ESSAYS ON LIFE INSURANCE

by

MONICA ELISABETH HEIDESCH

(Under the Direction of James M. Carson and Marc A. Ragin)

ABSTRACT

The three essays comprising this dissertation address life insurance, and consumer behavior with respect to life insurance, within the United States. The first essay functions as a qualitative primer in understanding the evolution of life insurance in America and includes a review of the determinants of life insurance demand for the first consumers to ever purchase policies as Americans, Presbyterian ministers. I argue that the Presbyterian Church played an important role in building the life insurance industry in early America, helping it evolve into the strong and important industry it remains present day. I posit the Church's need to maintain fund solvency, to both care for their congregations while also funding investments, resulted in a messaging shift from the very top of American Christian leadership via moral persuasion, resulting in persuasion bias. The secular commercial life insurance marketing strategies embraced this shift in messaging, resulting in a significant change in consumer behavior and contributing to industry growth. The second essay builds on this finding and empirically examines if consumers who identify as Christians in the United States have a significantly higher likelihood of owning life insurance. Using data from the Health and Retirement Survey, I find that consumers who identify as Christian do have a positive association with the likelihood of owning life insurance, and I believe this to be a novel finding. Additionally, I empirically

identify how certain determinants of life insurance demand are unique to members of specific generational birth cohorts. Finally, the third essay empirically examines life insurance demand for consumer subgroups independently with a focus on the consumer subgroup at the intersection of race and sex, Black females. Building on consumer socialization theory and intersectionality theory, I find that the determinants of life insurance demand for the consumer subgroup of Black females, who as product users have traversed a very different path to the life insurance marketplace than any other consumer subgroup, are unique. Together, the research and findings within these essays contribute to the knowledge base surrounding consumer behavior with respect to the life insurance marketplace within the United States.

INDEX WORDS: Life Insurance, Life Insurance Demand, Consumer Behavior

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DEDICATION

This dissertation is dedicated to my inspiring girls, Claire and Miranda. Thank you for all you have taught me. Being your mom is my most favorite thing, forever and always. I love you both.

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1 Introduction and Overview

This dissertation is comprised of a qualitative essay, a literature review, and two quantitative essays addressing life insurance evolution, determinants of life insurance demand, and behavior of consumer subgroups with respect to life insurance within the United States. The first qualitative essay, Chapter 2, functions as a primer in understanding the evolution of life insurance within the United States. This undertaking was the result of wanting to understand why the first users of life insurance in America were motivated to purchase it. What were the primary determinants of life insurance demand for those to ever first purchase it in the United States? The initial primer on the evolution of life insurance within America begins with discovering the origins of the life insurance industry within the United States. As I trace its roots from inception during colonial times through present day, I identify the predominant role Christian churches played as a determinant of life insurance demand for those first Americans to ever purchase policies. I review how the blending in of religiosity with commercial marketing messaging by secular life insurers via moral persuasion, resulted in a persuasion bias shifting consumer sentiment with respect to life insurance. These changes in consumer behavior and marketing tactics by insurers, combined with timely regulation and political changes, allowed the life insurance industry to blossom.

By reviewing the actions of the first ever life insurance company to sell policies within the American Colonies I identify the summary statistics for the first individuals to ever purchase policies as Americans, Presbyterian ministers. I subsequently argue that the important role the Presbyterian Church played in building life insurance in early America helped the industry to evolve into the strong and important business sector it has become. I posit the Church's need to maintain fund solvency to both care for their congregations, while also

allowing for the funding of their investments, resulted in a messaging shift from the very top of American Christian leadership. The shift in messaging toward congregations was eventually adopted by the secular commercial life insurance industry. The incorporation of this marketing messaging by commercial life insurers resulted in a change in consumer behavior which contributed to the significant success the industry would go on to attain. The evolution essay also highlights the historical timeline of life insurance utilization by the last two American demographic groups legally allowed to purchase insurance, women and Blacks/non-whites. Understanding how these consumer subgroups first came to utilize life insurance may help explain some of the differences that persist in how these consumer subgroups utilize life insurance today.

The two empirical essays, Chapters 4 and 5, respectively, examine the relationship between life insurance demand in the United States and consumer demography in novel ways. Within Chapter 4, I work to analyze if individuals who identify as Christian are significantly more or less likely to own life insurance than non-Christian consumers. I also include an examination of life insurance utilization across generational birth cohorts, and work to identify if there are any significant and meaningful differences attributable to generational birth cohort theory. The results from the empirical analysis, which utilizes data from the Health and Retirement Survey, suggest identifying as a Christian has continued to persist as a significant determinant of positive life insurance demand in the United States. I believe this result is a novel academic finding which contributes to the literature on life insurance demand by showing that a consumer who identifies as belonging to a certain religion, may not be less likely to own life insurance as previous research has indicated. I do believe this finding may be unique to the United States, or any other countries where a specific religious body was involved in growing the life insurance industry in a similar manner to America. It is important to consider the cultural background of consumers jointly with the economic development of their respective country to better gain a more customized understanding for the propensity of their purchasing behavior. Understanding the nuance that can potentially

affect purchasing decisions, particularly in developing countries, may help both academics and industry professionals to understand and predict why consumers make the decisions they do (Outreville, 2013). I also find that some changes in life insurance demand may well be attributable to changes in utilization by more recent generational birth cohorts. These findings build on prior work and previous findings by Chen, Wong, and Lee (2001).

In final quantitative essay, I examine life insurance demand at the intersection of race and sex, focusing on the consumer subgroup of Black females. I document the similarities and differences in how these consumer subgroups utilize life insurance compared against the consumer subgroup who has had access to purchase life insurance since its inception in America, Caucasian men. While a few prior academic works have examined the life insurance demand for these consumer subgroups in isolation (ie. females or Blacks), I believe my study is the first to examine life insurance demand specifically for this consumer subgroup.

Together, the research within these essays works to contribute to the knowledge base surrounding the life insurance marketplace within the United States. Understanding why and how the life insurance industry grew into the strong industry it is present-day is necessary in order to understand the likeliest shape the industry will take moving forward; as the only constant within the life insurance industry (as in life itself) is change. The empirical works allow for a greater understanding of consumer behavior, and particularly the behavior of consumer subgroups, with respect to life insurance utilization. The findings of which may be of interest and helpful to both academics and industry professionals.

2 A Primer on the Evolution of Life Insurance within the United States

"Don't become a mere recorder of the facts...

try to penetrate the mystery of their origin." - Ivan Pavlov

2.1 Burials to Bequests

2.1.1 Burial Clubs and Friendly Societies

During the times of Ancient Rome (around 600 BCE), the manner in which one was buried was a significant signal of social status, reflecting the station the individual held in life as well as conveying their anticipated spiritual status in the afterlife. Costs for desired burials were typically too high for those outside nobility, so burial clubs formed to fund burial costs for those affluent enough to afford membership. By collecting dues paid through routine deductions from pay, these clubs would then establish and fund respectable burial practices for the covered person upon the individual's death (Johnston and Johnston, 1932).

As societies evolved beyond Ancient Rome, so too did the structures of burial/funeral insurance. By the 15th and 16th centuries, it was not uncommon for burial clubs or friendly societies to be utilized throughout Europe and British colonies, with some at times offering the added benefit of an additional payout to surviving family members (Walford, 1871).[1] One of the earliest documented life insurance contracts on record covered the life of a man named William Gibbons in England and began on June 18th, 1583. Richard Martin purchased the contract covering Mr. Gibbons' life, and it had 16 underwriters.

[1]One of the first friendly societies in the American colonies was The Friendly Society of Charleston, SC, established in 1735 (Nelli, 1976).

Mr. Martin purchased the one-year life insurance policy, valued at £384, for £48.[2] Mr. Gibbons passed away on May 29th, 1584, 20 days before the expiration of the one-year contract. The underwriters attempted to avoid payment by arguing in the courts that the policy's term length had expired before Mr. Gibbons passed away. They argued the coverage was intended to be measured as 12 months, using 28 days as the length of each accounted month, spanning 336 days, versus a Gregorian calendar measured at 365 days. The underwriters argued Mr. Gibbons had just survived the term of the agreement, as he passed away 345 days after the contract began. The courts ruled in favor of Mr. Martin which resulted in a full payout by the underwriters. Therefore, the policy on Mr. Gibbons is not only novel for being one of the first life insurance policies on record, but the case law it produced helped to establish precedent for legality surrounding future life insurance contracts (Walford, 1871; Clark, 1999).

2.1.2 The First Life Insurer in the American Colonies

In a natural progression of British practices evolving within the American Colonies, so too did the concept of insurance. The first life insurance company established in the American Colonies, commonly referred to as the Presbyterian Ministers' Fund (PMF), was approved as a corporation by the State of Pennsylvania in 1759 (The Historical Society of Pennsylvania, 2008).[3] Though the charter was approved in 1759, the wellspring of monetary funds from which the PMF was created can actually be traced back to the early 1700s, as can the critical role religious and spiritual beliefs continued to play in the development of life insurance over

[2]For reference, the £384 value of the first documented life insurance policy in 1583 would have been worth between £65,000 ($79,844) to £75,000 ($92,128) in present day currency power (The National Archives, 2017).

[3]The first property insurance company, The Philadelphia Contributionship, was established in 1752, with Benjamin Franklin being one of its co-founders. It offered indemnification for financial losses caused by fire, and is still in business present day as the longest tenured insurance company in the United States (The Historical Society of Pennsylvania, 2008).

time.[4] In 1717, a committee of Presbyterian officials, the Synod of Philadelphia, established a fund to help financially protect Presbyterian ministers and their families, naming it the "Fund for Pious Uses".[5] During its first few years, this fund focused on supporting those in newly established Presbyterian congregations primarily in New York. In an effort to maintain fund solvency, ministers focused their fundraising efforts on obtaining donations from the wealthiest within their congregations (Brackenridge, 1999). In 1719 the Synod decided, for the first time, to use the fund to financially assist a widow of deceased Presbyterian reverend (Konkle, 1928).[6] The presence of Presbyterianism grew throughout the colonies and by 1735, the PMF had over 30 subscribing congregations throughout Pennsylvania, New York, New Jersey, and Delaware (The Historical Society of Pennsylvania, 2008). However, as the number of subscribers and subsequent balance of the fund grew, so too did requests for payments. Despite the ministers' fundraising efforts, demand remained greater than supply. In 1738, the Synod began assessing all ministers an annual amount of 10s (shillings) each (an approximate converted and adjusted present day value of $72), which they could either pay directly from their personal accounts or pay via a direct pass through to the fund from congregational donations.[7] The Synod also restructured the PMF by requiring the selection of one minister from each presbytery to serve on the Synod committee responsible for fund distribution decisions. These changes, along with a helpful donation from the Church of Scotland, stabilized the fund. By the early 1740s the balance of the PMF had reached

[4]The PMF's pre-American Revolutionary war incorporation date in 1759 makes it one of the oldest corporations in America to survive into modern history before it was acquired in 1994 by Provident Mutual Life Insurance Company (The Historical Society of Pennsylvania, 2008).

[5]This original "Fund for Pious Uses" was established in 1717 with an opening balance of £18 (an approximate converted present-day value of $2,500). After the PMF incorporated in 1759 they again used the same fund name for one of its two new funds (Brackenridge, 1999).

[6]The initial payment to "Widow Wilson", the widow of Reverend John Wilson, in 1719 was somewhere between £4 and £7 (approximate converted and adjusted present-day values of $564 and $812, respectively), with annuitized payments of similar amounts disbursed annually over the next seventeen years (Brackenridge, 1999).

[7]For perspective, £1 in the American Colonies at the time was worth 20s (shillings) (an approximate converted and adjusted present day value of $144). The average annual salary of a Presbyterian Minister was generally about the same as a Philadelphia seaman, approximately £60 (a converted and inflation adjusted present day value of approximately $8,600). This was comparatively lower than other professionals at that time (Brackenridge, 1999; The National Archives, 2017).

approximately £600 (worth approximately £2,100, or $2,585, present day) (Brackenridge, 1999).

2.1.3 The Creation of Modern-Day Life Insurance

In 1754, the assistant treasurer of the PMF and one of its ministers, Dr. Francis Alison, proposed a redesign of the fund structure to instead offer life insurance to its ministers in place of disbursing charitable grants upon request.[8] Alison's idea was inspired via correspondence with Scottish clergy who had successfully established the Widows' Fund of the Church of Scotland in 1743 (Mackie, 1956; Dow, 1971). Utilizing mortality tables created by Edmond Halley,[9] Scottish clergyman Dr. Robert Wallace,[10] and Dr. Alexander Webster,[11] as well as esteemed mathematician Colin MacLaurin,[12] created estimates based on demographic survey information collected from all the presbyteries comprising the Church of Scotland (Clark, 1999). These actuarial analyses serve as the building blocks for the actuarial work that has continued to evolve and is utilized within the life insurance industry present day (Mackie, 1956; Dow, 1971; Brackenridge, 1999; Clark, 1999; Sakamoto and Tanaka, 2003).

[8]It is believed Dr. Alison was the first American to receive a Doctorate from a European University, a Doctor of Divinity degree from Glasgow University in Scotland, bestowed upon him while he lived in Pennsylvania during 1756. Before immigrating to Pennsylvania in 1735, he had achieved a master's degree in 1733 from the University of Edinburgh. Also of note, Alison had previously served as a tutor within the family of John Dickinson, an American politician whose many roles included being a founding father of the United States, a participant in the First and Second Continental Congresses (which the PMF would go on to invest in), a member of the Pennsylvania State Legislature, and three terms as the President of Pennsylvania (The Historical Society of Pennsylvania, 2008).

[9]The mortality tables Webster, Wallace, and MacLaurin worked with were constructed via induction, and published in *Philosophical Transactions* in 1693, by the famed astronomer and mathematician Edmond Halley. Building on the statistics and demography science published in 1662 in the book entitled *Natural and Political Observations Made upon the Bills of Mortality*, Halley used information from the registers of Breslau, Poland to incorporate two critical elements for actuarial analysis, mortality and compound interest (Bacaër, 2011; Mackie, 1956; Wilson, 2018).

[10]Known for being a gifted mathematician and theorist on human population, one of Dr. Wallace's many notable works includes the Law of Propagation. In his works, he argued the poor expected financial positions of surviving wives and children of deceased men was holding back population growth (Dow, 1971; Sakamoto and Tanaka, 2003).

[11]Dr. Webster not only helped establish the Widows' Fund of the Church of Scotland in 1743, but he also oversaw the maintenance of the fund until his death in 1784. Interestingly, he also oversaw the first census of Scotland around 1755 (Dow, 1971).

[12]The Maclaurin Series, a special case of the Taylor Series in mathematics, is named after its creator, Colin MacLaurin.

2.1.4 Incorporation of the First American Life Insurer

The Synod of Philadelphia accepted Alison's proposal and restructured the fund to resemble the life insurance fund in Scotland. In an effort to organize and legitimize their efforts, PMF founders Alison, Reverend Robert Cross,[13] and William Allen,[14] along with other ministers from the Synod and local merchants functioning as corporation officers, worked to have the charter legally approved for the creation of "The Corporation for the Relief of Poor and Distressed Presbyterian Ministers and of the Poor and Distressed Widows and Children of the Presbyterian Ministers" (Nelli, 1976). The charter for this first American life insurance company was approved in 1759 by the Proprietaries and Governors-in-Chief of the Province of Pennsylvania, the Penn brothers, Thomas and Richard.[15] The Synod company remained separate from the newly incorporated life insurance company, however they maintained a cooperative relationship as the PMF benefited from the Synod's foundation efforts in a type of internal capital market (The Historical Society of Pennsylvania, 2008).

2.1.5 The First Life Insurance Policies Sold

Eventually renamed the "Presbyterian Ministers' Fund" (PMF), the corporation initially created two funds, the "Widows Fund" and the "Fund for Pious Uses" (Mackie, 1956; Nelli, 1976).[16] The PMF accepted annual premiums that would then pay annuities to the covered individual if they were sick or ailing or pay a lump sum directly to their families upon death. Ministers could choose to pay a premium between £2 to £7 a year (present day

[13]Reverend Cross was President and Senior Minister of the First Presbyterian Church.

[14]William Allen was the Chief Justice of Pennsylvania, the first Grand Master of the Grand Lodge of Free Masons of Pennsylvania, one of Benjamin Franklin's primary benefactors for over two decades, and among the most powerful people in the history of colonial Pennsylvania (Nelli, 1976; Berry, 2011).

[15]Benjamin Franklin is sometimes misattributed as a co-founder of the PMF. He was certainly well acquainted with the founders, however his only official professional relationship with the PMF existed because his printing shop did print work for the PMF. To his credit, Franklin had worked to call attention to the dire financial needs of widows and orphans, and discussed the idea of annuitized financial payments to support them, in his Silence Dogood letters written and published in 1722 (Nelli, 1976; Biggs and Richardson, 2014).

[16]The fund would undergo several name iterations over the years, with its most commonly referenced name being the Presbyterian Ministers' Fund (PMF), as approved by its board in 1888 (The Historical Society of Pennsylvania, 2008).

values of approximately $250 and $872, respectively), and upon his death, either his widow or a combination of his widow and children would receive a payment about four to five times the premium amount contributed. The policies were whole life contracts with level premiums, and though no medical exam was required, general good health was a requisite for participation in the fund. This "general good health" was determined simply by appearing in person before the Board for their visual assessment. Though the PMF's contract design was inspired by the Widow's Fund of the Church of Scotland (aka, The Scottish Ministers' Widows' Fund), premium amounts charged by the PMF were not related to the age of the insured.[17] The PMF and The Scottish Ministers' Widows' Fund were similar however, in that they both utilized reserve funds for investments. Their innovative utilization of reserves to fund investments differentiated both the Scottish Ministers' Widows' Fund and the PMF from any previous pay-as-you-go life insurance schemes, which had all previously functioned without accumulating reserves or investing funds (Dow, 1971; Sakamoto and Tanaka, 2003; Ferguson, 2009).[18] The PMF sold its first life insurance policies to 21 Presbyterian ministers on May 22, 1759.[19] The data from those first purchasers of life insurance within the United States can be found in Table 1. There were a total of 15 death claims, and the one cashed out policy was cashed out 31 years into the policy (Mackie, 1956; Brackenridge, 1999).

Initial sales of PMF life insurance contracts were sluggish and the fund began to face solvency concerns as only 36 more ministers would go on to purchase policies between 1763 and 1789.[20] Of those 36 policies, 27 (75%) of them would go on to lapse. The low demand for life insurance during those early years is likely due to the combination of relatively low

[17]The PMF did not incorporate age into their actuarial practices until the 1860s (The Historical Society of Pennsylvania, 2008).

[18]The initial fund for widows and orphans in Scotland, which preceded the Scottish Ministers' Widows' Fund, was established as a pay-as-you-go system in 1711 by the Bishop of Edinburgh (Dow, 1971).

[19]Francis Alison was notably among the group of the first 21 purchasers of life insurance in America. He paid $336 (approximately $11,100 present day adjusted for inflation) for his policy, and upon his death in 1779 (20 years later), his family received $1,213.33 (approximately $40,000 adjusted for inflation) from the fund (Mackie, 1956).

[20]For several decades, the PMF only offered this whole life type of life insurance contract. It would remain their only life insurance policy available for sale for 60 years, until around 1820 (Mackie, 1956).

wages received by ministers, economic instability surrounding the turmoil of the American Revolution (including high inflation rates), and Christian perceptions of life insurance during the 1700s (Zelizer, 1979; Brackenridge, 1999).

2.1.6 Christianity: Initially a Negative Determinant of Life Insurance Demand

Zelizer (1978) describes how during this early period of life insurance sales in the late 1700s through the early 1800s, it was common for Christians to regard life insurance in a very negative light. Concerns surrounding the utilization of life insurance included the fear of appearing to lack confidence in God's provincial care, fear that purchasing life insurance was akin to the sin of gambling, and, from wives in particular, the viewing of life insurance proceeds as "blood money". Christian women were vocal in their disdain against life insurance and viewed the receipt of life insurance proceeds as a sinful way to benefit from calculations against their husbands' lives (Zelizer, 1978, 1979). Despite these challenges, the PMF remained operational, in large part due to continued foundation efforts in Great Britain. Fundraising efforts by Charles Beatty across England and Scotland resulted in sizable donations from the churches and congregations he visited (Beatty, 1769; Mackie, 1956; Smith, 1964; Brackenridge, 1999). Fundraising under the umbrella of both PMF funds, Beatty (1769) journaled how he was able to grow the funds' balances by requesting donations not only for the financial protection of the Synod's ministers and their families, but also to support evangelical activities to convert the "savage Indians" of America [his words] to Christianity. Throughout this time period the life insurance industry still experienced growth, as would-be competitors were not thwarted by the financial challenges experienced by the PMF. From 1787 to 1837, more than 25 commercial life insurance companies were incorporated, though only a few would prove to be successful (Nelli, 1976). The life insurance industry was beginning to take shape in America, but it still needed to find its footing.

