |
| Healthcare | Sum of assets managed for clients in a healthcare organization (for profit and nonprofit). |
| Insurance | The sum of assets managed on behalf of insurance companies. Insurance companies often invest pooled assets to further grow available capital and finance additional operations. |
| High Net Worth Individuals | This is the sum of assets managed directly for a high net worth individual or family office. |
| Sub-Advised | This is the sum of assets whose day-to-day management is handled by a third party hired by the primary manager. |
| Wrap Accounts | Includes platform programs in which investors pay a single fee for all services associated with their account as opposed to per-transaction fees. This variable is a sum of assets managed for these types of programs. |
| Supranationals | Sum of assets managed for supranationals, which are international organizations whose member states share decision-making power. Membership is voluntary and decisions by the group follow majority rule. The European Union and World Trade Organization are both supranationals. |
| Defined Contribution | This is the sum of assets managed for Defined Contribution plans, such as a retirement plan in which the employer and/or employee contribution specified amounts (e.g., 401(k), 403(b), etc.). This category is independent of the other asset breakdowns (i.e., an investor can be listed as defined contribution as well as another client type). |

³⁷Again, some values appear to be reported by the firms in total dollars, so we cross-reference these variables with a separately reported variable for fund AUM. The sum of AUM across client types should not be greater than the total fund AUM. Therefore, for the investor type analysis, we drop any observations where this is the case. In calculating the sum of AUM across client types, we do not include AUM in “Defined Contribution” since this category is not mutually exclusive of all other categories. For instance, “Corporate,” “Public Fund,” and “Union/Multi-Employer” categories may also include AUM from defined contribution plans.

Hedge Funds Data

Hedge Fund Research (HFR) is a leading provider of hedge fund data, offering monthly data from over 2,200 distinct asset managers. These data include variables such as strategy focus, geographic location, fund size, and performance. The standard commercial database also includes a diversity variable to indicate whether the fund is substantially owned by women and/or minorities. HFR has provided supplemental proprietary data for this project that include type of firm ownership (women vs. minority) and level of ownership (substantial vs. majority). The HFR threshold for substantial ownership is 25-50% ownership, and the threshold for majority ownership is 51+% ownership. These identifiers allow us to categorize hedge funds into five ownership groups: substantial women ownership, majority women ownership, substantial minority ownership, majority minority ownership, and non-diverse ownership.

HFR has good coverage of hedge funds relative to other commercial databases and is frequently used for academic research on the hedge fund industry.³⁸ However, it does not capture the total universe of hedge funds,³⁹ so we almost certainly do not capture the entire universe of all *diverse-owned* hedge funds for this report. Although it would be preferable to combine multiple hedge fund databases for this analysis, we use the HFR database exclusively because it provides identifiers for diverse-owned firms. We do not know of any other hedge fund databases with similar data on diverse ownership. While we have no reason to believe that the representation or performance of diverse-owned firms in HFR is different from other hedge fund databases, we must acknowledge that unknown biases in the data could skew our results.

As noted above, HFR's supplemental proprietary dataset allows us to categorize hedge funds into five ownership groups: substantial women ownership, majority women ownership, substantial minority ownership, majority minority ownership, and non-diverse ownership. Unlike the data for mutual funds, these firm-level identifiers for hedge fund managers do not change over time. We assume that any identified-diverse firms are diverse for the entire life span of the firm.

Several adjustments are required to prepare the datasets for analysis:

- HFR separates the databases for fund characteristics, performance, and assets into active and dead databases, with funds grouped by their reporting status. We utilize data for both **active and dead** funds across each of these databases when constructing the timeline and evaluating performance, in order to look back at trends in diverse ownership and performance over multiple years.
- For the look at the current state of diversity, we use only the **active** funds database to construct the universe of funds, excluding any funds that are no longer reporting. This analysis aims to quantify the current number of diverse firms and the amount of associated AUM.
- The data are restricted to firms based in the U.S. and its overseas territories.

³⁸ See for example: Juha Joenväärä, Robert Kosowski, and Pekka Tolonen, "Hedge Fund Performance: What Do We Know?" *SSRN working paper*, March 2016.

³⁹ See, for example: (1) Andrew J. Patton, Tarun Ramadorai, and Michael Streatfield, "Change You Can Believe In? Hedge Fund Data Revisions," *SSRN working paper*, March 2013; (2) Juha Joenväärä, Robert Kosowski, and Pekka Tolonen, "Hedge Fund Performance: What Do We Know?" *SSRN working paper*, March 2016.

- While all funds are U.S.-based, a small minority report assets denominated in foreign currencies. These foreign monthly asset numbers are converted to U.S. dollars based on the monthly exchange rates provided by Oanda, a currency data provider and foreign exchange company.
- Because most diverse firms are classified as majority-diverse-owned and so few firms are classified as substantially-diverse-owned, we combine substantial and majority categories to create one variable to denote women ownership and one variable to denote minority ownership.
- While the “snapshot” of hedge fund AUM relies on the most recently reported fund AUM value, the timeline analysis uses *monthly* assets. Reporting of monthly assets is more limited compared to the coverage of the current AUM variable.
- The fund characteristics and diversity data are merged with the monthly assets data. For a fund to be included in the *timeline* analysis, it must have data available on its characteristics (e.g., industry focus, manager location, AUM, etc.), the diversity of its ownership, and its assets in a given month.
- Similarly, for a fund to be included in the *performance* analysis, it must have data available on its characteristics, the diversity of its ownership, and monthly performance. For this analysis, we rely on monthly returns data. This information is self-reported by firms, and 99% of observations are reported net of fees.

In addition to analyzing the data by diverse group, the HFR database allows us to investigate other demographic breakdowns for the current state of diversity analysis. These breakdowns include regional investment focus, manager location, and fund strategy:

- Regional investment focus has three categories—North American, Global, and Other—based on where the manager targets investments.
- We group firms into four U.S. regions by manager location using the same definitions as for mutual funds: Northeast, South, Midwest, and West.
- Fund strategies include equity hedge, event driven, fund of funds, macro, and relative value.

In this analysis, we do not consider funds of hedge funds since they typically have a distinct structure, size, fee arrangement, and performance profile compared to direct investments. In addition, any AUM with FoFs will be double counted if the sub-fund investments are also in the dataset. This could overstate the amount of capital in the industry and skew the results, misrepresenting the AUM allocated to diverse versus non-diverse firms. For these reasons, we drop any observations that list FoF as the strategy type.

Private Equity and Real Estate Data

Prequin, a commercial data provider in the alternative assets industry, serves as our source of data for all analyses involving PE and real estate. Prequin is among the top sources of data for the alternative assets industry and is one of the two databases most often used in PE research.⁴⁰ At

⁴⁰ Robinson, David and Berk Sensoy, “Private Equity in the 21st Century: Liquidity, Cash Flows, and Performance 1984-2010,” *NBER Working Paper*, July 15, 2011.

the time of this analysis, its datasets of U.S.-based PE and real estate funds comprise 21,575 and 5,614 funds, respectively. These databases provide access to a number of variables of interest and boast coverage over a long time period, with particularly strong coverage in the years since 2000.

Preqin, however, does not identify diverse ownership for the firms listed in its databases. To incorporate data on diverse ownership, we rely on a number of lists, which include the names of firms with women or minority ownership, provided by third parties. These lists were gathered by contacting several individuals and groups familiar with the diverse manager space, including institutional investors, consultants to institutions, managers of managers (MoMs), FoFs, and other professional organizations. The table below summarizes the public sources for lists of diverse-owned PE and real estate firms.⁴¹

| Source | Ownership Threshold | Asset Class |
|---|--------------------------------------|--------------------------------|
| Association of Black Foundation Executives (ABFE) Directory of Minority and Women-Owned Investment Management Firms, 2016 | Most 51+% Some 20+% | Private Equity, Real Estate |
| CalPERS Emerging Manager Five-Year Plan, 2014 | No threshold reported. | Private Equity, Real Estate |
| CalPERS Real Estate Emerging Managers Program, 2011 | No threshold reported. | Real Estate |
| Dow Jones Private Equity Analyst Report, 2012 | No threshold reported. | Private Equity |
| Illinois Municipal Retirement Fund | 51+% | Private Equity, Real Estate |
| Maryland Governor’s Office of Minority Affairs, “The Use of Minority- and Women-Owned Brokerage and Investment Management Firms by the State of Maryland,” 2014 | No threshold reported. | Private Equity |
| New York State Office of the Comptroller Report on MWBE, 2013 and 2015 Reports | Generally 51+%, with few exceptions. | Private Equity |
| Pennsylvania State Employees’ Retirement System (SERS) Supplemental Budget Book, 2016 | No threshold reported. | Real Estate |

⁴¹ We should note there are a number of additional lists of emerging managers (for example, “A Look Inside Emerging Manager Programs: Supplement” from *Emerging Manager Monthly*’s January 2016 publication) which likely include women- or minority-owned firms, but we are unable to use these sources for this report since they do not report ownership type. Typically, the term “emerging manager” includes not just women- or minority-owned firms but also young firms that manage a relatively small amount of capital. In some cases, the definition is even more inclusive, including individuals with disabilities, veterans, and members of the LGBT community (see James Comtois’s “Emerging Managers Finding More Opportunities Coming from Institutions” from *Pensions & Investments*’s February 2015 publication). Among emerging managers, women- and minority-owned firms are often well represented (see CalPERS’s “Emerging & Diverse Manager Data Report” from March 2013), and some institutions have used emerging manager programs or mandated allocations with emerging managers more generally, to increase diversity within their investment portfolios. Despite the representation of diverse firms among emerging managers, we do not capture any diverse firms from the emerging manager lists, unless they are identified by other sources as having diverse ownership.

In addition to the sources described in the table above, we acquired proprietary lists from three providers who prefer to remain anonymous. The first data source denotes women- and minority-owned firms, using a 50% ownership threshold for a firm to be categorized as diverse. The second data provider may track the degree of ownership but does not provide this level of detail for the women- and minority-owned firms on the list we were given. The third list of diverse firms does not provide an ownership threshold nor does it distinguish between *women* and *minority* firms. For firms on this last list, we use the demographics of senior partners at the firm as a proxy for ownership, using a 25% threshold. That is, a firm with one female partner and three male partners would be classified as women-owned while a firm with one female partner and four male partners would not. Data on management demographics were acquired from firm websites.

Considering top-level management demographics is an imprecise measure of ownership level, but this method mitigates the loss of diverse-owned firms that otherwise would not be included in our dataset due to insufficient information in the source material. Further, many of the firms we investigated have very small top-level management teams, consisting of only a few partners or founders, lending more confidence to our classification of women versus minority ownership. Ambiguous firms for which a diverse classification was not apparent are dropped from our sample of diverse firms.

Our method for compiling a list of diverse-owned PE and real estate firms is imperfect, and we do not claim to have comprehensive coverage of the diverse PE and real estate space. Those firms identified by this method typically have allocations from large public funds or they are very active in the diverse space (e.g., participating in emerging manager programs, being a sub-fund investment for a FoF, or participating in conferences for diverse asset managers). We expect that there may be a bias toward larger, more established, and more prominent diverse-owned firms. Small, new firms may be difficult to identify using this methodology.

In addition, the majority of the third-party lists that we utilize focus exclusively on PE, and there is substantial overlap among them. While we remain confident that the diverse PE firms are well represented in our dataset, the real estate data suffer the most from incomplete diversity information. There are undoubtedly a number of women- and minority-owned real estate firms that are not included in this report. Therefore, this analysis should be considered a foundation for future inquiry rather than a comprehensive view of diverse ownership in the real estate industry. It is our hope that this project will catalyze more comprehensive reporting practices for both PE and real estate.

Diverse PE and real estate firms were matched to demographic and fundraising data from Preqin based on firm name. The final list of diverse firms with accompanying data in Preqin comprises 52 women-owned and 98 minority-owned PE funds and 6 women-owned and 18 minority-owned real estate funds. We make a number of adjustments to both the PE and real estate databases from Preqin before merging them with our list of diverse-owned firms:

- Funds of funds are dropped from the PE and real estate datasets, for the reasons discussed in previous sections.
- Managers based outside the U.S. are dropped from the dataset.

- For PE, the data are limited to funds with vintage years 2004 to present, allowing us to construct a universe of funds that should be currently operating based on the typical life of PE funds.
- Since real estate funds exhibit a wider range of fund structures, we limit our dataset to only the non-liquidated funds in order to capture the subset of current real estate funds.
- Regional locations of firms are assigned based on the associated office address and follow the same state/territory groupings as in the hedge fund analysis.
- The AUM for each firm is calculated as the sum of the final size for each of a firm's funds raised from January 2004 through August 2016. Fund size and firm AUM calculations are reported in U.S. dollars.
- For the PE database, Preqin classifies fund types into a number of different categories. We regroup these funds into three broad categories: PE, VC, and real estate.⁴² To avoid double counting, we drop all PE funds categorized as real estate, as each of these funds is also listed in the real estate database.

Because PE and real estate funds generally do not report intermediate valuations in Preqin, the timeline analyses for these asset classes consist of the number of funds closed each year and the sum of their final sizes. The performance analysis looks only at PE due to the very small sample size for diverse real estate firms. We use net multiples as the performance measures since Preqin provides good coverage of this metric compared to other performance metrics, such as IRRs.⁴³ We also construct an “excess multiple” performance measure, using the median benchmark multiples for PE and VC separately. The excess multiple is calculated as the fund's actual reported multiple minus the median benchmark for that fund's type and vintage.⁴⁴

The final analysis examines the institutional investors in PE firms. Again, because of the small sample size of real estate funds, we only consider PE for this analysis. For each diverse PE firm, we download the names of limited partners (LPs) associated with that firm from Preqin and classify them into several investor types. Obtaining data in this way is prohibitively time-intensive for all 2,000+ firms in the dataset. Therefore, we take a random sample of 100 PE firms from the dataset and download the names and types of LPs associated with each of those firms individually. Some firms do not have investor information in Preqin, so we discard firms without investor information and sample another firm to replace it, so that there are 100 unique firms in our sample, and each has a list of associated investors. We use this matching sample of 100 firms as the control category when comparing the makeup of institutional investors in women- and minority-owned PE firms.

⁴² **PE** includes Buyout, Growth, Mezzanine, Co-Investment Multi-Manager, Co-Investment, Balanced, Direct Secondaries, Distressed Debt, Hybrid, PIPE, Natural Resources, Timber, Special Situations, Turnaround, Secondaries, Infrastructure, Infrastructure Fund of Funds, Infrastructure Secondaries, Fund of Funds, and Hybrid Fund of Funds.

VC includes Early Stage, Early Stage: Seed, Early Stage: Start-Up, Expansion/Late State, Venture (General), and Venture Debt.

Real Estate includes Real Asset, Real Asset Fund of Funds, Real Estate, Real Estate Co-Investment, Real Estate Fund of Funds, and Real Estate Secondaries.

⁴³ Net multiples are reported net of fees in Preqin.

⁴⁴ For VC, the benchmark includes U.S.-based funds with the strategies described in the previous footnote. The PE benchmark includes U.S.-based funds with the strategies described in the previous footnote. These benchmarks are calculated by vintage year.

It is important to note two potential issues with the data used in the analysis of institutional investor types for PE firms. First, the coverage of LPs in the Preqin investor database is not as comprehensive as many of its other fund characteristic variables. Small, private LPs may be underrepresented in these data, as they may have less stringent reporting requirements than large public LPs. Second, we do not know how large the commitment sizes are in each LP/GP pair; we only know the count of pairs. For example, this analysis counts a large pension fund that invested \$100 million with a diverse PE fund the same as a small family office that invested \$10 million with the same fund. Because of these data limitations, the results for this section should be interpreted cautiously.

IV. Methodology and Results

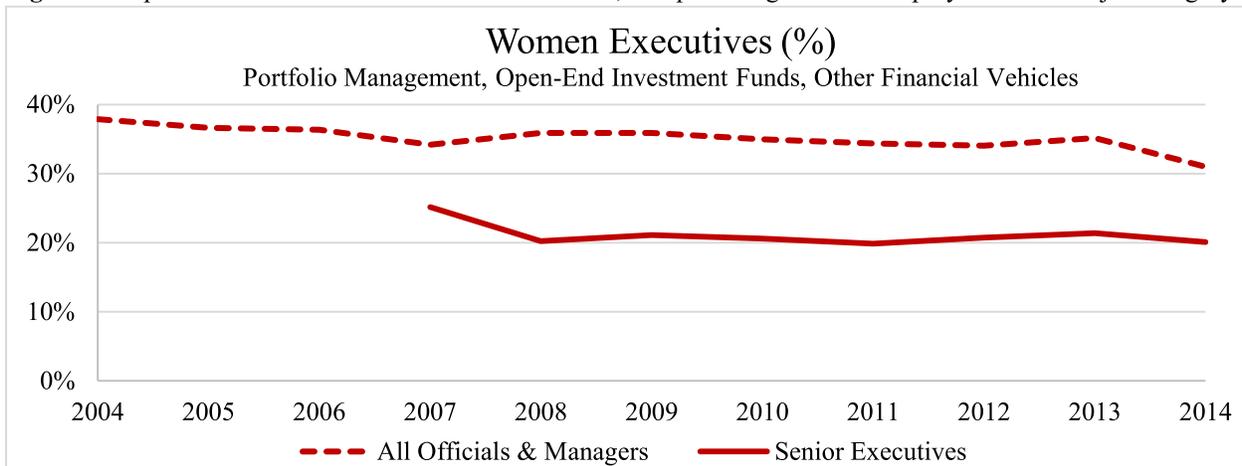
In this section, we review the key findings for the analysis of the current state of diverse ownership, time trends, performance, and institutional investor type. For each asset class, we investigate diverse ownership by firm count, fund count, and amount of AUM controlled by diverse-owned firms, and provide further breakdowns across a number of fund characteristics including manager location, geographic investment focus, and strategy or sub-asset class. We also present time trends for these diversity measures as well as an analysis of performance and institutional investor engagement.

Industry Employment

To begin the discussion, we first investigate the data from the EEOC, which offer a high-level timeline of employment diversity (not ownership) in the asset management industry since 2004. These data look at percentages of women and minority executives aggregated across three industries: Portfolio Management, Open-End Investment Funds, and Other Financial Vehicles. As discussed in the **Data Sources** section, starting in 2007, the “Officials & Managers” job category was divided into two groups: “Executive/Senior Level Officials & Managers” and “First/Mid-Level Officials & Managers.” We consider two job categories for this analysis: one that looks at just the senior level executives since 2007 and one that examines the group of all officials and managers. The second category is calculated by adding the two officials and managers groups in years since 2007.

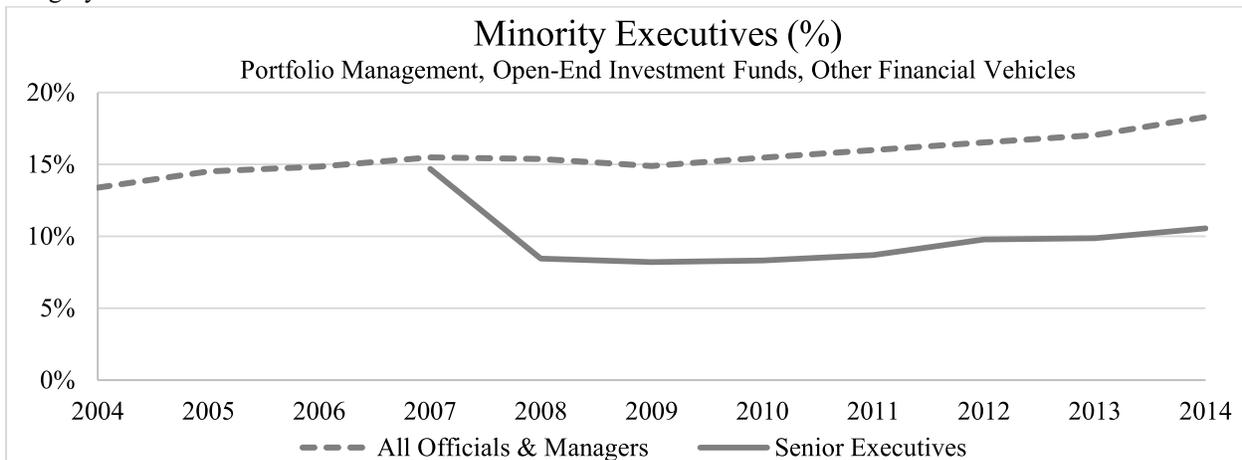
Figure 1 shows women executives as a percentage of all executives. Since data collection began for *senior executives*, **the representation of women in senior executive positions has stagnated at just above 20%**. The exception to this trend is between years 2007 and 2008, where there is a sharp decrease in the participation of women in senior executive positions. While this could be an effect of the Global Financial Crisis, it could also be a data quality issue, as 2007 was the first year of the manager breakdown into two categories. For *all officials and managers*, we use data on gender diversity going back to 2004. **The representation of women among all officials and managers shows a steady decline between 2004 and 2014**, starting at 38% and ending at 31%.

Figure 1. Representation of women in selected industries, as a percentage of total employment in each job category.



The data for minorities as a percentage of *senior executives* show a different trend. **Since 2008, minority representation in senior executive positions has shown a slight upward trend through 2014, increasing from 8% to 11%.** This trend is mirrored in the representation of minorities in the group of *all officials and managers*, which has increased in the decade between 2004 and 2014. These trends are shown in **Figure 2.**

Figure 2. Representation of minorities in selected industries, as a percentage of total employment in each job category.



This analysis of macro-level employment data offers some insight into the general employment trends in the industry. However, we should note that the diversity among *executives* is much higher than the levels of diverse *ownership* in the asset management industry presented in the rest of this report. These employment figures reflect a broader approach to quantifying diversity in the industry. Furthermore, these industry categories are large buckets that include job titles and sub-industries that do not match our project focus. Because of this, the macro-level employment data should be considered supplemental to the analysis rather than a cornerstone for actionable insights.

Mutual Funds

Summary: For mutual funds, we find that diverse firms are underrepresented. We identify 127 women-owned and 107 minority-owned firms as of Q2 2016, managing \$406 billion and \$160 billion in AUM, respectively. We use historical data from eVestment to identify women- and minority-owned firms for every quarter from Q1 2011 through Q2 2016 and find similar underrepresentation of diverse-owned firms for this time period.

For performance, we employ various regression models to quantify the relationship between diverse ownership and fund returns. As a whole, the evidence suggests that performance of diverse firms is no different from the performance of non-diverse firms. A separate look at top-quartile performance shows that diverse funds often have top-quartile returns with 25% and 28% of women- and minority-owned funds, respectively, in the top quartile per quarter.

Using data from Q2 2016, we also examine the mix of institutional investor types associated with diverse firms and non-diverse firms. We find that investments from public funds make up a larger share of AUM for average women-owned and minority-owned funds. Similarly, foundations, endowments, high net worth individuals, and family offices are proportionally more invested in diverse-owned funds compared to the non-diverse funds, on average.

Current State of Diverse Ownership for Mutual Funds

Diverse-owned firms comprise a small fraction of all firms and an even smaller fraction of the \$47 trillion AUM in mutual funds. Women-owned firms represent 8.8% of all firms, 5.2% of all funds, and just 0.9% of total AUM. Minority-owned firms, which make up 7.4% of firms, 3.8% of funds, and only 0.3% of AUM, are somewhat less represented in this asset class compared to women-owned firms. **Figure 3, Figure 4, and Figure 5** show the number of firms, funds, and AUM of diverse-owned firms relative to the universe of mutual funds.

Figure 3. Breakdown of diverse-owned firms for mutual funds, of 1,448 total firms.

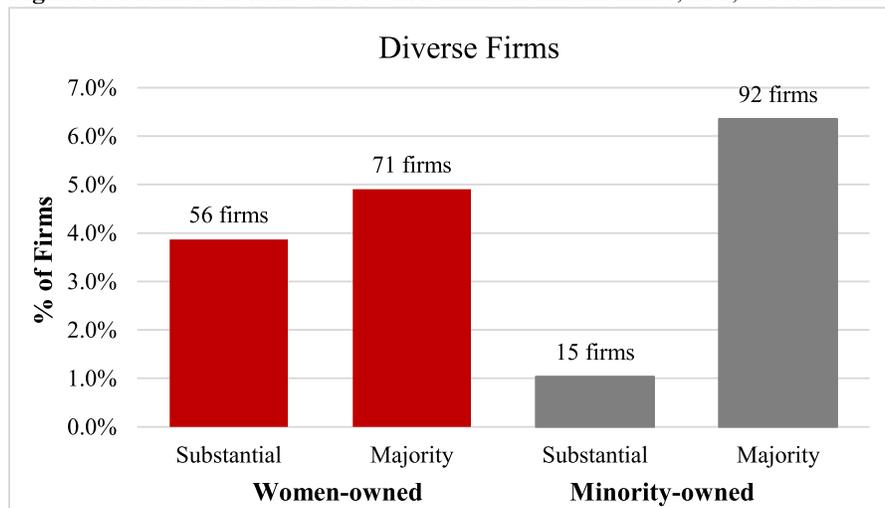


Figure 4. Breakdown of diverse-owned funds, for mutual funds, of 11,069 total funds.

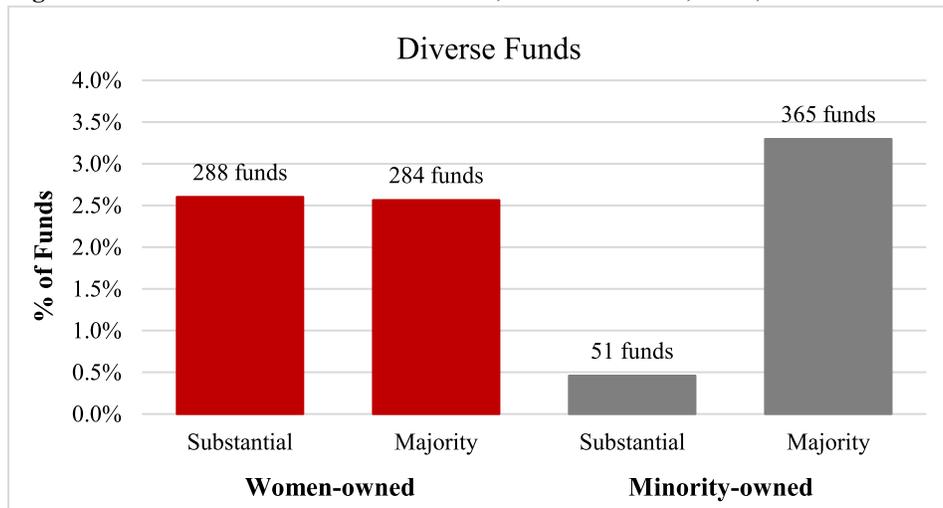
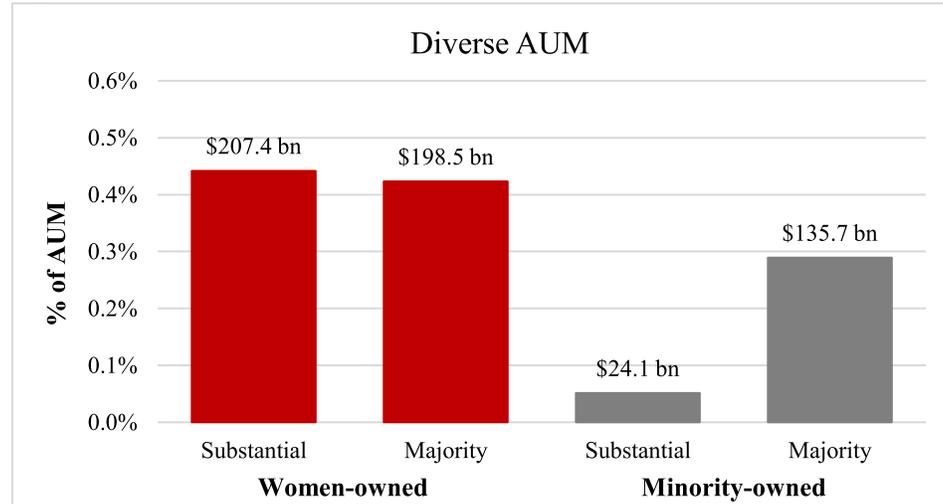


Figure 5. Breakdown of diverse-owned AUM in mutual funds, of \$47 trillion total AUM.



