The Geography of Savings Opportunities in Retirement Plans*

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Abstract

We study mutual fund fees in 401(k) plans from 2011 to 2021 to examine disparities in retirement savings opportunities. We find that despite an increase in ERISA-based lawsuits and regulatory attention, workers face significant inequalities across geographies. We also show that the savings gap is further exacerbated by the asset allocation decisions of participants in higher-fee plans and the lower performance of the investment options available on these menus.

JEL Classification: G23, J23

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1 Introduction

Defined contribution (DC) plans have played an important role in the democratization of finance by enabling households to participate in financial markets through employees' retirement savings. However, it remains unclear whether access to DC retirement accounts levels the playing field and provides equal opportunities.

Whether most workers can accumulate sufficient wealth for retirement in their self-directed DC accounts is an important question. A 2023 poll from Greenwald Reasearch finds widespread pessimism on this issue, with 79% of Americans believing that there is a retirement crisis.[1] A more nuanced look at defined contribution trends suggests that retirement savings also differ from one household to another. For example, not all employees have access to an employer-sponsored DC plan. Additionally, participation varies substantially by workers' income and demographic profile, contributing to significant wealth inequalities among future retirees.

Savings opportunities are unequal even among those who do participate in DC plans. These plans require individuals to manage their own investment accounts subject to the available investment options offered on the menu. Inequalities can arise in both 'tiers' of this system. First, plans can vastly differ in the availability of low-fee, high-quality investment options. Second, participants with higher financial literacy are more likely to make informed investment decisions, underscoring the potential effects of uneven financial knowledge.

In this paper, we study mutual fund fees in the near universe of 401(k) plans in the US from 2011 to 2021 to examine disparities in DC savings opportunities. We find that, consistent with broader industry trends, mutual fund fees have declined during our sample period. However, dispersion in plan investment fees remains high. For example, in 2011, the asset-weighted average fee of plans at the 10th percentile is 35 basis points (bps), while that

[1] https://www.nirsonline.org/reports/retirementinsecurity2024/

of plans at the 90th percentile is 99bps. A nearly 60bps difference is still present in 2021, with asset-weighted average plan fees of 13 bps and 72 bps at the 10th and 90th percentiles, respectively.

A closer inspection of our results also reveals significant geographic variation of 401(k) plan fees across large cities. For example, the average investment fee in Fresno, California, is 64bps while plans in San Jose, California, offer menus with average investment fees of 38bps. Similarly, plans in El Paso, Texas, charge 54bps, whereas plans in Dallas and Fort Worth, Texas, charge only 36bps.

To investigate whether this observed fee dispersion is consistent with a random distribution of plans across different areas, we perform a simulation analysis. The exercise reveals a surprisingly sharp contrast between the simulated and actual fees. If the plans were randomly distributed, we would see an average fee spread of 14.74 bps and a standard deviation of 3.09 bps across large U.S. cities. In contrast, we observe a much larger actual fee spread of 48.35 bps and a standard deviation of 8.08 bps across cities with populations of at least 500,000, indicating a geographic clustering of similar-fee plans. In fact, none of the 1000 simulations are close to the actual dispersion.

We then ask how the spatial variation of fees is related to the economic and demographic characteristics of the area, competition among financial intermediaries, and plan characteristics. We find that investment fees of otherwise similar plans are significantly higher in locations with lower average income and educational level. Fees are also higher in areas where the population is older. Additionally, though there are large differences even across big cities, as mentioned above, fees are higher in plans that are located in more rural areas. Although we do not find significant racial differences, we find that investment fees are higher in areas that have a higher proportion of Hispanic residents.

Taken together, we find that while fund fees have been steadily declining in more recent years in the mutual fund industry, average dispersion remains unchanged and inequalities across plans have increased geographically. This is consistent with Bhattacharya and Illanes (2022) who argue that increased regulatory scrutiny and litigation largely affect only a limited set of plans.

To study whether the source of potential inequalities comes from the menu design or the allocation choices of participants, we analyze both equal-weighted and value-weighted plan investment fees. The equal-weighted expense ratios of mutual funds offered in the plan represent the cost of the average investment option *available* to participants. In contrast, value-weighted average plan fees, which we calculate by weighting each mutual fund's fee by the dollar amount participants invest in the fund, represent the cost of the average investment option *chosen* by participants.

Although participants, on average, do tilt their allocations to cheaper funds on the menu, the average tilt between equal- and value-weighted plan fees is similar across rural and urban areas as well as across areas of different income or education levels. Therefore, our dispersion results are similar for equal- and value-weighted fees and the difference between these measures does not display significant geographic variability. This indicates that the main source of fee inequality comes from the menu design.

A potential question concerning these findings is whether fee differences are driven by differences in the type of investment options offered in the plans. To address this concern, our baseline analyses use benchmark adjusted fees by subtracting from the expense ratio of each menu option the average expense ratio of mutual funds in the same investment style. Additionally, we control for the plan's asset allocation as a robustness test and also analyze the distribution of fees in the various investment styles separately. We find very similar fee patterns when we limit our attention to only equity or only bond funds, for example, and the

results even hold across S&P 500 index funds. The exception is the target date group, where the differences are less pronounced.

Finally, we show that though our results are somewhat weaker, they continue to hold when we use management company and industry fixed effects. While understanding geographic variation in investment fees across industries and management companies is an important aspect of our paper, the analyses that utilize these fixed effects reveal that workers employed by similar-sized firms in the very same industry, investing in funds of the very same management company may face significant differences in the cost and quality of their investment opportunity sets when they live in different areas of the country.

Studying the dispersion of plan fees is important as small differences in fees can lead to economically substantial differences in retirement wealth over accumulation periods that can span 40 years. Analogously, it is also important to consider the compounding effects of differences in asset allocations over long investment horizons.

Having documented significant inequalities in plan fees, we next analyze the asset allocations to investigate whether participants' asset choices further contribute to unequal retirement outcomes. We find significant differences in asset allocations by local economic and demographic characteristics. Specifically, participant investments in equity funds as a proportion of total plan assets are significantly higher when the average income and the educational level of the zip code are higher. Additionally, equity investment allocations are lower in areas where the population has a higher proportion of Hispanic residents.

We also find that these allocation results are not driven by the asset composition of the menus offered to participants. This is not surprising given that allocation constraints are generally not binding in 401(k) plans, with an average of 26 investment options available to plan participants, even in the most rural areas. Consistent with our findings, Huberman and Jiang (2006) observe no relation between the proportion of savings plan participants

allocate to equity funds and the fraction of equity funds among the options offered in their plans. As Huberman and Jiang (2006) argue, this is in line with economic theory which suggests that investors should select portfolios based on risk-return considerations rather than the number of funds available or the prominence of a given asset class in the choice set. However, our results reveal that, even without the influence of the choice set, participants exhibit significant spatial differences in allocation decisions. While some of these differences are undoubtedly related to preferences - and optimal allocations should differ not just across age groups but also across other investor characteristics, such as wealth levels - they further compound the effect of higher fees.

In the last part of the paper we ask whether the results are mitigated by investment performance. Perhaps not surprisingly, our performance results are more muted. The signs of the coefficient estimates are generally consistent with the previous findings, indicating that higher fees are not offset by better performance. For example, plan investment performance is higher in more densely populated areas, correlating with, in part, higher education or higher income. Similarly, plans in areas with more Hispanic residents earn lower returns. In terms of overall plan performance, these results are stronger for raw than for benchmark-adjusted returns. When we focus on equity fund performance, we find consistent, but stronger results for both raw and risk-adjusted returns. Overall, our performance analyses suggest that higher fees are not offset by the availability of better performing investment options.

Taken together, our results show that despite an increase in ERISA-based lawsuits and heightened regulatory attention, workers face significant inequalities across 401(k) plans. These differences may be driven by sophistication: some companies may not possess the necessary expertise or resources to effectively evaluate investment options or the quality of the retirement plan they offer. Alternatively, some companies may not have the incentive to invest in creating high-quality plans when their workers are not financially sophisticated or do not consider the quality of DC savings plans when choosing employers. Moreover, our asset

allocation results show that participants further influence the savings gap in their retirement accounts.

Our paper contributes to a growing literature that seeks to deepen our understanding of the income and wealth inequality in the U.S. Chetty et al. (2014) study intergenerational mobility in the United States using administrative records on incomes. Saez (2021) discusses the evolution of inequality in the U.S. and how to better understand the role of the modern public economics and the prevalence of inequality concerns in the modern society. Similarly, Bayer and Charles (2018) document the evolution of earnings differences since 1940 by focusing on different racial groups. They show that the black-white income gap has recently expanded back to the levels seen in the 1950s. Fagereng et al. (2020) highlight the role of heterogeneity in investment returns in amplifying wealth differences. Using Norwegian data, they find that there is substantial heterogeneity in returns on wealth, and the returns are positively correlated with levels of wealth held. Our paper adds to this literature by focusing on retirement savings, one of the major financial assets owned by U.S. households. We show that workers face significant spatial inequalities across their 401(k) retirement plans. We also uncover a stark urban-rural divide in the retirement plan quality that is related to differences in a wide range of demographic characteristics such as income, education, age, and ethnicity.

Our paper also contributes to an emerging literature on inequalities in defined contribution savings opportunities. Bhattacharya and Illanes (2022), Loseto (2023), and Yang (2023) propose models to explain why some plans may feature low-quality or high-fee funds in equilibrium. Yogo et al. (2023) study financial participation, specifically the availability and take-up of DC plans and bank accounts. They document geographic variation in financial participation and show that it is related to the income level of the area rather than its racial composition. Choukhmane et al. (2023) examine the uneven effects of the savings incentives embedded in DC plans and find significantly lower contribution rates among Black and Hispanic workers. Their paper shows that contribution gaps are further amplified by

employer matching and tax benefits, creating unequal opportunities in retirement wealth accumulation. We extend this line of research by providing the first comprehensive analysis of plan fees. Additionally, we also show that participants' allocation choices further magnify inequalities in savings outcomes.

Finally, our research also contributes to the large literature on the role of menu design in facilitating the efficiency of participants' savings in defined contribution plans. For example, some papers examine whether DC plan menus offer adequate choices to participants.[2] Others investigate the role of employer stock as an investment option.[3] Finally, extant research also shows that menus can frame the participants' allocation choices.[4]

2 Data and Summary Statistics

In this section, we describe the data sources and provide summary statistics.

2.1 Data Sources

We obtain information on the near universe of 401(k) plans in the US from Brightscope for the period 2010 to 2021. Brightscope sources these data from Form 5500 filings with the Department of Labor (DOL). The information includes the full menu of investment options available to plan participants in plans with at least 100 employees. Plans with fewer than 100 employees face less stringent reporting requirements and therefore, menu information for these plans is generally not available. We identify the actual DOL filing for each plan and year

[2]See, for example, Elton, Gruber, and Blake (2006), Angus, Brown, Smith, and Smith (2007), Tang, Mitchell, Mottola, and Utkus (2010), and Egan, MacKay, and Yang (2022).

[3]See, for example, Benartzi and Thaler (2001), Poterba (2003), Huberman and Sengmueller (2004), Rauh (2006), and Brown, Liang, and Weisbenner (2006).

[4]See, for example, Madrian and Shea (2001), Choi, Laibson, Madrian, and Metrick (2002) Choi, Laibson, Madrian, and Metrick (2004) Agnew, Balduzzi, and Sunden (2003), Huberman and Jiang (2006), Brown, Liang, and Weisbenner (2007), Choi, Laibson, and Madrian (2009), Choi, Laibson, and Madrian (2010), Carroll, Choi, Laibson, Madrian, and Metrick (2009), Tang, Mitchell, Mottola, and Utkus (2010), Sialm, Starks, and Zhang (2015), Pool, Sialm, and Stefanescu (2016), Parker, Schoar, Cole, and Simester (2022), Parker, Schoar, and Sun (2022), and Pool, Sialm, and Stefanescu (2024).

in our sample by matching the information obtained from Brightscope with corresponding entries on Form 5500. This enables us to extract additional plan characteristics from the Form 5500 datasets available on the DOL's website.

To obtain information on the mutual funds included in DC plans, we match the menu data to the CRSP Survivorship Bias-Free U.S. Mutual Fund database using the fund tickers assigned to each fund by Brightscope. When the ticker is not available, we match by fund name. Although Brightscope assigns tickers to the mutual fund investment options on the menu, some of these assignments are not exact, rather, they are based on an algorithm Brightscope uses to infer the share class held in the plan. Hence, some tickers may not correspond to the actual share class of the fund included in the plan. Therefore, in most of our analyses, we use information at the fund, rather than the share class level. While our main analyses are at the fund level, we perform several of our tests at the share class level. For robustness, we also repeat these analyses using the subsample of options for which Brightscope is able to uncover the correct share class.

We calculate fund-level characteristics by combining information on the fund's share classes into fund-level variables. Accordingly, fund returns are calculated as the lagged TNA-weighted average returns of the share classes. For fund-level expense ratios, we adopt two measures. We use the expense ratio of the cheapest share class as well as the lagged TNA-weighted average expense ratio of the share classes. We also classify each mutual fund as 'balanced,' 'bond,' 'domestic equity,' 'international equity,' or 'other.' We create separate indicator variables for money market, target date, and index funds. We manually group funds into target date and index fund categories based on their fund names.

In most of our analyses, we use benchmark-adjusted fees and returns. To benchmark adjust, we first calculate the value-weighted average fee and return, respectively, in the fund's style category each year as defined by the objective codes provided in CRSP, excluding the

focal fund in question. The benchmark-adjusted fund fee (return) is then calculated as the difference between the fund's fee (return) and the corresponding benchmark average.