2.1.7 Early Solvency Strategies and Institutional Investments

Throughout the American Revolutionary War the PMF maintained operations, even backing American independence efforts by loaning £5,000 (an approximate converted and adjusted present day value of $525,000) to the Second Continental Congress in May of 1777 (The Historical Society of Pennsylvania, 2008). The economic instability and high rates of inflation across the country resulted in high-risk investments by the PMF.[21] The PMF invested in unsecured personal bonds, mortgage bonds secured by real estate, local business ventures, and select individuals (including two of its own Directors). These investments yielded overall losses for the PMF and required the liquidation of land holdings to maintain solvency (Mackie, 1956). Fund solvency was also challenged due to the actuarially incomplete premium structure the PMF continued to utilize. By not factoring in the age of the insured in the calculation of the premiums, it was not uncommon for the PMF to annually pay out more on policy triggers than the fund was able to bring in via premiums (Mackie, 1956).

2.1.8 Christianity Becomes a Positive Determinant of Life Insurance Demand

Struggling to maintain solvency, the PMF again requested aid from the Synod. As support for ministers and their families was still quite high, the Synod agreed to help. It was during this same time, just after the Revolutionary war had been won, that the Presbyterian church was working to create and adopt its General Assembly as a means to strengthen itself and expand across the western United States. The American Presbyterian Church adopted its General Assembly in 1789, and it became its highest governing body (Funk, 1924). As part of the agreements the church had established with the PMF, some of the many policies included within the General Assembly constitution included the donation and clergy requirements that had originally been established by the Synod in the 1740s. This

[21] The fledgling country experienced inflation rates as high as 29.78% during its earliest years as it worked to stabilize a new currency, pay off war debts, and combat currency devaluation caused by massive counterfeiting challenges (Smith, 1994; Williamson, 2022).

action solidified PMF participation and donation requirements as binding mandates within the Presbyterian Church (Mackie, 1956; Brackenridge, 1999). Zelizer (1978, 1979) shows how adoption of life insurance purchasing and participation requirements by the Synod, as well as church messaging encouraging the utilization of life insurance, helped create the resulting social innovation of the acceptance around the owning of life insurance. Zelizer convincingly argues the church's actions successfully ritualized money as a normal association with the value of a life.

2.1.9 Insurers Refine their Marketing Practices

Since the times of Ancient Rome through the beginnings of life insurance in the United States, spiritual beliefs and religious customs were primary determinants driving the demand for burial insurance and, eventually, life insurance. Though Christianity initially had negative effects on life insurance demand during its earliest years in the United States, the life insurance industry found a way to thrive in a Christian dominated consumer marketplace. A simultaneous shift in the relationship between the PMF and church governance, including a revision in church doctrine and messaging in how to view life insurance, aided in increasing demand of life insurance policies by Christian consumers (Zelizer, 1979; Stark and Mccann, 1993; Brackenridge, 1999).

Stalson (1938) describes how, throughout the 1800s, life insurance companies learned how to develop and optimize their marketing activities. Though they did employ salespeople, those individuals were typically part-time employees who held other jobs and waited for customers to come to them. The salespeople received training that consisted of instruction manuals and lectures covering laws on mortality, compound interest, and pertinent rules and regulations (Alborn and Murphy, 2013). In an effort to intrinsically motivate their salespeople, life insurers typically included an evangelical perspective within the training manuals they produced. This provided motivation for the salesperson, encouraging them to

enthusiastically convert the individuals in their personal lives into customers on the basis of providing for their own families benevolently and piously (Zelizer, 1979). Marketing practices aimed at increasing life insurance sales during the second half of the 1800s also began incorporating messages of religiosity and moral persuasion within insurer advertising (Zelizer, 1978). Advertising in the form of magazine articles, paid for by life insurers and aimed at the general public, continued to focus on the dutiful act of purchasing life insurance for those left behind, as well as for reducing the burden on communities overall by reducing poverty and crime rates (Zelizer, 1979; Bouk, 2011, 2015; Mulder, 2020). By the mid to latter part of the 1800s, purchasing life insurance became the morally just and religiously proper action to take, as a result of a shift in Christian consumers' attitudes toward life insurance beyond that of pure utilitarianism. Instead of viewing the purchasing of life insurance as going against God's provincial care, the idea of leaving a financial bequest, tied to the value of an individual's life, was instead beginning to be viewed as a benevolent and pious action to ensure family members surviving beyond one's own death were cared for (Mackie, 1956; Zelizer, 1978, 1979; Batra and Ahtola, 1991; Brackenridge, 1999).

2.2 Historical Regulation of the U.S. Life Insurance Industry

2.2.1 The Industry Works to Find Its Footing

Though perceptions and attitudes of consumers had begun to shift toward acceptance of life insurance ownership, solvency challenges continued to trouble the blossoming life insurance industry into the early 1800s.[22] However, the successes of only a few life insurers within

[22]Some of the surviving insurance companies from this time frame whose operations survived to present day include the Insurance Company of the State of Pennsylvania and the Insurance Company of North America (originally the Universal Tontine Association). Both companies officially had their charters incorporated in the State of Pennsylvania in April, 1794. In 1812 Pennsylvania awarded the first commercial insurance charter to The Pennsylvania Company for Insurance on Lives and Granting Annuities, however its charter also allowed it to function as a bank and trust company, and by 1872 it was no longer selling insurance. After a series of mergers and acquisitions it functions present day as Wells Fargo. (Stalson, 1938; Nelli, 1976; The Historical Society of Pennsylvania, 2008; Swiss Re, 2017)

the industry were enough to attract many more companies to jump into the marketplace. By 1820 New York State alone had incorporated 17 stock life insurers. There was also a significant growth in the number of mutual insurers during the 1840s, with their growth in numbers surpassing those of stock life insurers in 1843. After the 1837 financial panic, mutual insurers had greater access to capital markets than their stock form counterparts (Rousseau, 2000; Murphy, 2002; Knodell, 2006).[23]

2.2.2 Selling Life Insurance to Women

Prior to the 1830s, married women were legally forbidden from entering into legal contracts, and when a woman married, anything she had previously owned became the property of her husband.[24] When a husband passed away, all his assets (which included his wife's former possessions from before the marriage), as well as any life insurance proceeds were first used to pay off debts and creditors before she received anything. It was not uncommon for wives to be left financially destitute once all accounts had been settled (Heen, 2011). In 1839 regulations began to change throughout states to allow for the direct payout of insurance benefits to wives (Murphy, 2010; Heen, 2011).[25] The regulation changes allowed life insurance benefits to bypass the probate processes of estate law and therefore bypass creditors, allowing wives to receive full policy payouts. During this same time statutory regulation changes also began to allow married women to own property and enter into legal contracts of their own accord. These changes resulted in wives being able to purchase life insurance policies on their husbands as well as on themselves. Heen (2011) notes the pricing

[23]Mutuals at this time required little initial capital and relied on premium payments to pay policy claims. Between 1838 and 1846 only one stock life insurer successfully raised the required capital for incorporation (Murphy, 2002). As discussed later, in 1849 stock insurers worked to update regulations to level the playing field between stocks and mutuals.

[24]This subsummation of legal rights and wealth transfer to husbands by wives was known as coverture. Women who came from the wealthiest of families might have had their financial futures safeguarded in the form of trusts, however this was not a common occurrence for most wives (Heen, 2011).

[25]Though many states began to make changes throughout the 1840s, it would take decades for all the states to "catch up" with these updates, with regulation changes continuing through the 1890s (Heen, 2011).

on women's policies was initially cost-prohibitive, with prices being significantly higher than those for men, especially so for women still of child-bearing age.[26]

By the 1870s, life insurers (especially those that sold small industrial policies) began to focus on bringing working women on as new customers via updated marketing messages and strategies (Heen, 2011).[27] The insurers' strategies were successful, and business began to grow at a significant rate. The total face amount of life insurance policies in force in the United States was $300,000 in 1830 and blossomed to nearly $5 million in 1840 (the adjusted for inflation present day values are $9,808,590 and $17,440,095, respectively). The value of policies in force, held by a total of 48 life insurance companies, would grow even more significantly the next ten years, increasing to nearly $100 million by 1850 (an adjusted present day value of approximately $3,861,241,743). Three companies, Mutual Life Insurance Company of New York, Mutual Benefit Life Insurance Company of New Jersey, and Connecticut Mutual Life Insurance Company, accounted for over half of the total amount in force. The next 50 years would see continued growth, with nearly $14 billion (an adjusted present day value of approximately $502,720,393,120) of life insurance in force by 1900 (Nelli, 1976; Murphy, 2002, 2010; Alborn and Murphy, 2013).

2.2.3 Distrust of the Life Insurance Industry and its Salespeople

The industry was not all rainbows and butterflies for life insurers, however. Another likely contributor to the growth of the industry was the development and adoption of the agency system. A primitive version of the agency system was first introduced by New York Life and Trust Insurance Company in the 1830s (Woods, 1912). They initially used agents solely to function on behalf of the company as inspectors, and subsequent approvers, of potential

[26]Murphy (2010) goes on to describe that toward the end of the 19th century, insurers began utilizing unisex rates for life insurance, and higher rates to women for annuities.

[27]The industry also began employing women as insurance agents with some building their own insurance companies. Sabina "Bina" May (West) Miller started the "Women's Benefit Association" insurance company in 1892. Her organization sold life insurance and performed financial planning services for women struggling financially. (Blundell, 2011).

policyholders. The agents would receive $1 (an approximate adjusted present day value of $33) for each new policy, paid directly by the policyholder, and typically passed the entire amount to the medical examiner as payment for assessing the individual. The agent would also earn a commission however, receiving 5% both on the initial sale amount of the policy as well as on any subsequent premium payments. Other companies also began utilizing agents and their roles began to expand beyond simple inspectors, growing to include the solicitation of insurance contracts. By the late 1840s a typical commission from a life insurer to an agent was 10% on the initial sale amount and 5% on each subsequent premium payment (Woods, 1912). With the significant growth of the industry throughout the 1830s and 1840s, some life insurance companies, and their agents began to adopt practices that were either fraudulent or irresponsible (Murphy, 2010). Overselling insurance, selling an individual significantly more coverage than could be afforded or was needed, became a common practice, and many life insurance companies were not adequately managing their solvency which resulted in their customers losing all their investments. These practices resulted in a growing and significant distrust of the life insurance industry and life insurance salespeople (Murphy, 2010).

Stock life insurers wishing to shore up investor confidence began to lobby for regulations limiting the operations of mutual life insurers, who lacked the market discipline motivation of their stock counterparts. These efforts resulted in numerous states enacting legislation restricting activities of life insurers, affecting the types of products offered, reserve requirements, and rules affecting investment decisions. An example of this includes the New York state legislature passing a law on April 10, 1849 requiring any insurance company wishing to begin doing business in New York state to have $100,000 (the adjusted present day value is approximately $3,861,241) of capital stock, and it would go on two years later to require all life insurance companies to deposit $100,000 with the Comptroller of New York (Murphy, 2002).

2.2.4 The General Agency System

To both abide by, as well as leverage, the regulation changes that occurred throughout the mid to late 1800s, life insurers began to adopt and implement innovative marketing techniques and processes. This included a more consistent use of a generalized agency system throughout the industry by the 1850s and 1860s. Many states adopted new statutory regulations requiring any out-of-state insurer to have at least one in-state citizen serve as the company's legal representative with power of attorney. Life insurers typically appointed their lead selling agent in each respective state for this role within their organization, and this role eventually morphed into the role known as the general agent who would oversee all the other agents in their territory and functioned with pronounced autonomy (Woods, 1912; Stalson, 1942). As the industry continued to grow it became common for the general agents to receive significantly higher commissions, typically in the range of 25-60% on the initial sale and 10% for renewal premiums, as well as additional financial support for operations and advertising (Woods, 1912). Stalson (1938) argues these marketing and agency innovations throughout the life insurance industry contributed significantly to its exponential growth throughout the mid to late 1800s. Murphy (2010) however, argues that the unchecked autonomy wielded by general agents, along with the conflict of interest their earnings structure created, contributed significantly to continued corruption within the industry.

2.2.5 Paul v Virginia: Insurance is Not Interstate Commerce; For Now.

Following the U.S. Civil War (1861-1865), problematic business practices continued to persist. Advertising campaigns promoted misleading and exaggerated claims, appropriate levels of reserves were not being held by the insurers (leading to higher rates of insolvencies), and questionable accounting practices (such as declaring dividends that had not been earned) became more common. It was not uncommon for life insurers to declare bankruptcy, leaving their customers exposed and with losses every time a bankruptcy occurred. To protect

consumers, an increasing number of states began to establish state agencies to regulate insurers which could include reserve requirements, tax obligations, and additional financial reporting requirements. Insurers pushed back against these oversights in 1866, challenging states' authority in Congress, and the insurers lost (Webel and Cobb, 2005).

In 1868 the insurance industry argued to the U.S. Supreme Court in Paul v Virginia that insurers were entitled to the same protections as citizens under the U.S. Constitution, which should then result in insurance contracts being considered articles of commerce under the Commerce Clause.[28] The Supreme Court found the Commerce Clause did not apply to insurance contracts, determining that corporations are not entitled to the same protections as citizens. This allowed states to tax and regulate insurers, and set the precedent that Congress had no authority over the regulation of insurance policies (Webel and Cobb, 2005). It is also notable that though the life insurance industry was plagued with issues of reputability and consumer confidence, it continued to grow. The amount of life insurance in force during 1862 was $160 million and by 1870 it was $1.3 billion (approximate adjusted present day values of $4,796,652,307 and $30,038,324,110,respectively) (Murphy, 2002).

2.2.6 The Direct Agency/Branch Office System

The National Association of Insurance Commissioners (NAIC), discussed in greater detail later in this essay, was established in 1871 to help protect consumers via regulatory oversight of the insurance industry within the United States. While the NAIC still helps to guide regulation oversight present day, initially it had little oversight of life insurers. Pennsylvania, the state which housed the first ever life insurance company, established the Pennsylvania Insurance Department under the Act of Assembly on April 4, 1873, and reorganized under the Insurance Department Act of May 17, 1921 (Pennsylvania Insurance Department, 2021).[29]

[28]The Commerce Clause refers to Article 1, Section 8, Clause 3 of the U.S. Constitution. It places authority on Congress to "regulate commerce...among the several States" (United States Constitution, 1787).

[29]New Hampshire was the first state to establish an agency to regulate insurance in 1851 (Webel and Cobb, 2005).

Though state and external regulatory agencies worked toward stabilizing a blossoming industry by protecting consumers from suspect companies and their fraudulent practices, it appears that there were still those who continued to use the industry as a tool for their own wealth gain and extravagant spending. The rapid economic growth within the industry (and nation at that time) paired with general lack of managerial oversight on the handling of extremely large sums of capital, created a recipe for corruption that many could not resist (Keller, 1963). During the 1890s, New York Life was the first company to rebuild its agency system from a general agency system to a direct agency system in an effort to rein in what were considered corrupt activities being carried out by some general agents. It replaced the general agent role with a salaried manager who reported directly to the corporate office. By 1905 New York Life had 255 salaried agency directors. Most life insurers followed suit adopting this type of direct agency system, with some calling it a branch office system (Woods, 1912). The Equitable Life Assurance Society of the United States continued with the general agency system however and would maintain the utilization of that system for a few more decades to come. Much was about to change for Equitable, however, as it became the focus of an investigation in the early 1900s. The Armstrong Investigation, also known as "the upheaval of 1905" and the subsequent regulation resulting from it helped to shape the life insurance industry into what it is present day.

2.2.7 The Armstrong Investigation

By 1900, one of the largest life insurance companies within the United States, the Equitable Life Assurance Society of the United States (ELASUS), had acquired over $1 billion (an adjusted present day approximated value of $35,908,599,508) in assets (Henretta, 2006). Numerous complaints of corruption against ELASUS had been received by the New York Insurance Department, lodged by both consumers as well as other insurers. These complaints were taken up together into one investigation by the New York State Legislature in 1905 when it came to light that the then Vice President of ELASUS had charged the costs of

an extraordinarily extravagant costume ball to the corporate account. The "Joint Committee of the Senate and Assembly of the State of New York to Investigate and Examine into the Business and Affairs of Life Insurance Companies Doing Business in the State of New York", informally known as the Armstrong Committee, was spearheaded by New York State Senator, William Armstrong.

The Armstrong Committee conducted 51 investigative sessions. The lead legal counsel throughout the investigation was Charles Evans Hughes.[30] Upon the investigation's conclusion, the committee's findings revealed extensive corrupt practices within ELASUS, as well as within many other life insurance companies (Keller, 1963). Hughes and his team found evidence of significant abuse of private power such as nepotism tied with extravagant salaries; the use of proxy votes to improperly maintain directorial and executive positions; improper financier actions; consistently declining dividend returns; highly disproportionate marketing expenditures; and investment and political activities of "doubtful propriety" with payments found to journalists, lobbyists and legislators serving throughout the country (Keller, 1963).

The final recommendations by Hughes via the Armstrong Committee resulted in the resignation or firing of the majority of the top-ranking executives in the top three life insurance companies at that time. The Armstrong Committee findings also resulted in significant legislation change, not only in the State of New York, but in many other states as well. Eight New York statutes were updated to reflect the adoption of the Armstrong Committee recommendations, which included restrictions on policies with lengthy deferred payouts including tontines, a prohibition of political campaign contributions by life insurance organizations, and the barring of life insurers from owning corporate stock, underwriting securities, or en-

[30]In an attempt to remove Charles Evans Hughes as lead counsel from the Armstrong Investigation, culpable Republican legislators nominated him as the party's candidate for Mayor of New York City. Hughes refused the nomination. After succeeding as lead counsel in the Armstrong Investigation, Hughes would go on to become a two-term Governor for New York, Secretary of State for the United States, and a Supreme Court Justice. One of his many legacies was being consistent in fighting against corruption throughout his career. He played instrumental roles in regulations, agreements, and decisions which all had significant effects on the economic policies within the United States (Henretta, 2006; Novak, 2006).

gaging in other banking practices (Henretta, 2006; Novak, 2006).[31] Changes in marketing messages and processes also occurred throughout the entire life insurance industry in response to the legislation changes that resulted from the Armstrong Investigation (Stalson, 1942). Between 1907 and 1909 most states would adopt regulations working to minimize corruption within the life insurance industry, primarily by restricting investments to prevent financial abuse. As a result, the majority of stock life insurers converted to mutuals and changed their entire way of doing business, focusing solely on the business of insurance (Keller, 1963). Keller (1963) attributes this refocusing onto the business of insurance, to the next level of significant growth the industry would go on to achieve.

2.2.8 U.S. v South-Eastern Underwriters Association: Interstate Commerce

In 1944, a judgement by the U.S. Supreme Court resulted in nationwide confusion for insurers regarding the federal oversight bounds on the insurance industry. In response to an under-the-table bribe scheme around rate setting agreements between fire insurers and state regulators in Missouri, the Attorney Generals for both Missouri and the United States together obtained a criminal indictment against the South-Eastern Underwriters Association for violation of federal antitrust laws. In the *U.S. v South-Eastern Underwriters Association*, the Supreme Court judged the federal court did have jurisdiction over insurers.[32] They stated insurance was a form of interstate commerce and therefore, Congress had authority under the Constitution to regulate it under the scope of antitrust laws. This judgement was

[31] A tontine, which was named after an Italian financier (Lorenzo de Tonti) and was first adopted by the Netherlands in 1670 and subsequently by Paris in 1689, is a blend of an insurance concept with an investment/gambling concept. Though it is still utilized in parts of Europe present day, it does present significant ethical concerns. Each subscriber pays an agreed sum into the fund, and typically goes on to receive an annuity from said fund. As members pass away, their existing interest within the fund transfers to those participants still living, thereby increasing the value of the annuity payments. The fund terminates on the death of the last member. Originally introduced into the United States in 1868 by the Equitable Life Assurance Society of the United States, about 65% of life insurance in the United States was some form of a tontine arrangement by the time the Armstrong Investigation began in 1905 (Ransom and Sutch, 1987).

[32] This judgement affected all insurers regardless of line of business. Even though the original suit involved property/fire insurers, the subsequent judgement affected all insures, including the life insurance industry.

communicated without any reference to *Paul v Virginia*, which resulted in confusion and uncertainty among insurers and state regulators alike (Webel and Cobb, 2005).

