



# **Understanding Insurance Decisions: A Review of Risk Management Decision- Making, Risk Literacy, and Racial/Ethnic Differences**

A CIPR Research Fellows  
Program Report

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**JANUARY 2024**

## **A CIPR Research Fellows Program Report**

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# **Understanding Insurance Decisions: A Review of Risk Management Decision Making, Risk Literacy, and Racial/Ethnic Differences**

## **Executive Summary**

The racial/ethnic wealth gap is a stunning feature of U.S. household finances. Although the causes of the gap are complex, it is important that researchers investigate disparities between racial/ethnic groups in household financial management areas. We posit that first understanding insurance decisions as a critical component of overall household financial management is an important avenue for further understanding factors that may perpetuate or reduce the racial wealth gap. Moreover, risk management, including the purchase and use of insurance products, is a key yet challenging area for household financial management. Therefore, this literature review focuses on research relevant to three main questions:

- 1) How do consumers make risk management decisions?
- 2) What key skills are required to make risk management decisions (with a focus on literacy and numeracy skills)?
- 3) Do these skills vary between racial/ethnic groups?

Regarding the first question, we find that consumers are prone to errors when making decisions involving risk, but research shows that decisions can be improved. Skilled Decision Theory (SDT) highlights that cognitive ability plays less of a central role in decision-making and that decision-making is more of an acquired skill. Consequently, learning comprehension and confidence play a crucial role in the decision-making process. In terms of the second question and the skills needed to make appropriate risk management decisions, the literature suggests that insurance literacy, not necessarily financial literacy, as well as numeracy skills are likely to be critical prerequisites to good insurance choices. In particular, the importance of statistical numeracy in decision-making cannot be overstated.

Finally for our third question, our review indicates that there is a relatively limited number of available studies focusing on racial/ethnic differences in risk management decisions and skills. While some studies find differences between racial/ethnic groups in various measures of financial literacy, the findings are overall mixed and, therefore, inconclusive. Researchers should verify if there are, in fact, differences or if the differences are due to other factors that vary by racial/ethnic category.

## **About the Author**

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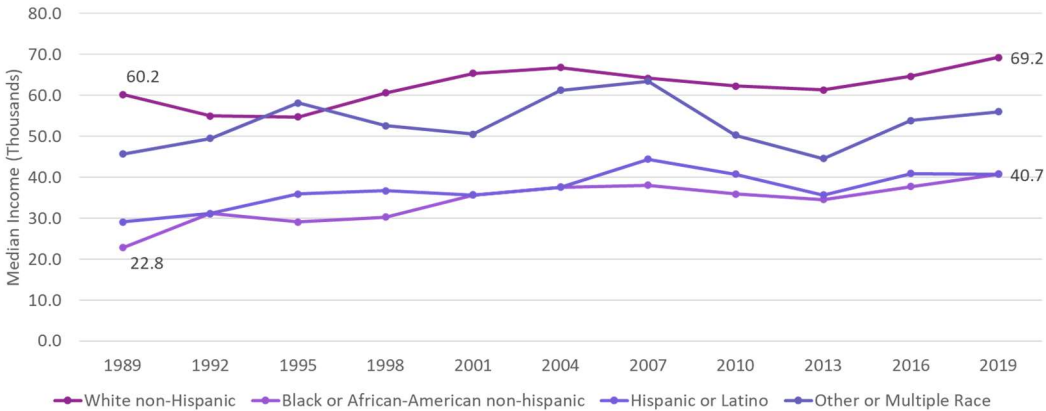
**Understanding Insurance Decisions:**

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**The Racial/Ethnic Wealth Gap and the Potential Role of Insurance Purchase Decisions**