Diverse-owned firms are typically smaller than non-diverse firms, which partly explains their very low proportion of diverse AUM compared to total AUM. **Figure 6**, **Figure 7**, and **Figure 8** present several measures of firm size, broken out by ownership type.

Figure 6 presents the average AUM per firm by ownership type and shows the **huge disparity in AUM between diverse-owned firms and the universe of all firms**. On average, women-owned firms manage \$4.4 billion of AUM, and minority-owned firms manage \$2.1 billion of AUM. The average AUM for the universe of all firms is \$47.4 billion, a full order of magnitude higher than the average AUM for diverse-owned firms.⁴⁵

⁴⁵ It is worth noting that this universe includes a number of large, publicly-traded firms which are owned by the shareholders. It is very unlikely that these firms have a substantial level of diverse ownership. Firm AUM for publicly-traded companies is much larger compared to diverse-owned firms as well as non-diverse firms that are not publicly-traded.

Figure 6. Average firm AUM (billion USD) for mutual funds, by ownership type.

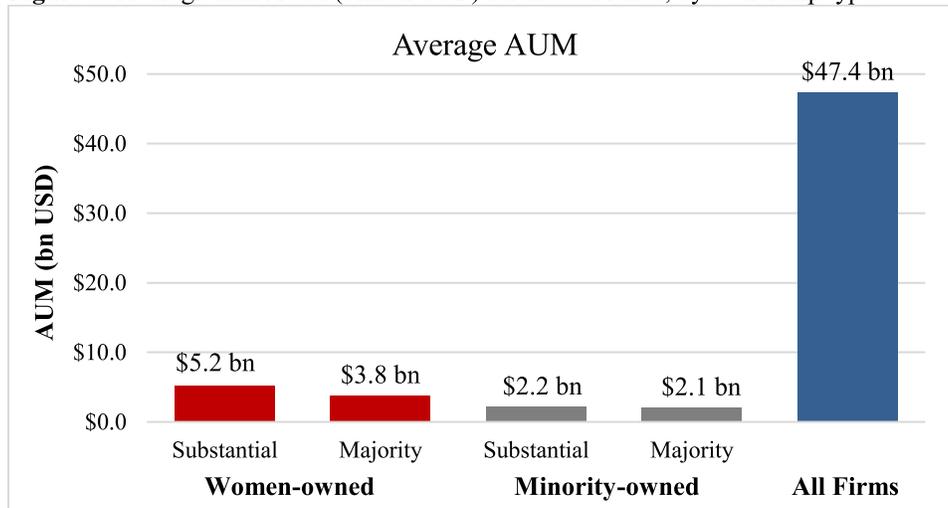
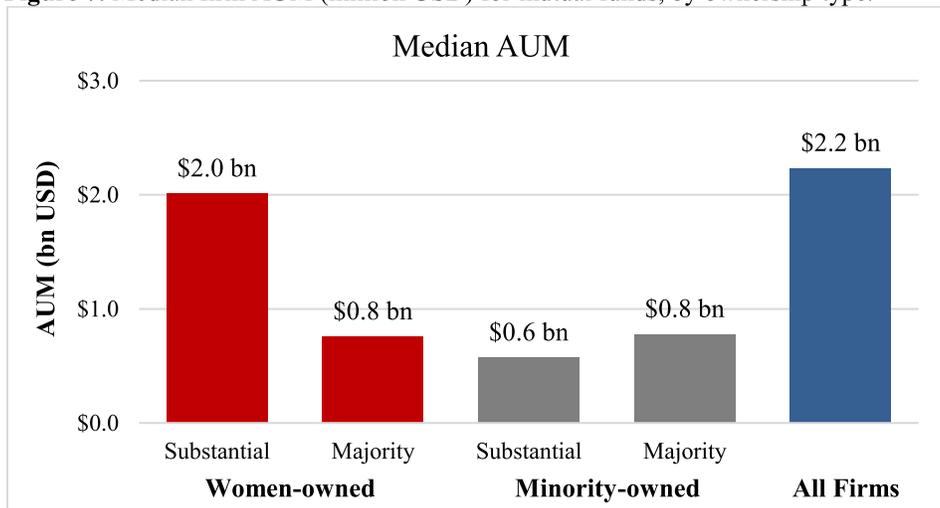


Figure 7 shows that the median AUM for diverse-owned firms is markedly smaller than the median AUM for all firms. The exception is the subset of firms with substantial ownership by women (25+%), which have a median AUM of \$2.0 billion, which is very close to the median AUM for all firms (\$2.2 billion). It is important to note that the subset of substantially women-owned firms is small; only 41 firms report AUM.

Figure 7. Median firm AUM (million USD) for mutual funds, by ownership type.



Diverse firms also manage fewer funds (Figure 8). Minority- and women-owned firms have less than half the number of funds, on average, than firms in the overall population. Another telling demographic factor is firm age. Diverse firms are much younger than the population of all firms (**Figure 9**). Minority-owned firms are the youngest; 2001 is the average year that minority firms were founded. Again, we see that firms with substantial women ownership are the exception, as they are about the same age as the universe of all firms. Overall, these results for

mutual funds are consistent with academic literature and with anecdotal evidence that indicates that diverse firms tend to be newer and smaller operations.⁴⁶

Figure 8. Average number of funds per firm by ownership type.

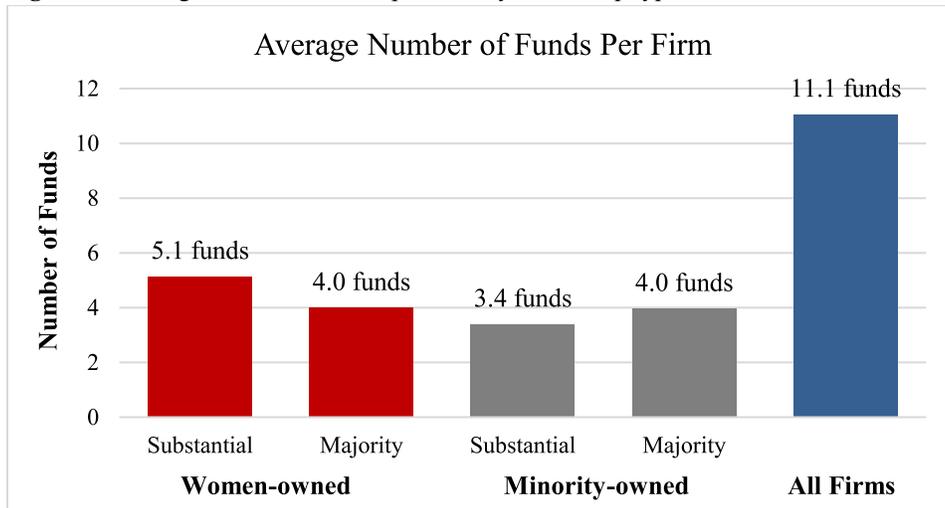
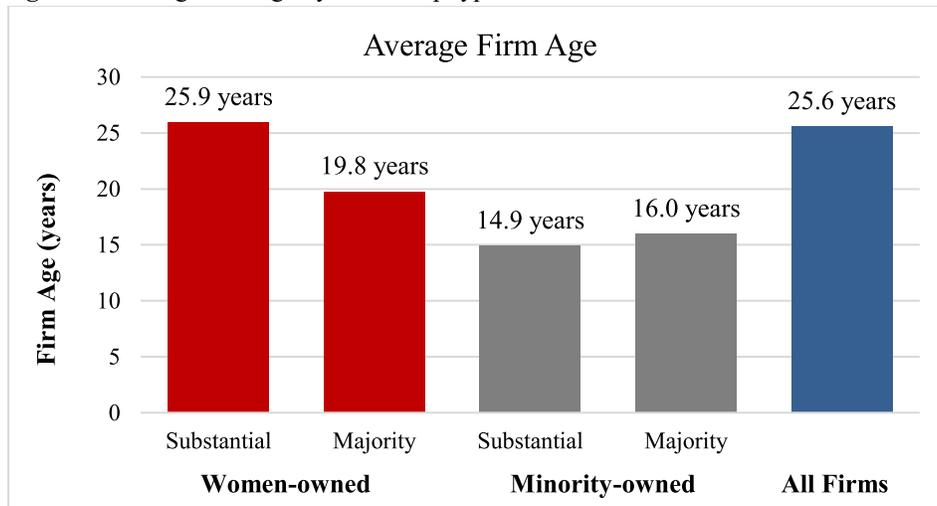


Figure 9. Average firm age by ownership type.



We also break down firms by location to see if diverse firms are concentrated in certain regions. **Figure 10** shows the representation of diverse firms in each region, relative to the total number of firms there. Diverse firms are best represented in the West, where women-owned firms comprise 13% and minority-owned firms represent 11% of all firms. The Northeast actually has the greatest number of diverse firms (n = 41 women-owned firms; 36 minority-owned firms), but this represents a smaller share of all firms in the region. Similarly, **Figure 11** shows the regional breakdown of AUM. By this measure, the West has the greatest amount of diverse AUM, in absolute terms *and* relative to the size of the industry in the West.

⁴⁶ Alexandra Niessen-Ruenzi and Stefan Ruenzi, "Sex Matters: Gender Bias in the Mutual Fund Industry," working paper, February 2015.

Figure 10. Diverse firm count by geographic location, as a percentage of total number of firms in the region.

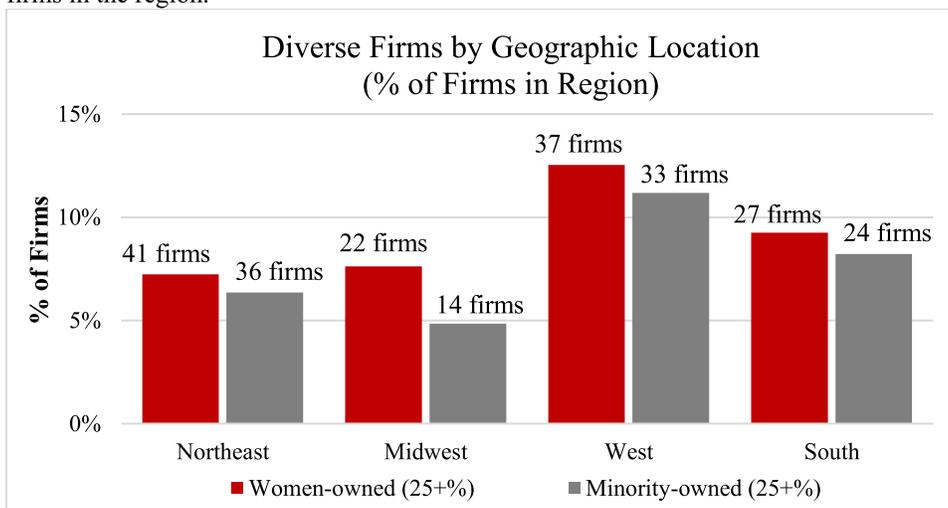
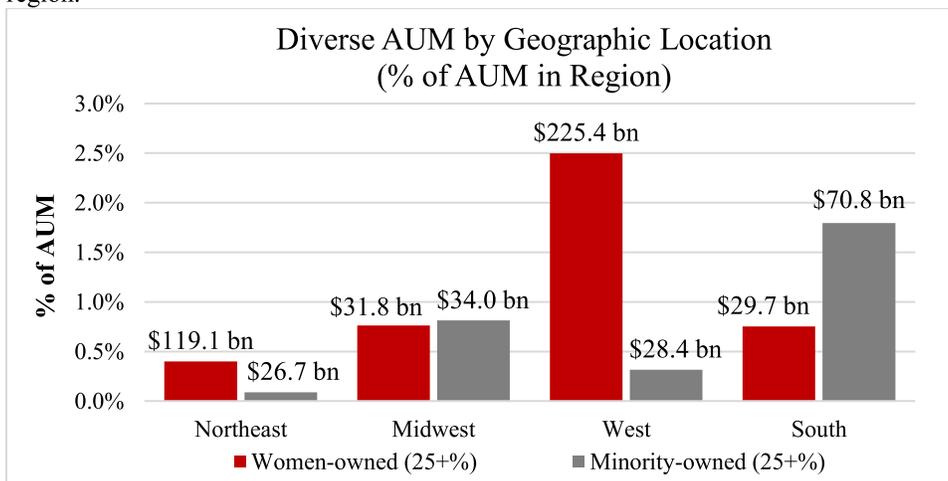


Figure 11. Diverse AUM by geographic location, as a percentage of total AUM in the region.



Next, we look at fund-level characteristics and how they differ among women-owned, minority-owned, and all funds. Mutual funds are further classified as equity, fixed income, and balanced/multi-asset. **Figure 12** and **Figure 13** examine the distribution of funds across these sub-asset classes for each ownership type. **Figure 12** presents the distribution by fund count. We see that the distribution is similar for all three ownership types (i.e., women-owned, minority-owned, and all funds), with 58-71% of funds in equity, 27-29% in fixed income, and 5-15% balanced. **Figure 13** shows the sub-asset class distribution of AUM, and gives a different picture of the asset allocation among equity, fixed income, and balanced funds. Balanced/multi-asset funds make up a small percentage of AUM for each ownership type. Looking at the universe of all funds, the remaining AUM is split evenly between equity and fixed income (47% each). However, the majority of women-owned AUM is invested in fixed income funds (65%), whereas most of the minority-owned AUM is in equity (57%).

Figure 12. Geographic focus of mutual funds, by number of funds for each ownership type.

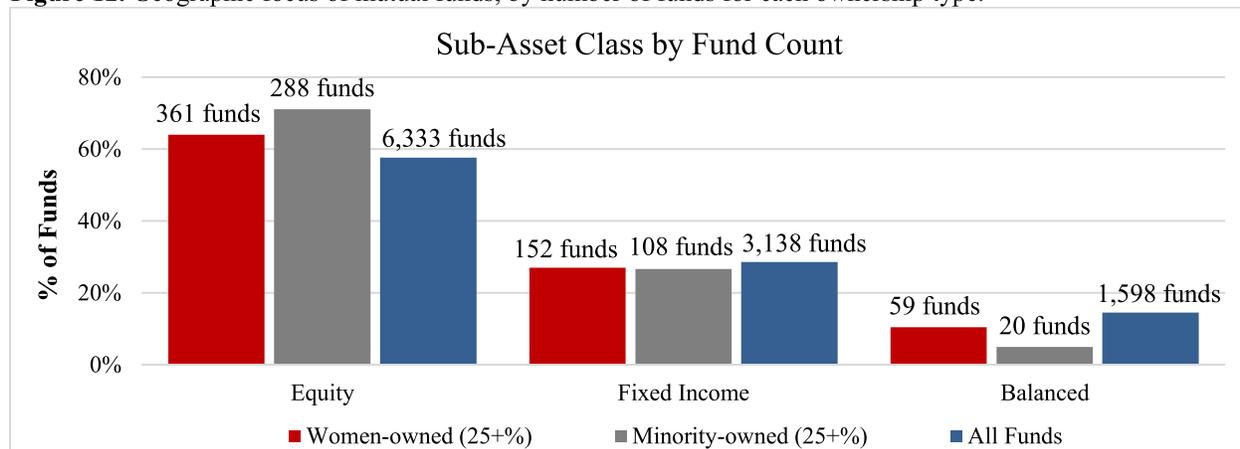
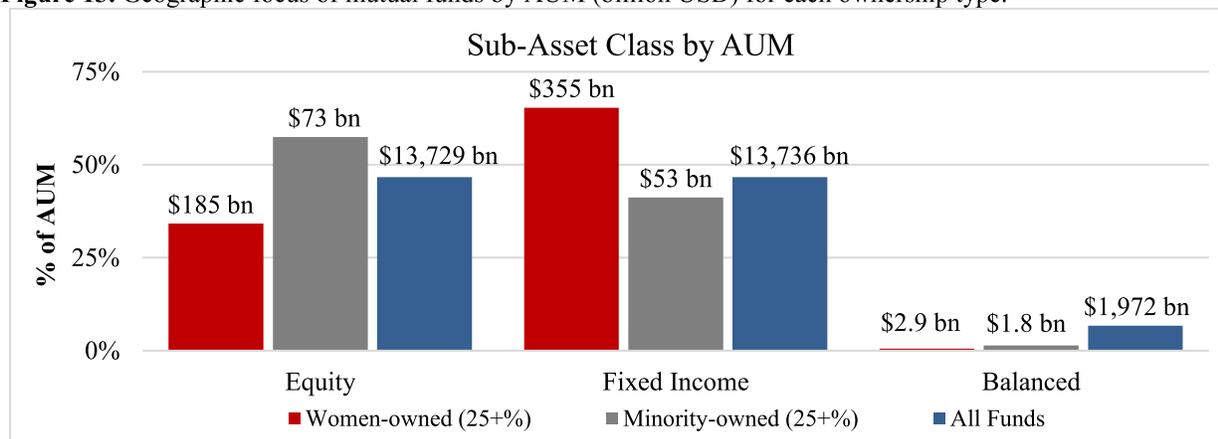


Figure 13. Geographic focus of mutual funds by AUM (billion USD) for each ownership type.



The main strategies for mutual funds are core, growth, passive index, and value. We look at the distribution of strategies for women-owned, minority-owned, and all funds, first by number of funds (**Figure 14**) and then by AUM (**Figure 15**). Distribution of strategies is similar across ownership types, each having 35-38% of funds in core, 26-28% of funds in value, 23-26% of funds in growth, 2-6% of funds in passive index, and 3-8% of funds in other. When viewed by AUM, however, the dominant strategy and distribution of strategies change considerably. In terms of AUM, core is the dominant strategy only for minority-owned funds (45% of AUM). Another 39% of minority-owned AUM is in value, followed by 13% in growth, 3% in other, and very little in passive index. For funds managed by women-owned firms, value is the most dominant strategy in terms of AUM (39%) followed by core (31%), growth (22%), passive index (7%), and other (1%). For all funds, the total AUM is more evenly distributed across value (27%), growth (25%), core (24%), and passive index (19%), with the remaining 5% in other strategies. Due to the economies of scale associated with setting up a passive index strategy, small firms may not have the resources to offer these products.⁴⁷ Since diverse-owned funds are usually smaller than average, this may explain why diverse-owned funds are under-represented in passive index funds, in terms of the number of funds and AUM.

⁴⁷ Hortense Bioy, Jose Garcia-Zarate, Caroline Gutman, Kenneth Lamont, and Gordon Rose, “A Guided Tour of the European ETF Marketplace,” online report for Morningstar, November 2014.

Figure 14. Strategy for mutual funds, by number of funds for each ownership type. (Number of funds in each strategy-ownership group shown above bars).

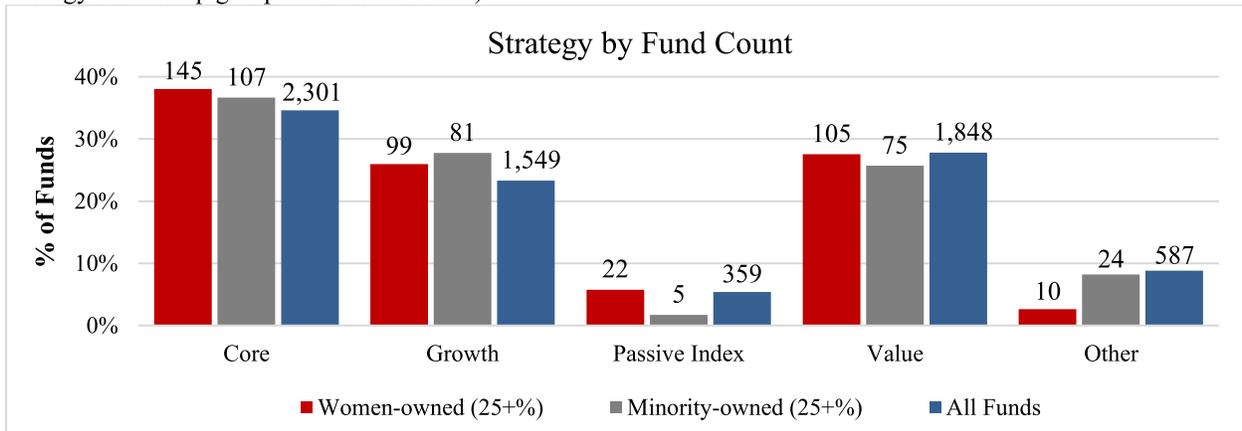
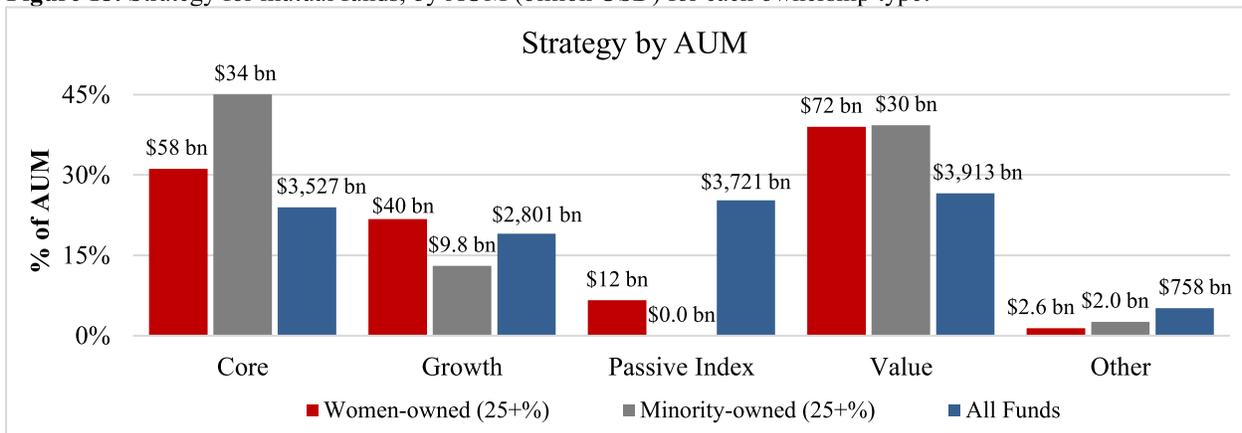


Figure 15. Strategy for mutual funds, by AUM (billion USD) for each ownership type.



The final characteristic we examine for mutual funds is the geographic investment focus. **Figure 16** shows clearly that the vast majority of funds in our dataset are focused on U.S. investments, regardless of ownership type (which is unsurprising since we only look at U.S.-based funds in this report). **Figure 17** tells a similar story, with most of the AUM in U.S.-focused funds.

Figure 16. Geographic focus of mutual funds, by number of funds for each ownership type.

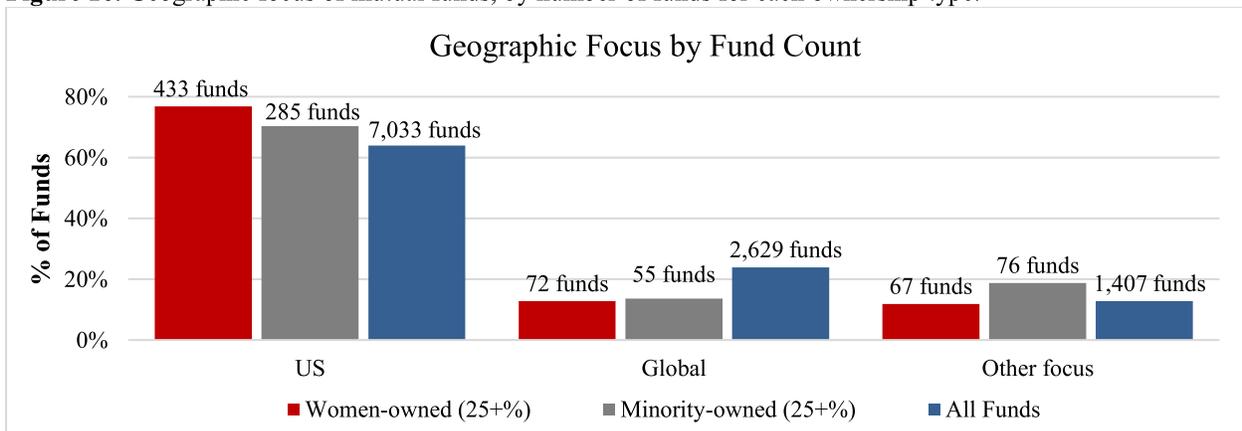
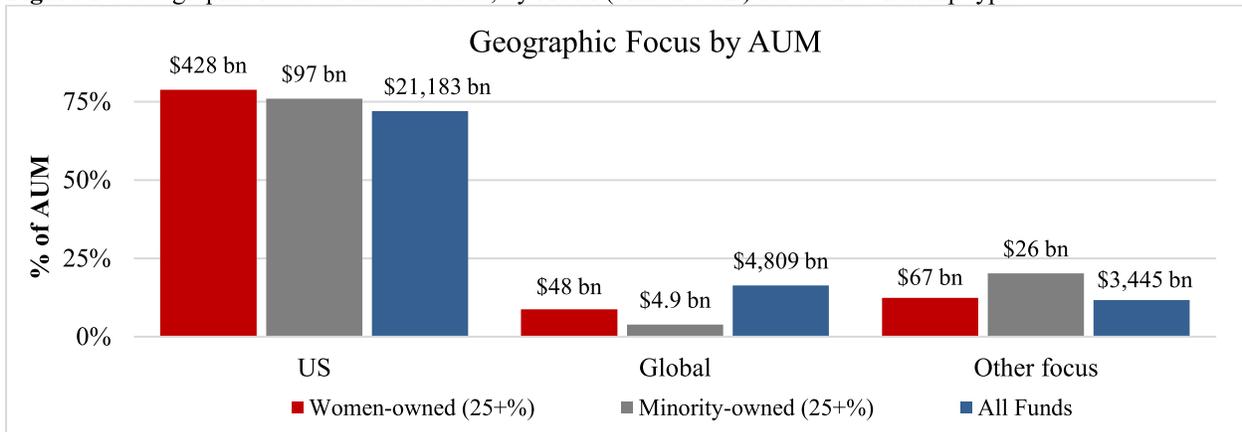


Figure 17. Geographic focus of mutual funds, by AUM (billion USD) for each ownership type.