2.2.9 The McCarran-Ferguson Act

Much debate ensued regarding whether insurers should be regulated at the state or federal level (Merkel, 1991). The debate was settled in 1945 when Congress passed the McCarran-Ferguson Act, which had been introduced by Senators McCarran (Nevada) and Ferguson (Michigan) and originally drafted by the NAIC (Webel and Cobb, 2005). The McCarran-Ferguson Act established states' rights to tax insurance policies and limited the application of federal antitrust laws. The McCarran-Ferguson Act encouraged states to implement their own laws, using guidance from the NAIC. The Act, which is still the precedent for insurance legislation present day, provides a loophole for federal antitrust oversight should a state fail to adequately maintain its own regulation around the insurers doing business in their respective state. Guided by the Model Unfair Trade Practices Act adopted by the NAIC in 1947, all states implemented their own appropriate regulations by 1951 (National Association of Insurance Commissioners, 1947). Within these regulations each state's department of insurance primarily focuses their attention on the insurers domiciled/headquartered in their own state, however each state does have business rights over any insurer conducting business within their state (Grace and Klein, 2006).

2.2.10 The Gramm-Leach-Bliley Act

The Gramm-Leach-Bliley Act (GLBA), also known as the Financial Services Modernization Act of 1999 was enacted to primarily address the financial services industry, and its effects were felt throughout the insurance industry.[33] The act repealed the Glass-Steagall

[33]The GLBA's (1999) repeal of the Glass-Steagall Act (1933) was in response to Citicorp's merger with Travelers Insurance Group, resulting in Citigroup. The result allowed insurers, banks, and securities firms to affiliate under a financial holding company structure.

Act of 1933 which had prohibited commercial banks from offering financial services such as investments and insurance related services. The GLBA enactment therefore allowed for more competition from commercial banks and also made mergers and acquisitions between commercial banks and insurers a possibility. Another facet of the GLBA was that insurers, banks, and securities firms were required to fully explain their information-sharing practices to their customers. These firms now had to allow their customers the opportunity to opt-out of having their sensitive information shared. It also tasked these firms with safeguarding their customers' sensitive data. Some economists credit the GLBA for paving the way for the changes within financial conglomerate structures that allowed for investments in sub-prime lending, mortgage fraud, and predatory lending practices that culminated in the 2007-2008 financial crisis.

2.2.11 The Dodd-Frank Act

In response to the 2007-2008 financial crisis, the Dodd-Frank Wall Street Reform and Consumer Act was enacted in 2010 to address abuses in the financial services industry, including insurers. It created the Financial Stability Oversight Council (FSOC) and aimed to reform the financial services industry, deal with destabilizing practices of commercial banks, investment firms, mortgage companies and credit-rating agencies, and provide protection for consumers. Though the landmark regulation retained state regulation of insurance, the act also established the Federal Insurance Office (FIO), an entity that reports to Congress and the President on the insurance industry.

2.3 Present-Day Industry Regulations: As Insurers and Institutional Investors

2.3.1 The NAIC

As referenced earlier, the NAIC was developed in 1871 to oversee the regulation of the insurance industry within the United States. Initially it functioned as a private and completely voluntary association comprising the insurance commissioners from the states, Washington D.C., and each American territory. The NAIC, which is organized as a Delaware corporation headquartered in Kansas City, Missouri, helps to protect consumers by working to maintain the financial stability of the insurance industry.[34] It does this by acting as an expert resource for insurance regulators in overseeing matters affecting the industry including financial, actuarial, legal, technology, marketing, and economics. Through 1967 these efforts were financially supported by the participating states with the volunteer work being done by the respective support staff from the insurance offices from each participating state and territory. In 1968, a support and services office was created to wholly support the NAIC, shifting its efforts amongst both those permanently employed by corporate NAIC as well as volunteers from each state and territory. By 2003, the NAIC had 422 permanent staff positions and a budget of $54 million. The NAIC currently earns the vast majority of its funds by assessing fees (to insurers) for various services and publications (Webel and Cobb, 2005).

2.3.2 Federal vs State Oversight

At present day, only states can charter insurers, and once chartered by a state, the insurer can then work to obtain a license for any other state they wish to do business in. Colquitt, Sommer, and Godwin (2005) find that life insurers tend to obtain their primary

[34]The NAIC also has offices in New York, NY and Washington D.C.

state license in a state with relatively low regulatory stringency. Each state has its own insurance commissioner, director, or supervisor who oversees the state specific regulation of rates, forms, conduct/discrimination, and solvency. In the regulation of rates and forms (fair pricing and what is included in coverage), states play a significant role in the financial health of insurers. States can either elect their own insurance commissioner, or a candidate is nominated by the governor or insurance commission, pending approval by their respective state Senate.[35] As can be seen in Figure 1, Pennsylvania is one of 37 states in which the insurance commissioner is appointed by the governor (Webel and Cobb, 2005).

The debate continues present day around state versus federal regulation. In the 1970s the National Conference of Insurance Legislators (NCOIL) was established (United States Congress, 2001). In 1998, the NAIC created an online system for electronic rate and form filing (SERFF) in an effort to increase speed to market efficiencies for insurers (United States Congress, 2001; Webel and Cobb, 2005).[36]

2.3.3 The Guaranty Fund System

In regard to solvency regulation, at present day the insolvency of insurers is typically low at generally .3% for life insurers (Cummins and Weiss, 2016).[37] These low levels of insolvency have not always existed. In the 1970s insolvencies were increasing at an alarming rate, so the NAIC issued guidelines for a guaranty system as a way to protect consumers with policies at failed insurers. All 50 states and U.S. territories adopted the NAIC guaranty guidelines, and then many states individually modified them. As guaranty programs differ state to state, there is some variability in how they function (such as some lines of business being covered by the guaranty program in one state but not in another). Generally, they function quite similarly. The guaranty program exists to help meet indemnification commitments to

[35]Only New Mexico and Virginia are currently appointed by a commission.
[36]For more information on SERFF, visit http://www.serff.com.
[37]For product line comparison, the insolvency rate for PC insurers is generally around .8%, though this can vary by year (Cummins and Weiss, 2016).

policyholders should an insurer become insolvent (Sommer, 1996). An insurer is required to participate within the guaranty fund for each state in which it is licensed. Unlicensed insurers are typically exempt. When an insurer has been deemed completely insolvent by the state, the guaranty program takes over the role of insurer for any claims that are made, and the state works to match existing policyholders with other (functioning) insurers. The guaranty fund is funded by all the participating insurers within the state. The majority of states function on a post-assessment basis, where existing insurers contribute based on their share of premiums to offset an insolvency within the state that has already occurred (Cummins and Weiss, 2016). The goal of the guaranty fund program is for the policyholder to be indemnified by the guaranty fund for any claims (up to the limits provided by the state guaranty fund) that may arise after the insolvency of their insurer. While the guaranty system is helpful for claimants, it is not a complete solution for the policyholders. Some limitations of the guaranty program include that not all lines of business are covered in every state, there is an upper bound on the funding available from the guaranty fund (it is unable to raise revenue via taxes like the FDIC), and payments can take an extended period of time to process and execute resulting in delays of payments for claims to the policyholder (Sommer, 1996).

2.3.4 Separate Accounts

Per Roth, Krawezyk, and Goldstein (1991), life insurance companies first began offering variable insurance products, which provide a combination of insurance and investment features, to their customers in the 1950s. These contracts became subject to regulatory oversight under federal securities laws, specifically the 1933 Act and the 1940 Act. These regulations meant the variable contracts insurers offered were financial securities, and the investment accounts they created to support the variable contracts were to be treated as investment companies (Roth, Krawezyk, and Goldstein, 1991). To help guide insurers, the NAIC implemented a Model Variable Contract Law in 1977. One primary provision it includes is

that, without regard to income, gains, or losses of the insurer, the income, gains, or losses from assets within a separate account (whether realized or unrealized) shall be credited or charged against the account only. All states would go on to adopt regulations that included the primary tenets of the model law, and established statutory accounting mechanisms to report the separate account's assets and liabilities as a component of the life insurer's general account financial statement (Roth, Krawezyk, and Goldstein, 1991; National Association of Insurance Commissioners, 2020a).

2.3.5 Accounting Practices Specific to the Insurance Industry

The utilization of Generally Accepted Accounting Principles (GAAP), established and maintained by the Financial Accounting Standards Board (FASB), is the method of accounting and financial reporting utilized by a typical American business. Insurance companies however, utilize Statutory Accounting Principles (SAP) for their quarterly and annual reports to insurance regulators within their respective state.[38] The model for SAP accounting regulations was developed by the NAIC to focus on conservatism, recognition, and consistency, with these three pillars supporting the overarching goal of recording specific measures to maintain solvency. Contrasted against GAAP, SAP concentrates on the balance sheet and utilizes more conservative criteria regarding the valuation and admissibility of assets, as well as the measurement of liabilities (National Association of Insurance Commissioners, 2020b).

2.3.6 The Use of Solvency Ratios

The NAIC and states work to decrease insurer insolvencies by monitoring different measure of solvency (Webb and Lilly, 1994; American Academy of Actuaries, 2013). Over time,

[38]Though they do file quarterly and annual statutory reports to insurance regulators, and pay taxes, using SAP accounting, publicly traded stock insurance companies must additionally prepare the accounting information they submit to the SEC using GAAP rules.

different ratios have been developed in an effort to identify insurers potentially on a path toward insolvency. These include the Insurance Regulatory Information System (IRIS) and Financial Analysis Solvency Tools (FAST) measures. Cummins and Weiss (2016) found that insurers eventually learned how to game both those ratios however, rendering them much less useful. The current gold standard used by the NAIC to identify an insurer potentially trending toward insolvency is the risk-based-capital (RBC) ratio. This ratio is defined as total adjusted capital to risk-based capital. It is not intended to reflect financial performance and is designed to be cycle-neutral (American Academy of Actuaries, 2014). The requirement by the NAIC is that insurers maintain an RBC above 2. If an insurer's RBC dips below 2, there are differing triggering points (150%, 70%, and 50%) that automatically result in required action with a goal to conserve and rehabilitate the insurer (drawing up a detailed plan to increase solvency, an internal review by the respective state to decide between rehabilitating or liquidating, or the full takeover by the state, respectively). Just how effective these ratios are in predicting insolvency is questionable, however. Pottier and Sommer (2002) compared RBC and FAST ratios against the private ratings of A.M. Best in relation to insolvency risk, and found the private ratings are significantly more accurate at indicating which firms are at higher risk. Using ratings as a measure of potential insolvency can still pose a challenge. For example, AIG was rated at A+ when it was taken over by regulators, and was subsequently bailed out by the U.S. government, during the financial crisis of 2008. Cummins, Harrington, and Klein (1995) found less than half the insurers who became insolvent from 1989 through 1991 had RBC ratios requiring regulatory attention. Additionally, Cummins and Weiss (2016) determined regulatory capital requirements are generally ineffective for the majority of firms. Working to identify firms that may be in trouble still presents ongoing challenges.

2.3.7 Insurers as Institutional Investors

As referenced earlier in this essay, the first American life insurer, the PMF, began its role as an investor when it loaned £5,000 to the Second Continental Congress in 1777.[39] In 1862, it invested $25,000 (an approximate adjusted present day value of $750,000) in bonds to back the Union during the Civil War and by the mid-1880s it made several stable investments including several dozen railroad and municipal bonds, commercial properties and mortgages, and temporary loans which contributed to its ongoing operations. During World War I, the PMF purchased $2,567,000 (an approximate adjusted present day value of $70,519,157) of Liberty and Victory bonds. Before it was acquired in 1994, the PMF maintained its investing parameters of never investing in high-yield/high-risk corporate bonds, and avoided investing in breweries, distilleries, or tobacco companies regardless of risk level (Brackenridge, 1999). The investing story of the PMF, while noteworthy as it portrays the investing strategy of the first American life insurance company, is not necessarily reflective of the industry as a whole and does not adequately explain how the life insurance industry became the strong institutional investment industry of the 21st century.

To appreciate the progression of the life insurance industry's institutional investment evolution, it is important to understand that as life insurance sales began to grow significantly throughout the 1800s, so too did the role life insurers played as institutional investors within the American economy. The American Revolutionary War in the late 1700s resulted in a debt ridden and independent America that was low on funds (Nelli, 1976; Murphy, 2010). Subsequently, commercial banking in America began to experience significant growth, with the number of banks increasing to over 200 by 1815 (Smelser and Swedberg, 2005). As the new U.S. economy continued to develop, commercial bank trust departments and insurers became the major administrators of private pension funds, and life insurers became specialists in long-term lending (Smelser and Swedberg, 2005).

[39] In present-day inflation dollars, this converts to approximately $525,000 dollars (Williamson, 2022).

Regulatory actions, aimed at maintaining the solvency and reputation of the life insurance industry, began to affect the types of investments life insurers could undertake, as well as requiring them to specialize in only a single line of business (Swiss Re, 2017). With insurers becoming the biggest non-bank financial institutions as an industry after the Civil War, investment regulations were put in place prohibiting risky investments in an effort to help them maintain solvency (Keller, 1963; Haeger, 1979). Initially, only a few states allowed insurance companies to invest in corporate securities. These investment restrictions would eventually be adjusted to allow insurers to invest in "investment grade" securities as a way to achieve the confidence of ratings agencies and external investors (Smelser and Swedberg, 2005).

2.3.8 Herd Mentality

Levine (1999) finds the continued development of life insurers as financial intermediaries, whose actions are significantly shaped by regulations, is positively associated with economic growth. With their long-tailed lines of business and requirements for stable investments, life insurers tend to invest heavily in fixed income securities including mortgage-backed securities, corporate debt, and public equities. Additionally, Levine (1999) finds life insurers continually adjust their investing strategies to match the regulatory climate as much as the economic environment. Chiang and Niehaus (2019) and Foley-Fisher, Narajabad, and Verani (2019) find that life insurers, together as an industry, invest with a herd type mentality, and that these investment decisions significantly affect international financial markets.

2.4 Life Insurers, Actuaries, and Technology. Oh my.

2.4.1 The Introduction of Actuaries

A discussion of the evolution of the life insurance industry within the United States would be remiss to neglect the impact actuarial innovation has had on the growth of the life insurance sector, and vice versa. Life insurers insure against the potential loss to others in the event of an unexpected death of the covered individual (Yaari, 1965; Fischer, 1973; Pissarides, 1980; Lewis, 1989). Insurers are able to stay in business and continue to take on risk if they consistently achieve profits either via underwriting profits and/or investments. Rothschild and Stiglitz (1976) discuss that in a competitive market where more than one type of customer exists, there is no equilibrium with regard to cost. To this end, the main function of actuarial science within life insurance organizations is to establish a person's insurability and determine what their premium should be for the company to maintain solvency.

As noted earlier, Edmond Halley, famed English astronomer and mathematician, is credited with building some of the first ever life/mortality/actuarial tables. His framework served as the foundation on which actuaries were able to increase the predictability of risk assessments for life insurers and learn how to price premiums that allowed for insurer growth while maintaining affordability for consumers (Walford, 1885; Dow, 1971). In his book *The Ascent of Money* (2009), Niall Ferguson suggests the advances in mathematics (and subsequent technology, discussed later) increased the predictability of losses. The increased prediction capabilities were critical to the growth of modern life insurance, as without them, buying and selling insurance tended toward being merely a form of gambling (Babbage, 1826).

Though Edward Wigglesworth was one of the first individuals to calculate mortality tables within the United States, he did not carry the title of actuary (Wigglesworth, 1775; Vinovskis, 1971; Murphy, 1983). The first person to officially carry the title of "actuary" in the

United States is yet another famed astronomer and mathematician, Nathaniel Bowditch.[40] In 1804 Bowditch became president of the Essex Fire and Marine Insurance Company in Salem, Massachusetts, and also gave himself the title of actuary. He would go on to move into the role of actuary at Massachusetts Hospital Life Insurance Company (MHLIC) and held the title of actuary for over 30 years in total (The American Academy of Actuaries, 2015). Bowditch also played a critical role in aligning banking interests with those of the life insurance industry.

During the early 1800s, the evolving banks within the United States began to embrace their role as investment managers. Throughout the 1700s, trust funds had been utilized by the wealthiest families as a way to care for the surviving family members after the primary income earner became incapacitated or passed away, and prior to 1815 it was common for wealthy Americans to individually invest without institutional support (Haeger, 1979). The economic expansion that occurred in America between 1815 and 1835 introduced many challenges for individual investors, however, and institutions began to shift their business processes to meet the new economic demands of their consumers. One of the ways the institutions pivoted to adjust to these new demands was by creating trust companies to manage investment functions in separate, yet connected, institutions. During the 1820s, Bowditch developed the first extensive trust business at the MHLIC. He initially introduced the structure for orphans, widows, and the elderly, but quickly expanded the opportunity to invest to any individual wishing to hire out the management of their own capital. By 1830 it was common for savings institutions to offer similar services to working class individuals through the acceptance of smaller deposit requirements. This included farmers who could now borrow money for longer periods of time, frequently up to 20 years. The shift in demand

[40]Nathaniel Bowditch also wrote the famed maritime navigation book, *Bowditch's American Practical Navigator*, first published in 1802. The U.S. Government acquired the copyright and has since published 52 editions of the book, ensuring its status as the premier reference book for practical marine navigation (National Geospatial-Intelligence Agency, 2019).

to these types of institutions supplanted the need for individual investors, and the bulk of investments tended toward secure real estate mortgages (Haeger, 1979).

In an effort to innovate actuarial practices, the Massachusetts Hospital Life Insurance Company commissioned Elizur Wright to research British actuarial best practices in 1844. Wright was the first to advise actuarial pricing on behavior rather than gender.[41] Wright believed alcohol consumption was correlated with poverty and crime, and suggested lower premium rates for those who abstained from drinking any alcohol whatsoever. While working for the New England Mutual Life Insurance Company in 1845, Elizur created "temperance" contracts for abstainers. Wright subsequently received commissions on the first premium of all temperance policies (Heen, 2011). Elizur Wright also contributed to the life insurance industry in two other significant ways: via the development of net valuations for whole life policies, and the concept of non-forfeiture. His non-forfeiture concept allowed for a cash-surrender value a policyholder was guaranteed to receive if they defaulted on premium payments (Clark, 1935). During his time researching life assurance companies and their actuarial processes in London, Elizur Wright witnessed the auctioning off of a life policy to the highest bidder. The policy had been defaulted on by an elderly man, and the highest bidder winning the policy then had a vested interest in the elderly man's death. This spurred Elizur to create the concept of non-forfeiture (Clark, 1935).

2.4.2 The Ugly History of Slavery and Insurance

Glenn (2003) speaks to what he calls, "insurance stories". These are the assumptions held by insurance companies regarding the natural world as they perceive it, prior to data analysis and the creation of actuarial tables and underwriting policies. These insurance stories inherently bias the direction of business decisions and have the potential to affect welfare in the process. Bouk (2011) addresses how these types of stories and biases have

[41] His son, Walter Wright, would go on to reinstate actuarial tables at New England Mutual Life separated out not only by gender, but delineated by age as well (Heen, 2011).

resulted in a lineage of race-based discrimination throughout the history of the American Life Insurance Industry.[42]

Murphy (2005) and Wolff (2006) review the relationship between the insurance industry and the slave trade. Between the 15th and 19th centuries, approximately 12.5 million Africans were abducted and transported to the New World (aka, the Americas) as slaves. The majority of African individuals captured between the 18th and 19th centuries, the peak time period of the trans-Atlantic slave trade, were transported by British ships who utilized marine insurance from Lloyd's of London to insure their goods.[43] Lloyd's dominated the maritime insurance market during this peak time of slave transport to the Americas, and the coverage of a slave's life was generally included in policies covering shipping cargo. Their human bodies were treated as property, and the shipping companies purchased coverage against their lives as a means of insuring "perishable cargo".[44] This precedent of insurance coverage as property continued in America, as it was not uncommon for American slave owners to insure their purchased slaves as property, beginning in the mid-1700s (Murphy, 2005; Wolff, 2006).

Britain banned slave trading in 1807, and the U.S. Congress banned the importation of new slaves in 1808 (Murphy, 2005; Pearson and Richardson, 2019).[45] Murphy (2005) details how this resulted in a secondary slave market within the U.S., as this meant if an American wanted to purchase a slave after 1808, they needed to purchase one from within the United

[42]As the author of this dissertation, I would like to pause here to reflect on the tragedies caused by the barbaric institution of slavery. Let us all honor the memory and life of each enslaved person ever forced to live that horror. During my time as a Ph.D. student at the University of Georgia, I learned that UGA was built and initially sustained by enslaved persons. It is imperative for humanity to learn about, recognize, and share the knowledge of the wrongs of the past, as a means to ensure they are never repeated in the future. To understand more about the history of slavery at UGA, please visit the "UGA & Slavery Project" at https://slavery.ehistory.org/. Thank you.