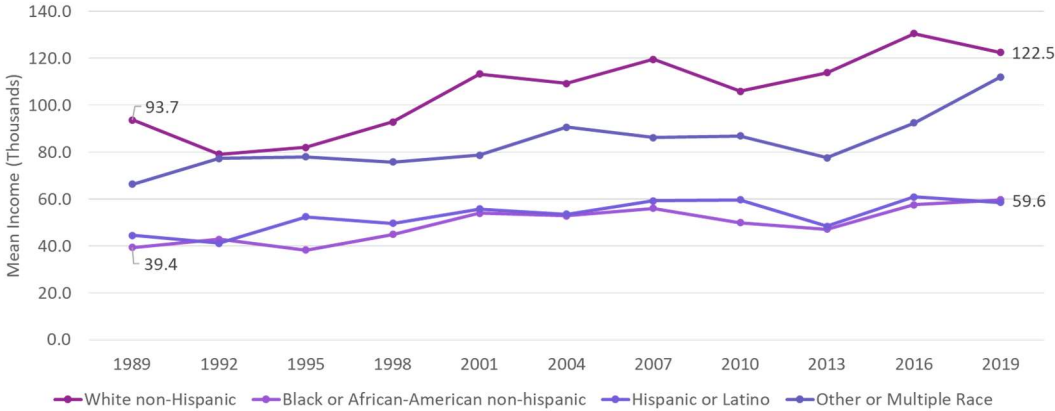
The racial/ethnic wealth gap is a stunning feature of U.S. household finances. To understand the scale of the gap, it is useful to compare household wealth gaps to wage gaps between different racial/ethnic groups. To this end, we compare household income and assets from 1989 to 2019 using the Survey of Consumer Finances (SCF), a triennial survey sponsored by the Federal Reserve Board (FRB) that provides the most detailed snapshot of U.S. household balance sheets. In 1989, white households had about 2.6 (2.4) times the median (mean) income of Black households; in 2019, white households had about 1.7 (2) times the median (mean) income of Black households. (Refer to Figures 1 and 2.) While the income gap has narrowed slightly over the last 30 years, the trajectory of wealth differences is somewhat nuanced.

**Figure 1. Median Income by Racial/Ethnic Identity**



Source: Author calculations based on a weighted analysis of the SCF

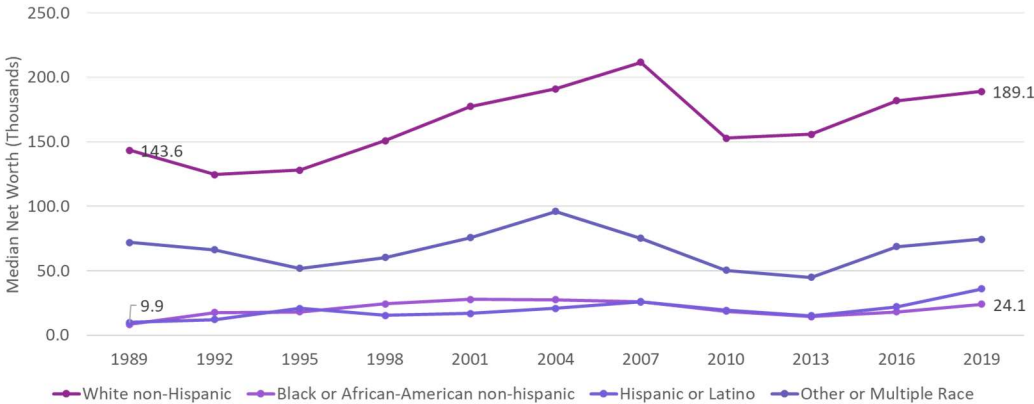
Figure 2. Mean Income by Racial/Ethnic Identity



Source: Author calculations based on a weighted analysis of the SCF

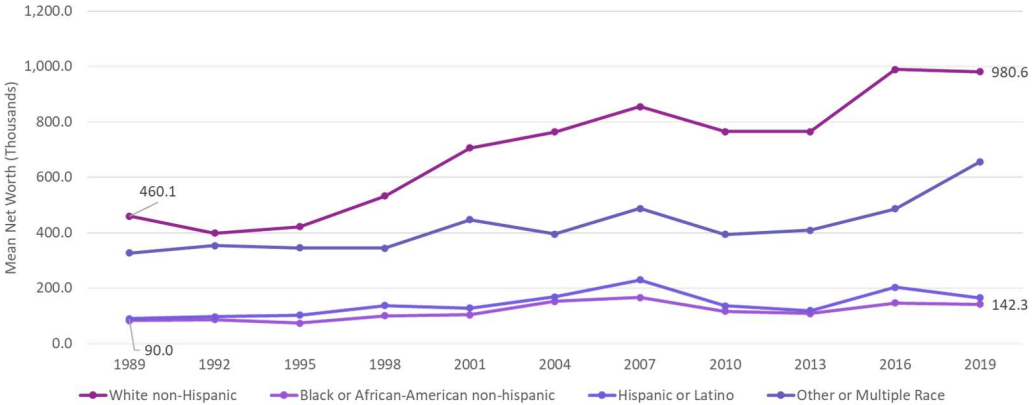
In 1989, white households had about 15 times the median net worth of Black households; in 2019, white households had about eight times the median net worth of Black households. (Refer to Figure 3.) Therefore, while there is some improvement when considering the median, we see a different trajectory if we examine the mean wealth levels. In 1989, white households had about five times the mean net worth of Black households; in 2019, white households had about seven times the mean net worth of Black households. (Refer to Figure 4.) Taken together, we interpret this to mean that while there is some improvement in the bottom 50% of the wealth distribution, the disparities are growing in the top 50% of the wealth distribution. That is to say, the gap between the wealthiest white households and the wealthiest Black households is widening. Although the causes of the gap are complex, it is important that researchers investigate disparities between racial/ethnic groups in household financial management areas.

