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Sociability, golf courses, and the performance of institutional investors

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Abstract

We hypothesize that prestigious golf courses attract golfers and visitors from across the country, providing greater opportunities for nearby investors to build social connections. Our evidence suggests that institutional investors located near prestigious golf courses earn significantly better benchmark- and risk-adjusted returns. This reflects the benefits of sociability as our findings are stronger for golf courses with reciprocal guest policies that allow wider participation and increase when major golf championships rotate to the state. Their portfolios reveal hallmarks of active trading – higher concentration, greater selectivity, more frequent turnover – and include more distant stocks. To establish a causal link, we exploit the fact that golf is a weather-dependent outdoor activity. We find that their outperformance occurs during times of low precipitation around golf courses, evaporating when bad weather keeps golfers off the greens.

Keywords*:* Sociability, Social Connections, Institutional Investors, Golf

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Abstract

We hypothesize that prestigious golf courses attract golfers and visitors from across the country, providing greater opportunities for nearby investors to build social connections. Our evidence suggests that institutional investors located near prestigious golf courses earn significantly better benchmark- and risk-adjusted returns. This reflects the benefits of sociability as our findings are stronger for golf courses with reciprocal guest policies that allow wider participation and increase when major golf championships rotate to the state. Their portfolios reveal hallmarks of active trading – higher concentration, greater selectivity, more frequent turnover – and include more distant stocks. To establish a causal link, we exploit the fact that golf is a weather-dependent outdoor activity. We find that their outperformance occurs during times of low precipitation around golf courses, evaporating when bad weather keeps golfers off the greens.

1 Introduction

Social connections significantly affect economic and financial decisions. Recent studies find that social connections influence the portfolio holdings of professional investors. These studies rise to the challenge of measuring social networks by analyzing school ties (Cohen, Frazzini, and Malloy, 2008) or identifying word-of-mouth communications (Hong, Kubik, and Stein, 2005; Pool, Stoffman, and Yonker, 2014).

Our study adds to this growing literature by identifying country clubs and golf courses as important social venues that attract golfers and visitors from across the country, stimulating social activities and facilitating information flow into the local area. We hypothesize that institutional investors located close to prestigious golf courses have better opportunities to build social connections and to gather investment-related information. As a result, they may generate better performance.

There are at least three reasons why golf courses may enhance social vibrancy and stimulate social interactions for nearby investors. First, golf is one of the most popular leisure activities among high net worth individuals. In 2012, there were 29 million total golfers in the U.S.,[1] representing 9.6% of the total population. Golfers have an average household income of $95,000, are predominantly male (77.5%), and are likely to own securities (83%). 79% of golfers have a personal net worth over $100,000. Also, many golfers have a great passion for the sport.[2] The 2003 National Golf Foundation estimates

[1] A golfer is defined as anyone having played an 18-hole round in the last 12-months. These statistics are available at http://www.statisticbrain.com/golf-player-demographic-statistics/.

[2] Not surprisingly, corporate executives are avid golfers. Golf Digest magazine regularly publishes rankings of the top 200 U.S. CEOs. The CEOs surveyed by Golf Digest report that 35 percent of their golf rounds are with business associates, and 71 percent have conducted business with someone they met when playing a round of golf. (http://money.cnn.com/2006/09/07/news/funny/ceo_golf/)

that approximately 11 million U.S. golfers travel within the country to play golf, and around 35% of these trips include air travel (Hudson and Hudson, 2010).

Second, prestigious golf courses and country clubs are popular social activity centers that host charity events, weddings, industry conventions, and golf tournaments. These activities attract golfers and visitors from around the country. For example, the recent 2015 U.S. Open in University Place, Washington attracted over 270,000 outside visitors among which 75% earned an average wage above $75,000 per year.[3] Also, financial companies are among the largest sponsors of golf tournaments. For example, Citibank, PriceWaterhouseCoopers, and UBS are sponsors of the Professional Golf Association (PGA) tour events.

Third, anecdotal evidence suggests that golf courses are natural venues for asset managers to socialize and interact with business partners. Peter Lynch, long-time manager of Fidelity Magellan Fund, recalls of his golf caddying experience: "*Those years on the golf course were a great education, the next best thing to being on the floor of the exchange.*" John Spooner, a Boston wealth manager, says that "*The truth is a tremendous amount of business gets done on the golf course... You have a captive audience for five hours. Tongues get loosened with the sport and the camaraderie.*"[4]

It is important to note that our focus is not on whether asset managers who golf make better investors, but rather on the importance of golf courses as social attractions

[3] http://www.thenewstribune.com/news/local/article26338330.html.

[4] Simiarly, Rikus Delport, Editor of Finance Week magazine, states: "Golf is the one sport where talking business is not only accepted but encouraged. Few other sports allow the networking opportunities that golf provides. Not many sports allow one to spend five hours of 'captive time' with clients or colleagues in relaxed, beautiful surroundings".

that enhance the information flow of nearby asset managers.[5] Also, the information advantages of these investors may not necessarily arise from private or insider information, although a number of recent SEC charges related to insider information exchange occurred on golf courses.[6] Instead, investors may use the information flow from their social interactions to learn before investing. The learning mechanism may amplify these information advantages, making investors more informed (Van Nieuwerburgh and Veldkamp, 2009).

Using a comprehensive database of 15,479 golf courses in the United States, we track the performance of institutional investors located close to "prestigious" golf courses.[7] Our empirical strategy focuses on prestigious golf courses because these venues are more likely to attract business professionals from across the country and offer better opportunities for nearby investors to meet and socialize with them. Performance tests indicate that the investor's distance to prestigious golf courses is a strong predictor of benchmark-adjusted and risk-adjusted portfolio returns. On average, institutional investors located close to prestigious golf courses ("close-to-golf" investors) outperform by approximately 0.49% per annum (market-adjusted returns) compared to their distant-to-golf counterparts. The results are similar using benchmark adjusted, factor model adjusted, and DGTW characteristics adjusted returns. This translates to an additional $2.5 million dollars for an institutional inves tor with $500 million assets under management.[8]

[5] Although this is an interesting research topic, data limitations make it is difficult to identify golfers among asset managers.

[6] For example, http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370542276935, http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370542670374, http://www.sec.gov/litigation/complaints/2006/comp19665.pdf).

[7] In our main tests, a golf course is designated as 'prestigious' if its green fee is in the top decile of all courses in a comprehensive database provided by www.coursedatabase.com.

[8] In our sample of institutional investors, the median and the mean size of investor portfolio holdings are

These findings are not due to differences in investor type (i.e. banks, insurance, pension funds etc.), investor styles (i.e., growth, growth & income, value), investor size (i.e. total assets under management), or institution age. To address reverse causality concerns, we exclude golf courses that were built after the beginning of our sample period (year 1991) in all of our analyses. This approach largely rules out the possibility that well-performing institutional investors may attract the development of golf courses. Also, the inclusion of state fixed effects helps to alleviate the concern that our results are driven by unobserved state heterogeneity.

While this evidence supports our motivation that golf courses and country clubs foster social interaction, we recognize that other common environmental sources are likely at play. For example, close-to-golf investors located in a particular region may experience local media coverage that may provide valuable investment information. Alternatively, skilled investment managers may sort into geographical regions such as financial centers or wealthy areas based on ability.[9] Such concerns are particularly tricky to address since golf course locations are static and investment companies rarely re-locate headquarters.

To address these concerns, we exploit two plausible sources of variation in the vibrancy of social activity around golf courses. First, we isolate golf clubs with reciprocal/open guest policies that allow course access to members from affiliated clubs. This increases opportunities for social interactions, attracting golfers and visitors from across the country. Ultra-exclusive country clubs and golf courses with fewer members have less opportunities to build social connections. Consistent with the sociability

$437 million and $4.2 billion.

[9] Christofferson and Sarkissian (2009) find that mutual funds in financial centers tend to exhibit better performance.

hypothesis, the outperformance from our performance tests are mostly due to golf courses with reciprocal guest policies.

Second, we identify major golf tournaments (PGA championship and U.S. Open) that rotate locations each year.[10] These events are likely to increase overall social activity around the golf course because the tournaments draw big crowds, increase golf awareness, and attract distant golfers. Our results show that investor performance spikes in the years when major championships are held within the state, particularly for investors located near prestigious golf courses.

To further establish a causal link, we exploit an exogenous feature that the opportunity to play golf is weather-dependent. We expect greater social interactions and information flow when good weather brings golfers and visitors on the greens, but recedes when bad weather sidelines play. We define good weather as periods of low precipitation since the opportunity to play golf is most affected by snow and rainfall.[11] We find that the pattern of outperformance for close–to–golf investors accrues mostly during times of low precipitation, evaporating when the weather sidelines play.

There are a number of ways close-to-golf investors may achieve their superior performance. Using portfolio holdings from the 13F filings, we find that close-to-golf investors are more likely to exhibit portfolio characteristics that are consistent with active trading due to information advantages (i.e., Kacperczyk, Sialm, and Zheng, 2005; Yan and

[10] The Major Championships, often referred to as "the majors," are the four most prestigious annual golf tournaments in the world: PGA Championship (U.S.), U.S. Open (U.S.), Masters Tournament (U.S.), and The Open Championship (U.K.).

[11] Our definition of good weather, measured by precipitation, is different than the cloud cover definition used in studies that examine weather-related mood on asset prices (Hirshleifer and Shumway, 2003; Goetzmann, Kim, Kumar, and Wang, 2015). Hirshleifer and Shumway (2003) find that after controlling for sunshine, rain and snow are unrelated to market returns.

Zhang, 2009; Amihud and Goyenko, 2013). Their portfolios are more concentrated, turnover more frequently, and are more selective, exhibiting lower correlation with systematic risk factors (low portfolio R-square). On average, close-to-golf investors have 7% more portfolio turnover, 10% more portfolio concentration, and 14% more portfolio selectivity compared to their distant-to-golf counterparts. The portfolios of nearby close-to-golf investors also exhibit particularly high correlations in performance and portfolio strategies, suggesting that they likely trade on similar signals.

However, local information advantages are not driving our findings as our performance test results are relatively unchanged after excluding local stocks from investors' portfolios. Rather, our tests reveal that on average close-to-golf investors tend to hold more distant stocks, particularly for investors near reciprocal/open guest policy golf courses and when major golf tournaments rotate to the state. This finding is consistent with our argument that close-to-golf investors may generate investment ideas from their social interactions with distant visitors.

We perform additional tests to ensure that our findings are robust. Our main results hold using various definitions of distance to prestigious golf courses and alternative classification of "prestigious" golf course based on rankings from Golflink.com.[12] Our findings are also robust to alternative measures of distance to golf courses. We find no results in a placebo test using "non-prestigious" golf courses.[13] At the stock level, we

[12] We select the top 20 ranked best state golf courses from http://www.golflink.com/top-golf-courses/. GolfLink's list of the *Best Golf Courses* details the top public and private golf courses in each state. It is calculated from the preferences of up to a million or more visitors to its website every month.
[13] Those golf courses are designated as not "prestigious" if their green fees are in the bottom decile in the comprehensive golf course database provided by www.coursedatabase.com.

calculate a close-to-golf weighted ownership measure for each stock. Calendar time portfolio tests reveal that a long-short portfolio based on the close-to-golf weighted ownership measure generates risk-adjusted excess returns of 5% (Carhart four-factor model) per year, confirming our institutional investor level findings.

Both our performance results and portfolio analysis tests suggest that close-to-golf investors are more informed. Therefore, their ownership may potentially affect stock-level information asymmetry. Consistent with this hypothesis, we find that greater close-to-golf weighted ownership predicts higher probability of informed trading (PIN) and higher Amihud illiquidity. A one standard deviation increase in the ownership-weighted close-to-golf measure increases stock PIN by 2% and Amihud illiquidity by 5% compared to the sample average, respectively. Overall, these stock level findings provide further support that close-to-golf investors have information advantages.

Our paper adds to a growing literature on the importance of social interaction for stock market participation (Hong, Kubik, and Stein, 2004) and portfolio choice (Hong, Kubik, and Stein, 2005; Cohen, Frazzini, and Malloy, 2008). Our study relates to Pool, Stoffman, and Yonker (2014), who find that mutual fund managers that are neighbors have more correlated trading patterns. Our study is among the first to emphasize the role of local amenities – golf courses and country clubs – in stimulating social activity and enhancing the performance of institutional investors.

We also contribute to a large literature on the behavior and performance institutional investors (Gompers and Metrick, 2001; Bennett, Sias, and Starks, 2003). Lewellen (2011) finds that on average institutional investors do not outperform the market. However, careful analysis of *trading* information suggests certain types of institutional trades are

informed (Yan and Zhang, 2009; Baik, Kang, and Kim, 2011; Puckett and Yan, 2011). Our study shows that the better overall *portfolio–level* performance of institutional investors located close to prestigious golf courses is likely due to greater social vibrancy and better access to information.

We proceed by describing the data and the main variables in Section 2. Section 3 presents the main investor level performance findings. Section 4 presents the identification strategies we use to test the sociability hypothesis. Section 5 studies portfolio characteristics and potential sources of information advantages of close-to-golf investors. Section 6 presents the stock level analysis. Section 7 concludes.

2 Data and Variables

We collect the data used in this study from a variety of sources. Equity holdings data of institutional investors is obtained from Thomson 13F filings. The SEC requires that all institutional investment managers with investment discretion over $100 million in 13(f) securities report long holdings positions each quarter. Investor style (value, income & growth, growth) and investor types (banks, insurance companies, investment companies, investment advisors, and other) are based on classifications available on Brian Bushee's website.[14] We collect information on the location (city, state, and zip code) of institutional investors from their 13F filings and the corresponding values of latitude and longitude are obtained from the Gazetteer Files of Census 2000. For our precipitation tests, we obtain precipitation conditions around golf courses using data from the National Climatic Data Center. We focus on the standardized precipitation index (SP01) which allows for

[14] The data are available at http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html.

comparison between locations with markedly different climates because it adjusts for median local weather conditions.[15]

Stock return and accounting data are from CRSP and COMPUSTAT. We construct firm level variables including size, market-to-book, book leverage, profitability, cash holdings, ILLIQ, and stock return volatility. The probability of informed trading measure (PIN) measure is from Stephen Brown's website.[16] The PIN measure construction is described in Brown and Hillegeist (2007). Detailed descriptions of all the variables are provided in the Appendix.

A. Measuring Portfolio Performance

We use a variety of techniques to evaluate investor portfolio performance in each quarter. We employ a calendar time portfolio approach by computing each quarter returns of institutional investor portfolios using their reported portfolio holdings at the end of the prior quarter. The portfolio is rebalanced at the end of every calendar quarter when holding information is freshly reported. Our first approach uses benchmark adjusted performance since institutional investors have different mandates and investment objectives. We benchmark against market returns and peer groups by calculating three benchmark-adjusted measures by subtracting the portfolio return from the 1.) CRSP value-weighted market return (*market adjusted*), 2.) median investor style return (*investor style adjusted*), 3.) median investor style-type return (*investor style-type adjusted*).

To measure risk-adjusted performance, we calculate portfolio alpha by estimating

[15] Full details of the construction of SP01 is available at ftp://ftp.ncdc.noaa.gov/pub/data/cirs/drd/divisional.README.
[16] The data are available at http://scholar.rhsmith.umd.edu/sbrown/pin-data.

rolling-window factor loadings over the prior 60 months for each investor portfolio. Then we subtract the portfolio return in excess of the risk free rate minus the factor returns multiplied by the estimated factor loadings based on the CAPM 1-factor model, the Fama-French 3-factor model, and the Carhart 4-factor model. We also perform a characteristic risk-adjustment by subtracting the individual stock return from its DGTW benchmark return following the methodology developed in Daniel, Grinblatt, Titman and Wermers (1997). Full details of these calculation are provided in the Appendix.

B. Measuring Portfolio Strategies

We calculate three types of portfolio strategies based on institutional investor's portfolio holdings. Throughout the study, we require each investor to have at least 20 quarters of reporting data to accurately estimate these measures.

1.) *Portfolio churn rate* captures how frequently stock positions rotate in the portfolio (Gaspar, Massa and Matos, 2005; Cella, Ellul, and Giannetti, 2013). If we denote the set of companies held by investor i by Q, the churn rate of investor i at quarter s is:

$$Churn\,Rate_{i,s} = \frac{\sum_{j \in Q} \left| N_{i,j,s} P_{j,s} - N_{i,j,s-1} P_{j,s-1} - N_{i,j,s-1} \Delta P_{j,s} \right|}{\sum_{j \in Q} \frac{N_{i,j,s-1} P_{j,s-1} + N_{i,j,s} P_{j,s}}{2}},$$

where $P_{j,s}$ and $N_{i,j,s}$ are the price and number of shares of stock j held by investor i.

