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RESEARCH ARTICLE

Post-ACA health insurance decisions: A survey on risk attitudes and consumer confidence

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Abstract: Objective: This study investigates the reluctance of individuals in the United States to get health insurance, specifically examining the psychological and sociodemographic aspects that contribute to this reluctance within the Affordable Care Act (ACA) framework. The research objective is to ascertain the behavioral factors contributing to insurance hesitation and offer valuable perspectives for decreasing the number of individuals without health insurance and enhancing health security. Methodology: The study uses data from the 2022 Survey of Consumer Finances to analyze the impact of specific variables such as risk tolerance, consumer confidence, income, education, age, and marital status on health insurance coverage choices. We also address issues related to cost, perceived health requirements, previous experiences, and misunderstandings about eligibility. Conclusion: The study demonstrates that higher customer confidence, frequently associated with financial stability, decreases reluctance to obtain insurance. By contrast, individuals with more risk tolerance exhibit more hesitancy, opting to depend on internal resilience. Furthermore, substantial demographic disparities indicate the presence of several obstacles in acquiring comprehensive coverage. Implications and Recommendations: The results underscore the necessity of tailored policy interventions that address the unique requirements of different demographic groups. It is crucial to consider both psychological and sociodemographic aspects to promote insurance adoption and ensure universal health security. The present study makes a valuable contribution to the current body of literature by offering a comprehensive examination of health insurance hesitation following the Affordable Care Act (ACA) implementation.

Keywords: health insurance, ACA, insurance hesitancy, racial disparities, consumer confidence, risk tolerance

1 Introduction

The Affordable Care Act (ACA) has emerged as a transformative force in the American healthcare sector since its introduction in 2010. It aimed to overcome accessibility gaps in healthcare and decrease the unisurance rate in the US, especially among underserved communities [1]. However, despite these developments, there are still significant obstacles and inequalities in terms of access to healthcare. Uneven Medicaid expansion among states highlights the complex character of the ACA's impact, underscoring the ongoing work required to achieve equitable health coverage for all Americans. Under the Affordable Care Act (ACA), the literature reveals complex consumer attitudes and behaviors around health insurance. The ACA's objective to ensure universal coverage for all American citizens brought about a range of responses and differing levels of acceptability [2]. Health insurance hesitation is driven by factors like as distrust in medical services, the perceived seriousness of health concerns, and emotional obstacles like fear and denial [3]. Although there has been much study on the sociodemographic characteristics linked to access to healthcare, there is a lack of comprehensive studies on health insurance hesitancy, specifically within the context of the Affordable Care Act (ACA).

Existing research frequently emphasizes the benefits of health insurance in providing access to medical treatments and protecting against the financial burden of disease [4]. However, a large information gap exists in understanding the precise causes of health insurance hesitancy under the ACA, including worries about affordability, skepticism about the value of insurance, and the psychological foundations of such hesitancy. This gap is especially relevant considering the continuing arguments surrounding universal coverage, which faces criticism for potential

rationing and reduced reimbursement for healthcare professionals [5]. Bridging this gap could reveal ways to increase healthcare coverage and amplify the ACA's efficacy.

This study's scope is designed to focus on the psychological and sociodemographic aspects that influence people's health insurance decisions. This study examines risk tolerance, consumer confidence, and sociodemographic variables like income, educational attainment, age groups, and marital status. These sociodemographic characteristics were selected for their well-documented impact on insurance uptake and attitudes in the existing literature [6, 7]. This study carefully avoids discussing political preferences, ideologies, and the impacts of partisanship. Although these elements have influence, they are outside of this study's analytical framework and objectives. The geographical focus of this study is limited to the United States during the COVID-19 pandemic. The study uses data from the 2022 Survey of Consumer Finances, ensuring that the conclusions are relevant to current economic situations.

The research problem of this study is based on the current literature on health insurance behavior. It investigates the psychological and sociodemographic elements contributing to Health Insurance Hesitancy in the U.S. population. Existing research has found several obstacles to acquiring health insurance, such as worries about the cost, doubts about the worth of insurance, and misunderstandings about qualifications [8, 9]. Building upon these findings, this study examines how consumer confidence, risk tolerance, and sociodemographic traits impact reluctance to obtain health insurance.

This study helps understand the mechanisms that drive uninsured rates, which have profound implications for community health and economic stability. The study aims to extensively investigate the relationship between an individual's unwillingness to accept risks and their hesitation to obtain health insurance. Furthermore, a major focus of the research is to examine the trajectory of consumer confidence and how this economic aspect influences one's willingness to buy health insurance. This inquiry component is significant since it contains the Consumer Confidence Theory, which states that people whose incomes have outpaced inflation are more likely to have strong consumer confidence. This improved confidence, resulting from perceived financial security and purchasing power, may positively impact their decision to get health insurance.

Furthermore, this study aims to identify behavioral impediments to health coverage by investigating the relationship between consumer confidence and health insurance acquisition. This research is useful in developing measures to reduce the uninsured rate, promoting greater health security and economic stability within communities.

Research Question: How does the interaction of risk aversion and consumer confidence, affected by income level, impact an individual's decision to obtain health insurance? This study investigates the delicate relationship between an individual's view of financial stability and risk, as determined by consumer confidence relative to inflation and subsequent confidence in making health insurance decisions. Furthermore, it seeks to understand the impact of intrinsic risk aversion in these decisions and the larger implications for devising successful policy initiatives to enhance health insurance coverage.

This study's main hypotheses are to examine the complex dynamics of health insurance hesitancy in the context of the Affordable Care Act (ACA) and to develop effective techniques for promoting health insurance adoption. The study attempts to:

Hypothesis I: There is a link between consumer confidence and health insurance hesitancy, with people with more consumer confidence tending to have less hesitancy about health insurance than those with less.

Hypothesis II: There is a link between risk aversion, as measured by the risk tolerance scale, and health insurance hesitancy. Individuals with lower risk tolerance are likelier to have less hesitancy toward health insurance than those with higher risk tolerance.

Hypothesis III: Certain sociodemographic traits, such as higher income and educational attainment, are associated with a decreased likelihhod of health insurance hesitation.

2 Background

2.1 Overview of the ACA

The Affordable Care Act (ACA), which was enacted in 2010, represents an essential moment in American healthcare policy. The objectives are to increase health insurance coverage, manage healthcare prices, and improve healthcare delivery [10–12]. The primary goal is to enhance insurance coverage, especially for those without employer-sponsored policies, through

expanding Medicaid and establishing health insurance markets [13, 14]. These platforms let people to purchase insurance through federal subsidies, solving the issue of affordable healthcare access.