**Figure 3. Median Net Worth by Racial/Ethnic Identity**



Source: Author calculations based on a weighted analysis of the SCF

**Figure 4. Mean Net Worth by Racial/Ethnic Identity**



Source: Author calculations based on a weighted analysis of the SCF

According to a 2019 report from the Organisation for Economic Co-operation and Development (OECD), the U.S. spends about 11.5% of gross domestic product (GDP) on insurance, a figure that has increased from around 10.3% of GDP in 2000. Globally, OECD countries spent about 9% of GDP on insurance in 2019, compared to about 8.6% in 2000. Consumers spend a substantial proportion of household income on insurance products; in 2020, they spent nearly \$1.3 trillion on property/casualty (P/C) and life/annuity insurance premiums in the U.S. (Insurance Information Institute, 2022). Although insurance is typically used to protect wealth, there are reasons insurance spending may also have an impact on wealth. Suboptimal insurance spending may prevent or reduce wealth building (i.e., by

reducing cash available for saving), whereas life insurance may be viewed by consumers as a strategy to build or transfer wealth to the next generation. While further research is needed to explore consumer perceptions and insurance spending and to determine whether insurance premium spending differs between racial/ethnic groups, it seems plausible that insurance decisions have implications for overall wealth accumulation, especially between generations. Therefore, understanding insurance decisions is an important avenue for understanding factors that may perpetuate or reduce the racial wealth gap.

Risk management decisions are especially important because the research literature shows that consumers face several challenges in making decisions involving risk. Risk management can be defined as “a systematic process for the identification and evaluation of loss exposures faced by an organization or individual, and for the selection and implementation of the most appropriate techniques for treating such exposures” losses (Rejda & McNamara, 2013, p. 674). Traditionally, the primary risk management strategies include risk control (e.g., avoid, loss prevention, loss reduction) and risk financing (e.g., insurance) (Rejda & McNamara, 2013). While insurance products can be very helpful risk management tools, insurance products can be complex and difficult to understand. The research literature suggests that the average consumer may not have adequate levels of financial literacy to effectively use these products. Financial literacy is defined as “how well an individual can understand and use personal finance-related information” (Huston, 2010, p. 306). Given the low levels of financial literacy in the U.S. (Lusardi & Mitchell, 2011), there is reason to be concerned about consumer insurance decisions.

Furthermore, research in the last 10 years in the field of judgment and decision-making has identified an important concept known as risk literacy. Cokely et al. (2012) defined risk literacy as “the ability to interpret and act on information about risk” (p. 26). Numeracy, which can be defined as an “ability with or knowledge of numbers” by the Oxford English Dictionary, is a critical component of risk literacy because risk is often quantified and communicated with numbers. Therefore, numeracy is essential to making any type of informed financial decision, including insurance choices. Recent research in risk literacy has suggested that investigating the role of risk literacy in finance applications and insurance specifically is an important next step for researchers. For example, Garcia-Retamero and

Cokely (2017) highlight studies examining risk literacy in health and finance applications and suggest that future research should investigate the effect of interventions. Similarly, other researchers have pointed out that research surrounding consumer insurance decisions is sparse relative to other types of financial decisions (Lin et al., 2019). Therefore, the purpose of this paper is to review the relevant research literature in hopes of answering three key questions:

- 1) How do consumers make risk management decisions?
- 2) What key skills are required to make risk management decisions (with a focus on literacy and numeracy skills)?
- 3) Do these skills vary between racial/ethnic groups?

To answer these questions, a literature review was conducted by searching the terms “financial literacy,” “insurance literacy,” and “risk literacy” in Google Scholar. The additional keyword “racial/ethnic” was added to each of the literacy terms to identify studies with a focus on racial/ethnic identity differences<sup>1</sup>.

### **Literature Review**

The literature review begins with a brief discussion of Skilled Decision Theory (SDT), which gives basis to the expectation that financial literacy and other forms of literacy (e.g., risk literacy) should impact risk management decisions. The next few sections review selected literature from financial literacy, insurance literacy, and risk literacy to understand these concepts and how they might drive risk management decisions. The literature review concludes with an overview of studies that have examined racial/ethnic differences in insurance decisions.