[43]Per Pearson and Richardson (2019), it is estimated the slave trade, combined with the subsequent trading of slave-produced goods, accounted for between 50% - 60% of premiums earned by the British marine insurance industry.

[44]During 2020, Lloyd's of London issued a public apology for the role it played in the slave trade (Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020).

[45]Despite the 1807 ban in Britain of slave-trading, the trading, transporting, and insuring of slaves shifted to "foreign" shipping companies and insurers, and would continue for several more years (Pearson and Richardson, 2019).

States. Due to the invention of the cotton gin in the 1790s, the cotton industry boomed across the Lower South of the U.S. throughout the early 1800s. This boom resulted in a higher demand for slaves in the Lower South than where initial demand had been high years before; the Upper South around Virginia and the Carolinas (Savitt, 1977).

Per Murphy (2005), the emergence of the domestic slave market in the U.S., where slaveholders in the Upper South contracted their surplus slaves out to either perform dangerous jobs elsewhere in the Upper South, or to travel to the Lower South to work on cotton farms, resulted in over half the slave population in the Upper South, (more than 700,000 individuals), moving to the Lower South between 1790 and 1860. As noted earlier, the mid-1800s was a time of significant expansion of the life insurance industry across the United States, with a high growth rate among white middle-class families in the Northeast. Murphy (2005) points out how the movement of high value urban slaves across the Lower South, or into dangerous jobs in mines or on riverboats, also proved a growth sector for life insurers, as their respective slaveholders wanted to insure the value of the enslaved persons they had contracted out.

Murphy (2005) documented the first known life insurance policy to cover the life of an enslaved person. The policy was purchased on behalf of his owner, was sold in 1831 by the Baltimore Life Insurance Company (BLIC), and was valued at $100.[46] Per Murphy (2005), the BLIC would go on to become the largest writer of slave life insurance policies throughout the Antebellum South. When covering the life of a black individual, the BLIC established a fee structure that charged a minimum of double what a white person's comparable coverage would cost, even in the event of a "free negro in good shape". The costs would go higher for slaves contracted out to perform dangerous jobs. These life policies, as opposed to property policies, were intended to protect "the long-term value of the slave" while the slave was under the hirer's care (Murphy, 2005).

[46]For comparison, $100 in 1831 would be worth approximately $3,300 in 2022 (Williamson, 2022).

Murphy (2005) describes how the pricing structure established by the BLIC laid the groundwork for how other life insurers began insuring the lives of Black and non-white persons. The pricing structure was adopted by the BLIC in an attempt to reduce underwriting risk as they lacked historical data on the mortality risk of the slaves. The BLIC also adopted other policies to reduce underwriting risk, including the implementing a policy that coverage amounts would not exceed two-thirds of actual value, and that the slaves' masters had to be persons of respectability and be known to treat their slaves well. Many competitor life insurers entered the slave insurance marketplace throughout the 1840s and 1850s, with most southern insurance companies offering life insurance policies on slaves' lives by 1850 (Murphy, 2005). As the economy began to be challenged leading up to and throughout the Civil War, the number of slave policies held by the southern life insurance companies increased. Murphy (2005) points out that when Emancipation occurred in 1863 in the North, and 1865 in the South, the life insurance policies covering the lives of slaves were voided. This resulted in many of the southern life insurance companies, who had focused the bulk of their life policies on covering the lives of enslaved persons, going out of business.

Through the efforts of the Reconstruction era after the Civil War, Black and non-white Americans were allowed to purchase life insurance policies. However, the precedent in how life insurers discriminated in their valuation of Black and non-white lives continued to persist. Though their lives were covered at full valuation, Black and non-white individuals were still being charged significantly higher premiums than white individuals (Murphy, 2005; Heen, 2014; Garrett-Scott, 2016). Wolff (2006) and Heen (2014) explain how the life insurance industry's relationship would further deteriorate in March of 1881. Prudential Life Insurance of New Jersey, and Metropolitan Life Insurance of New York, decided existing policies covering Black and non-white adults would immediately be valued at one-third less than they had been, with premiums remaining the same. The value of policies for Black and non-white children were unchanged, however the weekly premiums for their policies increased significantly. The values of the policies held by white individuals remained unaltered. The majority of

insurers in the life insurance industry followed suit, implementing discriminatory pricing and valuation against non-white individuals. It became common for life insurance companies to forbid agents from selling policies to "negroes", and agents were denied commissions for any policies deemed to cover the life of a Black or mixed-race individual. Throughout the early 1880s, some states began to respond to the race-based discrimination with regulations prohibiting it. In 1884, 1887, and 1889; Massachusetts, Connecticut, and Ohio, respectively, passed legislation specifically forbidding the reduction in benefits to Blacks paying the same as whites for full benefits. Per Wolff (2006), when New York legislators first proposed a similar law, which would go on to pass in 1892, a Prudential executive published a letter threatening to end all sales to Blacks and non-whites if the bill passed.

2.4.3 An Actuary's Legacy: Race-Based Discrimination

Frederick L. Hoffman, a German-American immigrant and self-taught statistician, entered the American life insurance industry as an industrial life insurance agent in 1888. He published a statistical study, "Vital Statistics of the Negro," in a Boston journal, The Arena, in 1892. Wolff (2006) explains how he argued that the lives of Black individuals were low in value and therefore Blacks either needed to be charged significantly higher premiums or not offered coverage at all. Hoffman's arguments garnered industry attention and acclaim, as his arguments supported the discriminatory pricing actions the industry was lobbying to maintain. In 1894, two months after the state of New Jersey would pass its anti-discrimination legislation, the head actuary for Prudential Life Insurance hired Hoffman as a statistician in their actuarial department. Hoffman was tasked with studying statistical mortality differences between races to support their discriminatory pricing practices. (Hoffman, 2003; Wolff, 2006). In May 1896, Hoffman published a series of essays for the American Economic Association (AEA). By assembling tables of aggregated statistics drawn from numerous external data sources, he attempted to detail why the life of a Black or "mixed-race" individual was

not worth insuring since their mortality rates were so much higher than whites, and therefore so much lower in value (Hoffman, 1896).[47]

Wolff (2006) points out how a cursory review of the data F. Hoffman published indeed shows higher mortality rates for Blacks and non-whites than whites. Hoffman argues this is due to the inferior physiological, intellectual, and sociological capacities of those with darker skin; all of which, Hoffman argues, have been on a steady decline since emancipation (Hoffman, 2003; Wolff, 2006). Hoffman (1896) includes many tables in his book that show "whites" at the top of any particular measure and then "mixed race" individuals in the middle of the respective scale, followed consistently by "full negro" at the bottom of the assessment for whatever was being measured in the respective table. One conclusion he reaches on page 176 in his book states, "A combination of these traits and tendencies must in the end cause the extinction of the race." However, with a lack of any further statistical analysis, he uses only his anecdotal arguments to explain the spurious results in his tables. Hoffman aggregated his data, which had been previously collected from a variety of sources, and consistently failed to stratify for other environmental and/or economic considerations. (Miller, 1897; DuBois, 1899; Wolff, 2006)

In response to Hoffman's publications, W.E.B. DuBois, the first African American to graduate from Harvard with a doctorate, and Kelly Miller, a distinguished mathematician from Howard University, published respective rebuttals (Miller, 1897; DuBois, 1899). Both rebuttals thoughtfully and methodically expose the flaws in Hoffman's work, particularly the lack of stratification of any of the data. DuBois highlights how stratification of individuals by economic status would have resulted in similar mortality rates between Blacks and immigrant

[47]Despite never having attended University, Hoffman is credited with numerous innovations in actuarial science. Hoffman (2003) notes that Frederick L. Hoffman is credited with identifying many correlations between industrial work and public health risks. As early as 1915, he was the first to identify the significant correlation between tobacco use and cancer. He would go on to become a founder of the American Cancer Society and be on the board for the American Lung Association. He also played an instrumental role in helping Prudential successfully fight against a national health insurance system (Hoffman, 1896).

groups with access to comparable economic resources and goes on to point out that the death rate of Blacks in the U.S. was less than whites in Munich, Germany (DuBois, 1899).

Despite the efforts of such esteemed academics working to shine a light on the flawed statistical methods Hoffman had used to support discriminatory pricing against Blacks and non-whites, the industry continued to hold up Hoffman's work as the reason behind their decisions. Hoffman's work would remain the gold standard for many years, and he would go on to have a long and illustrious career with Prudential, becoming their lead actuary by 1901 and working there for over 40 years (Wolff, 2006).

Though many in the life insurance industry actively fought to maintain discriminatory pricing and underwriting processes, there were also those who fought against discriminatory and predatory industry practices. In 1912, the NAIC convened proceedings to identify potential regulatory actions aimed at addressing abuses within Fraternal Benefit Societies, noting a significant portion of these societies targeted Black people with high-premium, low-value policies (National Association of Insurance Commissioners, 1912). Despite the NAIC working to address the inequities, many insurers continued to deny coverage and/or discriminate against Blacks and non-whites. In response to the lack of access for life insurance coverage within the white-dominated industry, Black entrepreneurs created a life insurance industry for themselves (Heen, 2009). One of these innovators, Minnie Geddings Cox, played a significant role in the development of Black American-owned life insurance companies. After launching the first Black-owned life insurance company in Mississippi in 1908, Cox grew the company to become the third-largest life insurance company in the United States with Black American ownership by 1923 (Garrett-Scott, 2016). By the 1920s there were over 40 large insurance companies across the U.S. that were Black-owned, and the industry thrived in Black communities (Heen, 2009; Marsh & McLennan Companies, 2018). Heen (2014) describes the affect the Civil Rights movement in the 1960s had on this industry, however. The Civil Rights movement implemented laws forbidding white life insurance companies from refusing coverage or discriminating against individuals based on race. This

resulted in white life insurers expanding into the marketplaces previously occupied by the Black life insurance industry. The majority of Black life insurers were subsumed by the larger white insurance companies as a result (Weems, 1993).

Race-based discriminatory practices persisted throughout the life insurance industry during the first half of the 1900s. A 1940 trade journal survey of life insurers found that 40% still did not accept Black policyholders (Pearson and Richardson, 2019). In 1940 the NAIC published a study of mortality rates, differentiating mortality rates by race. These differentiated rates continued to be used by insurers until race-based premiums were outlawed by regulations within each respective state. In 1947 the NAIC drafted and adopted a model law known as The Unfair Trade Practices Act, which defined and prohibited "unfair discrimination" for life, health, property and casualty insurance. This included prohibiting refusing to insure, refusing to renew, cancelling or limiting the amount of coverage because of: geographic location of the risk; the age of the dwelling; or sex, marital status, race, religion, or national origin of the individual (National Association of Insurance Commissioners, 1947). Campbell et al.'s (2020) work points out this prohibition of discrimination still did not prevent unfair pricing and mortality valuation for Black and non-white individuals. Life insurers commonly charged Black and non-white customers higher premiums, and encouraged cheap industrial life insurance coverage that offered only enough value to cover burial costs, a significant form of insurance for life insurers well into the 1950s (Heen, 2009).[48] The rates charged to Black and non-white individuals were sometimes as much as 30% higher than those charged to white individuals (Heen, 2009; Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020).

"Race-merged" mortality tables, using some combined white and non-white data, were created, and proposed to the NAIC by industry professional organizations in 1961. These integrated mortality table changes did not eliminate discriminatory race-based pricing but did

[48]The three largest life insurers during this time, Metropolitan Life, Prudential Life, and John Hancock, all discontinued writing new industrial policies by the late 1960s. Life insurance companies that continued to sell it were primarily located in the southeast (Heen, 2009).

soften the language and policy around race-based premium differences, making the visible differences harder to identify (Heen, 2009). The Civil Rights Act was subsequently passed by the U.S. Congress in 1964, prohibiting discrimination on the basis of race, color, religion, sex, or national origin. This eliminated the discriminatory practice of charging different life insurance premiums based on race. However, in 2000, a lawsuit alleged there were still numerous active policies from the 1960s that had not been revised, for which Black policyholders were still being charged higher premiums than whites (Jackson, 2002; Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020). Also in 2000, NAIC members signed a resolution encouraging state regulators to investigate if life insurers in their respective states were charging higher premiums to Black customers for comparable life policies and urged restitution to the Black policyholders (or their beneficiaries) where appropriate. While much work has been done to eliminate race-based discrimination within the life insurance industry, more work is still necessary.[49] As recently as 2020, the NAIC established their Race and Insurance Committee to investigate issues relating to discrimination and diversity in insurance (Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020).

2.4.4 Continued Debate Around Underwriting Processes

Debate continues within and around the life insurance industry regarding what type of individual information is economically necessary to collect in order to adequately "price" for life insurance coverage, against what information is ethically appropriate to collect. While the European Union mandated the utilization of unisex mortality tables in 2012, prohibiting the use of gender discrimination, only a handful of states in the U.S. have proposed or adopted the unisex concept (Schmeiser, Störmer, and Wagner, 2014).[50] The NAIC adopted

[49]This summary of life insurance industry actions that have affected Black and non-white races is only a part of the story of the relationship between race and the entirety of the insurance industry. To learn more, see the NAIC's report identifying milestones in racial discrimination across the insurance sector. (Pearson and Richardson, 2019; Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020)

[50]The first U.S. insurance company in the industry to offer life insurance to women, who typically have lower mortality risk, at lower rates than men was The Travelers Companies, Inc. in 1958 (Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020).

separate male and female mortality tables in 1977 in place of a gender merged table (Heen, 2011). Though this was revised in 1983, when the NAIC approved the gender-blended mortality tables for inclusion in its model laws and regulations (which many states went on to incorporate), insurers typically still consider gender during underwriting (Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020). The life insurance industry in the U.S. might also pivot toward mandated unisex pricing in the near future, as the culture in the U.S. is trending toward the acknowledgement of all gender identities, and away from the binary concept that all individuals must only be identified as male or female.

Another economic vs ethics topic currently being debated with respect to the information required by most insurers is individual credit scores. These credit scores are typically utilized as a part of what comprises underwriting decisions. In 1970, Congress enacted the Federal Credit Reporting Act (United States Congress, 1970). Though many of its requirements affected the banking industry directly, it also allowed insurers to utilize credit reporting activity when making underwriting decisions. Though debated, underwriting practices frequently consider an individual's credit score as part of its overall underwriting evaluation formula (Majoras, 2007).

2.4.5 Life Insurers, Computer Science, and Big Data

Perhaps it should go without saying that, all else equal, a life insurer with the most accurate ability to predict losses, optimize underwriting decision processes in place, and adequately price each contract, all while safely managing internal organization and communication of their data, is going to increase their likelihood for success.[51] In line with this perspective, life insurance companies have proven themselves to be leaders in technology innovation, adoption, and implementation. In fact, the life insurance industry was arguably the first industry to work in all forms with "big data", including collection, management,

[51] At least on the underwriting side of their business. They will still need to be successful in how they invest their float.

and analysis (Wilson, 2018). Life insurers first adopted punch card tabulation technology as early as 1890 (Yates, 1993, 1997).[52] While insurers implemented cutting edge tools for actuarial calculations, their interests reached much further. By 1910, their technology demands focused heavily on printing capabilities to create transactional documents, bills for insurance premiums, internal reports, and numerous other uses. Their push for these capabilities resulted in much competition, and subsequently innovation, from technology companies in the punched card tabulation industries. Throughout this time period, IBM was hard at work innovating its processes to capture the business needs of the life insurance market, and by 1930 the majority of the life insurance industry had acquired IBM tabulating equipment (Yates, 1997).

During World War II, American military branches recruited actuaries and other mathematically trained insurance personnel to perform various roles including; improving the accuracy of bombsights, creating statistics of casualty and injured rates, retirement benefits, strategic plan creation for submarine warfare, and code breaking. Most of this work was performed on IBM data processing equipment which included both punch card technology, as well as a newly developed computer technology, dependent on where one was stationed. When the war ended, many of these insurance professionals returned to their organizations with new skills and an appreciation for the new computing technology. One of these individuals was Edmund Callis Berkeley, who left his role as a mathematician and methods strategist at Prudential in 1942 to serve four years in the Naval Reserves. Berkeley spent part of his military service at Harvard where he was introduced to the Mark I computer, the result of a collaboration between IBM and Harvard's Howard Aiken. During his time in military service, Berkeley would go on to work with Aiken to develop the Mark II.

When Berkeley returned to Prudential in 1946, he directed all his energies into identifying avenues that could result in innovating computing technologies in ways that would

[52]While punched card technology was originally created by the company that would evolve into the company now known as IBM in 1924, many life insurers internally innovated beyond the base punch card technology, customizing it internally to fit their own needs (Yates, 1993).

help increase efficiencies for the insurance industry. He visited with leadership and management of external companies within the life insurance industry (including Prudential's direct competitor, MetLife), educating them on how to potentially utilize computing technologies. Berkeley created a network of individuals that included insurance industry executives, actuaries, and mathematicians as well as leadership and engineers from IBM, General Electric, Columbia and Harvard Universities, Bell Labs, the U.S. Army, and others. He also presented his innovative lessons and ideas at meetings for the Actuarial Society, the Insurance Accounting and Statistical Association, and the Life Office Management Association. He worked studiously to identify a vendor who could create the machine that could perform so many of the insurance related tasks Berkeley wanted it to. (Yates, 1997)

Berkeley left Prudential in 1947 to move into the computing technology space.[53] He would go on to write what would become the first popular book on computers, *Giant Brains, or Machines that Think* in 1949. One of his legacies while he had worked in the life insurance space was significantly shaping the developing computer industry in a way that most ideally benefited the life insurance industry. Berkeley's vast efforts resulted in the technology industry having a deep and explicit understanding of the computing needs of insurers (Yates, 1997).

During the post-WWII time period, the life insurance industry would go on to experience significant growth once again, with the number of policies in force growing by 24% between 1948 and 1953. Yates (1997) documents how, throughout the 1950s, the life insurance industry continued to play a significant role in the development of the computer technology industry, and vice versa. Life insurers, who were still using punch card technology into the 1950s, began purchasing computer systems in 1954. By 1955, the number of insurers utilizing computers skyrocketed with the industry accounting for one-third of all computers sold to businesses.

[53]Prudential would eventually go on to choose IBM as their computing technology vendor.

2.5 Following the Industry into Present Day

2.5.1 Bequest Motivations Persist

Per Mackie (1956), from the early beginnings of the PMF, religiosity continued to play a role in the motivation for many to purchase life insurance as a dutiful and pious act. Mackie, a Presbyterian minister who worked to document the history of the Presbyterian Ministers' Fund, posits the success of life insurance as an industry within the United States can be attributed to the commitment of those from the presbytery to take care of those who were not able to care for themselves. While life insurance uptake in the United States in the late 1700s and early 1800s may have initially been hindered due to Christian beliefs, long term, Christianity's eventual embrace of the concept of life insurance ultimately contributed to the significant success of the industry.[54] Zelizer (1978, 1979) and Murphy (2010) posit that the shift toward the purchasing of life insurance becoming socially and theologically respectable and duty-fulfilling, as the United States grew, also paved the way for the emerging capitalistic middle-class to learn how to utilize life insurance and annuities as tools for savings and investments. Bernheim, Shleifer, and Summers (1985) and Pashchenko and Porapakkarm (2020) argue the motivation of financial bequests, identified at the beginning of this essay as a primary determinant for purchasing life insurance at the outset of the industry in America, continues to persist as a significant determinant present-day.

2.5.2 Industry Trends

In recent history, the wealth held by the aforementioned middle-class has continued to grow, though the disparity of wealth held by differing economic classes of Americans has been

[54]Two of many notable quotes from Alexander Mackie, include; 1) "It takes backbone, ethics, and religion to administer life insurance"; 2) "Life insurance was not, is not, and cannot be a source of wealth and economic aggrandizement for its managers. It is of, for, and by its policyholders. It can be built only on an enduring foundation when it is administered as a trust and as a service. It must proceed from a religious conviction. And it must be administered by men who have religious convictions, whether these convictions be formal or informal." (Mackie, 1956).

widening, as shown in Figure 2. In the visualization of trends in the life insurance industry shown in Figure 3, it is evident that total life insurance in force and the average annual face amount purchased, have both continued to trend toward positive growth. As have the amount of life insurance purchased each year, and life insurer premium income and benefit payments. These industry levels have been maintained despite the significant decrease in the number of U.S. life insurers since 1990. This decrease in insurers within the marketplace has been driven by a number of stock insurers exiting the marketplace, as seen in Figure 3f. The number of mutual insurers has remained relatively unchanged. Chen, Eckles, and Pottier (2013) examined the difference between firm structure and efficiency within the life insurance marketplace and found stock firms and mutual firms operate on separate efficiency frontiers and therefore utilize different technologies. Their findings may well correlate with the driving factors behind the diminished number of stock insurers not having a diminishing effect on the overall value of life in force amounts for either the individual or group marketplaces. As shown in Table 2, while stock insurers still hold more life insurance in force than mutuals, by nearly double, the amount in force held by stock insurers has consistently trended downward over the last ten years. Interestingly, Table 3 shows that while the amount in force has generally been decreasing for stock insurers, the amounts being purchased each year are not decreasing in the same manner. Though the number of policies in force has decreased significantly across the same 30 years, as seen in Table 4, the total face value of life insurance in force has increased substantially for both the individual and group markets.