Finally, we perform most of our analyses at the plan level. Accordingly, we collapse fund fees and returns within each plan into plan averages. For example, equal-weighted plan fees are calculated by simply averaging fund fees (as well as benchmark-adjusted fees) across the available investment options on the menu. Similarly, value-weighted plan fees (as well as benchmark-adjusted fees) are weighted average fund fees where weights are given by the lagged dollar investments each fund receives in the plan.

We also obtain zip code-level information on the economic and demographic characteristics of the area from the American Community Survey (ACS) conducted by the U.S. Census Bureau.[5] The American Community Survey is a nationwide survey designed to provide detailed information on social, economic, housing, and demographic characteristics of America's communities (at the state or zip code level) every year. We match this information to our plans by year and zip code, using the zip code of the plan as provided on Form 5500.

2.2 Summary Statistics

Our final sample contains the investment menu for 93,941 unique plans, including those from both private and publicly traded companies, and 554,690 plan-year observations. Our sample covers $5.45 trillion in retirement assets in 2020 and approximately 70.36 million participants. This represents roughly 78% of all 401(k) assets reported by ICI in 2020.[6]

The number of investment options offered by the average plan has increased from 25.67 in 2011 to 29.34 in 2021. The various investment options are offered by about ten different investment companies in the average plan. Around 56% of the funds in our sample are domestic equity funds, 18% are balanced funds, and 14% are bond funds. The majority of

[5]We use a crosswalk file to map the ZIP Codes to ZIP Code Tabulation Areas (ZCTAs), which in most cases are the same.

[6]https://www.icifactbook.org/pdf/2024-factbook-ch8.pdf

the balanced funds are target date funds. These funds became popular especially after the passage of the Pension Protection Act (PPA) of 2006, as documented by Mitchell and Utkus (2021).[7]

Plan-level expense ratios have declined over our sample period. While the average equal-weighted expense ratio is 73.23 bps in 2011, the corresponding figure is 48.59 bps in 2021. Value-weighted expense ratios are lower, indicating that participants allocate their savings to the cheaper investment options on the menu. In 2011, this translates into a value-weighted expense ratio of 69.33 bps, while the corresponding figure is 44.16 bps in 2021.

Table 1 provides descriptive statistics for the variables used in our analyses. The variables are described in Table IA.1 in the Internet Appendix. The average (median) plan size is \$84.53 million (\$10.85 million). The average (median) plan has 1324 (277) participants. 9% of our plans are sponsored by publicly listed companies. About 5% of our plans are collectively negotiated (i.e., unionized).

Participants allocate 75.29% of these savings to equity investments, 18.95% to bonds, and 2.64% to money market securities. When calculating these proportions, we incorporate information on the portfolio allocation of the target date/balanced funds themselves using information on the portfolio holdings of these funds.

The table also reports summary statistics on the socioeconomic and demographic characteristics of the plan's geographic area. The median per capita income in our sample is \$35,205 and the median home value is \$250,300. The average plan is located in an area where 41.26% of the residents have college degrees (undergraduate or higher) and 26.91% of residents are at least 55 years old. Finally, in terms of ethnic and racial composition, 14.27% of residents are Hispanic, 11.43% are Black, and 64.88% are White.

[7]Following the PPA, the DOL added a new fiduciary protection to ERISA for Qualified Default Investment Alternatives (QDIA), such as target-date funds, traditional balanced funds, and managed account advice services.

3 Results

3.1 Plan Fees Distributions

We begin our analyses by examining plan-level fees. Panel A of Figure 1 provides a histogram of value-weighted plan fees in our sample in 2011, which are the asset-weighted average fees of the mutual funds offered on the menu using lagged dollar investments for each fund as weights. The corresponding distribution for 2021 is depicted in Panel B. As mentioned above, fees have declined over the sample period and as a result, the distribution of plan fees have shifted to the left. However, fee dispersion remains significant. In 2011, the asset-weighted average fee of plans at the 10th percentile is 35 basis points (bps) in our sample, while that of plans at the 90th percentile is 99bps. A nearly 60bps difference is still present in 2021, with asset-weighted average plan fees of 13bps and 72bps at the 10th and 90th percentiles, respectively. Interestingly, the distribution in 2021 is bimodal, one mode occurs at a fee level of around 30bps and the other at a level of around 60bps. This change in the distribution of fees may suggest a change in the competitive environment in the provision of DC pension plans.

To take a closer look at the fee dispersion, in Table IA.2 we report average equal- and value-weighted plan fees over our sample period for cities with a population exceeding half a million. We observe a significant dispersion in plan fees among these 53 large cities. For example, while plans located in San Jose, California, have an average fee of 38 bps, plans in Fresno, also in California, exhibit a much higher average fee of 64 bps. Overall, the equal-weighted and value-weighted fee spreads (between the highest and lowest fees) are as much as 43 and 48 basis points across these large U.S. cities, respectively. The standard deviations of the equal-weighted and value-weighted plan fees are 7.86 and 8.08 basis points, respectively.

To examine whether the observed fee dispersion is simply driven by the random distributions of plans across different areas, we perform a simulation analysis. Each year, for each zip code in our sample, we randomly select the same number of plans in that zip code from the plan universe. We perform this random draw exercise for all zip codes and for all years in our sample, and the simulation is repeated 1000 times. Next, we compare the simulated fee distributions to the actual fee distributions of the 53 large U.S. cities.

Figure 2 shows the histograms of the simulated fee distributions and the actual fee distributions based on value-weighted plan fees. Panel A reports the fee spreads, whereas Panel B reports the standard deviations. We observe a sharp contrast between the simulated and actual fees. Our analysis suggests that if the plans were randomly distributed, we would see an average fee spread of 14.74 bps and a standard deviation of 3.09 bps across large U.S. cities. In contrast, the actual fee dispersions we observe (i.e., a spread of 48.35 bps and a standard deviation of 8.08 bps) are much larger. In fact, none of the 1000 simulations are close to the actual dispersion.

Finally, Figure 3 shows the geographic distribution of plan fees for 2010 and 2021 for our full sample. Fees have uniformly declined over our sample period, as indicated by the different scales. More importantly, consistent with our prior results, the graph shows significant geographic variability in fees across geographical areas over the entire sample period. In addition, we also observe a higher concentration of high-fee plans in less populated areas.

3.2 Plan Fees and Geographic Characteristics

To understand the surprisingly large geographic fee spread, in the next part of the paper, we examine whether the variability in fees is related to population density, as well as the economic and demographic characteristics of the geographic areas. Since fees vary with plan characteristics and are also driven by the asset classes included on the plan's menu, we perform the analysis formally in a multiple regression framework. To isolate our fee

analyses from the effect of differences in the type of asset classes offered in plans, we use benchmark-adjusted fees in our baseline analyses.

To absorb variation due to differences in plans, we control for various plan characteristics. For example, since economies of scale are an important determinant of costs, we include plan size as a control variable. To characterize the governance of the sponsoring company, we use an indicator variable that captures whether the company is part of a bargaining agreement with a union. To proxy for sponsor attitudes towards employees, we include the match that the sponsor provides. Sponsors that are more generous with their contributions may also advocate employee savings through offering a more economical plan. Additionally, since our sample includes both publicly traded and private firms, we add an indicator variable to capture this feature of the employer in our analyses. Finally, we include year and state fixed effects.

Table 2 reports the results using the value-weighted benchmark-adjusted investment fee of the plan as the dependent variable. The main independent variables are economic and demographic characteristics at the zip-code level. Since these zip code-level Census variables are highly correlated, we introduce them one-by-one in the table. The pairwise correlations are reported in Table IA.3 in the Internet Appendix.

Column 1 shows that benchmark-adjusted plan fees are significantly negatively related to population density. This indicates that a rural-urban divide exists across 401(k) plans even after controlling for various plan characteristics. The results in Columns 2 - 5 indicate that economic and demographic characteristics are also significantly related to plan fees. For example, fees are lower in areas that have more educated residents, as measured by the proportion of college graduates (with at least an undergraduate degree). Similarly, fees are lower in zip codes where the per capita income is higher. In terms of racial and ethnic characteristics, we find that fees are higher in areas with a larger fraction of Hispanic residents.

The table also shows that fees are marginally lower when the proportion of Asian residents is higher, however this result is not robust in all specifications. In Column 5 we find that fees are also higher when a larger share of the population is older. Finally, the last column of the table estimates the model by including the variables introduced in Columns 2-5 simultaneously. Due to the high level of correlation, the effect of income is subsumed by the other explanatory variables, but the main conclusions remain similar. Interestingly, population density remains significant even after the inclusion of the socioeconomic and demographic characteristics of the area. Table IA.4 in the Internet Appendix shows that the results are similar when we use alternative variables to capture education, income, race/ethnicity, and age.

The coefficient estimates on the control variables in Table 2 are largely consistent with previous findings in the literature. For example, fees are lower in larger plans and in plans sponsored by publicly traded corporations. Fees are also negatively related to the company's match rate. Additionally, collectively-bargained firms offer plans with lower average fees.

In Table 2 the dependent variable is the plan value-weighted benchmark adjusted fee, which represents the cost of the average investment option *chosen* by participants. To study whether the source of potential inequalities comes from the menu design or the allocation choices of participants, we next examine equal-weighted investment fees (i.e., the equal-weighted average of the benchmark-adjusted expense ratios of the mutual funds offered in the plan), which represent the cost of the average investment option *available* to participants.

Panel A of Table 3 shows the results using equal-weighted plan fees. The coefficient estimates in the table are very similar to those obtained for value-weighted fees both in terms of economic magnitudes and statistical significance. In Panel B, we re-run the analyses using the difference between the value- and equal-weighted plan fees. This measure captures the degree to which participants tilt their allocations toward cheaper investment options on the

menu. When the difference is negative, participant fees are lower than the average fees of funds on the menu.

Although participants, on average, do tilt their allocations to cheaper funds on the menu, the average tilt between equal- and value-weighted plan fees is similar across rural and urban areas. Participants in more educated areas and in areas with a lower proportion of older residents do tilt their allocations toward lower fee funds. However, for many demographic variables we do not find significant differences between equal- and value-weighted fees. This indicates that the main source of fee inequality comes from the menu design. Interestingly, some of the cost advantages of larger and unionized plans are reduced by the allocation decisions of the employees. On the other hand, the allocation decisions of the retirement savers in firms with high employer matches further reduce the expense ratios.

One potential concern with our results thus far is that these fee differences may be driven by differences in the type of investment options offered in the plans. While our analyses use benchmark-adjusted fees, simply benchmark-adjusting may not fully address this concern. Therefore, in Table IA.5 of the Internet Appendix we reproduce our baseline model from Table 2 by adding controls that capture the distribution of plan assets in four broad fund types available in the plan as additional robustness, which include equity, bond, money market, and balanced. For brevity, the table captures race/ethnicity using the groups '*Latino*,' '*Non-Latino Minority*,' and '*White*,' with the latter being the omitted group. We also follow these categorizations in the rest of our analyses. The table shows that our coefficient estimates remain qualitatively identical using this alternative specification.

Moreover, we also analyze the distribution of fees in the various investment styles separately. These results are reported in Table 4. The regressions include the very same controls as in the previous analyses, however, we omit these for brevity in the table. We find very similar

fee patterns when we limit our attention to only equity, bond, and money market funds. The exception is the target date group, where the differences are less pronounced.

In addition to the asset class analyses, it is also interesting to ask whether there are similar spatial differences among S&P 500 index funds, which are largely homogeneous products. 68.6% of plans offer these funds in our sample, though the prevalence of these options is increasing over time. Specifically, only 57.9% of plans feature an S&P 500 fund in 2011, while the corresponding number in 2021 is 78.5%.

The regression results using the subsample of S&P 500 funds is reported in Table 5. The table shows that the fee patterns are very similar to those reported in Table 2 using the entire sample of menu funds. Thus, firms located in less densely-populated, less affluent, and less educated areas tend to offer S&P 500 index funds from more expensive providers.

Table 6 reproduces our baseline results from Table 2 by including management company and industry fixed effects. While understanding the geographic variation in investment fees across industries and management companies is an important aspect of our paper, the table shows that our results continue to hold when we use management company and industry fixed effects. Though the results in these analyses are somewhat weaker, they reveal that workers employed by similar-sized firms in the very same industry, investing in funds of the very same management company may face significant differences in the cost and quality of their investment opportunity sets when they live in different areas of the country.

Finally, in Table IA.6 in the Internet Appendix we adopt alternative fee measures. Specifically, within each plan year we calculate fees at the 10th and the 90th percentiles of the fee distribution of the available investment options, to capture fees charged by low- and high-fee funds in the plan, respectively. This analysis is insightful as more sophisticated participants may focus on investment options with relatively low fees. On the other hand, less sophisticated participants may select relatively expensive options. The results are reported

separately for low- and high-fee funds in Panels A and B of the table. We consistently find that the fees of both low-fee *and* high-fee funds offered in the plan are significantly lower in more educated areas and those with higher per capita income. Similarly, both 10th- and 90th-percentile fees are higher when the population has a higher fraction of Hispanic or older residents. We obtain similar results when we use fees charged by the cheapest and most expensive funds on the menu instead.

3.3 Asset Allocation

Our results thus far show that there are significant differences in fees across 401(k) plans. Studying the dispersion of plan fees is important as small differences in fees can lead to economically substantial differences in retirement wealth over accumulation periods that can span 40 years. For example, Loseto (2023) illustrates that, for a worker earning $70,000 and contributing 10% to retirement, paying 40bps more in investment fees, which corresponds to moving from a plan at the 25th percentile to one at the 75th percentile in his sample, amounts to $95,000 lower savings over a 40-year working period.