The ACA prohibits insurers from denying coverage due to pre-existing conditions (guaranteed issue) and requires all plans to provide essential health benefits [10, 15]. This provision assures full coverage, which includes preventative care, mental health treatment, and maternity care. The ACA also prohibits insurers from discontinuing coverage due to an unexpected illness [16]. While the legislation assures coverage, it also incorporates a semi-community rating system based on age and geographic area, which affects price and premiums. The ACA has provisions to reduce copayments for low-income individuals (those earning less than 250 percent of the Federal Poverty Level). The legislation also encourages methods to reduce healthcare expenses, such as incentivizing healthcare professionals to prioritize the quality of treatment above the quantity of services delivered. Although the Supreme Court repealed the coercive nature of this requirement in NFIB v. Sebelius, Medicaid expansion to 138% of the Federal Poverty Level, as recommended by the ACA, has been effective in reducing the number of uninsured individuals in states that implemented this recommendation [17].

The ACA has changed U.S. health insurance. Medicaid expansion in states and marketplace health plans have reduced uninsured Americans by millions [18–20]. Expanded healthcare access benefits diverse demographics, including low-income persons and those previously uninsured owing to cost or pre-existing conditions [21, 22]. The ACA's preventative care focus and more competitive insurance markets have promoted health equity and access. Moreover, the Affordable Care Act (ACA) aimed to lower healthcare costs by expanding delivery, improving network adequacy, and implementing telehealth services [23].

The ACA expanded family coverage to 26-year-olds, reducing uninsured Americans. Despite these efforts, a large segment of the U.S. population lacks health insurance, underlining the continued issue of universal coverage. Uneven health insurance coverage highlights the need for a universal payer system in the U.S. Unlike other advanced nations with single-payer systems, the U.S. uses private insurers and government programs. Sheils and Haught (2000) [24] suggests that single-payer systems simplify payment structures and may lower administrative costs.

An examination of the 2022 Survey of Consumer Finance (Figure 1) indicates that health insurance continues to be a noteworthy concern in Latino and Black communities, with uninsured rates of 16.45% and 11.52%, respectively. African Americans and individuals of Hispanic origin regularly exhibit lower insurance coverage rates across all age categories when compared to non-Hispanic white individuals. To comprehend the causes of these discrepancies in health insurance coverage, one must consider structural issues associated with socioeconomic class, individual choices, and market dynamics. In contrast to numerous Western nations, the healthcare system in the United States encompasses a blend of public and private organizations. Medicare and Medicaid are government-funded insurance programs, while the private sector provides most health insurance in the U.S. [25, 26].

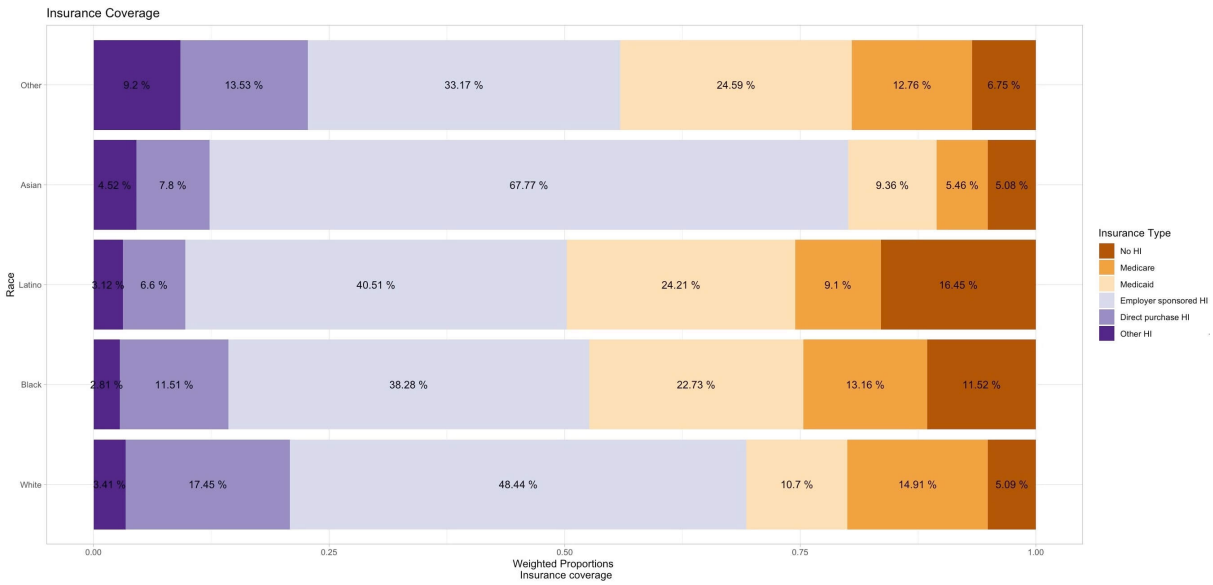

Figure 1 Relative proportion of health insurance type by race. (2022 Survey of Consumer Finance. Source: Author's analysis)

Based on Figure 1, Medicaid is crucial in providing health insurance coverage for Latino and Black households, with rates of 24.21% and 22.73%, respectively. These percentages reflect the fact that these communities have lower median earnings compared to Asian and White populations. Non-White Americans typically have more diverse health insurance coverage, often depending on public health insurance or having no coverage at all, in contrast to White Americans [27]. Medicare is a significant coverage provider for White and Black adults, with coverage percentages of 14.91% and 13.16%, respectively.

In addition, insurance through a workplace is the most common way for people of all races to get coverage. However, it is more common for Asians and Whites (67.77%) and less common for Latinos (40.51%) and Black Americans (38.28%). Asians and White people have more job possibilities than Latinos and Black people. This difference is due to these racial groups' different social structures of income and employment coverage. Black and Latino individuals may have lower incomes and less access to health care through their jobs, as pointed out by Artiga et al. (2022) [1]. Also, black and white people seem to be more inclined than Asians and Latinos to purchase health insurance through the marketplace (11.51% vs. 17.45%, respectively).

Baumgartner et al. (2023) [28] and Buchmueller & Levy (2020) [32] point out that the ACA has resulted in greater increases in health coverage for Black and Hispanic individuals compared to White individuals. While the ACA has brought about some improvements, there are still underlying differences that affect Latinos and Black individuals in different ways.

2.2 Reasons related to uninsurance

There are many aspects to the problem of people in the United States not having health insurance. Many studies have examined the socioeconomic factors that affect the number of people without health insurance [29–33]. On the other hand, this study looks at other behavioral factors that play a role in the problem. The analysis of the 2022 Survey of Consumer Finance (Figure 2) suggests that people do not have health insurance for several reasons, including thinking that the premiums are too expensive, not believing that health insurance is useful, thinking that they are healthy enough not to need insurance because they do not need hospital services very often, being unhappy with their past health insurer, waiting to get insurance until they get a job, and wrongly believing that they do not qualify for health insurance coverage.