Hartley, Paulson, and Powers (2017) examined Survey and Consumer Finance (SCF) data from 1989 through 2013 and found overall life insurance ownership fell by 16.5 percentage points across that time frame. Term life ownership fell from 58.1% to 50.2% and permanent life ownership fell from 37.4% to 18.7%. They also found life insurance ownership has declined within each race, education, and income subgroup for both term and permanent policies, with the largest declines in term coverage generally being in those households with lowest education and income, and the largest declines in permanent coverage being in the households

with higher education and lower income. Consistent with industry trends, Hartley, Paulson, and Powers (2017) also find the face values for both types of coverages have increased from 1989 through 2013 with the average face value for term policies increasing 126.5% and the average face value for permanent policies increasing 43.1%.

2.5.3 Why Consumers Do Not Buy Life Insurance....and Why They Do

Though the number of individual life insurance policies in-force in the United States between 1990 and 2019 decreased by 22% in the individual market and 23% in the group market, the U.S. life/annuity insurance market still reported $474.6 billion in direct premiums written (DPW) for 2019.[55] Despite the decrease in the number of in-force policies from 1990 through 2019, the total face amount value of in-force policies increased in both the individual market, as can again be seen in Table 4 (The American Council of Life Insurers, 2020). In January, 2020, before the economic effects of Covid-19 significantly impacted financial marketplaces, the Life Insurance and Market Research Association and Life Happens conducted its annual Insurance Barometer Study (LIMRA and Life Happens, 2020).[56] Twenty-eight percent of the consumers surveyed said they would feel a negative financial impact within one month if the primary wage earner in their household were to pass away. Nearly half of the individuals surveyed (46%) did not own any form of life insurance at all, and over the ten years of prior surveys, ownership of life insurance within the lower and middle-income households (under $100,000) had declined by 25%.

[55]Per the Insurance Information Institute (III), the Life/Annuity Industry reported $678.1 billion in direct premiums written (DPW) for 2019, however $204.1 billion of the total amount was for private health insurance. Since private health insurance has mandates driving a portion of its utilization, this figure was subtracted to obtain the total amount of DPW in the life/annuity marketplace excluding private health insurance.

[56]The Insurance Barometer is an annual study that tracks the perceptions, attitudes, and behaviors of adult consumers in the United States. In January 2020, LIMRA and Life Happens engaged an online panel to survey adult consumers who are financial decision makers in their households. The survey generated over 2,000 responses. The analysis performed by LIMRA includes a propensity model to adjust for sample selection error, and weighting models to adjust for sample response error. LIMRA, a not-for-profit research trade association, and Life Happens, a non-profit educational organization, jointly conducted the study. (LIMRA and Life Happens, 2020)

For those respondents who did not own life insurance, Figure 4 shows their reasoning for not owning any. These individuals indicated that other financial obligations were a higher priority than owning life insurance, and they also held the belief that life insurance was too expensive. For those survey respondents who did own life insurance, Figure 5 shows the top reasons they gave when asked why they owned it. The respondents indicated that paying for one's burial costs and final expenses was the primary reason for owning life insurance, followed by bequest motives, replacing wages, supplementing retirement, and paying off a mortgage. Of those same respondents who owned life insurance, 55% owned only individual policies, 27% owned only group policies, and 18% owned at least one of each (LIMRA and Life Happens, 2020).

2.5.4 Online Purchasing and Simplified Underwriting Trends

Changes in consumer behavior with respect to life insurance that are evident in the results from the 2020 Insurance Barometer Study include the shift in consumer preferences around where and how consumers prefer to purchase life insurance. As shown in Figure 6, from 2011 to 2020 consumer preferences trended away from the desire to purchase insurance in person, with less than half of individuals (only 41%) preferring to purchase life insurance in person in 2020. This was a significant decrease from the survey they had performed only ten years prior, where a significant majority (64%) had preferred to purchase policies from their agent in person. The desire for simplified underwriting is increasing as well. Figure 7 shows the top reasons driving the demand for simplified underwriting including that it is fast and easy, unbiased and objective, provides transparency, and avoids medical exams and physician visits. It is arguable these shifting trends in consumer preferences around online applications and simplified underwriting have increased even more significantly after all consumers experienced quarantine restrictions across the nation in 2020. I posit there is a high likelihood consumer preferences will continue to lean toward comparison shopping and purchasing online. The utilization of social media for those purposes is climbing substantially

as well. Consumer utilization of Facebook and YouTube to research financial topics doubled from 2019 to 2020 (LIMRA and Life Happens, 2020).

Brown and Goolsbee (2002) investigated if the growth of insurance comparison websites on the internet in the 1990s had an effect on pricing for term insurance. They found a 10 percent increase in the share of individuals in a group using the internet to comparison shop for life insurance, reduces average insurance prices for the group by as much as 5 percent. They concluded the growth of online comparison shopping for term life insurance has reduced prices by 8 to 15 percent and increased consumer surplus by $115-215 million per year. Interestingly, the decrease in price was not matched with an increase in demand for term insurance, suggesting inelasticity for term life insurance. Also of note was that online comparison shopping did not significantly affect the pricing for whole life policies. This is likely attributable to the heterogeneous characteristics between policies which make them difficult to compare.

Harris, Yelowitz, and Courtemanche (2021) investigated if life insurers changed product offerings during Covid-19 and found that premiums did differentially increase for those with the highest risk and some policies were not available to the extremely elderly. One of the most significant changes within the industry, however, may well be the changes in how the industry has moved much of its application and underwriting processes online for individuals. Covid-19 brought the industry simplified and online underwriting processes that appear likely to become mainstays for the industry moving forward.

2.5.5 Looking Ahead

The remainder of this dissertation reviews extant research regarding the determinants of life insurance demand and the traits and behaviors of the consumers who purchase it within the United States. The review of extant research is followed by unique empirical analyses implementing novel variables and building on prior successful models. The above evolutionary

examination shed light on the affect the Presbyterian church had on the secular marketing messages utilized by commercial life insurers, as well as worked to identify the manner in which marginalized demographic groups, (females, Blacks, and non-whites), came to be allowed to own life insurance in the United States. These discoveries prompted me to develop the following research questions. Is Christianity a positive determinant of life insurance demand specifically within the United States?; Do consumer subgroups with less historical life insurance marketplace access, identified as consumer subgroups at the intersection of race and sex, differ in their utilization of life insurance?

Table 1 Statistics from the First 21 Life Insurance Policies Sold in America (1759)

Average Age at Purchase	42.7	Lapsed Policies	5 (23.81%)
Average Age at Death	66.6	Cashed Out Policy	1 (4.76%)

Table 2 Life in Force by Insurer Organization Type (Millions)

Year	Stock	Mutual	Fraternal	Other
2011	13,676,379	5,068,574	319,942	154,169
2012	13,742,216	5,094,851	326,183	157,667
2013	13,795,758	5,374,339	329,985	161,436
2014	13,774,670	5,840,741	333,579	165,617
2015	14,012,604	6,240,289	356,129	169,967
2016	13,475,141	6,324,720	344,425	174,356
2017	13,236,248	6,653,159	346,277	180,008
2018	12,640,534	6,386,930	351,230	192,049
2019	12,500,608	6,775,771	354,516	203,162

Source: National Association of Insurance Commissioners (NAIC)
Note: The NAIC does not endorse analysis or conclusions based on the use of its data.

Table 3 Life Insurance Purchased from Insurer Organization Type (Millions)

Year	Stock	Mutual	Fraternal	Other
2011	2,038,263	797,365	30,918	23,901
2012	2,039,778	764,144	30,548	22,476
2013	1,957,904	822,719	29,307	23,631
2014	1,913,802	848,109	29,501	23,469
2015	1,897,710	976,211	32,187	24,017
2016	1,896,193	971,714	34,209	25,012
2017	1,989,990	1,024,533	38,051	24,925
2018	1,977,951	972,509	39,933	30,063
2019	2,056,378	967,741	36,731	28,726

Source: National Association of Insurance Commissioners (NAIC)
Note: The NAIC does not endorse analysis or conclusions based on the use of its data.

Table 4
Life Insurance Trends: 1990 - 2019

	Face Amount In Force (Millions)			Policies in Force (Thousands)		
Year	Individual	Group	Credit	Individual	Group	Credit
1990	5,391,053	3,753,506	248,038	177,000	141,000	71,000
1991	5,700,252	4,057,606	228,478	170,000	141,000	64,000
1992	5,962,783	4,240,919	202,090	168,000	142,000	56,000
1993	6,448,885	4,456,338	199,518	169,000	142,000	52,000
1994	6,448,758	4,443,179	189,398	169,000	145,000	52,000
1995	6,890,386	4,604,856	201,083	166,000	147,000	57,000
1996	7,425,746	5,067,804	210,746	166,000	139,000	50,000
1997	7,872,561	5,279,042	212,255	162,000	142,000	47,000
1998	8,523,358	5,735,273	212,917	160,000	152,000	46,000
1999	9,172,397	6,110,218	213,453	162,000	159,000	46,000
2000	9,376,370	6,376,127	200,770	163,000	156,000	50,000
2001	9,345,723	6,765,074	178,851	166,118	163,081	47,929
2002	9,311,729	6,876,075	158,534	169,438	163,761	41,591
2003	9,654,731	7,236,191	152,739	176,000	163,000	40,000
2004	9,717,377	7,630,503	160,371	168,000	165,000	39,000
2005	9,969,899	8,263,019	165,605	166,118	167,146	39,894
2006	10,056,501	8,905,646	150,289	161,000	177,000	37,000
2007	10,231,765	9,157,919	149,536	158,336	179,685	35,684
2008	10,254,379	8,717,453	148,443	156,008	147,728	30,949
2009	10,324,455	7,688,328	125,512	153,410	112,799	24,881
2010	10,483,516	7,830,631	111,805	151,787	109,462	23,086
2011	10,993,501	8,119,879	105,685	150,702	112,119	23,495
2012	11,215,136	8,011,839	93,940	146,209	106,098	19,371
2013	11,365,441	8,214,718	81,359	144,144	114,008	16,684
2014	11,825,927	8,208,725	79,955	142,659	119,883	15,285
2015	12,342,152	8,360,705	76,133	142,435	122,793	15,587
2016	11,991,547	8,245,991	78,117	142,339	133,443	14,866
2017	11,927,253	8,410,652	77,787	141,753	132,647	14,456
2018	12,120,445	7,366,765	83,534	138,471	114,699	13,720
2019	12,388,298	7,358,413	87,346	137,213	108,495	13,038
Percentage change from 1990 to 2019.*	17%	0.22%	-82%	-22%	-23%	-82%

Source: National Association of Insurance Commissioners (NAIC)
Note: The NAIC does not endorse analysis or conclusions based on the use of its data.
* Adjusted for inflation.

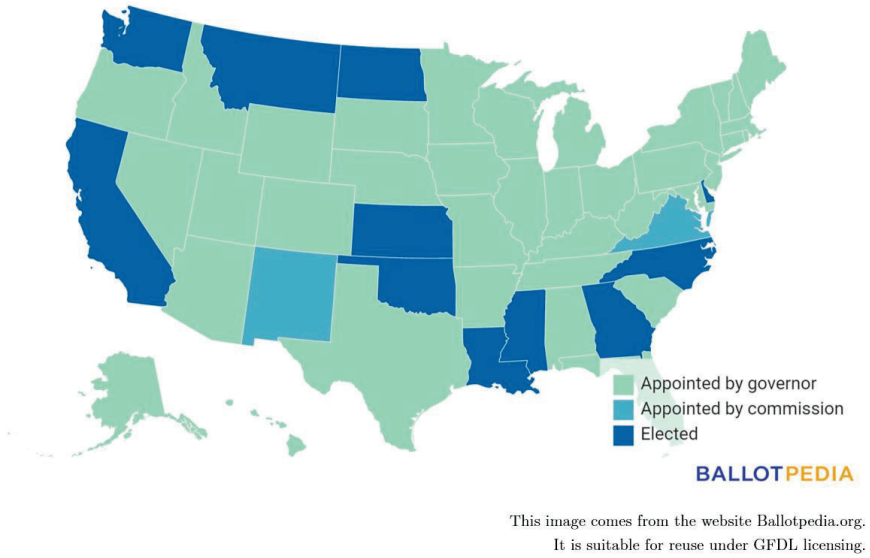


Figure 1
Insurance Commissioner Placement Process by State. Source: Ballotpedia.com

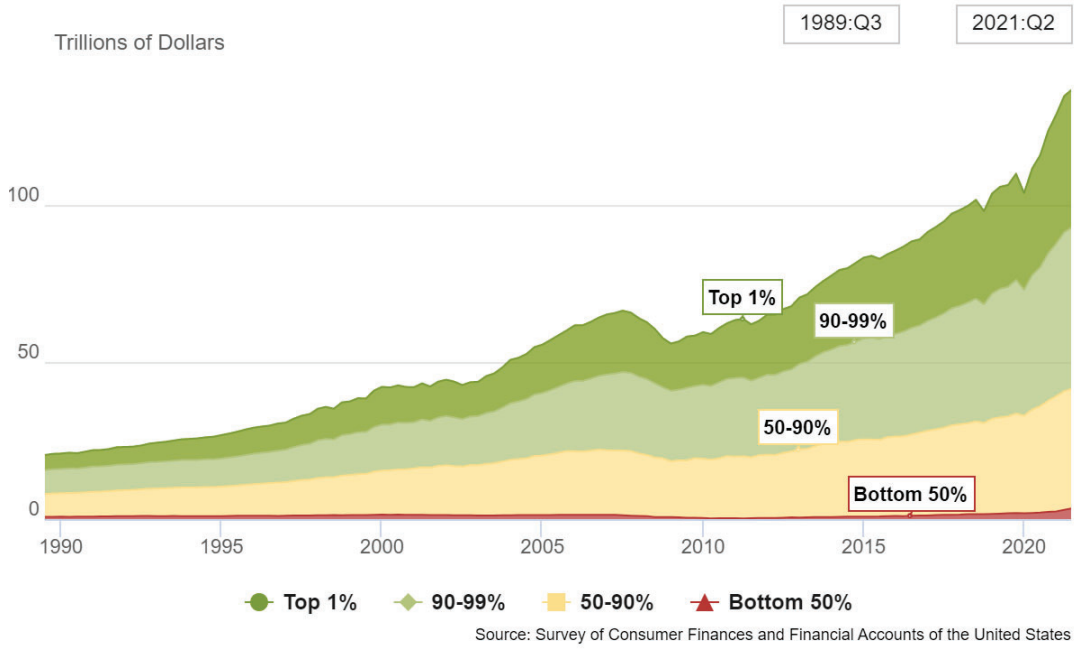
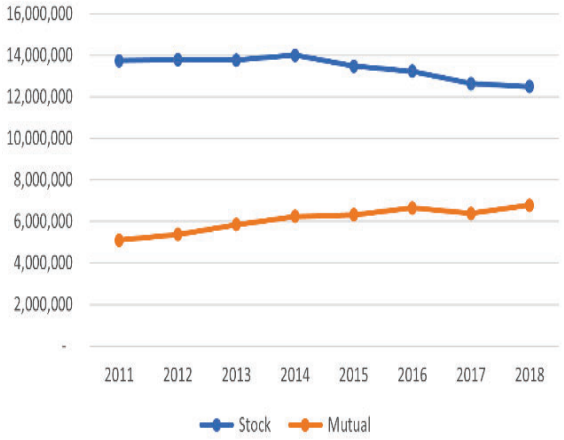
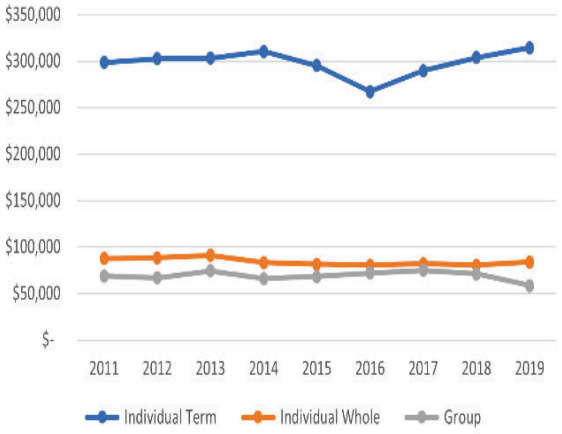


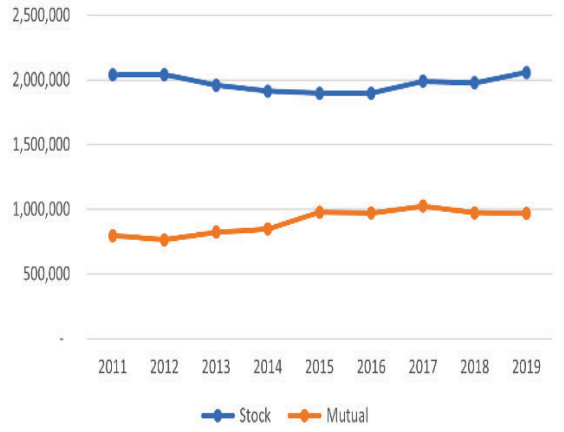
Figure 2
Wealth by Wealth Percentile Group Trends: 1989 - 2021



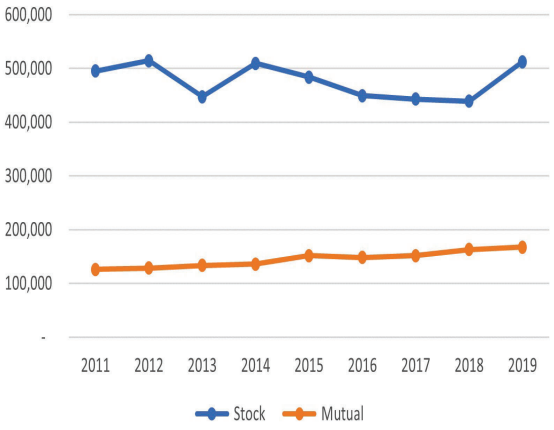
(a) Life in Force (Millions): 2011-2019



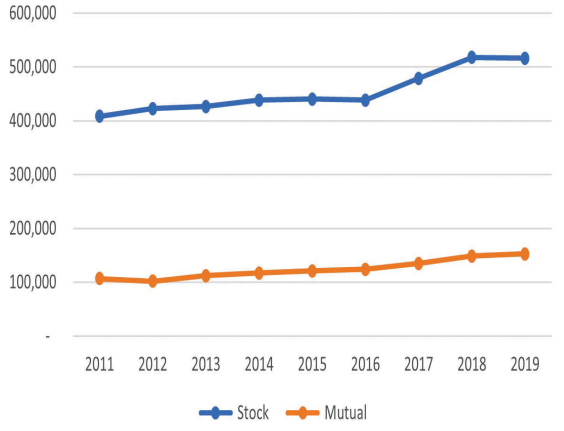
(b) Average Face Amount Purchased: 2011-2019



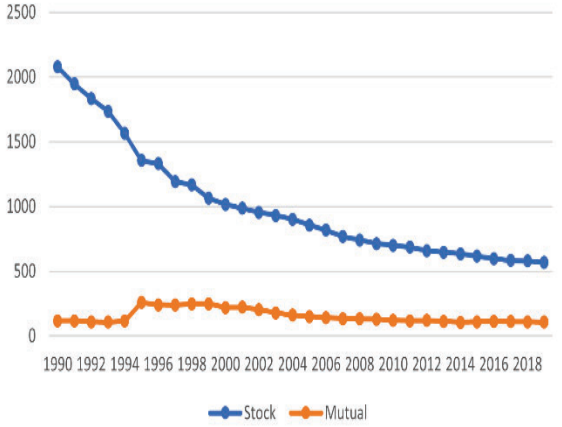
(c) Purchased by Year (Millions): 2011-2019



