Consumer Insights: Money & Investing

What's inside

Authors:

Angela Fontes, Ph.D., Mark Lush and Meimeizi Zhu
NORC at the University of Chicago

Olivia Valdes, Ph.D., Robert Ganem and Gary Mottola, Ph.D.
FINRA Investor Education Foundation

Measuring Investing Knowledge

Summary

Understanding investing concepts is an important part of making appropriate investment decisions. Historically, there have been large gender, race and ethnicity differences in the measured levels of knowledge about finances, including questions related to investing (Forbes & Kara, 2010; Lusardi & Mitchell, 2011; Lin et al., 2019). One unknown is the extent to which the complex investing terminology often used in investing knowledge assessments masks an understanding of the concepts the assessment is attempting to measure, particularly among groups historically underrepresented in investing, such as female, African American and Hispanic/Latino consumers.

To examine the role of complex investing terminology in the measurement of investing knowledge, in April and May 2021, researchers collected 1,680 completed surveys from a probability-based, nationally representative panel that included oversamples of both African American and Hispanic/Latino consumers. The survey tested five investing-related concepts (fees and expenses, diversification and risk, time horizon, liquidity, and investment types) with two sets of multiple choice questions: (1) a set that included investing terminology; and (2) a set that eliminated investing terminology or explained any terminology using plain language.[1] The study aimed both to explain differences in investing knowledge and to determine if investing jargon contributes to gender-, race- and ethnicity-based gaps in investing knowledge.

Results indicate that complex terminology does appear to impact the measurement of investing knowledge among several groups, including female, African American and Hispanic/Latino consumers. These impacts persisted when controlling for factors that may be related to both investing knowledge and the comprehension of complex terminology, including educational attainment and investor status. Results of this study have implications for the measurement of investing knowledge and for investment disclosure presentation.

Background

Financial knowledge, particularly knowledge about investing, is an important contributor to making sound investing decisions (Clark et al., 2014). Female, African American and Hispanic/Latino consumers have historically scored lower on measures of investing knowledge (Forbes & Kara, 2010). Questions that feature complex terminology may have a considerable impact on how investing knowledge is assessed.

This research investigates whether the use of complex investing terminology affects the measurement of investing knowledge. The use of complex investing terminology (rather than plain language) may disproportionately erode the ability of individuals with less investing experience to correctly answer investing knowledge questions. Thus, existing measures that use complex terminology may be measuring familiarity with vocabulary, rather than the ability to understand and use investing concepts in decision-making.

The study aims to determine whether using plain language in investing knowledge questions results in a more accurate measurement of how well groups typically underrepresented in investing—female, African American and Hispanic/Latino consumers, among others—grasp important investing concepts.

Results suggest that the inclusion of investing terminology affects the measurement of investing knowledge based on race, ethnicity and gender. Even when factors such as educational attainment and investor status are accounted for, female, African American and Hispanic/Latino consumers are more negatively impacted by the inclusion of investing terminology in knowledge assessments.

Complex terminology in the measurement of investing knowledge

To understand the impact of complex terminology in the measurement of investing knowledge, we devised a study in which each respondent was asked two sets of questions on five important investing concepts (fees and expenses, diversification and risk, time horizon, liquidity, and investment types). The first set of questions (Set 1) contained five traditional questions that included complex investing terminology such as "expense ratio" and "time horizon." The second set of questions (Set 2) examined the same concepts but used questions that either eliminated or explained any complex terminology. The Set 2 questions are designed to be similar in difficulty to those in Set 1 but do eliminate the terminology component. Responses were recoded so that the respondent received a 1 for a correct response, and a 0 otherwise, including skipped or "don't know" responses. The overall score (from 0 to 5) was then tabulated for each of the five-question batteries.

If terminology affects the measurement of investing knowledge based on race/ethnicity or gender, we expect the proportion of respondents who correctly answer a Set 2 question after incorrectly answering the Set 1 question on the same concept to vary by demographic characteristics. To address this research question, we code the data as follows. First, for each concept, we compare each respondent's Set 1 answers with their corresponding Set 2 answers. In doing so, we can identify the proportion of respondents who had improved scores ("Improvers"), that is, those who incorrectly answered the Set 1 question but correctly answered the Set 2 question for the same concept. Groups with larger proportions of Improvers have been disproportionately impacted by terminology. Second, we determine the proportion of respondents who correctly answered more questions in Set 2 than in Set 1 and identify them as "Overall Improvers."

To examine how investing knowledge may vary across different population segments, we first examine two factors that may be related to investing knowledge: educational attainment and experience with investing. We then examine overall differences based on race/ethnicity and gender. Finally, we look at race/ethnicity and gender differences within education and investor status categories to understand whether differences based on race/ethnicity or gender are partially or entirely driven by differences in education or experience with investing.

Overall results

In general, respondents performed poorly on both sets of questions, with a mean of 2.53 (out of 5) correct answers in Set 1, and 2.62 (out of 5) correct answers in Set 2. Results confirmed previous research; white and male respondents scored higher on both sets of questions, as did those with higher educational attainment and more investing experience.

African American and Hispanic/Latino respondents averaged fewer than two correct answers on each set, while white respondents and respondents of other races and ethnicities averaged close to three correct answers per set. Men scored marginally higher than women on both sets. The most prominent differences were between those with and without four-year college degrees and between investors and non-investors. Four-year college degree holders and investors with taxable investment accounts had the highest scores on both sets.

On average, scores on Set 2 were marginally higher than scores on Set 1 (Table 1). There were, however, a few noticeable differences, primarily among respondent groups with scores that were already marginally higher than the rest. Respondents with a college degree had a slight (non-significant) decrease in scores from Set 1 to Set 2 overall, as did investors with taxable accounts. This suggests that the inclusion of terminology had little to no effect on the measured investing knowledge of respondents in these groups.

Table 1. Average Number of Correct Responses on Set 1 and Set 2, by Group

	Set 1 mean # correct (SD)	Set 2 mean # correct (SD)
All respondents	2.53 (1.64)	2.62 (1.57)
Race/ethnicity		
African American	1.60 (0.96)	1.85 (0.96)
Hispanic/Latino	1.77 (1.16)	1.92 (1.14)
White	2.87 (1.89)	2.92 (1.78)
Other race(s)[2]	2.83 (1.94)	2.87 (2.10)
Gender		
Male	2.80 (1.74)	2.83 (1.63)
Female	2.28 (1.51)	2.42 (1.48)
Educational attainment		
With 4-year college degree	3.36 (1.55)	3.29 (1.53)
Without 4-year college degree	2.08 (1.51)	2.26 (1.47)
Investor status		
Non-investor	1.70 (1.41)	1.95 (1.48)
Retirement account holder	2.51 (1.58)	2.60 (1.47)
Taxable account holder	3.29 (1.50)	3.24 (1.45)

The relationship between education and investing knowledge

One potential factor in the measurement of investing knowledge is education. It stands that consumers with greater levels of educational attainment may also have greater ability to correctly answer questions related to finances or investing. To evaluate whether terminology disproportionately impacted those with lower levels of educational attainment, we created an indicator variable to identify whether the respondent had at least a four-year degree (1) or not (0).

Table 2 presents the percent of respondents who correctly answered each question and the average number of correct responses by educational attainment and set. In general, respondents without a four-year college degree less frequently answered both the Set 1 and Set 2 questions correctly. While the average number of correct responses increased on Set 2 (compared to Set 1) for non-degree holders, it remained roughly the same for degree-holders. This suggests that terminology did not have a substantial impact on degree-holders but may have for non-degree holders.
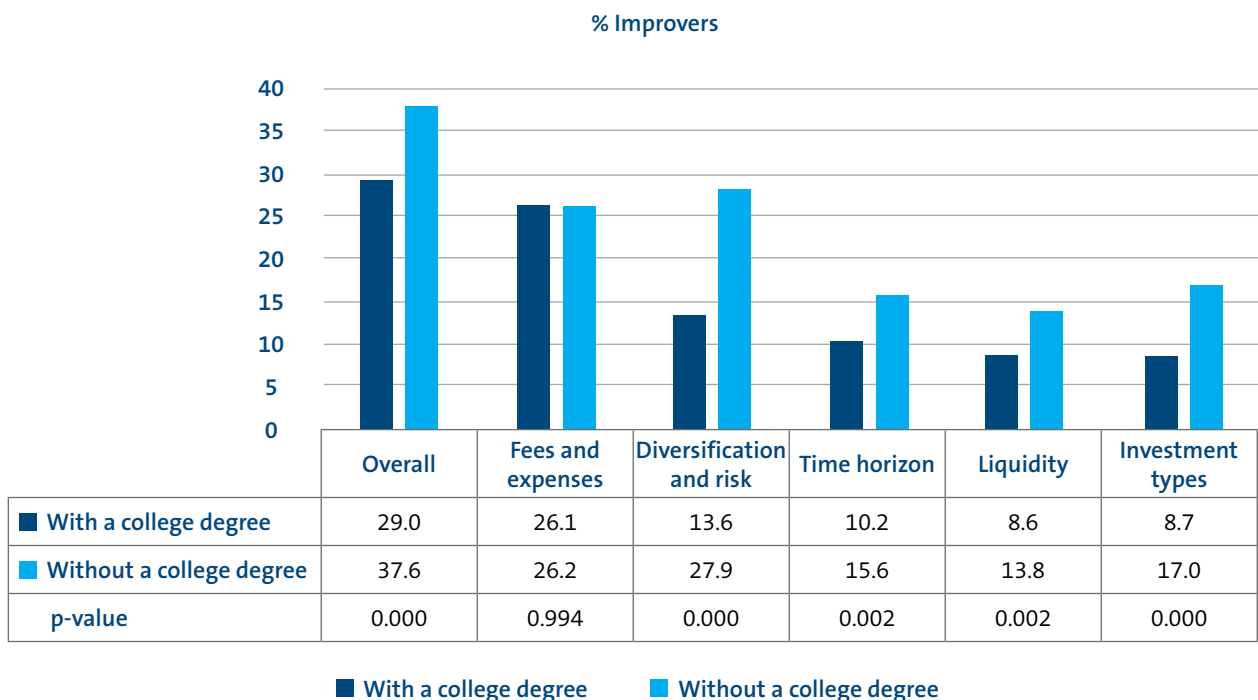
Table 2: Proportion of Respondents Correctly Responding to Set 1 and Set 2 Questions by Educational Attainment