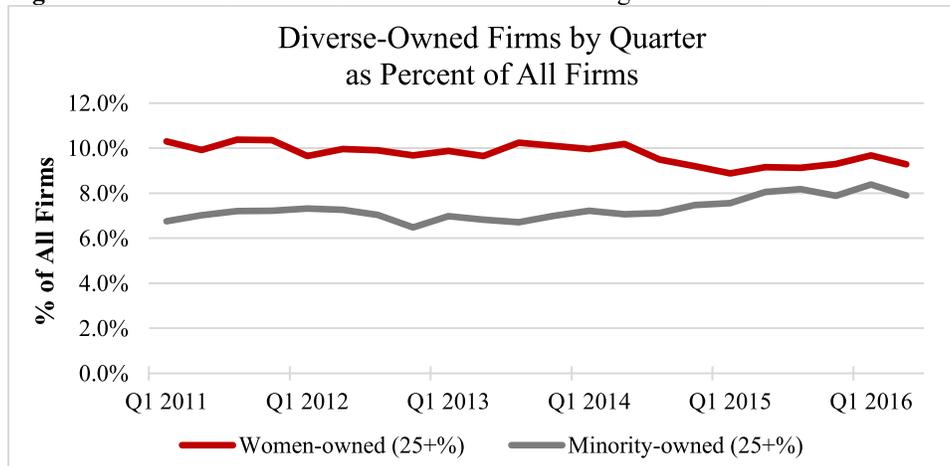
This examination of firm- and fund-level characteristics shows that diverse and non-diverse firms differ in meaningful ways, although there are some similarities between the ownership types. Characteristics such as fund strategy and geographic focus are linked to performance, so it will be important to control for these differences in the performance analysis.

Timeline of Diverse Ownership for Mutual Funds

We identify firms with women ownership (25%) or minority ownership (25%) for each quarter from Q1 2011 through Q2 2016. We then calculate the proportion of diverse-owned firms, diverse-owned funds, and diverse-owned AUM compared to the industry totals in each quarter. **Figure 18**, **Figure 19**, and **Figure 20** show the representation over time of diverse firms, funds, and AUM, respectively.

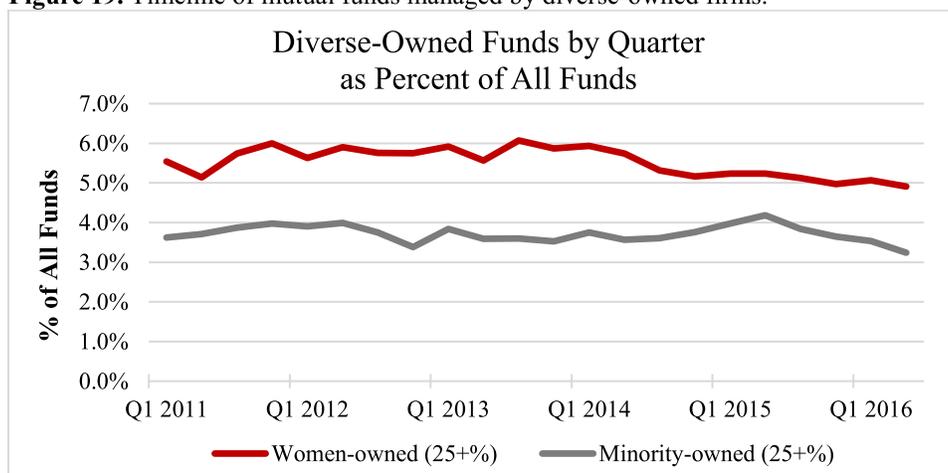
Firm Count: In **Figure 18**, minority-owned firms comprise 6.1% to 7.9% of all firms in each quarter. The representation of minority firms increases slightly over the period, from 6.8% of firms in Q1 2011 to 7.8% of all firms in Q2 2016. Women-owned firms make up 8.7% to 10.6% of all firms in any given quarter; representation of women firms decreases slightly over the period, from 10.3% of firms to 9.3% of firms.

Figure 18. Timeline of diverse-owned mutual fund management firms.



Fund Count: As shown in **Figure 19**, the total representation of diverse-owned *funds* is smaller compared to the representation of diverse-owned *firms*. This finding is consistent with findings for the current state of diversity (as of Q2 2016), which shows that diverse-owned firms tend to be smaller operations with fewer funds and lower AUM. Funds with women ownership represent 4.9% to 6.1% of all funds in a given quarter, while funds with minority ownership comprise 3.2% to 4.2% of the total. Similar to the firm analysis, we also observe fluctuation in funds over time. The net change shows that both women- and minority-owned categories decrease slightly in proportion to all funds (5.5% to 4.9% for women-owned firms; 3.6% to 3.2% for minority-owned firms).

Figure 19. Timeline of mutual funds managed by diverse-owned firms.



AUM: In terms of AUM, we find that diverse-owned firms represent a very small fraction of total AUM in each quarter (**Figure 20**). Women-owned firms comprise between 0.8% and 1.0% of total AUM by quarter, while minority-owned firms comprise 0.4% to 0.9% of AUM per quarter. These changes are associated with fairly large swings in assets from quarter to quarter. During this period, the amount of AUM (**Figure 21**) managed by women-owned firms is \$288.2 billion at the minimum in Q3 2011 and \$440.3 billion at the maximum in Q2 2014. AUM for minority-owned firms ranges from a low of \$167.2 billion in Q2 2016 to a high of \$408.6 billion in Q2 2015.

The *proportion* of AUM with women-owned firms is virtually the same at the beginning and end of this period (0.9% of total AUM). However, the *amount* of AUM with women-owned firms increases from \$318.8 billion in Q1 2011 to \$411 billion in Q2 2016. For minority-owned firms, the proportion of AUM and amount of AUM both decrease over this period (0.8% to 0.4% of total AUM; \$299.1 billion to \$207.2 billion AUM). **Figure 18** and **Figure 19** show that the proportion of minority-owned funds and firms is relatively more constant over the time period compared to AUM. The exit of a large minority-owned firm or fund could produce a large drop in AUM with minority-owned firms. In the data, we would see an “exit” for multiple reasons: (1) a change in ownership so that a firm no longer meets the threshold for diverse ownership, (2) a firm closes and stops reporting to the database, or (3) a firm is still active but stops reporting to the database.

Figure 20. Timeline of the proportion of mutual fund AUM by diverse ownership type.

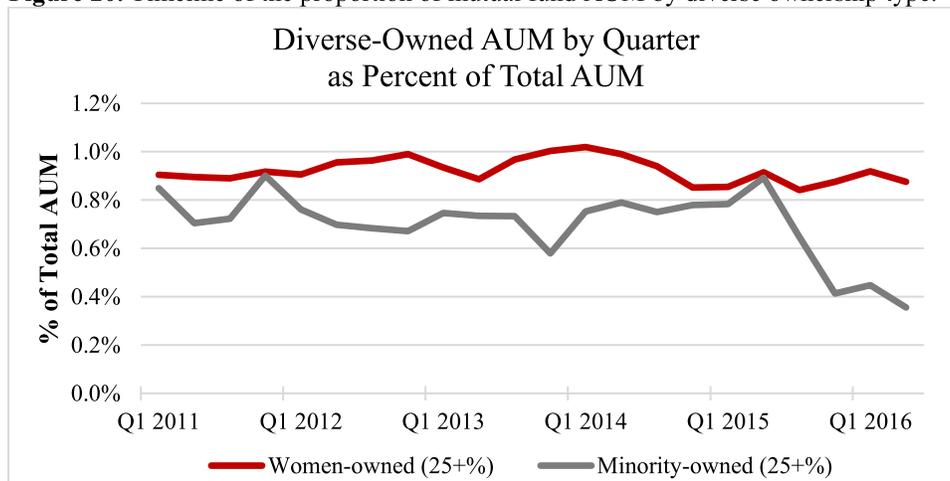
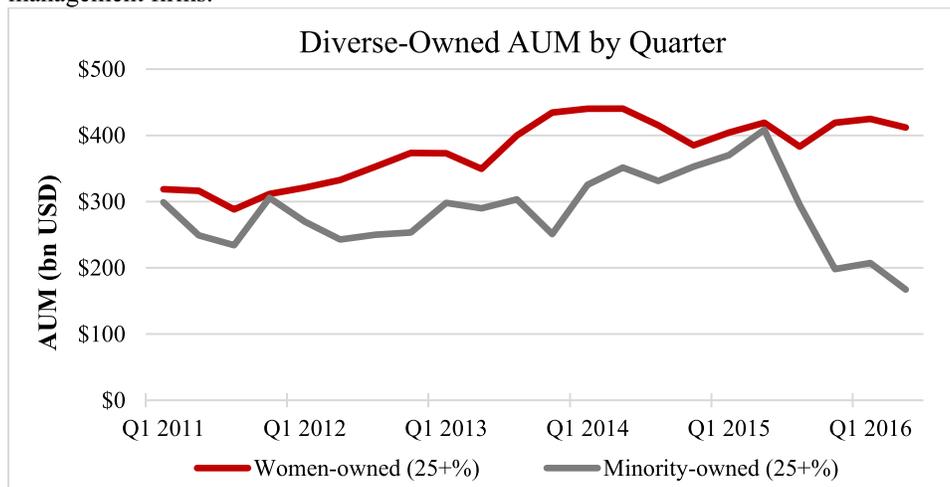


Figure 21. Timeline of AUM (USD billion) managed by diverse-owned mutual fund management firms.



It is important to remind readers that **Figure 20** and **Figure 21** represent the amount of assets controlled by *diverse firms* with at least 25% ownership held by diverse individuals. These numbers do not represent assets under control of *diverse individuals*.

Performance of Diverse-Owned Mutual Funds

We use regression analysis to examine the performance of diverse-owned firms. For this analysis, we utilize quarterly data going back to Q1 2011, when eVestment started collecting data on diverse ownership. Using regression models, we quantify the difference in returns for women- and minority-owned firms compared to *non-diverse* firms (after controlling for a number of other firm and fund characteristics).

Diversity data are incomplete, with missing data for some firms. In the main regressions, we restrict the data to firms that provide responses on the percentage of diverse ownership for at least one of the following groups in eVestment: Woman, African-American, Asian, Hispanic,

and All Minority (which considers both women and racial/ethnic minority ownership together). In other words, **these regressions only include observations if we have some level of information about the composition of firm ownership.** Then, we create indicator variables for women-owned firms (25+%) and minority-owned firms (25+%) for each quarter. In separate specifications, we look separately at substantial ownership (25-49%) and majority ownership (50+%).⁴⁸

To measure performance, we use quarterly returns data from eVestment for Q1 2011 through Q2 2016, which are reported at the fund level. In addition to unadjusted quarterly returns, we compute market-adjusted returns and perform regressions using these market-adjusted returns as the dependent variable. Market-adjusted returns capture the excess returns on an investment above the expected return (i.e., the predicted return, based on that fund's risk, the market return, and the risk-free rate), given the risk-free rate and level of risk (beta) associated with the investment type.⁴⁹ These metrics—returns and market-adjusted returns—treat every fund-quarter observation equally. In addition, we examine returns and market-adjusted returns where observations are weighted by the lagged fund AUM (i.e., AUM at the end of the quarter prior to that in which performance is measured). For these capital-weighted performance metrics, the largest funds have the greatest impact.

We first look at the difference between diverse-owned funds and all funds for each performance metric, *without* controlling for any other variables. **Table A** in the **Appendix** presents the average differences for each performance measure. In terms of quarterly returns, the diverse-ownership categories show stronger average performance compared to the average for all funds. For capital-weighted returns, we find that funds managed by minority-owned firms outperform, while funds managed by women-owned firms slightly underperform. For market-adjusted returns (equal-weighted *and* capital-weighted), we find that performance of diverse-owned funds is not significantly different from performance of all funds, on average. The exception is for the capital-weighted market-adjusted returns for minority-owned funds which are slightly lower on average compared to returns for all funds. Note that statistics in **Table A** rely on returns data

⁴⁸ If percent women ownership is missing but minority ownership is *non*-missing, then we assume the firm does not fall into the substantial- or majority-women-ownership categories. We make the same assumption for firms with missing values for percent minority ownership but *non*-missing values for women ownership. As stated above, firms must have *non*-missing values for **either** the percent women ownership or percent minority ownership to be included in the main regressions. We also perform robustness checks where we include the firms that do not report any diversity data. We assume that these firms with missing data for women **and** minority ownership are non-diverse in this robustness check regression (i.e., do not have substantial levels of either women ownership or minority ownership).

⁴⁹ Market-adjusted returns are calculated as the difference between actual quarterly returns and expected quarterly returns. Actual quarterly returns for each fund come from eVestment. We use the capital asset pricing model (CAPM) to calculate the expected return for each fund for each quarter: $E(r) = r_f + \beta(r_m - r_f)$ where $E(r)$ is the expected return, r_f is the risk-free rate, r_m is the market return, and β is the beta measure of volatility. For the risk-free rate, we use quarterly averages of the U.S. 3-month Treasury bill rate, provided by the U.S. Federal Reserve. Quarterly index returns are specific to asset class: (1) S&P 500 index returns for equity; (2) Barclays U.S. Aggregate index returns for fixed income; (3) weighted average (60%/40%) of S&P500 index returns and Barclays U.S. Aggregate index returns for balanced/multi-asset funds. The latter mimics a “normal” balanced fund, as opposed to “aggressive” or “conservative” funds which may be weighted more towards equity or fixed income assets, respectively (See, for example, Andrea Frazzini and Lasse Heje Pedersen, “Betting Against Beta,” *Journal of Financial Economics* 111(1): 1-25, January 2014). Beta values are calculated using the same asset-class specific indices. (For calculation of betas, see footnote 51 below.)

from multiple years and for mutual funds where the underlying assets may be public equity, fixed income, or balanced/multi-asset. These averages do not control for any variables that may be related to performance, such as quarter or sub-asset class, and therefore, do not isolate the true effect of diverse ownership. These summary statistics are intended to provide an overview of the performance data for mutual funds.

Next, we perform regressions of each performance measure and control for a number of relevant firm and fund characteristics. Several studies indicate that firm and fund size are linked with performance.⁵⁰ Therefore, we control for fund and firm assets from the previous quarter. Since different fund types are associated with different performance and risk profiles, all regressions contain fixed effects (FE) for asset class (e.g., equity, fixed income, and balanced/multi-asset), strategy (e.g., core, growth, value, and passive index), and regional focus (e.g., U.S., Europe, Asia, Africa, Latin America, and Global). To control for market fluctuations, we include quarter fixed effects, and most specifications also include quarter-asset class fixed effects, since certain fund types may perform better under different market conditions. Alternative specifications control directly for beta (a measure of fund volatility)⁵¹ and survivorship (whether the fund was still active when we downloaded the dataset on August 25, 2016). All performance regressions cluster standard errors by firm to account for the fact that each firm has multiple fund-quarter observations.

To briefly summarize our approach, we estimate a series of six regressions that quantify the effect of diverse ownership on performance and test the robustness of our findings:

1. Base Regression.

In this base model, we examine the effect of women and minority ownership on unadjusted quarterly returns, controlling for fund assets (lagged one quarter), firm assets (lagged one quarter), and fixed effects for several fund characteristics.

2. Base Regression with Additional Controls.

This model expands the Base Regression by adding beta (a measure of volatility) and a variable to indicate whether the fund is active.

3. Market-Adjusted Regression.

This regression is similar to the Base Regression with Additional Controls, using market-adjusted quarterly returns as the dependent variable. Since the calculation of market-adjusted returns incorporates beta directly, this specification excludes beta as an explanatory variable.

⁵⁰ See for example: (1) Joseph Chen, Harrison Hong, Ming Huang, Jeffery D. Kubik, "Does Fund Size Erode Mutual Fund Performance? The Role of Liquidity and Organization," *The American Economic Review* 94(5): 1276-1302, December 2004. (2) John A. Haslem, H. Kent Baker, David M. Smith, "Performance and Characteristics of Actively Managed Retail Mutual Funds with Diverse Expense Ratios," SSRN working paper, July 2008.

⁵¹ Betas are calculated as the correlation between a fund's quarterly returns and the returns of the index for the same time period. For equity funds and fixed income funds, we use S&P 500 index returns and Barclays Aggregate U.S. index returns, respectively, as the indices for calculating beta. For balanced/multi-asset funds, we use a weighted average of 60% S&P 500 index and 40% Barclays U.S. Aggregate index. For each quarter-fund observation, we calculate a 12-quarter rolling beta using the funds' actual quarterly returns and the asset-class-specific index returns for the past three years.

4. Capital-Weighted Regression.
This version of the Base Regression weights observations by lagged fund assets. For this reason, we exclude lagged fund assets as an explanatory variable.
5. Capital-Weighted Regression with Additional Controls.
This model is the same as the Base Regression with Additional Controls, except that observations are weighted by lagged fund assets. Again, we exclude lagged fund assets as an explanatory variable, since it is used for the weighting.
6. Capital-Weighted Market-Adjusted Regression.
This model is the capital-weighted version of the Market-Adjusted Regression, where observations are weighted by lagged fund assets.

This set of six regressions is estimated twice, first using indicators for all women- and minority-owned firms (25+% ownership) and second with separate indicators for substantial (25-49%) and majority (50+% ownership). Output from these sets of regressions can be found in **Tables B** and **C** of the **Appendix**.

We find that larger firms and smaller funds are generally associated with higher returns, but this effect is not significant in regressions of market-adjusted returns or capital-weighted returns. In terms of asset class, equity and fixed income products typically exhibit lower returns (equally-weighted *and* capital-weighted) compared to balanced/multi-asset products; on the other hand, market-adjusted returns for fixed income and equity are typically higher. We find that higher beta values are associated with higher returns. We also find that active funds tend to see significantly higher returns in the equal-weighted regressions, but the coefficients are not significant in the capital-weighted regressions.

The indicators for firms with 25+% women ownership and 25+% minority ownership are insignificant for almost every specification in **Table B**. Only in model (4), we find that the coefficient for majority women-owned firms is negative and significant, but model (5) with additional controls for volatility and survivorship shows no significant difference in performance. Further, all other regressions in **Table B** do not show any performance difference between women-owned firms and non-women-owned firms. This suggests that the **performance of funds managed by diverse-owned firms is not different from that of non-diverse firms, after controlling for firm and fund characteristics as described.**

Table C tells a similar story, looking separately at substantially- and majority-women-owned firms and substantially- and majority-minority-owned firms. In most specifications, we find no significant differences in performance between diverse-owned firms and non-diverse firms, with only two exceptions. The coefficient for majority women-owned firms is negative and significant in the capital-weighted returns regression [column (4)], but all other specifications show no significant differences for this group. For firms with majority ownership by minorities, there is no significant effect of ownership on returns, market-adjusted returns, or capital-weighted returns [columns (1)-(5)]. However, there is a negative and significant coefficient in model (6) for capital-weighted market-adjusted returns. **Taken as a whole, this evidence suggests that diverse and non-diverse firms have similar performance.**

We performed a number of robustness checks that substantiate these findings. First, we re-estimate all regressions but include firms without any data on diverse ownership. We assume that these firms do not belong to any diverse category. Second, we estimate the same models using just the subset of equity and balanced/multi-asset funds, to see if the inclusion of fixed income products is driving the results. Third, we include firm age as an explanatory variable since diverse firms tend to be younger, and firm age may be correlated with survival, capital inflows, and performance. Finally, we drop the top 5% largest firms from the dataset in order to diminish the influence of large, publicly-traded companies, and we re-estimate the regression models.⁵² The results from each robustness check are generally consistent with the initial analysis, pointing to similar performance between diverse and non-diverse firms.

While the regression results show no difference in *average* performance between diverse and non-diverse firms (after controlling for many relevant factors), we are also interested in those firms with *above-average* returns. In particular, how many women- and minority-owned funds have top-quartile performance? For this analysis, we find the proportions of women- and minority-owned mutual funds with top-quartile returns for each quarter, and we calculate the average percentage across all quarters of data. Averages are weighted by the number of women- or minority-owned funds with reported returns data for each quarter.

Table I in the **Appendix** demonstrates clearly that **a number of women- and minority-owned mutual funds outperform**. On average, 25% of women-owned funds and 28% of minority-owned funds are top quartile.

Institutional Investor Types for Diverse-Owned Mutual Funds

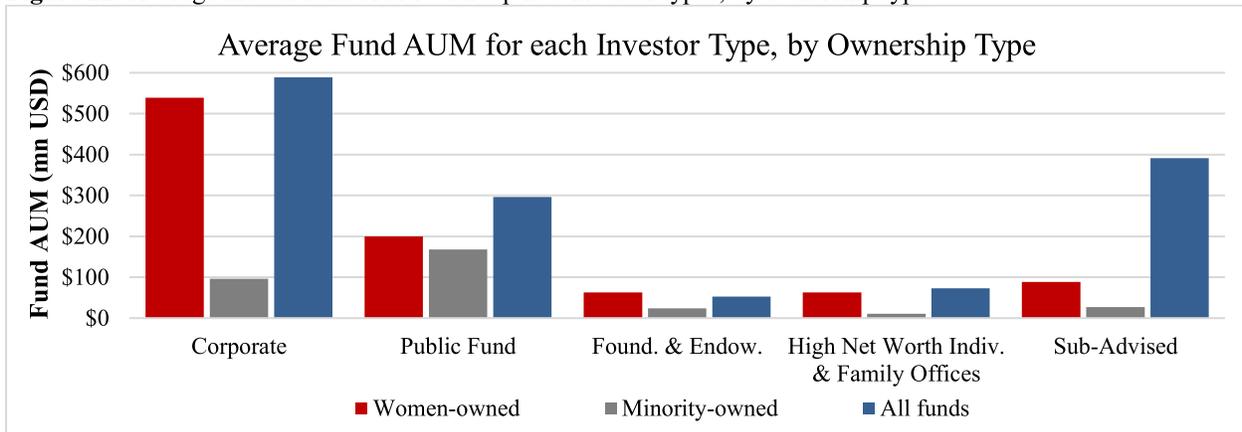
For mutual funds, the institutional investor analysis looks at the breakdown of AUM associated with each investor type. First, we find the average **amount** of AUM per investor type for each of the ownership categories (i.e., women-owned, minority-owned, and all funds). To calculate these figures, we use data on how much fund-level capital comes from each investor type, and we take averages across all funds in the women-owned, minority-owned, and all funds categories.

Figure 22 displays the average AUM amounts for the top five investor types by ownership category. The average women-owned fund has nearly \$540 million in AUM from corporate clients⁵³ followed by \$200 million from public funds. The average minority-owned fund has \$168 million in AUM from public funds and \$97 million from corporate clients.

⁵² Unfortunately, we could not identify the subset of privately-held companies in a systematic way without dropping a large number of relevant observations. Therefore, we use firm size as a proxy for public ownership and exclude the top 5% largest firms.

⁵³ This large value for the average amount of AUM invested in women-owned funds is driven by a single women-owned firm with several very large funds.

Figure 22. Average mutual fund AUM with top five investor types, by ownership type.



For each investor type, the women- and minority-owned funds have less AUM on average compared to the other funds. We perform comparison tests to determine whether these differences are statistically significant. The table below summarizes these results. Stars represent the significance level for the comparison of women- or minority-owned averages to the averages for all funds.⁵⁴

| | Corporate Clients | Public Funds | Foundations & Endowments | High Net Worth Individuals & Family Offices | Sub-Advised Funds |
|-----------------------------|-------------------|---------------|--------------------------|---|-------------------|
| Women-Owned Funds | \$538.7 mn | \$199.9 mn** | \$63.2 mn | \$63.2 mn | \$88.4 mn*** |
| Minority-Owned Funds | \$96.5 mn*** | \$167.6 mn*** | \$23.6 mn*** | \$10.5 mn*** | \$27.0 mn*** |
| All Funds | \$588.7 mn | \$296.4 mn | \$52.5 mn | \$73.3 mn | \$391.1 mn |

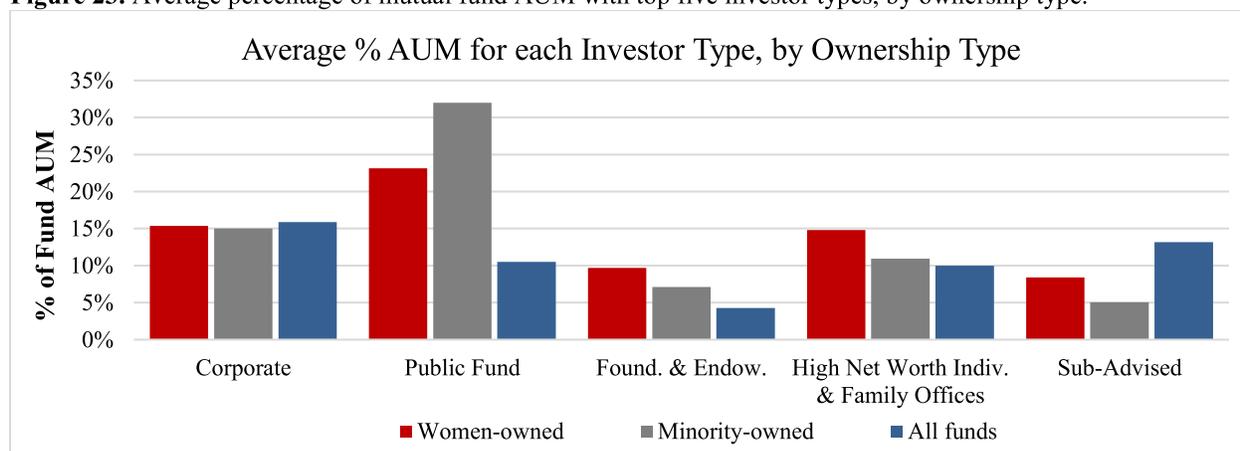
Minority-owned funds have *significantly* less AUM for each investor type, on average, compared to the universe of all funds. Women-owned funds also have less AUM for every ownership type, but these differences are only significant for AUM amounts from public funds and sub-advised funds. The *amount* of fund AUM for each ownership type is closely tied to the size of the fund. These differences between diverse and non-diverse funds, then, can be explained by the fact that women- and minority-owned funds are typically smaller.

Because of this, we also look at the average *representation* of investor types within a fund. For each fund, we calculate the ratio of AUM from each investor type compared to the fund’s total AUM. For example, suppose Mutual Fund A has \$500 million in AUM with \$250 million from corporate investors, \$125 million from a public fund, and \$125 million from an endowment. The distribution of AUM distribution for Mutual Fund A is 50% corporate, 25% public funds, and 25% foundations and endowments. We calculate these distributions for each fund, and we find the average percentage representation for each investor type for women-owned funds, minority-owned funds, and all funds.

⁵⁴ Number of stars indicates confidence level that the difference is not due to random chance. * = 90% confidence, ** = 95% confidence, *** = 99% confidence.

Figure 23 shows the representation of investor types for each ownership type. Public fund investments make up 11% of the AUM for other funds, but **public fund investments represent a much greater portion of AUM for diverse-owned mutual funds**. These investments make up 23% of AUM for women-owned funds and 32% of AUM for minority-owned funds, on average. Similarly, investments from foundations, endowments, high net worth individuals, and family offices make up a greater fraction of the AUM for women- and minority-owned funds compared to other funds.

Figure 23. Average percentage of mutual fund AUM with top five investor types, by ownership type.



Again, we perform comparison tests to examine whether the representation of each investor type is statistically different for women- and minority-owned funds compared to all funds. Results from these tests are summarized in the table below, with stars representing the level of confidence regarding each comparison test.

| | Corporate Clients | Public Funds | Foundations & Endowments | High Net Worth Individuals & Family Offices | Sub-Advised Funds |
|-----------------------------|-------------------|--------------|--------------------------|---|-------------------|
| Women-Owned Funds | 15.4% | 23.2%*** | 9.7%*** | 14.8%** | 8.4%*** |
| Minority-Owned Funds | 15.0% | 32.0%*** | 7.1%* | 10.9% | 5.0%*** |
| All Funds | 15.9% | 10.5% | 4.3% | 10.0% | 13.2% |

The analysis regarding investor type *representation* shows that **public funds, foundations, and endowments make up a significantly greater portion of AUM for women-owned or minority-owned mutual funds**. Diverse-owned funds also have a higher representation of AUM from high net worth individuals and family offices, but this finding is statistically significant only for the subset of women-owned funds. We also find that **AUM from sub-advised funds represents a significantly lower proportion of AUM for women- and minority-owned mutual funds**, while the representation of corporate clients is similar across all ownership categories.