2.) *Portfolio concentration* is the investor's concentration ratio (Herfindahl) of its portfolio, which is similar to the concept developed in Kacperczyk, Sialm, and Zheng (2005). If we denote the set of stocks held by investor i by Q and $w_{i,j,t}$ the fraction invested in stock j at time t, portfolio concentration is defined as:

$$Herfin_{i,t} = \sum_{j \in Q} w_{i,j,t}^2$$

3.) *Portfolio selectivity* follows the methodology introduced in Amihud and Goyenko (2013). In every quarter t, and for each institutional investor j, we calculate daily buy-and-hold portfolio returns based on its previous quarter-end stock holdings. Then, for each investor-quarter (j, t), we compute the $R_{j,t}^2$ from the following Carhart 4-factor regression:

$$r_{j,s} - rf_s = a_j + \beta_j(MKT_s - rf_s) + s_j SMB_S + h_j HML_S + u_j UMD_S + \varepsilon_{j,s}\ s \in Quarter\ t$$

where $r_{j,s}$ is the daily portfolio return of investor j on date s.[17] Then, for investor-quarter (j, t), we define the portfolio selectivity at the investor level as:

$$Portfolio\ Selectivity_{j,t} = 1 - R_{j,t}^2 .$$

For our later tests, we use a measure of how geographically distant firms in an investor's portfolio are located from the investor's headquarter. We calculate a total portfolio measure of the weighted average distance between the institutional investor and its portfolio holdings. If we denote the set of stocks held by investor i by Q and $w_{i,j,t}$ to be the fraction of investor i invested in stock j, the portfolio distance is defined as:

$$Portfolio\ Distance_{i,t} = \sum_{j \in Q} w_{i,j,t} 3963 * \arccos(\sin(lat_i)\sin(lat_j) + \cos(lat_i)\cos(lat_j)\cos(lon_i - lon_j))$$

where (lat_i, lon_i), (lat_j, lon_j) are the (latitude, longitude) for investor i and stock j in radian degrees.

[17] The independent variables include the market return minus the risk-free rate (MKT_s-rf_s), the return difference between small and large capitalization stocks (SMB_s), the return difference between high and low book-to-market stocks (HML_s), and the return difference between stocks with high and low past returns (UMD_s). The data for the risk-free rate, market return, SMB, HML and UMD are obtained from Kenneth French's website.

C. Measuring Closeness to Prestigious Golf Courses

We obtain data on the universe of U.S. golf courses from the golf course database provided by www.coursedatabase.com. The database covers 15,479 US golf courses (last updated on January 2013) with detailed information on the zip codes, guest policy, build year, and green fees. We focus on established golf courses that are built before 1991. We rank the universe of golf courses by their green fees and select the top decile of golf courses as the set of prestigious golf courses.

Panel A of Table 1 presents the number of prestigious golf courses, average green fees, and average build year by state. There are 40 states that pass the build year and green fee screens. Florida has the most golf courses classified as prestigious (121 total), while New Hampshire and West Virginia have the fewest (1 total). We address the issue of heterogeneous golf course distribution in our close-to-golf measure below.

For each institutional investor, we first calculate a measure of distance-to-golf course as the average geographical distance between the investor and the selected golf courses in the same state. As states vary in size and distribution of investors, we standardize the distance-to-golf measure by dividing by the value of state median distance-to-golf. This simple standardization sets the median distance-to-golf value equal to 1. Since we are interested in how close an investors is to golf courses, our measure is:

$$\text{Close-to-golf} = \textit{1 – standardized distance-to-golf.}$$

We subtract standardized distance-to-golf measure from 1 so that that median close-to-golf measure is equal to 0, as seen in Panel B of Table I. We report the summary statistics of the other main variables in the same panel. For each variable, we report the mean, the median, and the standard deviation. The sample includes 90964 investor-quarter

observations and 71051 firm-year observations. The median and the average size of investor portfolio holdings are $437 million and $4.2 billion. On average, the raw portfolio return of investors is 2.48% per quarter, and the DGTW characteristics adjusted return is 0.18% per quarter. The CAPM 1-factor (Fama-French 3-factor, Carhart 4-factor) portfolio alpha is 0.42% (0.17%, 0.19%) per quarter. These numbers are largely consistent with the figures reported by Lewellen (2011).[18]

We construct the close-to-golf measure as a relative within state measure because our primarily concern is with the large differences in geographic size across states and the distribution of investors across the country. However, this choice represents a trade-off. While the standardization within state addresses this issue, it may not reflect actual distance to golf courses experienced by investors. Additionally, there is a concern that using the top decile of green fees may be too simplistic and not entirely capture the quality of a golf course.

In our robustness tests, we construct three additional close-to-golf measures to address these concerns. First, we construct a non-standardized distance-to-golf measure. Second, we create a measure based on the number of prestigious golf courses within a 100 mile radius of the investors. Third, we re-estimate our main tests using state-level golf course rankings from Golflink.com for all 50 states. Our main findings in the subsequent sections are robust to these three alternative measures. We discussed the details of these tests in Section 5 and report the full results in the Internet Appendix, Tables A3 and A4.

[18] Our numbers are in general higher than the ones reported in Lewellen (2011). The reason is that our sample period is from 1991-2011, while Lewellen (2011) uses a sample period of 1980-2007.

3 Investor Level Portfolio Performance

We test our main hypothesis that close-to-golf investors experience better performance. To measure excess returns, we estimate benchmark- and risk- adjusted returns to capture differences in investment mandates and risk taking behavior. Since investor level benchmarks are not publicly available, we construct three benchmark adjustments to ensure our findings are robust. We use a simple market-adjustment for ease of interpretation and two peer adjustments (i.e., style-adjusted and style-type adjusted) to compare the investor's performance against its cohort, effectively creating a relative performance measure. We adjust for risk using DGTW characteristic-adjusted returns and estimate portfolio alphas based on the CAPM, Fama-French 3 factor, and Carhart 4 factor risk models as described in Section 2. We start by conducting univariate sorts and follow up with multivariate analysis.

Figure 1 presents sub-sample (below and above median close-to-golf) averages of the excess return measures. Institutional investors that are located closer to prestigious golf courses (i.e. above the median level) earn higher excess returns than their below median counterparts across both benchmark-, risk-, and characteristics-adjusted return measures. All differences are statistically significant at the 1% level using both t-test and Wilcoxon test and reported in Panel C of Table I. On average, institutional investors located close to prestigious golf courses outperform by approximately 0.49% per annum (market-adjusted returns) compared to their distant-to-golf counterparts. This translates to an additional $2.5 million dollars for an institutional investor with a size of $500 million assets under management.

While the univariate analysis is simple and easy to interpret, we wish to control for additional investor characteristics. Therefore we estimate the following baseline panel regression:

$$Portfolio\,Excess\,Return_{i,t} = a + \beta \times Close-to-Golf_{i,t-1} + \delta \times X_{i,t-1} + \varepsilon_{i,t}\,.$$

Close-to-golf$_{i,t-1}$ is the close-to-golf measure and $X_{i,t-1}$ is a vector representing total equity assets under management and institution age. We include four fixed effects: year-quarter fixed effects to capture unobservable time-related heterogeneity, state fixed effects to capture time-invariant state characteristics, institution type fixed effects (i.e. bank, insurance, investment companies, investment advisors, and others) and investor style fixed effects (i.e. value, growth & income, growth). Standard errors are clustered by institutional investor. Our results are robust to double clustering standard errors by both investor and time, which we report in the Internet Appendix Table A1.

Table II reports the main findings. Panel A shows that the close-to-golf measure significantly predicts future benchmark-adjusted returns. The parameter estimate on the close-to-golf measure is positive and statistically significant at the 1% level across all three benchmark-adjusted return measures. The results remain with the inclusion of state fixed effects in columns (2), (4), and (6), suggesting that unobservable state heterogeneity is not behind our findings. Based on the average (median) size of institutional investors in our sample, a one standard deviation increase is associated with more than $10 ($1.2) million dollars of excess returns per year. These findings imply that investors located close-to-golf courses tend to outperform their peers after controlling investor type (i.e. bank, insurance, investment companies, etc.) or investor characteristics related to size (AUM) or age.

Panel B reports risk- or characteristic- adjusted returns results from the same regression specification above. The parameter estimate on the close-to-golf measure remains positive and statistically significant at the 1% level across all risk-adjustments and with the inclusion of state fixed effects in columns (2), (4), (6), and (8).[19] These findings suggest that the superior performance of close-to-golf investors is not due to differences in risk-taking. As before, the regressions include investor and style fixed effects, suggesting that differences across investor types or invest style are not behind our findings.

In sum, our univariate sorts and multivariate regression produce the similar conclusion that close–to–golf investors significantly outperform their counterparts, both on a benchmark- and risk- adjusted basis. Robustness tests using alternative measures of distance to golf courses are discussed in full detail in Section 5 and presented in the Internet Appendix.

4 Identification: Sociability Hypothesis

Our main hypothesis is that sociability improves the dissemination and flow of information, potentially improving portfolio decisions. We ideally wish to capture actual conversations and communication, but unfortunately such social interaction is difficult to observe. This raises data mining concerns and makes it easy to dismiss our results as spurious correlations. Therefore, we search for plausible exogenous variation in social activity around golf courses to test our sociability hypothesis.

To identify the sociability hypothesis, we employ three distinct tests based on golf

[19] It is worth discussing that our results indicate that portfolio performance decreases with investor size and institution age. This is consistent with diminishing marginal returns to asset size, perhaps through the mechanisms described in Berk and Green (2004) and Chen, Hong, Huang, and Kubik (2004).

course guest policy, rotation of major golf tournaments, and exogenous changes in precipitation. These tests are important because they are our primary approach to rule out the possibility that local regional characteristics (i.e., financial centers, population characteristics, local income, etc.) are behind our results.

A. Guest Policy

We exploit variation in a country club's reciprocity arrangement which is a guest policy that allows entry to members of affiliated clubs. Guest policies that are open or reciprocal allow for more visitors, increasing the potential for social interactions, all else equal.[20] We argue that these country clubs are more likely to be socially vibrant, attracting visitors from across the country. Additionally, we check and find that these reciprocal and open policy golf course are randomly distributed across the country, suggesting that local effects are likely not determining guest policy choice. We implement this test by re-calculating the close-to-golf measure separately for reciprocal-policy clubs and closed-policy clubs that are in the prestigious golf club sample. Then, we re-estimate the regression specification in Table II using these alternative definitions.

Panel A of Table III presents the results of our guest policy test. We find a significantly stronger relation between performance and our close-to-golf measure for reciprocal-policy golf courses compared to closed-policy golf courses. The coefficient estimates on close-to-golf measure is more than twice as large for reciprocal-policy golf course (0.148, t= 3.94) than closed-policy courses (0.063, t= 2.28) using market-adjusted returns. The difference in coefficient estimates is statistically significant using Chi-square

[20] In our sample of selected golf courses, 60% of the courses have reciprocal/open guest policy and the rest 40% have closed guest policy.

test (5.17**). Columns (3)-(8) show that the patterns are statistically significant for style-, style and type-, and DGTW- adjusted returns, suggesting that the results are robust to alternative measures of performance. The differences in coefficients are also statistically significant across all specifications using Chi-square tests.

This evidence supports the hypothesis that social vibrancy may be a source of the portfolio performance outcomes we find in Section 3. By exploiting plausible cross-sectional variation across our sample of 'prestigious' golf courses, we find that it is not the proximity to any prestigious golf and country clubs, but to ones that are likely to more social activity. We provide additional supporting evidence on the sociability channel in Section 5, where we find no results from a placebo test that uses 'non-prestigious' golf courses. These golf course are unlikely to attract distant golfers and visitors and therefore are unlikely to provide the benefits of sociability to nearby investors. We use the variation in guest policy in our later tests to help with our identification strategies, but we recognize its limitations make it difficult to completely rule-out omitted variables relating to regional characteristics. Therefore, in our subsequent tests, we identify plausible exogenous shocks to social activity to help address these omitted variable concerns.

B. Major Championships

We design a quasi-natural experiment based on the annual rotation of premier golf tournaments, commonly known as Major Championships or simply 'Majors.' Two of the four annual 'Majors' in professional golf change locations each year. Specifically, the U.S. Open, hosted by the United States Golf Association, and the PGA Championship, hosted by the Professional Golfers' Association of America, are played at various locations in the

United States. 'Majors' draw big crowds and attract both local and distant golfers. These tournaments tend to increase awareness and may inspire less active players to play a round of golf. What is important for our identification strategy is that these events increase overall social activity around golf and country clubs. As an example, the recent 2015 U.S. Open in University Place, Washington attracted over 270,000 outside visitors among which 75% earned an average wage above $75,000 per year.[21]

While the selection of tournament location is not random, it is determined many years in advance. For example, the site for the 2022 PGA Championship (Bedminster, New Jersey) was already announced in 2015. This alleviates concerns that the tournament location is confounded with contemporaneous regional economic conditions that could potentially affect investor performance. The tournaments also rotate around many states alleviating concerns that we only identify a small subset of states.[22]

To test the impact of 'Majors,' we define a dummy variable *Championship Dummy* equal to 1 if the state hosts a "U.S. Open" or "PGA Championship" in the year and 0 otherwise. We use the same regression specification as in Table III, but include the Championship dummy variable and the interaction between the close-to-golf and the championship dummy.

Panel B of Table III presents results using style-adjusted returns. Column (1) shows that the variable of interest – the interaction term of close-to-golf × *Championship Dummy* – is a positive and statistically significantly relates to style-adjusted returns. In this specification, the coefficient estimate on the close-to-golf measure remains positive

[21] http://www.thenewstribune.com/news/local/article26338330.html.

[22] The historical locations of PGA Championship and U.S. Open can be found at: https://en.wikipedia.org/wiki/PGA_Championship, https://en.wikipedia.org/wiki/U.S._Open_(golf).

and statistically significant suggesting that close-to-golf investors on average earn higher returns, but that performance spikes during the years when a 'Major' rotates to an investor's home state.

We incorporate our previous guest policy analysis and find that the effects of 'Major' championships are mostly concentrated in reciprocal guest policy clubs in Column (2) rather than closed policy clubs in Column (3). The coefficient estimate on the interaction term of close-to-golf × *Championship Dummy* is nearly twice as large for reciprocal policy courses (0.267, t=3.34) compared to closed policy courses (0.143, t=2.25). The differences are more pronounced using DGTW characteristics adjusted portfolio returns in Columns (5) and (6). Column (6) shows that the coefficient estimate on the interaction term is insignificant for the close policy course specification.

Our main inferences remain unchanged using an alternative econometric specification that includes investor fixed effects, creating a difference-in-difference test. This compares the treated club against itself (investor fixed effect), while non-treated clubs act as a control group. We report these results in the Internet Appendix, Table A2. It is interesting to note that *Championship Dummy* is positive and statistically significant across all six columns. This implies an overall level effect for all investors in the state during the year of the 'Major.' One explanation is that these tournaments stimulate social activity across the state leading to benefits for all investors.

C. Precipitation Around Golf Courses

The evidence presented thus far suggests that the benefits of sociability are a likely source of the superior performance of close-to-golf investors. However, there are plausible

alternative interpretations of our results. For example, the location of close-to-golf investors may be correlated with better local information sources such as local media coverage, journalist, and other financial intermediaries that produce valuable information. These types of local effects are difficult to dismiss because the location of both golf courses and institutional investor headquarters are static.

We address these concerns and other alternatives explanations relating to regional effects by exploiting the fact that golf is a weather-dependent outdoor activity. Poor weather conditions such as rainfall and snow keeps golfers off the greens, lowering social activity around golf courses. If our sociability hypothesis is correct, investor performance will also vary with the time-series variation in social activity, as proxy by weather. To test this idea, we gather precipitation data from the National Climatic Data Center (NCDC). Precipitation is measured using the standardized precipitation index (SP01) designed to allow for comparison across locations with markedly different climates conditions.

To implement this causality test, we estimate performance regressions similar to the specification in Table II. We additionally include a weather dummy variable to indicate quarters when precipitation is low, representing 'good' weather for social activity, and an interaction term – close-to-golf measure × *Good Weather Dummy* – which tests how the performance of close-to-golf investors varies with precipitation conditions around golf courses.. We define the "Good Weather Dummy I" equal to one if the standardized precipitation index is below the sample median, and "Good Weather Dummy II" equal to one if the standardized precipitation index is below the state median.

The results in Table IV show that the better performance of close-to-golf investors concentrates during times when precipitation is low. Using market-adjusted returns,

Column (1) shows that the parameter estimate on the interaction term is positive and statistically significant (0.237, t=4.85), while the parameter estimate on close-to-golf loses statistical significance (0.011, t=0.29). Column (2) shows that the results are nearly identical using our second weather variable, "Good Weather Dummy II." The results remain statistically significant at better than the 1% level using style-, style & type-, and DGTW- adjusted returns in the remaining columns (3) to (8). The results are also similar using risk-adjusted returns, which we report in Internet Appendix Table A6, Panel B.

The inclusion of time fixed effects and investor style and type fixed effects in the regressions suggest that investor types and styles are not behind our findings. They also include state fixed effects, ruling out the possibility that these findings are due to differences across states. Using differences in guest policies, we find that the precipitation effects are stronger for open policy courses, consistent with our earlier findings. We report these results in Internet Appendix, Table A6. As a robustness test, we estimate a more stringent alternative econometric specifications of this regression by including investor fixed effects. Our findings continue to hold in this difference-in-difference test, which we present in the Internet Appendix, Table A2.