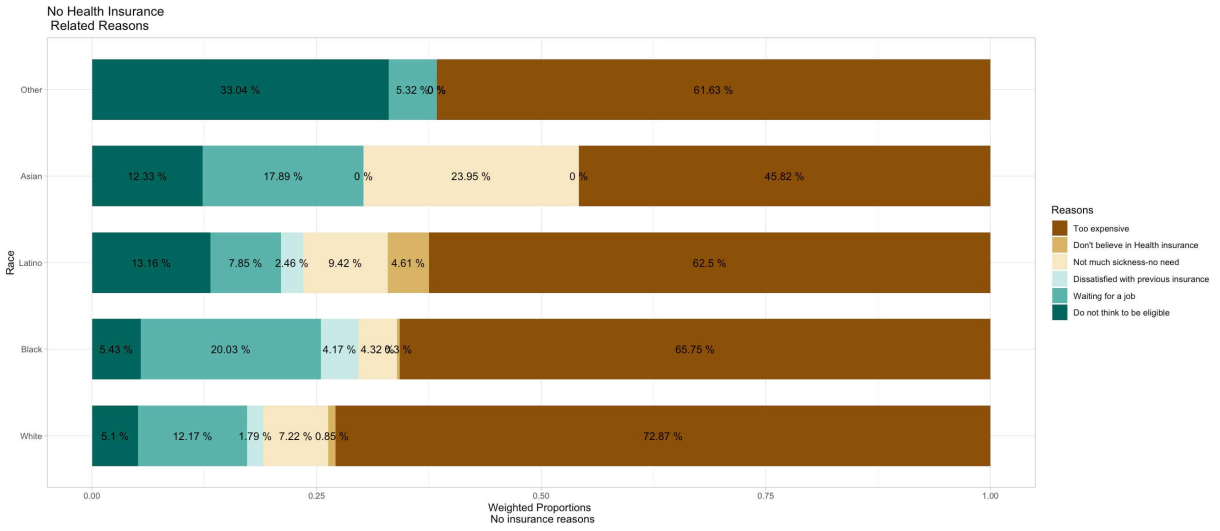

Figure 2 Reasons for insurance hesitancy by race. (2022 Survey of Consumer Finance. Source: Author's analysis)

All of these reasons make people less likely to get health insurance. The high cost of health insurance rates can make people hesitant to buy coverage because they are out of reach financially or think they are not worth the money. You need to believe that health insurance works, trust it, and understand how it can protect your finances and give you access to medical care. People often overestimate the danger and overconfidence in their ability to stay healthy, leading them to think they do not need insurance. People who have had bad health insurance experiences may lose faith in the system as a whole and not want to deal with it again. The choice to wait for health insurance through work shows how dependent people are on stable jobs for getting coverage, which can leave them vulnerable when they are out of work. Lastly, people who think they can't get health insurance may be misinformed or need more information

about their choices, such as government programs that help people in need. All of these things show how complicated the web of ideas and views leads to people not having insurance in the U.S.

The data presented in Figure 2 highlights significant variations across racial groups regarding the reasons behind health insurance hesitancy in the United States, emphasizing the multifaceted nature of this issue. The cost of health insurance emerges as a predominant factor across all racial categories, with the highest reluctance noted among White individuals at 72.87%, followed by Black individuals at 65.75%, Latinos at 62.5%, and Asians at 45.82%. This variance underscores the critical impact of financial barriers on insurance coverage decisions, illustrating how economic factors play a pivotal role in health insurance hesitancy.

Another notable reason is the perception of being in good health and therefore not needing insurance, with Asians reporting this as a reason 23.95% of the time, significantly higher than Latinos (9.42%), Black individuals (4.32%), and White individuals (7.22%). This difference reflects varying levels of health perception and risk assessment among racial groups, influencing their decision-making process regarding health insurance.

Dissatisfaction with previous health insurance experiences also contributes to hesitancy, albeit to a lesser extent, demonstrating the importance of consumer experiences and trust in insurance providers. Employment status further affects health insurance decisions, with notable percentages of individuals across racial groups waiting for employment to obtain insurance. This is most pronounced among Black individuals (20.03%) and Asians (17.89%), highlighting the link between employment and insurance coverage.

Perceptions of ineligibility for health insurance differ among different racial and ethnic groups. Asians (12.33%) and Latinos (13.16%) are more prone to consider this as a justification for not having insurance compared to Black (5.43%) and White folks (5.1%). This suggests a potential requirement for increased awareness or comprehension of eligibility criteria among specific demographics.

These observations demonstrate the intricate interaction of economic, cultural, and institutional elements contributing to reluctance to acquire health insurance. Comprehending these differences is essential for addressing inequalities in healthcare coverage and guaranteeing that initiatives to boost insurance enrollment are customized to the distinct requirements and perspectives of various ethnic groupings.

2.3 Health insurance hesitancy

Health insurance hesitancy and reluctance describe delaying or refusing to acquire health insurance, even when it is readily accessible and there is a possible need for it. This phenomenon is impacted by many factors, including psychological, economic, social, and structural influences. Psychological variables encompass individual attitudes or anxieties regarding the healthcare system, doubts about the importance or effectiveness of insurance, or a general lack of confidence in insurance providers. From an economic standpoint, the expense of health insurance premiums and the belief that one should receive greater value for the money spent can discourage individuals from buying coverage. From a social perspective, cultural norms and the influence of peers can significantly impact individuals' attitudes regarding health insurance. Structural complexities, enrollment process challenges, and past unfavorable encounters with health insurers can all lead to uncertainty in understanding insurance policies. Furthermore, research has demonstrated a correlation between having health insurance and reduced levels of vaccine reluctance, suggesting that insurance can have a beneficial impact on individuals' inclination to seek healthcare [34–37].

Health insurance hesitancy, like vaccination hesitancy, denotes the unwillingness or postponement of acquiring health-related services despite their accessibility and the monetary safeguard they provide against medical expenses. This reluctance becomes especially apparent with the implementation of the Affordable Care Act (ACA), which sought to enhance coverage by expanding Medicaid and establishing health insurance markets [38–40].

3 Theory

This study primarily attributes the hesitancy of individuals purchasing insurance to two pivotal factors: consumer confidence and risk tolerance. Consumer confidence pertains to the collective opinions and outlooks of the general population regarding the present and future state of the economy. It substantially impacts decision-making processes, notably those pertaining to

insurance. Risk tolerance, in contrast, relates to the extent to which individuals are prepared to embrace unpredictability in anticipation of either negative or positive outcomes. It has a significant impact on their probability of choosing insurance coverage. Combining these aspects provides an extensive comprehension of why particular consumers may be reluctant to purchase insurance policies, emphasizing the complex link between economic views and personal risk evaluations.

3.1 Consumer confidence theory

The concept of consumer confidence, crucial for comprehending economic dynamics, originates from the broader economic and psychological research framework that became prominent in the mid-20th century. George Katona, along with other pioneering individuals, made substantial contributions to conceptualizing and quantifying consumer sentiment. They integrated psychological insights with economic data to assess consumer sentiment regarding the economy's future. The term "consumer confidence" is a combination of the word "consumer," which refers to persons who buy products and services, and the word "confidence," which represents their emotions regarding their financial stability or instability [41,42]. This dichotomy captures the fundamental concept of consumer confidence theory, which posits that the psychological condition of consumers plays a crucial role in shaping their economic actions. This hypothesis originated during a time characterized by an increasing fascination with the interaction between psychology and economics. The significance of consumer views on economic well-being is emphasized, resulting in tools such as the Consumer Confidence Index (CCI) to measure these attitudes and their effects on economic activity [43, 44]. The Consumer Confidence Index (CCI) is a significant economic indicator that aims to quantify consumers' optimism about the economy's general condition and financial circumstances. The CCI operates under the assumption that consumer sentiment directly impacts economic activity, particularly in terms of consumer spending and saving patterns. It plays a crucial role in forecasting future economic activity by assessing consumer attitudes and expectations through surveys. The Consumer Confidence Index survey comprises four fundamental subjective inquiries. Participants furnish demographic data, including age, gender, marital status, occupation, and location. The survey then explores the following questions:

(1) Has your household's financial status improved or decreased compared to six months ago?