Differences in retirement savings are further magnified by the differences in returns across asset classes. For example, the difference between equity and money market returns can be orders of magnitudes higher than the dispersion in fees. Therefore, it is also important to consider the compounding effects of asset allocation over long investment horizons. Of course some differences in allocations are undoubtedly related to preferences: optimal allocations should differ not just across age groups but also across various other investor characteristics, such as wealth levels. Nonetheless, differences in asset choices can significantly contribute to unequal retirement outcomes.

To examine participants' asset allocations in the plans, we first look at the number of available investment options on the menus. Table 7 reports that more urban areas offer more menu choices. This is also true for areas with higher educational achievements and

higher income per capita. More menu choices manifest themselves in more choices in all fund categories, as described in Panels B-E in the table.

To measure participants' allocations/exposure to three broad asset classes - equities, bonds, and money market securities - we calculate the proportion of retirement savings participants invest in each of these assets. Accordingly, we assign each fund on the menu into the three categories based on their investment styles. Since target date/balanced funds invest in multiple asset classes, we use portfolio holdings information from CRSP to decompose their total assets into equity, bond, and money market shares. We then use the ratio of dollar assets in each category to that of the plan to determine participants' asset allocation.

In addition to determining the asset exposure *chosen* by participants, we also calculate the exposure *offered* to participants by the collection of funds available on the menu. To do so, we count the number of funds in each category and also consider the portfolio compositions of target date/balanced funds, as before. For example, if the plan has two equity funds, one bond fund, and one target date fund that holds 50% equity and 50% bonds, we conclude that the fraction of equity investment offerings in the plan is 2.5/4 and that of bonds is 1.5/4.

Table 8 displays results for the proportional allocations chosen by participants as our dependent variable. The model includes the very same control variables used in the previous analyses, which are omitted in the table for brevity. The coefficient estimates reported in the table confirm that participants' asset choices do indeed contribute to unequal retirement outcomes, further magnifying the effects of fees. We find a rural-urban divide that is similar to that we document for investment fees. Specifically, participant investments in equity funds as a proportion of total plan assets are significantly higher when the average income and the educational level of the zip code are higher. Additionally, equity investment allocations are lower in areas where the population has a higher proportion of Hispanic residents.

These allocation results are not driven by the asset composition of the menus offered to participants, however. Specifically, Table IA.7 in the Internet Appendix reproduces our results from Table 8 by replacing the dependent variable with the fraction of funds across the three asset classes offered on the menu. The table shows, for example, that the relation between the fraction of equity funds among the funds offered is generally not related to population density or area demographic and economic characteristics. If anything, plans in high income areas offer a lower proportion of equity funds, though this relation is not robust across specifications.

That participant allocations are not driven by menu options is not surprising given that allocation constraints are generally not binding in 401(k) plans, with an average of 26 investment options available to plan participants, even in the most rural areas. Consistent with our findings, Huberman and Jiang (2006) observe no relation between the proportion of savings plan participants allocate to equity funds and the fraction of equity funds among the options offered in their plans. As Huberman and Jiang (2006) argue, this is in line with economic theory which suggests that investors should select portfolios based on risk-return considerations rather than the number of funds available or the prominence of a given asset class in the choice set. However, our results reveal that, even without the influence of the choice set, participants exhibit significant spatial differences in allocation decisions that are also related to socioeconomic and demographic characteristics. While some of these differences are in line with those predicted by preference theories, they further compound the effect of higher fees.

3.4 Performance

In this section we ask whether our results on unequal opportunities are mitigated by investment performance. To do so we calculate plan-level performance using information on the performance of the individual mutual funds included on the plan's menu. We examine both

raw and benchmark-adjusted performance. To measure raw plan performance, we simply calculate the weighted average net return of each fund on the menu using lagged dollar participant investments as weights. To adjust for benchmarks, we subtract from the net return of each menu option the average net return of mutual funds in the same investment style, excluding the focal fund.

Panel A and B of Table 9 report our results for raw and benchmark-adjusted returns, respectively. The econometric specification follows those in the previous section. Perhaps not surprisingly, our performance results are more muted, especially if performance is adjusted for the asset class returns. The signs of our coefficients are generally consistent with our previous findings, indicating that higher fees or lower exposure to equity are not offset by better performance, though the results are not always significant. For example, benchmark-adjusted plan investment performance is higher in more densely populated areas, correlating with, in part, higher education or higher income, though the estimates are not statistically significant. Similarly, plans in areas with more Hispanic residents generate lower returns.

In Table 10 we report the performance results separately for equity and bond funds. When we focus on equity fund performance, we find consistent, but stronger results for both raw and risk-adjusted returns. These results are tabulated in Panels A and B. Panels C and D present the coefficient estimates for bonds. Here again, our estimates are consistent with the previous findings, albeit weaker.

Overall, our performance analyses suggest that higher fees are not offset (or driven by) the availability of better performing investment options.

3.5 Additional Analyses

In this section we provide additional analyses to expand our fee results in Section 3.1 above.

3.5.1 Adding Low-Fee Funds

First, we ask whether the probability of adding low-fee funds to the menu displays geographic variation similar to that reported in our previous analyses. To address this question, we focus on the subsample of plans that do not currently include low-fee funds. We define low-fee funds as those in the bottom 25% of the distribution of benchmark-adjusted fees.

We report results for two specifications. First, we run a panel regression in which the dependent variable is *AddLowFeePerc*, which is the percentage of low fee funds added to a plan's menu at time t. Our second specification is a logit model, in which the dependent variable is *AddLowFee*. This is an indicator variable that takes the value of one if a plan adds at least one low-fee fund to the menu at time t, and zero otherwise. Our sample size in these analyses is markedly smaller than that used in other analyses as our requirement of not having a low-fee fund only applies to about 15% of our sample.

The results of these analyses are reported in Table 11. The coefficients in Panel A are estimated using OLS, while those in Panel B are from a logit model. The results show that more urban areas and those with higher educational levels and higher income are more likely to add low-fee funds to their menus.

3.5.2 Subsample Analyses

Our second set of additional analyses focus on subsamples. First, we ask how the geographic variability of fees has changed over time by dividing our sample into two subperiods. The first subperiod runs from 2011 to 2015, while our second subperiod is from 2016 to 2021.

As mentioned above, average expense ratios of mutual funds have been steadily declining over time, both in terms of industry averages as well as those of funds marketed in the retirement channel. Additionally, retirement plans have been under increased regulatory

scrutiny in recent years, along with heightened litigation activity targeting defined contribution plans. Our subsample analyses are motivated by these developments.

Table 12 reports our results. Perhaps surprisingly, the geographic fee dispersion that we document above is mostly driven by the second subperiod, suggesting that inequalities across plans have increased over time. This is consistent with Bhattacharya and Illanes (2022) who argue that increased regulatory scrutiny and litigation largely affected only a limited set of plans. Figure 3 confirms this. The figure shows average plan fees over time for small and large plans separately in Panels A and B in rural and urban areas. While fees have declined in both areas and for plans of all sizes, the decline has been markedly steeper in urban areas, especially among smaller plans, indicating that regulatory scrutiny and litigation risk had a disproportionately larger effect in these settings.

In our second set of subsample analyses, we investigate how the geographic variability of fees differs across small and large plans. Economies of scale are an important determinant of plan fees. However, size also proxies for additional plan features. For example, size may capture financial sophistication in the sense that large plans have more resources and larger benefits departments and thus may be better able to offer higher quality menus to plan participants. Furthermore, large plan sponsors may also have more bargaining power when setting the menu with recordkeepers and fund companies. An additional consideration for size is that we use plan locations based on the zip code reported on Form 5500. The economic presence of large companies in our sample (i.e., the location of their employees) is likely spread across a large number of locations, however. This in turn also predicts that our results should not be driven by the very largest firms in our sample.

To investigate the role of size, we divide our sample plans into three groups based on total plan assets. The results are reported in Table 13. Panels A-C present results for small, mid, and large plans, respectively. Additionally, in Panel D we re-run our results by eliminating

plans with assets above $100 million. Overall, we observe that, regardless of plan size, fees are lower for more populated areas. Our results on geographical charateristics are stronger for small and mid-sized plans. Finally, excluding the largest plans from the sample does not affect our results.

3.5.3 Share Class-Level Analyses

While our results thus far are at the plan level, our data are at the option level. As mentioned above, Brightscope attempts to identify the share class of the fund included on the menu. Therefore, there is a ticker assigned to each fund in the database, although when share class information is not available, the assigned ticker may not correspond to the actual share class of the fund included in the plan.

The database does indicate whether the ticker is known with certainty or inferred by Brightscope. For example, the former is the case for the subsample of plans that disclose share class information in the 'Schedule of Assets' table in the Form 5500 filing. Brightscope also attempts to infer the share class from other sources, such as using other information in the filing as well as the assets invested in the fund. Once the tickers are assigned, Brightscope also adds the corresponding expense ratio to the database.

We use these data to perform some option-level analyses. Since the very same fund can have different fees across different plans in the same year (by offering different share classes to different plans), we estimate our analyses within fund-year.

The results of these option-level analyses are reported in Table 14. The table reveals that differences in the fees charged by the same fund at the same time vary significantly with the demographic characteristics of the area and are higher in more rural areas. Thus the results are consistent with our baseline analyses estimated at the plan level.

4 Conclusion

In this paper we study mutual fund fees in the near universe of 401(k) plans in the US from 2011 to 2021 to examine disparities in DC savings opportunities. Our results show that despite an increase in ERISA-based lawsuits and heightened regulatory attention, workers face significant inequalities across 401(k) plans. These differences may be driven by sophistication: some companies may not possess the necessary expertise or resources to effectively evaluate investment options or the quality of the retirement plan they offer. Alternatively, some companies may not have the incentive to invest in creating high-quality plans when their workers are not financially sophisticated or do not consider the quality of DC savings plans when choosing employers. Moreover, our asset allocation results show that participants further exacerbate the savings gap in their retirement accounts.

References

Agnew, J., P. Balduzzi, and A. Sunden (2003). Portfolio choice and trading in a large 401(k) plan. *American Economic Review 93*, 193–215.

Angus, J., W. O. Brown, J. K. Smith, and R. L. Smith (2007). What's in your 403(b)? academic retirement plans and the costs of underdiversification. *Financial Management*, 1–38.

Bayer, P. and K. K. Charles (2018). Divergent paths: A new perspective on earnings differences between black and white men since 1940. *The Quarterly Journal of Economics 3*, 1459–1501.

Benartzi, S. and R. H. Thaler (2001). Naive diversification strategies in defined contribution saving plans. *American Economic Review 91*(1), 79–98.

Bhattacharya, V. and G. Illanes (2022). The design of defined contribution plans. Working Paper.

Brown, J. R., N. Liang, and S. Weisbenner (2006). 401(k) matching contributions in company stock: Costs and benefits for firms and workers. *Journal of Public Economics 90*, 1315–1346.

Brown, J. R., N. Liang, and S. Weisbenner (2007). Individual account investment options and portfolio choice: Behavioral lessons from 401(k) plans. *Journal of Public Economics 91*, 1992–2013.

Carroll, G. D., J. Choi, D. Laibson, B. C. Madrian, and A. Metrick (2009). Optimal defaults and active decisions. *Quarterly Journal of Economics 124*, 1693–1674.

Chetty, R., N. Hendren, P. Kline, and E. Saez (2014). Where is the land of opportunity? The geography of intergenerational mobility in the United States. *Quarterly Journal of Economics 129*, 1553–1623.

Choi, J., D. Laibson, and B. C. Madrian (2009). Mental accounting in portfolio choice: Evidence from a flypaper effect. *American Economic Review 99*, 2085–2096.

Choi, J., D. Laibson, and B. C. Madrian (2010). Why does the law of one price fail? An experiment on index mutual funds. *Review of Financial Studies 23*, 1405–1432.

Choi, J. J., D. Laibson, B. C. Madrian, and A. Metrick (2002). Defined contribution pensions: Plan rules, participant decisions, and the path of least resistance. In J. M. Poterba (Ed.), *Tax Policy and the Economy*, pp. 67–113. Cambridge, MA: MIT Press.

Choi, J. J., D. Laibson, B. C. Madrian, and A. Metrick (2004). For better or for worse. Default effects and 401(k) savings behavior. In D. A. Wise (Ed.), *Perspectives on the Economics of Aging*, pp. 81–121. Chicago, IL: University of Chicago Press.

Choukhmane, T., J. Colmenares, C. O'Dea, J. Rothbaum, and L. D. Schmidt (2023). Who benefits from retirement saving incentives in the u.s.? evidence on racial gaps in retirement wealth accumulation. Working Paper.

Egan, M., A. MacKay, and H. Yang (2022). What drives variation in investor portfolios? Evidence from retirement plans. *Working Paper*.

Elton, E. J., M. J. Gruber, and C. R. Blake (2006). The adequacy of investment choices offered by 401(k) plans. *Journal of Public Economics 90*, 1299–1314.

Fagereng, A., L. Guiso, D. Malacrino, and L. Pistaferri (2020). Heterogeneity and persistence in returns to wealth. *Econometrica 88*, 115–170.

Huberman, G. and W. Jiang (2006). Offering versus choice in 401(k) plans: Equity exposure and number of funds. *Journal of Finance 61*, 763–801.

Huberman, G. and P. Sengmueller (2004). Performance and employer stock in 401(k) plans. *Review of Finance 8*, 403–443.

Loseto, M. (2023). Plan menus, retirement portfolios, and investors' welfare. Working Paper.