This test is perhaps our most important evidence supporting the sociability hypothesis since it is difficult to find alternative reasons for why the performance of close-to-golf institutional investors rises and falls with precipitation around the golf course. One possible story is that this effect may relate to weather-induced mood effects (Hirshleifer and Shumway, 2003) in institutional investors (Goetzmann et al., 2015). However, we believe this is unlikely for the following reasons. First, our weather definition is based on

precipitation, which is different than the cloud-cover definition used in weather-induced mood studies. Hirshleifer and Shumway (2003) shows that their findings are related to sunshine, and importantly, unrelated to rainfall and snow. Second, Goetzmann et al. (2015) show that while cloud-cover affects buy-sell trading behavior, it does not have permanent return effects.

5 Portfolio Strategy and Information Advantage

The pattern of superior performance of close-to-golf investors that we document in the previous section raises the question as to the source of this advantage. Close-to-golf investors may achieve these outcomes in a number of different ways. For example, investors may possess skilled trading ability (Puckett and Yan, 2011) or they may focus their portfolios in their areas of expertise. In this section, we carefully examine the portfolio characteristics of close-to-golf investors to potentially gain insights on the source of their information advantages.

A. Portfolio Strategies

Using portfolio holdings from the 13F filings, we calculate portfolio characteristics that are associated with better performance as documented in the prior literature: churn rates, portfolio concentration, and portfolio selectivity. The full details of variable construction are discussed in Section II.

We start by presenting univariate sorts, splitting institutional investors on the median close-to-golf measure. Figure II presents averages of the three portfolio strategy measures for the above and below median close-to-golf investor groups. The above median group of

close-to-golf institutional investors have 10% greater portfolio concentration (4.120 vs. 3.736), 14% greater portfolio selectivity (0.139 vs. 0.122), and 7% higher churn rates (0.571 vs. 0.534) than their more distant to golf counterparts. Panel C of Table I shows that all differences are statistically significant at the 1% level using both t-test and Wilcoxon tests. These results are consistent with close-to-golf investors possessing information advantages since holding more concentrated portfolios, more selective portfolios, and turning over their portfolios more frequently are related to informed trading behavior.

To test whether the univariate patterns hold in a multivariate setting, we estimate the following baseline panel regression:

$$Portfolio\,Strategy_{i,t} = \alpha + \beta \times \text{Close-to-Golf}_{i,t-1} + \delta \times X_{i,t-1} + \varepsilon_{i,t}$$

Portfolio strategy measures include investor portfolio churn rate, portfolio concentration, and portfolio selectivity. Close-to-golf$_{i,t-1}$ is the close-to-golf measure defined in Section 2 and $X_{i,t-1}$ is a vector representing total equity assets under management and institution age. As before, we include four fixed effects in our regression specifications: year-quarter fixed effects, state fixed effects, institution type fixed effects (i.e. bank, insurance, investment companies, investment advisors, and others), and investor style fixed effects (value, growth & income, growth). Standard errors are clustered by institutional investor.

The results in Table V show that the patterns from the univariate sorts are also present in the multivariate setting. Close-to-golf institutional investors have statistically significantly higher churn rates, greater concentration, and greater portfolio selectivity. The inclusion of institution type and investor style fixed effects suggest that our results are not related to these differences across investors, and our results are similar and in

some cases stronger with the inclusion of state fixed effects in columns (2), (4), and (6). The regressions results also show that these portfolio strategies tend to decrease in investor size and age. This points to the possibility that as institutional investors gain more assets under management, it becomes more difficult to implement these strategies.

In sum, our analysis suggests that on average, close-to-golf investors exhibit portfolio characteristics that associated with superior performance in the prior literature. This implies that these investors are likely informed. In this next section, we consider whether the information is local or distant in nature.

B. Ruling-out Local Information Advantages

We examine the possibility that our results are driven by the local holdings advantage documented in Baik, Kang, and Kim (2010). This test is important to help shed light on the source of the information advantage of close-to-golf investors. Our sociability hypothesis proposes that prestigious golf courses attract visitors from across the country, generating information flow of a distant nature. This implies two predictions. First, we expect that the superior performance of close-to-golf investors is not likely to be generated from local stocks. Second, if their information flow is from outside the local area, we would expect that close-to-golf investors are more likely to hold distant stocks

To test these predictions, we first re-examine our performance results by excluding all local stocks in the portfolio using the same regression specifications in Table II. We exclude a 'local' stock from the investor's portfolio either if the distance between the institutional investor's location and the firm's headquarter is less than 250 miles or if the institutional investor and firm are located in the same state.

Panel A of Table VI shows that there remains a statistically significant relation between the close-to-golf measure and market adjust returns after excluding all local stocks. Column (1) shows that the parameter estimate on the close-to-golf measure (0.137, t=4.00) is similar to the one using all stocks in Column (1) in Table II (0.125, t=3.70). This implies that the holdings of local stocks are not the primary source of better performance by close-to-golf investors. The results are relatively unchanged with the inclusion of state fixed effects in Column (2), and the parameter estimates on the close-to-golf measure are positive and statistically significant at the 1% level using style-adjusted returns in Columns (3) and (4), and style and type adjusted returns in Columns (5) and (6).

We find that the portfolio strategy results are also similar after excluding all local stocks from investor portfolios. Panel B of Table VI presents the results using the same portfolio strategy regression specifications used in Table V. Columns (1) shows that the relation between churn rates and the close-to-golf measures is positive and statistically significant, with parameter estimates (0.032, t=3.65) that are similar to the finding using all stocks in Column (1) of Table V (0.032, t=3.66). The inclusion of state fixed effects in Column (2) does not affect the results. The portfolio concentration test in Columns (3) and (4) show much stronger effects after the exclusion of local stocks. While these findings are not directly comparable to our earlier results due to the mechanical difference in portfolio composition, the coefficient estimate on the close-to-golf measure remains positive and statistically significant at better than the 1% level, suggesting that the exclusion of local stocks does not change our original inferences. Likewise, our findings from the portfolio selectivity tests in Columns (5) and (6) are also consistent with the

evidence presented in Table V.

For our second test, we calculate the average geographic distance between the investor's headquarter and the firm's headquarter for all the stocks in the portfolio. We call the logarithm of this measure *portfolio distance*. The details of the variable construction are summarized in the Appendix. We test if this distance relates to our close-to-golf measure using the following regression:

$$Portfolio\ Distance_{i,t} = a + \beta \times \text{Close-to-Golf}_{i,t-1} + \delta \times X_{i,t-1} + \varepsilon_{i,t}$$

where close-to-golf$_{i,t-1}$ is the close-to-golf measure defined in Section 2 and $X_{i,t-1}$ is a vector representing total equity assets under management and institution age. As before, we include four fixed effects in our regression specifications: year-quarter fixed effects, state fixed effects, institution type fixed effects (i.e. bank, insurance, investment companies, investment advisors, and others), and investor style fixed effects (value, growth & income, growth). Standard errors are clustered by institutional investor.

Table VII presents the tests using our portfolio distance measure. Column (1) shows that close-to-golf investors have greater portfolio distance. The coefficient estimate on the close-to-golf measure is positive and statistically significant at the 1% level, and remain significant with the inclusion of state fixed effects in Column (2). Columns (6) and (7) show that the results are stronger after excluding local stocks from the portfolio distance calculations. These findings suggest that close-to-golf investor are more likely to hold distant stocks, consistent with the idea that their information flow may be of a distant nature.

Next, we search for additional supporting evidence that the holding of distant stocks relates to social interactions with distant visitors. While we do not observe actual social

interactions, we employ the approach in our earlier identification tests that more distant visitors are more likely to visit golf courses with reciprocal policies and during times when Major Championships rotate into the state.

Consistent with the possibility of increased social interactions with distant visitors, Column (3) shows that portfolio distance increases during the years when Majors rotate into the state. The interaction term close-to-golf × *Championship Dummy* is positive and statistically significant, suggesting that the average portfolio distance of close-to-golf investors increases during these years. Column (4) show that while the close-to-golf measure constructed from reciprocal golf courses relates to greater portfolio distance, the parameter estimate on the close-to-golf measure for closed golf course is not statistically significant (Column (5)). The Chi-square test of the differences in the two parameter estimates are statistically significant (13.07***). The results are similar when we repeat these tests using only non-local stocks to calculate portfolio distance in Columns (8)-(10).

This set of results provides evidence that likely rules-out local information advantages as the source of better performance of close-to-golf investors. First, we find that the better investment performance of close-to-golf investors is not due to local stocks. They also tend to hold more distantly located stocks, particularly around more socially vibrant golf courses (i.e. open course policy) and during times of greater social activity (i.e. Major championships).

C. Co-movement with Nearby Close-to-Golf Investors

Investors located near each other may share similar investment signals and have access to similar information flow. This could occur if they communicate with the same

sources or socialize with each other. For example, Hong, Kubik, and Stein (2005) show that portfolios of mutual fund managers in the same city exhibit return co-movement, while Pool, Stoffman, and Yonker (2014) find that the co-movement is even greater amongst neighbors. Since investors located close to prestigious golf courses share similar benefits from sociability, their portfolio performance and strategies are also likely to exhibit particularly high correlations.

We examine how each investor's return and portfolio strategy co-moves with their geographically proximate neighbors, and whether these patterns are affected by the close-to-golf measure. For each institutional investor, we identify nearby investors as all the other investors that are located within 50 miles from the investor. Then, we calculate the average performance measures and average portfolio strategies of all nearby investors. All performance measures are either benchmark- or risk- adjusted to control for contemporaneous systematic trends.

We estimate a panel regression of portfolio return/strategy on the average of the nearby investors' return/strategy. The regressions include year-quarter fixed effects to capture additional time-varying systematic macro conditions. Standard errors are clustered by investor. The key variable of interest is the interaction term between the nearby return (nearby strategy) with the close-to-golf measure.

Panel A of Table VIII presents the results of the return co-movement tests. Column (1) shows that an investor's style-adjusted portfolio return significantly co-moves with its local neighbors' benchmark-adjusted returns, consistent with the findings in Hong, Kubik, and Stein (2005). The patterns are similar using style- and type- return adjustment (Column 3) or DGTW return adjustment (Column 5). Our focus is on the interaction

term - nearby return × close-to-golf measure - which we include in Columns (2), (4) and (6). The coefficient estimate on the interaction term is positive and statistically significant at better than the 1% level across all three return adjustments, implying that the co-movement of close-to-golf investors with their nearby investor is 22% to 46% greater that their distant-to-golf counterparts. We interpret this evidence to support our hypothesis that prestigious golf courses stimulates the social vibrancy in the local area, increasing the sociability of nearby investors.

Panel B of Table VIII presents portfolio strategy results using the same regression specification. Columns (1), (3), and (6) show that an investor's portfolio strategy is correlated with nearby investors. The interaction term between the nearby strategy and the close-to-golf measure is also positive and statistically significant across all three portfolio strategies, suggesting that correlations increase particularly when investors are located near prestigious golf courses. In particular, portfolio concentration is nearly twice as correlated with nearby investors if investors are located near prestigious golf courses.

The results of the return correlation and strategy correlation tests lend support to our sociability hypothesis. We find that investors located near to prestigious golf courses exhibit high correlations with nearby investors that exceed the location effects documented in previous literature. We argue that this evidence is consistent with the greater effects of social activity around prestigious golf courses.

D. Alternative Measures of Distance and Identification of Prestigious Golf Courses

We construct our primary close-to-golf measure as a relative within state measure due to the concern that state-level differences may drive our results. While this relative

measure helps to address this particular issue, it may not reflect the actual distance to the golf course as experienced by investors.

To insure that our results are robust to the measurement of distance, we construct two alternative measures using different distance calculations. First, we create an unstandardized value of the close-to-golf measure by using the negative value of the logarithm of the average distance to prestigious golf courses in each state. We find that the investment performance and portfolio strategy results are unchanged using this alternative measure. We present these results in the Internet Appendix: Table A3.

Another potential concern with measuring distance within state is that certain investor may be located near state borders and may conveniently access nearby golf courses in other states. This makes our within state assumption potentially restrictive and noisy. Therefore, we create a measure based on the number of prestigious golf course within a 100 mile radius of the investors. We find that our main inferences are unchanged using this measure. The full results are available in the Internet Appendix: Table A3.

Next, we re-create our close-to-golf measure using an alternative definition of 'prestigious' golf courses. While the benefit of using the top decile green cut-off is in its simplicity, green fees do not perfectly capture golf course quality. Also, green fees may be associated with local regional wealth, which may be potentially correlate with investor performance. Our alternative definition of 'prestigious' golf courses uses the top 20 best golf courses ranked within each state by Golflink.com. The main findings from our investor performance and portfolio strategy tests are quantitatively similar using the Golflink.com based measure. The full results are available in the Internet Appendix: Table A4.

As a second approach to test the validity of our use of 'prestigious' golf courses, we

expect that the closeness to *non*-prestigious golf courses is likely to have no effect on institutional investors' portfolio performance and strategies. These golf courses are unlikely to attract distant golfers and visitors especially business professionals with high net worths, reducing the sociability benefits to nearby investors. To identify non-prestigious courses, we use golf courses in the bottom decile of green fees, and re-estimate our main analysis. Indeed, we find no relation between nearness to these golf courses and investor performance and portfolio strategies. We report the full set of results in the Internet Appendix: Table A5.

6 Stock Level Analysis

Our main evidence suggests that close-to-golf investors possess information advantages in the stocks they own. While the analysis in previous sections focuses along the institutional investor dimension, in this section, we examine performance on the stock dimension by calculating a weighted average close-to-golf measure based on institutional investors' holdings for each stock. For each stock-quarter, we create a close-to-golf weighted ownership measure calculated as follows:

$$Close\text{-}to\text{-}golf\ \ weighted\ \ Ownership_{i,t} = \sum_{j \in Q}^{Q} w_{i,j,t} \times Close\text{-}to\text{-}golf\ _{i,j,t}\ ,$$

where for stock i at time t, $w_{i,j,t}$ represents the percentage ownership by investor j, close-to-golf represents the close-to-golf measure of investor j, and Q represents the set of all institutional investors holding the stock. To ensure that our measure does not reflect the information advantages inherent in local institutional ownership, we create an alternative measure that excludes all local institutional investor holdings.

Also, we conduct stock level analysis to explore the link between ownership by close-to-golf investors and information asymmetry. If the information advantages of close-to-golf investors are large enough, it may potentially effect the probability of informed trading (PIN) and stock liquidity.

A. Close-to-golf Return Predictability

First, we examine whether our performance results are also present when we form calendar time portfolios at the stock-level based on holdings of close-to-golf investors. At the beginning of each month from January 1991 to December 2011, stocks are sorted into quintiles based on the previous quarter-end close-to-golf weighted ownership measure. Portfolio 1 has the lowest close-to-golf weighted ownership measure. Portfolio 5 has the highest close-to-golf weighted ownership measure. Equally-weighted returns for the five portfolios are calculated over the month. For each portfolio, we report the raw average portfolio return, the abnormal return (i.e., alpha) from the CAPM 1-factor (market factor) model, the alpha from the Fama-French 3-factor (market factor, SMB, HML) model, and the alpha from the Carhart 4-factor (market factor, SMB, HML, and momentum factor) model. "Long Portfolio 5 & Short Portfolio 1" is the difference in the returns between the highest and lowest close-to-golf portfolios.

Table IX presents the results of the portfolio sorts. Panel A shows that across all four return measures, the highest close-to-golf weighted ownership measure portfolio (Portfolio 5) outperforms its lowest counterpart. The long-short portfolio return is positive and statistically significant for all return measures, generating a monthly alpha of 0.45% (t= 3.16) using the Carhart 4-factor model.

Panel B shows that the results are similar when we exclude local institutional investors from the close-to-golf weighted ownership measure. In this panel, we re-calculate the close-to-golf weighted ownership measure as before but exclude all local institutional investors. We define local investors as any investor located in the same state or within 250 miles of the firm's headquarter. The results show that the long-short portfolio returns continue to generate positive and statistically significant alphas with a monthly alpha of 0.37% (t=2.74) using the Carhart 4-factor model.

In sum, these results support our investor level findings that close-to-golf investors possess information advantages. It also suggests that the aggregation of close-to-golf investors' holdings may provide valuable trading signals.

B. Probability of Informed Trading (PIN)

Next, we examine whether ownership by close-to-golf investors affects the probability of informed trading measure (PIN) at the stock level. We estimate panel regressions of PIN on the close-to-golf weighted ownership measure using the following equation:

$$\text{PIN}_{i,t} = a + \beta \times \textit{Close - to - Golf weighted Ownership}_{i,t\text{-}1} + \delta \times X_{i,t\text{-}1} + \varepsilon_{i,t}$$

where $X_{i,t\text{-}1}$ is a vector of firm and stock characteristics including firm size, market-to-book, book leverage, profitability, cash holding, past stock return, and return volatility. The regressions include institutional ownership and institutional investor turnover so that the close-to-golf weighted ownership measure does not simply reflect institutional ownership or investor horizon. All regressions include time and industry fixed effects.