### **Skilled Decision Theory**

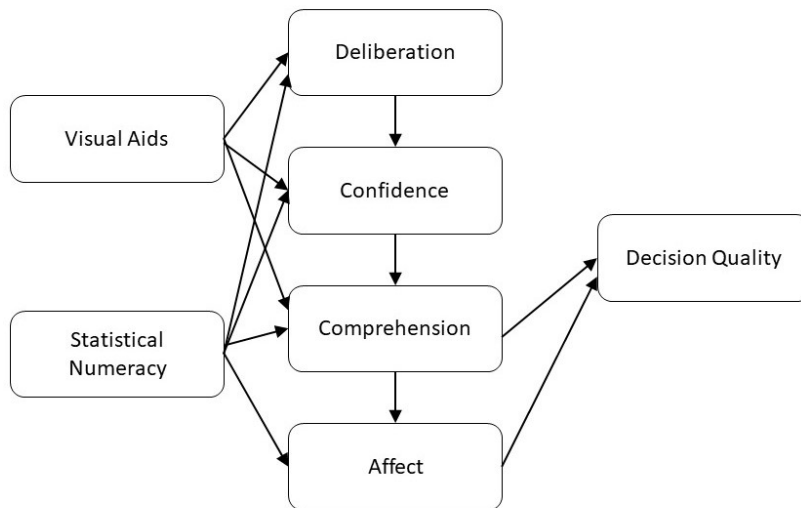
Cokely et al. (2018) provide a critical contribution to decision-making research by creating a framework to organize the vast literature on intelligence, expert decision-making, rational choices, and heuristics. Although decision theory of the past tended to emphasize the role of general intelligence, more recent evidence suggests that cognitive ability plays less of a central role in decision-making (Cokely et

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<sup>1</sup> Although this was a narrative literature review, future work should consider a systematic literature review on these topics.

al., 2018). In their review, Cokely et al. (2018) show that “decision-making is an acquired skill that generally operates independent of fluid intelligence” (p. 497). Based on their synthesis of the literature and drawing on skilled memory theory, rational thinking, and adaptive heuristic decision-making, Cokely et al. (2018) outline a generalized structure of skilled decision-making, as shown in Figure 5. In SDT, numeracy and decision aids support skilled decision-making by affecting cognition and risk comprehension and understanding affective reactions. There is an interplay between deliberative evaluation and representative understanding which allows individuals to comprehend the stakes of a decision.

**Figure 5. Skilled Decision Theory**



Ramasubramanian et al. (2019) apply the SDT to a flood insurance application to examine decision quality and the effect of visual aids. As predicted by the SDT, they found that the “relationship between numeracy, risk perception, and flood decision quality is mediated by knowledge and comprehension of risk information” (Ramasubramanian et al., 2019, p. 1632). Further, they found that risk communication (i.e., decision aids in the form of additional text or text and visual aids) improved comprehension and decision quality (Ramasubramanian et al., 2019).

Overall, the SDT highlights the importance of risk literacy in the decision-making process. Indeed, Cokely et al. (2018) suggest that “[t]heoretically, risk literacy is the central necessary and



potentially sufficient condition for skilled and informed decision-making among healthy and motivated adults in naturalistic general decision settings” (p. 496). As we consider how consumers make insurance decisions, it is therefore critical to review the research literature with respect to risk literacy, as well as other forms of literacy that may be determinants of decision quality. Personal finance research literature has traditionally focused on financial literacy and domain-specific literacy (e.g., insurance literacy) when trying to understand consumer financial decisions. Therefore, our next literature review focuses on financial literacy, as well as insurance literacy, and the resulting significance of numeracy.

### **Financial Literacy**

The research literature on financial literacy is immense. For a recent review of peer-reviewed financial literacy articles published between 2000 and 2019, refer to Goyal and Kumar (2021). Their overview highlights three major themes in the literature: 1) the level of financial literacy in different populations and cohorts; 2) the effect of financial literacy on behavior; and 3) the effect of financial education on financial literacy (Goyal & Kumar, 2021). For the current study, we focus our discussion on a few key studies that are concerned with financial literacy as a construct and studies in which numeracy is considered a separate or integrated concept to financial literacy.