Madrian, B. C. and D. F. Shea (2001). The power of suggestion: Inertia in 401(k) participation and savings behavior. *Quarterly Journal of Economics 116*, 1149–1187.

Mitchell, O. S. and S. Utkus (2021). Target date funds and portfolio selection in 401(k) plans. *Journal of Pension Economics and Finance*, 1–18.

Parker, J. A., A. Schoar, A. Cole, and D. Simester (2022). Household portfolios and retirement saving over the life cycle. Working Paper.

Parker, J. A., A. Schoar, and Y. Sun (2022). Retail financial innovation and stock market dynamics: The case of target date funds. Working Paper.

Pool, V. K., C. Sialm, and I. Stefanescu (2016). It pays to set the menu: Mutual fund investment options in 401(k) plans. *Journal of Finance 71*, 1779–1812.

Pool, V. K., C. Sialm, and I. Stefanescu (2024). Mutual fund revenue sharing in 401(k) plans. *Working Paper*.

Poterba, J. M. (2003). Employer stock and 401(k) plans. *American Economic Review 93*, 398–404.

Rauh, J. (2006). Own company stock in defined contribution pension plans: A takeover defense? *Journal of Financial Economics 81*(2), 379–410.

Saez, E. (2021). Public economics and inequality: Uncovering our social nature. *AEA Papers and Proceedings 111*, 1–26.

Sialm, C., L. T. Starks, and H. Zhang (2015). Defined contribution pension plans: Sticky or discerning money? *Journal of Finance 70*, 805–838.

Tang, N., O. S. Mitchell, G. R. Mottola, and S. P. Utkus (2010). The efficiency of sponsor and participant portfolio choices in 401(k) plans. *Journal of Public Economics 94*, 1073–1085.

Yang, H. (2023). What determines 401(k) plan fees? a dynamic model of transaction costs and markups. Working Paper.

Yogo, M., A. Whitten, and N. Cox (2023). Financial inclusion across the united states. Working Paper.

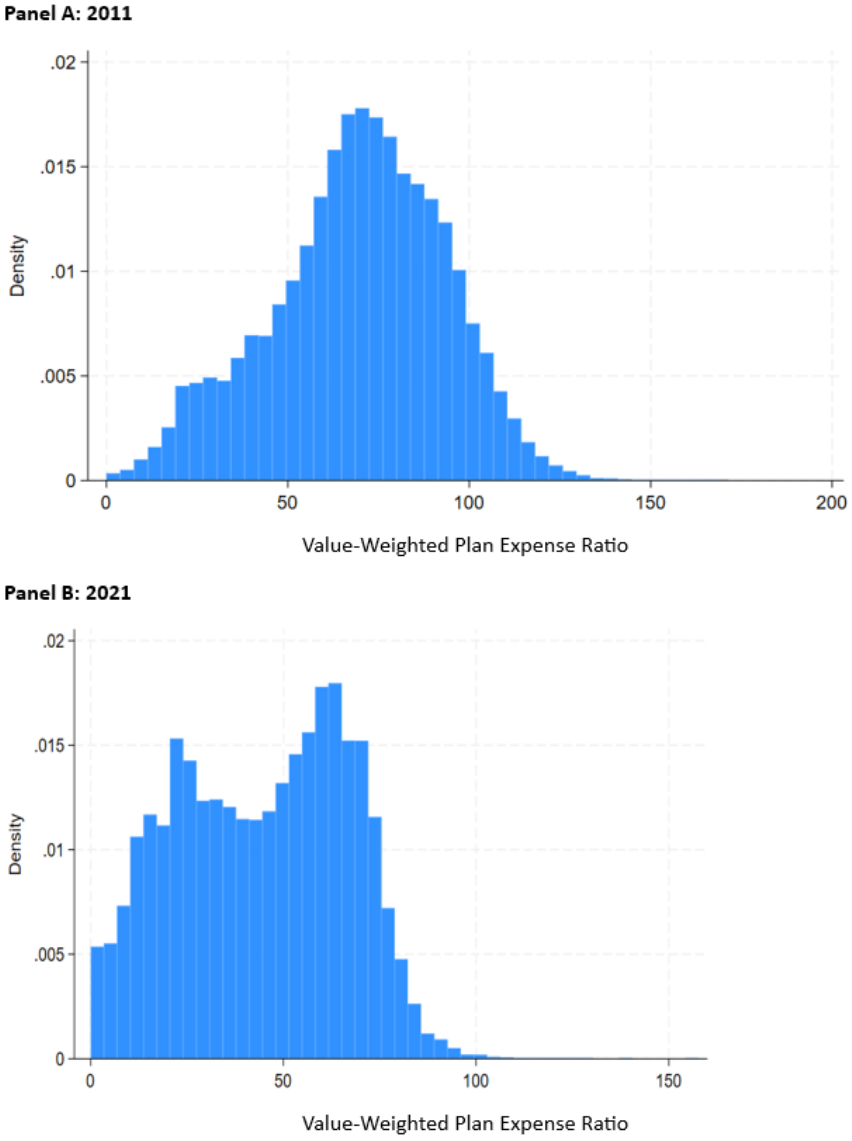

Figure 1: Distribution of Value-weighted Plan fees.
The graph shows the distribution of plan fees in 2011 (Panel A) and 2021 (Panel B).

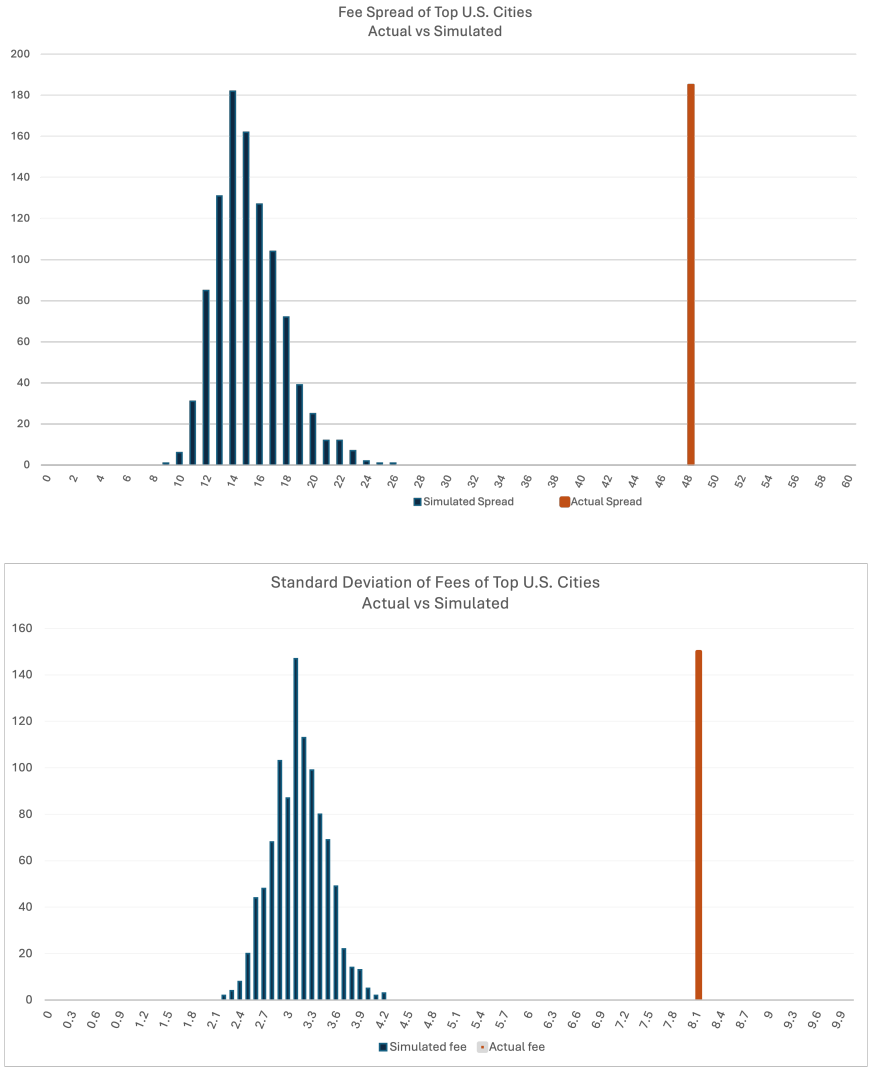

Figure 2: Distribution of Simulated versus Actual VW plan level fees.
The figure shows the histograms of simulated fee distributions and the actual fee distributions of the value-weighted plan fees for all U.S. cities with a population exceeding half a million. Panel A reports the fee spreads (between the minimum and maximum fees), while panel B reports the standard deviations of fees. The simulation is performed for each zip code and each year by randomly picking the same number of plans in the zip code from the plan universe. We repeat the exercise for all zip code and all years in our sample for 1000 times.

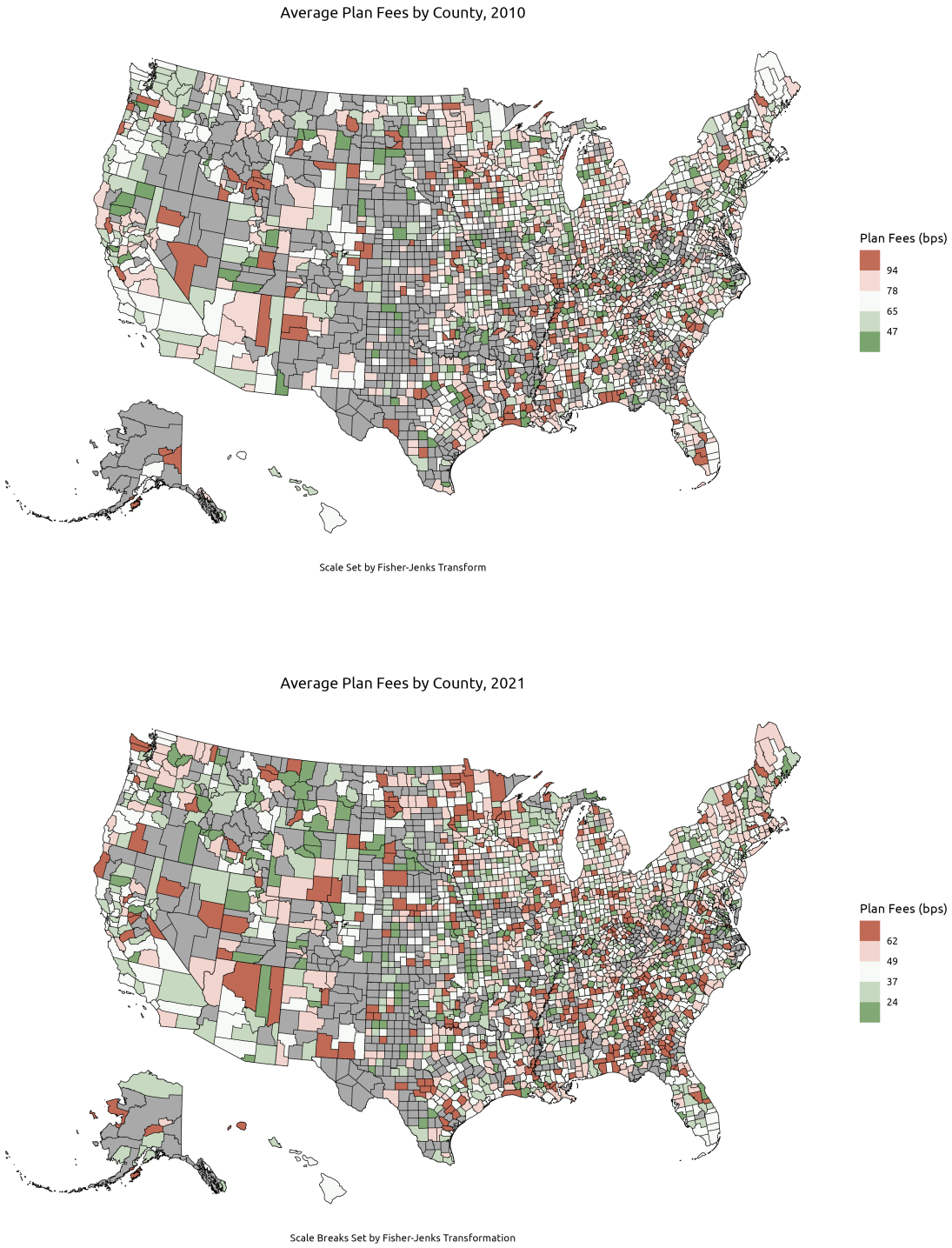

Figure 3: Fee Maps.
The graph shows average plan fees by county in 2010 and 2021.