Table X presents regression results using the PIN measure. The first column shows that the parameter estimate (0.034***, t=6.94) on the close-to-golf weighted ownership

measure is significantly and positively related to PIN. One standard deviation increase in close-to-golf increase the stock PIN by 2% relative to the sample average. The inclusion of state fixed effects in column (2) and firm fixed effects in column (3) does not materially change the parameter estimate. The next three columns report results using the non-local close-to-golf weighted ownership measure. We find similar results across these specifications.

We note that the close-to-golf weighted ownership measure does not simply reflect ownership by institutional investors. For example, Column (1) shows negative and statistically significant parameter estimates on institutional ownership (–0.082***, t=–32.40). This is directionally opposite to the parameter estimate on the close-to-golf weighted ownership measure as we discuss above.

C. Amihud Illiquidity

Liquidity also reflects information asymmetry. Greater information asymmetry among investors will cause greater stock illiquidity, all else equal. We explore whether the close-to-golf weighted ownership measure relates to stock-level liquidity by estimating the same regression model in the PIN analysis, using the ILLIQ measure developed in Amihud (2002).

Table XI shows that the close-to-golf weighted ownership measure significantly affects liquidity. A one standard deviation increase in the close-to-golf measure increases the stock illiquidity by 5% relative to the sample average. The parameter estimate remains statistically significant with the inclusion of state fixed effects in column (2) and firm fixed effects in column (3). The results do not materially change using the non-local holdings-

weight measure reported in Columns (4)-(6).

To establish a causal relation, we employ precipitation levels around golf courses to instrument for the close-to-golf weighted ownership and then link it to stock liquidity in an instrumental variables regression. In particular, we perform an analysis at the firm-investor state level. In each quarter, for every stock i and State J pair, we calculate the close-to-golf weighted ownership among all investors that are located in State *J*. Then, we regress the weighted close-to-golf on the average precipitation among all the selected golf courses in State J. We verify the relevance of the instrument using the following equation:

$$Close\text{-}to\text{-}Golf\ weighted\ Ownership_{i,J,t} = \alpha + \beta \times Golf\ Course\ Precipitation_{J,t} + \delta \times X_{i,t\text{-}1} + \varepsilon_{i,t}.$$

Panel A of Table XII presents the results.[23] We find that the average precipitation among the selected golf courses is a strong predictor of the close-to-golf weighted ownership measure. The coefficient estimates are positive and statistically significant across all specifications. Next, we use the average precipitation across golf courses in different states, estimated from Panel A, to serve as an instrument for the close-to-golf weighted ownership at the stock level.

Panel B reports the second-stage regressions results. In columns (1)-(3), we use the instrumented measure based on the weighted close-to-golf among all the investors. In columns (4)-(6), we use the instrumented measure based on the weighted close-to-golf among the non-local investors. In columns (3) and (6), we include firm fixed effects in the

[23] We control for investor and state fixed effects in all specifications. In columns (1)-(3), we use the full sample of investors to construct the weighted close-to-golf measure, while in columns (4)-(6) we only consider non-local investors. We identify an investor as non-local if it is located in a different state and the distance with the firm headquarter is more than 250 miles. In columns (3) and (6), we further include firm fixed effects in the regressions.

regressions. Across all specifications, the instrumented holdings weighted close-to-golf is positive and statistically significant. These results help to establish a causal link that ownership by close-to-golf investors do have significant impact on stock liquidity.

7 Conclusion

We hypothesize that a vibrant social environment potentially improves investor performance because these investors are more likely to have better information flow. We propose prestigious golf courses as social venues that may foster such social interaction and communication, particularly amongst business professionals and delegated asset managers.

Using the distance to prestigious golf courses to proxy for the intensity of sociability of institutional investors, we find evidence that institutional investors located close to prestigious golf courses ("close-to-golf" investors) exhibit better benchmark- and risk-adjusted performance. Analysis of the portfolio holdings of close-to-golf investors reveal that their portfolios are more concentrated, turnover more frequently, and exhibit more selectivity/activity – characteristic hallmarks of active trading with information advantages.

Since social interactions are difficult to observe, it may be easy to dismiss our findings as the result of data mining or spurious correlation. To provide plausible identification, we exploit potentially exogenous variation in social vibrancy around golf courses. We find that good performance occurs when 1.) golf courses have open/reciprocal guest policies 2.) 'Major' championships rotate into the state 3.) low precipitation conditions allows for more social interactions. These tests help to rule out alternative explanations including

self-selection or local regional conditions (i.e. financial centers, local residential wealth). Our evidence supports the hypothesis that sociability affects investment outcomes and highlights the importance of social amenities in stimulating social interactions.

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Appendix: Variable Definitions

Investor Level Variables

Close-to-golf*:* First, we identify a set of prestigious golf courses. We obtain the data on the universe of U.S. golf courses from the golf course database provided by www.coursedatabase.com. The database covers 15479 U.S. golf courses (last updated on January 2013) with detailed information on the zip codes, guest policy, built year, and green fees. We focus on established golf courses that are built before 1991 which is the starting year of the sample period of institutional investors in this paper. We rank the universe of golf courses by their green fees and select the top decile courses as the set of prestigious golf courses. Second, for each institutional investor, we calculate a measure of distance-to-golf as the average geographical distance between the investor and the selected golf courses in the same state. As different states have different size and distribution of investors, we standardize the measure of distance-to-golf as divided by the value of state median distance-to-golf. Then, we define the measure of close-to-golf as:

Close-to-golf=*1-standardized distance-to-golf.*

Investor Size: the log value of the amount of investor portfolio holdings.

Investor Age: the log value of the number of years since the investor first appears in the CDA/Spectrum 13F database.

Portfolio Return (market adjusted, investor style adjusted, investor style & type adjusted): For each investor, we first calculate the holdings-based quarterly portfolio returns. We define the market adjusted portfolio as the difference between the raw portfolio return and the CRSP value-weighted market return in the same quarter. Similarly, we calculate the style adjusted portfolio return as the raw return minus the median return among investors belonging to the same investment style. And we calculate the style & type adjusted portfolio return as the raw return minus the median portfolio return among investors having the same investor type and investment style.

Portfolio Return (DGTW characteristics adjusted): We follow the methodology of Daniel, Grinblatt, Titman and Wermers (1997) to calculate the DGTW adjusted portfolio returns. In every quarter t, and for each institutional investor j, we calculate the adjusted portfolio return as $\mathrm{DGTW}_{j,t} = \sum_{i=1}^{N} \omega_{i,t-1}\left(\mathrm{Ret}_{i,t} - \mathrm{Benchmark}_{i,t}\right)$, where $\omega_{i,t-1}$ is the portfolio weight on stock i at the end of quarter t-1, $\mathrm{Ret}_{i,t}$ is the quarter t return of stock i, and $\mathrm{Benchmark}_{i,t}$ is the quarter t return of the characteristic-based benchmark portfolio that is matched to stock i along the dimensions of size (market value of equity), book-to-market ratio, and momentum.

Portfolio Alpha (*Carhart 4-factor, CAPM 1-factor, Fama-French 3-factor*): We estimate the portfolio alphas from the Fama-French factor models. We first calculate the monthly holdings-weighted investor returns using the previous quarter end holdings value as the weight. For each investor month, we use the previous 60 months of observations and regress the excess portfolio returns on the risk factors. We use the CAPM 1-factor model, the Fama-French 3-factor model and the Carhart 4-factor model and estimate the factor loadings accordingly. Then we calculate the portfolio alpha as the raw portfolio return in excess of the risk free rate minus the expected

returns equal to the factor returns in the contemporaneous month times the estimated factor loadings.

Portfolio Churn Rate: The portfolio churn rate captures how frequently an investor rotates his positions on all the stocks of the portfolio. Investor-level portfolio information comes from CDA/Spectrum, a database of quarterly 13-F filings of asset managers to the SEC. If we denote the set of companies held by investor i by Q, the churn rate of investor i at quarter s is:

$$Churn\ Rate_{i,s} = \frac{\sum_{j \in Q} \left| N_{i,j,s} P_{j,s} - N_{i,j,s-1} P_{j,s-1} - N_{i,j,s-1} \Delta P_{j,s} \right|}{\sum_{j \in Q} \frac{N_{i,j,s-1} P_{j,s-1} + N_{i,j,s} P_{j,s}}{2}},$$

where $P_{j,s}$ and $N_{i,j,s}$ are the price and number of shares of stock j held by investor i.

Portfolio Concentration: Portfolio concentration represents the investor's concentration ratio (Herfindahl) of its portfolio. If we denote the set of stocks held by investor i by Q and $w_{i,j,t}$ the fraction invested in stock j, portfolio concentration is defined as: $\text{Herfin}_{\text{i,t}} = \sum_{\text{j} \in \text{Q}} \text{w}_{\text{i,j,t}}^2$.

Portfolio Selectivity (Carhart 4-factor model): In every quarter t, and for each institutional investor j, we calculate its daily buy-and-hold portfolio returns based on its previous quarter-end stock holdings. Then, for each investor-quarter (j, t), we compute the $\text{R}^2_{\text{j,t}}$ from the following Carhart four-factor regression:

$$r_{j,s} - rf_s = a_j + \beta_j \left(MKT_S\text{-}rf_s \right) + s_j SMB_s + h_j HML_s + u_j UMD_s + \varepsilon_{j,s}, \quad s \in Quarter\ t$$

where $r_{j,s}$ is the daily portfolio return of investor j on date s, and the right-hand side variables include the excess market return over the risk-free rate (MKT_s-rf_s), the return difference between small and large capitalization stocks (SMB_s), the return difference between high and low book-to-market stocks (HML_s), and the return difference between stocks with high and low past returns (UMD_s). The data of the risk-free rate, market return, SMB, HML and UMD are obtained from Kenneth French's website. Then, for investor-quarter (j, t), we define the portfolio selectivity at the investor level as:

$$Portfolio\ Selectivity_{j,t} = 1 - R^2_{j,t}$$

Portfolio Distance: Portfolio distance measures the weighted average distance between the institutional investor and its portfolio holdings. If we denote the set of stocks held by investor i by Q and $w_{i,j,t}$ be the fraction of investor i invested in stock j, the portfolio distance is defined as:

$$Portfolio\ Distance_{i,t} = \sum_{j \in Q} w_{i,j,t} 3963 * \arccos(\sin(lat_i) \sin(lat_j) + \cos(lat_i) \cos(lat_j) \cos(lon_i - lon_j))$$

where (lat_i , lon_i), (lat_j , lon_j) are the (latitude, longitude) for investor i and stock j in radian degrees.

Firm Level Variables

Close-to-golf *weighted ownership:* For each investor quarter, it is the close-to-golf weighted ownership among all the institutional investors that hold the stock.

Institutional ownership: For stock i at quarter t, it is the ratio of total institutional holdings divided by the number of shares outstanding.

Stock return: the cumulative stock return in a year.

Return volatility: the standard deviation of daily stock returns in a year/quarter. To relate to the idiosyncratic volatility literature, we also compute the idiosyncratic volatility of stocks using the standard deviation of the regression residuals estimated from the Carhart 4-factor model.

Amihud illiquidity: the Amihud (2000) illiquidity measure, at annual frequency. It averages the square root of the ratio of the absolute price change divided by daily dollar volume over each day in year t. It is calculated as:

$$Illiquidity_{i,t} = \frac{1}{D_t} \sum_{Days \in t} (1000 * \sqrt{\frac{|\text{daily return}|}{|\text{daily dollar volume}|}})$$

where D_t is the number of days in year/quarter t.

Firm size: the log value of book assets (Compustat Items, AT).

Market-to-book: market value of assets/book assets, where the market value of assets is calculated as: stock price (PRCC_F) * shares outstanding (CSHO) + short term debt(DLC) + long term debt(DLTT) + preferred stock liquidation value (PSTKL) – deferred taxes and investment tax credits (TXDITC).

Book leverage: total debt/book assets, where the total debt is long term debt (DLTT) + short term debt (DLC).

Profitability: operating income before depreciation (OIBDP)/book assets (AT).

Cash holding: cash and short-term investments (CHE)/book assets (AT).

Figure I
Quarterly Portfolio Excess Returns of Institutional Investors Sorted on the Close-to-golf Measure

This figure presents univariate sorts of institutional investors in our sample based on above and below median close-to-golf measure. Benchmark adjusted returns are in the upper portion and include market-, style-, and style & type- adjusted returns. Risk- and characteristics- adjusted returns are in the bottom portion and include CAPM 1-factor Alpha, Fama-French 3-factor Alpha, Carhart 4-factor Alpha, and DGTW-adjusted returns. The details of variable construction are available in the Appendix.

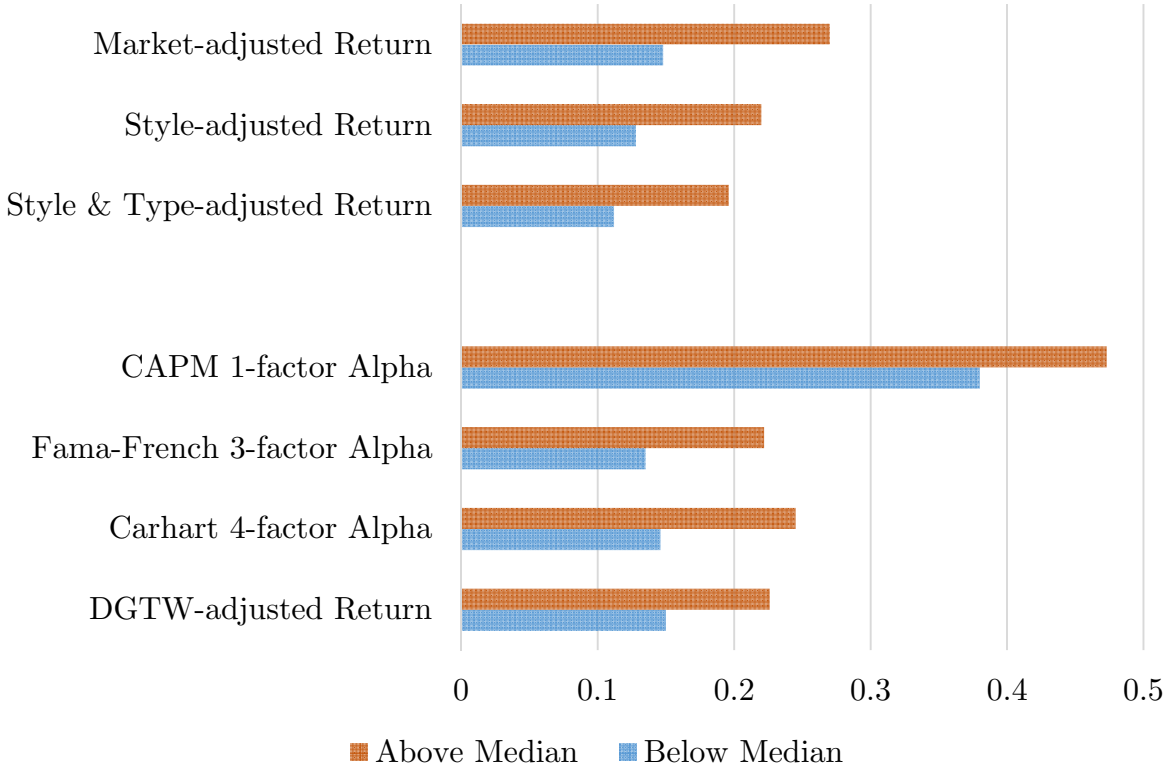

Figure II
Portfolio Strategies of Institutional Investors Sorted on the Close-to-golf Measure

This figure presents univariate sorts of institutional investors in our sample based on above and below median close-to-golf measure. Portfolio strategy measures including concentration, selectivity, and churn rate. The construction of these variables are available in the Appendix.