In one of the most widely cited studies on financial literacy, Lusardi and Mitchell (2007) analyzed Baby Boomers’ retirement security in the Health and Retirement Study (HRS) and its relation to planning, financial literacy, and housing wealth. To assess financial literacy, they used three measures to capture numeracy skills: 1) a basic probability question; 2) an expected value question; and 3) a compounding interest question. They found that those who are more financially literate (especially those who understand compound interest) are more likely to plan for their retirement (Lusardi & Mitchell, 2007). Lusardi and Mitchell (2014) provided a review of the theoretical and empirical papers on the role of financial literacy on several economic behaviors, including saving behavior, planning for retirement, and borrowing behavior. In their measurement discussion, they suggest that three skills or concepts are critical to saving and investment decisions over the life cycle: 1) numeracy; 2) inflation; and 3) risk

diversification (Lusardi & Mitchell, 2014). In their proposed measure, the numeracy item is a question related to compound interest and worded as follows:

Suppose you had \$100 in a savings account, and the interest rate was 2 percent per year. After 5 years, how much do you think you would have in the account if you left the money to grow: (more than \$102; exactly \$102; less than \$102; do not know; refuse to answer.) (Lusardi & Mitchell, 2014, p. 10)

In this financial literacy measure, numeracy is an integrated part of what it means to be financially literate.

In another widely cited financial literacy paper, Huston (2010) presented an important conceptual framework for measuring financial literacy, pointing out that financial knowledge alone is insufficient to make a consumer financially literate. Specifically, Huston (2010) argues that there must be an ability and confidence to apply or use financial knowledge, so financial literacy measures should include a knowledge component and a component capturing an individual's confidence and ability to apply the knowledge. She notes that although numeracy skills are foundational and will affect a person's financial literacy, there are available tools to help compensate for a lack of numeracy skills (Huston, 2010).

In a meta-analysis of financial literacy, Fernandes et al. (2014) separated studies into financial literacy measurement and financial literacy manipulation, i.e., the efficacy of financial literacy interventions. They found very small effects of financial literacy interventions overall in the meta-analysis. In addition to the meta-analysis, Fernandes et al. (2014) conducted their own empirical analysis and measured numeracy separately from financial literacy. They found that once confidence in financial information search, propensity to plan, willingness to take financial risk, and numeracy were controlled for, financial literacy tended to become insignificant in predicting financial behaviors (Fernandes et al., 2014).

One additional study is worth highlighting for the purpose of the current study. Lin et al. (2019) investigated whether financial literacy affects insurance decisions. They studied actuarial and finance students and found that non-actuarial students with low financial literacy made the most mistakes, while

actuarial students with high financial literacy made the fewest. Moreover, they found that general financial literacy does not directly translate into improved insurance literacy, and specialized education (e.g., actuarial studies) can improve insurance literacy (Lin et al., 2019).

Although researchers have approached financial literacy in a variety of ways, many of the primary drivers or components of financial literacy literature fit nicely into the SDT framework. For example, many studies acknowledge the importance of numeracy in financial decisions. This consideration is captured within risk literacy in SDT. Furthermore, it seems reasonable to conclude that some basic information about personal finances should impact comprehension. However, SDT would suggest that knowledge improvement is not the only way to impact comprehension. The more scalable solution is to offer visual aids that enhance comprehension. Some of the financial literacy includes confidence in the measure, whereas SDT posits that confidence is driven by statistical numeracy, visual aids, and deliberation. We suggest that SDT provides a more comprehensive view of how decisions are made while still incorporating the main features from the financial literacy literature.

### **Insurance Literacy**

Most studies with an insurance literacy component have focused primarily on health insurance literacy. In one of the first studies on health insurance literacy, McCormack et al. (2009) included a numeracy measure as part of the development of a health insurance literacy framework and measure in their investigation of health insurance literacy among Medicare beneficiaries. Their measure was built on financial literacy and health literacy, and they showed that consumers generally have low to moderate health insurance literacy. Consumers who were older and had lower income, less education, and poorer health tended to have the lowest levels of health insurance literacy (McCormack et al., 2009).

The passage of the federal Affordable Care Act (ACA) in 2010 generated a lot of interest in consumers' ability to understand and make decisions about health insurance policies. (Refer to Consumers Union [2011] and Kim et al. [2013] for an overview). A report from Consumers Union (2011) highlighted the concerns about consumers' ability to make health insurance decisions and described a call to action. Quincy (2011) examined consumer reactions to the ACA-mandated disclosure document known

as the summary of benefits and coverage (SBC). Although consumers were able to make use of the disclosure to make hypothetical choices among health plans, there was a lot of confusion and a lack of confidence among consumers regarding health plan cost-sharing (Quincy, 2011).