Hedge Funds

Summary: Using hedge fund data from HFR, we analyze the current state of diversity in the hedge fund space, construct a timeline of diverse managers, and analyze the performance of these diverse managers. We find that since 2010, women- and minority-owned hedge funds have gained representation, but women- and minority-owned firms are still underrepresented. Furthermore, we find no conclusive evidence to suggest that the performance of diverse-owned hedge funds differs significantly from the performance of non-diverse firms.

Current State of Diverse Ownership for Hedge Funds

Hedge funds suffer from a lack of diversity in ownership with 4.3% and 8.0% of firms having substantial levels of ownership by women and minorities, respectively. At the fund level, we find similar results: approximately 3.3% and 5.5% of funds are women- and minority-owned. These percentages decrease further when considering percentage of diverse-owned AUM. **Less than 1% of assets are controlled by firms with diverse ownership.** Figure 24, Figure 25, and Figure 26 show the diversity breakdown by substantially and majority diverse firms for number of firms, number of funds, and amount of AUM. While the dollar amount of diverse-owned AUM is high in absolute terms—\$70.2 billion for women and \$40.1 billion for minorities—the hedge fund industry is large; our dataset contains active funds representing approximately \$16.2 trillion.

Figure 24. Breakdown of diverse-owned hedge fund managers of 1,198 total firms.

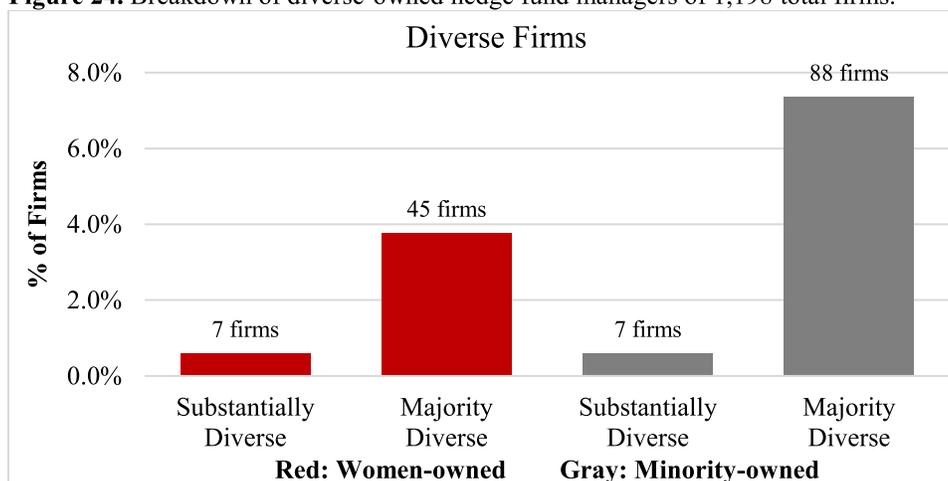


Figure 25. Breakdown of diverse-owned hedge funds of 2,584 total funds.

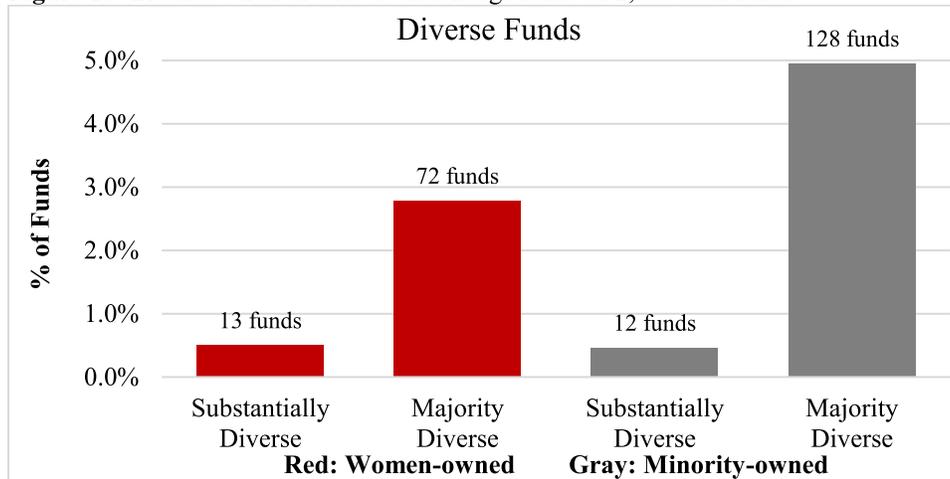
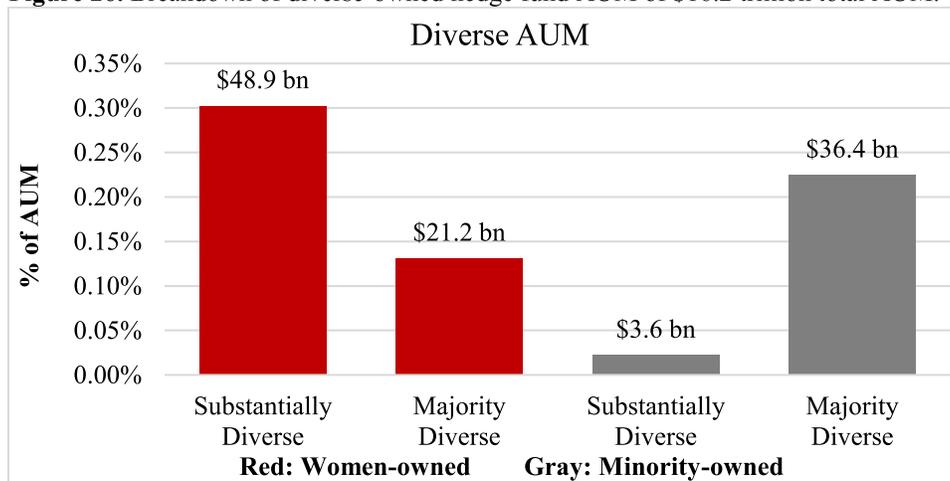


Figure 26. Breakdown of diverse-owned hedge fund AUM of \$16.2 trillion total AUM.



The fact that **diverse-owned firms manage such an extremely low proportion of AUM** is partially explained by the smaller size of diverse-owned firms. In addition, diverse-owned firms have raised fewer funds than the overall population of the dataset. **Figure 27** shows the average number of funds per firm by ownership type. We also find that the **average and median AUM are lower for women- and minority-owned firms compared to the population of hedge fund managers**. **Figure 28** shows the average AUM across all diverse groups, with breakdowns for substantial and majority ownership. For median AUM, however, we group substantial and majority ownership together due to a skewed result caused by the small sample size of substantially diverse women-owned firms. The median AUMs for diverse-owned firms are also lower than the population median. This is shown in **Figure 29**.

Figure 27. Average number of hedge funds per firm, by ownership type.

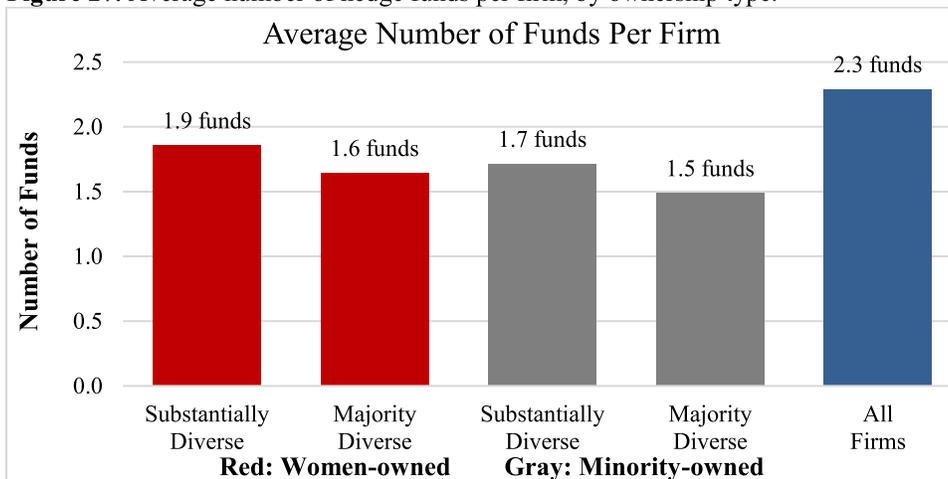


Figure 28. Average hedge fund AUM, by ownership type (million USD).

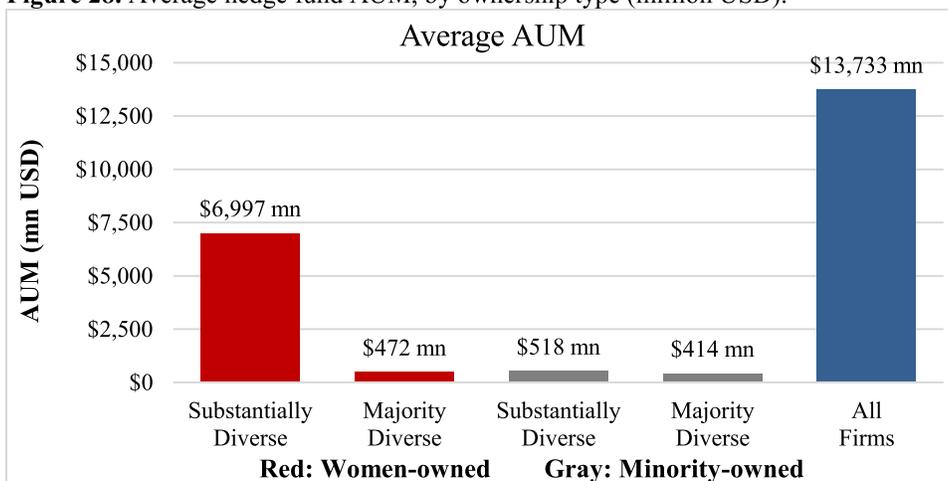
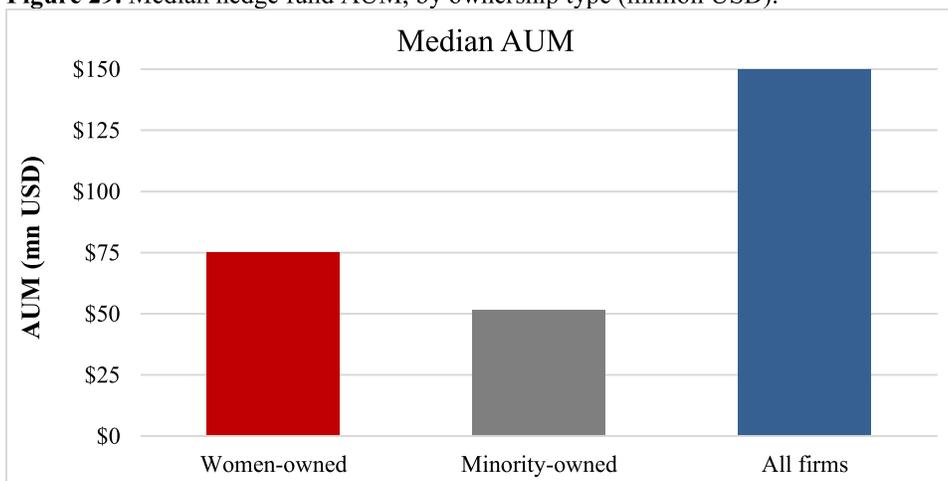


Figure 29. Median hedge fund AUM, by ownership type (million USD).



The demographics of diverse-owned firms can be further broken down by manager location, fund strategy, and geographic focus. For these breakdowns, we combine substantial and majority categories into one category each for women-owned and minority-owned groups. We use firm-level data for manager location. For fund strategy and geographic focus, however, we must use fund-level data, as these two variables change for different funds within the same firm.

As described in the **Data Sources** section, the four categories used for firm location are Northeast, Midwest, West, and South. The highest proportion of women-owned firms, 4.7%, is seen in the West. In terms of AUM, however, women-owned firms are best represented in the South compared to other regions, managing roughly 1.2% of the total AUM in the South.

Minority-owned firms are best represented in the Northeast in absolute and relative terms, with 56 firms, or 8.7% of all hedge fund managers in the Northeast. The next best represented region in absolute terms is the West followed by the Midwest and South in turn. As with women-owned firms, however, the landscape changes when considering AUM rather than firm counts. By AUM, minority-owned firms are best represented in the South as a percentage of total firms, at approximately 2.3%. In absolute terms, though, minority-owned AUM is mostly based in the Northeast at \$30.2 billion, followed in absolute terms by the South at \$6.6 billion, the West at \$2.6 billion, and finally the Midwest at \$0.6 billion. **Figure 30** and **Figure 31** show the breakdown in manager location by region for each ownership type.

Figure 30. Diverse firm count by geographic location as a percentage of total number of hedge fund managers in the region.

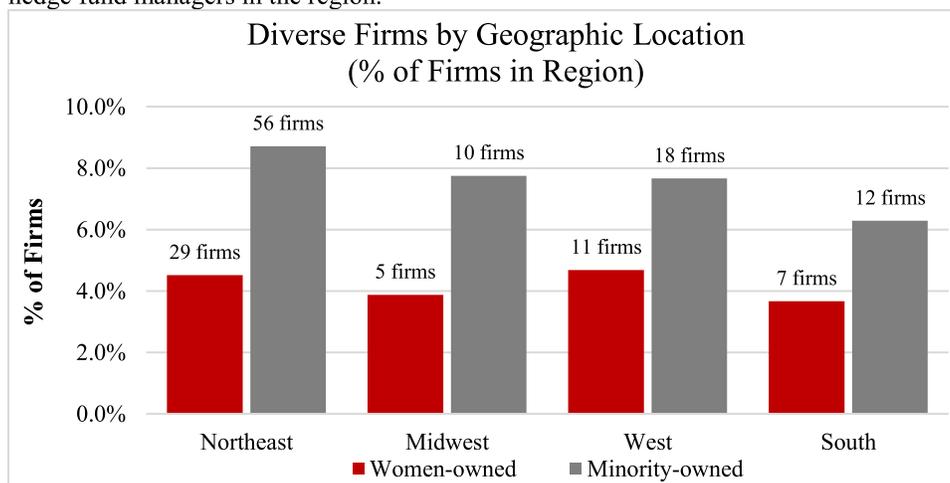
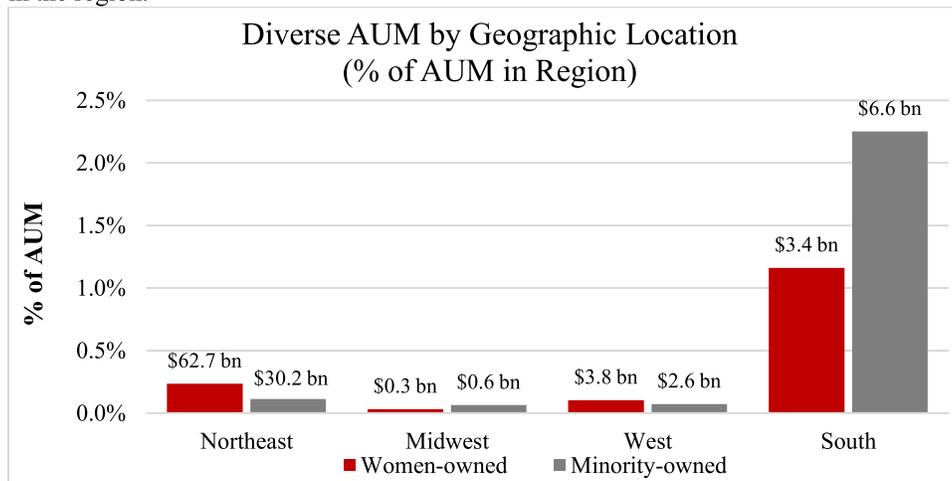


Figure 31. Diverse AUM by geographic location as a percentage of total hedge fund AUM in the region.



The HFR database breaks strategy into five groups: equity hedge, event driven, fund of funds, macro, and relative value. As described in the **Data Sources** section, we drop all funds of funds from this analysis, leaving the other four strategy groups. Across each ownership group, equity hedge is the most popular strategy by fund count, with 48% of women-owned funds, 45% of minority-owned funds, and 44% of all funds focusing on this strategy. When considering strategies by the amount of AUM dedicated to each, equity hedge remains the top choice for minority-owned funds, with 33% of AUM in funds using that strategy. AUM managed by women-owned firms, however, is most concentrated in event-driven funds at 37%. Strategy breakdowns by fund count and AUM are shown in **Figure 32** and **Figure 33**.

Figure 32. Main hedge fund strategy by number of funds for each ownership type.

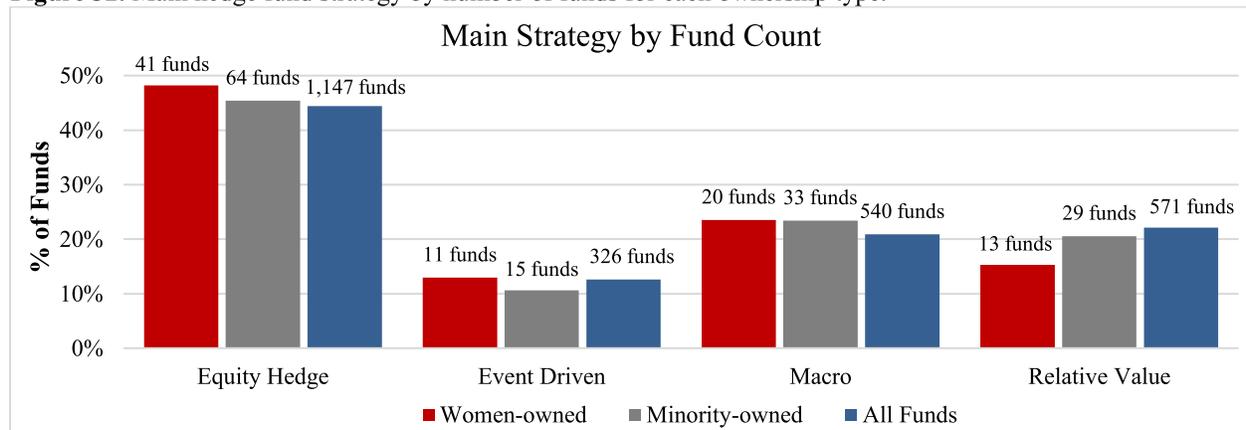
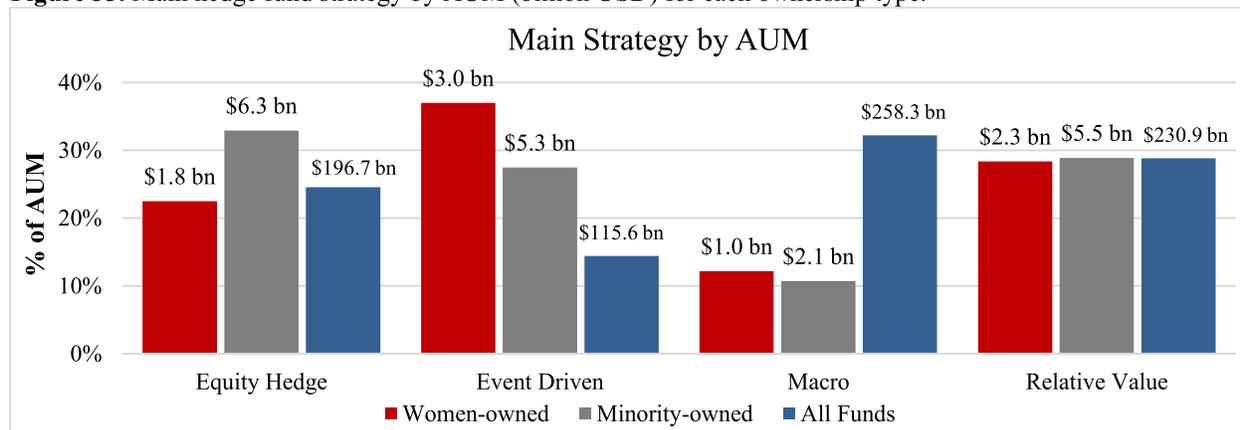


Figure 33. Main hedge fund strategy by AUM (billion USD) for each ownership type.



The final breakdown for the hedge fund data is by geographic focus. Although each firm is based in the U.S., some funds target investments in certain regions or countries while others use a global approach for investment. We group managers into three categories for geographic focus: North America, Global, and Other, with the Other category encompassing investments that target Latin America, Asia, Europe, Africa, the Middle East, Emerging Markets, or Pan-American investments.

For minority-owned firms, the most popular geographic investment focus by fund count is North America, with 49% of funds focusing investment in that region. At 45%, women-owned firms are more concentrated in funds with a global focus. Women-owned AUM, however is spread more equally among North American, Global, and Other funds at \$2.6 billion, \$2.1 billion, and \$3.3 billion. Approximately 55% of minority-owned AUM is in North American-focused funds with the difference split almost equally between Global and Other funds. With 59% of all capital, most of the total AUM is concentrated in Global funds, followed by North American-focused funds at 35%, and a small minority in funds with a different geographic focus. **Figure 34** and **Figure 35** show the breakdown of geographic focus by fund count and AUM totals.

Figure 34. Geographic focus by number of hedge funds for each ownership type.

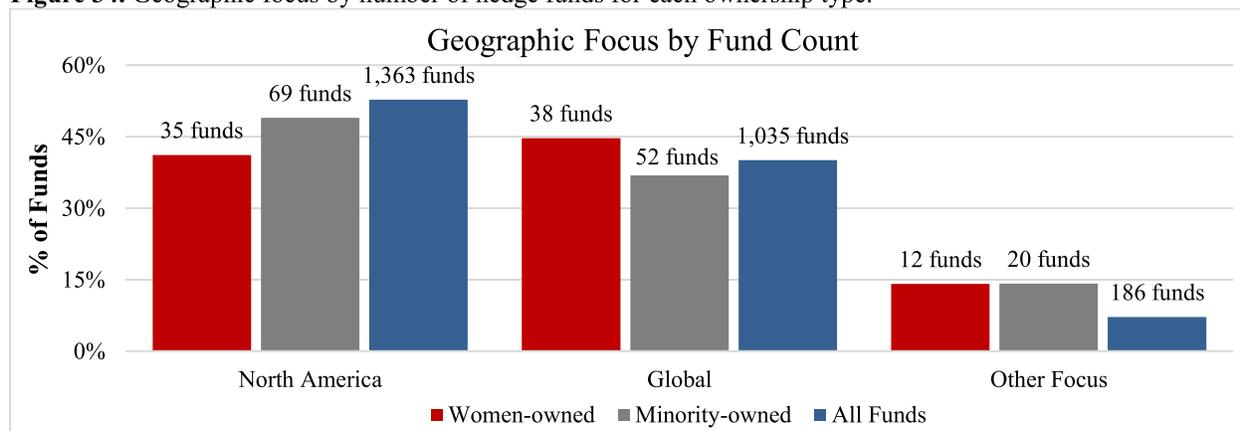
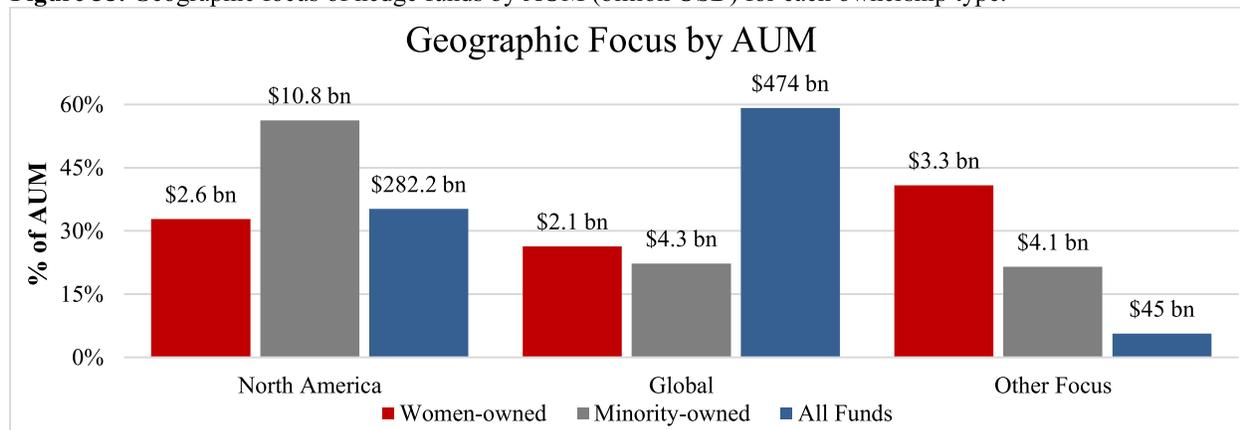


Figure 35. Geographic focus of hedge funds by AUM (billion USD) for each ownership type.

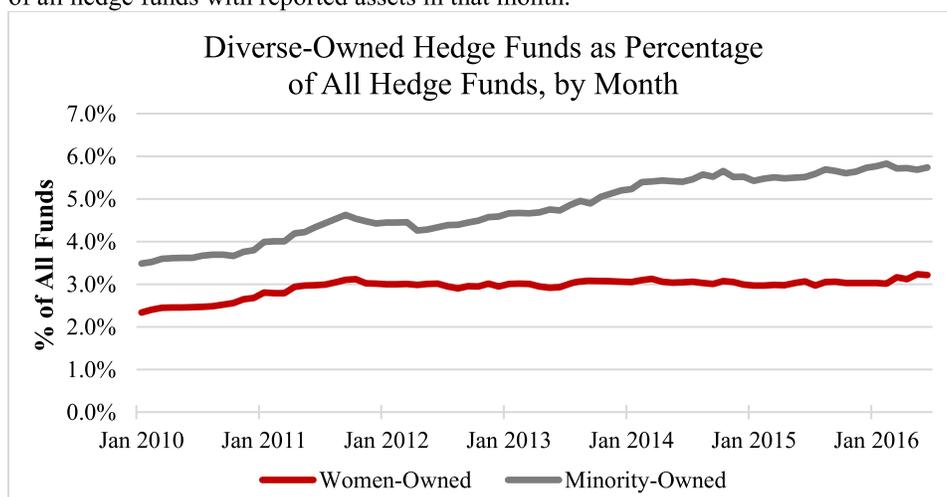


Timeline of Diverse Ownership for Hedge Funds

The timeline graphs show the number of diverse-owned funds as a percentage of total fund count, diverse-owned AUM as a percentage of total AUM, and the sum of diverse-owned AUM. These metrics are calculated on a monthly basis from January 2010 through July 2016.

Fund Count: The fund count timeline (**Figure 36**) shows a **steady increase in minority representation**, with the percentage of minority-owned funds starting at around 3.5% of the total fund count and increasing to just under 6.0%. As a percentage of total industry fund count, the **representation of women-owned funds has also increased steadily**, from slightly more than 2.0% of funds at the start of 2010 to over 3.0% by mid-2016.