(d) Life Insurer Premium Income: 2011-2019



(e) Life Insurer Benefit Payments: 2011-2019



(f) Number of U.S. Life Insurers: 1990-2019

Figure 3 Life Insurance Industry Trends

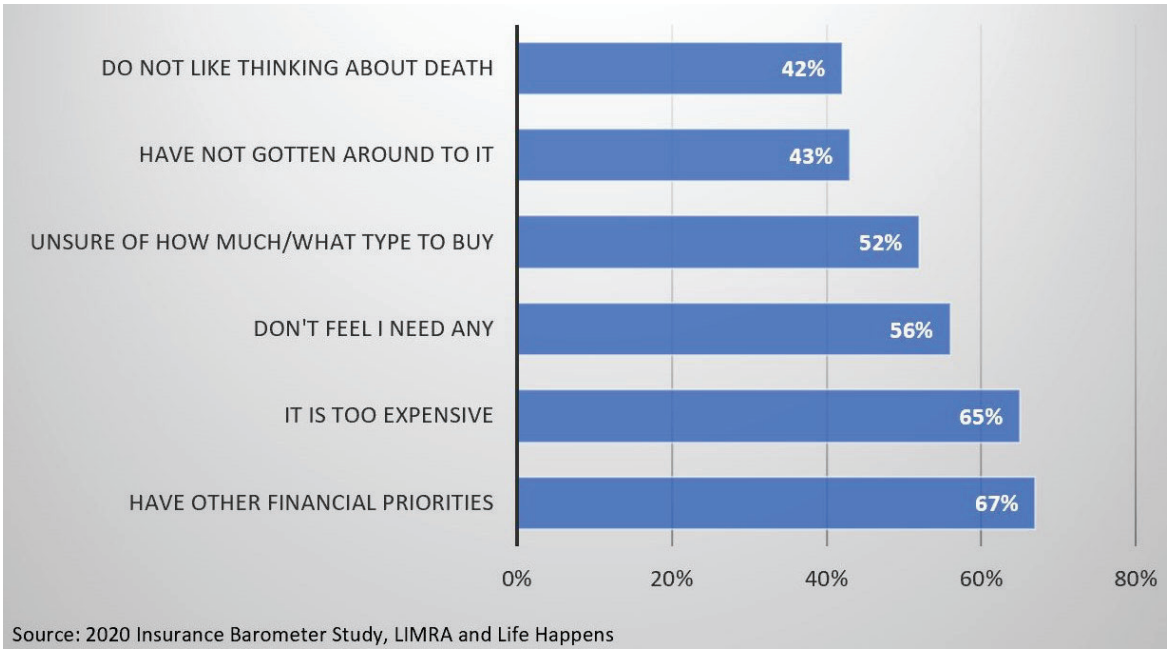


Figure 4 Top Reasons for Not Owning Life Insurance

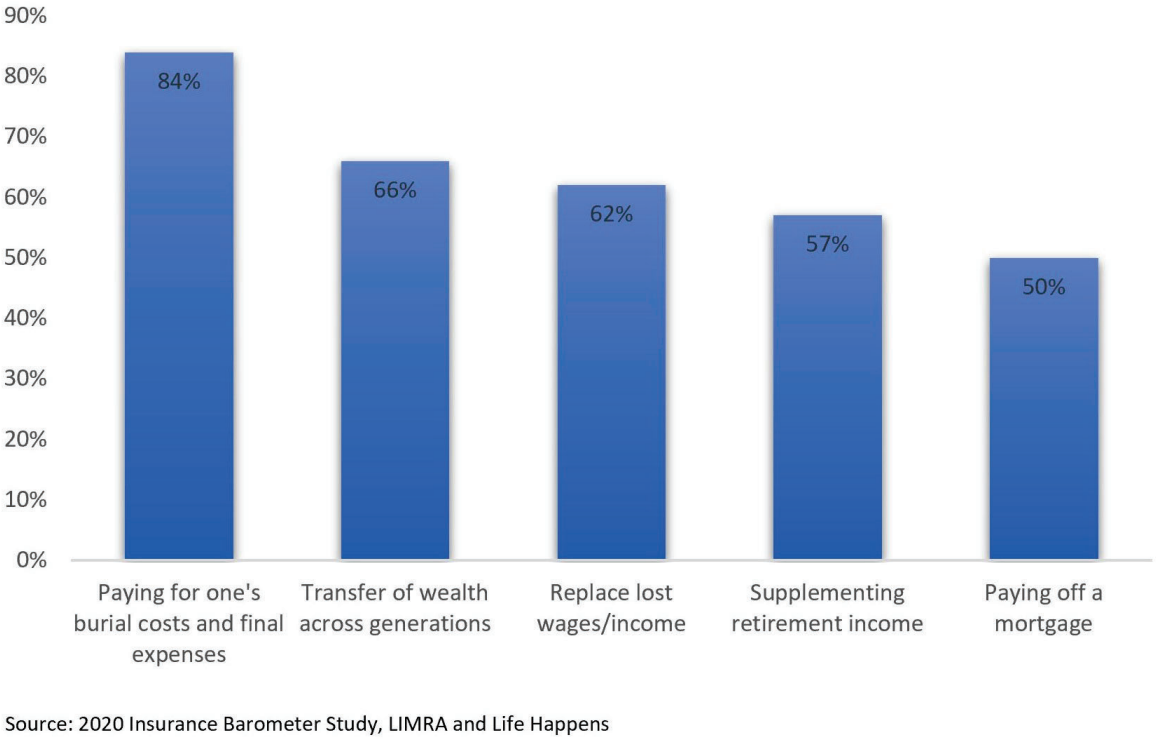


Figure 5 Top Reasons for Owning Life Insurance

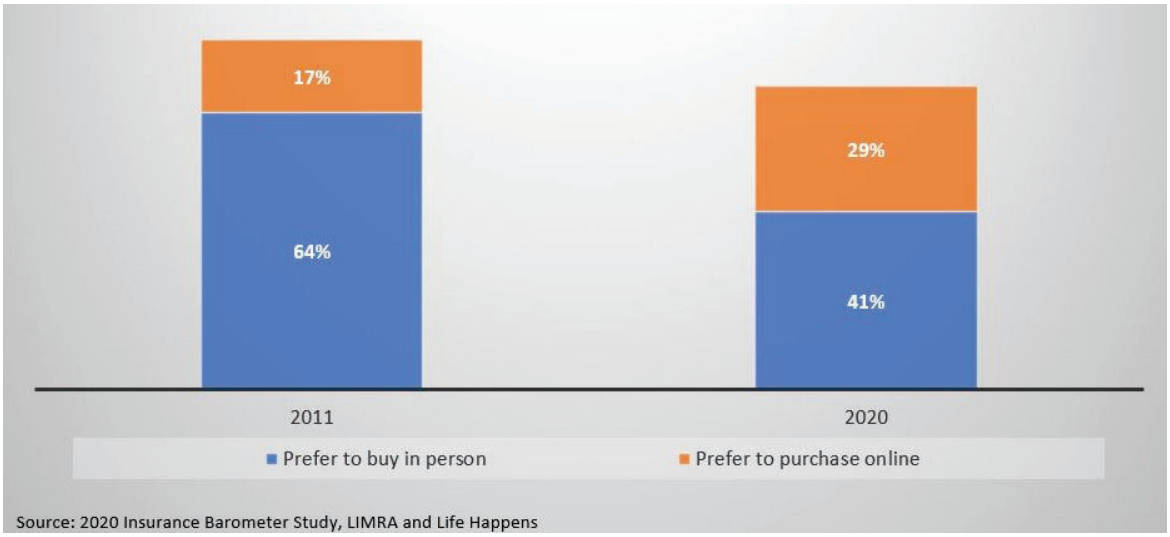


Figure 6 Consumer Modality Preference for Purchasing Life Insurance

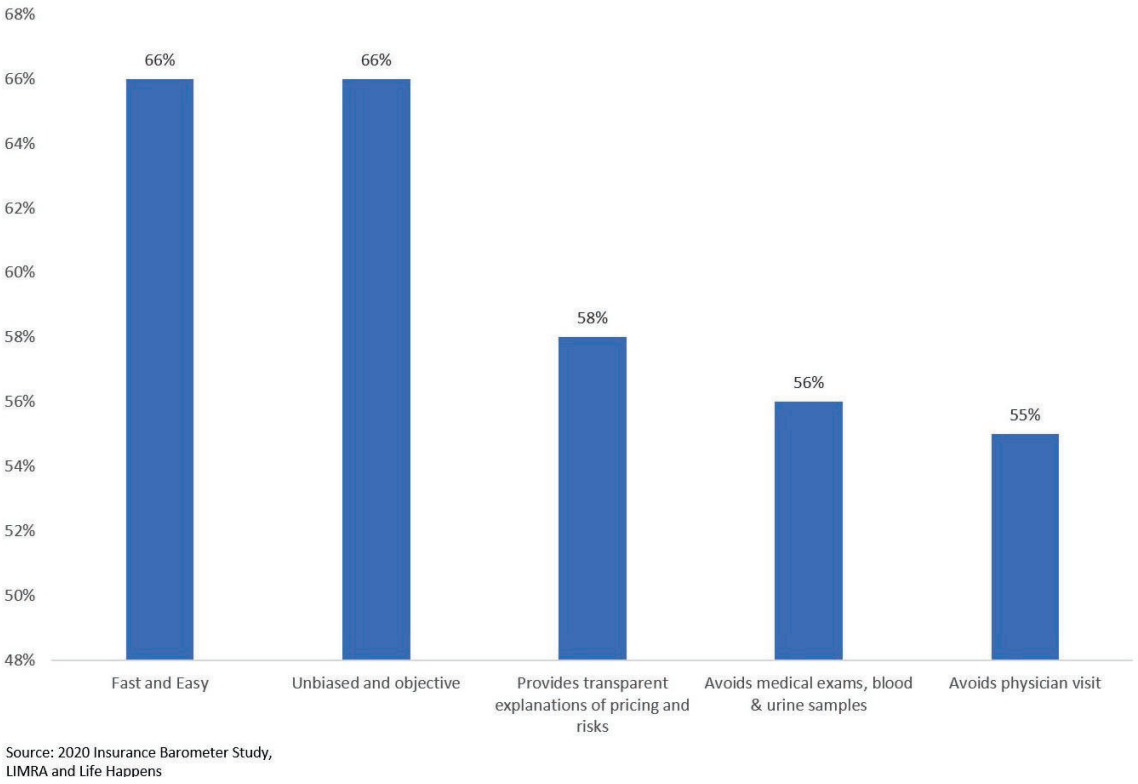


Figure 7 Reasons Consumers Prefer Simplified Underwriting

3 Determinants of Life Insurance Demand: A Progress Report

Knight (1921) refers to life insurance as the branch of insurance with contingencies "most accurately measured because its classifications are most perfect". He argues purchasing life insurance is clearly insuring against the premature loss of earning power, not against death. He goes on to suggest that when it is used as a mere investment proposition, it is not functioning as insurance. Similarly, Smith (1982) suggests consumers view whole life insurance products as an options package. Therefore, a critical reader reviewing literature assessing potential determinants of life insurance demand must be certain to discern whether the utilization is for term or whole/hybrid insurance type contracts. However, though Knight's argument is rationally sound, it cannot be discounted that individuals with greater wealth are potentially (likely) influenced by wealth advisors to use different types of life insurance products offering more than just term coverage. With a multitude of hybrid products existing on the market that blend term coverage with investment possibilities and tax savings (and salespeople highly incentivized to sell them), an individual who purchases whole over term cannot be assumed to be neglecting a bequest motive. It is pertinent to acknowledge the challenge that lies behind the disentangling of consumer motives in choosing between life insurance product types.

Life insurance demand encompasses the acquisition of life insurance policies, the utilization of features within those policies (ie. loans), and the forfeiture of policies (whether or not the action is voluntary). While much empirical work has uncovered many answers to the questions examined, more work has yet to be done. Extant research examining consumer utilization of life insurance hails a robust collection of theoretical and empirical works

examining the demand for life insurance, with Yaari (1965); Fischer (1973); Pissarides (1980) and Lewis (1989) included among the seminal works. As Srbinoski, Strozzi, Poposki, and Born (2020) conclude in their study "Trends in Life Insurance Demand and Lapse Literature", *"While the empiricists have made substantial progress by uncovering a wide array of determinants driving the behavior in life insurance, many puzzles remain at the macro and micro level. At the macro level, the influence of culture and institutional development on lapse rates remains to be explored in future studies, while at the micro level, the research on the role of tax incentives for lapsations may contribute to a better understanding of policy-replacement and interest rate hypotheses."* This paper works to fill in some of the knowledge gaps surrounding life insurance utilization. The following review of many of the major studies examining both micro and macro determinants of life insurance shares the knowledge the extant research has gained through present-day. A brief summary of a few selected works can be found in Table 5. While the following summaries are not intended to be exhaustive, they are intended to serve as a foundation to explain the motivation driving the analyses that follow it.

3.1 Consistent vs Conflicting Findings

Zietz (2003) performs a thorough review of literature examining demographic and economic factors affecting the demand for life insurance. Factors Zietz identifies as either a positive or insignificant determinant of life insurance demand across previous literature includes bequest motives, community involvement, consumer sentiment, employment, male gender, geography, geographic mobility, insurance on wife pre-marriage, life expectancy, population, psychographic traits, budget, earnings, number of credit cards, home ownership, and stock market price index. Factors she identifies in the literature as either a negative or insignificant determinant across the literature include brand loyalty, information seeking, insurance on husband pre-marriage, marital status, price conscious, religion, self-esteem, work ethic,

and the price of insurance. Zietz also identifies numerous factors with conflicting findings, both positive and negative outcomes across the literature. These include age, education, family size, life stage, number of income earners in a home, birth order, income, wealth, inflation, and social security. The remainder of this section reviews these determinants and the findings from the literature that has examining them.

3.1.1 Macroeconomic Factors

When examining the utilization of life insurance in any country, whether cross-sectionally or across time, it is important to consider the exogenous effects of the marketplace on individual consumer decisions. Beck and Webb (2003) examine panel data from 68 different countries between the years 1961 to 2000, and find pricing stability and banking sector development to be significant predictors on the utilization of life insurance within a specific economy. Li, Moshirian, Nguyen, and Wee (2007) examine the determinants of life insurance consumption in OECD countries and find demand for life insurance significantly increases with income, the number of dependents, and level of education. They also find that demand decreases with life expectancy and social security expenditure and go on to conclude that life insurance demand is better explained when the product market and socioeconomic factors within a country are jointly considered.

In an examination of the affect macroeconomic factors have at the microeconomic level, Liebenberg, Carson, and Hoyt (2010) analyze the use of policy loans within permanent insurance in a post-World War II marketplace. Using SCF data, they examine four hypotheses previously proposed in prior literature as potential loan determinants. These hypotheses are the aforementioned EFH, as well as the Arbitrage Hypothesis, the Alternative Funds Hypothesis, and the Inflation Hypothesis (Outreville, 1990). They find novel evidence supporting the EFH as a policy loan determinant within the U.S. in the post-World War II marketplace. They also find significant support for the Alternative Funds Hypothesis as

well. Russell, Fier, Carson, and Dumm (2013) examine macroeconomic data as it relates to life insurance surrender activity and find support for the EFH as well as the Interest Rate Hypothesis (IRH) (Kuo, Tsai, and Chen, 2003). They also find macroeconomic factors that support the Policy Replacement Hypothesis (Outreville, 1990).

Life insurance demand has also been shown to be affected during times of economic financial crisis. Parker (2017) examines data from the Nielsen Consumer Panel of 2008, which includes 25,000 households, in an effort to identify factors that affect consumption smoothing by a household. Per Parker, the Life-Cycle/Permanent-Income-Hypothesis (LC/PIH) theory, explained in greater detail in Section 3.1.2, adequately explains the propensity of households to increase spending in response to the arrival of predictable, lump-sum payments. Per LC/PIH theory, consumers may not smooth consumption due to income shocks and temporary portfolio illiquidity. Parker also points to an alternative hypothesis whereby preferences and behavioral characteristics result in a consumer's inability to smooth consumption. These preference and behavioral characteristic factors include limits on human reasoning, complexity of human motivation, limited attention, limited planning, reliance on heuristics, and/or problems with self-control. Parker also finds evidence that a household's response to economic stimulus payments is related to household income two years prior to the receipt of the payment. Parker argues this behavioral finding supports the preferences hypothesis versus the hypothesis of temporary low income. Parker does find some evidence for the buffer-stock (LC/PIH) model for those households which are highly impatient as they showed larger spending responses among households with low liquidity, and posits these low levels of ability and low levels of economic sophistication are persistent characteristics resulting in consumption volatility. Parker also finds lack of consumption smoothing is associated with a measure of impatience, a measure of lack of financial planning, and some measures of lack of frictionless optimization in other dimensions.

In an effort to analyze a recession's effect on the joint decisions between life insurance demand and a household's portfolio composition, Wang (2022) examines SCF panel data

from 2007 through 2009. Using models similar to those developed in Liebenberg, Carson, and Dumm (2012), Wang finds that during times of economic crisis, household portfolio composition is a more significantly correlated determinant of life insurance demand than any life event. Wang also identifies that policyholders holding a higher proportion of assets in bonds have a higher likelihood to reduce a greater percentage of term life insurance coverage during a recession, compared to other households. Additionally, Wang finds that households with a newly unemployed resident during a recession are more likely to reduce or drop whole life insurance coverage, compared to other households.

3.1.2 Identified Determinants Within Life-Cycle Theory

It has long been acknowledged in extant economic literature that life-cycle theory is the benchmark against which to measure real world activities, despite acknowledged challenges in matching theoretical and empirical outcomes (Ludvigson and Michaelides, 2001; Xiao, Ford, and Kim, 2011).[57] Both theoretical and empirical works have shown a consumer's decision to purchase adequate amounts of life insurance, as a way to buffer against exogenous household economic shocks throughout their lifetime, is supported by life-cycle theory (Fischer, 1973; Pissarides, 1980; Carroll, 1997; Deaton, 2005). The Life Cycle Model (LC) introduced by Modigliani and Brumberg (1954) closely resembles the Permanent Income Hypothesis (PIH) introduced by Friedman (1957). A primary feature of the traditional LC/PIH model is that consumers typically face a single budget constraint across their lives. As consumers strive to maintain smooth consumption across their lifetime, there will be subsequent periods of borrowing, saving, and dis-saving, respectively. This effort to smooth consumption across their lifetime results in a hump shape distribution of their lifetime wealth, with a life-cycle

[57]In examining the different economic theories on rationality, many newer behavioral considerations offer opportunities for future research examining life insurance determinants. These include, but are certainly not limited to, the certainty effect, the effect of expectation based reference dependent preferences upon the life cycle model, emotional stability, loss aversion, and bounded rationality across the life cycle (Binswanger, 2012; Mather, Mazar, Gorlick, Lighthall, Burgeno, Schoeke, and Ariely, 2012; Hwang, 2017; Pagel, 2017; Kettlewell, 2019; Richter, Ruß, and Schelling, 2019).

deficit in the youngest and oldest years (borrowing and dis-saving respectively), and a surplus during middle age when their income is highest (savings). Consumption is a function of wealth plus expected lifetime earnings divided by the number of years until retirement/death. The implication of the life-cycle hypothesis for the economy as a whole is when income in a country is growing, each subsequent generation adjusts their consumption expectations upward to match the increase in income. Though Modigliani and Brumberg (1954) recognized the existence and importance of bequest motives, they were not explicitly accounted for in their original life-cycle model hypothesis. Not accounting for bequests within the life-cycle hypothesis allows equilibrium to be maintained within the circular flow of macroeconomics, representing the flow of goods and money between producers and consumers. Solow (1956) would go on to derive a general equilibrium model, however one of the many assumptions again needed for the model to hold, is to assume there are no bequests.

As Carroll (1997) points out, many academics have argued the LC/PIH model is too restrictive to be applicable in real world scenarios. In response to these criticisms, Carroll introduced the Buffer-Stock LC/PIH Model in 1997 (Carroll, 1997). Carroll posited buffer-stock type choices are made by consumers who strive to undertake precautionary savings yet have low patience and high-income uncertainty. Carroll argued the buffer-stock saving perspective of the LC/PIH model is much more realistic and holds without requiring the strict assumptions needed by the LC/PIH models. Within the buffer-stock model, consumers set average consumption growth equal to average labor income growth, regardless of tastes. The buffer-stock LC/PIH model suggests consumers save as a way to finance consumption during retirement, finance specific expenditures, maintain a buffer-stock of wealth for precautionary motives, and also potentially for bequests. Researchers have debated over the years as to the prevalence of bequest motives being intentional versus accidental, as there is evidence for both. Also, just as individuals do not smoothly dis-save at the end of their lives, empirical work has shown that consumption also drops toward the end of life in many cases. While this could be attributed to hyperbolic discounting, behavioral economists tend to posit that

individuals simply have a hard time planning for the future (Parker, 2017). Regardless of motive, bequests exist, and this translates to less wealth going out in consumption, which negates the perfect feedback loop of equilibrium establishing the foundation of the Buffer-Stock LC/PIH. As no economic model has yet been able to overlay reality, the Buffer-Stock LC/PIH model remains the gold standard by which to examine life-cycle theory, regardless of the undeniable existence of bequest motives.