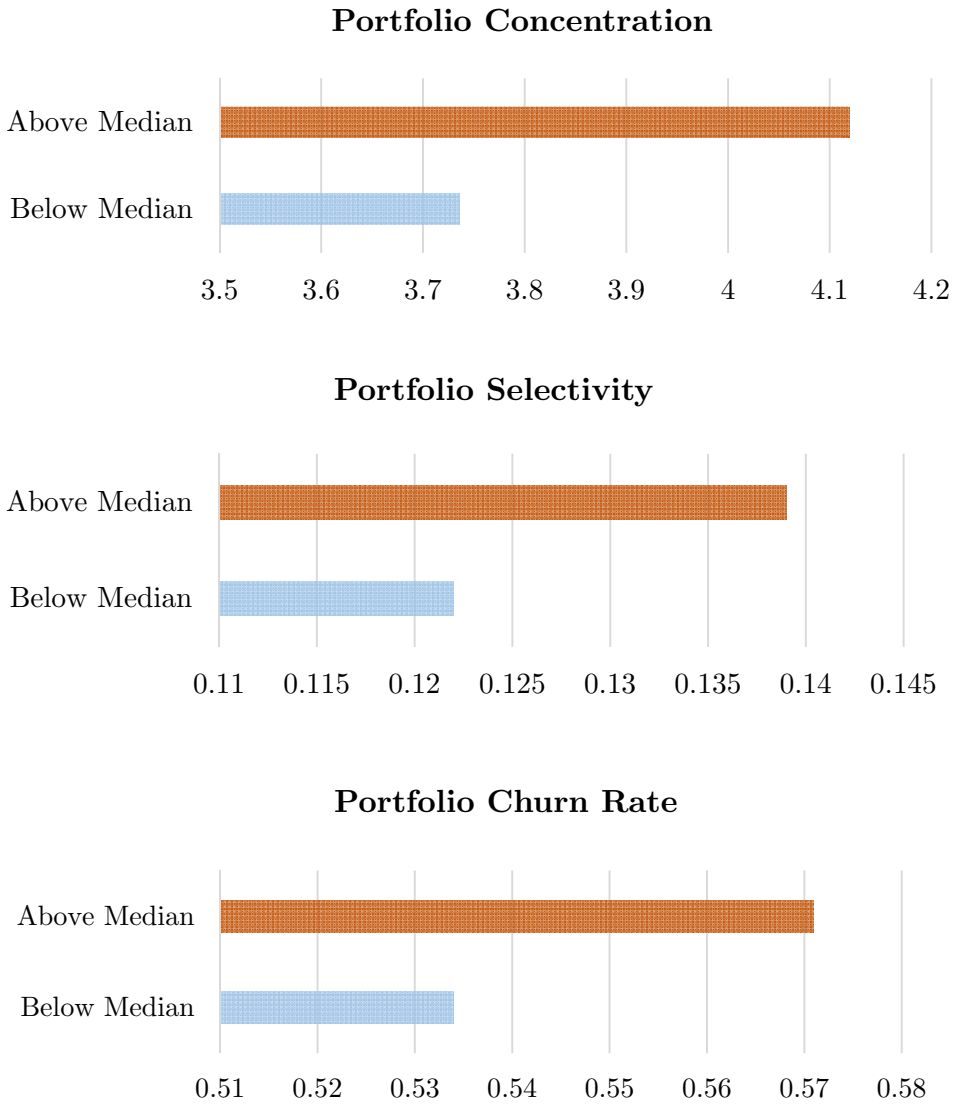

Table I
Summary Statistics

This table presents summary statistics of the main variables used in the study. Panel A reports the characteristics of the selected prestigious golf courses.

Panel A: Prestigious Golf Courses by Top Decile Green Fees

The complete universe of U.S. golf courses is from www.coursedatabase.com. The database covers 15,479 US golf courses (last updated on January 2013) with detailed information on the zip code, guest policy, built year, and green fees. We only include established golf courses built before 1991 which is the starting year of the sample period of institutional investors in this study. We rank the full sample of golf courses by their green fees and select the top decile courses as the set of prestigious golf courses. For every state, we report the average minimum green fees, the average built year, and the number of the selected golf courses.

State Name	State Code	Average Minimum Green Fee ($)	Average Built Year	Number of Selected Golf Courses
Alabama	AL	93	1968	2
Arizona	AZ	94	1975	43
Arkansas	AR	82	1963	4
California	CA	96	1926	115
Colorado	CO	81	1970	18
Connecticut	CT	77	1936	13
Delaware	DE	67	1975	2
Florida	FL	84	1957	121
Georgia	GA	94	1960	18
Idaho	ID	84	1960	5
Illinois	IL	75	1869	64
Indiana	IN	99	1944	6
Iowa	IA	86	1937	3
Kansas	KS	102	1951	7
Kentucky	KY	75	1964	3
Louisiana	LA	78	1971	8
Maine	ME	65	1934	2
Massachusetts	MA	72	1938	34
Michigan	MI	71	1931	24
Minnesota	MN	79	1920	12
Nevada	NV	126	1975	16
New Hampshire	NH	75	1921	1
New Jersey	NJ	68	1940	28
New Mexico	NM	71	1961	3
New York	NY	75	1924	37
North Carolina	NC	81	1805	13
Ohio	OH	80	1934	28
Oklahoma	OK	81	1941	11
Oregon	OR	106	1931	8
Pennsylvania	PA	76	1895	51
Rhode Island	RI	100	1894	2
South Carolina	SC	112	1891	22
Texas	TX	73	1976	7
Utah	UT	85	1943	3
Vermont	VT	68	1610	6
Virginia	VA	80	1973	5
Washington	WA	89	1943	15
West Virginia	WV	55	1954	1
Wisconsin	WI	75	1944	16
Wyoming	WY	138	1970	3

Table I (Continued)

Panel B: Summary Statistics of Main Variables

The data on quarterly stock holdings of institutional investors are from Thomson CDA/Spectrum (13F) from 1990 to 2011. The data on daily and monthly stock returns, trading volumes and annual accounting information are from Compustat and CRSP. For each variable, we report the mean, the median and the standard deviation. The sample includes 90964 investor-quarter observations and 71051 firm-year observations.

Variables	Frequency	Mean	Median	Std. Dev.	N
Investor Level Variables					
Close-to-golf	Quarter	-0.092	0.000	0.444	90964
Investor Size ($millions)	Quarter	4248.09	437.26	21107.82	90964
Investor Age	Quarter	2.228	2.342	0.756	90964
Portfolio Return (Raw)	Quarter	2.486	3.260	9.908	90964
Portfolio Return (Market-adjusted)	Quarter	0.201	0.000	4.392	90964
Portfolio Return (Style-adjusted)	Quarter	0.168	0.000	4.149	90964
Portfolio Return (Style & Type-adjusted)	Quarter	0.148	0.000	4.054	90964
Portfolio Return (DGTW-adjusted)	Quarter	0.183	0.006	3.715	90964
Portfolio Alpha (CAPM 1-factor)	Quarter	0.420	0.204	4.233	84218
Portfolio Alpha (Fama-French 3-factor)	Quarter	0.172	0.059	3.778	84218
Portfolio Alpha (Carhart 4-factor)	Quarter	0.188	0.053	3.809	84218
Portfolio Churn Rate	Quarter	0.550	0.368	0.437	90964
Portfolio Concentration	Quarter	3.901	2.374	5.037	90964
Portfolio Selectivity	Quarter	0.130	0.076	0.144	90964
Log (Portfolio Distance)	Quarter	6.871	6.849	0.335	90964
Firm Level Variables					
Close-to-golf weighted ownership	Year	-0.031	-0.013	0.118	71051
Firm Size	Year	5.410	5.281	2.019	71051
Market-to-Book	Year	1.920	1.184	2.996	71051
Book Leverage	Year	0.215	0.174	0.207	71051
Profitability	Year	0.061	0.107	0.332	71051
Cash Holding	Year	0.187	0.089	0.226	71051
Institutional Ownership	Year	0.410	0.374	0.290	71051
Investor Turnover	Year	0.528	0.514	0.105	71051
Yearly Return	Year	0.187	0.061	0.722	71051
Stock Return Volatility	Year	0.038	0.033	0.024	71051
Illiquidity	Year	0.447	0.187	0.581	71051

Table I (Continued)

Panel C: Univariate Sorts of Portfolio Strategy/Performance by Close-to-Golf

This table presents univariate tests on the relation between the close-to-golf measure and investor performances and portfolio strategies. We split the sample by the median close-to-golf measure and we perform both t-tests and Wilcoxon tests to compare the differences between the two subsamples. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively.

Main Dependent Variables	Sample Split by Close-to-golf				
	Below median	Above Median	T-test	Wilcoxon	N
Portfolio Returns (Market-adjusted)	0.148	0.270	4.12***	4.48***	90964
Portfolio Returns (Style-adjusted)	0.128	0.220	3.31***	3.83***	90964
Portfolio Returns (Style & Type-adjusted)	0.112	0.196	3.05***	3.53***	90964
Portfolio Return (DGTW-adjusted)	0.150	0.226	3.06***	2.71***	90964
Portfolio Alpha (CAPM 1-factor)	0.380	0.473	3.14***	3.75***	84218
Portfolio Alpha (Fama-French 3-factor)	0.135	0.222	3.30***	3.80***	84218
Portfolio Alpha (Carhart 4-factor)	0.146	0.245	3.70***	3.44***	84218
Portfolio Churn Rate	0.534	0.571	12.73***	13.41***	90964
Portfolio Concentration	3.736	4.120	11.36***	19.72***	90964
Portfolio Selectivity	0.122	0.139	17.74***	21.32***	90964
Log (Portfolio Distance)	6.853	6.894	17.95***	17.90***	90964

Table II
Closeness to Golf and Investment Performance

This table presents panel regression results of investment performance on the Close-to-golf measure. We estimate the following equation:

$$Portfolio\ Excess\ Returns_{i,t} = a + \beta \times Close\text{ - }to\text{ - }Golf_{i,t-1} + \delta \times X_{i,t-1} + \varepsilon_{i,t}$$

where portfolio excess returns are benchmark -adjusted (Panel A) and risk-adjusted (Panel B). Panel headers provide full details. We report regression specifications with and without state fixed effects. Investor style and investor type definitions are from Brain Bushee's website. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors clustered by investor. T-statistics are given in parentheses.

Panel A: Benchmark-adjusted Portfolio Returns

This panel presents results using benchmark-adjusted returns including the market adjusted portfolio return, the investor style adjusted portfolio return and the investor type and style adjusted portfolio return. For each investor, we first calculate the holdings-based quarterly portfolio returns. We define the excess returns as the difference between the raw portfolio return and either the market portfolio, the median portfolio return among all investors in the same investor style, or the median return among investors belonging to the same investment type and style.

Dependent variable:	Market Adjusted Return		Style Adjusted Return		Style & Type Adjusted Return	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.125***	0.136***	0.123***	0.133***	0.124***	0.135***
	(3.70)	(3.84)	(3.93)	(4.03)	(3.88)	(4.03)
Log (Investor Size)	-0.028***	-0.035***	-0.011	-0.017*	-0.008	-0.014
	(-2.73)	(-3.40)	(-1.12)	(-1.77)	(-0.88)	(-1.52)
Log (Investor Age)	-0.071**	-0.073***	-0.074***	-0.077***	-0.082***	-0.085***
	(-2.56)	(-2.67)	(-2.83)	(-3.00)	(-3.21)	(-3.39)
Investor Type FE	Y	Y	Y	Y	Y	Y
Investor Style FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Standard Error Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	90964	90964	90964	90964	90964	90964
R-squared	0.016	0.017	0.010	0.012	0.008	0.009

Table II (continued)

Panel B: Risk- and Characteristic- Adjusted Portfolio Returns

This panel presents results using risk- and characteristic-adjusted portfolio returns. We follow the methodology developed in Daniel, Grinblatt, Titman, and Wermers (1997) to calculate the DGTW adjusted portfolio returns. Portfolio alphas are calculated based on Fama-French/Carhart factor models. We first calculate the monthly holdings-weighted investor returns using the previous quarter end holdings value as the weight. Then for each investor month, we use the previous 60 months of observations and regress the excess portfolio returns on the Fama-French risk factors to obtain factor loadings. We use the CAPM 1-factor model, the Fama-French 3-factor model and the Carhart 4-factor model and estimate the factor loadings accordingly. The portfolio alpha is the raw portfolio return in excess of the risk free rate minus the expected returns equal to the factor returns in the contemporaneous month times the estimated factor loadings. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dependent variable:	DGTW Adjusted Return		CAPM 1-factor Alpha		Fama-French 3-factor Alpha		Carhart 4-factor Alpha	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Close-to-golf	0.058**	0.067***	0.107***	0.123***	0.090***	0.105***	0.105***	0.126***
	(2.47)	(2.79)	(3.02)	(3.31)	(3.42)	(3.63)	(3.63)	(4.20)
Log (Investor Size)	-0.021***	-0.023***	-0.032***	-0.038***	-0.011	-0.020**	-0.020**	-0.024***
	(-2.60)	(-2.91)	(-2.98)	(-3.57)	(-1.27)	(-2.26)	(-2.26)	(-2.74)
Log (Investor Age)	-0.068***	-0.071***	0.016	0.012	-0.048*	-0.053*	-0.053*	-0.057**
	(-3.32)	(-3.44)	(0.48)	(0.37)	(-1.73)	(-1.93)	(-1.93)	(-2.08)
Investor Type, Style FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	-	-	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	90,964	90,964	84,218	84,218	84,218	84,218	84,218	84,218

Table III
Social Interaction and Investment Performance: Guest Policy & Major Championships

This table examines the relation between social interaction and investment performance using differences in guest policy and Major Championships across golf courses. Panel A presents analysis using differences in golf course guest policy. Panel B presents analysis using rotating locations of Major Championships.

Panel A: Golf Course Guest Policy

Golf courses with guest policies that are open/reciprocal are likely to be more socially vibrant than ones that are closed. We separately calculate two versions of the close-to-golf measure using only reciprocal guest policy golf courses (Close-to-golf Reciprocal) and closed guest policy golf courses (Close-to-golf Closed). The regression specifications include investor type fixed effects, investor style fixed effects, year-quarter fixed effects and state fixed effects. Standard errors are clustered at the investor level. We perform Chi-square tests to test the difference in coefficients. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dependent Variable:	Market Adjusted Return		Style Adjusted Return		Style & Type Adjusted Return		DGTW Adjusted Return	
	Reciprocal	Closed	Reciprocal	Closed	Reciprocal	Closed	Reciprocal	Closed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Close-to-golf Reciprocal	0.148***		0.146***		0.158***		0.077***	
	(3.94)		(4.00)		(4.21)		(3.11)	
Close-to-golf Closed		0.063**		0.058**		0.070***		0.036*
		(2.28)		(2.31)		(2.74)		(1.93)
Log (Investor Size)	-0.029***	-0.029***	-0.011	-0.011	-0.013	-0.013	-0.020**	-0.020**
	(-2.81)	(-2.78)	(-1.18)	(-1.15)	(-1.38)	(-1.36)	(-2.44)	(-2.42)
Log (Investor Age)	-0.089***	-0.090***	-0.091***	-0.091***	-0.098***	-0.098***	-0.076***	-0.077***
	(-3.15)	(-3.17)	(-3.42)	(-3.44)	(-3.78)	(-3.79)	(-3.63)	(-3.64)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Quarter FE, State FE	Y	Y	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	86,132	86,132	86,132	86,132	86,132	86,132	86,132	86,132
Chi-square Tests	5.17**		6.78***		6.14**		2.77*	

Table III (Continued)

Panel B: Major Golf Championships

Two of the four most prestigious annual tournaments in professional golf (known as the Major Championships) change locations each year. The U.S. Open, hosted by the United States Golf Association, and the PGA Championship, hosted by the Professional Golfers' Association of America, are played at various locations in the United States. We define a dummy variable "Championship Dummy" equal to 1 if the state hosts a "U.S. Open" or "PGA Championship" in the year and 0 otherwise. Our variable of interest is the interaction between the close-to-golf and the championship dummy. All specifications include investor type and style fixed effects as well as state fixed effects. Columns (1)-(3) present investor style adjusted portfolio return as the dependent variable, and columns (4)-(6) present DGTW adjusted portfolio return as the dependent variable. In both cases, we consider the close-to-golf measure using the full set of prestigious golf courses as well as separate measures by distinguishing the guest policies of these golf courses. We always cluster the errors at the investor level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Dependent variable:	Style Adjusted Return			DGTW Adjusted Return		
	All Golf Courses	Guest Policy: Reciprocal	Guest Policy: Closed	All Golf Courses	Guest Policy: Reciprocal	Guest Policy: Closed
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf ×	0.256***	0.267***	0.143**	0.183***	0.200***	0.052
Championship Dummy	(3.11)	(3.34)	(2.25)	(3.06)	(3.38)	(1.05)
Close-to-golf	0.080**	0.091**	0.036	0.029	0.033	0.027
	(2.20)	(2.34)	(1.44)	(1.04)	(1.22)	(1.41)
Championship Dummy	0.227***	0.234***	0.224***	0.109**	0.113***	0.100**
	(4.46)	(4.56)	(4.38)	(2.54)	(2.60)	(2.32)
Log (Investor size)	-0.017*	-0.012	-0.012	-0.023***	-0.020**	-0.020**
	(-1.81)	(-1.29)	(-1.23)	(-2.91)	(-2.48)	(-2.44)
Log (Investor age)	-0.076***	-0.090***	-0.091***	-0.070***	-0.076***	-0.077***
	(-2.96)	(-3.39)	(-3.43)	(-3.41)	(-3.61)	(-3.64)
Year-Quarter FE	Y	Y	Y	Y	Y	Y
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	90,965	86,132	86,132	90,965	86,132	86,132