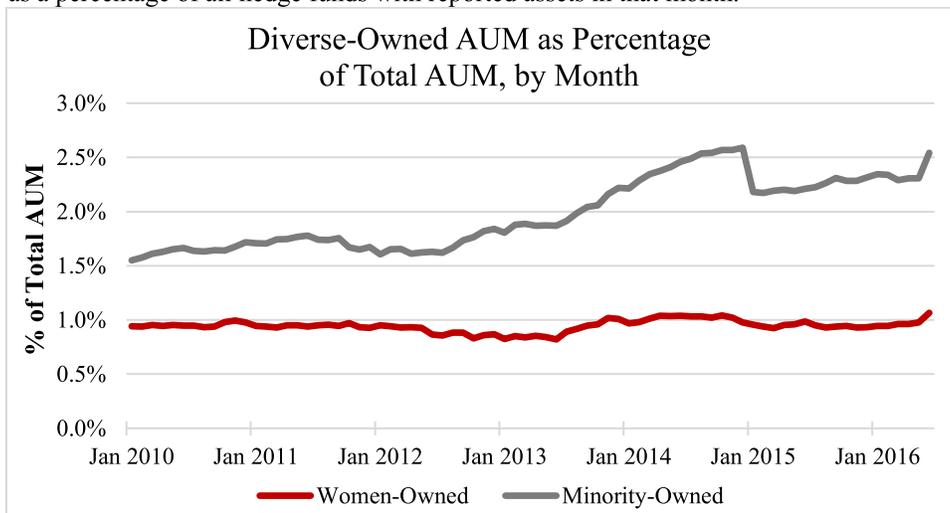
Figure 36. Fund count of women- and minority-owned firms by month, as a percentage of all hedge funds with reported assets in that month.



AUM Percentage: The AUM percentage timeline, **Figure 37**, shows that **AUM controlled by women-owned firms has fluctuated around the 1.0% mark** from January 2010 through July 2016, without the clear upward trend seen in the fund count timeline. **AUM with minority-owned firms shows a clear trend upward** over the period, starting at just over 1.5% of total AUM and ending around 2.5%. The notable exception to this trend is from December 2014 to

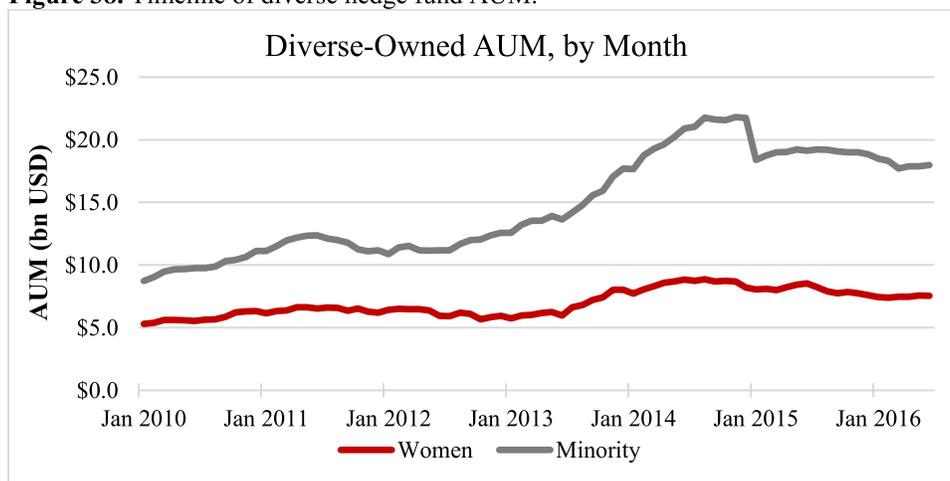
January 2015, where there is a drop in the amount of AUM controlled by minority-owned firms. This sharp downturn is due in large part to the exit of one big firm.

Figure 37. Amount of AUM managed by women- and minority-owned firms by month, as a percentage of all hedge funds with reported assets in that month.



Total AUM: The same phenomenon is seen in **Figure 38**, which shows the sum of AUM managed by women- and minority-owned firms. This figure tracks very closely to the AUM percentage timeline, including the drop in minority AUM from December 2014 to January 2015. The analysis of AUM over time relies on monthly assets data that has imperfect coverage. Therefore, the timeline should be considered *indicative* of overall trends in the hedge fund industry rather than representative of the true level of diversity at any individual point in time.

Figure 38. Timeline of diverse hedge fund AUM.



Performance of Diverse-Owned Hedge Funds

The analysis of hedge fund performance relies on monthly returns data provided by HFR. We use several different metrics to measure performance: unadjusted returns, market-adjusted returns, capital-weighted returns, and market-adjusted capital-weighted returns.⁵⁵

Table D in the Appendix presents the average performance differential between the universe of all funds and the subsets of women- and minority-owned funds, for each performance metric. Unadjusted mean monthly returns show funds managed by women- and minority-owned firms outperforming. Minority-owned funds, in fact, exhibit higher performance for every metric except the capital-weighted market-adjusted returns. For women-owned funds, the average market-adjusted and capital-weighted returns are lower compared to all funds. Note that these summary statistics do not control for any firm- or fund-level characteristics that may be relevant to performance and therefore shouldn't be taken to represent the true performance differential between diverse and non-diverse firms.

We utilize regression models to isolate the effects of diverse ownership on fund performance. These models control for fund assets, manager location, fund strategy, and strategy-specific time trends. We run six main regressions to investigate the effects of diverse ownership on monthly returns. Output from each of these regressions is shown in the **Appendix**.

1. Base Regression.

In this base model, we investigate the effect of women and minority ownership on monthly returns, controlling for fund assets in the previous month and several fund-specific fixed characteristics, such as region, strategy, and time.

2. Base with Additional Controls Regression.

This model expands the Base Regression by adding a variable to indicate whether the fund is active (based on HFR's classification as of August 2016) and another variable with the fund betas, as a measure of volatility.⁵⁶

⁵⁵ For **market-adjusted returns**: we use the capital asset pricing model (CAPM) to calculate the expected return for a fund in each month and subtract this number from the fund's actual performance to get the market-adjusted return. The expected return is calculated as $E(r) = r_f + \beta(r_m - r_f)$ where r_f is the risk-free rate and r_m is the market return. For the risk-free rate, we use monthly averages of the U.S. 3-month Treasury bill rate, provided by the U.S. Federal Reserve. The beta calculation is described in the following footnote. For **capital-weighted returns**, each observation is weighted by the lagged fund AUM (i.e., the fund assets at the end of the previous quarter).

⁵⁶ Betas are calculated by regressing the fund monthly return on the HFRX North America Index and a constant. The unit of observation is the fund-month (i.e., each fund's performance in each month). We use data from January 2005 through July 2016. Betas are calculated using 36 months of data, starting from 36 months before a given date. For example, to calculate the beta for a fund in December 2007, we would use data from January 2005 through December 2007 (i.e., 36 months) in the regression.

3. Market-Adjusted Regression.
The Market-Adjusted Regression is the same as the Base with Additional Controls Regression with two exceptions. First, we use market-adjusted monthly returns as the dependent variable. Second, we exclude the beta variable, as it is used in the calculation of the dependent variable.⁵⁷
4. Capital-Weighted Base Regression.
This version of the Base Regression weights the observations by the previous month's fund assets. We exclude fund assets as an independent variable. This gives larger firms more weight in the model's calculations.
5. Capital-Weighted with Additional Controls Regression.
This model is the same as the Base with Additional Controls, with the exception that observations are weighted by the previous month's fund assets. The fund assets variable is therefore excluded from the regression.
6. Capital-Weighted Market-Adjusted Regression.
This model is the capital-weighted version of the Market-Adjusted Regression.

The data for the HFRX North America index (used to calculate betas) starts in 2005. Therefore, for regressions 1 and 4, the data span January 2005 to July 2016. All other regressions use data spanning December 2007 through July 2016, due to the 36-month lag time required to calculate betas and market-adjusted returns, accounting for the differences in sample sizes.

Table E in the **Appendix** shows the regression output for each of these models. In each model, the coefficient for women-owned funds is negative, although these coefficients are insignificant in three of the six regressions. Conversely, the coefficient for the minority-owned variable is positive in most cases, with a negative coefficient only in the capital-weighted market-adjusted regression. However, like the women-owned coefficients, three of the six coefficients are insignificant. Due to the insignificance of the women-owned and minority-owned coefficients in many of these models, the results are not robust and should not be interpreted as conclusive evidence of differential performance.

In the case of women-owned funds, the negative coefficient in the base case model becomes significant when weighting observations by fund assets. This gives more weight to larger funds and less weight to smaller funds. The result suggests that larger women-owned funds underperform smaller women-owned funds *on average*.

The idea of larger diverse-owned funds underperforming is somewhat corroborated by the coefficients on the minority-owned variable. The first three models suggest that minority-owned funds significantly outperform the general population. However, when weighting observations

⁵⁷ We use the capital asset pricing model (CAPM) to calculate the expected return for a fund in each month and subtract this number from the fund's actual performance to get the market-adjusted return. The expected return is calculated as $E(r) = r_f + \beta(r_m - r_f)$ where r_f is the risk-free rate and r_m is the market return. For the risk-free rate, we use monthly averages of the U.S. 3-month Treasury bill rate, provided by the U.S. Federal Reserve. The beta calculation is described in the previous footnote.

by fund assets, each of these coefficients loses significance. Since larger funds are weighted more heavily in the capital-weighted regressions, this suggests that the larger minority-owned funds perform worse than smaller minority-owned funds *on average*.

The larger takeaway from this exercise is the lack of robustness of results for the relative performance of diverse-owned hedge funds. While some models suggest that these hedge funds outperform or underperform compared to funds in the general population, others return insignificant results. Furthermore, the relative performance changes based on how performance is measured. Because the results are not robust to changes in the model specification, **we cannot conclude that there is a significant difference in performance between funds managed by women- or minority-owned firms and non-diverse funds.**

As a robustness check and for ease of comparison across asset classes, we run the same set of regressions using data exclusively from January 2011 through July 2016. This is the same time period used for the hedge funds timeline and for the performance analysis of mutual funds. Output for this robustness check is presented in **Table F** in the **Appendix**. While there is some change in the coefficients, the results are qualitatively similar. In fact, fewer of the coefficients for the diverse-ownership variables are significant, providing more support for our conclusion that the performance of diverse-owned hedge funds is not different from the performance of non-diverse-owned hedge funds.

To augment this analysis of the *average* performance of hedge funds, we also investigate to what extent diverse-owned hedge funds obtain top-quartile returns. While there is some debate about whether hedge fund managers display persistence or skill in performance, it is nonetheless important to choose top funds in order to obtain outsized returns. We investigate the distribution of returns over time and find that it is possible to obtain top-quartile returns by investing with diverse-owned hedge funds. **Table I** shows the results of this analysis, which investigates the average representation of women- and minority-owned hedge funds in the top performance quartile over time. We find that 24% of women-owned hedge funds and 28% of minority-owned hedge funds exhibit top-quartile returns during the period of January 2005 through July 2016.

Private Equity and Real Estate

Summary: The final asset classes we consider in this report are PE and real estate. We present an analysis of the current state of diversity and the diversity timeline trends for both real estate and PE firm ownership. Additional analyses—performance and institutional investor types—focus only on PE, since the small sample size of diverse-owned real estate investment firms precludes a careful analysis in these regards. At a high level, we find some evidence of an increase in representation of diverse-owned firms in the real estate and PE spaces. We note that among PE asset managers, there is no significant difference in performance between funds managed by diverse-owned firms and those managed by non-diverse firms. Finally, we find that foundations and endowments are underrepresented with women- and minority-owned firms, but public pensions are overrepresented with minority-owned firms.

Current State of Diverse Ownership for Private Equity

As with other asset classes investigated in this paper, the PE industry shows a low level of diversity in ownership. However, unlike mutual funds and hedge funds, the PE data do not allow us to categorize firms as substantial versus majority diverse. Rather, we must simply use the women-owned and minority-owned indicators without further sub-classification. As discussed in the **Data Sources** section, these indicators are gathered from third-party sources and contain a mix of women/minority ownership thresholds.

At a high level, women- and minority-owned firms make up 1.9% and 3.7% of firms, respectively. Considering diverse ownership as a percentage of funds yields similar results, with 2.1% of funds owned by women and 3.8% of funds owned by minorities. In terms of AUM, **women- and minority-owned PE firms represent only 1.5% and 3.4% of total AUM, respectively.**

Figure 39, Figure 40, and Figure 41 show the diversity breakdown by ownership group for number of firms, number of funds, and amount of AUM. These findings suggest that diverse-owned PE firms are only slightly smaller than those in the general population, as measured by total AUM.

Figure 39. Breakdown of diverse-owned PE firms of 2,679 total firms.

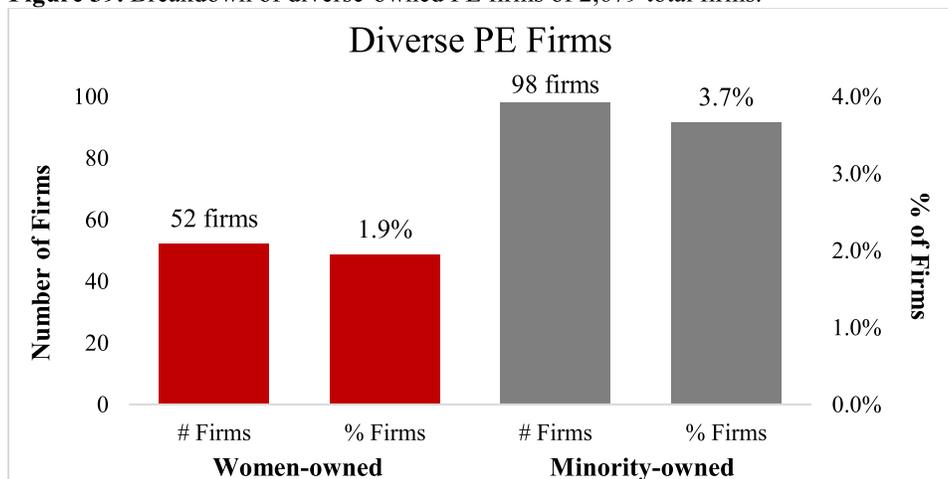


Figure 40. Breakdown of diverse-owned PE funds of 6,079 total funds.

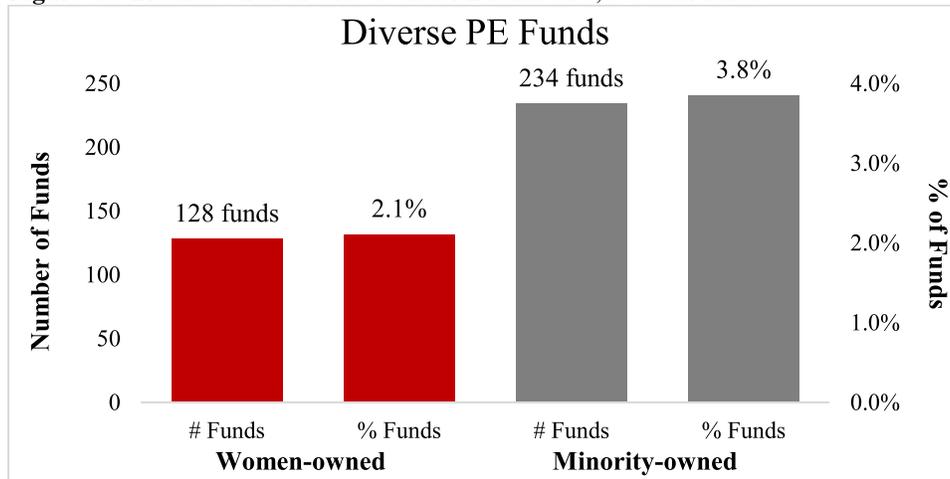
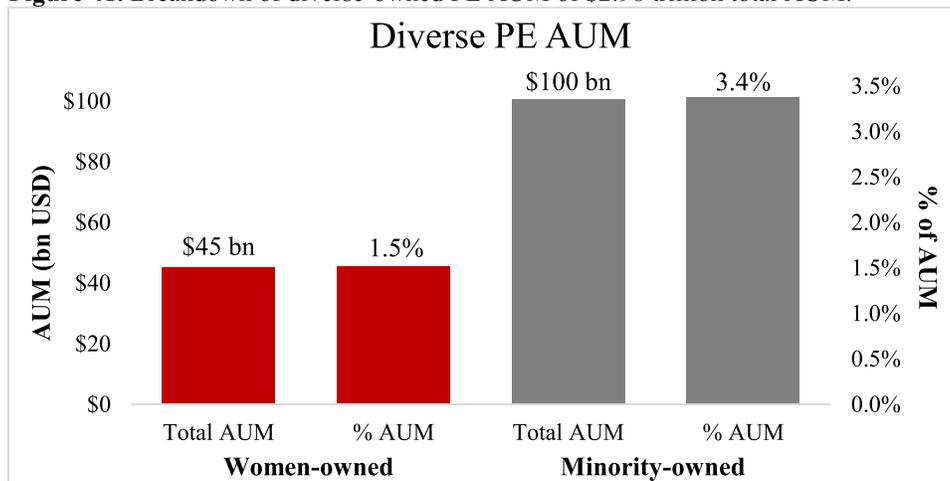


Figure 41. Breakdown of diverse-owned PE AUM of \$2.98 trillion total AUM.



In fact, diverse-owned firms are comparable to the overall population in average number of funds per firm with 2.5, 2.4, and 2.3 funds per firm for women-owned, minority-owned, and all firms, respectively. **Figure 42** shows the average number of funds per firm for each ownership category. The AUM for the average women- or minority-owned firm, however, is smaller than the population average, as shown in **Figure 43**. The median AUMs for women- and minority-owned firms are both markedly larger than the population median and require some discussion (**Figure 44**).

Figure 42. Average number of PE funds per firm, by ownership type.

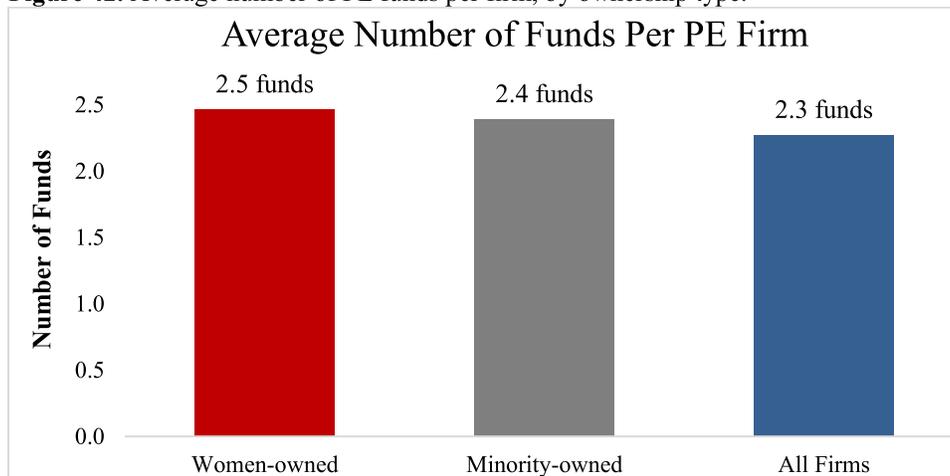


Figure 43. Average PE AUM by ownership type (million USD).

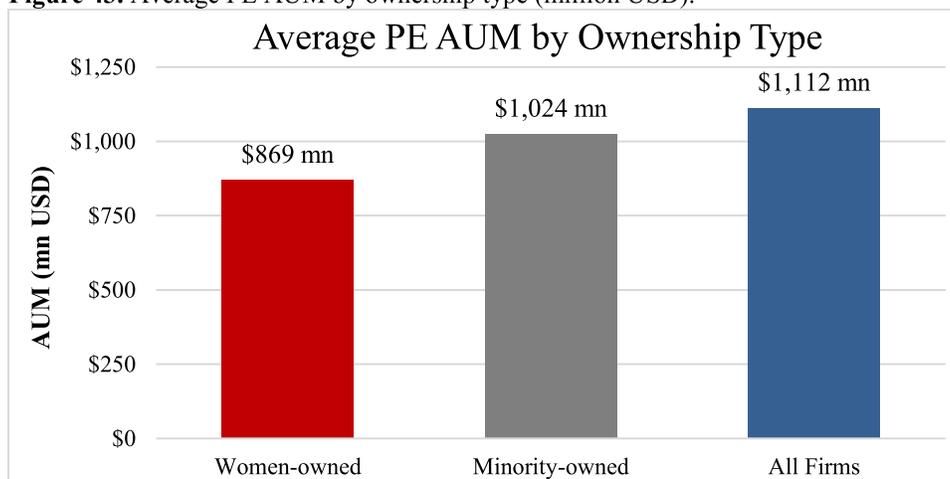
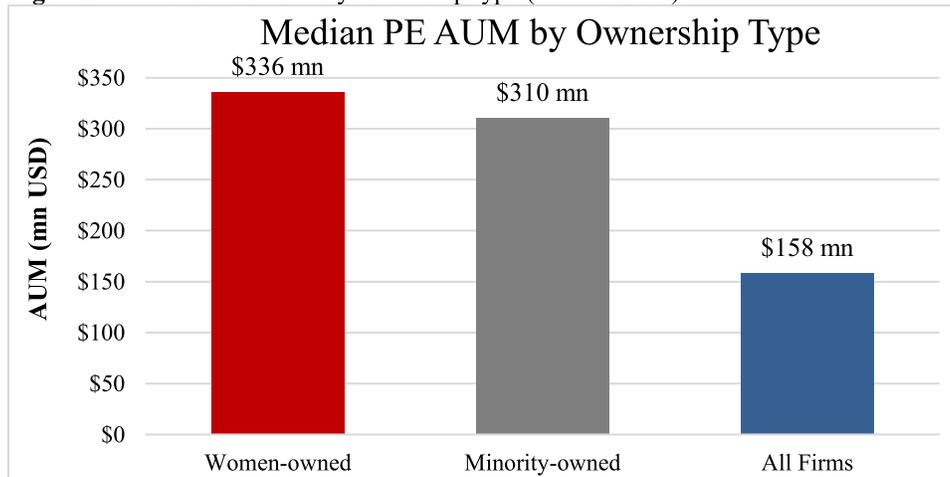


Figure 44. Median PE AUM by ownership type (million USD).



There are two likely explanations for the unexpectedly large values for median AUM for diverse-owned firms: sample size and data bias. The first issue, sample size, is due to the small number of diverse firms in this report (52 women-owned and 98 minority-owned). A small sample size can introduce noise into the analysis. The second potential issue, data bias, arises from the method used to compile the list of diverse firms. Rather than using a comprehensive database for diversity information, this report relies on a hand-compiled list of diverse PE firms gathered from several third-party sources.⁵⁸ By searching for diverse-owned firms outright, it is possible that a bias was introduced for larger, more well-known firms. Undoubtedly, this methodology has omitted some diverse firms, and smaller firms may have been disproportionately excluded.

This analysis focuses exclusively on U.S.-based managers, so we use the firm's main office address to determine manager location, using the same regional groups as described earlier: Northeast, Midwest, West, and South. Women-owned firms are represented almost equally in each of the four regions by firm count, hovering just around 2% of the total in each region. In absolute terms, however, the majority of women-owned firms are located in the Northeast (19 firms) and West (15 firms). Minority-owned firms are best represented in the Northeast by firm count and as percentage of all firms in the region, with 44 minority-owned firms representing 4.6% of all firms in the Northeast. Minority-owned firms are also heavily concentrated in the West, with 34 firms representing almost 4% of all firms in that region. The South and Midwest have comparatively low minority representation, at 2.6% and 1.9%, respectively.

When considering AUM in each region, the story changes markedly. Women-owned firms control their greatest percentage of regional AUM in the Midwest, with 3.9% of AUM in the Midwestern PE industry. The largest amount of women-owned AUM, however, is managed by firms located in the Northeast (\$21.3 billion) and West (\$12.9 billion), significantly more than the Midwest's \$7.8 billion. The vast majority of AUM managed by minority-owned firms is located in the Northeast and West, at \$47.9 billion and \$45.2 billion, respectively. However, this amounts to just 1.3% of the total AUM for the PE industry in the Northeast but 3.9% for that of the West. Minority-owned firms in the Midwest and South manage significantly less, with \$3.7 billion and \$3.5 billion, respectively. Differences between the regional totals and percentages for firm counts and AUM are due to the relative sizes of the PE industry in each region. Because of this, more can be learned about the diversity in each region by looking at the percentage of AUM controlled by minorities within each region rather than the overall amount of AUM or number of firms. The distribution of manager location by AUM and number of firms is shown in **Figure 45** and **Figure 46**.

⁵⁸ For more detail on these sources, please see the **Data Sources** section.

Figure 45. Diverse PE AUM by location as a percentage of total AUM in that region.

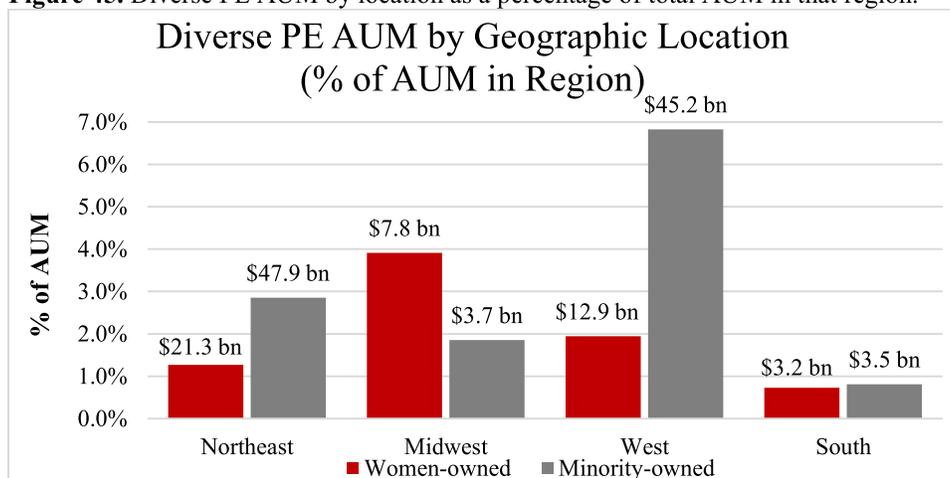
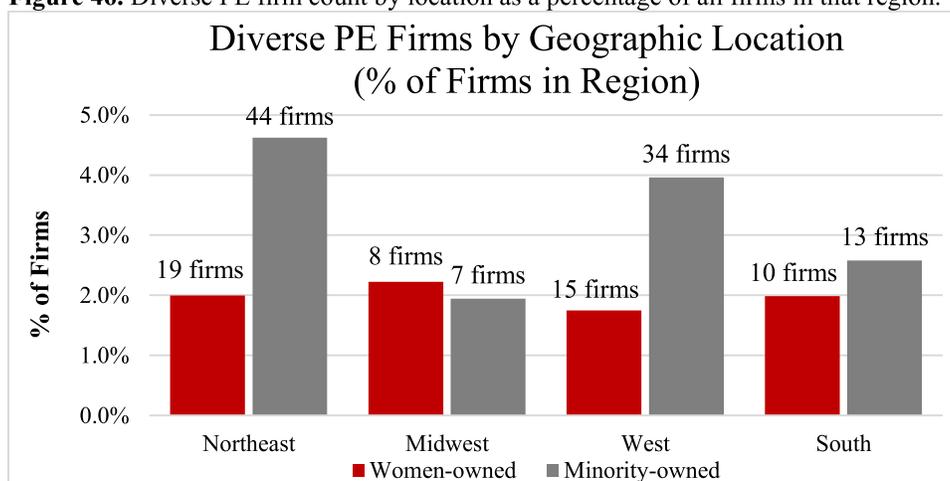


Figure 46. Diverse PE firm count by location as a percentage of all firms in that region.