(2) Over the next six months, do you expect your household's financial status to improve, stay the same, or worsen?

(3) What are your predictions about job opportunities and employment in your area in the next six months?

(4) Do you think it is prudent or imprudent for individuals to invest in assets such as houses, vehicles, or other significant purchases?

These inquiries are vital since they offer valuable insights into:

(1) Evaluations of previous financial advancements: This component assesses changes in individuals' purchasing power over time by comparing their current financial condition to that of six months earlier, which may be influenced by inflation. This demonstrates the direct influence of economic volatility on customers.

(2) Anticipated projections for future financial advancement: This component assesses individuals' outlook on their financial situation, specifically regarding inflation, and determines whether they are optimistic or pessimistic. It provides a direct assessment of customer expectations, which might have an impact on consumer purchasing and saving habits.

(3) Perspectives on Credit and Borrowing: This evaluates customers' preparedness to assume financial risks via borrowing. The readiness to participate in credit transactions implies a sense of assurance in one's future financial stability, whereas hesitancy may indicate apprehensions about economic circumstances or personal financial well-being.

Collectively, these elements play a crucial role as a reliable indicator for understanding consumer confidence. They not only reflect current financial conditions and expectations but also serve as indicators of broader economic sentiments. These insights can significantly influence governmental decisions and economic predictions. The evolution in the Conference Board Consumer Confidence Index from 1977 to August 2024 is illustrated in Figure 3, which emphasizes the variations in consumer attitude. Significantly, in 2022, consumer confidence substantially

decreased, with levels remaining at approximately 90.6. This decline results from economic uncertainty, most likely caused by inflationary pressures and difficulties in recovering from the pandemic, which greatly affected people's financial prospects. The diminished confidence levels observed in 2022 are essential for comprehending the reluctance to undertake substantial financial obligations, such as obtaining health insurance. These findings are consistent with the research objectives, which investigate the impact of customer confidence on the probability of acquiring health insurance.

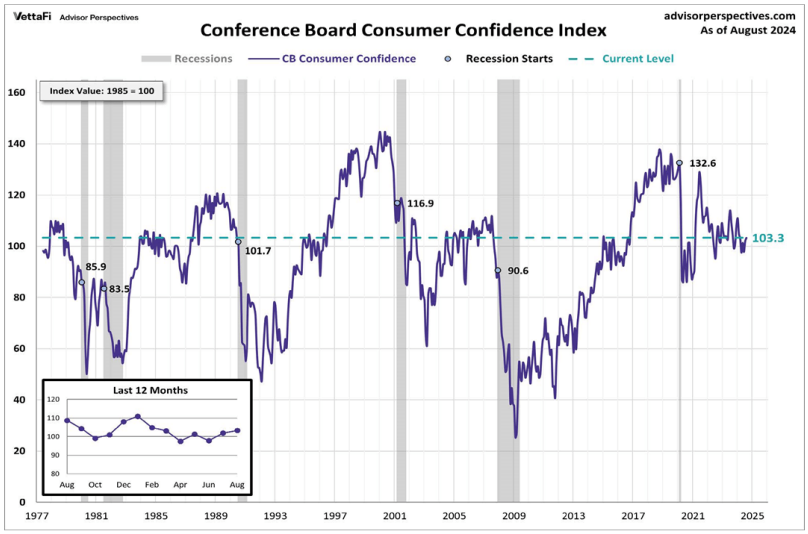

Figure 3 Conference board consumer confidence index

Consumer confidence theory examines the degree of optimism or pessimism that consumers possess regarding the general condition of the economy and their financial circumstances. It serves as a significant gauge that mirrors the state of the economy by assessing consumer expenditure and saving patterns. The Consumer Confidence Index (CCI) assesses consumer sentiment by analyzing their views on present economic conditions and their predictions for the upcoming six months [45]. A greater confidence level implies that consumers have a positive outlook on their financial prospects and are more inclined to increase their expenditures.

In contrast, a lower confidence level signifies pessimism and may lead to reduced spending. One aspect of this study's objective is to determine how customer confidence influences the likelihood of having health insurance. This idea is predicated on the premise that customers with higher confidence levels are more likely to engage in substantial purchases and investments, such as acquiring health insurance, due to their perception of financial security in meeting both present and future expenses.

3.2 Risk aversion

Risk aversion has a strong foundation in economics and psychology, as it pertains to humans' inclination to favor certainty rather than uncertainty when making choices. The concept is derived from the anticipated utility theory formulated by Von Neumann and Morgenstern (2007) [46], which established a mathematical framework for making decisions when faced with uncertainty. In the 18th century, Daniel Bernoulli made a crucial contribution by introducing the St. Petersburg conundrum. This dilemma introduced the concept of diminishing marginal utility and examined risk aversion.

Economists such as Paul Samuelson, Milton Friedman, and Leonard Savage advanced the profession by enhancing and broadening the anticipated utility theory. The authors of the cited studies introduced more intricate perspectives on risk. Kenneth Arrow and John Pratt created the Arrow-Pratt measure of absolute and relative risk aversion during the 1960s and 1970s [47–49]. The insights provided by diverse economists have enhanced our comprehension of risk aversion in economic conduct, exerting an influence on numerous schools of thought, such as behavioral economics. Richard Thaler and other economists have advocated for this discipline, which explores psychological insights to elucidate deviations from conventional economic forecasts of rational behavior [50–54].

In economics and finance, the concept of risk aversion suggests that individuals favor options

with less uncertainty compared to those with higher uncertainty, even if the later options could provide similar or higher financial gains. This notion emphasizes a common tendency to choose stable scenarios that offer a consistent, but occasionally lower, financial return instead of engaging in more unpredictable investments that could generate more significant profits and carry a higher chance of monetary loss [55]. An example that demonstrates this behavior can be seen in investment decisions. Individuals who display risk aversion may choose to deposit their savings in a savings account that offers a moderate and guaranteed rate of return rather than investing in the stock market. Although the stock market has the potential for significant gains, it also carries the risk of substantial financial loss.