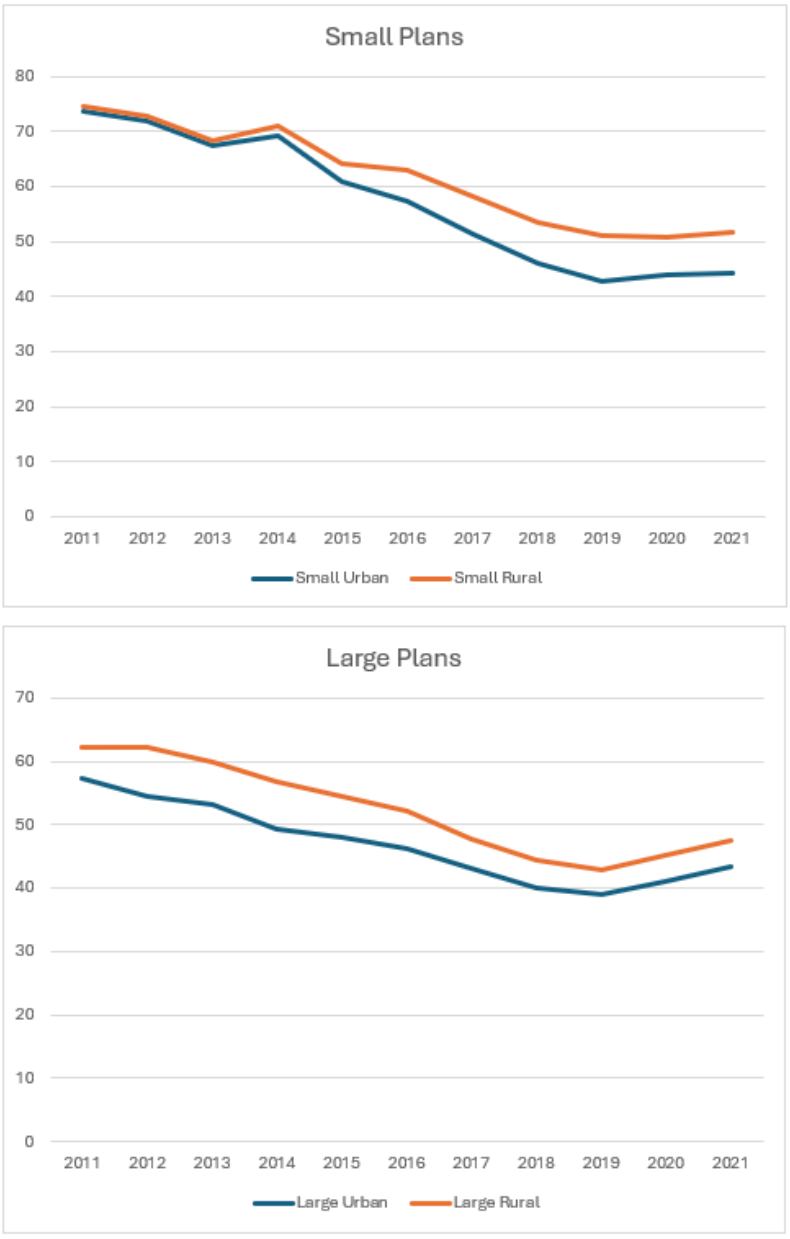

Figure 4: Rural vs. Urban.
The graph shows average plan fees for plans with assets below $25 million (Panel A) and assets above $25 million (Panel B) in rural and urban areas. Rural (urban) areas are defined as those with population densities below the 10th (above the 90th) percentile in our sample.

Table 1: Summary Statistics

The table reports descriptive statistics for the variables used in our analyses. The variable definitions are provided in Table IA.1 in the Internet Appendix.

	Unit	Mean	Standar Dev	P25	P50	P75
EW Expense Ratio (Raw)	in bps	57.80	23.15	41.84	57.85	73.03
VW Expense Ratio (Raw)	in bps	53.19	25.83	33.21	54.12	71.44
EW Expense Ratio	in bps	1.77	18.82	-10.37	1.67	14.76
VW Expense Ratio	in bps	-0.38	21.03	-15.77	0.79	14.99
VW-EW Expense gap	in bps	-2.14	11.49	-8.19	-1.18	4.84
Undergraduate or higher	in %	41.26	20.89	23.60	38.70	56.90
Graduate or higher	in %	17.10	11.68	7.80	14.20	24.00
Per Capita Income		41,346	23,215	26,135	35,205	49,117
Medium Home Value		327,949	246,679	157,500	250,300	419,400
Population Density		4,590	10,705	628	2,012	4,101
Latino	in %	14.27	16.76	3.90	8.10	17.20
White	in %	64.88	24.10	49.66	70.27	84.22
Black	in %	11.43	15.75	1.98	5.22	13.75
Asian	in %	8.47	10.92	1.61	4.46	10.73
Other Non-Latino	in %	0.95	3.09	0.22	0.48	0.90
Non-Latino Minority	in %	20.85	17.90	7.64	15.73	28.93
Over 55	in %	26.91	8.21	21.80	26.80	31.50
Over 65	in %	14.55	6.19	10.70	14.20	17.50
VW Performance	in bps	23.22	231.03	-91.11	21.11	131.23
EW Performance	in bps	2.57	164.49	-85.41	-0.31	88.49
Assets in Equity	in %	75.29	10.94	70.05	76.50	81.95
Assets in Bonds	in %	18.95	8.42	13.72	18.14	23.28
Assets in Money Market	in %	2.64	7.44	0.00	0.00	2.20
Assets in Other Funds	in %	3.13	3.82	0.82	2.06	4.20
Plan Assets (in mils)		84.53	740.40	4.70	10.85	28.31
Account Size		55,090	76,232	16,777	36,589	69,915
Participants		1,323	10,419	169	277	612
Employer Match		0.27	0.18	0.15	0.28	0.38
Public	Indicator	0.09	0.29	0.00	0.00	0.00
Unionized	Indicator	0.05	0.21	0.00	0.00	0.00

Table 2: Value-Weighted Plan Investment Fees

The table reports coefficient estimates from OLS regressions. The unit of observation is plan-year. The dependent variable is the plan value weighted benchmark adjusted fee, which is calculated as the asset-weighted average expense ratio of the investment options offered on the menu. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.255***					-0.148**
	(-4.698)					(-2.221)
Undergraduate or higher		-0.032***				-0.028***
		(-8.045)				(-2.613)
Log(Per Capita Income)			-1.055***			-0.116
			(-5.796)			(-0.254)
Latino				0.019***		0.014*
				(3.242)		(1.896)
Black				-0.007		-0.008
				(-1.163)		(-1.221)
Asian				-0.018*		0.020*
				(-1.711)		(1.711)
Other Non-Latino				0.026		-0.004
				(0.855)		(-0.128)
Over 55					0.030***	0.033**
					(2.905)	(2.536)
Public	-2.376***	-2.371***	-2.400***	-2.411***	-2.460***	-2.422***
	(-9.506)	(-9.275)	(-9.422)	(-9.443)	(-9.620)	(-9.458)
Unionized	-0.922***	-0.935***	-0.904**	-0.859**	-0.835**	-0.849**
	(-2.746)	(-2.626)	(-2.534)	(-2.410)	(-2.337)	(-2.398)
Log(Plan Assets)	-0.192***	-0.078	-0.104*	-0.125**	-0.143***	-0.050
	(-3.520)	(-1.413)	(-1.882)	(-2.268)	(-2.585)	(-0.889)
Employer Match	-7.438***	-7.502***	-7.429***	-7.351***	-7.263***	-7.487***
	(-18.458)	(-17.958)	(-17.828)	(-17.661)	(-17.392)	(-17.879)
Constant	7.143***	4.304***	14.464***	3.639***	3.158***	4.829
	(7.922)	(5.004)	(7.308)	(4.179)	(3.424)	(1.095)
Observations	456,285	406,343	406,499	406,788	406,791	400,480
R-squared	0.025	0.023	0.023	0.022	0.022	0.023
FE	year,state	year,state	year,state	year,state	year,state	year, state

Table 3: Equal-Weighted Plan Fees and Participant Tilt

The table reports coefficient estimates from OLS regressions. The unit of observation is plan-year. The dependent variable in Panel A is plan fee, which is calculated as the equal-weighted average expense ratio of the investment options offered on the menu. In Panel B, the dependent variable is the difference between the equal- and asset-weighted plan investment fee, which captures the degree to which plan participants tilt their investments to cheaper investment options on the menu. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Equal-Weighted Plan Expense Ratios

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.240***					-0.181***
	(-4.986)					(-3.057)
Undergraduate or higher		-0.027***				-0.021**
		(-7.574)				(-2.178)
Log(Per Capita Income)			-0.940***			-0.062
			(-5.559)			(-0.149)
Latino				0.022***		0.018***
				(4.087)		(2.823)
Black				-0.006		-0.006
				(-1.124)		(-0.957)
Asian				-0.014		0.015
				(-1.586)		(1.464)
Other Non-Latino				0.042		0.020
				(1.527)		(0.686)
Over 55					0.014	0.016
					(1.380)	(1.297)
Public	-2.467***	-2.339***	-2.363***	-2.369***	-2.423***	-2.385***
	(-10.256)	(-9.729)	(-9.863)	(-9.861)	(-10.090)	(-9.887)
Unionized	-1.663***	-1.441***	-1.418***	-1.378***	-1.351***	-1.350***
	(-5.274)	(-4.327)	(-4.250)	(-4.131)	(-4.045)	(-4.107)
Log(Plan Assets)	-1.505***	-1.365***	-1.386***	-1.403***	-1.423***	-1.336***
	(-29.845)	(-26.862)	(-27.292)	(-27.624)	(-28.030)	(-26.008)
Employer Match	-5.603***	-5.644***	-5.600***	-5.538***	-5.440***	-5.679***
	(-15.759)	(-15.418)	(-15.316)	(-15.150)	(-14.854)	(-15.477)
Constant	29.979***	26.858***	35.921***	26.146***	26.246***	27.347***
	(36.270)	(33.990)	(19.485)	(32.785)	(30.746)	(6.799)
Observations	456,285	406,343	406,499	406,788	406,791	400,480
R-squared	0.041	0.037	0.037	0.037	0.037	0.038
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 3: continued

Panel B: Participant Tilt

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.015					0.033
	(-0.583)					(1.022)
Undergraduate or higher		-0.005**				-0.007
		(-2.378)				(-1.516)
Log(Per Capita Income)			-0.115			-0.054
			(-1.458)			(-0.273)
Latino				-0.003		-0.004
				(-0.954)		(-1.176)
Black				-0.001		-0.002
				(-0.320)		(-0.722)
Asian				-0.004		0.005
				(-0.796)		(0.999)
Other Non-Latino				-0.016		-0.024*
				(-1.056)		(-1.749)
Over 55					0.017***	0.017***
					(3.534)	(2.838)
Public	0.091	-0.032	-0.036	-0.043	-0.038	-0.036
	(0.770)	(-0.273)	(-0.308)	(-0.362)	(-0.319)	(-0.304)
Unionized	0.742***	0.507***	0.514***	0.519***	0.517***	0.502***
	(4.524)	(3.013)	(3.052)	(3.083)	(3.076)	(2.961)
Log(Plan Assets)	1.313***	1.287***	1.282***	1.277***	1.280***	1.286***
	(53.134)	(51.545)	(51.493)	(51.410)	(51.557)	(51.042)
Employer Match	-1.835***	-1.858***	-1.829***	-1.814***	-1.823***	-1.808***
	(-9.057)	(-8.916)	(-8.780)	(-8.719)	(-8.744)	(-8.594)
Constant	-22.836***	-22.553***	-21.458***	-22.507***	-23.088***	-22.518***
	(-54.825)	(-57.901)	(-24.213)	(-57.243)	(-56.085)	(-11.747)
Observations	456,285	406,343	406,499	406,788	406,791	400,480
R-squared	0.048	0.046	0.046	0.046	0.046	0.046
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 4: Expense Ratios by Asset Class

The table reports coefficient estimates from OLS regressions. The unit of observation is plan-year. The dependent variable in Panel A is the asset-weighted average expense ratio of the equity options offered on the menu. Panels B, C, and D report the corresponding results for bond, money market, and target date investment options, respectively. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Equity Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.355***					-0.232***
	(-6.556)					(-3.476)
Undergraduate or higher		-0.046***				-0.033***
		(-11.100)				(-3.138)
Log(Per Capita Income)			-1.597***			-0.214
			(-8.031)			(-0.434)
Latino				0.026***		0.012*
				(4.312)		(1.646)
Non-Latino Minority				-0.009*		-0.002
				(-1.860)		(-0.313)
Over 55					0.029**	0.023
					(2.523)	(1.626)
Observations	452,949	403,225	403,374	403,657	403,660	397,399
R-squared	0.028	0.029	0.028	0.027	0.027	0.029
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: Bond Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.450***					-0.310***
	(-7.977)					(-4.505)
Undergraduate or higher		-0.043***				-0.028**
		(-9.701)				(-2.377)
Log(Per Capita Income)			-1.536***			-0.312
			(-7.049)			(-0.571)
Latino				0.024***		0.009
				(3.679)		(1.169)
Non-Latino Minority				-0.014***		-0.008
				(-2.790)		(-1.309)
Over 55					0.014	0.002
					(1.186)	(0.141)
Observations	434,014	386,600	386,725	387,000	387,003	380,951
R-squared	0.057	0.057	0.057	0.056	0.056	0.058
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 4: continued

Panel C: Money Market Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.201***					-0.141**
	(-4.146)					(-2.549)
Undergraduate or higher		-0.021***				0.016**
		(-6.001)				(2.005)
Log(Per Capita Income)			-0.946***			-1.622***
			(-6.288)			(-4.589)
Latino				0.009*		0.002
				(1.681)		(0.319)
Non-Latino Minority				-0.012***		-0.012**
				(-2.881)		(-2.456)
Over 55					0.019**	0.027**
					(2.082)	(2.556)
Observations	189,286	165,036	165,091	165,223	165,226	162,388
R-squared	0.114	0.073	0.073	0.072	0.072	0.074
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel D: Target Date Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.109*					-0.160**
	(-1.704)					(-2.061)
Undergraduate or higher		0.001				0.014
		(0.131)				(1.232)
Log(Per Capita Income)			-0.024			-0.244
			(-0.121)			(-0.486)
Latino				0.010		0.018**
				(1.429)		(2.059)
Non-Latino Minority				0.001		0.007
				(0.106)		(1.043)
Over 55					-0.004	0.009
					(-0.324)	(0.599)
Observations	323,815	297,136	297,237	297,434	297,434	292,821
R-squared	0.110	0.078	0.078	0.078	0.078	0.078
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 5: Expense Ratios of S&P 500 Index Funds