For the majority of this analysis, PE includes venture investments as well as non-buyout PE investments. Here however, we group PE funds into two sub-asset classes: PE and VC, following the groupings described in the **Data Sources** section and copied in the footnote below.⁵⁹ When considering the number of funds, the investment focus for women-owned firms is divided nearly three-to-one PE-to-VC. Interestingly, this ratio holds when considering the amount of AUM managed by women-owned firms as well. Minority-owned firms have roughly twice as many PE funds as VC funds (153 to 81) but are more heavily skewed toward PE by AUM (\$83.9 billion to \$16.5 billion). This suggests that while women-owned PE and VC firms are comparable in size, minority-owned PE firms are larger than minority-owned VC firms, a characteristic of the overall population as well. The sub-asset class breakdowns can be seen in **Figure 47** and **Figure 48**.

⁵⁹ VC is comprised of all venture investments, including Venture Debt. PE includes the following categories: Buyout, Growth, Mezzanine, Co-Investment Multi-Manager, Co-Investment, Balanced, Direct Secondaries, Distressed Debt, Hybrid, PIPE, Natural Resources, Timber, Special Situations, Turnaround, Secondaries, Infrastructure, Infrastructure Fund of Funds, Infrastructure Secondaries, Fund of Funds, and Hybrid Fund of Funds.

Figure 47. Main fund strategy by number of PE funds for each ownership type.

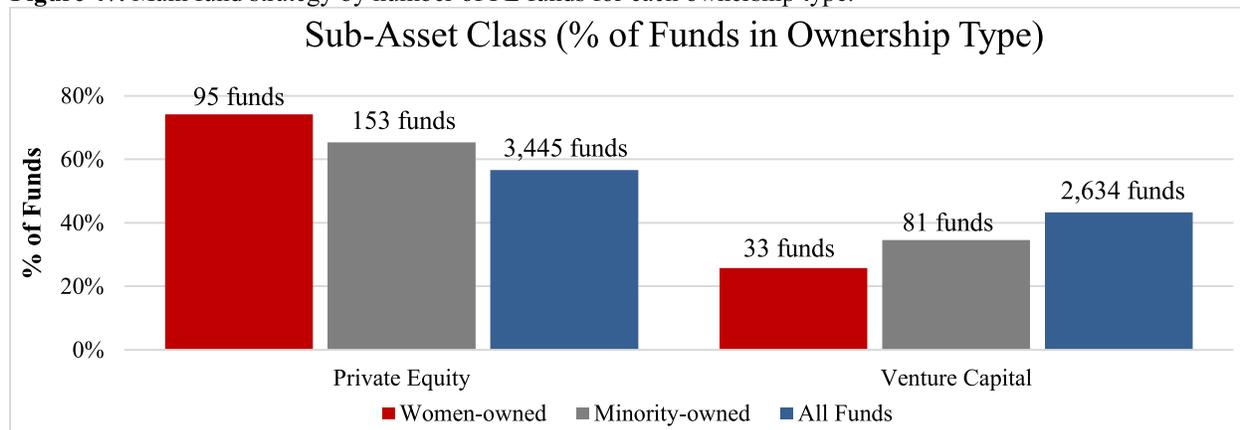
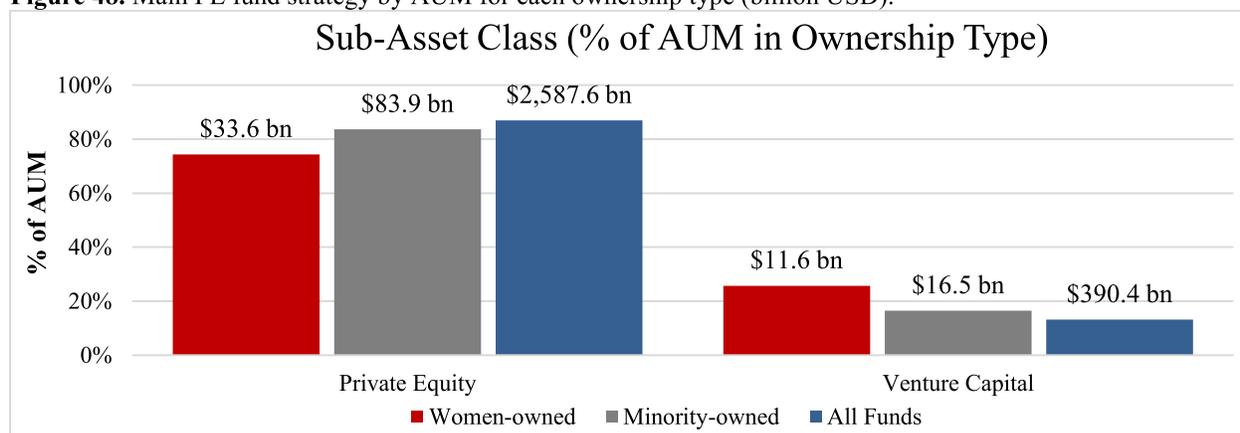


Figure 48. Main PE fund strategy by AUM for each ownership type (billion USD).



Finally, we look at the geographic investment focus across PE firms, shown in **Figure 49** and **Figure 50**. The overwhelming majority of funds in our database, both diverse and non-diverse, have a U.S. investment focus (again, this is not surprising given that we restrict the sample to U.S.-based funds). There are only four women-owned funds with an investment focus outside the U.S., representing \$0.8 billion of the \$44.4 billion AUM managed by women-owned firms in our database. Minority-owned funds tell a similar story: all but 16 of the 234 minority-owned funds focus on the U.S., which amounts to just \$2.3 billion in funds with non-U.S. investment focuses. The geographic distributions of diverse-owned funds are very similar to those of the overall population, in which 91% of funds, representing 89% of AUM, have a U.S. investment focus. These metrics are perhaps not surprising, given that this analysis looks exclusively at U.S.-based firms. Nevertheless, it is worth highlighting that diverse-owned firms are more focused on domestic investments than firms in the overall population.

Figure 49. Geographic focus for each ownership type, by number of PE funds.

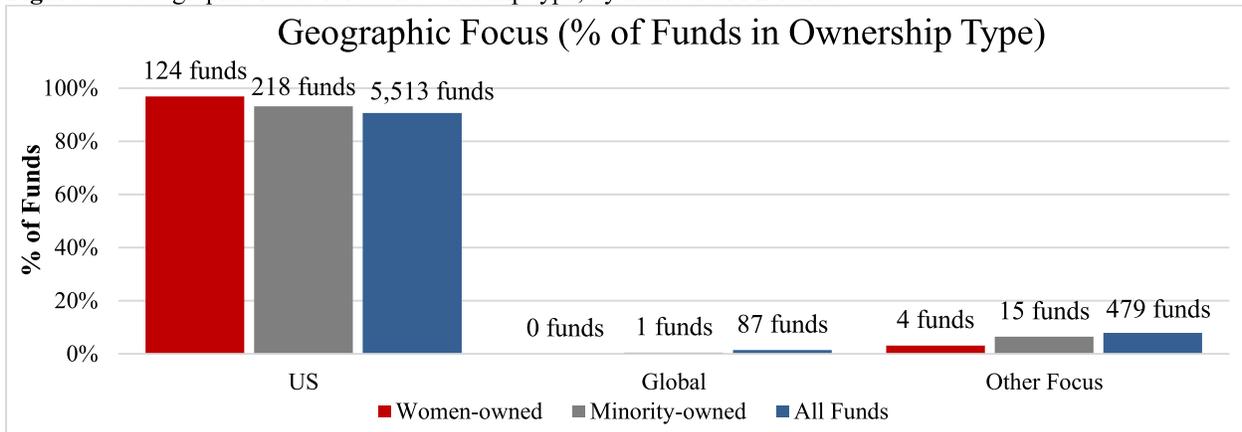
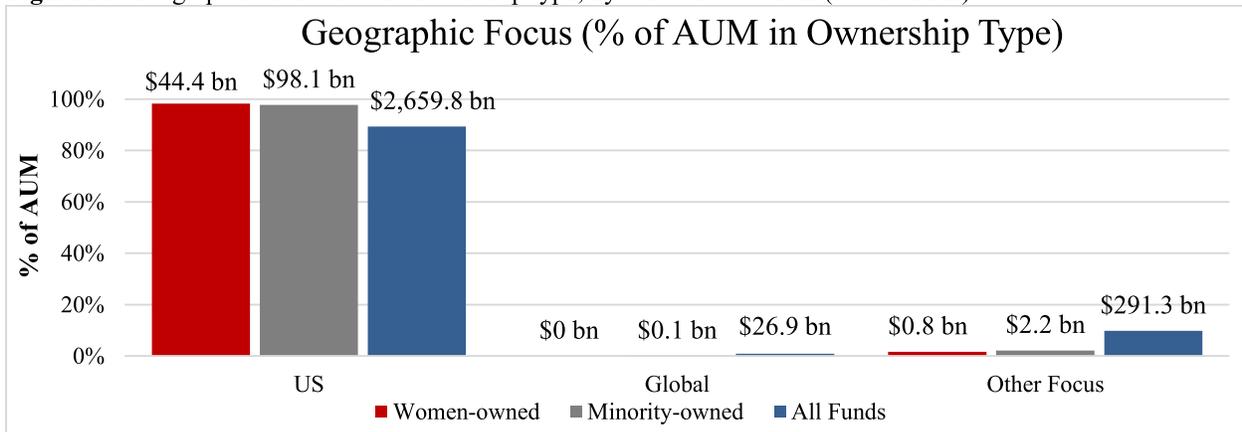


Figure 50. Geographic focus for each ownership type, by AUM of PE funds (billion USD).



Current State of Diverse Ownership for Real Estate

As discussed in the **Data Sources** section, real estate is the asset class that suffers most from incomplete diversity data, so our measures likely understate the true representation of diverse-owned real estate firms. However, despite very low counts of women- and minority-owned firms, these firms still constitute a notable percentage of firms, funds, and AUM in the real estate space, due to the relatively small size of the industry as captured by the Preqin database. As with PE, diverse real estate firms are not categorized by substantial versus majority ownership since the lists from third-party sources do not provide this detail. They are simply tagged as women- or minority-owned based on the ownership thresholds used by each data provider.

Of the 889 total real estate firms in our dataset, the 6 women-owned and 18 minority-owned firms make up 0.7% and 2.0% of the total industry firm count, respectively, as seen in **Figure 51**. Women-owned funds represent just 0.4% of all real estate funds (**Figure 52**), lower than the 0.7% representation of women-owned *firms*. Minority ownership in real estate, however, is better represented in terms of funds, with minority-owned funds representing 2.3% of all funds.

Figure 51. Breakdown of diverse-owned real estate firms of 889 total firms.

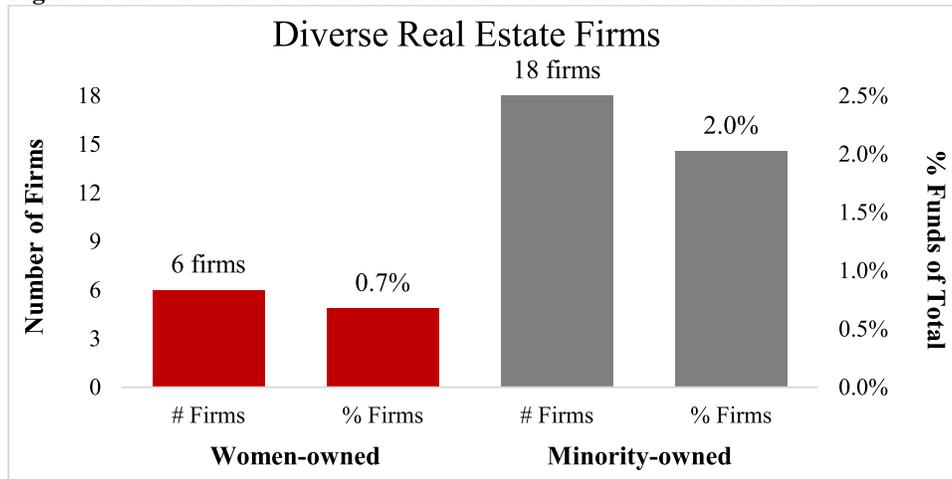
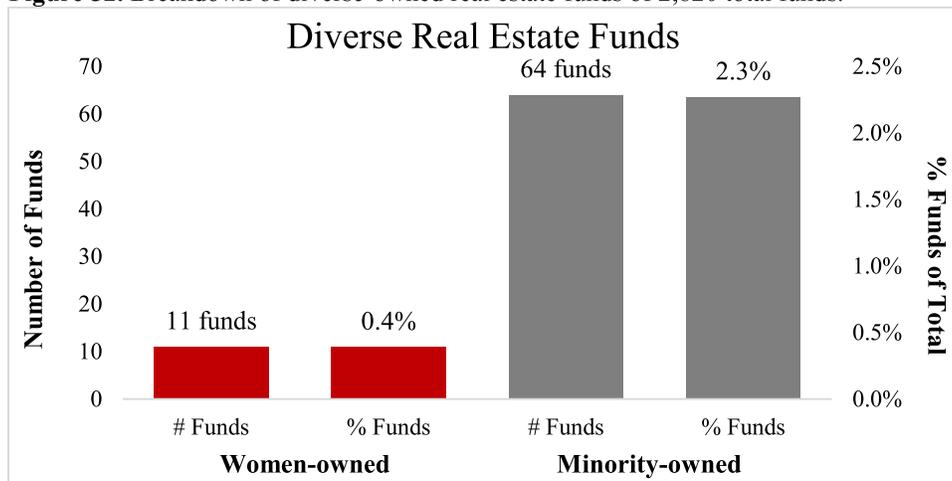


Figure 52. Breakdown of diverse-owned real estate funds of 2,820 total funds.



This change in representation when considering funds rather than firms is due to a larger average number of funds per firm for minorities (3.6 funds) compared to women (1.8 funds). Shown in **Figure 54**, the average number of funds per firm in the general population is higher than that of women-owned firms but lower than that of minority-owned firms. **Figure 53**, however, shows that when measuring size by AUM, **both women-owned and minority-owned firms are underrepresented in real estate with only 0.3% and 1.5% of total AUM, respectively**, due to the smaller size of diverse-owned firms.

Figure 53. Breakdown of diverse-owned real estate AUM of \$1.05 trillion total AUM.

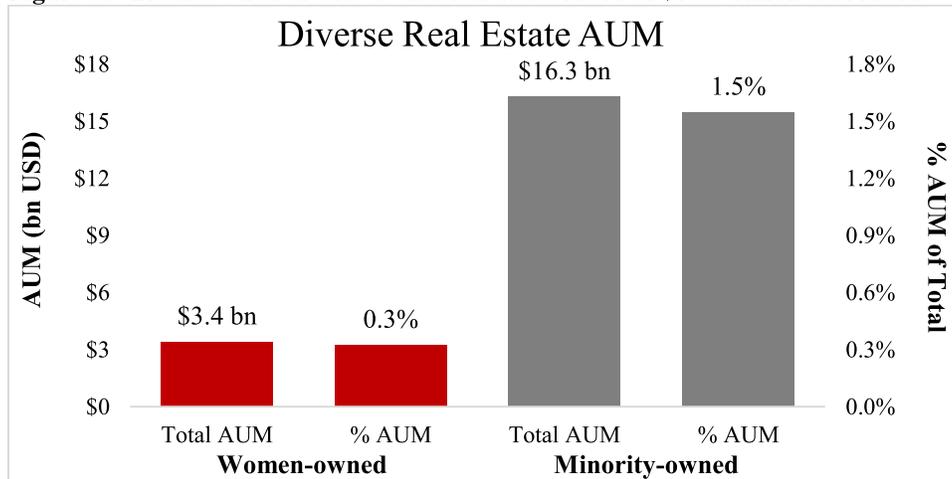
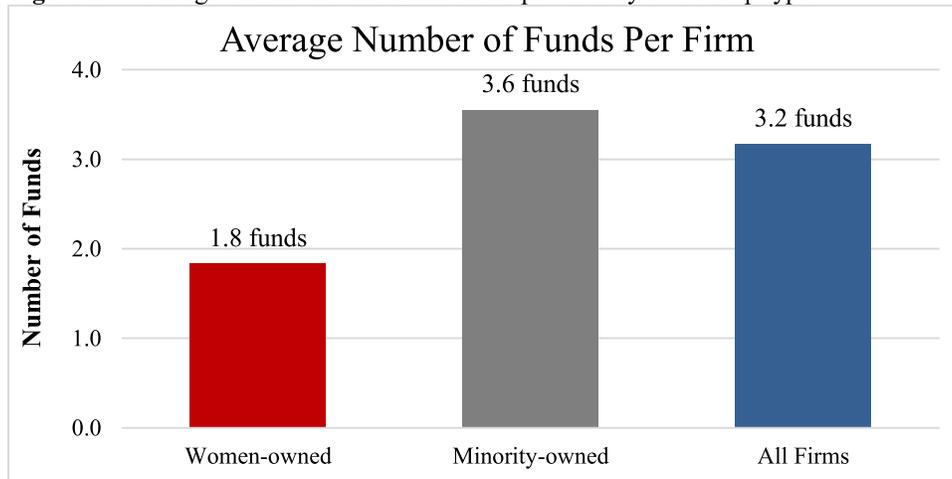


Figure 54. Average number of real estate funds per firm by ownership type.



On average, **women- and minority-owned real estate firms are markedly smaller** than the average firm in the population. The average women-owned firm has only \$569 million in AUM compared to the overall average of \$1,184 million. Minority-owned firms score somewhat higher than women, with \$905 million on average. This comparison is shown in **Figure 55**. While the women-owned median AUM is lower than the median for all firms, as expected, the minority-owned median is considerably higher, as seen in **Figure 56**.

Figure 55. Average real estate AUM by ownership type (million USD).

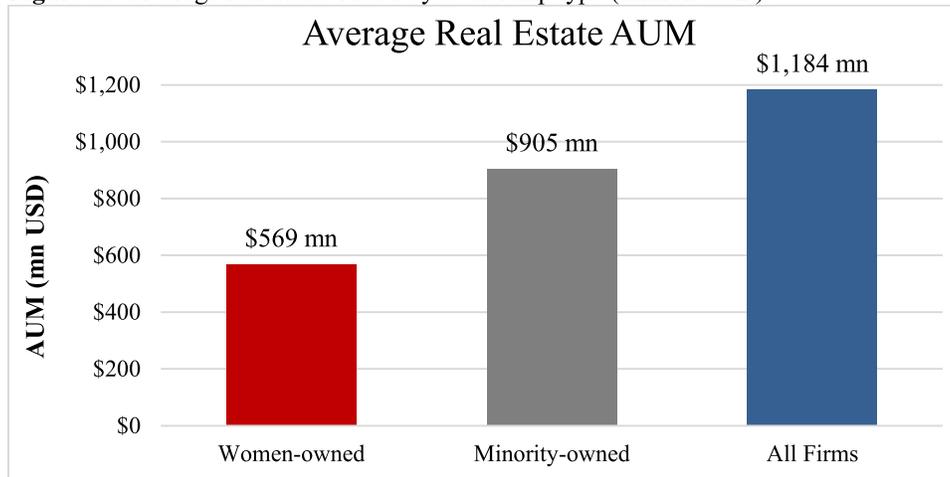


Figure 56. Median AUM of real estate firms, by ownership type (million USD).

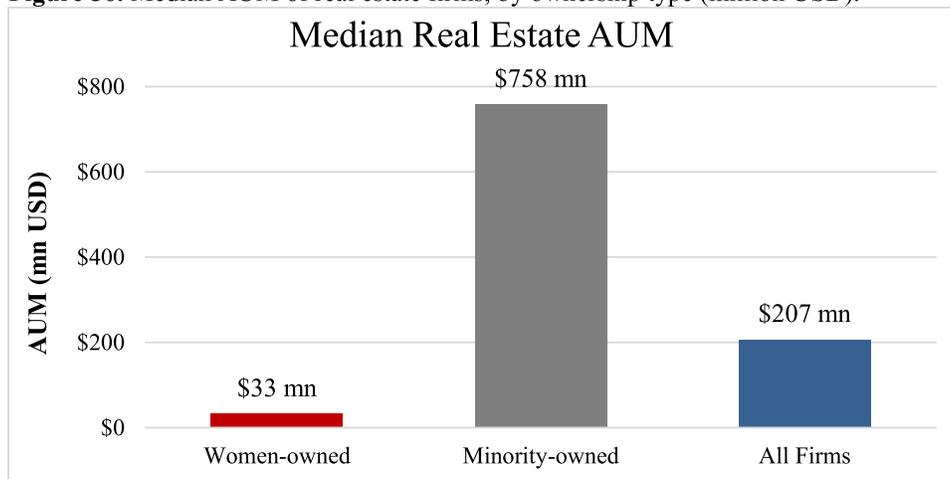


Figure 57 and **Figure 58** show the breakdown of minority-owned firms by manager location, as measured by firm count and AUM. We do not report data for the small sample of 6 women-owned firms due to data confidentiality concerns. These counts exclude observations with missing data for manager location. The 18 minority-owned real estate firms are spread across the four regions, with 6 in the Northeast, 5 each in the Midwest and West, and 2 in the South. Because of the relatively small size of the region’s real estate industry, minority-owned firms are best represented in the Midwest, representing almost 4.5% of all firms there. Minority ownership representation in the Northeast and West hovers around 2% of regional firm counts. The situation is similar when considering AUM rather than firm count, with most of the AUM in the Northeast (\$6.5 billion) and Midwest (\$5.9 billion). However, the Midwest again shows the highest minority representation, with the \$5.9 billion representing nearly 7% of the regional AUM, considerably higher than in the Northeast, where the \$6.5 billion minority AUM represents just over 1% of the regional real estate AUM.

Figure 57. Minority-owned real estate firms by location, as a percentage of total firms in the region.

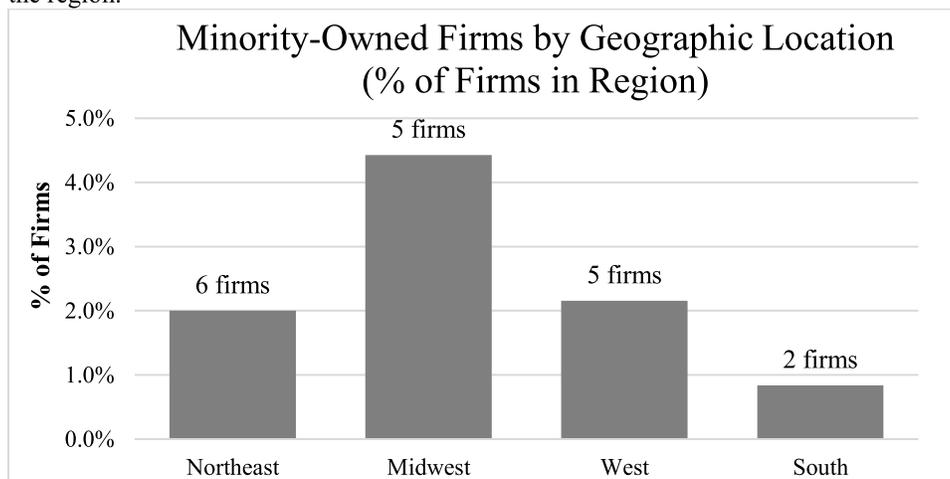
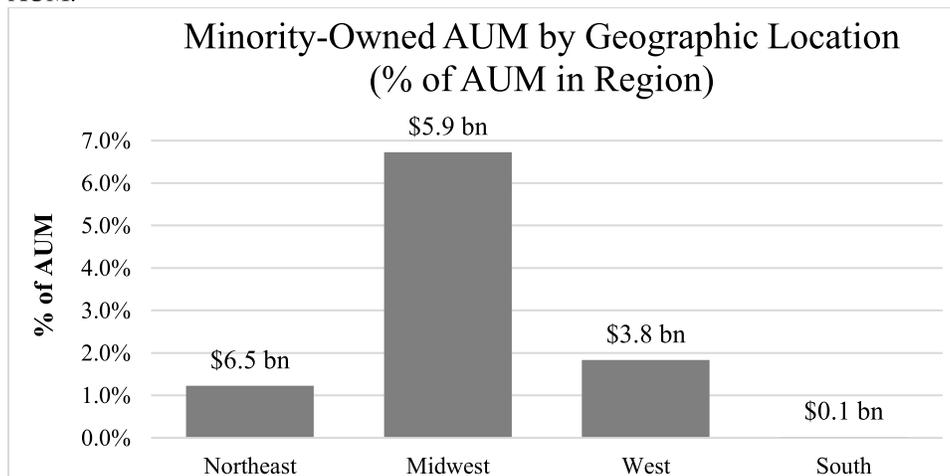


Figure 58. Minority-owned real estate AUM by location, as a percentage of total regional AUM.



Prequin categorizes real estate funds into nine different property focuses, with each fund choosing only one primary focus. The nine groups are Diversified, Hotels, Residential, Office, Retail, Land, Industrial, Niche, and Operating Companies. There are no diverse-owned funds in the Land or Industrial categories, so these two groups are excluded from the report. We combine Retail with Office and Niche with Operating Companies for ease of review. As shown in **Figure 59**, most women-owned funds are diversified (8 funds), with the remaining 3 funds investing in residential, niche, or operating companies. Similarly, most minority-owned funds are diversified (24 funds) or focus on residential investments (19 funds). Of the remaining 7 minority-owned funds, 4 invest in hotels and 3 in retail/office space. Note that 10 minority-owned real estate funds do not report a property focus, accounting for the difference.

Figure 59. Main property focus by number of real estate funds, excluding categories with no diverse observations. (Number of funds in each group shown above bars).