Paez et al. (2014) developed and tested a health insurance literacy measure to understand consumer behavior in selecting and using health insurance. In their proposed framework, health insurance literacy has, in addition to one underlying domain of self-efficacy, four domains: 1) knowledge; 2) information seeking; 3) document literacy; and 4) cognitive skills. The results of their analyses suggested that the self-assessment measures loaded into two distinct areas: 1) choosing insurance; and 2) using insurance. Paez et al. (2014) concluded that selecting and using health insurance involves complex tasks in which consumers need to apply knowledge while performing skills. Fitzgerald et al. (2017) suggest that health insurance literacy reflects aspects of both health literacy and financial literacy. They argue that good health insurance choices require an understanding of health and finances (Fitzgerald et al., 2017).

O'Connor and Kabadayi (2020) explored factors that determine an individual's health insurance literacy, including locus of control, cognitive style—i.e., whether an individual tends to be analytical or intuitive in decision-making—and objective and subjective financial knowledge. They found that those with an external locus of control (i.e., those who believe that external events or agents cause outcomes as opposed to being caused by actions by the individual), an intuitive cognitive style, and lower subjective financial knowledge were most likely to have low health insurance literacy. Interestingly, objective financial knowledge was not related to health insurance literacy (O'Connor & Kabadayi, 2020).

Research on health insurance literacy has found that young adults and college students tend to have the lowest health insurance literacy (Bartholomae et al., 2016; James et al., 2020), and education and income are positively related to health insurance literacy (Bartholomae et al., 2016). There have also been significant differences in health insurance literacy by racial/ethnic identity; after controlling for education and income, Black and Hispanic respondents had about 15 and 17 fewer percentage points for health insurance literacy than white respondents (Villagra et al., 2019).

In an examination of insurance literacy, Tennyson (2011) explored consumers' knowledge, confidence, and capability in making insurance decisions. Following Huston's (2010) framework for financial literacy, Tennyson (2011) assessed insurance knowledge and confidence in making insurance decisions. Findings showed that the average insurance knowledge score was 58% (Tennyson, 2011). Compared to women, men tended to have higher insurance knowledge, and individuals who had insurance and personal finance interests and education tended to be more knowledgeable than otherwise similar individuals. Owning insurance and having taken a personal finance course were the only significant predictors of confidence in making insurance choices, but interestingly, insurance knowledge was not related to confidence (Tennyson, 2011).

Lin et al. (2019) suggested that an individual's understanding of their own risks is critical to insurance decisions, and they proposed a definition of insurance literacy as follows:

(1) Understanding the concept of insurance and being knowledgeable about insurance products under consideration; (2) having a reasonable understanding of the risks covered by the insurance policy under consideration; and (3) being able to apply the knowledge and understanding to evaluate insurance options and make insurance decisions that are consistent with the perceived risks. (Lin et al., 2019, p. 689)

This definition is consistent with the wider financial literacy literature that suggests that both knowledge and application are important to decision making (e.g., Huston, 2010) and makes the important contribution that an individual's perception of risk is a key part of literacy. Lin et al. (2019) found that general financial literacy does not correlate strongly with insurance literacy. Specifically, they found that actuarial students significantly outperformed other students in a hypothetical personal income protection scenario and concluded that because insurance literacy may be difficult for individuals to attain, trust in financial and insurance industries and state insurance regulators may be the default choice for many consumers (Lin et al., 2019).

The literature that is focused on insurance literacy highlights several key points. For one, studies in this area emphasize the role of confidence in insurance decisions. The research also shows clearly that

financial literacy and insurance literacy are not very strongly related. Lastly, findings from several studies indicate that statistical numeracy may be an important predictor of insurance decisions.

## **Numeracy**

Numeracy, which can be defined as mathematical or quantitative literacy, has traditionally been considered an important skill for consumers in developed countries, but recent research in judgment and decision-making has focused specifically on statistical numeracy as being a key determinant of making risky decisions. (Refer to Cokely et al., 2012 for a discussion.) Cokely et al. (2012) reviewed the research literature on statistical numeracy and developed a new test, the Berlin Numeracy Test (BNT). They make the case that statistical numeracy is one determinant of risk literacy, which they defined to be “the ability to accurately interpret and act on information about risk” (Cokely et al., 2012, p. 26). In their analyses, they showed that the BNT predicted individuals’ understanding of risks, even after accounting for other cognitive ability and numeracy tests. Subsequent research has confirmed that risk literacy (often operationalized as statistical numeracy) is an important predictor of a wide variety of behaviors, especially financial behaviors, which is the focus of this review.