	With a college degree		Without a college degree	
	Set 1	**Set 2**	**Set 1**	**Set 2**
Fees and expenses (% correct)	49.48	65.59	31.12	45.24
Diversification and risk (% correct)	81.51	89.35	50.09	68.13
Time horizon (% correct)	74.88	75.64	50.83	47.67
Liquidity (% correct)	61.74	40.55	34.24	28.45
Investment types (% correct)	68.30	57.47	41.60	36.51
Average total correct responses (out of 5)	3.36	3.29	2.08	2.26

Figure 1 presents the proportion of each group (those with and without four-year college degrees) who improved on each concept, and overall, from Set 1 to Set 2. There were proportionally more Overall Improvers among those without a college degree than among those with a college degree. When broken down by concept, those without a college degree more frequently improved on all concepts other than fees and expenses from Set 1 to Set 2. Two concepts—risk and investment types—had particularly large differences in the proportion of Improvers; there were twice as many Improvers without a college degree on both concepts.

These findings suggest that complex investing terminology may disproportionately impact those without a college degree in the measurement of investing knowledge, and that the inclusion of this type of terminology may be affecting the measurement of investing knowledge.

Figure 1: Proportion of Improvers From Set 1 to Set 2 by Educational Attainment

% Improvers

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
With a college degree	29.0	26.1	13.6	10.2	8.6	8.7
Without a college degree	37.6	26.2	27.9	15.6	13.8	17.0
p-value	0.000	0.994	0.000	0.002	0.002	0.000

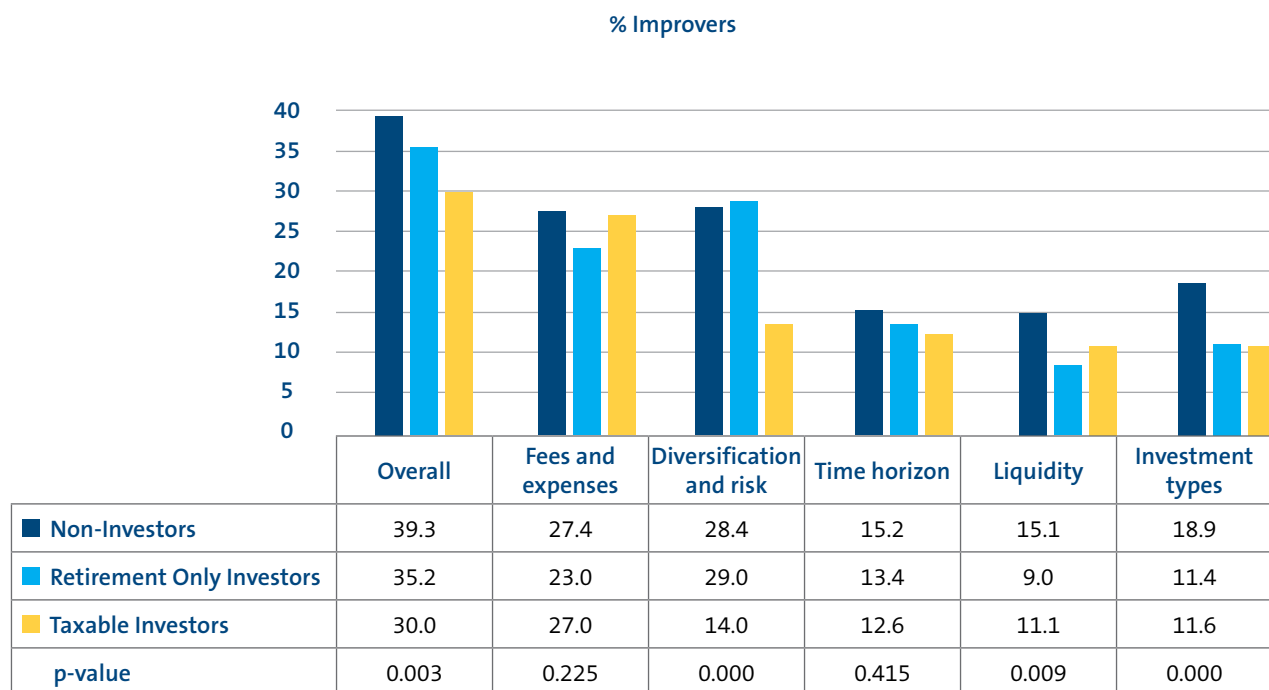■ With a college degree ■ Without a college degree

The relationship between investing experience and investing knowledge

Like the relationship between education and investment knowledge, more experienced investors may have a greater ability to correctly answer questions related to investing as they have had greater exposure to investing terminology. To evaluate whether terminology disproportionately impacted those with less experience investing, we grouped respondents into one of three categories:

▶ **Non-Investors**, who had no investments in the stock market or retirement accounts (35.3 percent)

▶ **Investors with retirement accounts only (Retirement Only Investors)**, who held investments in retirement accounts but no other types of accounts (25.5 percent)

▶ **Investors with taxable accounts (Taxable Investors)**, who held investments in non-retirement accounts (and most have investments in retirement accounts) (39.3 percent)

Figure 2 presents the proportion of overall and concept-specific Improvers from Set 1 to Set 2 among Non-Investors, Retirement Only Investors, and Taxable Investors. The proportion of Overall Improvers was largest in the non-investor group, followed by that of the retirement only group. The proportion of Overall Improvers was smallest among the taxable investor group. When broken down by concept, Non-Investors more frequently showed improvements from Set 1 to Set 2 than Retirement Only and Taxable Investors on all concepts other than risk.

Figure 2: Proportion of Improvers From Set 1 to Set 2 by Investing Experience

% Improvers

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
Non-Investors	39.3	27.4	28.4	15.2	15.1	18.9
Retirement Only Investors	35.2	23.0	29.0	13.4	9.0	11.4
Taxable Investors	30.0	27.0	14.0	12.6	11.1	11.6
p-value	0.003	0.225	0.000	0.415	0.009	0.000

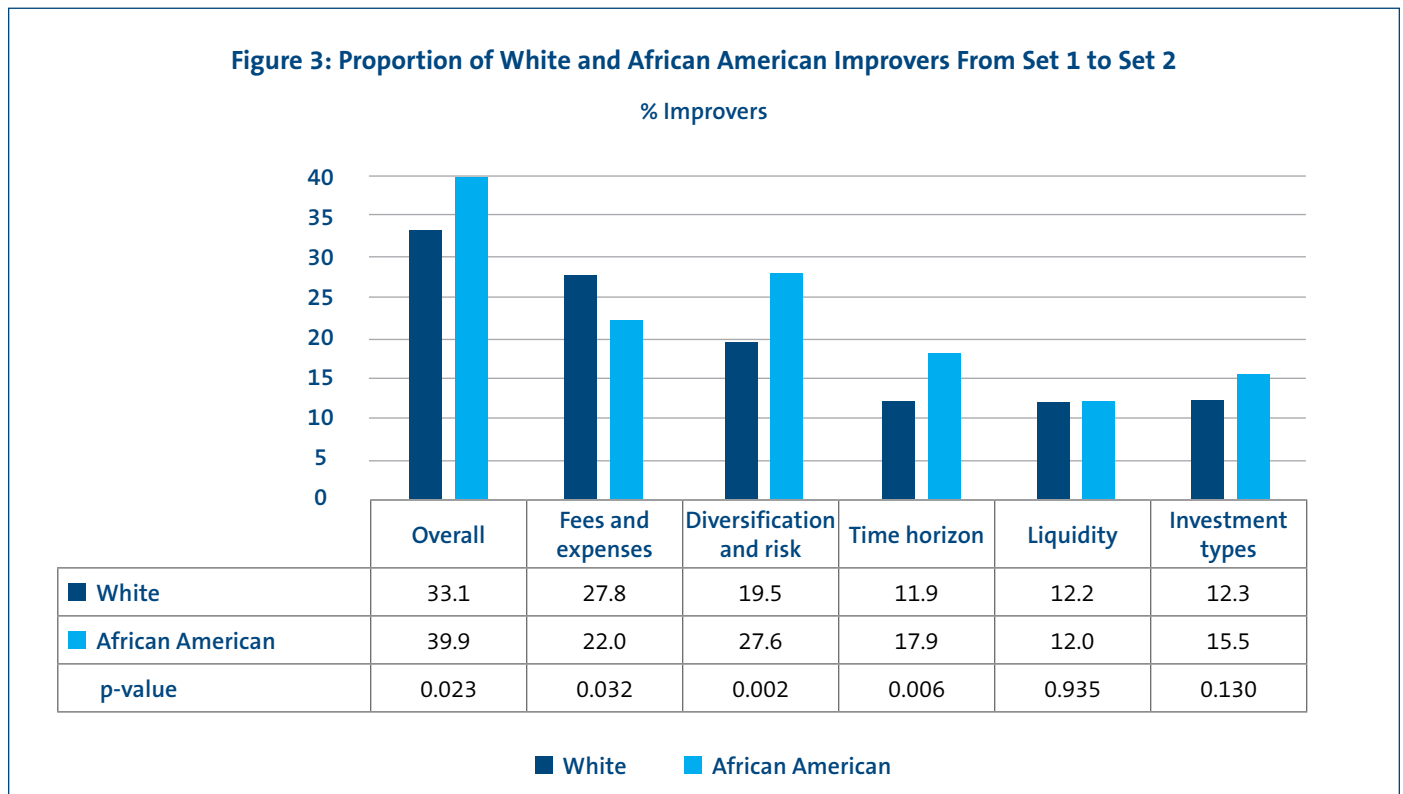■ Non-Investors   ■ Retirement Only Investors   ■ Taxable Investors