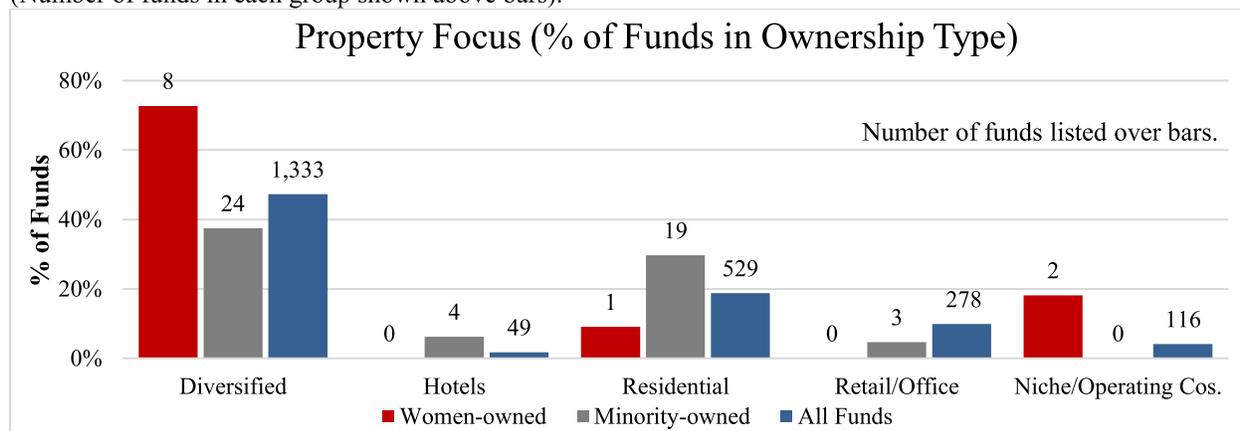
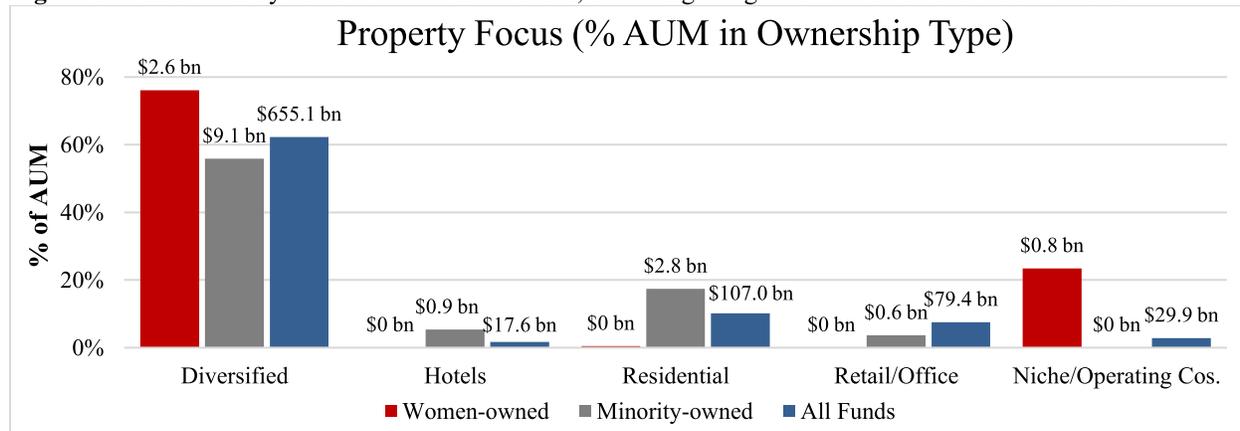


Figure 60 shows the main property focus by AUM, with similar results. At \$2.6 billion, the vast majority of AUM managed by women-owned funds is focused in diversified portfolios, with the remaining amount in niche funds or operating companies and a near-zero amount in residential investments. Minority AUM is also concentrated in diversified real estate funds at \$9.1 billion, followed by residential investments at \$2.8 billion. The remaining amount is focused on hotel, retail, and office investments.

Figure 60. Asset class by number of real estate funds, excluding categories with no diverse observations.



The final breakdown for real estate funds is by sub-asset class, with each fund categorized into one of seven categories: Core, Core-Plus, Debt, Distressed, Opportunistic, Value Added, and Secondaries. Secondaries are not reported in the results since there are no diverse-owned secondaries funds listed in our database. Further, we combine the Core and Core-Plus categories for ease of review. As shown in **Figure 61**, women-owned firms are spread among the five categories, with 4 value-added funds, 3 core/core-plus funds, 2 opportunistic, and one each in debt and distressed. With a count of 30 funds, minority-owned funds are also most often value-added funds, followed in popularity by opportunistic at 16 funds, and debt at 12 funds.

Figure 61. Asset class by number of real estate funds, excluding categories with no diverse observations. (Number of funds in each asset class-ownership group shown above bars).

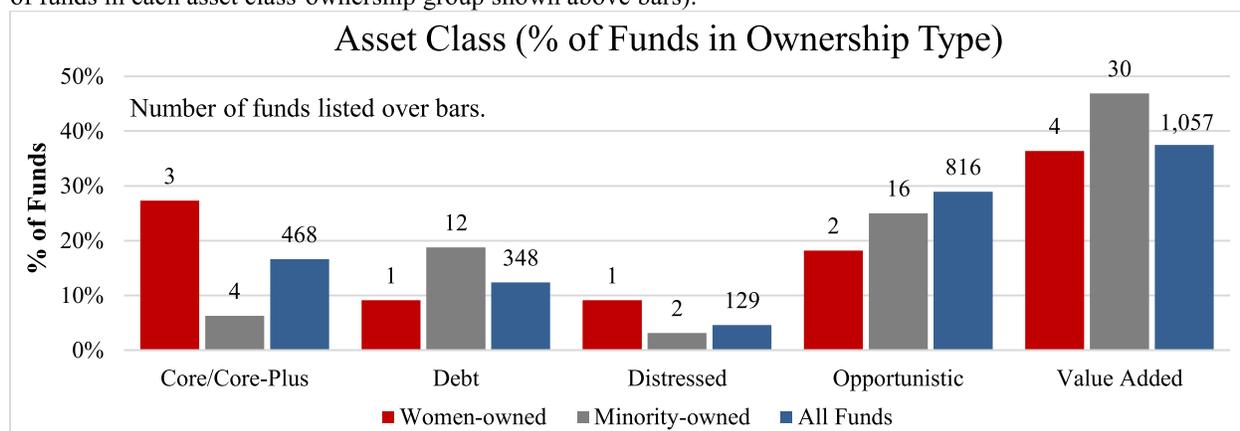
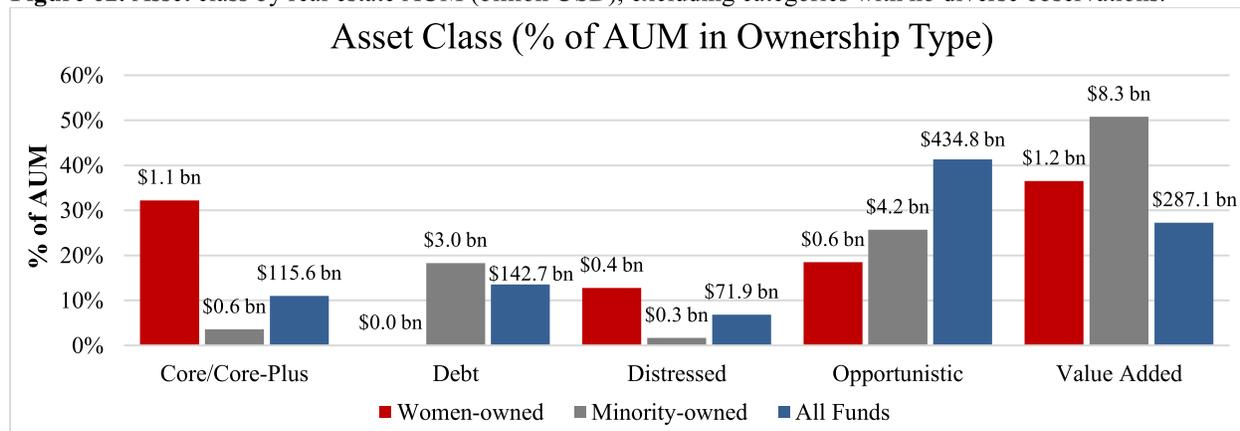


Figure 62 shows the sub-asset class breakdown by AUM, with similar results. The two most popular sub-asset classes for women-owned funds are value added and core/core-plus with \$1.2 billion and \$1.1 billion, respectively. Note that while there is one women-owned debt fund, the women-owned debt AUM is shown as \$0.0 billion due to a missing data point for that fund’s AUM. Most minority AUM is in value added funds, at \$8.3 billion, followed by opportunistic funds at \$4.2 billion and debt funds at \$3.0 billion.

Figure 62. Asset class by real estate AUM (billion USD), excluding categories with no diverse observations.



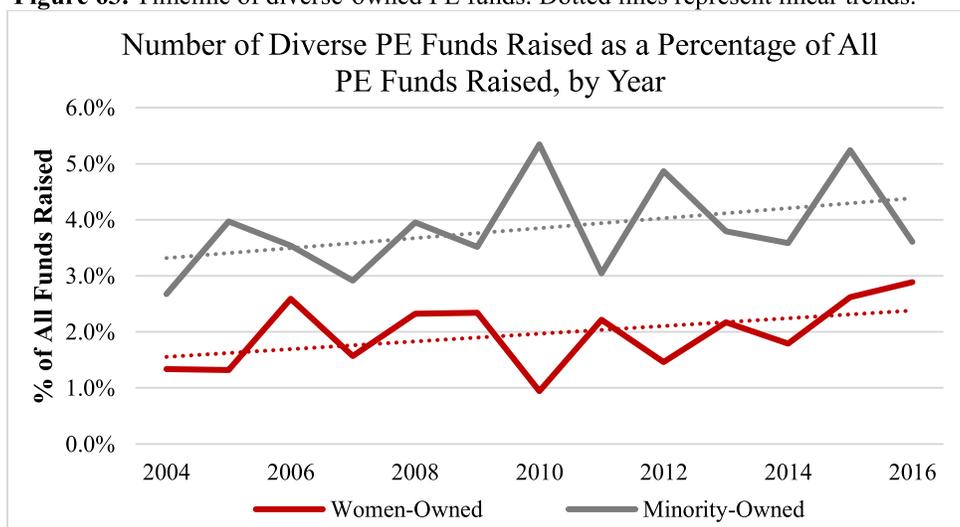
It is important to remember that the categories in each of these breakdowns have very few observations due to the small number of diverse-owned real estate firms in our sample. Therefore, the distributions of manager location, property focus, and sub-asset class should be interpreted carefully, with the understanding that these results may be amended in the future with more comprehensive data.

Timeline of Diverse Ownership for PE and Real Estate

Because the real estate and PE funds are more opaque and generally do not report interim valuations on a regular basis, it is very difficult to track active funds or the amount of assets they manage over time. Therefore, we use fundraising statistics each year to construct the timeline of diverse representation for each ownership group. The timeline data is particularly noisy here since it represents *new* funds raised and *new* fundraising dollars as opposed to the *total* number of active funds or *total* assets under management in a given time period. In addition, the sample size of women- and minority-owned real estate and PE firms is limited.

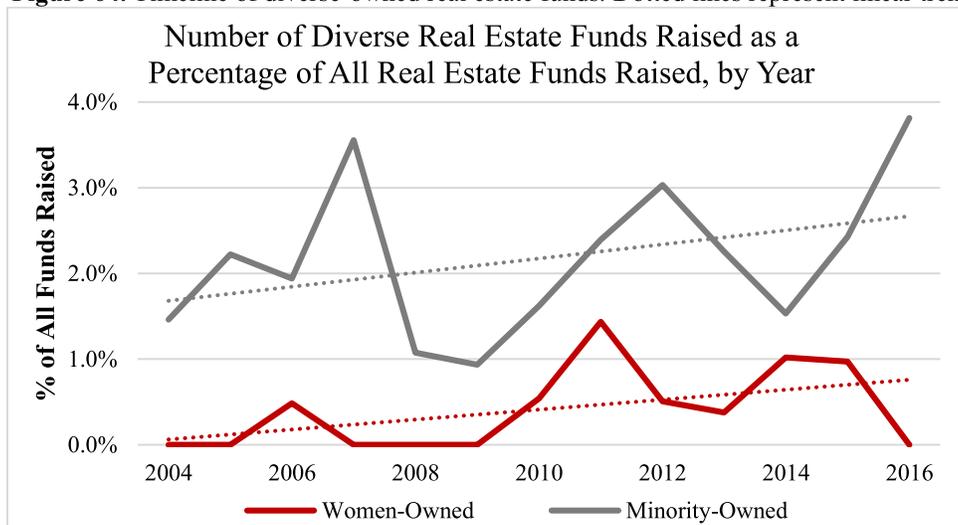
Number of PE Funds: We first look at minority representation in PE and real estate by the number of funds raised each year, as a percentage of the total number of funds raised in the same year. **Figure 63** shows this metric for the PE industry. Despite some noise in the data, there is a noticeable **trend upward in the representation of funds managed by women- and minority-owned firms**, with women representation increasing from just over 1.0% in 2004 to just under 3.0% in 2016 and minority representation increasing from 2.7% to 3.6% over the same period.

Figure 63. Timeline of diverse-owned PE funds. Dotted lines represent linear trends.



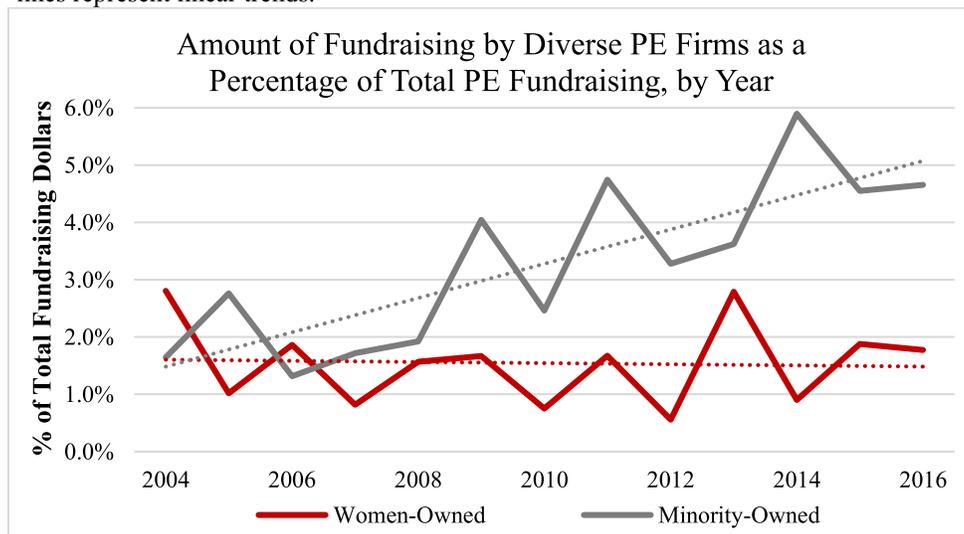
Number of Real Estate Funds: **Figure 64** is the analogous graph for real estate funds. Due to the small sample size of diverse firms in this asset class and the relatively small size of the real estate industry in terms of the number of funds in the Preqin database, these ownership metrics show even greater fluctuation. In fact, for some years, there are no known funds raised by women-owned firms. Despite these limitations, there does appear to be **some upward movement in the representation of women- and minority-owned real estate funds**. There is a drop in the representation of women-owned funds in 2016, as we did not identify any women-owned funds raised in 2016. Due to the noise in this data, we cannot tell whether this represents a shift in fundraising or whether the drop is a fluctuation that will rebound in the next period.

Figure 64. Timeline of diverse-owned real estate funds. Dotted lines represent linear trends.



AUM Raised for PE: We also construct timelines based on the total amount of AUM raised in a given vintage year. For this metric, we sum the final size of each fund raised in each vintage year, grouped by ownership type. **Figure 65** shows the results for the PE industry. Using the final fund size metric, minority representation increases more than when considering fund count, growing from approximately 1.75% in 2004 to approximately 4.75% of fundraising in 2016 (through August 2016). While there is a **clear upward trend in fundraising by minority-owned firms** compared to total PE fundraising, there is no distinct trend for women-owned firms over the same time period.

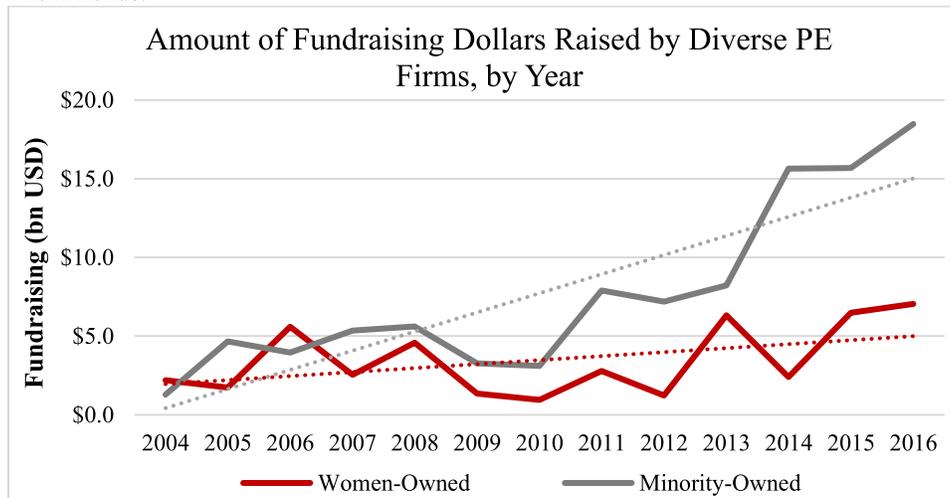
Figure 65. Timeline of percentage of AUM managed by diverse-owned PE firms. Dotted lines represent linear trends.



We also construct timelines for the total AUM raised in each year for diverse-owned firms. **Figure 66** shows the AUM timeline for PE firms from 2004 through 2016. **AUM raised by minority-owned firms has increased substantially over the time frame**, from \$1.3 billion in 2004 to \$18.5 billion in 2016. This metric shows a consistent upward trend, with the notable

exception of 2009-2010, when fundraising stagnated in the wake of the Global Financial Crisis. AUM raised by women-owned firms has also increased between 2004 and 2014, though at a less consistent rate.

Figure 66. Timeline of AUM managed by diverse-owned PE firms. Dotted lines represent linear trends.



AUM Raised for Real Estate: The AUM timeline showing the representation of diverse-owned real estate funds is even noisier. Seen in **Figure 67**, the share of AUM raised by women-owned firms constitutes a very small part of the overall amount of capital raised. In fact, this metric only exceeds 1% in one year: 2014. Minority-owned firms have a greater percentage of AUM than women-owned firms in most of these years.

Figure 67. Timeline of the percentage of AUM managed by diverse-owned real estate firms. Dotted lines represent linear trends.

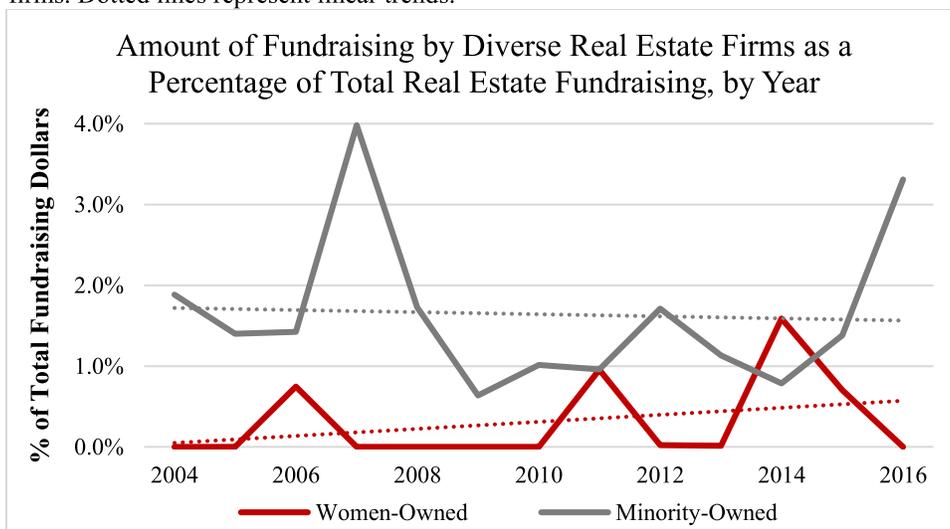
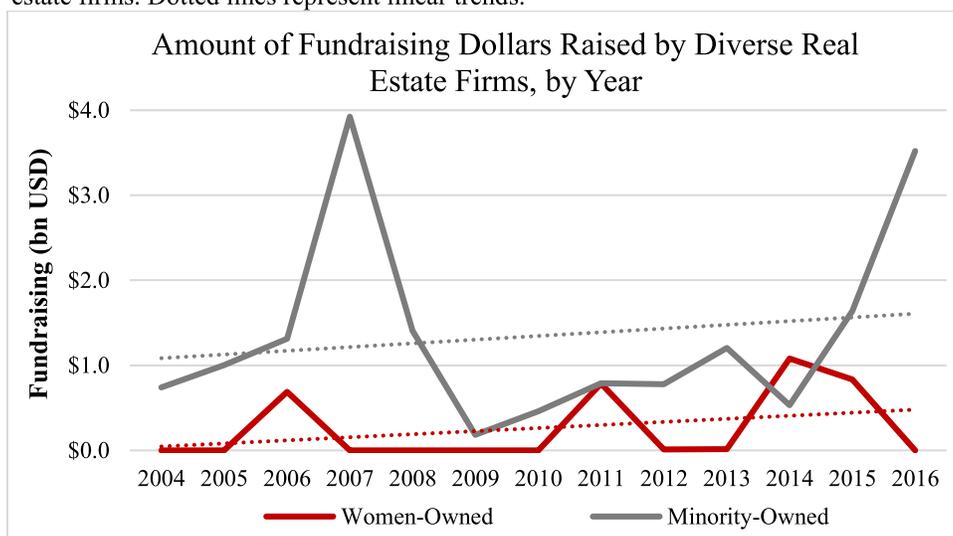


Figure 68 shows the timeline for AUM raised each year by diverse-owned real estate funds. Over this period, there is a slight upward trend in the AUM raised by both minority- and women-owned real estate firms, but the dollar amounts fluctuate greatly year-to-year.

Figure 68. Timeline of the dollar amount of AUM managed by diverse-owned real estate firms. Dotted lines represent linear trends.



It is important to note that some firms do not report the closing size of their fund. For example, in the fund counts timeline graph, we note that there were some diverse-owned real estate funds raised in 2012 and 2013, but the AUM timeline shows zero values for each of these years. Because the diversity data for private equity and real estate are hand-collected from third parties, there are undoubtedly a number of diverse-owned firms that are unintentionally excluded from this analysis, creating an incomplete picture of the real estate landscape. We hope that this report acts as a catalyst for improved reporting in the future, particularly for these alternative asset classes.

Performance of Diverse-Owned PE Funds

We investigate the performance of asset managers for the sample of PE funds only. Unlike with the hedge fund and mutual fund performance data, a large sample of funds do not report performance data to Preqin on a regular (i.e., quarterly) basis. Instead, we focus on the most recent performance metrics, where the coverage is greater.

Preqin uses several different performance metrics including multiples, IRRs, and PMEs. Many more funds in Preqin report multiples than report IRRs or PMEs. For this reason, we use multiples and excess multiples (that is, the performance of a fund compared to the market benchmark) as the dependent variables in our models.⁶⁰ Multiples are reported net of fees.

Table G in the **Appendix** shows the average difference in performance between the universe of all funds and the subsets of women- and minority-owned funds. The average multiple for funds managed by women-owned firms is greater than that of the overall population. However, the

⁶⁰ Excess returns are calculated by subtracting the appropriate median benchmark multiple from the fund's multiple of invested capital. We use the Preqin database to obtain VC and PE benchmarks separately. We further restrict the benchmark to only consider the same types of funds used in our analysis (i.e., excluding non-U.S.-based funds, funds of funds, and real estate funds). For example, a VC fund with vintage year 2009 would use a benchmark that is calculated using all U.S.-based venture funds in Preqin with a 2009 vintage year.

average multiple for funds managed by minority-owned firms is less than that of the overall population. The same is true for the excess multiple. Please note that these averages do not control for firm- and fund-level characteristics that may be related to PE fund performance.

To isolate the effect of women- and minority-ownership on fund performance, we run a series of regressions, controlling for fund characteristics such as fund size, fund type, firm location, vintage year, industry, and region. We run four regressions (see output in **Table H** in the Appendix):

1. **Multiple Base Regression.**
This regression uses the multiple of invested capital as the dependent variable. In addition to indicators for women- and minority-ownership, we include an indicator variable for VC funds, as well as year fixed effects and year-asset class interaction terms.
2. **Multiple Controls Regression.**
This model is an extension of the first, adding additional control variables for firm location, industry focus, and region focus.
3. **Excess Base Regression.**
Rather than the investment multiple, this regression uses the excess multiple as the dependent variable. Because the benchmark used to calculate the excess multiple is specific to the year and asset class, we exclude fixed effects for the year and year-asset class interaction.
4. **Excess Controls Regression.**
This extension of the previous regression includes additional control variables: firm location, industry focus, and region focus.

By using the excess multiple metric in models 3 and 4, we can measure a fund's performance relative to peer benchmarks for a given asset class and vintage year. While the year fixed effects and year-asset class interaction variables control for this fluctuation to some extent, incorporating the benchmark into the calculation of the dependent variable provides a more comprehensive measure of relative performance.

In each of the four models, the coefficients for the women- and minority-owned indicators are insignificant. This means that **within conventional statistical confidence levels, diverse-owned PE funds perform as well as non-diverse PE funds**. It is worth noting that the R-squared on each model is very low, indicating that the models are poor predictors of performance. In fact, few of the variables are consistently significant across the different models. Even in the regressions with extra controls, the R-squared values are less than 0.1, indicating that less than 10% of the variation in performance can be explained by the given independent variables.

However, obtaining the outsized returns often associated with the PE industry requires LPs to identify and invest in the top-performing funds. In this sense, the *average* performance of PE funds does not tell the whole story in this asset class. We must also look at the distribution of returns across each ownership class to determine how the top-performing diverse-owned funds

compare to their non-diverse peers. While there is some debate about the extent to which LPs can predict which funds will outperform, it is widely accepted that manager selection is important in obtaining top returns in a PE portfolio.

With this in mind, we investigate the distribution of performance for diverse-owned PE firms. We first find the percentage of diverse-owned funds that fall in the top quartile of performance in each month and average these percentages over the time period for which we have data. The results, presented in **Table I**, show that 33% of funds managed by women-owned firms and 20% of funds managed by minority-owned firms fall in the top quartile, measuring performance using the net multiple. **This suggests that it is possible to construct a portfolio of top diverse-owned PE firms that outperforms the PE benchmark.**

Institutional Investor Types for Diverse-Owned PE Firms

This analysis looks at what types of institutional investors commit capital to diverse asset managers. To address this question, we use the institutional investor datasets provided by Preqin to analyze the breakdown of the types of LPs associated with each PE firm. Using these LP/GP pairs, we assign to each of the LPs a “type” based on their classification in Preqin. Examples of these types include public pension fund, endowment, advisor, etc.

For each PE firm, we count the number of LPs of each type that invest with that firm and calculate the representation of each LP type with each firm. As an example, suppose that there are 2 public pension funds and 3 endowments that invest in funds managed by PE Firm A, meaning that 40% of the LPs engaged with PE Firm A are pensions and 60% are endowments.

Using these counts and percentages, we describe the average representation of each LP type for women-owned PE firms and minority-owned PE firms. We compare LP types for diverse PE firms with LP types for a random sample of 100 matching firms from the general population of firms.⁶¹ The metrics for the 100 Matching Firms Sample are calculated in the same way as the counts and percentages were calculated for the women- and minority-owned firms.

We first look at the *count* of institutional investor types for each PE ownership category, summarized in the table below. These numbers represent the average number of LP types engaged with PE firms, by diversity category. For example, there are 6.05 public pension funds invested with each women-owned PE firm *on average*. The stars indicate whether the difference between the women- or minority-owned averages are significantly different than the average for the 100 Matching Firms sample.⁶² For example, there are an average of 1.86 foundations and endowments invested with each women-owned PE firm compared to 3.71 foundations and endowments engaged with the one of the 100 Matching Firms, on average. This difference is significant at a 90% confidence level, as shown with the star on the 1.86 value. On the other hand, although more public pensions invested with the average minority-owned firm than with one of the 100 Matching Firms (6.68 versus 5.51), this difference is not statistically significant.