Table IV
Social Interaction and Investment Performance: Weather of Golf Courses

We exploit the feature that golf is a particularly weather-dependent activity. We interact close-to-golf with the precipitation conditions around golf courses. Precipitation is measured using the standardized state precipitation index (SP01) from the National Climatic Data Center (NCDC). The standardized index allows for comparison between locations with markedly different climates because it adjusts for median weather conditions. We define "Good Weather Dummy I" if the standardized precipitation index is below the sample median. Alternatively, we define "Good Weather Dummy II" if the standardized precipitation index is below the state median. In columns (1), (3) and (5), we interact close-to-golf with the good weather dummy using the first definition, while in columns (2), (4), (6) we interact close-to-golf with the good weather dummy using the second definition. All specifications include investor type and style fixed effects as well as state fixed effects. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dependent variable:	Market Adjusted Return		Style Adjusted Return		Style & Type Adjusted Return		DGTW Adjusted Returns	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Close-to-golf ×	0.237***		0.205***		0.184***		0.144***	
Good Weather Dummy I	(4.85)		(4.27)		(4.14)		(2.88)	
Close-to-golf ×		0.243***		0.206***		0.191***		0.172***
Good Weather Dummy II		(4.95)		(4.09)		(4.19)		(3.25)
Close-to-golf	0.011	0.011	0.023	0.025	0.039	0.038	-0.009	-0.020
	(0.29)	(0.29)	(0.61)	(0.65)	(1.10)	(1.08)	(-0.25)	(-0.53)
Good Weather Dummy I	0.002		0.010		0.006		-0.055**	
	(0.05)		(0.32)		(0.19)		(-2.04)	
Good Weather Dummy II		-0.013		-0.001		-0.005		-0.069**
		(-0.40)		(-0.03)		(-0.17)		(-2.58)
Log (Investor Size)	-0.034***	-0.034***	-0.016*	-0.016*	-0.015	-0.015	-0.022***	-0.022***
	(-3.28)	(-3.28)	(-1.67)	(-1.68)	(-1.56)	(-1.56)	(-2.71)	(-2.71)
Log (Investor Age)	-0.076***	-0.076***	-0.078***	-0.078***	-0.088***	-0.088***	-0.073***	-0.073***
	(-2.74)	(-2.74)	(-3.00)	(-2.99)	(-3.46)	(-3.46)	(-3.53)	(-3.53)
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Investor Style, Type FE	Y	Y	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	89,969	89,969	89,969	89,969	89,969	89,969	89,969	89,969

Table V
Closeness to Golf and Investment Strategies

This table presents panel regression results of various investment strategies on the close-to-golf measure. We estimate the following equation:

$$Portfolio\,Strategy_{i,t} = a + \beta \times Close\text{ - }to\text{ - }Golf_{i,t-1} + \delta \times X_{i,t-1} + \varepsilon_{i,t}$$

where for investment strategies, we consider investor portfolio churn rate, portfolio concentration and portfolio selectivity. Detailed variable definitions are described in the Appendix. We control for the institutional type of investors such as banks, insurance, investment advisors etc. We also control for the investment styles of institutional investors (growth/value/growth & income). Investor style and investor type definitions are from Brain Bushee's website. Specifications (2), (4), (6) include state fixed effects. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dependent variable:	Portfolio		Portfolio		Portfolio	
Investment Strategy	Churn Rate		Concentration		Selectivity	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.032***	0.039***	0.240*	0.323**	0.011***	0.012***
	(3.66)	(3.99)	(1.72)	(2.16)	(2.72)	(2.82)
Log (Investor Size)	0.002	-0.001	-0.711***	-0.730***	-0.022***	-0.023***
	(0.82)	(-0.37)	(-16.45)	(-16.67)	(-20.57)	(-21.27)
Log (Investor Age)	-0.061***	-0.062***	-0.307***	-0.328***	-0.010***	-0.010***
	(-9.51)	(-9.88)	(-2.94)	(-3.21)	(-3.72)	(-4.05)
Investor Type FE	Y	Y	Y	Y	Y	Y
Investor Style FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	90964	90964	90964	90964	90964	90964
R-squared	0.509	0.531	0.199	0.221	0.287	0.315

Table VI
Excluding Local Stocks in Investors' Portfolio

This table presents our main tests while excluding local stocks in institutional investors' portfolio. We identify an investor as non-local if it is located in a different state and the distance with the firm headquarter is more than 250 miles. Then, we exclude local stocks in investors' portfolio, and calculate investor portfolio returns, portfolio churn rate, portfolio concentration, and portfolio selectivity in the same way as in the previous analyses. In Panel A, we link close-to-golf to investment performances, using the same specifications as in Table II. In Panel B, we relate the measure of close-to-golf to portfolio strategies. We always cluster the errors at the investor level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Panel A: Investment Performance

Dependent variable: *Performance*	Market Adjusted Return		Style Adjusted Return		Style & Type Adjusted Return	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.137***	0.155***	0.126***	0.145***	0.138***	0.159***
	(4.00)	(4.14)	(3.92)	(4.19)	(4.25)	(4.57)
Log (Investor Size)	-0.025**	-0.033***	-0.011	-0.018*	-0.013	-0.020**
	(-2.28)	(-3.08)	(-1.14)	(-1.93)	(-1.39)	(-2.17)
Log (Investor Age)	-0.074**	-0.079***	-0.067**	-0.072***	-0.065**	-0.070***
	(-2.50)	(-2.73)	(-2.40)	(-2.64)	(-2.40)	(-2.64)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	90,560	90,560	90,560	90,560	90,560	90,560

Panel B: Portfolio Strategies

Dependent variable: *Investment Strategy*	Portfolio Churn Rate		Portfolio Concentration		Portfolio Selectivity	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.032***	0.038***	0.574***	0.627***	0.016***	0.017***
	(3.65)	(3.99)	(2.84)	(2.83)	(3.66)	(3.50)
Log (Investor Size)	0.003	0.000	-1.105***	-1.161***	-0.025***	-0.026***
	(1.21)	(0.05)	(-16.99)	(-17.90)	(-20.38)	(-22.56)
Log (Investor Age)	-0.060***	-0.062***	-0.369**	-0.430***	-0.010***	-0.011***
	(-9.51)	(-9.91)	(-2.53)	(-3.08)	(-3.46)	(-4.23)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	90,560	90,560	90,560	90,560	90,560	90,560

Table VII
Closeness to Golf and Portfolio Distance

This table presents panel regression results of investor portfolio distance on the close-to-golf measure. We estimate the following equation:

$$Portfolio\ Distance_{i,t} = a + \beta \times Close\text{ - }to\text{ - }Golf_{i,t-1} + \delta \times X_{i,t-1} + \varepsilon_{i,t}\ .$$

Detailed definitions are described in the Appendix. In columns (1)-(5), the dependent variable is the logrithm of portfolio distances calculated based on investors' entire portfolio holdings. In columns (6)-(10), we calculate the portfolio distance in the same way but excluding local stocks from investors' portfolios. We identify an investor as non-local if it is located in a different state and the distance with the firm headquarter is more than 250 miles. In columns (3) and (8), we interact the close-to-golf measure with the championship dummy as previously defined. In columns (4)-(5) and columns (9)-(10), we separately calculate two alternative versions of the close-to-golf measure using only reciprocal golf courses and closed golf courses in terms of guest policy. We perform Chi-square tests to test the difference in coefficients. We always include investor type fixed effects, investor style fixed effects and year-quarter fixed effects. Specifications (2)-(5) and (7)-(10) include state fixed effects. Standard errors are clustered at the investor level. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively.

	Log (Portfolio Distance): All Stocks					Log (Portfolio Distance): Non-Local Stocks				
	All Courses			Reciprocal	Closed	All Courses			Reciprocal	Closed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Close-to-golf	0.056***	0.025***	0.019**	0.038***	0.004	0.097***	0.058***	0.050***	0.076***	0.021***
	(3.74)	(3.20)	(2.45)	(4.24)	(0.79)	(7.26)	(6.32)	(5.87)	(7.82)	(2.91)
Close-to-golf ×			0.031***					0.040***		
Championship Dummy			(3.34)					(5.31)		
Championship Dummy			0.008**					0.002		
			(2.38)					(0.97)		
Log (Investor Size)	0.011***	0.009***	0.009***	0.009***	0.009***	0.007**	0.001	0.001	0.001	0.001
	(3.43)	(4.40)	(4.39)	(4.39)	(4.51)	(2.09)	(0.48)	(0.46)	(0.47)	(0.71)
Log (Investor Age)	-0.003	0.000	0.000	-0.002	-0.002	-0.003	-0.004	-0.004	-0.004	-0.005
	(-0.39)	(0.08)	(0.09)	(-0.30)	(-0.37)	(-0.39)	(-1.02)	(-1.01)	(-1.19)	(-1.29)
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State FE	-	Y	Y	Y	Y	-	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	90,906	90,906	90,906	86,132	86,132	90,831	90,831	90,831	85,962	85,962
R-square	0.075	0.523	0.523	0.499	0.497	0.088	0.710	0.711	0.709	0.700
Chi-square Tests	-	-	-	13.07***		-	-	-	18.73***	

Table VIII
Return Co-movement and Strategy Co-movement with Nearby Close-to-Golf Investors

This table examines how the co-movement of investor portfolio performance and strategies with their geographically proximate neighbors varies dependent on their close-to-golf measure. For each institutional investor, we identify nearby investors as all the other investors that are located within 50 miles from the investor. Then, we calculate the average performance measures and average portfolio strategies of all nearby investors. The key variable of interest is the interaction term between the nearby return (nearby strategy) with close-to-golf. Panel A reports the results of the co-movement in portfolio performance with nearby investors. Panel B presents the results of the co-movement in portfolio strategies with nearby investors. We include year-quarter fixed effects in all specifications and we always cluster the errors at the investor level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Panel A: Return Co-movement with Nearby Investors

Dependent Variable:	Style Adjusted Return		Style & Type Adjusted Return		DGTW Adjusted Return	
	(1)	(2)	(3)	(4)	(5)	(6)
Nearby Return	0.308***	0.350***	0.274***	0.313***	0.267***	0.290***
	(8.91)	(9.42)	(7.87)	(8.33)	(11.18)	(11.23)
Nearby Return ×		0.157***		0.143***		0.065***
Close-to-Golf		(4.09)		(3.80)		(2.82)
Close-to-Golf		0.074*		0.075**		0.064**
		(1.86)		(2.01)		(2.30)
Year-quarter FE	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	89,705	89,705	89,705	89,705	89,705	89,705

Panel B: Portfolio Strategy Co-movement with Nearby Investors

Dependent Variable:	Portfolio Churn Rate		Portfolio Concentration		Portfolio Selectivity	
	(1)	(2)	(3)	(4)	(5)	(6)
Nearby Strategy	0.598***	0.593***	0.163***	0.183***	0.371***	0.400***
	(15.56)	(14.84)	(4.25)	(4.37)	(8.66)	(9.07)
Nearby Strategy ×		0.033***		0.162***		0.191***
Close-to-Golf		(2.66)		(3.64)		(3.90)
Close-to-Golf		0.004		-0.208		-0.013
		(0.37)		(-0.86)		(-1.51)
Year-quarter FE	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	89,705	89,705	89,705	89,705	89,705	89,705

Table IX
Holdings Weighted Close-to-golf Measure and Stock Return Predictability

This table reports the returns of stock portfolios sorted by the close-to-golf holdings-weighted measure. The close-to-golf weighted ownership measure is calculated each stock-quarter as the average close-to-golf measure of all institutional investors that hold the stock weighted by the amount of ownership each investors holds. Then, at each month-beginning from January 1991 to December 2011, stocks are sorted into quintiles based on the previous quarter-end holdings weighted close-to-golf measure. Portfolio 1 has the lowest close-to-golf ownership. Portfolio 5 has the highest close-to-golf weighted ownership measure. "Long Portfolio 5 & Short Portfolio 1" is the difference in the returns between the highest and lowest close-to-golf portfolios. Equally-weighted returns for the five portfolios are calculated over the month. For each portfolio, we report the raw average portfolio return, the excess return (i.e., alpha) from the CAPM 1-factor (market factor) model, the alpha from the Fama-French 3-factor (market factor, SMB, HML) model, and the alpha from the Carhart 4-factor (market factor, SMB, HML, and momentum factor) model. Panel A presents results based on the weighted close-to-golf among all the investors. Panel B presents results based on weighted close-to-golf among all of the non-local investors. An investor is non-local if it is located in a different state and the distance with the firm headquarter is more than 250 miles. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses. N denotes the number of total months.

Panel A: Close-to-golf Weighted Ownership

Portfolio Sorting by Close-to-golf weighted ownership	Raw Excess Return	CAPM 1-factor Alpha	FF 3-factor Alpha	Carhart 4-factor Alpha	N
Portfolio 1	0.0084	0.0025	0.0005	0.0025**	252
		(1.53)	(0.43)	(2.44)	
Portfolio 2	0.0094	0.0032**	0.0014	0.0031***	252
		(2.05)	(1.27)	(2.95)	
Portfolio 3	0.0097	0.0036**	0.0017	0.0033***	252
		(2.04)	(1.47)	(3.00)	
Portfolio 4	0.0102	0.0040*	0.0016	0.0035**	252
		(1.88)	(1.12)	(2.37)	
Portfolio 5	0.0128	0.0072***	0.0047**	0.0070***	252
		(2.71)	(2.43)	(3.46)	
Long Portfolio5 & Short Portfolio 1	0.0044***	0.0046***	0.0043***	0.0045***	252
	(2.93)	(3.09)	(3.35)	(3.16)	

Panel B: Close-to-golf Weighted Ownership excluding Local Ownership

Portfolio Sorting by Close-to-golf weighted ownership	Raw Excess Return	CAPM 1-factor Alpha	FF 3-factor Alpha	Carhart 4-factor Alpha	N
Portfolio 1	0.0086	0.0025	0.0008	0.0028***	252
		(1.54)	(0.72)	(2.74)	
Portfolio 2	0.0095	0.0033*	0.0015	0.0033***	252
		(1.95)	(1.33)	(3.20)	
Portfolio 3	0.0095	0.0035*	0.0016	0.0032***	252
		(1.92)	(1.28)	(2.67)	
Portfolio 4	0.0098	0.0038*	0.0011	0.0030**	252
		(1.86)	(0.86)	(2.37)	
Portfolio 5	0.0124	0.0068***	0.0043**	0.0065***	252
		(2.71)	(2.28)	(3.32)	
Long Portfolio5 & Short Portfolio 1	0.0037***	0.0043***	0.0035***	0.0037***	252
	(2.67)	(3.08)	(2.85)	(2.74)	

Table X
Close-to-Golf Weighted Ownership Measure and Informed Trading (PIN)

This table presents stock-level analysis on the relation between close-to-golf weighted ownership and the probability of informed trades (PIN). The close-to-golf weighted ownership measure is calculated each stock-quarter as the average close-to-golf measure of all institutional investors that hold the stock weighted by the amount of ownership each investors holds. The quarterly data on the PIN measure from 1993 to 2010 are obtained from Stephen Brown's website at http://scholar.rhsmith.umd.edu/sbrown/pin-data?destination=node/998. The procedures to construct PIN are detailed in Brown and Hillegeist (2007). We estimate the following equation:

$$\text{PIN}_{i,t} = a + \beta \times \textit{Close - to - Golf weighted Ownership}_{i,t\text{-}1} + \delta \times X_{i,t\text{-}1} + \varepsilon_{i,t} ,$$

where $X_{i,t-1}$ is a vector of firm characteristics including firm size, market-to-book, book leverage, profitability, cash holding, institutional ownership, institutional turnover, yearly return and stock return volatility. Columns (1)-(3) use close-to-golf weighted ownership measure among all the investors. Columns (4)-(6) use the close-to-golf weighted ownership measure among all the non-local investors. An investor is non-local if it is located in a different state and the distance with the firm headquarter is more than 250 miles. Columns (3) and (6) include firm fixed effects. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Dependent Variable: PIN	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf weighted ownership (all investors)	0.034***	0.033***	0.025***			
	(6.94)	(6.75)	(6.14)			
Close-to-golf weighted ownership (non-local investors)				0.028***	0.025***	0.015***
				(7.16)	(6.55)	(4.80)
Controls						
Firm Size	-0.028***	-0.028***	-0.026***	-0.028***	-0.029***	-0.026***
	(-62.30)	(-62.31)	(-28.84)	(-62.10)	(-62.25)	(-28.82)
Market-to-Book	-0.006***	-0.006***	-0.004***	-0.006***	-0.006***	-0.004***
	(-13.27)	(-13.35)	(-11.65)	(-12.99)	(-13.11)	(-11.56)
Book Leverage	0.038***	0.038***	0.034***	0.039***	0.039***	0.035***
	(11.96)	(11.93)	(9.64)	(12.03)	(12.03)	(9.86)
Profitability	0.013***	0.013***	-0.002	0.013***	0.013***	-0.001
	(3.17)	(3.09)	(-0.48)	(3.14)	(3.06)	(-0.44)
Cash Holding	-0.029***	-0.027***	-0.005	-0.029***	-0.027***	-0.004
	(-8.91)	(-8.31)	(-1.44)	(-8.74)	(-8.32)	(-1.20)
Institutional Ownership	-0.082***	-0.082***	-0.074***	-0.082***	-0.082***	-0.074***
	(-32.40)	(-32.03)	(-23.25)	(-32.35)	(-32.03)	(-23.19)
Investor Turnover	-0.039***	-0.036***	-0.022***	-0.040***	-0.038***	-0.022***
	(-7.07)	(-6.71)	(-4.45)	(-7.11)	(-6.84)	(-4.42)
Yearly Return	-0.013***	-0.013***	-0.012***	-0.013***	-0.013***	-0.013***
	(-19.98)	(-19.98)	(-24.59)	(-20.15)	(-20.20)	(-24.65)
Stock Return Volatility	-0.683***	-0.672***	-0.485***	-0.679***	-0.669***	-0.492***
	(-14.97)	(-14.80)	(-11.67)	(-14.65)	(-14.48)	(-11.57)
Year-quarter FE	Y	Y	Y	Y	Y	Y
Industry FE (2-digit SIC)	Y	Y	-	Y	Y	-
State FE	-	Y	-	-	Y	-
Firm FE	-	-	Y	-	-	Y
Cluster	Firm	Firm	Firm	Firm	Firm	Firm
Number of Observations	184,596	184,596	184,596	183,117	183,117	183,117
R-squared	0.412	0.413	0.545	0.412	0.414	0.545