Race/ethnicity differences

To understand whether complex investing terminology affects the measurement of investing knowledge, we also examined whether the proportion of Improvers from Set 1 to Set 2 varied between white and non-white respondents. Specifically, we compared the proportion of Improvers among (1) white and African American respondents and (2) white and Hispanic/Latino respondents.[3]

Comparison of white and African American respondents

As previous research has suggested, measured investing knowledge is considerably lower among African American respondents than white respondents (Figure 3). There was a greater proportion of African American (40 percent) than white respondents (33 percent) who improved their overall scores from Set 1 to Set 2. When broken down by concept, African American respondents improved on the risk and time horizon concepts more often than white respondents. There were no significant differences in the proportions of white and African American Improvers on either the liquidity or investment type concepts.

Figure 3: Proportion of White and African American Improvers From Set 1 to Set 2

% Improvers

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ White	33.1	27.8	19.5	11.9	12.2	12.3
■ African American	39.9	22.0	27.6	17.9	12.0	15.5
p-value	0.023	0.032	0.002	0.006	0.935	0.130

■ White   ■ African American

These findings suggest that, for at least some of the concepts measured (fees and expenses, risk, time horizon, and overall differences), the inclusion of complex investing terminology affects the measurement of investing knowledge for African American respondents.

Given that a larger proportion of African American respondents has lower educational attainment (74 percent of African American respondents had no college degree, compared to 61 percent of white respondents) and that African American respondents are less frequently investors when compared to white respondents (51 percent of African American respondents reported no investment accounts, compared to 29 percent of whites), we next examined differences between white and African American respondents with and without four-year college degrees and with and without investment accounts independently, disentangling the effects of race from these co-variates. If, for example, the differences between white and African American respondents were no longer present when examining college graduates and non-college graduates separately, we would attribute the differences to education, and not to race.

While small sample sizes may limit our ability to detect some significant differences, it appears educational attainment moderates many, but not all, of the differences in the proportions of white and African American respondents who improved (Figure 4). Among African Americans and whites holding a college degree, while the direction of the differences remained, only the risk concept differences were statistically significant (African American respondents were more likely to improve in Set 2). Among African American and white respondents without a college degree, only the fees and expenses difference remained, (white respondents were more likely to improve in Set 2). While there was also a greater proportion of African American Improvers on the time horizon concept, the p-value was slightly over .05 (p=.07). Together, these findings suggest that the disproportionate impacts of terminology in measuring investing knowledge on African American consumers partially remain, even when controlling for educational attainment.

Figure 4: Proportion of White and African American Improvers From Set 1 to Set 2, by Educational Attainment

% Improvers with a four-year college degree

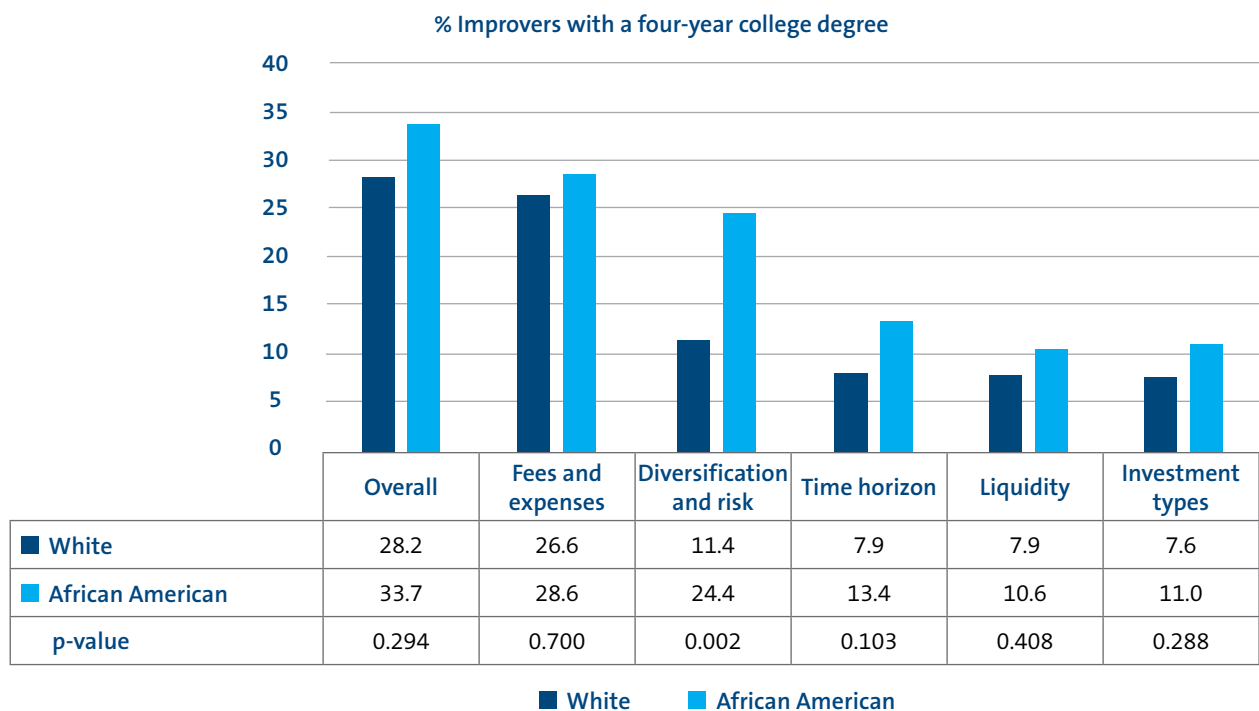|	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
White	28.2	26.6	11.4	7.9	7.9	7.6
African American	33.7	28.6	24.4	13.4	10.6	11.0
p-value	0.294	0.700	0.002	0.103	0.408	0.288

■ White   ■ African American

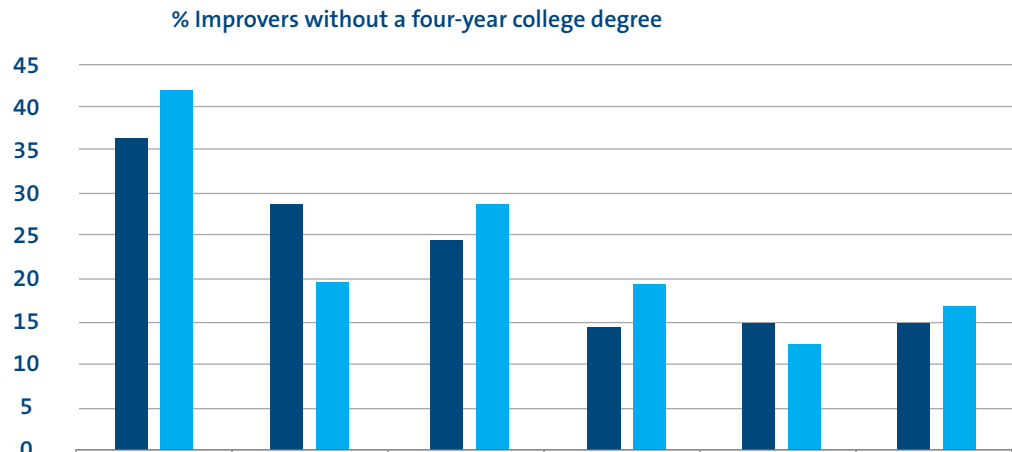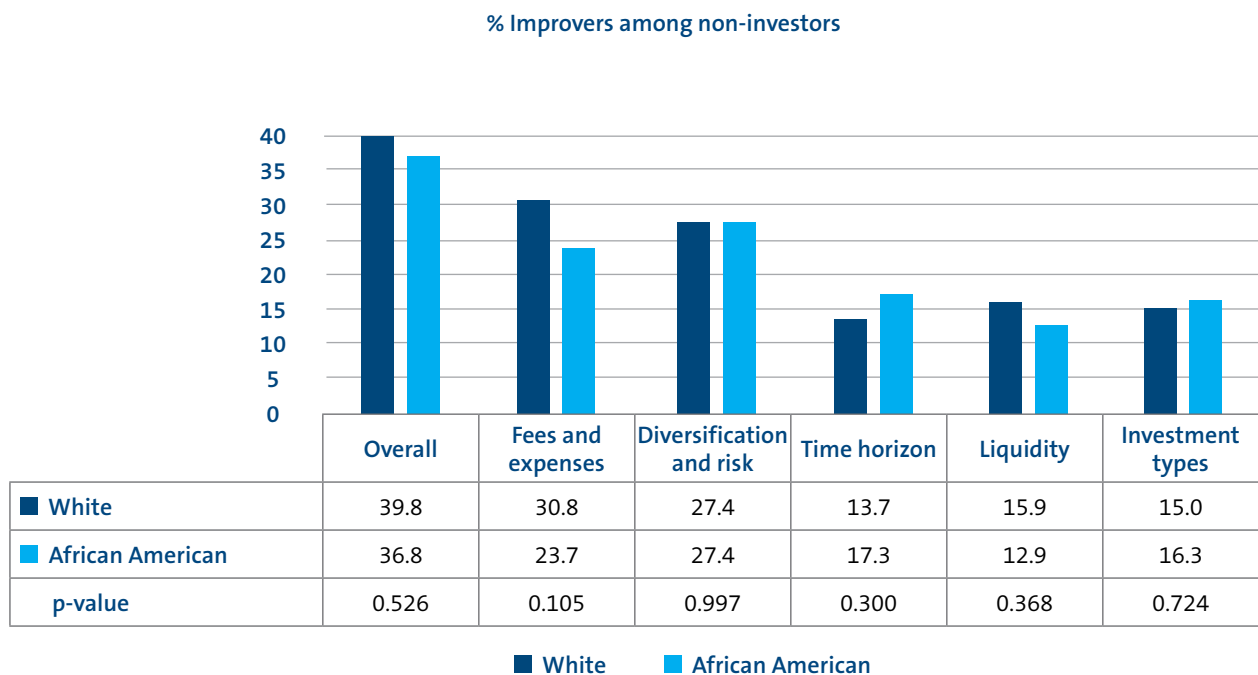**Figure 4: Proportion of White and African American Improvers From Set 1 to Set 2, by Educational Attainment**