Individuals' decision-making processes, particularly about health insurance enrollment, are highly influenced by risk aversion. Individuals with a greater inclination towards risk aversion generally choose the assurance and stability insurance offers to minimize potential monetary setbacks resulting from unexpected medical costs. On the other hand, those less willing to take risks may be reluctant to get health insurance because they prioritize immediate cost savings over the possible long-term advantages of having coverage. This reluctance may arise from misinterpreting or undervaluation of risk, resulting in an inclination to prioritize liquidity over investing in proactive financial measures. One aspect of this study's objective is to examine the relationship between risk aversion and the likelihood of obtaining health insurance. Hence, it is essential to comprehend the intricate correlation between an individual's risk tolerance level and their propensity towards health insurance. This comprehension is vital for overcoming obstacles to insurance coverage and fostering more comprehensive health security.

4 Methodology

This study uses data from the 2022 Survey of Consumer Finances (SCF) to investigate the determinants of health insurance hesitancy. Logistic regression is employed to establish a mathematical model that describes the correlation between health insurance hesitation (the dependent variable) and important independent variables like consumer confidence, risk tolerance, and specific sociodemographic parameters. By employing suitable weighting and considering multicollinearity, the methodology guarantees a rigorous study that thoroughly comprehends the behavioral and economic factors influencing insurance choices.

4.1 Data source and sample design

This study's data was acquired from the 2022 Survey of Consumer Finances (SCF), an extensive survey carried out by the Federal Reserve Board. The SCF compiles comprehensive data on the financial status of American households, encompassing income, assets, liabilities, and perspectives on risk and financial decision-making. The Federal Reserve Board compiled the data over the period of March to December 2022. The questionnaire comprised a combination of open-ended and closed questions, including some with answer scales specifically crafted to encompass a broad spectrum of financial practices and views. The SCF's meticulous data gathering and weighting procedures guarantee that the survey precisely reflects the U.S. population, increasing its credibility as a source for examining the determinants of health insurance choices in the U.S.

In addition, the SCF utilizes an advanced weighting structure that is thorough and comprehensive, thereby improving the accuracy of survey findings. This approach integrates the original selection probability with supplementary data and aggregated statistics from the Current Population Survey. Although this methodology is thorough, it is crucial to recognize the existence of multiple variables in the SCF data. Certain variables may have a low occurrence rate or be prone to extreme values, which has the potential to distort the results. In order to tackle this problem, especially when dealing with variables that are heavily skewed such as income, the analysis step includes the use of logarithmic transformations to reduce these inequalities [56, 57].

Regarding missing data, the SCF utilizes a technique known as multiple imputation. This technique generates five distinct datasets for each missing value, aiming to replicate the original data distribution closely. The dataset is expanded by including 23,010 entries from the initial pool of 4,602 respondents, significantly improving the statistical analysis's reliability and precision.

In this context, the R "survey" package plays a critical role in managing the complexities of the augmented dataset resulting from multiple imputations. It ensures that the data remains properly weighted throughout the analysis process, even when adjusted by a factor of five for certain evaluations. This tool is essential for reducing bias and producing estimates that more

accurately reflect the true characteristics of the population. Working in conjunction with the "mitools" package, the "survey" package effectively handles data with multiple imputations, facilitating accurate and minimally biased analyses [58].

4.2 Main variables

4.2.1 Dependent variable

This study aims to explore the factors contributing to individuals' reluctance to acquire health insurance by requesting them to select the most relevant explanation from a provided list. The list elucidates why they or someone in their family does not own insurance. The poll offered 17 predetermined choices for participants, subsequently classified into six primary groups for examination. The categories encompass concerns regarding the affordability of insurance, skepticism towards the value of health insurance, the perception that insurance is unnecessary due to the family's good health, dissatisfaction with past insurance experiences, job-related challenges such as unemployment or lack of employer-provided insurance, and doubts about eligibility for insurance coverage.

The categorizing procedure played a crucial role in simplifying the issue and making it more manageable for analysis. It consolidated the various reasons into more general themes, particularly in cases where individual responses were infrequent or insignificant. This method led to a clearer understanding of the main elements contributing to hesitation towards health insurance. By categorizing numerous distinct reasons into broader categories, we made the issue more digestible and easier to handle.

The study employed a dummy variable to measure the extent of health insurance hesitation among the participants. Consequently, those who provided an explanation for lacking health insurance were designated with a code of 1. This coding methodology quantifies the level of reluctance towards health insurance across the surveyed population, providing valuable insights into the different obstacles individuals encounter while attempting to obtain health coverage. The systematic methodology employed in this study allows for a comprehensive understanding of health insurance hesitation, revealing the various complex factors contributing to the absence of insurance within specific demographic groups.

4.2.2 Independent variables

In this study, the primary factors used to understand reluctance to obtain health insurance include the Consumer Confidence Index (CCI) and risk tolerance. Risk tolerance serves as an indirect measure of an individual's aversion to risk. The Consumer Confidence Index (CCI) is calculated based on survey responses to three key questions: past and future income expectations relative to inflation, and views on credit usage. This report presents the methodology and the calculated CCI.

The CCI is calculated as an average of responses to the following questions, with each question equally weighted:

(1) Over the past five years, did your total (family) income go up more than inflation, less than inflation, or about the same as inflation? (Coded as 1 = Up less, 2 = About the same, and 3 = Up more)

(2) Over the next year, do you expect your total (family) income to go up more than inflation, less than inflation, or about the same as inflation? (Coded as 1 = Up less, 2 = About the same, and 3 = Up more)

(3) In general, do you think it is a good idea or a bad idea for people to buy things by borrowing or on credit? (Coded as 1 = Bad idea, 2 = Good in some ways, bad in others, 3 = Good idea)

The calculated Consumer Confidence Index (CCI) for our sample is presented below:

$$CCI = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{Q1_i + Q2_i + Q3_i}{3}\right) \quad (1)$$

where N is the number of respondents, and $Q1i$, $Q2i$, and $Q3i$ are the responses to questions 1, 2, and 3, respectively, for each respondent i.

Risk tolerance, utilized in this study as a measure of risk aversion, is a significant topic in economics and finance. It signifies an individual's inclination towards certainty rather than

uncertainty. The Survey of Consumer Finances (SCF) assesses individuals' propensity for financial risk-taking by inquiring, "On a scale ranging from zero to ten, where zero signifies a complete aversion to risk, and ten signifies a strong inclination towards risk, what is your (and your partner's, if applicable) position?" The ten-point scale is effective for measuring risk tolerance as it directly and quantifiably assesses individuals' comfort level with risk. The uncomplicated architecture of the system facilitates the collection of information from multiple individuals, allowing for easy comparisons between different responses. Furthermore, this approach provides a more comprehensive comprehension of an individual's risk tolerance than only requesting them to select 'yes' or 'no.' It aligns effectively with research methodologies in psychology and economics, where self-rating scales are extensively employed to investigate individual attitudes and preferences [59].

This research uses various control variables to strengthen the credibility of how primary independent variables relate to the dependent variables, considering other potential explanations and demographic factors. It categorizes age into six groups, from young adults (18-29) to those in advanced age (85-100), and classifies marital status into three groups: never married, married or cohabiting, and separated or widowed. The level of education is assessed on a scale from elementary education to a doctoral degree, and employment status is coded as either employed or unemployed. Additionally, the study measures financial knowledge with two specific questions: one about the growth of money in a savings account over five years at a 2% interest rate, and another on the buying power of money in an account with a 1% interest rate in an environment where inflation is 2% per year. Answers are coded to determine participants' understanding of these financial concepts. The study also takes into account participants' self-assessed financial knowledge, rated on a scale from zero (no knowledge) to ten (very knowledgeable).