Although the measures of numeracy vary between studies, the studies reviewed here included measures that had statistical numeracy items included. The literature shows that numeracy is positively related to wealth accumulation (Estrada-Mejia et al., 2016; Estrada-Mejia et al., 2020), pre-retirement savings rates (Banks et al., 2010), better financial outcomes and higher financial well-being (Tompkins, 2018), stock and housing market participation (Almenberg & Widmark, 2011), retirement savings, investment portfolios, understanding pensions, and perceived financial security (Banks & Oldfield, 2007). These findings are noteworthy in that the effect of numeracy remains even after accounting for financial knowledge and financial literacy (Almenberg & Widmark, 2011; Estrada-Mejia et al., 2016; Tompkins, 2018).

The literature is sometimes mixed regarding the effect of numeracy. For example, in a study on money illusion—i.e., failure to account for inflation in financial decisions—Darriet et al. (2020) found that financial literacy was negatively related to money illusion, but numeracy was not significantly related

to money illusion. However, numeracy was measured with a unique ratio comparison test, so it is not clear whether the lack of effect was due to measurement differences.

Several studies on the effect of numeracy are especially relevant to insurance decisions. For example, understanding consumer perceptions of risk is a critical part of understanding consumer insurance decisions. In a study of the influence of effect and cognitive skills, including numeracy, on probability weighting in hypothetical insurance situations, Petrova et al. (2014) found that high-numeracy individuals were able to assign more normative weights when presented with affective descriptions of risks compared to low numeracy individuals. Similarly, Traczyk & Fulawka (2016) found that irrelevant affective stimuli influenced the probability weight of risk prospects but only for less numerate participants. This indicates that consumer perceptions of risks are likely to be dependent on numeracy skills.

Other research has focused on the nature of the relationship between numeracy and financial literacy. As mentioned previously, some researchers consider numeracy an integral part of financial literacy, and others consider it a prerequisite or part of a broader skill set that is foundational to developing financial literacy. Skagerlund et al. (2018) used the BNT to study how cognitive abilities (e.g., numeracy) and emotional factors determine financial literacy. They concluded that numeracy and math anxiety are driving determinants of financial literacy (Skagerlund et al., 2018).

### **Racial/Ethnic Differences in Insurance Decisions**

Several studies provide summaries of racial/ethnic differences in financial literacy and the returns to financial education. For example, Angrisani et al. (2021) and Al-Bahrani et al. (2019) provided a review of studies that consistently show that there is a racial/ethnic gap in financial literacy, with non-white households consistently having lower levels of financial literacy than white households. Angrisani et al. (2021) also analyzed the 2017 Survey of Household Economic Decisionmaking and found that there is a consistent gap between white households and Black and Hispanic households in the level of financial literacy, even after accounting for income and other key determinants of financial literacy (Angrisani et al., 2021).

A few studies have examined whether there are differences in insurance literacy by racial/ethnic identity, and the results are somewhat mixed. Most studies have focused on health insurance literacy, specifically in comparisons between racial/ethnic groups. In their study of health insurance literacy among health plan participants in Connecticut, Villagra et al. (2019) found that Black and Hispanic respondents had significantly lower health insurance literacy scores compared to white respondents after controlling for education and income. Similarly, McCormack et al. (2009) also found that white Medicare beneficiaries had significantly higher scores on health insurance literacy measures than racial/ethnic minority groups. Long and Goin (2014) also found large differences between white and non-white respondents. In their report, non-white, non-Hispanic, and Hispanic respondents had lower health insurance literacy than white respondents, and that pattern was consistent when examining the understanding of financial and non-financial terms in health insurance products (Long & Goin, 2014).

However, O'Connor and Kabadayi (2020) did not find statistically significant differences between white and non-white respondents in their study on health insurance literacy. The authors found that locus of control, cognitive style, and subjective financial knowledge are the most important drivers of health insurance literacy differences (O'Connor & Kabadayi, 2020). One potential explanation for the conflicting results is that the inclusion of novel variables—i.e., locus of control, cognitive style, and subjective financial knowledge—made the racial/ethnic difference in literacy measures disappear.

Reiter and Heckman (2022) explored racial/ethnic differences in life insurance ownership and coverage using the 2019 SCF. They found that Black households had a higher probability of having life insurance compared to white households, while Hispanic and Asian/other households had lower probabilities. Additionally, Hispanic households were more likely to be underinsured when evaluating the level of life insurance coverage compared to white households. These findings were consistent with the previous literature that have consistently found Black households are more likely to own life insurance. (Refer to Reiter and Heckman [2022].) However, this pattern does not seem to hold across all insurance types. According to a report by the U.S. Census Bureau analyzing health insurance coverage among U.S. households, Black and Hispanic households tend to have larger proportions of uninsured individuals than



white and Asian households (Keisler-Starkey & Bunch, 2022). In an analysis of disability insurance, Heckman (2016) found no significant differences between racial/ethnic groups. Therefore, it is important for future research to understand the underlying drivers of insurance behavior and how the decisions differ by insurance product.