% Improvers without a four-year college degree

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ White	36.3	28.6	24.6	14.5	14.9	15.3
■ African American	42.0	19.7	28.7	19.5	12.5	17.1
p-value	0.116	0.006	0.214	0.071	0.356	0.521

■ White   ■ African American

Finally, we examine differences between white and African American respondents within investor status categories to determine whether differences based on race reflect experience with investing, rather than race. To accommodate smaller sample sizes, we combined Retirement Investors and Taxable Investors into one category for this analysis and compared those respondents to Non-Investors.

Unlike the results related to educational attainment, race-based differences remained when investors and non-investors were analyzed separately, but only among investors (Figure 5). Compared to white investors, a larger proportion of African American investors (those owning a retirement or taxable account) improved on the risk and time horizon concepts, along with the overall performance. However, among non-investors, there were no differences in the proportion of African American and white Improvers on any concept, suggesting that the effects of complex terminology disproportionately impact African American investors, but not non-investors.

Figure 5: Proportion of White and African American Improvers From Set 1 to Set 2, by Investing Status

% Improvers among investors (retirement or taxable)

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ White	30.4	26.6	16.2	11.2	10.7	11.2
■ African American	43.1	20.1	27.8	18.6	11.2	14.7
p-value	0.002	0.076	0.001	0.010	0.850	0.203

■ White   ■ African American

% Improvers among non-investors

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ White	39.8	30.8	27.4	13.7	15.9	15.0
■ African American	36.8	23.7	27.4	17.3	12.9	16.3
p-value	0.526	0.105	0.997	0.300	0.368	0.724

■ White   ■ African American

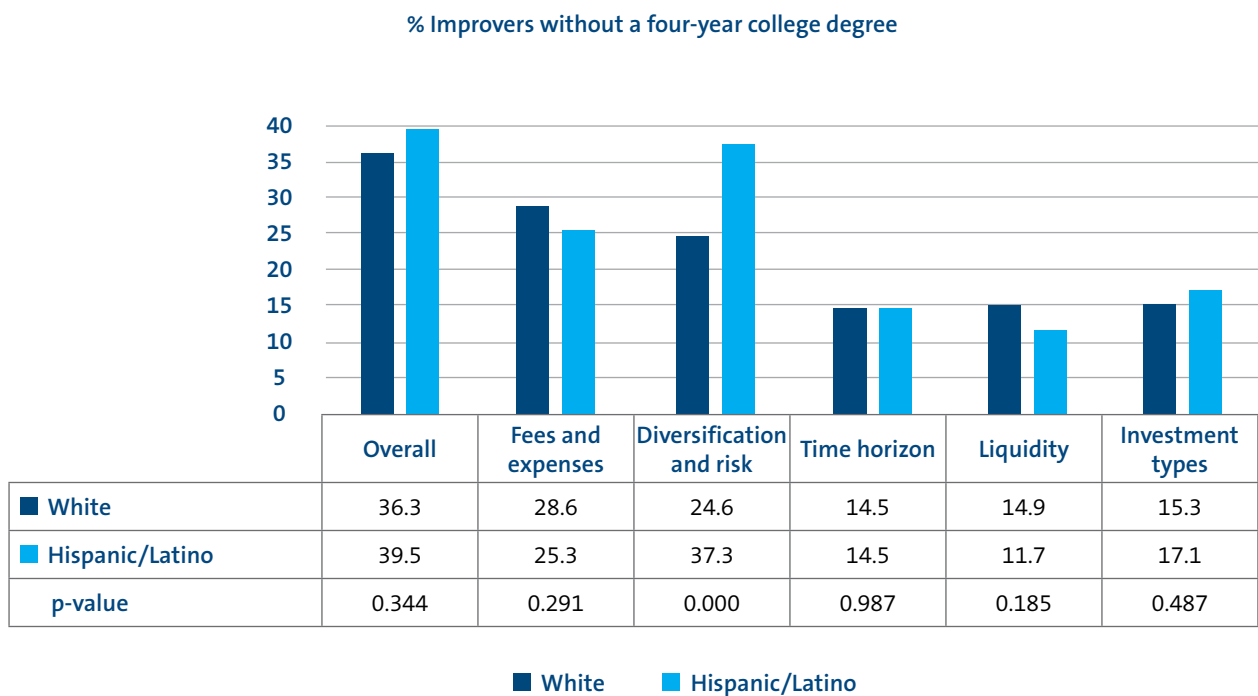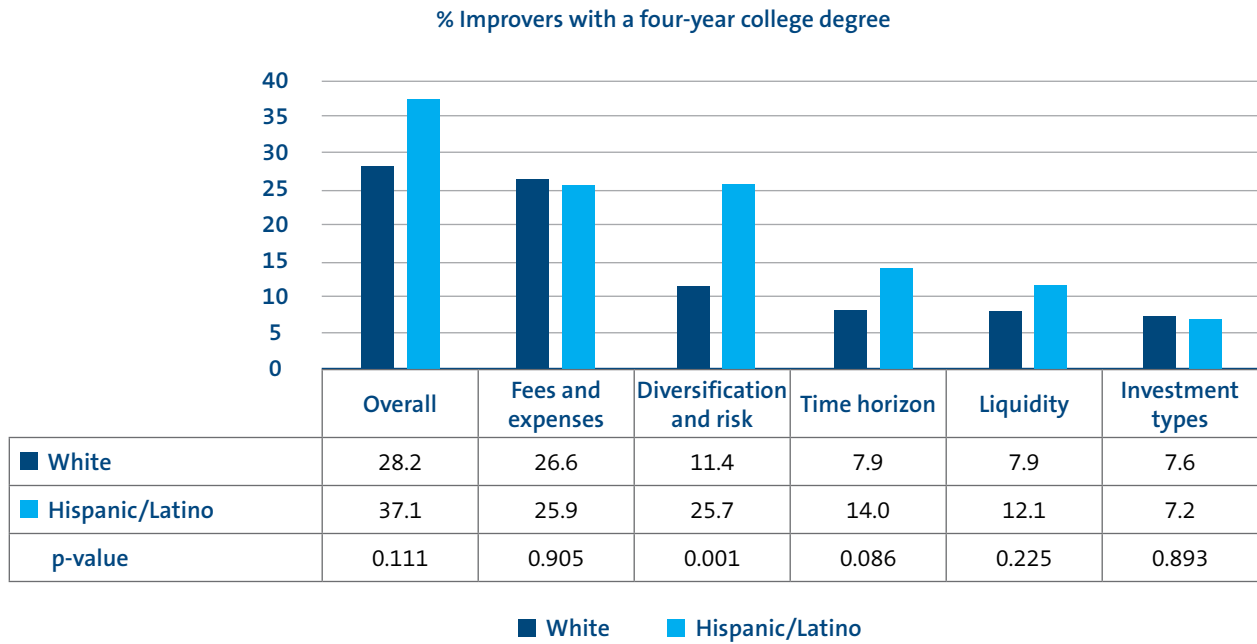## Comparison of white and Hispanic/Latino respondents

A similar pattern emerged when we compared white and Hispanic/Latino respondents (Figure 6). While there was a greater proportion of Hispanic/Latino Overall Improvers than white Overall Improvers, when broken down by concept, risk was the only concept in which Hispanic/Latino respondents improved more frequently than white respondents. Hispanic/Latino respondents improved at the same rates as white respondents on questions related to fees, time horizon, liquidity or investment types from Set 1 to Set 2.