The table reproduces our baseline model using S&P 500 index funds. The unit of observation is plan-year. The dependent variable is the plan value weighted benchmark adjusted fee, which is calculated as the asset-weighted average expense ratio of the S&P 500 index options offered on the menu. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.457***					-0.309***
	(0.067)					(0.085)
Undergraduate or higher		-0.053***				-0.022**
		(0.005)				(0.011)
Log(Per Capita Income)			-2.087***			-0.664
			(0.218)			(0.433)
Latino				0.027**		0.023**
				(0.011)		(0.011)
Black				0.013*		0.007
				(0.007)		(0.008)
Asian				-0.052***		-0.006
				(0.011)		(0.013)
Other Non-Latino				0.015		-0.005
				(0.023)		(0.022)
Over 55					0.006	0.007
					(0.013)	(0.015)
Public	-0.697***	-0.531**	-0.561**	-0.579**	-0.713***	-0.531**
	(0.256)	(0.255)	(0.255)	(0.255)	(0.256)	(0.255)
Unionized	0.743*	0.627	0.648*	0.673*	0.779**	0.609
	(0.392)	(0.392)	(0.392)	(0.392)	(0.393)	(0.391)
Log(Plan Assets)	-4.064***	-4.003***	-4.028***	-4.058***	-4.107***	-3.994***
	(0.069)	(0.070)	(0.070)	(0.069)	(0.068)	(0.070)
Employer Match	-3.315***	-3.502***	-3.444***	-3.344***	-3.053***	-3.609***
	(0.493)	(0.490)	(0.489)	(0.492)	(0.494)	(0.490)
Constant	78.945***	76.789***	96.913***	75.271***	75.975***	84.174***
	(1.166)	(1.119)	(2.403)	(1.128)	(1.184)	(4.208)
Observations	223,435	223,520	223,414	223,566	223,566	223,295
R-squared	0.088	0.089	0.089	0.088	0.087	0.090
FE	state,year	state,year	state,year	state,year	state,year	state,year

Table 6: Industry and Management Company Fixed Effects

The table reports coefficient estimates from OLS regressions that add industry and management company fixed effects to the baseline models estimated in Table 2. The unit of observation is plan-year. The dependent variable is plan fee, which is calculated as the asset-weighted average expense ratio of the investment options offered on the menu. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Panel A reports the results with industry fixed effects while Panel B includes management company/family fixed effects. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Industry Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.178***					-0.106
	(-3.235)					(-1.606)
Undergraduate or higher		-0.025***				-0.012
		(-6.189)				(-1.157)
Log(Per Capita Income)			-0.833***			-0.409
			(-4.632)			(-0.916)
Latino				0.016***		0.012*
				(2.673)		(1.655)
Non-Latino Minority				-0.006		-0.001
				(-1.192)		(-0.094)
Over 55					0.030***	0.037***
					(2.899)	(2.902)
Observations	456,254	406,317	406,473	406,762	406,765	400,454
R-squared	0.029	0.027	0.026	0.026	0.026	0.027
FE	year, state, ind	year, state, ind	year, state, ind	year, state, ind	year, state, ind	year, state, ind

Panel B: Fund Family Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.134***					-0.065
	(-3.567)					(-1.396)
Undergraduate or higher		-0.019***				-0.016**
		(-6.748)				(-2.112)
Log(Per Capita Income)			-0.634***			-0.082
			(-4.999)			(-0.243)
Latino				0.010**		0.003
				(2.339)		(0.654)
Non-Latino Minority				-0.006*		-0.003
				(-1.767)		(-0.773)
Over 55					0.021***	0.020**
					(2.839)	(2.021)
Observations	456,244	406,300	406,456	406,745	406,748	400,438
R-squared	0.388	0.376	0.376	0.376	0.376	0.375
FE	year, state, MC	year, state, MC	year, state, MC	year, state, MC	year, state, MC	year, state, MC

Table 7: Number of Menu Offerings

The table reports coefficient estimates from OLS regressions. The dependent variable in Panel A is the total number of investment options offered on the menu. In Panels B, C, D, and E, the dependent variable is the number of equity, bond, money market, and target date funds, respectively. The unit of observation is plan-year. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Total Number of Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.223***					0.121***
	(6.725)					(3.468)
Undergraduate or higher		0.021***				0.020***
		(9.344)				(3.658)
Log(Per Capita Income)			0.699***			-0.025
			(7.178)			(-0.104)
Latino				-0.004		0.003
				(-1.192)		(0.841)
Non-Latino Minority				0.002		-0.002
				(0.928)		(-0.742)
Over 55					-0.019***	-0.013**
					(-3.336)	(-1.977)
Observations	456,591	406,624	406,781	407,070	407,073	400,760
R-squared	0.025	0.025	0.025	0.024	0.024	0.026
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: Total Number of Equity Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.133***					0.074***
	(6.185)					(3.279)
Undergraduate or higher		0.011***				0.012***
		(7.873)				(3.374)
Log(Per Capita Income)			0.361***			-0.078
			(5.923)			(-0.503)
Latino				-0.000		0.002
				(-0.212)		(0.821)
Non-Latino Minority				0.000		-0.003*
				(0.211)		(-1.685)
Over 55					-0.014***	-0.011**
					(-3.708)	(-2.530)
Observations	456,591	406,624	406,781	407,070	407,073	400,760
R-squared	0.016	0.018	0.018	0.017	0.018	0.019
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 7: continued

Panel C: Total Number of Bond Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.032***					0.015**
	(5.411)					(2.487)
Undergraduate or higher		0.004***				0.003***
		(10.546)				(3.161)
Log(Per Capita Income)			0.162***			0.053
			(9.014)			(1.153)
Latino				-0.001**		0.001
				(-2.288)		(0.827)
Non-Latino Minority				-0.000		-0.001
				(-0.486)		(-1.085)
Over 55					-0.002**	-0.002*
					(-2.319)	(-1.778)
Observations	456,591	406,624	406,781	407,070	407,073	400,760
R-squared	0.024	0.022	0.021	0.020	0.020	0.022
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel D: Total Number of Money Market Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.010***					0.007***
	(6.230)					(4.009)
Undergraduate or higher		0.001***				0.000
		(6.851)				(0.924)
Log(Per Capita Income)			0.029***			0.018
			(5.680)			(1.280)
Latino				-0.000*		-0.000
				(-1.912)		(-0.075)
Non-Latino Minority				0.000***		0.000**
				(3.173)		(2.028)
Over 55					-0.000	0.000
					(-1.115)	(0.231)
Observations	456,591	406,624	406,781	407,070	407,073	400,760
R-squared	0.029	0.027	0.027	0.027	0.027	0.028
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 7: continued

Panel E: Total Number of Target Date Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.054***					0.023
	(4.599)					(1.601)
Undergraduate or higher		0.005***				0.003
		(5.878)				(1.454)
Log(Per Capita Income)			0.180***			0.085
			(4.543)			(0.946)
Latino				-0.002**		0.000
				(-1.991)		(0.091)
Non-Latino Minority				0.003***		0.003**
				(2.659)		(2.081)
Over 55					-0.004*	-0.002
					(-1.680)	(-0.667)
Observations	456,591	406,624	406,781	407,070	407,073	400,760
R-squared	0.108	0.079	0.079	0.079	0.079	0.080
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 8: Participants' Asset Class Allocations

The table reports coefficient estimates from OLS regressions. The unit of observation is plan-year. We measure participants' allocations/exposure to three broad asset classes - equities, bonds, and money market securities - by the proportion of retirement savings participants invest in each of these assets. Since target date/balanced funds invest in multiple asset classes, we use portfolio holdings information from CRSP to decompose their total assets into equity, bond, and money market shares. The dependent variable in Panel A is the proportion of plan assets participants allocate to equity. Panels B and C report the corresponding results for bond and money market, respectively. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Equity Allocation

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.181***					0.089***
	(6.769)					(2.836)
Undergraduate or higher		0.033***				0.008*
		(17.001)				(1.669)
Log(Per Capita Income)			1.294***			0.927***
			(12.577)			(4.694)
Latino				-0.026***		-0.014***
				(-8.361)		(-3.587)
Non-Latino Minority				0.003		0.002
				(1.399)		(0.763)
Over 55					-0.017***	-0.030***
					(-3.120)	(-4.622)
Observations	455,004	405,061	405,222	405,506	405,509	399,238
R-squared	0.051	0.057	0.057	0.055	0.054	0.058
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: Bond Allocation

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.248***					-0.135***
	(-10.401)					(-5.043)
Undergraduate or higher		-0.030***				-0.002
		(-17.967)				(-0.422)
Log(Per Capita Income)			-1.214***			-1.184***
			(-13.659)			(-7.011)
Latino				0.018***		0.005
				(6.579)		(1.478)
Non-Latino Minority				-0.010***		-0.010***
				(-5.125)		(-4.376)
Over 55					0.016***	0.021***
					(3.322)	(4.015)
Observations	455,004	405,061	405,222	405,506	405,509	399,238
R-squared	0.035	0.037	0.037	0.034	0.033	0.039
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 8: continued

Panel C: Money Market Allocation

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.083***					0.065***
	(5.374)					(3.484)
Undergraduate or higher		-0.000				-0.005*
		(-0.010)				(-1.942)
Log(Per Capita Income)			0.019			0.256**
			(0.418)			(2.471)
Latino				0.005***		0.006***
				(3.208)		(3.060)
Non-Latino Minority				0.006***		0.006***
				(3.998)		(3.602)
Over 55					0.000	0.007**
					(0.087)	(2.017)
Observations	455,004	405,061	405,222	405,506	405,509	399,238
R-squared	0.044	0.028	0.029	0.029	0.029	0.029
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 9: Performance

The table reports coefficient estimates from OLS regressions. The unit of observation is plan-year. The dependent variable captures plan performance, which is calculated either as the asset-weighted average net return of the investment options offered on the menu ('*raw performance*') or as the asset-weighted average difference between the net return of the investment options offered on the menu and their benchmark return ('*benchmark-adjusted performance*'). The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Panel A reports the results for raw performance, while Panel B uses benchmark-adjusted returns. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Raw Performance

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	2.231***					0.959*
	(5.431)					(1.918)
Undergraduate or higher		0.367***				0.210***
		(11.898)				(2.875)
Log(Per Capita Income)			13.499***			4.875
			(8.421)			(1.552)
Latino				-0.297***		-0.120*
				(-5.801)		(-1.885)
Non-Latino Minority				0.113***		0.115***
				(2.983)		(2.587)
Over 55					-0.081	-0.083
					(-0.987)	(-0.839)
Observations	456,550	406,589	406,746	407,035	407,038	400,726
R-squared	0.939	0.944	0.944	0.944	0.944	0.944
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: Benchmark-Adjusted Performance

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	0.097					0.096
	(0.320)					(0.235)
Undergraduate or higher		0.041				0.045
		(1.576)				(0.746)
Log(Per Capita Income)			1.391			-2.098
			(1.289)			(-0.834)
Latino				-0.135***		-0.126**
				(-3.419)		(-2.454)
Non-Latino Minority				0.025		0.018
				(0.817)		(0.485)
Over 55					0.088	0.048
					(1.417)	(0.607)
Observations	456,550	406,589	406,746	407,035	407,038	400,726
R-squared	0.221	0.238	0.238	0.238	0.238	0.239
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 10: Performance by Asset Class

The table reports coefficient estimates from OLS regressions. The unit of observation is plan-year. The dependent variable captures the performance of equity (bond) funds offered on the menu. These are calculated either as the asset-weighted average net return of the equity (bond) investment options offered on the menu ('*raw performance*') or as the asset-weighted average difference between the net return of the equity (bond) investment options offered on the menu and their benchmark return ('*benchmark-adjusted performance*'). The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Performance results for equity (bond) funds are reported in Panels A and B (C and D), using raw and benchmark-adjusted performance, respectively. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Raw Performance - Equity

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	2.441***					1.275**
	(5.781)					(2.388)
Undergraduate or higher		0.171***				0.125
		(5.201)				(1.571)
Log(Per Capita Income)			6.046***			1.353
			(3.893)			(0.384)
Latino				-0.085		0.026
				(-1.629)		(0.383)
Non-Latino Minority				0.106**		0.106**
				(2.543)		(2.156)
Over 55					0.037	0.178*
					(0.448)	(1.730)
Observations	454,259	404,508	404,660	404,945	404,948	398,678
R-squared	0.945	0.947	0.947	0.947	0.947	0.947
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: Benchmark-Adjusted Performance - Equity

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	0.764**					0.608
	(2.336)					(1.447)
Undergraduate or higher		0.076***				0.009
		(2.915)				(0.150)
Log(Per Capita Income)			3.239***			1.188
			(2.881)			(0.451)
Latino				-0.120***		-0.091*
				(-2.975)		(-1.693)
Non-Latino Minority				-0.002		-0.007
				(-0.060)		(-0.176)
Over 55					0.089	0.052
					(1.401)	(0.665)
Observations	454,230	404,482	404,633	404,918	404,921	398,652
R-squared	0.162	0.176	0.176	0.176	0.176	0.177
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 10: continued

Panel C: Raw Performance - Bonds

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	-0.026					-0.269
	(-0.071)					(-0.896)
Undergraduate or higher		0.049***				0.008
		(2.700)				(0.186)
Log(Per Capita Income)			2.217***			3.333*
			(2.811)			(1.677)
Latino				0.020		0.072**
				(0.789)		(2.159)
Non-Latino Minority				0.010		0.027
				(0.454)		(1.049)
Over 55					-0.073	-0.066
					(-1.634)	(-1.183)
Observations	441,303	393,556	393,687	393,964	393,967	387,885
R-squared	0.755	0.809	0.809	0.809	0.809	0.809
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel D: Benchmark-Adjusted Performance - Bonds