### **Discussion and Concluding Comments**

This literature review sought to answer three key questions: 1) How do consumers make risk management decisions? 2) What key skills are required to make risk management decisions (with a focus on financial and insurance literacy skills)? and 3) Do these skills vary between racial/ethnic groups? With respect to the first question, this review highlights Skilled Decision Theory (SDT) as an integrative framework that can help explain how individuals make decisions involving risk. Risk literacy or statistical numeracy is a key predictor of decision quality within the SDT framework. However, with respect to the second question, much of the literature on insurance decisions has focused on financial literacy and insurance literacy as key skills required to make these types of decisions. Finally, although there is a relatively limited number of available studies focusing on racial/ethnic differences in risk management decisions and skills, some show that there are key differences between racial/ethnic groups in some measures of literacy and in some, but not all, types of insurance decisions. Therefore, in the discussion that follows, we highlight key findings and next steps for researchers and policymakers.

Consumers generally have low levels of financial literacy and insurance literacy (e.g., general insurance, health insurance, flood insurance). Some studies treat numeracy skills as an integral part of financial literacy, and others consider it a foundational skill but separate from financial literacy. Based on the research reviewed and SDT (Cokely et al., 2018), we suggest that numeracy skills, and more specifically statistical numeracy, are a critical prerequisite and determinant of consumer financial decisions. We also suggest that SDT can more clearly explain consumer financial behavior than emphasizing the role of financial literacy. Findings on the effect of financial literacy on behavior tend to be inconsistent or minimal, especially when including proper control variables (e.g., Fernandes et al., 2014). While some financial knowledge may help comprehend risky decisions, SDT provides a more

helpful and nuanced perspective on how individuals make choices. Researchers should continue utilizing SDT to examine the relationship between statistical numeracy and financial decisions, including insurance decisions. Improving consumer statistical numeracy skills may be a helpful focus in primary and secondary education as indicated by results from Lin et al. (2019).

Furthermore, SDT suggests that visual aids can and should be used to help improve deliberation, confidence, and comprehension. While mass education efforts are likely cost-intensive, research from the visual aids literature indicates that simple adjustments in the way probabilistic information is presented can help consumers make better decisions (Gigerenzer, 2015). For example, visually presenting statistical information and utilizing natural frequencies rather than probabilities is especially effective at facilitating greater comprehension (Gigerenzer, 2015). A potential policy change could emulate the fair lending disclosure boxes. Policymakers could consider requiring a short table illustrating the probability of losses covered in natural frequencies. Researchers should explore whether risk disclosures along these lines improve comprehension.

There are mixed findings in the literature regarding differences between racial/ethnic groups in financial literacy, insurance literacy, and risk literacy. That is, some studies find significant differences between racial/ethnic groups, but others do not. Therefore, researchers should verify if there are, in fact, differences or if the differences are due to other factors that vary by racial/ethnic category. One way to begin to explore these differences includes utilizing clear theoretical frameworks (e.g., SDT) to clarify the causal structure of the relationships. Applying clear theories to analyses of racial/ethnic differences in insurance decisions is critical to reducing spurious relationships. Furthermore, racial/ethnic group differences in insurance coverage vary by insurance product. Additionally, the extent to which differences in consumer insurance decisions contribute to the racial/ethnic wealth gap is unclear from the literature, and investigating these relationships should be a priority for future research.

Finally, this research has implications for a variety of ongoing initiatives at the NAIC. For example, several working groups are focused on improving consumers' understanding and use of insurance products and would benefit from insights from SDT. The Consumer Information (B) Subgroup

is charged with developing information or resources that might assist consumers in understanding health insurance (NAIC, 2023a). The Transparency and Readability of Consumer Information (C) Working Group (NAIC, 2023b) is also focused on improving consumers' understanding of insurance policies and helping insurers communicate information to consumers more clearly. Incorporating SDT perspectives in these efforts should be productive. For example, finding ways to visualize the risk involved in decisions and presenting information in ways that compensate for varying levels of numeracy should improve consumer comprehension. Lastly, future research on the racial/ethnic differences in insurance decisions among U.S. households is especially relevant to the Special (EX) Committee on Race and Insurance, which is focused on issues related to race in the insurance sector and access to products (NAIC, 2023c). The mixed patterns of insurance coverage by racial/ethnic groups suggest that future research should continue to elucidate barriers to coverage.

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