Figure 6: Proportion of White and Hispanic/Latino Improvers From Set 1 to Set 2

% Improvers

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
White	33.1	27.8	19.5	11.9	12.2	12.3
Hispanic/Latino	39.0	25.4	35.0	14.4	11.8	15.1
p-value	0.040	0.367	0.000	0.228	0.833	0.170

■ White ■ Hispanic/Latino
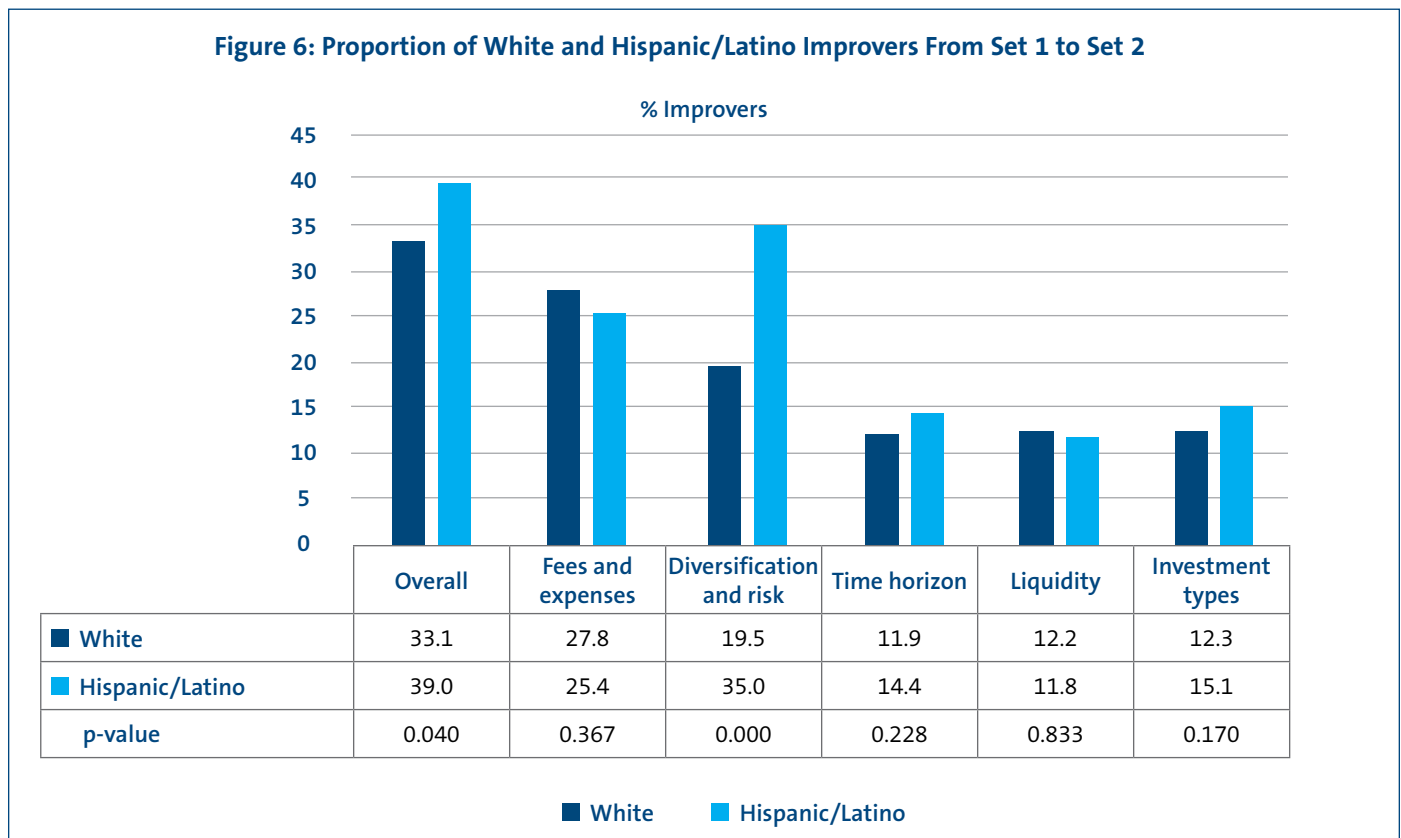
Because a larger proportion of Hispanic/Latino respondents has lower educational attainment (80 percent of Hispanics/Latinos reported not having a college degree, compared to 61 percent of whites) and because Hispanic/Latino respondents are less frequently investors (47 percent of Hispanics/Latinos reported not being investors, compared to 29 percent of whites), we again examined differences between white and Hispanic/Latino respondents with and without four-year college degrees and with and without investment accounts.
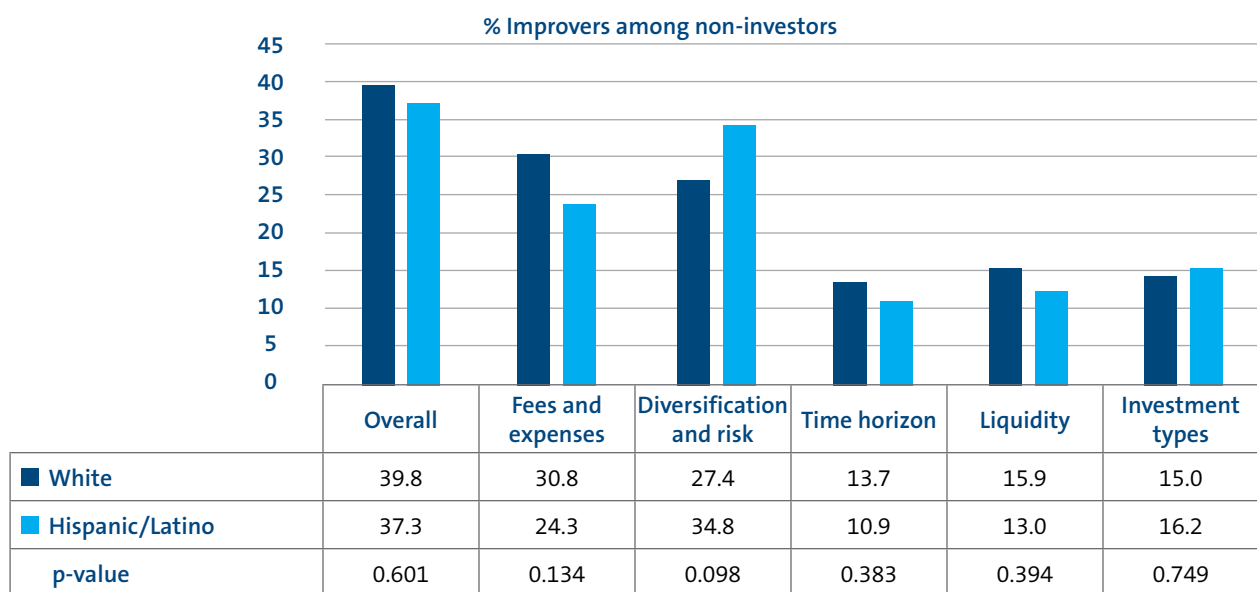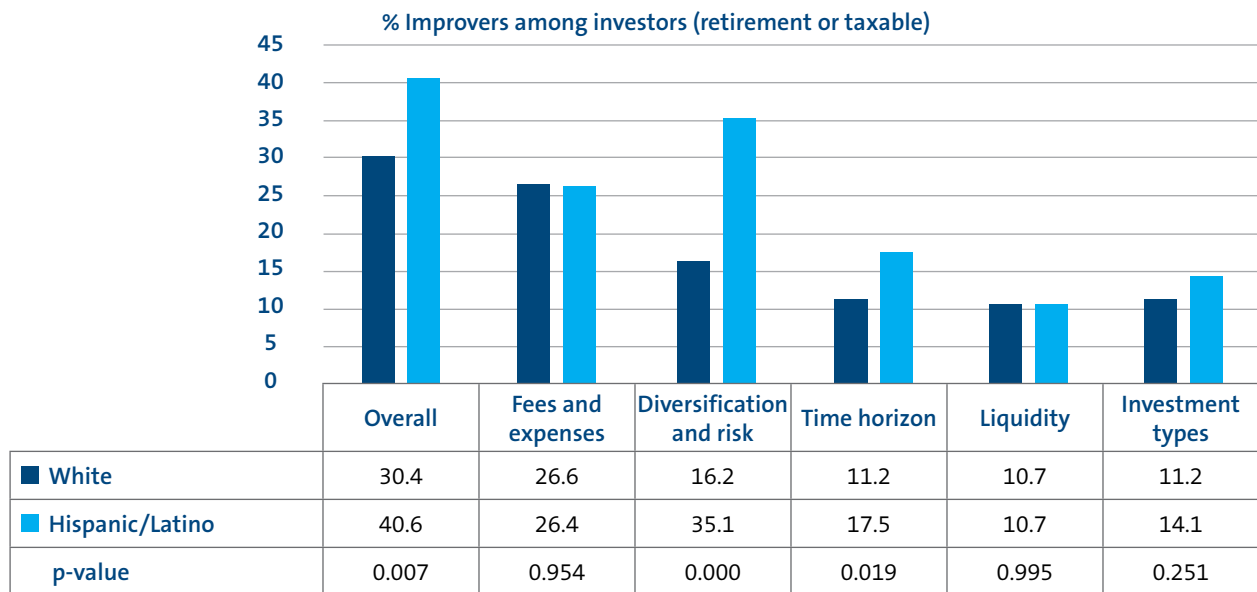
When we analyzed those with and without college degrees separately, the difference for the risk concept remained in both: Hispanic/Latino respondents more frequently improved when compared with white respondents (Figure 7). Additionally, among those with college degrees, there were marginal differences for the time horizon concept, with Hispanic/Latino respondents more frequently showing improvements from Set 1 to Set 2. This finding suggests that the disproportionate impacts of terminology in measuring the investing knowledge of Hispanic/Latino consumers, while apparently specific to the risk concept, is not a simple reflection of lower levels of educational attainment among this group.