Table XI
Close-to-Golf Weighted Ownership Measure and Stock Liquidity

This table presents stock-level analysis on the relation between close-to-golf weighted ownership and stock liquidity. The close-to-golf weighted ownership measure is calculated each stock-quarter as the average close-to-golf measure of all institutional investors that hold the stock weighted by the amount of ownership each investors holds. Liquidity is measured using the ILLIQ measure (Amihud, 2002) defined as the average of the square root of the ratio of the absolute price change divided by daily dollar volume over each day in a year. We estimate the following equation:

$$\text{ILLIQ}_{i,t} = a + \beta \times Close\text{-}to\text{-}Golf\ weighted\ Ownership_{i,t\text{-}1} + \delta \times X_{i,t\text{-}1} + \varepsilon_{i,t},$$

where $X_{i,t-1}$ is a vector of firm characteristics including firm size, market-to-book, book leverage, profitability, cash holding, institutional ownership, institutional turnover, yearly return and stock return volatility. Close-to-golf ownership is calculated as An investor is non-local if it is located in a different state and the distance with the firm headquarter is more than 250 miles. Columns (1)-(3) use close-to-golf weighted ownership measure among all the investors. Columns (4)-(6) use the close-to-golf weighted ownership measure among all the non-local investors. Columns (3) and (6) include firm fixed effects. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Dependent Variable: Illiquidity	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf weighted ownership (all investors)	0.210***	0.203***	0.110***			
	(10.29)	(9.96)	(6.09)			
Close-to-golf weighted ownership (non-local investors)				0.172***	0.157***	0.089***
				(10.11)	(9.30)	(6.17)
Controls						
Firm Size	-0.149***	-0.149***	-0.145***	-0.147***	-0.147***	-0.144***
	(-48.53)	(-48.43)	(-30.65)	(-47.63)	(-47.63)	(-30.15)
Market-to-Book	-0.032***	-0.032***	-0.020***	-0.031***	-0.031***	-0.019***
	(-14.75)	(-14.90)	(-11.07)	(-14.26)	(-14.39)	(-10.98)
Book Leverage	0.273***	0.270***	0.277***	0.268***	0.266***	0.268***
	(15.86)	(15.70)	(15.44)	(15.55)	(15.41)	(14.83)
Profitability	0.054***	0.052***	-0.065***	0.053***	0.051***	-0.064***
	(3.12)	(3.02)	(-3.92)	(3.05)	(2.98)	(-3.86)
Cash Holding	-0.249***	-0.237***	-0.080***	-0.246***	-0.237***	-0.080***
	(-15.93)	(-14.83)	(-4.56)	(-15.83)	(-14.92)	(-4.56)
Institutional Ownership	-0.355***	-0.349***	-0.090***	-0.353***	-0.348***	-0.091***
	(-27.84)	(-27.03)	(-5.90)	(-27.63)	(-26.94)	(-5.95)
Investor Turnover	-0.551***	-0.539***	-0.303***	-0.576***	-0.567***	-0.321***
	(-19.30)	(-19.05)	(-12.73)	(-20.10)	(-19.94)	(-13.45)
Yearly Return	-0.100***	-0.100***	-0.101***	-0.100***	-0.100***	-0.100***
	(-30.39)	(-30.70)	(-36.43)	(-30.05)	(-30.30)	(-36.22)
Stock Return Volatility	5.072***	5.115***	3.684***	5.207***	5.251***	3.815***
	(12.43)	(12.25)	(9.74)	(12.35)	(12.19)	(9.26)
Year FE	Y	Y	Y	Y	Y	Y
Industry FE (2-digit SIC)	Y	Y	-	Y	Y	-
State FE	-	Y	-	-	Y	-
Firm FE	-	-	Y	-	-	Y
Cluster	Firm	Firm	Firm	Firm	Firm	Firm
Number of Observations	71,051	71,051	71,051	70,446	70,446	70,446
R-squared	0.569	0.572	0.769	0.563	0.565	0.767

Table XII
Close-to-Golf Weighted Ownership Measure and Stock Liquidity: Instrumental Variables Regression

In this table, we use the precipitation levels around golf courses to instrument for the close-to-golf weighted ownership measure and then link it to stock liquidity in an instrumental variables regression.

Panel A: Close-to-Golf Weighted Ownership and Weather of Golf Courses (Firm-Investor State Analysis)

In Panel A, we verify the relevance of the instrument. The close-to-golf weighted ownership measure is calculated each stock-quarter as the average close-to-golf measure of all institutional investors that hold the stock weighted by the amount of ownership each investors holds. In particular, we perform an analysis at the firm-investor state level. In each quarter, for every stock i and State J pair, we calculate the close-to-golf weighted ownership among all investors that are located in State J. Then, we regress the weighted close-to-golf on the average precipitation among all the selected golf courses in State J. We control for investor state fixed effects in all specifications. In columns (1)-(3), we use the full sample of investors to construct the weighted close-to-golf measure, while in columns (4)-(6) we only consider non-local investors. We identify an investor as non-local if it is located in a different state and the distance with the firm headquarter is more than 250 miles. In columns (3) and (6), we further include firm fixed effects in the regressions.

Dep. Var.: Close-to-golf weighted ownership	All Investor States			Non-Local Investor States		
	(1)	(2)	(3)	(4)	(5)	(6)
Golf Course Precipitation	-0.012***	-0.012***	-0.012***	-0.014***	-0.014***	-0.014***
	(-17.60)	(-17.64)	(-17.86)	(-17.94)	(-17.90)	(-18.03)
Year FE	Y	Y	Y	Y	Y	Y
Investor State FE	Y	Y	Y	Y	Y	Y
Firm State FE	-	Y	-	-	Y	-
Firm FE	-	-	Y	-	-	Y
Cluster	Firm	Firm	Firm	Firm	Firm	Firm
Number of Observations	1,265,337	1,265,337	1,265,337	1,108,244	1,108,244	1,108,244
R-squared	0.309	0.310	0.321	0.297	0.298	0.312

Table XII (Continued)

Panel B: Instrumental Variables Regression

In Panel B, for each firm, we use the average precipitation across golf courses in different states, estimated from Panel A, to serve as an instrument for the close-to-golf weighted ownership at the stock level. We report the second-stage regressions results. In columns (1)-(3), we use the measure based on the weighted close-to-golf among all the investors. In columns (4)-(6), we use the measure based on the weighted close-to-golf among all the non-local investors. In columns (3) and (6), we include firm fixed effects in the regressions. We always cluster the errors at the firm level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Dependent Variable: Illiquidity	(1)	(2)	(3)	(4)	(5)	(6)
Instrumented Close-to-golf weighted ownership (all investors)	2.236***	2.212***	1.769***			
	(8.54)	(8.72)	(5.94)			
Instrumented Close-to-golf weighted ownership (non-local investors)				1.333***	1.351***	0.913***
				(9.22)	(8.46)	(5.34)
Controls						
Firm Size	-0.140***	-0.140***	-0.139***	-0.139***	-0.140***	-0.140***
	(-41.56)	(-41.63)	(-35.83)	(-42.61)	(-43.25)	(-38.34)
Market-to-Book	-0.030***	-0.029***	-0.020***	-0.029***	-0.029***	-0.019***
	(-13.03)	(-13.06)	(-15.43)	(-12.41)	(-12.41)	(-15.51)
Book Leverage	0.219***	0.220***	0.246***	0.238***	0.239***	0.253***
	(10.98)	(11.14)	(15.72)	(13.16)	(13.29)	(17.51)
Profitability	0.054***	0.052***	-0.072***	0.052***	0.053***	-0.071***
	(2.87)	(2.79)	(-5.96)	(2.81)	(2.85)	(-5.87)
Cash Holding	-0.232***	-0.218***	-0.063***	-0.212***	-0.221***	-0.068***
	(-13.26)	(-12.24)	(-4.30)	(-12.48)	(-13.03)	(-4.91)
Institutional Ownership	-0.213***	-0.209***	-0.013	-0.264***	-0.260***	-0.050***
	(-8.98)	(-8.98)	(-0.72)	(-14.83)	(-14.25)	(-3.73)
Investor Turnover	-0.456***	-0.441***	-0.241***	-0.496***	-0.495***	-0.287***
	(-13.85)	(-13.56)	(-10.13)	(-15.77)	(-15.91)	(-13.10)
Yearly Return	-0.113***	-0.113***	-0.107***	-0.108***	-0.108***	-0.103***
	(-28.63)	(-28.88)	(-40.71)	(-29.25)	(-29.24)	(-43.21)
Stock Return Volatility	4.731***	4.819***	3.452***	5.096***	5.074***	3.646***
	(11.83)	(11.76)	(9.60)	(12.17)	(12.00)	(9.22)
Year FE	Y	Y	Y	Y	Y	Y
Industry FE (2-digit SIC)	Y	Y	-	Y	Y	-
State FE	-	Y	-	-	Y	-
Firm FE	-	-	Y	-	-	Y
Cluster	Firm	Firm	Firm	Firm	Firm	Firm
F-statistic of weak instruments	322.43	335.80	197.11	644.03	551.90	371.21
Number of Observations	71,034	71,034	71,034	70,429	70,429	70,429

Internet Appendix

This is the Internet appendix for "Sociability, Golf Courses, and the Performance of Institutional Investors." This supplementary appendix is not meant for publication in print. It can be made available on a Journal website and the authors' websites upon publication. It reports the complete results of additional tests described in the main text, but not included in the main table for brevity.

Section I reports alternative econometric specifications for our main tests. Section II reports results using three alternative close–to–golf measures constructed using alternative measures of distance, locality, and course prestige. We also present the results of a placebo test constructed using golf courses with the lowest green fees. Section III presents risk-adjusted return results for the weather analysis which include DGTW-adjusted returns and portfolio alphas.

I. Alternative Econometric Specifications

This sections presents alternative econometric specifications including double-clustered standard error specifications for the main investment performance and portfolio strategy results and investor-level fixed effects in the causality tests

A. Robustness: Standard Error Specification

We present an alternative method for clustering the standard error in our main investment performance tests (Table II) and portfolio strategy tests (Table V). Since there is a potential concern of cross-sectional correlation in returns, we additionally cluster our panel regression by investor *and* quarter.

Table A1 shows that our inferences are unchanged with the inclusion of time clusters. Panel A shows that the coefficient estimate on the close-to-golf measure remains statistically significant across market-, style-, and style-type adjusted returns. However, the coefficient estimates on the control variables, Log (Investor Size) and Log (Investor Age), are no longer significant in most of the specifications. Panel B shows that the relation between the close-to-golf measure and portfolio strategies is nearly identical with the inclusion of the additional time cluster. Compared to Table V, the standard errors on

the coefficient estimates for the close-to-golf measure are nearly unchanged.

B. Robustness: Investor Fixed Effects

We present an additional econometric specification that includes investor fixed effects for our causality tests presented in Table III and Table IV in the main text. Since institutional investor locations are generally static, there remains concerns that regional effects may be behind our results. The inclusion of investor fixed effects should alleviate some of these concerns since it removes unobserved investor heterogeneity.

Table A2 shows that the inclusion of investor fixed effects does not significantly change our main inferences from our causality tests. Panel A shows that the Championship Dummy interaction remains positive and statistically significant for courses with reciprocal policies and remains insignificant for closed policy courses. Panel B shows that results from the Weather shock remains unchanged.

In sum, our main results are robust to alternative econometric specifications which addresses concerns relating to standard error estimates and unobserved investor heterogeneity.

II. Alternative Measurement: Close to Golf Measure

In this section, we address concerns relating to our close-to-golf measure. In the main text, the close-to-golf measure is constructed as a relative within state measure because we are primarily concerned with state-level differences driving our results. However, this choice represents a trade-off. While it is able to address our main concern, it may not reflect actual distance to golf courses experienced by investors. Also, while green fees may be reasonable proxy for prestige of golf courses, there may be dimensions of quality not captured by fees.

A. Alternative Measure 1: Non-standardized Distance

To address concerns with measuring actual distance, we create an unstandardized value of the close-to-golf measure by using the negative value of the logarithm of the average distance to prestigious golf courses in each state.

Table A3 Panel A presents the results. We find that the investment performance and

portfolio strategy results are unchanged using this alternative measure. The coefficient estimate on the non-standardized close-golf measure is positive and statistically significant across all specifications.

B. Alternative Measure 2: Number of Nearby Prestigious Golf Courses

Another potential concern with our measure of distance is that certain investor may be close to state borders and may have access to nearby golf courses in other states. This makes our within state assumption potentially restrictive and noisy. To address this, we create a measure based on the number of prestigious golf course within a 100 mile radius of the investors.

Table A3 Panel B shows our main inferences are unchanged using this measure. Columns (1)-(3) show that the investment performance results are unchanged using this alternative measure, while columns (4)-(6) show that the portfolio strategy results are similar. The coefficient estimate on the non-standardized close-golf measure is positive and statistically significant across all specifications.

C. Alternative Measure 3: Golflink.com Prestigious Golf Courses

Using golf course rankings for the top 20 golf courses in each state from Golflink.com, we re-estimate our baseline regression models. Golflink.com rankings are perhaps subjective in nature, but may also capture aspects of golf club quality that are missed by simply assessing course fees. Golflink.com provides ranking for all 50 states, allowing us to perform analysis for all states and the full set of institutional investors.The data are available at http://www.golflink.com/top-golf-courses/.

The results presented in Table A4 are similar to our main findings. It provides an additional robustness check to our definition of 'prestigious' golf course which we define as having course fees in the top decile.

D. Placebo Test: Bottom 10% Green Fees

We perform a "placebo" analysis to test the validity of our definition of 'prestigious' golf courses. If our story is correct, we expect that proximity to *non-prestigious* golf courses is unlikely to affect institutional investors' portfolio strategies and performance. To define non-prestigious, we use golf courses in the bottom decile of green fees, which tend be

public courses, and re-estimate our main analysis.

Table A5 shows that both investment performance and portfolio strategies are unrelated to the distance to non-prestigious golf courses.

III. Precipitation Tests: Risk-adjusted Performance

The main text employs an identification strategy which exploits the precipitation at the golf course to derive exogenous variation in social participation and vibrancy. For brevity in the main text, we omit factor model returns and conditional tests based on reciprocal policies. We present those results here.

Table A6 presents the results of identical regression tests using the complete set of risk-adjusted returns. Panel A presents the results using DGTW-adjustment while Panel B presents risk-adjusted returns for the CAPM 1-factor, Fama-French 3-factor, and Carhart 4-factor risk models. The results are robust to the usage of these return adjustments across regression specification.

Table A1
Closeness to Golf and Investment Performance/Portfolio Strategy: Double Clustering Standard Errors by Investor and Time

This table presents our main investment performance and portfolio strategy tests double clustering standard errors by both investor and time (Petersen, 2009). Panel A presents results on the relation between the close-to-golf measure and investment performance using the same regression equation as in Table II. Panel B presents results on the relation between the close-to-golf measure and portfolio strategies using the same regression equation as in Table V. ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Panel A: Investment Performance

Dependent variable: *Performance*	Market Adjusted Return		Style Adjusted Return		Style & Type Adjusted Return	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.125***	0.136***	0.123***	0.133***	0.124***	0.135***
	(2.73)	(2.80)	(2.85)	(2.87)	(2.88)	(2.93)
Log (Investor Size)	-0.028	-0.035	-0.011	-0.017	-0.008	-0.014
	(-0.86)	(-1.12)	(-0.35)	(-0.59)	(-0.29)	(-0.53)
Log (Investor Age)	-0.071	-0.073	-0.074	-0.077	-0.082*	-0.085*
	(-1.29)	(-1.31)	(-1.46)	(-1.50)	(-1.65)	(-1.68)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor & Time	Investor & Time	Investor & Time	Investor & Time	Investor & Time	Investor & Time
Number of Observations	90964	90964	90964	90964	90964	90964

Panel B: Portfolio Strategies

Dependent variable: *Investment Strategy*	Portfolio Churn Rate		Portfolio Concentration		Portfolio Selectivity	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.032***	0.039***	0.240*	0.323**	0.011***	0.012***
	(3.62)	(3.96)	(1.73)	(2.17)	(2.71)	(2.81)
Log (Investor Size)	0.002	-0.001	-0.711***	-0.730***	-0.022***	-0.023***
	(0.72)	(-0.32)	(-16.05)	(-16.29)	(-14.45)	(-15.06)
Log (Investor Age)	-0.061***	-0.062***	-0.307***	-0.328***	-0.010***	-0.010***
	(-8.39)	(-8.82)	(-2.80)	(-3.04)	(-3.37)	(-3.64)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor & Time	Investor & Time	Investor & Time	Investor & Time	Investor & Time	Investor & Time
Number of Observations	90964	90964	90964	90964	90964	90964

Table A2
Social Interaction and Investment Performance: Including Investor Fixed Effects

This table presents the results of our social interaction and investment performance tests including investor fixed effects. Panel A presents results using Major Championship rotations. Panel B presents results using precipitation around the golf course.