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	-0.582*					-0.167
	(-1.721)					(-0.585)
Undergraduate or higher		0.054***				-0.003
		(3.139)				(-0.070)
Log(Per Capita Income)			2.707***			3.530**
			(3.636)			(1.967)
Latino				-0.006		0.043
				(-0.254)		(1.327)
Non-Latino Minority				-0.007		0.010
				(-0.335)		(0.425)
Over 55					-0.031	-0.042
					(-0.751)	(-0.810)
Observations	441,195	393,484	393,615	393,892	393,895	387,813
R-squared	0.038	0.064	0.064	0.064	0.064	0.064
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 11: Adding Low-Fee Funds

Panel A reports coefficient estimates from a panel regression in which the dependent variable is the percentage of low fee funds added to plan p's menu at time t. Panel B reports results from a logit model, in which the dependent variable is an indicator variable that takes the value of one if plan p adds a low-fee fund to the menu at time t, and zero otherwise. These analyses use the subsample of plans that do not currently include low-fee funds. We define low-fee funds as those in the bottom 25% of the distribution of benchmark-adjusted fees. The models include the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: OLS

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.183***					0.124**
	(4.726)					(2.444)
Undergraduate or higher		0.021***				0.006
		(6.365)				(0.683)
Log(Per Capita Income)			0.837***			0.580
			(5.898)			(1.592)
Latino				-0.006		-0.001
				(-1.452)		(-0.141)
Non-Latino Minority				0.005		0.002
				(1.241)		(0.360)
Over 55					-0.022***	-0.023**
					(-2.875)	(-2.314)
Observations	55,971	51,455	51,504	51,529	51,529	50,727
R-squared	0.021	0.017	0.017	0.016	0.017	0.018
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: Logit

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.032***					0.016*
	(4.588)					(1.723)
Undergraduate or higher		0.003***				-0.001
		(5.260)				(-0.765)
Log(Per Capita Income)			0.129***			0.189***
			(5.104)			(2.882)
Latino				-0.000		0.000
				(-0.563)		(0.223)
Non-Latino Minority				0.001*		0.001
				(1.801)		(0.900)
Over 55					-0.005***	-0.006***
					(-3.797)	(-3.616)
Observations	55,971	51,455	51,504	51,529	51,529	50,727
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 12: Sub-Period Analyses

The table reports coefficient estimates from OLS regressions that re-estimate the baseline models in Table 2 for the 2011 to 2015 and the 2016 to 2021 subperiods, respectively. The unit of observation is plan-year. The dependent variable is plan fee, which is calculated as the asset-weighted average expense ratio of the investment options offered on the menu. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Panel A reports the results for the 2011-2015 subperiod, while the corresponding results for the 2016-2021 period are reported in Panel B. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: 2011-2015

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.115					-0.077
	(-1.643)					(-0.920)
Undergraduate or higher		-0.017***				-0.034***
		(-3.211)				(-2.841)
Log(Per Capita Income)			-0.338			0.984*
			(-1.589)			(1.939)
Latino				0.012*		0.010
				(1.672)		(0.996)
Non-Latino Minority				-0.007		-0.000
				(-0.972)		(-0.030)
Over 55					0.013	0.001
					(0.982)	(0.038)
Observations	188,388	135,970	135,974	136,115	136,115	133,599
R-squared	0.032	0.035	0.035	0.035	0.035	0.035
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: 2016-2021

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.328***					-0.182**
	(-5.510)					(-2.519)
Undergraduate or higher		-0.038***				-0.015
		(-8.660)				(-1.288)
Log(Per Capita Income)			-1.393***			-0.655
			(-6.676)			(-1.201)
Latino				0.024***		0.016**
				(3.687)		(2.032)
Non-Latino Minority				-0.009		0.000
				(-1.592)		(0.026)
Over 55					0.037***	0.045***
					(3.367)	(3.078)
Observations	267,897	270,373	270,525	270,673	270,676	266,881
R-squared	0.017	0.018	0.017	0.017	0.017	0.018
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 13: Small vs. Large Plans

The table reports coefficient estimates from OLS regressions that re-estimate the baseline models in Table 2 for small, mid-sized, and large plans, respectively. The unit of observation is plan-year. The dependent variable is plan fee, which is calculated as the asset-weighted average expense ratio of the investment options offered on the menu. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Panels A, B, and C report the results for small, mid-sized, and large plans, respectively. Panel D uses the subsample of plans with assets below $100 million. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Small Plans

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.325***					-0.220**
	(-4.142)					(-2.248)
Undergraduate or higher		-0.042***				-0.027*
		(-6.840)				(-1.705)
Log(Per Capita Income)			-1.532***			-0.286
			(-5.540)			(-0.388)
Latino				0.020***		0.016
				(2.624)		(1.504)
Non-Latino Minority				-0.012*		-0.001
				(-1.690)		(-0.146)
Over 55					0.042***	0.047**
					(2.704)	(2.399)
Observations	154,131	137,361	137,458	137,540	137,540	135,456
R-squared	0.037	0.035	0.035	0.034	0.034	0.036
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: Medium Plans

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.129*					-0.059
	(-1.742)					(-0.635)
Undergraduate or higher		-0.029***				-0.025*
		(-5.288)				(-1.742)
Log(Per Capita Income)			-1.043***			0.091
			(-4.358)			(0.142)
Latino				0.024***		0.017
				(2.948)		(1.605)
Non-Latino Minority				-0.001		0.006
				(-0.094)		(0.640)
Over 55					0.026*	0.034*
					(1.782)	(1.887)
Observations	153,100	136,319	136,343	136,435	136,438	134,400
R-squared	0.030	0.028	0.027	0.027	0.027	0.028
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 13: continued

Panel C: Large Plans

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.229***					-0.189*
	(-2.585)					(-1.706)
Undergraduate or higher		-0.015**				-0.006
		(-2.400)				(-0.395)
Log(Per Capita Income)			-0.381			0.023
			(-1.415)			(0.038)
Latino				0.020*		0.022*
				(1.919)		(1.697)
Non-Latino Minority				-0.005		0.003
				(-0.626)		(0.282)
Over 55					0.012	0.012
					(0.780)	(0.625)
Observations	149,054	132,663	132,698	132,813	132,813	130,624
R-squared	0.038	0.036	0.036	0.036	0.036	0.037
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel D: Plants with Assets less than $100 million

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.239***					-0.150**
	(-4.348)					(-2.247)
Undergraduate or higher		-0.033***				-0.027**
		(-8.079)				(-2.498)
Log(Per Capita Income)			-1.105***			0.073
			(-5.890)			(0.150)
Latino				0.021***		0.015**
				(3.534)		(1.963)
Non-Latino Minority				-0.005		0.003
				(-1.026)		(0.427)
Over 55					0.029***	0.030**
					(2.662)	(2.193)
Observations	418,421	371,259	371,416	371,674	371,677	365,944
R-squared	0.026	0.025	0.025	0.024	0.024	0.025
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table 14: Option-Level Investment Fees

The table reports coefficient estimates from OLS regressions. The unit of observation is plan-option-year. The dependent variable is the expense ratio of the investment options offered on the menu. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.104***					-0.049
	(0.031)					(0.041)
Undergraduate or higher		-0.017***				-0.016***
		(0.002)				(0.005)
Log(Per Capita Income)			-0.607***			0.111
			(0.097)			(0.205)
Latino				0.010**		0.007
				(0.005)		(0.005)
Black				0.006*		0.004
				(0.003)		(0.004)
Asian				-0.011**		0.005
				(0.005)		(0.006)
Other Non-Latino				0.003		-0.004
				(0.009)		(0.009)
Over 55					0.003	0.003
					(0.005)	(0.007)
Public	-0.442***	-0.393***	-0.403***	-0.407***	-0.444***	-0.393***
	(0.123)	(0.123)	(0.123)	(0.123)	(0.123)	(0.123)
Unionized	-0.344**	-0.400**	-0.389**	-0.377**	-0.346**	-0.394**
	(0.170)	(0.169)	(0.169)	(0.169)	(0.169)	(0.169)
Log(Plan Assets)	-2.815***	-2.792***	-2.802***	-2.815***	-2.826***	-2.792***
	(0.036)	(0.036)	(0.036)	(0.036)	(0.035)	(0.036)
Employer Match	-1.068***	-1.159***	-1.126***	-1.075***	-1.010***	-1.149***
	(0.227)	(0.227)	(0.227)	(0.227)	(0.227)	(0.227)
Constant	111.748***	111.316***	117.159***	110.849***	111.046***	110.259***
	(0.590)	(0.569)	(1.110)	(0.574)	(0.587)	(2.008)
Observations	9,782,245	9,786,698	9,781,553	9,788,383	9,788,383	9,776,122
R-squared	0.788	0.788	0.788	0.788	0.788	0.788
FE	fundyear,state	fundyear,state	fundyear,state	fundyear,state	fundyear,state	fundyear,state

Internet Appendix
Uneven opportunities in 401(k) Plans

Table IA.1: Variable Definitions

Variable	Definition
exp_bvwex	Benchmark-adjusted annual expense ratio, valued weighted at the plan level by the fund balance of each fund (by contemporaneous fund balance). The expense ratio of the benchmark group is computed as the value-weighted average expense ratio of the relevant crsp_obj_cd group, excluding the fund in question.
Vexp_bvwex	Benchmark-adjusted annual expense ratio, equal weighted at the plan level. The expense ratio of the benchmark group is computed as the value-weighted average expense ratio of the relevant crsp_obj_cd group, excluding the fund in question.
gap_bvwex	the difference between the value weighted and equal weighted benchmark-adjusted expense ratios. (agap_bvwex= vexp_bvwex - exp_bvwex)
undergradover	Percentage of the population (in the zip code) with undergraduate or higher degrees
gradover	Percentage of the population (in the zip code) with graduate or higher degrees
ln_incomeper	log income per capital (in the zip code)
ln_medhomevalue	log medium home value (in the zip code)
ln_popdens	log population density
Latino	Percentage of the Latino population (in the zip code)
NLWhite_p	Percentage of the Non-Latino White population (in the zip code)
NLBlack_p	Percentage of the Non-Latino Black population (in the zip code)
NLAsian_p	Percentage of the Non-Latino Asian population (in the zip code)
oth_nl	Percentage of all other non-Latino race population (in the zip code), excluding non-Latino White, Non-Latino Black, Non-Latino Asian. (Latino+ NLWhite_p+ NLBlack_p+ NLAsian_p+ oth_nl =100%)
othm_nl	Percentage of all other non-Latino minority population (in the zip code), excluding non-Latino White. (Latino+ NLWhite_p+ othm_nl =100%)
age55over	Percentage of the population (in the zip code) with age 55 or older
age65over	Percentage of the population (in the zip code) with age 65 or older
Verf_bvwex	benchmark-adjusted annual fund return, valued weighted at the plan level by the fund balance of each fund (by contemporaneous fund balance). The return of the benchmark group is computed as the value-weighted average annual fund return of the relevant crsp_obj_cd group, excluding the fund in question.
erf_bvwex	benchmark-adjusted annual fund return, equal weighted at the plan level. The return of the benchmark group is computed as the value-weighted average annual fund return of the relevant crsp_obj_cd group, excluding the fund in question.
eq_pct_adj	percentage invested in equity funds (in terms of dollar fund balance), including equity investments in target date funds
bond_pct_adj	percentage invested in bond funds (in terms of dollar fund balance), including bond investments in target date funds
mmk_pct_adj	percentage invested in money market funds (in terms of dollar fund balance), including money market fund investments in target date funds
oth_pct_adj	percentage invested in other funds (in terms of number of dollar fund balance), including other investments in target date funds
lntotasset	log total assets of a plan
lnaccountsize	log average account size of plan aprticipants
lntpart	log total participants of a plan
match	percentage employer matching contribution
public	public firm indicator
union	union indicator

Table IA.2: Plan fees across the largest U.S. cities

This table reports the equal-weighted and value-weighted plan fees for all U.S. cities with a population exceeding half a million. Plan-level fees are value-weighted to city level by lagged total plan assets. Average fees for each city over our sample period are reported in the table.