Figure 7: Proportion of White and Hispanic/Latino Improvers From Set 1 to Set 2, by Educational Attainment

% Improvers with a four-year college degree

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ White	28.2	26.6	11.4	7.9	7.9	7.6
■ Hispanic/Latino	37.1	25.9	25.7	14.0	12.1	7.2
p-value	0.111	0.905	0.001	0.086	0.225	0.893

■ White   ■ Hispanic/Latino

% Improvers without a four-year college degree

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ White	36.3	28.6	24.6	14.5	14.9	15.3
■ Hispanic/Latino	39.5	25.3	37.3	14.5	11.7	17.1
p-value	0.344	0.291	0.000	0.987	0.185	0.487

■ White   ■ Hispanic/Latino

Ethnicity-based differences remained when analyzing investors and non-investors separately, but only for investors (Figure 8). Relative to white respondents, a greater proportion of Hispanic/Latino investors with a retirement or taxable account improved in Set 2 on their overall performance and in the risk and time horizon concepts. Among non-investors, however, improvement did not vary by ethnicity on any concept. This suggests that the differences observed between white and Hispanic/Latino respondents is primarily due to differences in Hispanic/Latino and white investors, and that white and Hispanic/Latino non-investors are impacted similarly by the inclusion of terminology.
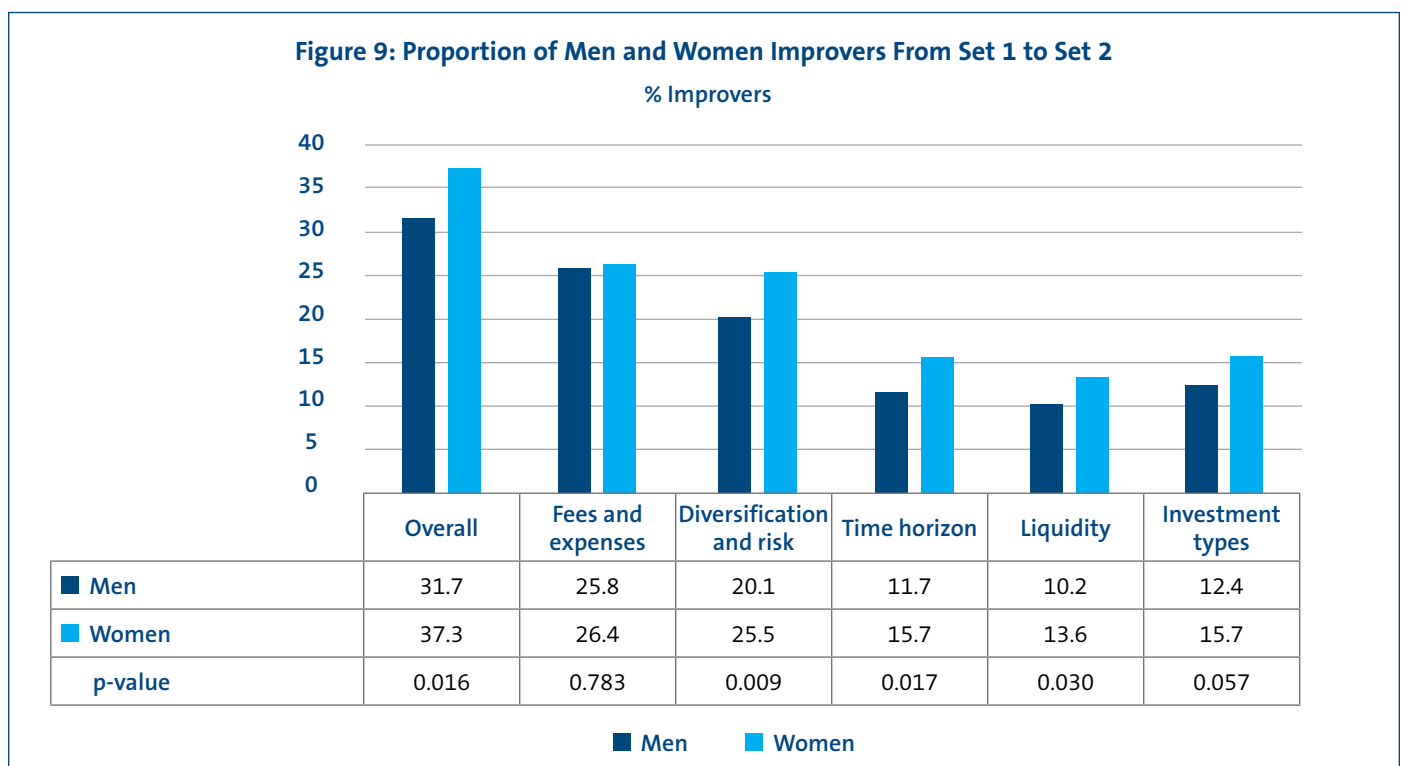
Figure 8: Proportion of White and Hispanic/Latino Improvers From Set 1 to Set 2, by Investing Status

% Improvers among investors (retirement or taxable)

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
White	30.4	26.6	16.2	11.2	10.7	11.2
Hispanic/Latino	40.6	26.4	35.1	17.5	10.7	14.1
p-value	0.007	0.954	0.000	0.019	0.995	0.251

% Improvers among non-investors

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
White	39.8	30.8	27.4	13.7	15.9	15.0
Hispanic/Latino	37.3	24.3	34.8	10.9	13.0	16.2
p-value	0.601	0.134	0.098	0.383	0.394	0.749

Gender differences

In addition to race and ethnicity, gender differences in financial and investing knowledge have been outlined in previous research. To investigate the role of complex terminology based on gender,[4] we used the same approach we used for race and ethnicity. Because there is not the same gap in educational attainment based on gender that exists for race and ethnicity, we only examine gender differences by investor status and not by education.

Consistent with previous research, women correctly responded to investing knowledge questions, both with and without complex terminology, less frequently than men (Figure 9). However, women more frequently showed improvements from Set 1 to Set 2, both on overall performance and on all the individual concepts, except for fees.

Figure 9: Proportion of Men and Women Improvers From Set 1 to Set 2

% Improvers

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ Men	31.7	25.8	20.1	11.7	10.2	12.4
■ Women	37.3	26.4	25.5	15.7	13.6	15.7
p-value	0.016	0.783	0.009	0.017	0.030	0.057

■ Men   ■ Women

These differences in the proportion of respondents who improve their scores when complex terminology is either explained or eliminated suggest that this type of terminology is more problematic for women than men.

Finally, we examined differences based on gender by investing experience. If we believe that the differences apparent between men and women are primarily due to differential rates of investing (where women are less frequently investors compared to men), we would expect no differences between men and women within investor categories.

Results revealed that gender difference remain when controlling for investment experience, but that the majority of the gains realized by women were among women with taxable investment accounts (Figure 10). Among non-investors, women more frequently showed improvements in Set 2 than men on the questions related to risk, but less frequently improved on the questions related to fees. Among respondents with retirement accounts only, a larger proportion of women improved on the time horizon concept, and in total. The most substantial gains were realized by women with taxable accounts: Proportionately more women improved on the concepts related to fees, risk and liquidity, and in total, compared to men. As evident in the educational attainment analysis, it appears that the effects of complex terminology on the measurement of investing knowledge is greatest among women with more investing experience.