Panel A: Major Championships with Investor Fixed Effects

Two of the four most prestigious annual tournaments in professional golf (known as the Major Championships) change locations each year. The U.S. Open, hosted by the United States Golf Association, and the PGA Championship, hosted by the Professional Golfers' Association of America, are played at various locations in the United States. We define a dummy variable "Championship Dummy" equal to 1 if the state hosts a "U.S. Open" or "PGA Championship" in the year and 0 otherwise. Our variable of interest is the interaction between the close-to-golf and the championship dummy. All specifications include investor fixed effects. Columns (1)-(3) present investor style adjusted portfolio return as the dependent variable, and columns (4)-(6) present DGTW adjusted portfolio return as the dependent variable. In both cases, we consider the close-to-golf measure using the full set of prestigious golf courses as well as separate measures by distinguishing the guest policies of these golf courses. We always cluster the errors at the investor level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Dependent variable:	Style Adjusted Return			DGTW Adjusted Return		
	All Golf Courses	Guest Policy: Reciprocal	Guest Policy: Closed	All Golf Courses	Guest Policy: Reciprocal	Guest Policy: Closed
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf ×	0.206**	0.223***	0.096	0.174***	0.199***	0.029
Championship Dummy	(2.39)	(2.77)	(1.43)	(2.80)	(3.18)	(0.54)
Close-to-golf	0.074	0.055	-0.070	0.041	0.023	-0.042
	(1.05)	(0.76)	(-1.39)	(0.73)	(0.40)	(-1.04)
Championship Dummy	0.214***	0.219***	0.207***	0.096**	0.097**	0.081*
	(4.17)	(4.22)	(4.01)	(2.21)	(2.19)	(1.84)
Log (Investor size)	-0.255***	-0.228***	-0.229***	-0.204***	-0.188***	-0.188***
	(-9.90)	(-8.66)	(-8.67)	(-8.85)	(-8.24)	(-8.25)
Log (Investor age)	-0.044	-0.077	-0.077	-0.049	-0.048	-0.049
	(-0.75)	(-1.27)	(-1.27)	(-0.98)	(-0.95)	(-0.96)
Year-Quarter FE	Y	Y	Y	Y	Y	Y
Investor FE	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	90,965	86,132	86,132	90,965	86,132	86,132

Table A2 (Continued)

Panel B: Weather of Golf Courses with Investor Fixed Effects

In Panel B, we exploit the feature that golf is a particularly weather-dependent activity. We interact close-to-golf with the precipitation conditions around golf courses. Precipitation is measured using the standardized state precipitation index (SP01) from the National Climatic Data Center (NCDC). The standardized index allows for comparison between locations with markedly different climates because it adjusts for median weather conditions. We define "Good Weather Dummy I" if the standardized precipitation index is below the sample median. Alternatively, we define "Good Weather Dummy II" if the standardized precipitation index is below the state median. In columns (1), (3) and (5), we interact close-to-golf with the good weather dummy using the first definition, while in columns (2), (4), (6) we interact close-to-golf with the good weather dummy using the second definition. To establish causality, we control for investor fixed effects in all specifications. To avoid the econometric issue of short panels with fixed effects, we require that each investor should have more than 20 quarterly observations. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dependent variable:	Market Adjusted Return		Style Adjusted Return		Style & Type Adjusted Return		DGTW Adjusted Returns	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Close-to-golf ×	0.266***		0.228***		0.209***		0.158***	
Good Weather Dummy I	(5.36)		(4.62)		(4.56)		(3.06)	
Close-to-golf ×		0.261***		0.218***		0.203***		0.178***
Good Weather Dummy II		(5.20)		(4.27)		(4.41)		(3.34)
Close-to-golf	-0.048	-0.046	-0.006	-0.002	0.008	0.011	-0.018	-0.027
	(-0.50)	(-0.48)	(-0.08)	(-0.02)	(0.11)	(0.15)	(-0.27)	(-0.42)
Good Weather Dummy I	-0.001		0.008		0.003		-0.052*	
	(-0.04)		(0.25)		(0.11)		(-1.89)	
Good Weather Dummy II		-0.015		-0.001		-0.006		-0.066**
		(-0.46)		(-0.04)		(-0.18)		(-2.42)
Log (Investor Size)	-0.309***	-0.309***	-0.252***	-0.252***	-0.232***	-0.232***	-0.198***	-0.198***
	(-11.20)	(-11.20)	(-9.76)	(-9.76)	(-9.03)	(-9.04)	(-8.58)	(-8.58)
Log (Investor Age)	-0.042	-0.042	-0.056	-0.056	-0.080	-0.080	-0.055	-0.055
	(-0.66)	(-0.66)	(-0.94)	(-0.95)	(-1.38)	(-1.38)	(-1.11)	(-1.11)
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Investor FE	Y	Y	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	89,969	89,969	89,969	89,969	89,969	89,969	89,969	89,969

Table A3
Closeness to Golf and Investment Performance/Portfolio Strategy: Alternative Close-to-Golf Measures

This table presents our main performance and portfolio strategy tests using two alternative close-to-golf measures. Panel A presents results using the negative value of the logarithm of the average distance to prestigious golf courses in each state. Panel B presents results using the logarithm of the number of prestigious golf courses within 100 miles from the location of the investor. All specifications include year-quarter fixed effects, investor type and style fixed effects as well as state fixed effects. Standard errors are clustered at the investor level.

Panel A: Non-standardized Close-to-Golf

	(1)	(2)	(3)	(4)	(5)	(6)
	Market Adjusted Return	Style Adjusted Return	Style & Type Adjusted Return	Portfolio Churn Rate	Portfolio Concentration	Portfolio Selectivity
Close-to-golf	0.176***	0.169***	0.172***	0.048***	0.495**	0.018***
	(3.06)	(3.15)	(3.22)	(3.21)	(2.09)	(2.70)
Log (Investor Size)	-0.034***	-0.016*	-0.013	-0.001	-0.729***	-0.023***
	(-3.33)	(-1.69)	(-1.44)	(-0.28)	(-16.64)	(-21.25)
Log (Investor Age)	-0.074***	-0.078***	-0.086***	-0.063***	-0.330***	-0.010***
	(-2.71)	(-3.03)	(-3.42)	(-9.92)	(-3.23)	(-4.08)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE, State FE	Y	Y	Y	Y	Y	Y
Number of Observations	90964	90964	90964	90964	90964	90964

Panel B: Number of Nearby Prestigious Golf Courses

	(1)	(2)	(3)	(4)	(5)	(6)
	Market Adjusted Return	Style Adjusted Return	Style & Type Adjusted Return	Portfolio Churn Rate	Portfolio Concentration	Portfolio Selectivity
Close-to-golf	0.129***	0.116***	0.119***	0.035***	0.289**	0.012***
	(3.89)	(3.74)	(3.93)	(4.14)	(2.34)	(3.24)
Log (Investor Size)	-0.035***	-0.017*	-0.014	-0.001	-0.730***	-0.023***
	(-3.41)	(-1.76)	(-1.51)	(-0.37)	(-16.59)	(-21.29)
Log (Investor Age)	-0.072***	-0.076***	-0.084***	-0.062***	-0.327***	-0.010***
	(-2.64)	(-2.97)	(-3.36)	(-9.84)	(-3.18)	(-4.01)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE, State FE	Y	Y	Y	Y	Y	Y
Number of Observations	90964	90964	90964	90964	90964	90964

Table A4
Closeness to Golf and Investment Performance/Portfolio Strategy: Top 20 Ranked State Golf Courses by Golflink.com

This table presents results on the relation between portfolio performance/strategy and closeness to prestigious golf courses using an alternative identification of prestigious state golf courses. Particularly, in each state, we obtain the location information of the top 20 golf courses from http://www.golflink.com/top-golf-courses/. Then we calculate the close-to-golf for each investor using the same methodology as in the main analysis. In Panel A, we link close-to-golf to investment performance, using the same specifications as in Table II. In Panel B, we relate this alternative measure of close-to-golf to portfolio strategies. We always cluster the errors at the investor level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Panel A: Investment Performance

Dep. var.: Portfolio Alpha	Market Adjusted		Style Adjusted		Style & Type Adjusted	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.107***	0.119***	0.100***	0.113***	0.096***	0.110***
	(3.26)	(3.37)	(3.22)	(3.41)	(3.10)	(3.31)
Log (Investor Size)	-0.024**	-0.030***	-0.008	-0.014	-0.007	-0.012
	(-2.45)	(-3.09)	(-0.94)	(-1.58)	(-0.74)	(-1.38)
Log (Investor Age)	-0.073***	-0.076***	-0.073***	-0.076***	-0.083***	-0.087***
	(-2.76)	(-2.89)	(-2.91)	(-3.08)	(-3.42)	(-3.63)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	97,463	97,463	97,463	97,463	97,463	97,463
R-squared	0.015	0.016	0.010	0.011	0.007	0.008

Panel B: Portfolio Strategies

Dep. var.: Investment Strategies	Portfolio Churn Rate		Portfolio Concentration		Portfolio Selectivity	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.032***	0.039***	0.364**	0.470***	0.008**	0.009**
	(3.67)	(4.12)	(2.19)	(2.62)	(1.97)	(2.01)
Log (Investor Size)	0.003	-0.000	-0.827***	-0.849***	-0.022***	-0.023***
	(1.20)	(-0.02)	(-12.99)	(-13.21)	(-20.14)	(-20.97)
Log (Investor Age)	-0.061***	-0.062***	-0.240	-0.249*	-0.009***	-0.009***
	(-9.98)	(-10.44)	(-1.64)	(-1.72)	(-3.38)	(-3.67)
Investor Style FE, Type FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	97,463	97,463	97,463	97,463	97,463	97,463
R-squared	0.516	0.539	0.214	0.228	0.280	0.307

Table A5
Closeness to Golf and Investment Performance/Portfolio Strategy: Placebo Tests on Golf Courses with Bottom Decile Green Fees

This table presents a "placebo" test based on golf courses in the bottom decile of green fees. Specifically, we rank the full sample of golf courses by their green fees and select the bottom decile courses as the set of interested golf courses. Then we calculate the close-to-golf for each investor using the same methodology as in the main analysis. In Panel A, we link close-to-golf to investment performances, using the same specifications as in Table II. In Panel B, we relate this alternative measure of close-to-golf to portfolio strategies. We always cluster the errors at the investor level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Panel A: Investment Performance

Dep. var.: Portfolio Return	Market Adjusted		Style Adjusted		Style & Type Adjusted	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.004	-0.040	0.037	-0.002	0.017	-0.023
	(0.07)	(-0.61)	(0.65)	(-0.04)	(0.30)	(-0.40)
Log (Investor Size)	-0.021**	-0.026***	-0.005	-0.010	-0.004	-0.009
	(-2.05)	(-2.61)	(-0.54)	(-1.09)	(-0.48)	(-1.05)
Log (Investor Age)	-0.080***	-0.083***	-0.085***	-0.088***	-0.089***	-0.093***
	(-2.94)	(-3.09)	(-3.25)	(-3.46)	(-3.53)	(-3.75)
Investor Type FE, Style FE	Y	Y	Y	Y	Y	Y
Year-quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	93,118	93,118	93,118	93,118	93,118	93,118
R-squared	0.102	0.104	0.088	0.090	0.089	0.091

Panel B: Portfolio Strategies

Dep. var.: Investment Strategies	Portfolio Churn Rate		Portfolio Concentration		Portfolio Selectivity	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf	0.008	-0.029*	0.035	0.016	0.001	-0.008
	(0.51)	(-1.76)	(0.11)	(0.05)	(0.12)	(-0.86)
Log (Investor Size)	0.002	-0.001	-0.716***	-0.730***	-0.022***	-0.023***
	(0.86)	(-0.23)	(-16.57)	(-16.69)	(-20.81)	(-21.47)
Log (Investor Age)	-0.062***	-0.064***	-0.301***	-0.327***	-0.009***	-0.010***
	(-9.85)	(-10.22)	(-2.85)	(-3.16)	(-3.48)	(-3.89)
Investor Type FE, Style FE	Y	Y	Y	Y	Y	Y
Year-quarter FE	Y	Y	Y	Y	Y	Y
State FE	-	Y	-	Y	-	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	93,118	93,118	93,118	93,118	93,118	93,118
R-squared	0.509	0.531	0.212	0.232	0.283	0.311

Table A6

Closeness to Golf and Risk-Adjusted Investment Performance: Weather Around Golf Courses

The table presents results on the relation between close-to-golf, risk- and characteristic-adjusted returns, and weather.

Panel A: Weather Around Golf Courses and DGTW Adjusted Portfolio Returns

Panel A examines the relation between investor close-to-golf, weather and the DGTW adjusted portfolio returns. We follow the methodology developed in Daniel, Grinblatt, Titman, and Wermers (1997) to calculate the DGTW adjusted portfolio returns. The close-to-golf measure is based on the full set of prestigious golf courses as well as separate measures based on the guest policies of golf courses. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dep. var.: Portfolio DGTW	All Golf Courses		Guest Policy: Reciprocal		Guest Policy: Closed	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf ×	0.144***		0.171***		0.076**	
Good Weather Dummy I	(2.88)		(3.03)		(2.15)	
Close-to-golf ×		0.172***		0.170***		0.110***
Good Weather Dummy II		(3.25)		(3.07)		(3.08)
Close-to-golf	-0.009	-0.020	-0.004	-0.003	0.001	-0.015
	(-0.25)	(-0.53)	(-0.10)	(-0.09)	(0.02)	(-0.58)
Good Weather Dummy I	-0.055**		-0.049*		-0.054*	
	(-2.04)		(-1.73)		(-1.91)	
Good Weather Dummy II		-0.069**		-0.065**		-0.067**
		(-2.58)		(-2.34)		(-2.40)
Log (Investor size)	-0.022***	-0.022***	-0.020**	-0.020**	-0.020**	-0.020**
	(-2.71)	(-2.71)	(-2.41)	(-2.41)	(-2.40)	(-2.40)
Log (Investor age)	-0.073***	-0.073***	-0.077***	-0.077***	-0.077***	-0.077***
	(-3.53)	(-3.53)	(-3.62)	(-3.62)	(-3.63)	(-3.62)
Year-Quarter FE	Y	Y	Y	Y	Y	Y
Investor Style, Type FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	89,970	89,970	85,685	85,685	85,685	85,685

Table A6 (continued)

Panel B: Weather of Golf Courses and Portfolio Alphas

Panel B presents results on the relation between the close-to-golf measure, weather and the risk adjusted portfolio alphas. The regression specification are identical to Table IV, which includes the interaction of close-to-golf with the weather condition of golf courses with the inclusion of investor fixed effects. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dep. var.: Portfolio Alpha	CAPM 1-factor		Fama-French 3-factor		Carhart 4-factor	
	(1)	(2)	(3)	(4)	(5)	(6)
Close-to-golf ×	0.201***		0.090**		0.123***	
Good Weather Dummy I	(4.00)		(2.03)		(2.84)	
Close-to-golf ×		0.207***		0.096**		0.134***
Good Weather Dummy II		(4.34)		(2.28)		(3.06)
Close-to-golf	0.020	0.020	0.054*	0.053*	0.061*	0.058
	(0.52)	(0.52)	(1.78)	(1.70)	(1.68)	(1.59)
Good Weather Dummy I	-0.039		-0.057*		-0.073**	
	(-1.18)		(-1.92)		(-2.43)	
Good Weather Dummy II		-0.036		-0.065**		-0.074**
		(-1.12)		(-2.22)		(-2.55)
Log (Investor size)	-0.038***	-0.038***	-0.015*	-0.015*	-0.024***	-0.024***
	(-3.50)	(-3.51)	(-1.70)	(-1.71)	(-2.73)	(-2.73)
Log (Investor age)	0.009	0.009	-0.050*	-0.050*	-0.056**	-0.056**
	(0.29)	(0.29)	(-1.78)	(-1.78)	(-2.03)	(-2.03)
Year-Quarter FE	Y	Y	Y	Y	Y	Y
Investor Style, Type FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y
Cluster	Investor	Investor	Investor	Investor	Investor	Investor
Number of Observations	83,309	83,309	83,309	83,309	83,309	83,309