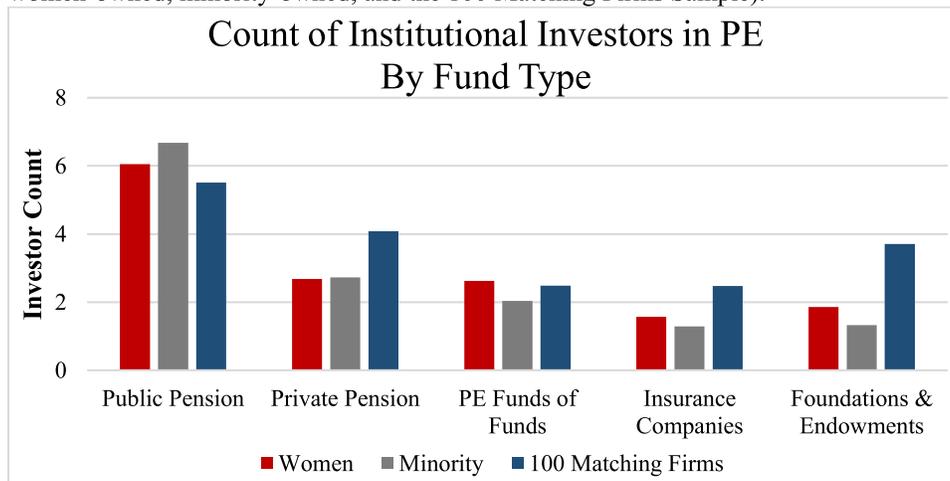
⁶¹ For a discussion on how we obtained the sample of funds, see the **Data Sources** section.

⁶² Number of stars indicates confidence level. * = 90% confidence, ** = 95% confidence, *** = 99% confidence.

| | Public Pension | Private Pension | PE Funds of Funds | Insurance Companies | Foundations & Endowments |
|-------------------------------------|----------------|-----------------|-------------------|---------------------|--------------------------|
| Women-Owned Firms | 6.05 | 2.68 | 2.62 | 1.57 | 1.86* |
| Minority-Owned Firms | 6.68 | 2.73 | 2.03 | 1.29** | 1.32*** |
| Sample of 100 Matching Firms | 5.51 | 4.08 | 2.48 | 2.47 | 3.71 |

These results are represented graphically in **Figure 69**. We present the top five LP types, which are the same for each ownership category. Public pensions are the LP type most frequently engaged with diverse asset managers, followed by private pensions, foundations and endowments, and FoFs. For public pensions, private pensions, and PE FoFs, there is no significant difference in LP engagement with PE firms between diverse- and non-diverse-owned firms. However, insurance companies invest significantly less often with minority-owned firms than with firms in the 100 Matching Firms sample, which here represents the general population. Further, foundations and endowments are less engaged with both women- and minority-owned firms than with firms in the 100 Matching Firms sample.

Figure 69. Count of institutional investors by fund type, across each diverse category (i.e. women-owned, minority-owned, and the 100 Matching Firms Sample).

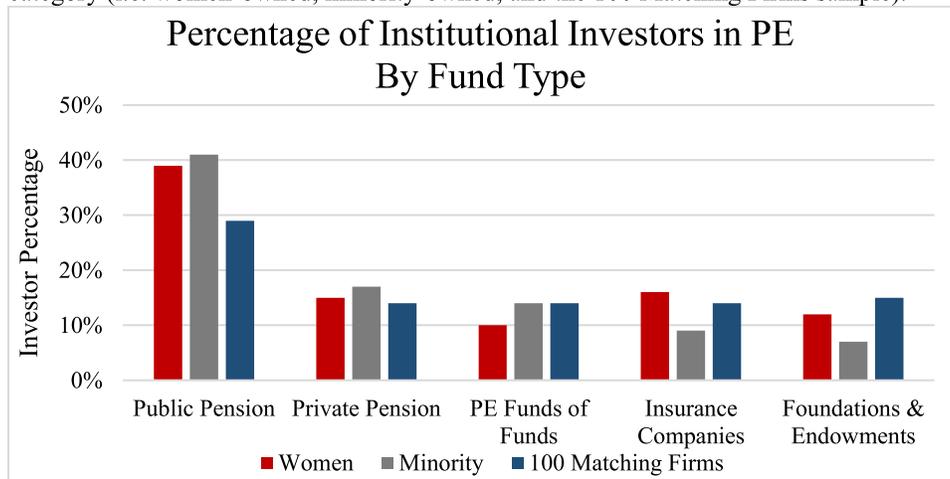


We next present the analysis of LP representation by ownership type as measured by the percentage of LPs engaged with each PE firm. These results are summarized in the table below. The percentages represent the average proportion of investors engaged with each LP. For example, we note that *on average*, 39% of the institutional investors in a women-owned firm are public pensions.

| | Public Pension | Private Pension | PE Funds of Funds | Insurance Companies | Foundations & Endowments |
|-------------------------------------|----------------|-----------------|-------------------|---------------------|--------------------------|
| Women-Owned Firms | 39% | 15% | 10% | 16% | 12% |
| Minority-Owned Firms | 41%** | 17% | 14% | 9%* | 7%*** |
| Sample of 100 Matching Firms | 29% | 14% | 14% | 14% | 15% |

These results are shown graphically in **Figure 70**. We note that in this calculation as well, public pensions are the most represented LP type. While there are some differences between women-owned firms and firms in the 100 Matching Firms Sample, none of the differences are statistically significant. However, for minority-owned firms, we note three significant results. First, public pensions make up a larger percentage of the average minority-owned firm’s investors than would be expected. However, insurance companies and foundations and endowments make up a smaller percentage of the average minority-owned firm’s investors than would be expected, given the results of the analysis of the 100 Matching Firms sample.

Figure 70. Percentage of institutional investors by fund type, across each diverse category (i.e. women-owned, minority-owned, and the 100 Matching Firms sample).



These findings suggest that **foundations and endowments are underrepresented in women- and minority-owned PE firms**. Further, insurance companies appear to also underinvest in minority-owned firms. **However, public pensions are better represented among investors in minority-owned firms** than would be expected. However, because of the data limitations discussed in the **Data Sources** section—namely that none of these pairs has associated dollar amounts—these measures of LP engagement with diverse managers should be considered a first attempt at quantifying these relationships. More robust data collection in the future is critical to a proper understanding of these relationships.

V. Conclusion

This study aims to provide a first look at diversity in the ownership of asset management firms and to quantify the level of ownership across a variety of metrics. For this project, the Knight Foundation contracted with Bella Research Group to collect and analyze data on the representation of women- and minority-owned firms in the United States across four asset classes: mutual funds; hedge funds; private equity; and real estate.

The primary focus of this project is quantifying the number of diverse-owned firms and funds as well as the amount of AUM compared to the population totals. Where the available data permit, we also investigate trends over time, performance, and institutional investors for diverse-owned firms. Our findings are summarized by asset class below:

Mutual Funds:

Women- and minority-owned firms are underrepresented, whether measured by number of firms, number of funds, or amount of AUM. Over the past five years, the representation of diverse-owned firms has fluctuated, but there is no clear trend in either direction. Sub-par investment performance should not be considered a contributing factor to this underrepresentation, as diverse-owned firms perform as well as non-diverse firms, within conventional confidence intervals.

Hedge Funds:

Similarly, we note an underrepresentation of diverse-owned firms in the hedge fund space, though there is some evidence for increased representation since 2010. The performance analysis provides no conclusive evidence that performance of diverse-owned hedge funds is worse than performance of non-diverse hedge funds.

Private Equity and Real Estate:

We find very low representation of diverse-owned firms in the PE and real estate space, noting possible biases due to our efforts to identify women and minority ownership from public and proprietary sources. We find some evidence of an increase in the representation of women- and minority-owned firms since 2004. While the small sample size precludes an analysis of performance for diverse-owned real estate firms, we note that for PE, there is no significant difference in performance between funds managed by diverse-owned firms and those managed by non-diverse firms.

Other Conclusions:

We hope that this report provides the foundation for future inquiry and more robust data collection. Importantly, we highlight the need for data sources with comprehensive and detailed reporting of diverse ownership and diverse management. This demographic information is most notably absent in the PE and real estate spaces. Creating a publicly-available, non-proprietary database with this information should be a top priority for the investment community. It is our hope that these analyses will spur increased awareness and knowledge on this topic and encourage enhanced data reporting in the future.

VI. Acknowledgements

Funding for this report was provided by The John S. and James L. Knight Foundation, which is gratefully acknowledged. The authors would also like to thank the external reviewers who provided helpful feedback on this report. This advisory group includes Knight Foundation, the National Association of Investment Companies, Protégé Search, Exelon Corporation, RG + Associates, Cambridge Associates, MJ Alternative Investment Research, and the Raben Group.

This advisory group provided input on potential investment databases for the study and provided comments on a draft of the report. They did not have editorial privileges, and the final methodology and results were solely at the discretion of the Bella Research Group.

VII. Appendix

Mutual Fund Performance

Table A. Difference in average performance between diverse-owned mutual funds and all mutual funds. The sample comprises all U.S.-based asset managers from the eVestment Traditional Database for Q1 2011 through Q2 2016, excluding all FoFs (n = 212,542 fund-quarter observations). See page 37 in the **Methodology and Results** section for detailed descriptions of each performance measure. Note that average performance measures below include returns from multiple years and for mutual funds where the underlying assets may be public equity, fixed income, or balanced/multi-asset. These summary statistics provide an overview of the performance data for mutual funds. The performance regressions (**Tables B and C**) are the main analytic tool for assessing fund performance, as they control for the underlying asset class and other relevant firm and fund characteristics.

| | (1) | (2) |
|---|----------------------------|----------------------------|
| | Women-Owned | Minority-Owned |
| Quarterly Returns | +0.108 % (p = 0.060)* | +0.148 % (p = 0.046)** |
| Observations | 12,011 | 8,179 |
| Market-Adjusted Quarterly Returns | +0.008 % (p = 0.803) | -0.010 % (p = 0.810) |
| Observations | 10,044 | 6,753 |
| Capital-Weighted Quarterly Returns | -0.184 % (p = 0.001)*** | +0.531 % (p = 0.000)*** |
| Observations | 8,777 | 5,724 |
| Capital-Weighted Market-Adjusted Quarterly Returns | +0.038 % (p = 0.167) | -0.073 % (p = 0.077)* |
| Observations | 7,651 | 4,968 |

Average difference in performance; p-values in parentheses. Asterisks represent the statistical significance level for t-tests between returns for all funds and the returns for women- or minority-owned funds: *** p<0.01, ** p<0.05, * p<0.01.

Table B. Performance regressions using indicators for firms with 25+% ownership held by women and/or minorities. The sample includes fund-quarter observations for U.S.-based asset managers from the eVestment Traditional Database for Q1 2011 through Q2 2016 (excluding all FoFs). For equity and fixed income asset classes, the coefficients represent the difference in performance compared to the balanced/multi-asset category. Additional information on explanatory variables can be found on pages 17-19 in the **Data Sources** section. For detailed descriptions of each performance measure, see page 37 in the **Methodology and Results** section.

| VARIABLES | (1) Qtr. Returns | (2) Qtr. Returns (Add'l Controls) | (3) Market-Adjusted Qtr. Returns | (4) Capital- Weighted Qtr. Returns | (5) Capital-Weighted Qtr. Returns (Add'l Controls) | (6) Capital-Weighted Market-Adjusted Qtr. Returns |
|----------------------------|---------------------|---|--|---|---|--|
| Women-Owned | -0.0767 (0.0610) | -0.0571 (0.0631) | -0.0617 (0.0772) | -0.117* (0.0711) | -0.0836 (0.0669) | -0.0957 (0.0835) |
| Minority-Owned | -0.0200 (0.0575) | -0.0347 (0.0582) | -0.0951 (0.0720) | 0.0111 (0.0962) | -0.0596 (0.101) | -0.168 (0.134) |
| Firm Assets (mn USD) | 8.57e-08*** | 6.27e-08*** | -5.18e-08 | -5.12e-09 | -7.67e-09 | -2.21e-08 |
| Lagged 1 period | (2.90e-08) | (1.93e-08) | (3.53e-08) | (2.83e-08) | (2.32e-08) | (1.96e-08) |
| Fund Assets (mn USD) | -2.36e-06*** | -1.47e-06* | 1.48e-06 | | | |
| Lagged 1 period | (8.83e-07) | (8.41e-07) | (1.22e-06) | | | |
| Asset Class = Equity | -0.833*** | -0.768*** | 0.158 | -0.720* | -0.791** | -0.161 |
| | (0.233) | (0.233) | (0.101) | (0.401) | (0.377) | (0.111) |
| Asset Class = Fixed Income | -0.504** | -0.412* | 0.635*** | -0.692* | -0.676* | 0.0767 |
| | (0.236) | (0.239) | (0.105) | (0.411) | (0.391) | (0.193) |
| Beta | | 0.329** | | | 0.367*** | |
| | | (0.146) | | | (0.0980) | |
| Product Status = Active | | 0.242*** | 0.338*** | | -0.0921 | -0.0872 |
| | | (0.0584) | (0.0614) | | (0.140) | (0.144) |
| Constant | 1.912*** | 1.176*** | -1.318*** | 1.425*** | 1.229*** | -0.934*** |
| | (0.264) | (0.309) | (0.206) | (0.410) | (0.432) | (0.255) |
| Observations | 84,980 | 74,786 | 74,786 | 82,308 | 72,737 | 72,737 |
| R-squared | 0.760 | 0.770 | 0.162 | 0.791 | 0.797 | 0.182 |
| Quarter FE | YES | YES | YES | YES | YES | YES |
| Strategy FE | YES | YES | YES | YES | YES | YES |
| Geographic Focus FE | YES | YES | YES | YES | YES | YES |
| Quarter-Asset Class FE | YES | YES | NO | YES | YES | NO |

Clustered standard errors by firm in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table C. Performance regressions using indicators for substantial women ownership (25–49%), majority women ownership (50+%), substantial minority ownership (25–49%), and majority minority ownership (50+%). The sample includes fund-quarter observations for U.S.-based asset managers from the eVestment Traditional Database for Q1 2011 through Q2 2016 (excluding all FoFs). For equity and fixed income asset classes, the coefficients represent the difference in performance compared to the balanced/multi-asset category. Additional information on explanatory variables can be found on pages 17–19 in the **Data Sources** section. For detailed descriptions of each performance measure, see page 37 in the **Methodology and Results** section.

| VARIABLES | (1) Qtr. Returns | (2) Qtr. Returns (Add'l Controls) | (3) Market-Adjusted Qtr. Returns | (4) Capital-Weighted Qtr. Returns | (5) Capital-Weighted Qtr. Returns (Add'l Controls) | (6) Capital-Weighted Market-Adjusted Qtr. Returns |
|------------------------------|----------------------------|---|--|---|---|--|
| Substantially Women-Owned | -0.153 (0.0964) | -0.130 (0.102) | -0.117 (0.132) | -0.0336 (0.0995) | -0.0216 (0.103) | -0.0632 (0.130) |
| Majority Women-Owned | -0.0180 (0.0686) | 0.000144 (0.0675) | -0.0149 (0.0815) | -0.156** (0.0763) | -0.113 (0.0762) | -0.113 (0.102) |
| Substantially Minority-Owned | 0.00855 (0.127) | 0.0355 (0.137) | -0.117 (0.181) | 0.161 (0.115) | 0.0586 (0.193) | 0.0730 (0.248) |
| Majority Minority-Owned | -0.0229 (0.0629) | -0.0429 (0.0632) | -0.0901 (0.0771) | -0.0567 (0.114) | -0.108 (0.112) | -0.253* (0.139) |
| Firm Assets (mn USD) | 8.52e-08*** (2.90e-08) | 6.26e-08*** (1.92e-08) | -5.19e-08 (3.52e-08) | -5.00e-09 (2.83e-08) | -7.58e-09 (2.32e-08) | -2.20e-08 (1.96e-08) |
| Lagged 1 period | -2.39e-06*** (8.88e-07) | -1.50e-06* (8.46e-07) | 1.46e-06 (1.22e-06) | | | |
| Fund Assets (mn USD) | -0.839*** (0.233) | -0.773*** (0.233) | 0.154 (0.101) | -0.720* (0.401) | -0.790** (0.377) | -0.160 (0.111) |
| Lagged 1 period | -0.506** (0.236) | -0.415* (0.239) | 0.633*** (0.104) | -0.689* (0.411) | -0.673* (0.391) | 0.0803 (0.193) |
| Asset Class = Equity | | 0.329** (0.147) | | | 0.367*** (0.0981) | |
| Asset Class = Fixed Income | | 0.244*** (0.0583) | 0.340*** (0.0610) | | -0.0932 (0.140) | -0.0885 (0.143) |
| Beta | | 1.177*** (0.309) | -1.318*** (0.206) | 1.425*** (0.410) | 1.230*** (0.432) | -0.934*** (0.255) |
| Product Status = Active | | 74,786 | 74,786 | 82,308 | 72,737 | 72,737 |
| Constant | 1.917*** (0.263) | 0.770 (0.263) | 0.162 (0.263) | 0.791 (0.263) | 0.797 (0.263) | 0.182 (0.263) |
| Observations | 84,980 | 74,786 | 74,786 | 82,308 | 72,737 | 72,737 |
| R-squared | 0.760 | 0.770 | 0.162 | 0.791 | 0.797 | 0.182 |
| Quarter FE | YES | YES | YES | YES | YES | YES |
| Strategy FE | YES | YES | YES | YES | YES | YES |
| Geographic Focus FE | YES | YES | YES | YES | YES | YES |
| Quarter-Asset Class FE | YES | YES | NO | YES | YES | NO |

Clustered standard errors by firm in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Hedge Fund Performance

Table D. Difference in average performance between diverse-owned hedge funds and all hedge funds. The sample comprises all U.S.-based hedge funds from HFR, excluding funds of hedge funds (n = 385,082 fund-month observations). For detailed descriptions of each performance measure, please see pages 51-52 in the **Methodology and Results** section.

| | (1) | (2) |
|---|----------------------------|----------------------------|
| | Women-Owned | Minority-Owned |
| Quarterly Returns | +0.013 % (p = 0.792) | +0.177 % (p = 0.000)*** |
| Observations | 8,794 | 13,600 |
| Market-Adjusted Quarterly Returns | -0.067 % (p = 0.255) | +0.085 % (p = 0.117) |
| Observations | 4,719 | 6,631 |
| Capital-Weighted Quarterly Returns | -0.157 % (p = 0.000)*** | +0.013 % (p = 0.642) |
| Observations | 8,664 | 13,373 |
| Capital-Weighted Market-Adjusted Quarterly Returns | -0.236 % (p = 0.000)*** | -0.003 % (p = 0.924) |
| Observations | 4,621 | 6,473 |

Average difference in performance; p-values in parentheses. Asterisks represent the statistical significance level for t-tests between returns for all funds and the returns for women- or minority-owned funds:
*** p<0.01, ** p<0.05, * p<0.01.

Table E. Performance regressions using fund-month observations for U.S.-based hedge funds from HFR (excluding funds of hedge funds) from **all available years**. Additional information on explanatory variables can be found on pages 20-21 in the **Data Sources** section. For detailed descriptions of each performance measure, see page 51-52 in the **Methodology and Results** section.

| VARIABLES | (1) Monthly Returns | (2) Monthly Returns (Add'l Controls) | (3) Market-Adjusted Monthly Returns | (4) Capital-Weighted Monthly Returns | (5) Capital-Weighted Monthly Returns (Add'l Controls) | (6) Capital-Weighted Market-Adjusted Monthly Returns |
|-------------------------|-------------------------|--|---|--|--|---|
| Women-Owned | -0.0617 (0.0654) | -0.0765 (0.0643) | -0.113* (0.0630) | -0.146** (0.0646) | -0.131 (0.0892) | -0.160** (0.0728) |
| Minority-Owned | 0.246*** (0.0637) | 0.124* (0.0723) | 0.129** (0.0653) | 0.0213 (0.0481) | 0.0104 (0.0761) | -0.0319 (0.0722) |
| Fund Assets (mn USD) | -8.58e-06 (6.45e-06) | -8.47e-06 (6.19e-06) | -6.93e-06 (6.05e-06) | | | |
| Lagged 1 period | | 0.496*** (0.0369) | 0.507*** (0.0373) | | 0.320*** (0.0646) | 0.358*** (0.0592) |
| Product Status = Active | | -0.0694*** | | | -0.278*** | |
| Beta | | (0.0251) | | | (0.0576) | |
| Constant | 3.906*** (0.193) | -4.504*** (0.273) | -0.147 (0.214) | 3.965*** (0.340) | -4.736*** (0.476) | -0.129 (0.378) |
| Observations | 370,606 | 193,825 | 193,825 | 370,566 | 193,818 | 193,818 |
| R-squared | 0.170 | 0.223 | 0.138 | 0.282 | 0.309 | 0.209 |
| Region FE | YES | YES | YES | YES | YES | YES |
| Strategy FE | YES | YES | YES | YES | YES | YES |
| Month FE | YES | YES | YES | YES | YES | YES |
| Strategy-Month | YES | YES | YES | YES | YES | YES |

Clustered standard errors by firm in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table F. Performance regressions for U.S.-based hedge funds (excluding funds of hedge funds). The sample includes fund-month observations from **January 2011 through July 2016**. Additional information on explanatory variables can be found on pages 20-21 in the **Data Sources** section. For detailed descriptions of each performance measure, see pages 51-52 in the **Methodology and Results** section.

| VARIABLES | (1) Monthly Returns | (2) Monthly Returns (Add'l Controls) | (3) Market-Adjusted Monthly Returns | (4) Capital-Weighted Monthly Returns | (5) Capital-Weighted Monthly Returns (Add'l Controls) | (6) Capital-Weighted Market-Adjusted Monthly Returns |
|---|-------------------------|--|---|--|--|---|
| Women-Owned | -0.127** (0.0626) | -0.0544 (0.0628) | -0.104 (0.0637) | -0.248** (0.0967) | -0.141* (0.0801) | -0.165** (0.0823) |
| Minority-Owned | 0.164*** (0.0628) | 0.0584 (0.0667) | 0.0860 (0.0637) | 0.00256 (0.0728) | 0.0117 (0.0779) | -0.00955 (0.0684) |
| Fund Assets (mn USD) Lagged 1 Period | -6.41e-07 (4.26e-06) | -2.68e-06 (4.25e-06) | -1.29e-08 (4.36e-06) | | | |
| Product Status = Active | | 0.500*** (0.0425) | 0.495*** (0.0444) | | 0.351*** (0.100) | 0.364*** (0.103) |
| Beta | | -0.00896 (0.0278) | | | -0.102 (0.0722) | |
| Constant | 2.992*** (0.218) | 3.163*** (0.279) | 0.806*** (0.223) | 2.462*** (0.404) | 2.605*** (0.408) | 0.272 (0.303) |
| Observations | 162,667 | 122,660 | 122,660 | 162,658 | 122,653 | 122,653 |
| R-squared | 0.140 | 0.181 | 0.089 | 0.264 | 0.276 | 0.176 |
| Region FE | YES | YES | YES | YES | YES | YES |
| Strategy FE | YES | YES | YES | YES | YES | YES |
| Month FE | YES | YES | YES | YES | YES | YES |
| Strategy-Month | YES | YES | YES | YES | YES | YES |

Clustered standard errors by firm in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Private Equity Performance

Table G. Difference in average performance between diverse-owned PE funds and all PE funds, in terms of net multiple and excess multiple. The sample comprises all U.S.-based PE funds, excluding PE FoFs, in Preqin with vintage years 2004 through 2016 (n = 1,407 funds). The net multiple is the fund's multiple of invested capital. The excess multiple is a fund's net multiple minus the appropriate median benchmark multiple. For more information on how these performance measures are calculated, see pages 70-71 in the **Methodology and Results** section.

| | (1) | (2) |
|------------------------|-----------------------|-----------------------|
| | Women-Owned | Minority-Owned |
| Net Multiple | +0.065 (p = 0.553) | -0.134 (p = 0.344) |
| Observations | 41 | 84 |
| Excess Multiple | +0.085 (p = 0.391) | -0.136 (p = 0.440) |
| Observations | 41 | 84 |

Average difference in performance; p-values in parentheses. Asterisks represent the statistical significance level for t-tests between returns for all funds and the returns for women- or minority-owned funds:
 *** p<0.01, ** p<0.05, * p<0.01.

Table H. Performance regressions for U.S.-based PE funds in Prequin with vintage years 2004 through 2016, excluding funds of funds. The coefficients for the variable “Fund Type = VC” represent the difference in performance for venture capital funds compared to the subset of non-venture PE funds. Coefficients for each of the geographic location variables (i.e., “West,” “Midwest,” and “South”) compare performance of funds in each of these regions with the excluded region (“Northeast”). Additional information on explanatory variables can be found on pages 23-24 in the **Data Sources** section. For detailed descriptions of each performance measure, see pages 70-71 in the **Methodology and Results** section.

| VARIABLES | (1) Net Multiple | (2) Net Multiple (Add'l Controls) | (3) Excess Multiple | (4) Excess Multiple (Add'l Controls) |
|--------------------------|-------------------------|---|---------------------------|--|
| Women-Owned | 0.0954 (0.116) | 0.0519 (0.123) | 0.0889 (0.110) | 0.0436 (0.121) |
| Minority-Owned | -0.0730 (0.0852) | -0.109 (0.0860) | -0.0733 (0.0807) | -0.108 (0.0845) |
| Final Fund Size (mn USD) | -9.22e-06 (5.62e-06) | -1.10e-05* (6.53e-06) | -1.66e-05** (6.49e-06) | -1.26e-05** (6.37e-06) |
| Fund Type = VC | -0.308 (0.350) | -0.363 (0.378) | | 0.0431 (0.0723) |
| Location = West | | 0.0293 (0.0616) | | 0.0336 (0.0594) |
| Location = Midwest | | 0.0946 (0.0730) | | 0.0983 (0.0692) |
| Location = South | | -0.00716 (0.0557) | | -0.00747 (0.0530) |
| Constant | 1.793*** (0.118) | 0.866*** (0.172) | 0.108*** (0.0276) | -0.863*** (0.112) |
| Observations | 1,389 | 1,388 | 1,389 | 1,388 |
| R-squared | 0.040 | 0.066 | 0.003 | 0.036 |
| Year FE | YES | YES | NO | NO |
| Year-Asset FE | YES | YES | NO | NO |
| Industry FE | NO | YES | NO | YES |
| Region FE | NO | YES | NO | YES |

Clustered standard errors by firm in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Top-Quartile Performance

Table I. The percentage of diverse-owned funds with top-quartile performance. We find the proportions of women- and minority-owned mutual funds with top-quartile *returns* for each quarter, and we calculate the average percentage across all quarters of data. Averages are weighted by the number of women- or minority-owned funds with reported returns data for each quarter. We use the same methodology for hedge funds, except we rely on monthly *returns* data and average across all months. These averages for mutual funds and hedge funds are presented in the table with standard deviations in parentheses.

For private equity, we use *net multiples* as the performance measure and calculate the percentage of diverse funds in the top quartile. We use net multiples over the lifetime of each fund and thus, have only one performance measure per fund. Then the numbers in the table for PE are not averages and therefore do not have an associated standard deviation.

| | Mutual Funds | | Hedge Funds | | Private Equity | |
|-------------------------|--------------|----------------|-------------|----------------|----------------|----------------|
| | Women-Owned | Minority-Owned | Women-Owned | Minority-Owned | Women-Owned | Minority-Owned |
| Top Quartile | 25.2% (3.0) | 28.4% (5.4) | 24.4% (5.6) | 27.8% (5.7) | 33.3% | 19.8% |
| Not Top Quartile | 74.8% (3.0) | 71.6% (5.4) | 75.6% (5.6) | 72.2% (5.7) | 66.7% | 80.2% |