City	State	EW Fees	VW Fees	Population
BROOKLYN	NY	22	14	2,584,217
MEMPHIS	TN	22	26	697,948
SEATTLE	WA	34	26	911,505
FORT WORTH	TX	36	33	879,288
DALLAS	TX	36	36	1,343,509
MINNEAPOLIS	MN	38	38	1,069,113
SAN JOSE	CA	38	42	1,021,819
SAINT LOUIS	MO	40	42	920,888
CLEVELAND	OH	40	40	755,847
WASHINGTON	DC	40	35	653,370
CHICAGO	IL	41	42	2,697,241
OMAHA	NE	41	42	540,327
ATLANTA	GA	42	35	960,529
INDIANAPOLIS	IN	42	36	939,630
SACRAMENTO	CA	42	41	789,777
PITTSBURGH	PA	42	41	685,543
ALBUQUERQUE	NM	43	47	650,206
PHILADELPHIA	PA	43	43	1,558,586
SAN DIEGO	CA	43	41	1,311,436
HOUSTON	TX	44	41	3,081,190
NEW YORK	NY	44	43	1,616,320
PHOENIX	AZ	45	38	1,397,481
AUSTIN	TX	45	41	1,041,181
PORTLAND	OR	45	44	892,056
JACKSONVILLE	FL	45	37	850,704
FORT LAUDERDALE	FL	45	42	810,769
OKLAHOMA CITY	OK	45	44	667,793
DENVER	CO	46	42	1,040,382
CHARLOTTE	NC	46	45	868,436
DETROIT	MI	46	44	651,079
MILWAUKEE	WI	47	49	809,072
CINCINNATI	OH	47	49	800,645
KANSAS CITY	MO	47	47	563,632
LOS ANGELES	CA	48	48	2,424,548
ORLANDO	FL	48	46	957,803
BUFFALO	NY	48	47	559,963
SAN FRANCISCO	CA	48	42	844,931
SAINT PAUL	MN	48	41	784,871
TUCSON	AZ	49	47	896,973
MESA	AZ	50	49	513,957
RALEIGH	NC	51	48	526,593
SAN ANTONIO	TX	51	42	1,706,233
LOUISVILLE	KY	53	53	752,086
COLUMBUS	OH	53	48	822,179
MIAMI	FL	54	55	1,816,634
EL PASO	TX	54	50	775,856
LAS VEGAS	NV	55	53	1,501,146
BRONX	NY	55	56	1,425,720
COLORADO SPRINGS	CO	55	51	563,368
BAKERSFIELD	CA	55	50	547,412
BALTIMORE	MD	58	50	628,292
TAMPA	FL	59	63	771,756
FRESNO	CA	64	57	591,832

Table IA.3: Correlations

The table reports pairwise correlation coefficients for the variables included in our analyses.

	Log(Population Density)	Undergraduate or higher	Log(Per Capita Income)	Latino	Black	Asian	Other Non-Latino	Over 55	Non-Latino Minority	Public	Unionized	Log(Plan Assets)	Employer Match
Log(Population Density)	1												
Undergraduate or higher	0.396	1											
Log(Per Capita Income)	0.320	0.877	1										
Latino	0.222	-0.301	-0.308	1									
Black	0.117	-0.256	-0.344	-0.042	1								
Asian	0.354	0.446	0.378	0.002	-0.161	1							
Other Non-Latino	-0.095	-0.098	-0.097	0.007	-0.041	0.043	1						
Over 55	-0.238	-0.041	0.176	-0.300	-0.188	-0.170	-0.039	1					
Non-Latino Minority	0.303	0.030	-0.089	-0.034	0.775	0.475	0.163	-0.275	1				
Public	0.057	0.108	0.096	-0.014	-0.013	0.096	-0.018	-0.031	0.044	1			
Unionized	0.010	-0.005	-0.007	-0.024	0.018	-0.009	-0.006	0.002	0.010	0.114	1		
Log(Plan Assets)	0.108	0.179	0.162	-0.073	0.000	0.103	-0.017	-0.033	0.060	0.330	0.143	1	
Employer Match	-0.072	-0.043	-0.050	-0.040	0.030	-0.094	0.033	0.007	-0.025	0.009	0.027	0.273	1

Table IA.4: Alternative Census Measures

The table reports results from OLS regressions that re-estimate the baseline models in Table 2 using alternative Census variables to capture education, income, race/ethnicity, and age at the zip code level. Specifically, the table replaces '*Undergraduate or higher*' with '*Graduate or higher*' to capture education, '*Income per Capita*' with '*Median Home Value*' to capture income, and '*Over 55*' with '*Over 65*' to capture age. In this table, race/ethnicity is captured by the following groups: '*Latino*,' '*Non-Latino Minority*,' and '*White*,' with the latter being the omitted group. As in Table 2, the unit of observation is plan-year and the dependent variable is plan fee, which is calculated as the asset-weighted average expense ratio of the investment options offered on the menu. All other explanatory variables are the same as those included in Tables 2 and 3. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

	Population Density	**Education**	**Income**	**Race**	**Age**	**Combination**
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.255***					-0.191***
	(-4.698)					(-2.940)
Graduate or higher		-0.059***				-0.053***
		(-8.028)				(-4.415)
Log(Median Home Value)			-0.856***			0.166
			(-5.575)			(0.698)
Latino				0.021***		0.013*
				(3.480)		(1.886)
Non-Latino Minority				-0.008		0.003
				(-1.615)		(0.600)
Over 65					0.029**	0.041**
					(2.206)	(2.559)
Public	-2.376***	-2.369***	-2.447***	-2.428***	-2.465***	-2.424***
	(-9.506)	(-9.261)	(-9.464)	(-9.499)	(-9.637)	(-9.340)
Unionized	-0.922***	-0.934***	-0.929***	-0.851**	-0.831**	-0.892**
	(-2.746)	(-2.623)	(-2.587)	(-2.386)	(-2.328)	(-2.503)
Log(Plan Assets)	-0.192***	-0.079	-0.091	-0.132**	-0.145***	-0.04
	(-3.520)	(-1.433)	(-1.640)	(-2.393)	(-2.627)	(-0.699)
Employer Match	-7.438***	-7.463***	-7.556***	-7.298***	-7.258***	-7.591***
	(-18.458)	(-17.850)	(-18.059)	(-17.524)	(-17.389)	(-18.111)
Constant	7.143***	4.001***	13.902***	3.680***	3.592***	1.767
	(7.922)	(4.660)	(6.888)	(4.228)	(4.009)	(0.604)
Observations	456,285	406,343	399,628	406,788	406,791	394,349
R-squared	0.025	0.023	0.023	0.022	0.022	0.023
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table IA.5: Asset Allocation Controls

The table reports coefficient estimates from OLS regressions that add asset allocation and performance controls to the baseline models estimated in Table 2. The unit of observation is plan-year. The dependent variable is plan fee, which is calculated as the asset-weighted average expense ratio of the investment options offered on the menu. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	-0.257***					-0.188***
	(-5.238)					(-3.132)
Undergraduate or higher		-0.028***				-0.017*
		(-7.611)				(-1.900)
Log(Per Capita Income)			-0.956***			-0.058
			(-5.625)			(-0.140)
Latino				0.022***		0.019***
				(4.048)		(2.800)
Non-Latino Minority				-0.006		0.003
				(-1.238)		(0.517)
Over 55					0.022**	0.026**
					(2.263)	(2.192)
Public	-1.152***	-1.031***	-1.048***	-1.066***	-1.099***	-1.085***
	(-5.043)	(-4.472)	(-4.559)	(-4.623)	(-4.773)	(-4.680)
Unionized	0.944***	0.860**	0.893***	0.935***	0.955***	0.944***
	(2.910)	(2.554)	(2.648)	(2.772)	(2.832)	(2.835)
Log(Plan Assets)	-1.025***	-0.991***	-1.014***	-1.039***	-1.050***	-0.965***
	(-19.457)	(-18.771)	(-19.210)	(-19.846)	(-19.931)	(-18.083)
Employer Match	-5.772***	-5.828***	-5.772***	-5.652***	-5.623***	-5.905***
	(-15.064)	(-14.912)	(-14.775)	(-14.513)	(-14.420)	(-15.053)
Performance	0.019	0.032*	0.029	0.028	0.027	0.038*
	(1.089)	(1.669)	(1.500)	(1.459)	(1.400)	(1.922)
Equity Allocation	0.259***	0.241***	0.240***	0.240***	0.239***	0.241***
	(33.027)	(30.433)	(30.379)	(30.242)	(30.163)	(30.271)
Bond Alloction	0.153***	0.123***	0.124***	0.123***	0.123***	0.124***
	(13.610)	(10.804)	(10.857)	(10.842)	(10.835)	(10.868)
Money Mkt Allocation	0.134***	0.120***	0.119***	0.118***	0.117***	0.122***
	(12.830)	(11.219)	(11.125)	(11.002)	(10.953)	(11.407)
Target Date Allocation	-0.087***	-0.102***	-0.103***	-0.104***	-0.104***	-0.101***
	(-12.637)	(-14.706)	(-14.833)	(-14.905)	(-14.986)	(-14.455)
Constant	6.516***	6.893***	16.235***	6.422***	6.254***	6.893*
	(6.503)	(7.034)	(8.437)	(6.512)	(6.039)	(1.695)
Observations	365,954	348,930	349,043	349,286	349,289	344,058
R-squared	0.177	0.177	0.177	0.177	0.176	0.177
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table IA.6: Alternative Fees

The table reports coefficient estimates from OLS regressions that replace the dependent variable in the baseline models estimated in Table 2 with alternative fee measures. Specifically, within each plan year we calculate fees at the 10th and the 90th percentiles of the fee distribution of the available investment options, to capture fees charged by low- and high-fee funds in the plan, respectively. In Panel A (B), the dependent variable is the 10th (90th) percentile fee in the plan. The unit of observation is plan-year. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: 10th Percentile Fund Fee

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	-0.440***					-0.269***
	(-7.429)					(-4.107)
Undergraduate or higher		-0.050***				-0.029***
		(-12.248)				(-2.888)
Log(Per Capita Income)			-1.743***			-0.396
			(-8.554)			(-0.843)
Latino				0.034***		0.024***
				(5.627)		(3.185)
Non-Latino Minority				-0.011**		-0.000
				(-2.253)		(-0.017)
Over 55					0.037***	0.043***
					(3.231)	(3.194)
Observations	456,295	406,348	406,504	406,793	406,796	400,485
R-squared	0.034	0.035	0.034	0.034	0.033	0.035
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: 90th Percentile Fund Fee

	(1)	(2)	(3)	(4)	(5)	(6)
Log Population Density	-0.123**					-0.167***
	(-2.502)					(-2.708)
Undergraduate or higher		-0.015***				-0.014
		(-3.887)				(-1.531)
Log(Per Capita Income)			-0.462***			0.414
			(-2.795)			(0.984)
Latino				0.017***		0.017***
				(3.148)		(2.640)
Non-Latino Minority				-0.002		0.004
				(-0.440)		(0.727)
Over 55					0.001	-0.003
					(0.087)	(-0.226)
Observations	456,295	406,348	406,504	406,793	406,796	400,485
R-squared	0.042	0.041	0.041	0.041	0.041	0.041
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table IA.7: Menu Asset Class Offerings

The table reports coefficient estimates from OLS regressions. The unit of observation is plan-year. We calculate the fraction of equity, bond, and money market funds among the funds offered on the menu. Since target date/balanced funds invest in multiple asset classes, we use portfolio holdings information from CRSP to decompose their total assets into equity, bond, and money market shares. For example, if the plan has two equity funds, one bond fund, and one target date fund that holds 50% equity and 50% bonds, the fraction of equity investment offerings in the plan is 2.5/4 and that of bonds is 1.5/4. The dependent variable in Panel A is the fraction of funds that represent equity offerings. Panels B and C report the corresponding results for the bond and money market categories, respectively. The model includes the same explanatory variables as those included in Tables 2 and 3. The explanatory variables of interest are zip code-level Census variables that capture population density, education, income, race/ethnicity, and age. Standard errors are double clustered at the plan and zip code levels. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

Panel A: Equity Offerings

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.015					0.025
	(0.775)					(1.090)
Undergraduate or higher		-0.002*				0.000
		(-1.686)				(0.070)
Log(Per Capita Income)			-0.131**			-0.192
			(-2.189)			(-1.235)
Latino				0.003		-0.001
				(1.444)		(-0.370)
Non-Latino Minority				-0.002		-0.004**
				(-0.968)		(-2.107)
Over 55					-0.006	-0.006
					(-1.550)	(-1.301)
Observations	456,586	406,619	406,776	407,065	407,068	400,755
R-squared	0.020	0.014	0.014	0.014	0.014	0.014
FE	year, state	year, state	year, state	year, state	year, state	year, state

Panel B: Bond Offerings

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	-0.038**					-0.040**
	(-2.522)					(-2.193)
Undergraduate or higher		0.002*				0.001
		(1.728)				(0.451)
Log(Per Capita Income)			0.104**			0.081
			(2.142)			(0.671)
Latino				-0.004**		-0.001
				(-2.401)		(-0.532)
Non-Latino Minority				-0.001		0.000
				(-1.087)		(0.195)
Over 55					0.004	0.002
					(1.473)	(0.573)
Observations	456,586	406,619	406,776	407,065	407,068	400,755
R-squared	0.042	0.023	0.024	0.024	0.024	0.023
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table IA.7: continued

Panel C: Money Market Offerings

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Population Density)	0.030***					0.024*
	(2.949)					(1.717)
Undergraduate or higher		0.001*				-0.002
		(1.794)				(-0.865)
Log(Per Capita Income)			0.061*			0.136*
			(1.887)			(1.737)
Latino				0.000		0.001
				(0.068)		(0.476)
Non-Latino Minority				0.003**		0.003**
				(2.468)		(2.141)
Over 55					-0.001	0.001
					(-0.281)	(0.307)
Observations	456,586	406,619	406,776	407,065	407,068	400,755
R-squared	0.013	0.011	0.011	0.011	0.011	0.011
FE	year, state	year, state	year, state	year, state	year, state	year, state

Table IA.8: Simulation Tests

The table reports the actual distribution, the simulated distributions and the difference between the simulated and the actual distributions for all U.S. cities with a population exceeding half a million. The simulation is performed for each zip code and each year by randomly picking the same number of plans in the zip code from the plan universe. We repeat the exercise for all zip code and all years in our sample for 1000 times.

		Actual fee	Simulated fee	Difference
	No. simulations	vexp_VWcc	Vexp_VWCC_RD	Vexp_VWCC_Diff
mean	1000	43.39	44.31	-0.92
(t-stats)	1000		3535.98	-73.65
std	1000	8.08	3.09	4.99
(t-stats)	1000		291.63	471.72
spread	1000	48.35	14.74	33.62
(t-stats)	1000		185.21	422.50