Figure 10: Proportion of Male and Female Respondents With Improved Scores in Set 2 (Improvers), by Investing Experience
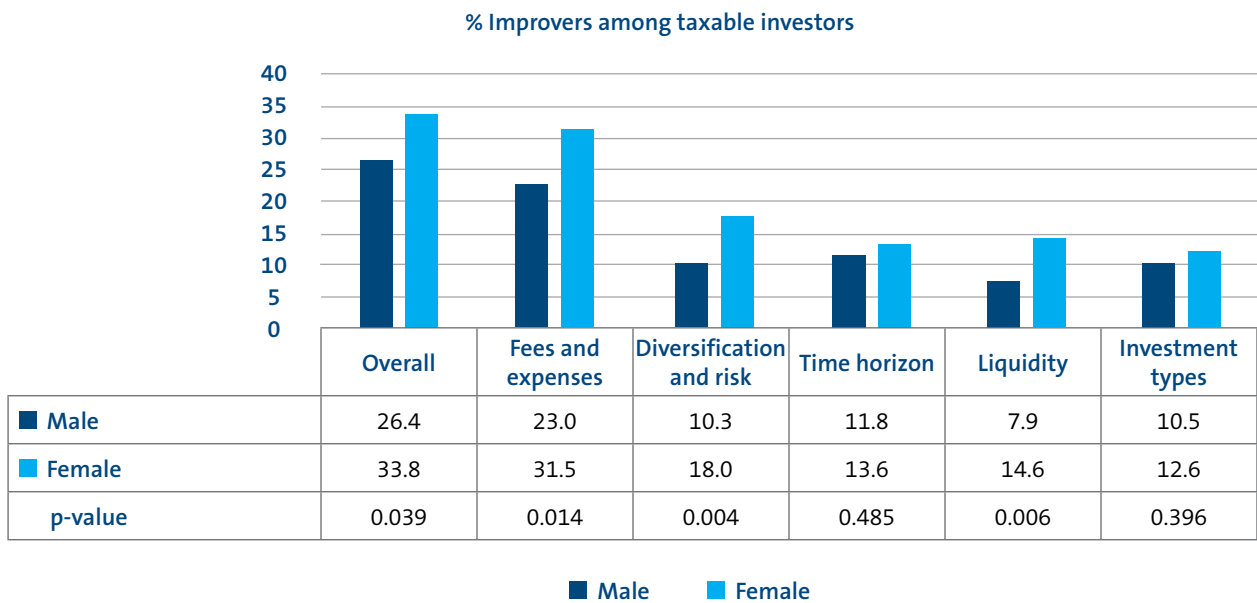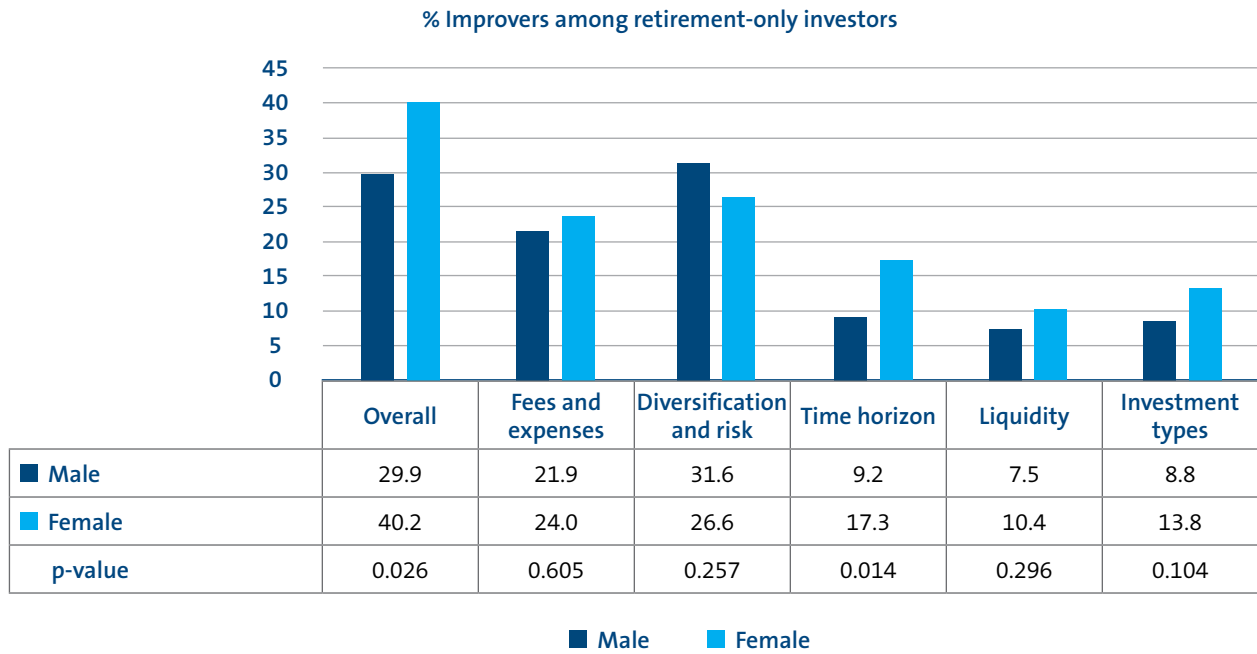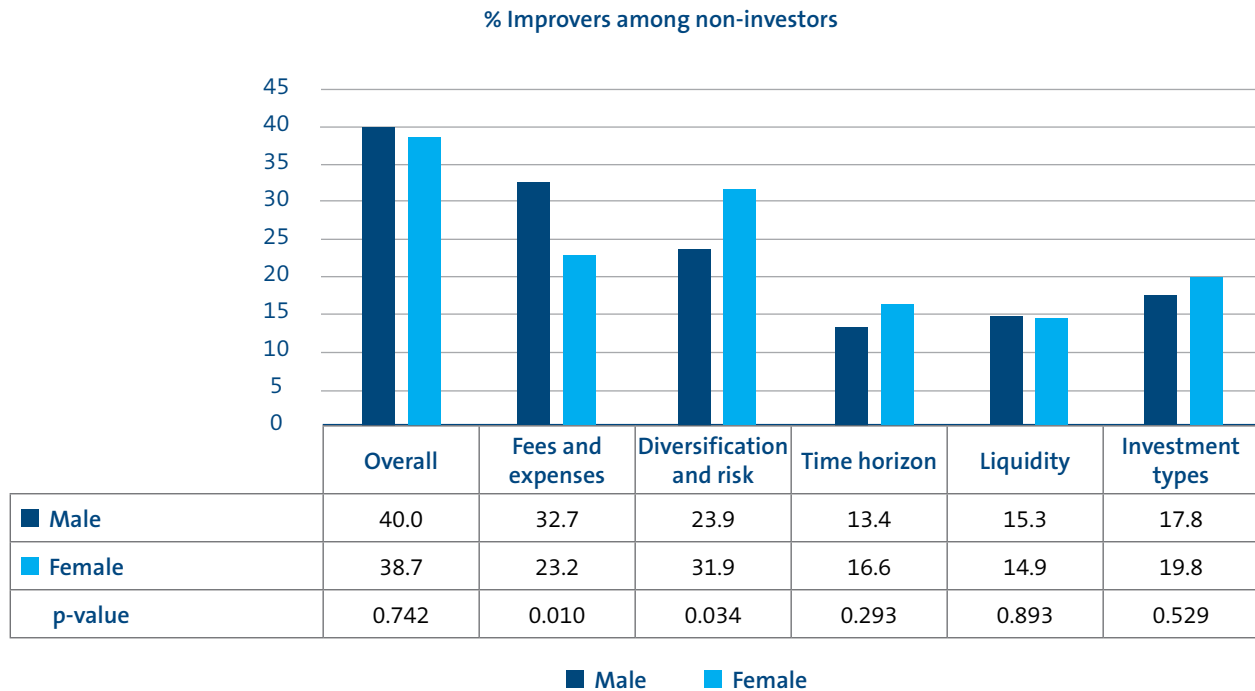
% Improvers among retirement-only investors

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ Male	29.9	21.9	31.6	9.2	7.5	8.8
■ Female	40.2	24.0	26.6	17.3	10.4	13.8
p-value	0.026	0.605	0.257	0.014	0.296	0.104

■ Male   ■ Female

% Improvers among taxable investors

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
■ Male	26.4	23.0	10.3	11.8	7.9	10.5
■ Female	33.8	31.5	18.0	13.6	14.6	12.6
p-value	0.039	0.014	0.004	0.485	0.006	0.396

■ Male   ■ Female

Figure 10: Proportion of Male and Female Respondents With Improved Scores in Set 2 (Improvers), by Investing Experience

% Improvers among non-investors

	Overall	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
Male	40.0	32.7	23.9	13.4	15.3	17.8
Female	38.7	23.2	31.9	16.6	14.9	19.8
p-value	0.742	0.010	0.034	0.293	0.893	0.529

■ Male ■ Female

Conclusion

Complex terminology does appear to affect the measurement of investing knowledge among several groups, including female, African American and Hispanic/Latino consumers. For all three groups, the proportion of consumers who moved from incorrect responses on questions that include complex terminology to correct answers in the terminology-free questions is larger overall and on questions related to risk. Women appear to be most impacted by the inclusion of complex investing terminology.

Although consumers with lower educational attainment and non-investor status also appear to be negatively impacted when complex terminology is included in questions measuring investing knowledge, these factors do not fully explain the negative impact of investing terminology, even though African American and Hispanic/Latino consumers are more likely to be in these groups. Instead, the effects of complex terminology appear to concentrate among African American and Hispanic/Latino investors.

Table 3 indicates statistically significant comparisons for African American, Hispanic/Latino and female respondents. When we look across race/ethnicity and gender comparisons, we see a few patterns. First, certain concepts appear more impacted by complex terminology than others—diversification/risk and time horizon, specifically. Conversely, concepts related to fees and expenses and investment types appear less impacted by terminology, with only gender comparisons statistically significant. Second, it appears that women are disproportionately impacted on more concepts than either African American or Hispanic/Latino respondents. Finally, in all race/ethnicity and gender comparisons, we see that investors remain impacted by complex terminology, where non-investors appear to be less (or not at all) impacted.

This suggests that there is a fundamental lack of investment knowledge among many non-investors not driven by terminology; these consumers are unfamiliar with investing concepts regardless of the terms used.

Table 3. Summary of Results

	Overall performance	Fees and expenses	Diversification and risk	Time horizon	Liquidity	Investment types
More African American Improvers						
All	**		**	**		
College degree			**			
No college degree				*		
Investors	**		**	**		
Non-investors						
More Hispanic/Latino Improvers						
All	**		**			
College degree			**	*		
No college degree			**			
Investors	**		**	**		
Non-investors			*			
More Women Improvers						
All	**		**	**	**	*
Retirement investors	**			**		
Taxable investors	**	**	**		**	
Non-investors			**			

* p< .10; ** p< .05

Instead of measuring an understanding of investing concepts, many investing knowledge assessments may be measuring consumers' grasp or familiarity with investing terminology. Future development of investing knowledge measures should carefully consider the use of complex investing terminology.

This study may also have implications for the presentation of investment disclosure. Insofar as investment disclosure contains complex investing terminology or terminology that is not adequately explained in plain language, certain groups of investors, or potential investors, may be systematically disadvantaged when seeking to make well-informed investment decisions.