The investigation explores how income influences the need for life insurance, using data from the Survey of Consumer Finances (SCF) and applying a logarithmic transformation to income figures to reduce the skewing effect of outliers. It also adjusts for racial differences and analyzes the data by race to identify how these main variables differ among racial groups once other factors are accounted for. This systematic approach helps understand the intricate dynamics of income's role in life insurance demand across different demographic segments.

4.3 Research method

The present study examines the influence of respondents' economic confidence and risk aversion on their hesitancy to acquire health insurance. Participants were queried about if they had any justifications for their lack of health insurance. To facilitate statistical analysis, all categories associated with the reasons for not having insurance were consolidated into a single binary variable. A value of "Yes" (1) denotes that individuals had a reason (namely, insurance hesitancy), while a value of "No" (0) shows that they did not have insurance. Insurance reluctance can be attributed to several causes, including chiefly financial obstacles, the belief of being in good health and so not requiring insurance, discontentment with past insurance encounters, and the delay in securing coverage due to waiting for an employment. Given the low frequencies of certain categories, such as discontent with previous experiences and waiting for a job, the categories were consolidated to guarantee statistical reliability. By adopting this strategy, the analysis is enhanced, thereby increasing the strength and methodological rigor of the results. This, in turn, guarantees the reliability of the conclusions made, especially in cases when the original categories have unequal distributions. The data was analyzed using logistic regression, a statistical method well-suited for predicting outcomes that fall into categories based on various predictors [60]. This technique is particularly useful for estimating the likelihood of individuals having health insurance, taking into account factors such as consumer confidence, risk tolerance, demographic influences, and other essential variables.

Incorporating weights in logistic regression is crucial for ensuring that the sample represents the broader population's demographics more accurately. This step helps address any biases in the sample and provides a more precise depiction of people's perspectives on health insurance. The "survey" package in R software plays a vital role in this analysis, providing the necessary tools to apply these weights and enhance the study's accuracy and reliability.

The logistic regression model can be expressed as:

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n \tag{2}$$

Where:

(1) p is the probability of the dependent variable equaling a case (e.g., 1);

(2) β_0, β_1, ..., β_n are the coefficients;

(3) x_1, x_2, ..., x_n are the independent variables.

And the probability p can be expressed as:

$$p = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n)}} \tag{3}$$

In the context of multiple logistic regression analysis, it is essential to address multicollinearity, which occurs when independent variables are closely related. This step ensures the validity and comprehensibility of the model's results. Experts often use a rule where a Pearson correlation coefficient exceeding 0.7 suggests a strong relationship between variables [61]. Setting this 0.7 benchmark strikes a balance between strictness and leniency in identifying multicollinearity, making the detection process effective and balanced [62]. Choosing a 0.7 cutoff helps identify strong correlations between variables without removing valuable insights. At this level, the problem of multicollinearity, which can cause exaggerated fluctuations in regression coefficients, is less likely to occur. A correlation up to 0.7 means that while variables may share some common information, they are not nearly identical. This balance maintains the integrity of the model without sacrificing critical data that could enhance predictive accuracy and insights [63].

In logistic regression models, which predict binary outcomes, the focus is on how well the entire model forecasts outcomes rather than the contribution of each predictor variable. If the overall model can make accurate predictions, predictors that are somewhat related to each other, shown by correlation values up to 0.7, usually do not harm the model's effectiveness or comprehensibility (Figure 4).

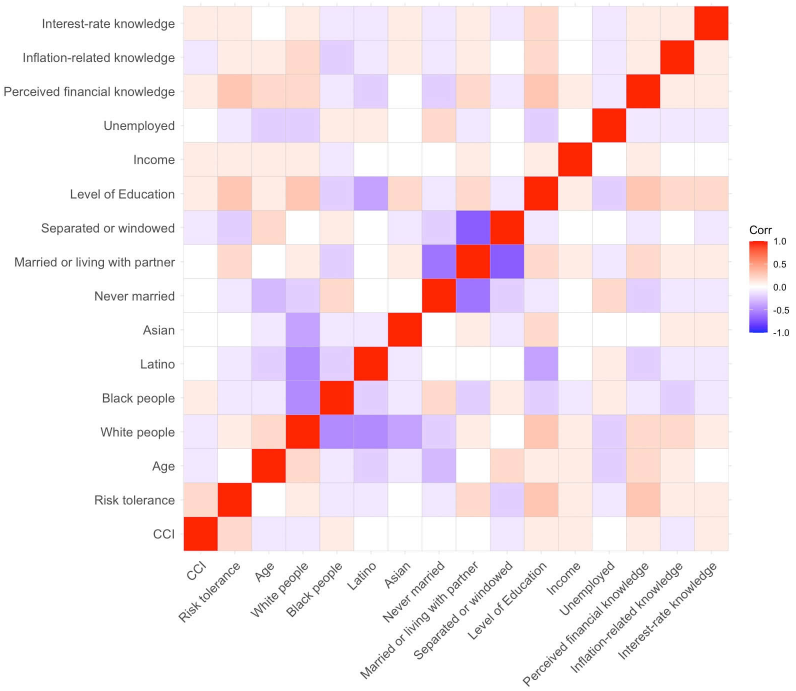

Figure 4 Correlation matrix: Independent variables. (2022 Survey of Consumer Finance. Source: Author's analysis)

The Variance Inflation Factor (VIF) is a valuable tool in logistic regression models as it aids in detecting multicollinearity among predictor variables, which can impact the stability and reliability of the model's coefficients. While logistic regression generally emphasizes the predictive ability of the model, the presence of substantial multicollinearity can cause the standard errors of the coefficients to increase, resulting in reduced reliability and interpretability. Using VIF (Variance Inflation Factor), researchers can identify the presence of multicollinearity and subsequently implement measures to mitigate its effects. This leads to the development of more robust and understandable models. It is especially relevant when the model's interpretability is crucial for comprehending the connections between predictors and the outcome variable, even if multicollinearity does not impact the predicted accuracy. Figure 5 demonstrates that all predictors in this model have VIF values below 2, indicating that multicollinearity is not a concern. The variance inflation generated by predictor correlations may not affect the model.