3.1.3 Bequest Motives

Bequest motives are examined within economic analysis to understand why people leave money behind when they die. Some researchers argue bequest motives are intentional, for instance a parent willfully leaving wealth to a child or grandchildren as a form of altruism. Becker (1991) argues if people with a planned intentional bequest live longer than expected, they then use the wealth originally intended as a bequest, essentially purchasing an annuity from their heir(s). Others have argued the bequest motive is accidental. This would occur when precautionary savings are held by the individual as a form of insurance against mortality risk as a form of protection from outliving their savings. Thus, when they die there is still money leftover, and the bequest is unintentional. When a bequest motive exists, whether intentional or accidental, individuals do not fully dis-save which invalidates the equilibrium of the model. Additionally, if the bequest was intentional, the individual may have saved more as a gift, so the amount is beyond the anticipated consumption through death.

In an analysis on the existing literature examining determinants affecting lapsation and demand for life insurance, Srbinoski, Strozzi, Poposki, and Born (2020) argue younger policyholders are more likely motivated by income, particularly in a one-earner household, whereas older policyholders are more motivated by bequest motives. These bequest motives for older individuals are subsequently reduced by bequest motive shocks such as the loss of a spouse. Fang and Kung (2020) utilize a reduced form logit to examine the likelihood of life insurance

lapsation within a sub-population group of older men within HRS data. They estimate that when these policyholders are younger, lapsations are uncorrelated with bequest motives. Their findings suggest that as male policyholders get older however, bequest motive shocks are significant determinants of life insurance lapsation.

3.1.4 Age

As noted by Zietz (2003) and Liebenberg, Carson, and Dumm (2012), the investigation of age as a determinant of life insurance demand has yielded inconsistent results. It is arguable that results examining age as a determinant for life insurance demand should track closely with life cycle theory expectations, with age being important at a point in one's life where dis-savings begins, subsequently becoming less significant as one nears end of life. It is also important to consider the effect of pricing on consumer behavior, since as one ages, the cost of life insurance increases significantly, and Zietz (2003) finds price to be a significantly negative determinant of life insurance demand. It is then arguable that those older individuals with high wealth levels to exhibit less negative demand than older individuals with lower levels of wealth. Hartley, Paulson, and Powers (2017) find the peak age of owning term insurance is about 47, which coincides with the average age of peak earnings.

Lin and Grace (2007) examine the life cycle demand within SCF data for different types of life insurance and find a significant relationship between financial vulnerability, the amount of life insurance purchased, and the age of the consumer. Older consumers utilized less life insurance to protect a certain level of financial vulnerability than younger consumers. This aligns with findings from Srbinoski, Strozzi, Poposki, and Born (2020) that younger households are motivated by income in their life insurance utilization decisions, unlike their older counterparts which are more driven by bequest motives.

3.1.5 Generational Birth Cohorts

Chen, Wong, and Lee (2001) point out that cohort analysis has traditionally been used in the field of sociology. In examining life insurance purchasing decisions across birth cohorts, they find a decrease in the purchase of life insurance for households whose members belong to more recent birth cohorts. They attribute a higher share of individuals living alone without dependents and trend toward getting married later in life (delaying children). They argue that cohort analysis is appropriate because cross-sectional age differences can be tied to different age groups belonging to different birth cohorts. As these different birth cohorts move through their own respective life cycles, they experience their own environmental forces and exogenous impacts unique to each birth cohort, thereby shaping their behavior as consumers.

3.1.6 Gender

The difference in American life insurance utilization between male and female consumers has existed since life insurance first began in the United States. Section 2.2.2 gives an overview of the initial laws and regulations that restricted a woman's right to own or utilize life insurance. At the time when women initially earned the right to own life insurance, the industry typically marketed industrial policies toward working women (Heen, 2011). The differences in how women first began utilizing life insurance in America may contribute to how women continue to utilize it differently present day, as women consistently tend to lag behind men in life insurance demand. In their empirical examination of risk aversion between genders, Croson and Gneezy (2009) find those who identify as male are less risk averse than those who identify as female. However, there are likely additional contributing factors beyond differences in risk aversion/tolerance. Other reasons may include significant differences in income earned and/or the potential to undervalue the financial worth of a woman's role outside of traditional employment.

3.1.7 Race

The type of life insurance policies initially marketed to Blacks in the early to mid-1900s were typically low value industrial policies (comparable to the focus of those types of policies to women years earlier) that functioned as over-priced term policies that did not provide adequate coverage to surviving family. As noted in Section 2, a 1940 survey of life insurers found that over 40% of companies had yet to offer life insurance coverage to black individuals. The timing and manner in which Black and non-white consumers in the U.S. first began utilizing life insurance is important to understand while examining the affect the factor of race has on the utilization of life insurance. Despite the stark differences in how whites first came to use life insurance versus non-whites, very few studies have examined the differences between races and life insurance demand. Indeed, in the thorough literature review performed by Zietz (2003), only one study in 1967 is identified that examined the factor of race, and there were no significant findings.

Harris and Yelowitz (2018) work to evaluate racial differences in life insurance coverage. They begin by acknowledging the significant gap in wealth between Black households and non-white households that exists even after controlling for earnings and family structure. They offer several possible reasons for this gap including differential savings behavior and asset composition and bequest differences. What is neglected however, is the lag in time that Blacks have had to acquire comparable wealth (and education and bequests) to whites. They do examine life insurance coverage between races, as a way to measure if differences in mortality prior to retirement may also be contributing to the wealth gap between Blacks and whites. Examining data from the Survey of Income and Program Participation between 2001 and 2010, Harris and Yelowitz (2018) find that Blacks are more likely to hold life insurance than whites, and more likely to hold whole life insurance than term.

3.1.8 Ethnicity and Culture

The term culture is an abstract concept defined by numerous dynamic factors. Referencing a specific "culture" is intended to convey that cultural group's shared system of values, beliefs, traditions, and customs that result in a shared set of behavioral standards for individuals comprising the respective culture. Ethnicity refers to a shared common ancestry, geographic place of ancestral origin, language, race, religion, and/or culture by a group. It is not unusual for consumer surveys to ask respondents to indicate whether or not they have a Hispanic heritage. Empirical work examining life insurance demand has generally found that a consumer identifying as a Hispanic individual is less likely, on average, to own life insurance (Hartley, Paulson, and Powers, 2017). The motivation behind this lower demand by Hispanics has yet to be empirically identified, and it leaves room for further investigation. The lower demand may be at least somewhat correlated with the likelihood of those with lower income and wealth to purchase life insurance, in that Reimers (1983) examines wages for Hispanics, and finds Hispanics earn significantly less than their non-Hispanic counterparts. Immigration is an unlikely correlate within the Hispanic community of consumers, particularly within more recent birth cohorts, as the vast majority of Hispanics are U.S. Citizens (79%) as of 2019, and immigration within that demographic has continued to fall significantly in recent years (Noe-Bustamante, 2019).

Eck and Nizovtsev (2006) work to investigate the low penetration rate of life insurance utilization within Latin America countries and the Caribbean, of which Hispanics comprise significant portions of the population. Their examination stems from a perspective of fatalistic theory, and they investigate Catholicism rates within Latin American and Caribbean countries as a proxy for fatalism. They identify a correlation between fatalism and low, or no, life insurance utilization in those countries. They do have a sampling selection error however in that their data does not consider consumer level information, therefore stratification down to life-cycle variables is not performed adequately. Also, there is an omission

of consideration in the low general uptake in Hispanic cultures in general of life insurance. While fatalism may well play a role in the low utilization of life insurance with within Latin America and the Caribbean, and even within Hispanic cultures in general, their analysis still leaves more questions to be answered.

3.1.9 Religion

Zietz (2003) notes prior literature that has examined religion as a potential determinant of life insurance demand typically finds it to be a negative determinant of life insurance. Outreville (2014) reviews life insurance demand literature and notes that religion has only been empirically examined in a small number of academic papers. Burnett and Palmer (1984) use a Multiple Classification Analysis (MCA) on a Consumer Panel survey and find strongly held religious beliefs to be inversely related to the amount of life insurance held. However, their sample had a small number of observations (n=159) that were all drawn from the same southwestern American city. Their sole reliance on MCA, paired with the small homogeneous sample, results in a lack of generalizability of their findings to the rest of the country. In another examination of life insurance demand, Browne and Kim (1993) determine that antagonistic attitudes toward life insurance due to religious beliefs may significantly lessen demand.

Barsky, Juster, Kimball, and Shapiro (1999) find risk tolerance varies by religion. Using data from the HRS, they find Protestants to be the least risk tolerant and Jewish individuals to be the most risk tolerant, with Catholics landing between the two. One of the many variables they use in arriving at their conclusion is the owning of life insurance. In an analysis of risk aversion demography, Halek and Eisenhauer (2001) find race, heritage, gender, and religion all have the potential to affect risk aversion, as measured by owning term life insurance. In an examination of HRS data from the 1992 survey wave, they find whites and "other race" individuals to be significantly more risk averse than Blacks, non-Hispanics to

be significantly more risk averse than Hispanics, and women to be significantly more risk averse than men. They also find that the religion one identifies with generally has very little effect on risk aversion. In the results from one of their semi-log models however, Catholicism indicated a marginally higher level of risk aversion, while results from their full-log model showed Judaism increased risk aversion significantly.

Scheve and Stasavage (2006) posit religion acts as a negative determinant on the demand for life insurance. Employing a factor analysis technique against the World Values Survey and examining religious attendance, their model suggests there may be a correlation between higher religious values and lower interest in differing forms of social insurance, including life insurance. In their comprehensive study of culture's effect on life insurance demand, Chui and Kwok (2008) argue there is no need to break out denominations when examining religion with life insurance consumption, as they argue a "religious" person will generally buy less insurance.

Park and Lemaire (2011) find that being religious, measured by an individual identifying as either Christian or Muslim, is a negative determinant of life insurance demand. Numerous studies examining Muslim individuals and their utilization of life insurance have found countries with an Islamic background, or governed by Islamic law, to result in a lower demand for life insurance (Outreville, 1996; Ward and Zurbruegg, 2002; Feyen, Lester, and Rocha, 2011; Outreville, 2013, 2018). Beck and Webb (2002) perform a cross country analysis and find identifying as a Muslim is a negative determinant of life insurance demand, as well as identifying as either Protestant or Catholic. Beck and Webb (2002, 2003) find religion, inflation, income per capita, banking sector development, and institutional indicators to all be robust correlates with life insurance utilization; whereas, education, life expectancy, young dependency ratio, and the size of the social security system of a country were found to be insignificant.

3.1.10 Marital Status & Single Parenting

Anderson and Nevin (1975) use a Multiple Classification Analysis to examine socioeconomic, demographic, and psychographic variables associated with the amount and type of life insurance purchased by a sample of young newly married couples. The purchase of a larger than average amount of life insurance was found to be much more likely in households where: the husband did not attend college; current and expected household incomes were in the low and high ranges; net worth was greater; the husband had purchased no life insurance before marriage; or the wife had purchased term insurance before marriage. The purchase of term insurance was found to be much more likely in households where: household net worth was greater; the wife purchased term insurance before marriage; or the insurance agent did not influence the decision. Ferber and Lee (1980) perform a survey of young married couples in mid-size cities and identify adequate asset accumulation as a primary determinant of life insurance demand, which in their sample, typically occurred several years into a marriage. In an analysis of life insurance demand with joint decisions in a heterogeneous-agent life cycle economy, Wang (2019) finds that demand for life insurance significantly increases in single parent households at younger ages and higher levels than married-couple households.

3.1.11 Education

Both Truett and Truett (1990) and Browne and Kim (1993) find life insurance demand to be significantly and positively correlated with education, with numerous academic works since then confirming their results. The higher the years of education, the higher the likelihood of owning life insurance. Halek and Eisenhauer (2001) make an important point by noting the high correlation between education, employment, income, and wealth must all be considered when examining the effects of education on life insurance demand.

3.1.12 Children in the Household

Utilizing similar control variables found in Mulholland, Finke, and Huston (2015), Hartley, Paulson, and Powers (2017) estimate the following equation to characterize the demand for life insurance.

$$Y_{i,j,t} = \alpha_t + \beta_{i,j} x_{i,t} + \varepsilon^*_{i,j,t} \tag{1}$$

Where the variable Y is equal to one if household i owns life insurance of type j in year t, and is zero otherwise. Their results were surprising in that they did not find evidence showing the presence of children in the household affects the likelihood of owning term life insurance. This differs from the findings from Srbinoski, Poposki, Born, and Lazzari (2021). Using German data from the Socio-Economic Panel, they find the birth of a child creates additional burden on household budget and can motivate households to surrender their policies.

3.1.13 Employment

Similar to age, employment status is another factor that is translational via life cycle theory. In the analysis performed by Liebenberg, Carson, and Dumm (2012), they find that unemployment negatively affects the demand for life insurance. They also find that individuals beginning new jobs are more likely to initiate term insurance coverage compared to other households. They attribute their significant finding of new policy initiation with a growing household, which differed from previous academic findings, to the dynamic analytical framework they utilize in their analysis.

3.1.14 Income/Wealth/Affluence

Age, education level, and employment status typically all culminate into one's earning power which can be measured by both income and wealth. Eisenhauer and Halek (1999) find that increasing household wealth has a positive effect on the demand for life insurance. An examination of SCF data by Bertaut and Starr-McCluer (2000) looking at household portfolio composition within the U.S. finds that households with the highest likelihood to own permanent insurance are those that are wealthier and have a higher percentage of other types of financial holdings. Storesletten, Telmer, and Yaron (2004) examine the widening wealth disparity that increases with age across income and consumption and find that individual-specific earnings can provide a coherent explanation for the disparity. In reviewing the participation in life insurance ownership by low to moderate income (LMI) households, Brobeck (2011) determine there is need for concern regarding the lack of coverage for those households. Figure 2 shows how the wealth disparity within the United States has been growing across the last several decades.

$$
\begin{aligned}
VLapse = \beta_0 &+ \beta_1(1 \text{ if NewUnemploy for R or SP}) + \beta_2(1 \text{ if 1st quartile of NegInc}) \\
&+ \beta_3(1 \text{ if 2nd quartile of NegInc}) + \beta_4(1 \text{ if 3rd quartile of NegInc}) \\
&+ \beta_5(1 \text{ if 1st quartile of NegNW (negative HH } \Delta \text{ in net worth.)} \\
&+ \beta_6(1 \text{ if 2nd quartile of NegNW}) + \beta_7(1 \text{ if 3rd quartile of NegNW}) \\
&+ \beta_8(1 \text{ if NewLife for R}) + \beta_9(\text{Average Age of HH at Survey Year}) \\
&+ \beta_{10}(1 \text{ if NewDivorced for R}) + \beta_{11}(1 \text{ if NewRetired for R and S}) \\
&+ \beta_{12}(1 \text{ if NewWidowed for R}) + \beta_{13}(\text{LN of HH Inc} > 0) \\
&+ \beta_{14}(\text{LN of HH Wealth} > 0) + \beta_{15}(\text{LN of Respondent Debt}) \\
&+ \beta_{16}(\text{Liquidity Measure}) + \beta_{17}(\text{Number of Children in HH}) \\
&+ \beta_{18}(1 \text{ for R or S Working}) + \beta_{19}(1 \text{ if College Degree R or S})
\end{aligned}
\tag{2}
$$

As seen in Equation 2, Fier and Liebenberg (2013) work to identify determinants of voluntary life insurance policy lapses by building on prior work identifying and investigating the Emergency Fund Hypothesis, the Interest Rate Hypothesis, and the Policy Replacement Hypothesis (Outreville, 1990; Russell, Fier, Carson, and Dumm, 2013; Carson and Forster, 2000). They find income shocks by age to be a significant determinant of the voluntary lapse decision, with income shocks having a higher effect on younger households. Similar to Liebenberg, Carson, and Dumm (2012), they also find support for the EFH, with an increased likelihood of lapse (by 33%) after suffering a substantial income shock.

Saez and Zucman (2014) examine wealth in the United States via income tax returns from 1913 through 2012 and subsequently test their findings across three separate microeconomic data sets, including the SCF. They find wealth inequality has increased considerably since the mid-1980s. They attribute this growing disparity to the rise of the share of wealth owned by the top 0.1% richest families. Fulford (2015) however, finds income uncertainty does not play a role in motivator for precautionary savings. As noted in Section 2.5.2, as wealth disparity has continued to widen throughout the United States, the number of policies being purchased has dropped. However, the face amounts of the policies being purchased have increased significantly. This supports the argument that as wealth decreases so does the demand for life insurance, and as wealth increases, demand not only similarly increases, but the average policy amount also increases substantially.

In her examination on life insurance demand across joint decisions, Wang (2019) finds that for married couples whose husband is in the middle to high income earning brackets, life insurance demand decreases monotonically as wealth increases. Wang argues this indicates a substitution effect between net wealth and life insurance. She also finds that for those married-couple households with husbands in the low earning income group, life insurance demand first increases as wealth grows and then significantly decreases.

With the explicit goal of understanding the multi-step decision process consumers use when surrendering a life insurance policy and/or taking a loan on it, Cole and Fier (2020) utilize a sequential logistic regression analysis to examine the surrender and loan decisions jointly. Using microeconomic data from the SCF they find households tend to surrender their cash value policies when longer-term financial needs arise, while temporary needs are more likely addressed with loans which keep the policy in force.

3.1.15 Tax Motivations

Brown and Poterba (2006) investigate the utilization of life insurance and its use in tax-savings strategies and find that life insurance is used by some as a tax-sheltered form of savings. Mulholland, Finke, and Huston (2015) perform a microeconomic analysis using SCF data to examine if a change in tax codes and estate laws have contributed toward the downward shift in demand for cash value life insurance. They employ the following semi-log model, where P_i represents the probability the household will own cash value life insurance,

$$\begin{aligned} ln\frac{P_i}{(1-P_i)} = {} & \beta_0 + \beta_1(\textit{QualSavingsPlans-post98}) + \beta_2(\textit{EstTaxVulnerable-post01}) \\ & + \beta_3(\textit{OwnTerm}) + \beta_{4-9}(\textit{1995-2010yr dummies}) + \beta_{10-14}(\textit{agegroups} < 75) \\ & + \beta_{15-18}(\textit{income quintiles} > 20\%) + \beta_{19-22}(\textit{net worth quintiles} > 20\%) \\ & + \beta_{23-25}(\textit{education} > HS) + \beta_{26-27}(\textit{health status} > fair/poor) \\ & + \beta_{28-29}(\textit{risk averter}) + \beta_{30}(\textit{owns QRP}) + \beta_{31}(\textit{pension}) \\ & + \beta_{32}(\textit{married}) + \beta_{33}(\textit{children}) + \beta_{34}(\textit{self-employed}) + \beta_{35}(\textit{homeowner}) \\ & + \beta_{36}(\textit{bequest motive}) + \beta_{37}(\textit{expect sizable estate}) \\ & + \beta_{38-40}(\textit{nonwhite race groups}) + \beta_{41-44}(\textit{financial sophistication}) \end{aligned} \tag{3}$$

Mulholland, Finke, and Huston (2015) find the fewer households who do own cash value policies are on average wealthier and more financially sophisticated. They argue this finding

lends support to their hypothesis that permanent life insurance is increasingly being used as a tax shield rather than as a hedge against a loss in human capital. This could signal a difference in utilization of different types of policies by wealthy households, which would be further widened by the growing wealth disparity within the nation.