Appendices

Methodology

About the data

This study uses data collected between April 23 and May 14, 2021, using the AmeriSpeak® Panel. Funded and operated by NORC at the University of Chicago, AmeriSpeak is a probability-based panel designed to be representative of the U.S. household population. Randomly selected U.S. households are sampled using area probability and address-based sampling, with a known, non-zero probability of selection from the NORC National Sample Frame. These sampled households are then contacted by U.S. mail, telephone and field interviewers (face to face). The panel provides sample coverage of approximately 97 percent of the U.S. household population. Those excluded from the sample include people with P.O. Box only addresses, some addresses not listed in the USPS Delivery Sequence File and some newly constructed dwellings. While most AmeriSpeak households participate in surveys by web, non-internet households can participate in AmeriSpeak surveys by telephone. Households without conventional internet access but that have web access via smartphones are allowed to participate in AmeriSpeak surveys by web. AmeriSpeak panelists participate in NORC studies or studies conducted by NORC on behalf of governmental agencies, academic researchers, and media and commercial organizations. 1,680 U.S. adults ages 18 and older participated in the study. The study was fielded in English only, and was administered online. Respondents were considered eligible for the study if they were either the primary decision-maker or shared in the decision-making related to finances in the household. Oversamples of African American and Hispanic/Latino respondents were collected. The survey completion rate was 26.7 percent. The final AAPOR response rate (RR3) for the study was 4.5 percent, and the margin of error was 3.33 percentage points. AmeriSpeak participants self-identified their age, sex, education and race/Hispanic ethnicity.

Weighting

Statistical weights for the study-eligible respondents were calculated using panel-base sampling weights to start. The base sampling weights are further adjusted to account for unknown eligibility and nonresponse among eligible housing units. The household-level nonresponse adjusted weights are then post-stratified to external counts for number of households obtained from the Current Population Survey. Then, these household-level post-stratified weights are assigned to each eligible adult in every recruited household. Furthermore, a person-level nonresponse adjustment accounts for nonresponding adults within a recruited household. Finally, panel weights are raked to external population totals associated with age, sex, education, race/Hispanic ethnicity, housing tenure, telephone status and Census Division. The external population totals are obtained from the Current Population Survey. Study-specific base sampling weights are derived using a combination of the final panel weight and the probability of selection associated with the sampled panel member. The screener nonresponse adjusted weights for the study are adjusted via a raking ratio method to general population age 18 and older population totals associated with the following socio-demographic characteristics: age, sex, education, race/Hispanic ethnicity and Census Division.

Imputation

Investor Status

Due to missing data, we were initially unable to classify 293 observations as Non-investors, Retirement investors or Taxable investors. To classify these observations, a multiple imputation technique using a random forest model was employed. The technique was used to estimate missing responses to the questions that determined investor group. Specifically, the questions that determined investor group (Non-investors, Retirement investors, or Taxable investors) were estimated five separate times for each respondent using a series of independent variables to inform the imputation. Independent variables included demographic factors and indicators of financial knowledge, attitudes and behaviors.

After the questions that determined investor group classification were estimated five times, the final investor group classification for these respondents was obtained by calculating the mode each of the variables estimated from the five-model imputation and using those values to classify the observation into one of the three investor groups.

Demographic variables

A small subset of respondents did not report gender, race or ethnicity. As these variables are used in weighting, missing values were imputed using a proportional imputation approach. Missing values were assigned a random number between 1 and 0. If that random number is below the population benchmark for male (the same process was used for race and ethnicity), the observation was assigned male; otherwise, the observation was assigned female.

About FINRA and the FINRA Foundation

The Financial Industry Regulatory Authority (FINRA) is a not-for-profit organization dedicated to investor protection and market integrity. It regulates one critical part of the securities industry—brokerage firms doing business with the public in the United States. FINRA, overseen by the Securities and Exchange Commission, writes rules, examines for and enforces compliance with FINRA rules and federal securities laws, registers broker-dealer personnel and offers them education and training, and informs the investing public. In addition, FINRA provides surveillance and other regulatory services for equities and options markets, as well as trade reporting and other industry utilities. FINRA also administers a dispute resolution forum for investors and brokerage firms and their registered employees. For more information, visit www.FINRA.org.

The FINRA Investor Education Foundation supports innovative research and educational projects that give underserved Americans the knowledge, skills and tools to make sound financial decisions throughout life. For more information about FINRA Foundation initiatives, visit www.FINRAFoundation.org.

About NORC

NORC at the University of Chicago is an independent research institution that delivers reliable data and rigorous analysis to guide critical programmatic, business and policy decisions. Since 1941, NORC has conducted groundbreaking studies, created and applied innovative methods and tools and advanced principles of scientific integrity and collaboration. Today, government, corporate and nonprofit clients around the world partner with NORC to transform increasingly complex information into useful knowledge.

References

Clark, R. L., Lusardi, A., & Mitchell, O. S. (2014). *Financial knowledge and 401(k) investment performance* (NBER Working Paper No. 20137). National Bureau of Economic Research. www.nber.org/papers/w20137.pdf

Forbes, J., & Kara, S. M. (2010). Confidence mediates how investment knowledge influences investing self-efficacy. *Journal of Economic Psychology, 31*(3), 435–443. https://doi.org/10.1016/j.joep.2010.01.012

Lin, J., Bumcrot, C., Mottola, G., & Walsh, G. (2019). *Investors in the United States: A report of the National Financial Capability Study*. FINRA Investor Education Foundation. https://www.usfinancialcapability.org/downloads/NFCS_2018_Report_Natl_Findings.pdf

Lusardi, A., & Mitchell, O. S. (2011). *Financial literacy and retirement planning in the United States* (NBER Working Paper No. 17108). National Bureau of Economic Research. https://doi.org/10.1017/S147474721100045X

Investing Knowledge Questions

Set 1 (*correct response)

Q1.1 - A mutual fund expense ratio is best described as:

1. The percentage that investors pay annually for the management, marketing, and operation of a mutual fund*
2. The fee investors pay to buy or sell shares in a mutual fund, expressed as a percentage of the amount invested
3. The annual percentage investors owe in taxes on mutual fund earnings
4. The difference in share price when an investor sells a mutual fund compared to the original purchase price paid by the investor
5. Don't know[5]

Q1.2 - Which of the following is generally true about investment risk?

1. Investing in a stock mutual fund involves the same amount of risk as investing in a single company stock
2. Investing in a stock mutual fund is riskier than investing in a single company stock
3. Investing in a single company stock is riskier than investing in a stock mutual fund*
4. Don't know

Q1.3 - Which of the following is most true of an investor with a LONG time horizon:

1. The investor should be largely unconcerned about inflation
2. The investor should hold only long-dated assets
3. The investor should be less concerned about price volatility than an investor with a short time horizon*
4. The investor does not need to focus on portfolio diversification
5. Don't know

Q1.4 - Which of the following choices presents the investments in order from MOST to LEAST liquid (where 1 is the MOST liquid and 3 is the LEAST liquid):

1. Money in a Savings Account Rental Property Stock Mutual Fund
2. Rental Property Stock Mutual Fund Money in a Savings Account
3. Stock Mutual Fund Money in a Savings Account Rental Property
4. Money in a Savings Account Stock Mutual Fund Rental Property*
5. Don't know

Q1.5 - If you buy a company's bond...

1. You own a part of the company
2. You have lent money to the company*
3. You are liable for the company's debts
4. You can vote on shareholder resolutions
5. Don't know

Set 2 (*correct response)

Q2.1 - The expense ratio of an investment fund (a mutual fund, for example) is the percentage that investors pay annually for the management, marketing, and operation of the fund. Which of the following is true?

1. The expense ratio of an investment fund is important if the fund declines in value, but is not important if the fund gains in value
2. Expense ratios matter less the longer you hold an investment fund
3. All things being equal, it is better to pay a higher expense ratio than a lower one
4. The expense ratio of an investment fund could affect how much money you earn from your investment*
5. Don't know

Q2.2 - You are trying to decide how to invest $1,000 and have narrowed the possibilities to four companies. Which of the following approaches would generally keep the risk of losing money lowest?

1. Investing $250 in each of the four companies*
2. Investing the full $1,000 in one of the companies
3. Investing $500 in each of two of the four companies
4. Don't know

Q2.3 - The amount of time between when an investor purchases an investment and when the invested money will be needed for a specific purpose is the investor's "time horizon." An investor who will need to use the invested money soon has a "short time horizon." An investor who will not need to use the invested money until many years in the future has a "long time horizon." Which of the following best describes an investor with a SHORT time horizon?

1. The investor should be especially concerned about big swings in the price of the investment*
2. The investor should only buy inexpensive investments
3. Because the investor will hold investments for only a short period of time, the risk of losing money is low
4. The investor's time horizon should not be a factor in deciding which investments to buy
5. Don't know

Q2.4 - Some investments are easier to sell and convert into cash than others. Which of the following is NOT true?

1. Investments with many buyers are easier to sell and convert into cash than those with few buyers
2. Determining the value of investments that are frequently bought and sold is easier than determining the value of investments that are rarely bought and sold
3. An investment that is difficult to sell and convert into cash is riskier than an investment that is easy to sell and convert into cash, all else being equal
4. The ease or difficulty with which an investment can be sold and converted into cash is not important for an investor with a short-term goal*
5. Don't know

Q2.5 - An investor who buys a share of a company's stock owns a part of that company. An investor who buys a company's bond lends money to that company. Which of the following is NOT true?

1. Investors in a company's stock can lose money
2. Investors in a company's bond cannot lose money*
3. Earnings from a bond investment depend in part on the interest rate the bond pays
4. The price of a company's stock depends in part on investor demand for the stock
5. Don't know

Endnotes

1. In addition, half of the respondents were provided a "Don't know" response option on each of the ten multiple choice questions related to investing concepts, while the other half were not provided a "Don't know" response option.

2. "Other race(s)" included respondents who identified their race or ethnicity as Asian or "Other" or who selected multiple races and/or ethnicities.

3. Missing values for race and ethnicity were imputed. See Imputation section below for additional detail.

4. Gender options on the survey were male and female. If a respondent skipped the question, gender was imputed. See Imputation section below for additional detail.

5. For all questions in both Sets, one-half of the sample was offered a "Don't know" option, while the remaining one-half was not offered this response option.