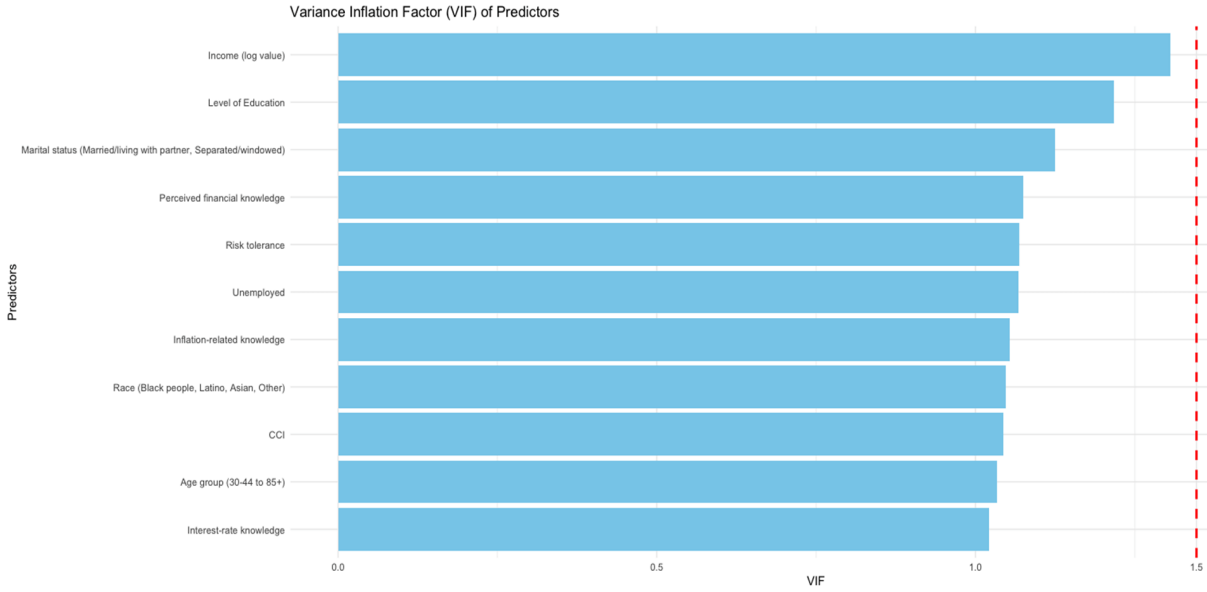

Figure 5 Variance inflation factors. (2022 Survey of Consumer Finance. Source: Author's analysis)

5 Result

Table 1 displays the logistic regression analysis findings that examine the impact of the Consumer Confidence Index (CCI) and Risk Tolerance on health insurance hesitation among various racial groups. The investigation uncovers intricate connections between these parameters and views towards insurance, emphasizing notable disparities among different demographic groups. The intercept values suggest a prevailing inclination towards reluctance to acquire health insurance among most racial groupings, except Asians. This outlier may suggest that cultural or structural factors influence how Asians perceive health insurance.

Table 1 Logistic regression: Health insurance hesitancy

	Full Model	White People	Black People	Latino	Asian
(Intercept)	4.21*** (0.37)	4.68*** (0.43)	4.47*** (0.92)	4.75*** (0.92)	1.70 (1.83)
Consumer Confidence Index	-0.13* (0.06)	-0.23** (0.08)	-0.32* (0.13)	0.30** (0.11)	-0.33 (0.29)
Risk tolerance	0.06*** (0.01)	0.08*** (0.02)	0.08*** (0.02)	-0.02 (0.02)	-0.08 (0.06)
Age group – comparison group: 18-29					
30-44	-0.29** (0.10)	-0.30° (0.15)	0.35° (0.19)	-0.81*** (0.16)	-0.99** (0.36)
45-59	-0.32** (0.10)	-0.36* (0.16)	0.38° (0.20)	-0.84*** (0.18)	-1.13** (0.42)
60-74	-1.20*** (0.12)	-0.92*** (0.16)	-0.56* (0.25)	-2.60*** (0.27)	-4.17*** (0.69)
75-84	-1.91*** (0.19)	-1.66*** (0.25)	-1.10* (0.50)	-3.32*** (0.37)	-17.06*** (0.49)
85+	-2.76*** (0.48)	-2.58*** (0.50)	-13.89*** (0.34)	-15.68*** (0.36)	-18.76*** (0.64)
Marital status – comparison group: Never married					
Married or living with partner	0.35*** (0.09)	0.10 (0.14)	0.46** (0.17)	0.52** (0.16)	0.61* (0.30)
Separated or windowed	0.36*** (0.10)	0.30* (0.15)	0.12 (0.18)	-0.02 (0.18)	2.36*** (0.39)
Level of Education	-0.17*** (0.01)	-0.26*** (0.02)	-0.09** (0.03)	-0.11*** (0.02)	0.06 (0.06)
Income(log value)	-0.40*** (0.04)	-0.32*** (0.04)	-0.57*** (0.09)	-0.43*** (0.09)	-0.34* (0.15)
Unemployed	0.59*** (0.08)	0.83*** (0.11)	0.54*** (0.15)	0.09 (0.13)	-0.51 (0.56)
Perceived financial knowledge	-0.001 (0.01)	-0.04° (0.02)	0.08** (0.03)	0.01 (0.02)	0.11° (0.07)
Financial Knowledge Test – comparison group: failed					
Inflation – related knowledge	-0.24*** (0.07)	-0.29* (0.11)	-0.26° (0.14)	-0.22° (0.13)	0.37 (0.46)
Interest – rate knowledge	-0.19** (0.07)	-0.27** (0.10)	0.20 (0.15)	-0.28* (0.11)	-0.42 (0.36)
Race – comparison group: White people					
Black people	0.28*** (0.08)				
Latino	0.51*** (0.08)				
Asian	0.17 (0.17)				
Other	0.43° (0.22)				
Deviance	13758.08	6899.23	2792.39	3039.32	951.17
Dispersion	1.01	1.00	0.94	1.05	1.38
Num. obs.	22753	14051	3572	3124	1746

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; ° $p < 0.1$.

The Consumer Confidence Index has different impacts on different racial groupings. The White and Black populations exhibit a negative correlation between heightened economic confidence and decreased reluctance, which is consistent with consumer confidence theory. On the other hand, Latinos demonstrate a contrasting impact, indicating intricate socioeconomic relationships. The statistical clarity of the Asian group's response to this index is uncertain.

The Full Model analysis indicates that there is a positive correlation between risk tolerance and insurance reluctance. This correlation holds true for both White and Black groups. These findings suggest that those who are more tolerant of Risk are more likely to hesitate when it comes to getting health insurance. The reversal or absence of this tendency among Latinos and Asians suggests that there are varying interpretations of Risk within different cultural groups. The data also demonstrates that socioeconomic considerations are essential in affecting the adoption of insurance. Hesitancy is negatively correlated with higher education and income levels, while unemployment has a strong positive impact on hesitancy. Surprisingly, the perception of one's financial knowledge has little impact, in contrast to the substantial effects of one's real financial understanding on attitudes towards insurance. Age is a significant influence, as persons who are 75 years old and older tend to have reduced levels of reluctance. Marital status also affects reluctance, with married persons or those cohabiting with a spouse showing higher levels of hesitancy compared to individuals who have never been married.

Racial analysis reveals significant disparities, with Black and Latino individuals showing higher levels of hesitancy compared to their White counterparts, indicating systemic differences in health insurance access and attitudes. Figure 6 illustrates the connections among CCI, risk tolerance, and insurance hesitation. As consumer confidence rises, the level of hesitation diminishes, declining from 12.3% at the lowest Consumer Confidence Index (CCI) to 9% at the highest. On the other hand, when risk tolerance improves, the level of hesitation also increases, going from 8% for the individuals most averse to danger to 15% for those most tolerant of risk. These findings underscore the complex interplay of psychological, economic, and cultural factors in shaping health insurance decisions. They suggest that tailored approaches may be necessary to effectively address hesitancy across different demographic groups.

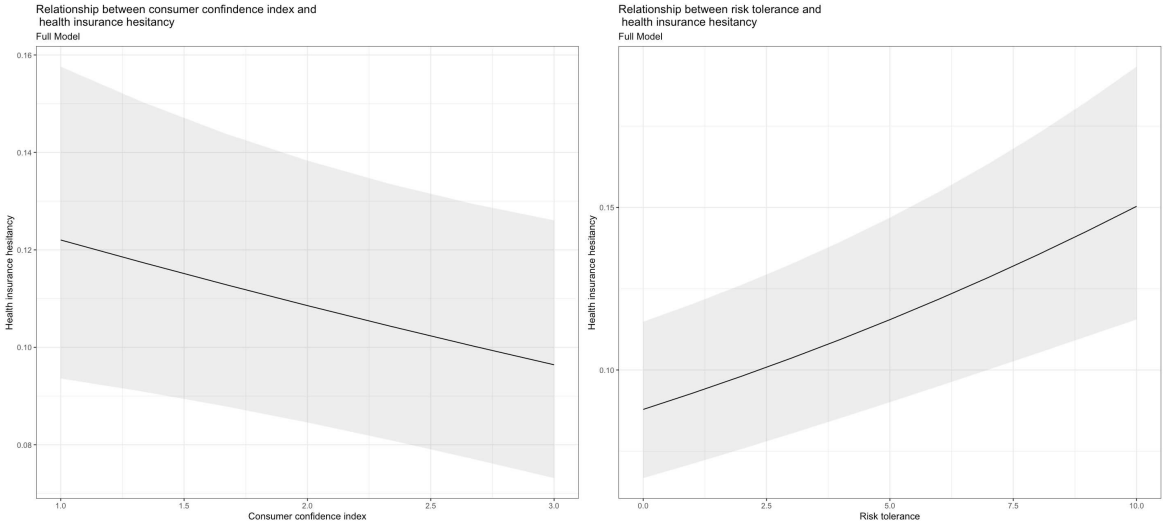

Figure 6 Predicted probabilities: Risk tolerance and Consumer confidence index. (2022 Survey of Consumer Finance. Source: Author's analysis)

6 Discussion

The logistic regression analysis results, a significant milestone in the research, validate the research hypotheses. They indicate that customer confidence and risk tolerance strongly influence health insurance hesitation across various racial groups, providing a robust foundation for the findings.

6.1 Validation of Hypothesis 1

The correlation between risk aversion and the probability of acquiring health insurance was established. Overall, The results demonstrate a distinct positive association between risk

tolerance and health insurance reluctance, particularly among White and Black populations, suggesting that persons with a greater capacity to tolerate risk are more prone to hesitancy when acquiring health insurance. This finding corroborates the notion that persons with lower risk aversion tend to give higher importance to immediate financial savings rather than the possible long-term advantages of insurance. In contrast, the reduced reluctance identified among persons with a greater aversion to risk indicates that they highly appreciate the financial stability offered by insurance.

6.2 Validation of Hypothesis 2

The impact of consumer confidence on purchasing health insurance was also validated, namely within the White and Black demographic segments. The observed inverse relationship between the Consumer Confidence Index (CCI) and health insurance hesitancy within these groups suggests that persons with greater confidence in their economic circumstances are less likely to hesitate to acquire insurance. These findings support the study's hypothesis that a positive economic outlook promotes a higher readiness to make significant financial obligations, such as obtaining health insurance. Notably, the Latino population exhibited a direct relationship between consumer confidence and reluctance, indicating that other socioeconomic variables could influence their insurance choices.

The investigation underscores the substantial influence of sociodemographic variables, including income, education, and unemployment, on the reluctance to obtain health insurance. Individuals with higher income and education levels exhibit less reluctance, supporting the notion that those with greater financial resources and education are more inclined to appreciate and acquire insurance. Conversely, unemployment amplifies reluctance, strengthening the correlation between economic stability and insurance purchasing. Additionally, age and marital status are important factors that significantly influence people's choices regarding health insurance. Elderly individuals aged 75 and above are more inclined to seek insurance, possibly due to increased health concerns commonly associated with this age group. However, married or cohabiting individuals show higher hesitancy levels than those who have never been married. This could be related to a perceived reliance on spousal support or shared financial responsibilities.

Analysis of racial disparities has shown that Black and Latino persons have greater degrees of reluctance to obtain health insurance in comparison to White individuals. This observation highlights systemic problems in healthcare accessibility and attitudes toward insurance among different racial groups. The existence of these inequalities highlights the necessity of implementing focused policy measures to mitigate the obstacles these groups encounter.

Subsequent investigations should employ longitudinal studies to monitor the enduring impact of the ACA on health insurance coverage and healthcare access in various states, particularly those with disparate Medicaid expansion. Conducting such studies would offer valuable information on the long-term effects of the ACA and help uncover ongoing issues related to healthcare coverage and access. Furthermore, studying the psychological obstacles that hinder individuals from enrolling in health insurance, such as fear, denial, and distrust of the healthcare system, could aid in creating interventions aimed at boosting enrollment rates. Examining the cultural and systemic elements that impact how different racial and ethnic groups perceive health insurance, especially in communities with hesitancy or unequal access to coverage, would establish a basis for developing policies and outreach initiatives that are culturally sensitive and aimed at expanding coverage.

7 Conclusion

This study aims to clarify the influence of consumer perceptions of economic conditions and personal risk preferences on the choices made about health insurance. The results validate that persons with greater optimism over their financial prospects are more inclined to obtain health insurance. In contrast, those with a more substantial capacity to accept risk tend to exhibit reluctance. Age, marital status, income, and education are significant socioeconomic determinants of attitudes toward insurance. Younger persons and those experiencing financial instability tend to exhibit greater degrees of reluctance. These findings emphasize the need to implement focused measures that tackle issues related to affordability and encourage thorough financial education.

An inherent constraint of this analysis is its exclusive concentration on the United States amidst the COVID-19 epidemic, exploiting data derived from the 2022 Survey of Consumer Finances. Furthermore, the study refrains from engaging in debates on political preferences,

ideologies, and the consequences of partisanship, as these aspects are not directly within its analytical framework. Notwithstanding these constraints, the research offers pertinent and practical observations on health insurance behavior, so helping endeavors focused on decreasing the number of individuals without health insurance and promoting macroeconomic stability.

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Conflict of interest

The author declares that there is no conflicts of interest. All research was conducted under the highest ethical standards, ensuring complete integrity and transparency.

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