3.1.16 Cognition

As whole life and hybrid products are generally tied to investing and tax saving strategies, cognition levels may well be correlated with an increase in the demand for whole life insurance policies. Inversely, it is possible that as individuals age into physical conditions that result in lower cognition, lower utilization of these products may be the result. Christelis, Jappelli, and Padula (2010) use German SHARE data to examine the effect of cognition levels on portfolio decisions and find the propensity to invest in stocks is strongly associated with cognitive abilities.[58]

$$
\begin{aligned}
ln\frac{P_i}{(1-P_i)} = {} & \beta_0 + \beta_{1-3}(\textit{cognitive ability quartiles} > 25\%) \\
& + \beta_{4-6}(\textit{income quartiles} > 25\%) + \beta_{7-9}(\textit{net worth quartiles} > 25\%) \\
& + \beta_{10}(\textit{financial knowledge}) + \beta_{11}(\textit{married}) + \beta_{12}(\textit{children}) \\
& + \beta_{13-17}(\textit{age groups} < 60 \ \textit{or} > 64) + \beta_{18}(\textit{gender}) \\
& + \beta_{19}(\textit{log of Total Debt}) + \beta_{20-21}(\textit{non-white race groups}) \\
& + \beta_{22-24}(\textit{education} > no - HSdegree) + \beta_{25-28}(\textit{health problems} > 0) \\
& + \beta_{29}(\textit{estate tax vulnerable}) + \beta_{30}(\textit{newly retired}) \\
& + \beta_{31}(\textit{income shock}) + \beta_{32}(\textit{additional grown child at home shock}) \\
& + \beta_{33}(\textit{marriage shock}) + \beta_{34}(\textit{health shock})
\end{aligned} \tag{4}
$$

[58] While this is not an American study, their findings help support the hypothesis that cognition is associated with the utilization of whole life insurance products as well as loans from those product types.

Mulholland and Finke (2014) use the semi-log model found in Equation 4 on 2008 household level data from the HRS to examine the effect of cognition on the likelihood of lapsation, where P_i represents the probability that the individual will voluntarily lapse on their life insurance. They find that numeracy, when used as a measure of cognition, is significantly related to voluntary lapse decisions. They also find, when controlling for numeracy, individuals with greater net worth are significantly less likely to voluntarily lapse than those with lower net worth, supporting the Emergency Fund Hypothesis. They note that lapsation not only affects consumers who lapse, but it also has economic effects on their potential beneficiaries as well as the life insurers. , they test individual cognitive abilities against the incidence of lapsation rates.[59] They use the following model to determine the probability of voluntarily lapsing a life insurance policy:

Goldsmith (1983) find that households of married couples that include a highly educated wife with labor force experience, or labor force potential, had a lower likelihood of purchasing term insurance. They posit her human capital was likely substituting as a substitute for life insurance. Auerbach and Kotlikoff (1989) focus on the exposure wives would face upon losing a bread-winning spouse. They find older women in the lower income demographics face the highest vulnerability of exposure due to inadequate life insurance coverage. Gandolfi and Miners (1996) examine life insurance purchases by and between husband and wife married couples in 1984. They find full-time employed wives had only 48% as much life insurance coverage as their husbands, and non-employed wives had only 15% as much as their husbands. In an effort to examine if middle aged American households were adequately covered with life insurance in the late 1980s, Hartley, Paulson, and Powers (2017), find that while the sex of the household head has no significant effect on the ownership of term life insurance during the time period studied, the sex of household head did affect cash value ownership.

[59]To identify numeracy, the authors followed McArdle, Smith, and Willis (2009) to create a combined numeracy score by adding the "1s" for each of the following three HRS questions; MD178, MD179, and MD180. Episodic memory was measured using two measures of word recall found in the HRS, immediate word recall and delayed word recall. Following Browning (2014), they add the two scores together to create a total word recall (TWR) score for each respondent.

Interestingly, these trends flipped across the time-period studied. In 1989 a male-headed household was more likely to own a permanent policy while in 2013 that expectation was reversed, with a male-headed household less likely to own a permanent policy.

3.2 The Implementation of Dynamic Analysis

The inconsistent findings for so many determinant factors of life insurance demand across numerous empirical studies, are likely due to many of the examinations being static analyses at respective periods of time. This results in static snapshots at different periods of time, not compensating for the changing priorities of individuals and households across time. While this type of analysis is quite useful to identify determinants for individuals with specific characteristics, including age and cohort, many time variant consumer priorities are affected by changes throughout time. These include major life events as well as changing economic climates. In working to dynamically examine these types of changes over time, Liebenberg, Carson, and Dumm (2012) analyze microeconomic panel data within Survey of Consumer Finances (SCF) data, from 1983 through 1989. Their analysis examines several of these factors, including years of education, marital status, number of children, and financial vulnerability, in relation to changes in life insurance demand across time. The controls included in all their model are those typically utilized within life insurance demand empirical analyses, and are comprised of household income, net worth, number of children in the household, marital status, age, race, education level, employment, homeownership, bequest motive, financial risk tolerance, and portfolio composition.

As seen in in Equation 5, they employ a double hurdle econometric analysis via a Cragg regression to examine the changes in new and dropped policies, respectively, conditional on having initiated new coverage or dropped coverage. The initial hurdle model they utilize to examine acquisition of new life insurance, one for term and one for whole. They utilize a

similar initial model to examine the dropping of life insurance, again employing one for term and one for whole, as seen in Equation 6.

$$\begin{aligned} \textit{New Policy}_i = \beta_0 &+ \beta_1(\textit{NewKid}_i) + \beta_2(\textit{NewMarried}_i) + \beta_3(\textit{NewJob}_i) \\ &+ \beta_4(\Delta \textit{Income}_i) + \beta_5(\Delta \textit{Worth}_i) \\ &+ \beta_6(\textit{DroppedTerm (or DroppedWhole, respectively)}_i) \\ &+ \textit{controls} + \epsilon_i \end{aligned} \tag{5}$$

$$\begin{aligned} \textit{Dropped Policy}_i = \beta_0 &+ \beta_1(\textit{NewDivorced}_i) + \beta_2(\textit{NewWidowed}_i) + \beta_3(\textit{NewSeparated}_i) \\ &+ \beta_4(\textit{NewUnemp}_i) + \beta_5(\textit{NewRetired}_i) \\ &+ \beta_6(\Delta \textit{Income}_i) + \beta_7(\Delta \textit{Worth}_i) \\ &+ \beta_8(\textit{NewTerm (or NewWhole, respectively)}_i) \\ &+ \textit{controls} + \epsilon_i \end{aligned} \tag{6}$$

The model for their second stage of analysis of new policies again examines both term and whole amounts separately, adding a control for the dropped policy type opposite to the respective policy type of the dependent variable, can be found in Equation 7, and their second stage model to examine changes for dropped policies can be found in Equation 8.

$$\begin{aligned} \textit{ln\$NewPolicy}_i = \alpha &+ \beta_1(\textit{NewKid}_i) + \beta_2(\textit{NewMarried}_i) + \beta_3(\textit{NewJob}_i) \\ &+ \beta_4(\Delta \textit{Income}_i) + \beta_5(\Delta \textit{Worth}_i) + \beta_6(\textit{ln\$policydroppped}_i) \\ &+ \textit{controls} + \epsilon_i, \textit{where } \textit{NewPolicy}_i = 1 \textit{ (from equation 5)} \end{aligned} \tag{7}$$

$$
\begin{aligned}
ln\$PolicyDropped_i = \alpha &+ \beta_1(NewDivorced_i) + \beta_2(NewWidowed_i) + \beta_3(NewSeparated_i) \\
&+ \beta_4(NewUnemp_i) + \beta_5(NewRetired_i) + \beta_6(\Delta Income_i) \\
&+ \beta_7(\Delta Worth_i) + \beta_8(ln\$NewPolicy_i), + controls + \epsilon_i, \\
&where\ DroppedPolicy_i = 1\ (from\ equation\ 6)
\end{aligned} \tag{8}
$$

Their findings identify a significant relationship between individual life events, such as new parenthood and the number of children in the household, and the demand for life insurance, which support the Emergency Fund Hypothesis (EFH) (Linton, 1932; Outreville, 1990; Kuo, Tsai, and Chen, 2003; Kim, 2005).

3.3 Moving Forward

Though much has been accomplished and answered in the quest to understand determinants of life insurance demand, there is still much work to be done. Empirical evidence has shown us that the ownership of life insurance is likely to match with life-cycle theory, in that an increasing wealth, being a member of the labor force, and age (to a point) are all expected to increase the likelihood of owning life insurance. It has also shown us that bequest motives exist and are a driving factor as well in the holding of life insurance. However, there is also evidence that the growth of a family unit, which would inherently increase bequest motives, can also create an economic constraint that results in the decrease in likelihood of life insurance ownership, and/or increase in lapsation likelihood. We also learn from Chen, Wong, and Lee (2001) that birth cohort differences can result in conflicting findings for consumers born into different generational cohorts. As the concluding sentiments of Srbinoski, Strozzi, Poposki, and Born (2020) convey, there is still much opportunity for future research to address the numerous questions that remain.

The following essays work to answer some of these questions by performing both static and dynamic analyses. First is an examination comprised of numerous analyses within a large longitudinal data set, employing different perspectives of focus on the sample. It also examines the relationship between Christianity and life insurance demand as well as potential differences between generational birth cohorts. The subsequent essay that follows examines determinants of life insurance for consumer subgroups to examine them independently. These essays help contribute to the knowledge base of life insurance demand for both academics as well as those in industry who strive to understand what drives their consumers' decisions.

Table 5 Examples of Previous Literature Examining Life Insurance Demand

Factor		Result	
Religion	Burnett & Palmer (1984) Beck & Webb (2002) Park & Lemaire (2011) Heidesch, Carson, Ragin, and Watson (2022)	D – D – D – D +	Time invariant factors.
Race	Harris & Yelowitz (2018)	D +/-	
Hispanic Heritage/ Ethnicity/Culture	Reimers (1983)	D –	
Gender	Gandolfi & Miners (1996) Hartley, Paulson, & Powers (2017)	D – D +/-	
Education	Truett & Truett (1990) and Browne & Kim (1993)	D +	Life-cycle factors.
Age	Hartley, Paulson, & Powers (2017) Fier and Liebenberg (2013)	D +/- La +	
Employment	Liebenberg, Carson, & Dumm (2012)	D +	
Marital Status	Liebenberg, Carson, & Dumm (2012)	D +	
Single Parenting	Wang (2019)	D +	
Children	Hartley, Paulson, & Powers (2017) Srbinoski, Poposki, Born, & Lazzari (2021)	D n/s La +	
Wealth/Income	Eisenhauer & Halek (1999) Wang (2019) Cole & Fier (2020)	D + D +/- La +/-	
Home Ownership	Liebenberg, Carson, & Dumm (2012)	D +	
Taxes	Mulholland, Finke, & Huston (2015)	D +	
Cognition/ Numeracy	Mulholland & Finke (2014)	D n/s La +	
Bequest Motives	Srbinoski, Strozzi, Poposki, & Born (2020)	D +	
Generational/Cohort Effect	Chen, Wong, & Lee (2001)	D -	

D = Demand: La = Lapse: Ln = Loan: n/s = no significance

4 Life Insurance Demand: Religion and Generational Birth Cohorts

4.1 Introduction

As Zietz (2003) notes, prior literature that has examined religion typically finds it to be a negative determinant of life insurance demand. However, Heidesch and Carson (2022) describe the important role Christian churches played in the development of the life insurance industry within the United States. They share how leaders in Christian churches, opinion leaders in the eyes of their congregants, influenced consumer decision-making via moral persuasion, during the earliest years of the life insurance industry in America. The Christian churches who owned and operated life insurance companies and schemes, adopted messaging that not only encouraged their congregants to participate in the life insurance marketplace, but also told them it was their Christian duty to do so. Subsequently, the secular life insurance industry adopted moral persuasion strategies within their own marketing messages (Stalson, 1942; Zelizer, 1978, 1979; Alborn and Murphy, 2013). I argue these actions resulted in a persuasion bias for consumers, which likely resulted in the residual effect of American Christians having a positive bias toward life insurance ownership. I posit the morally persuasive messages from Christian leadership, that became part of the secular/commercial life insurance industry marketing messaging, means that identifying as a Christian consumer in America may be associated with an increased likelihood of life insurance utilization. The purpose of this study is to use data from the Health and Retirement Survey (HRS) to examine if being a Christian in America is positively related to life insurance demand.

Using a Multiple Classification Analysis (MCA) on consumer survey data, Burnett and Palmer (1984) find that strongly held religious beliefs tend to be inversely related

to the amount of life insurance held. However, their sample had a small number of observations (n=159) that were all drawn from the same mid-size city in the Southwestern United States. Their sole reliance on MCA, paired with the small homogeneous sample, challenges the generalizability of their findings across the rest of the country. Browne and Kim (1993) determine that antagonistic attitudes toward life insurance due to religious beliefs significantly lessen demand. In an examination of risk aversion, using the owning of term life insurance as a proxy for such, Halek and Eisenhauer (2001) find that the religion one identifies with generally has very little effect on risk aversion.[60]

In a cross-country analysis, Beck and Webb (2002) find that identifying as a Muslim, Protestant, or Catholic are negative determinants of life insurance demand. Employing a factor analysis technique against the World Values Survey and examining religious attendance, Scheve and Stasavage (2006) posit religion acts as a negative determinant on the demand for life insurance. Their model suggests a correlation between higher religious values and lower interest in differing forms of social insurance, including life insurance. In their comprehensive study of culture's effect on life insurance demand, Chui and Kwok (2008) argue against breaking out denominations when examining religion with life insurance demand, as they state a "religious" person will generally buy less insurance.

Park and Lemaire (2011) find that being religious, defined by an individual identifying as either Christian or Muslim, is a negative determinant of life insurance demand. They do not disentangle those individuals who identify as Christians from those who identify as Muslim. Multiple studies examining Muslim individuals and their utilization of life insurance have found that individuals living in countries with a predominantly Islamic background, or governed by Islamic law, results in a decreased demand for life insurance relative to individuals who reside in countries that are not predominantly Islamic (Outreville, 1996; Ward and Zurbruegg, 2002; Feyen, Lester, and Rocha, 2011; Outreville, 2013, 2018).

[60]In the results from one of their semi-log models however, Catholicism indicated a marginally higher level of risk aversion, while results from their full-log model showed Judaism increased risk aversion significantly (Halek and Eisenhauer, 2001).

This study is unique in that it disentangles denominations and specifically investigates the relationship between identifying as Christian with the individual's life insurance demand. The following analyses extend traditional life insurance demand research in two novel ways. The first is by intentionally identifying and including those consumers within the sample who identify as Christian, either Protestant or Catholic. I posit the unique history around the creation and messaging of life insurance specifically within America, resulted in Christianity positively affecting life insurance demand within the United States. The second novel contribution to life insurance demand literature is the examination of differences in life insurance demand determinants across generational birth cohorts. Using the HRS data allows for this unique perspective within the analysis.

Section 4.2 explains the rationale for the subsequent analyses, Section 4.3 describes the data set, Section 4.4 describes the empirical methods utilized for each of the three overarching analyses, Section 4.5 reports the results, Section 4.6 addresses the limitations, and Section 4.7 presents conclusions and a subsequent discussion on generalization and potential implications of the findings.

4.2 Background and Hypothesis Development

Life insurance demand encompasses the acquisition (ownership) of life insurance policies by consumers, as well as their forfeiture (lapsation) of those policies. Academic research examining consumer utilization of life insurance hails a robust collection of theoretical and empirical works examining the demand for life insurance, with Yaari (1965); Fischer (1973); Pissarides (1980) and Lewis (1989) included among the seminal works. As Srbinoski, Strozzi, Poposki, and Born (2020) note however, there are still many questions to be answered.

The thorough review of life insurance demand literature by Zietz (2003) reveals numerous inconsistencies in findings for many determinants across life insurance demand research. Factors that Zietz identifies that have consistently been found to be a positive determinant

of life insurance demand include community involvement, consumer sentiment, employment, male gender, geographic mobility, insurance on wife pre-marriage, population, psychographic traits, geography, budget, earnings, number of credit cards, home ownership, and stock market price index. She also notes that life expectancy and bequest motives have each been found to be positive determinants in one study and insignificant in another. Determinants she identifies as consistently having a negative effect on demand are brand loyalty, the inclination to be information seeking, having insurance on husband pre-marriage, being price consciousness, self-esteem, work ethic, and the price of insurance. She notes that religion has either been found to be a negative determinant, or an insignificant factor, depending on the study, with the same being true for marital status and the number of marriages. Factors she identifies with conflicting effect directions between studies, sometimes positive and sometimes negative, include age, birth order, cohort effects, education, family size and number of children, life stage, number of income earners in a home, income, wealth, inflation, and receiving social security.

4.2.1 The Roles of Christian Churches and Persuasion Bias

Heidesch and Carson (2022) identify the initial determinants of life insurance demand for the first policies to be sold in the United States, and show that bequest motives were among those initial determinants of life insurance demand.[61] The other determinants they are able to identify include being married, having children, having a job, education, being able to afford the premium (adequate liquidity), and being a Christian, Caucasian, male. Heidesch and Carson (2022) also describe the important role of moral persuasion by the Presbyterian church in the early development of life insurance demand within the United States. This moral persuasion catalyzed the shift of consumer sentiment toward embracing

[61]The Presbyterian Ministers Fund, the first life insurance company in America, was created as a means to financially care for surviving widows and children of Presbyterian ministers (Heidesch and Carson, 2022).

the idea of life insurance, and the same persuasive messaging would subsequently be adopted into marketing strategies by the secular life insurance industry.

As noted earlier, extant research that examines religion as a potential determinant of life insurance demand, typically finds it to be a significantly negative determinant (Burnett and Palmer, 1984; Browne and Kim, 1993; Outreville, 1996; Barsky, Juster, Kimball, and Shapiro, 1999; Halek and Eisenhauer, 2001; Zietz, 2003; Scheve and Stasavage, 2006; Chui and Kwok, 2008; Park and Lemaire, 2011; Outreville, 2013, 2014, 2018). This does make logical sense, since dogma within many religions generally discourages its adherents from actively seeking life insurance coverage, as it may signal a lack in the faith of their God's providence. For example, Christian principles likely contributed to the initial slow adoption of life insurance in the American Colonies, before the messaging shift via moral persuasion occurred and affected consumer behavior (Zelizer, 1978; Stark and Mccann, 1993; Brackenridge, 1999). Another example is that Islamic law actively prohibits Muslims from speculating about the future (Ward and Zurbruegg, 2002; Outreville, 2014, 2018).

Much academic work has identified the effects of persuasion bias, which requires social influence via an opinion leader using unidimensional and repetitive messaging across a network, on consumer decision making (Katz and Lazarsfeld, 1955; Galbraith, 1967; DeGroot, 1974; DeMarzo, Vayanos, and Zwiebel, 2003; Ackerberg, 2003; Brandts, Giritligil, and Weber, 2015). The model formalized by DeMarzo, Vayanos, and Zwiebel (2003) for persuasion bias builds on the opinion consensus work by DeGroot (1974). Persuasion bias is the result of a boundedly rational individual not optimally processing information. An optimal decision making process would consist of aggregating information received multiple times from within a network, by discounting the information received repeatedly. The individual who aggregates boundedly rational information can be said to be influenced by persuasion bias DeMarzo, Vayanos, and Zwiebel (2003). Per Demarzo's model, all agents treat all information they receive as new and do not account for the fact that they have heard it before from within the same network. Dellavigna and Gentzkow (2009) examine the effect of per-

suasive messaging when paired with social pressures, and find the combination significantly increases the likelihood of consumers changing their behavior. Similarly, Brandts, Giritligil, and Weber (2015) empirically examine the persuasion bias model developed by DeMarzo, Vayanos, and Zwiebel (2003), and find observed behavior to not only confirm persuasion bias, but match nearly perfectly with many of the model's predictions. In her thorough examination of the effects of the Christian church's shift in messaging with respect to life insurance throughout the late 1700s and early 1800s, Zelizer (1979) coined the term "moral persuasion" to represent how the messaging shifts effectively persuaded Christian, and eventually secular, consumer sentiment with respect to life insurance. This shift in consumer sentiment via persuasion bias affected consumer behavior and resulted in increased life insurance sales (Zelizer, 1978, 1979; Stark and Mccann, 1993). I posit the shift in marketing messaging, initiated by moral persuasion begun by the Christian churches, was instrumental in altering aggregate consumer sentiment with respect to life insurance ownership, from negative to positive.[62] Heidesch and Carson (2022) describe how messaging shifts from within the Presbyterian Church, motivated by the Constitution of its General Assembly, incorporated the expectation of purchasing life insurance for bequest purposes as a benevolent and pious act into Christian dogma. The secular commercial life insurance industry then went on to incorporate these messages of moral persuasion as it strategically refined its sales and marketing processes.

This evolution of marketing messaging spearheaded by the Christian churches, and the residual effects of the persuasion bias it resulted in, leads to the creation of the first hypothesis tested in this study. Is identifying as a Christian a significantly positive determinant of life insurance demand in the United States? The null hypothesis for **H1** reads as follows;

$\mathbf{H}1_0$: *A consumer who identifies as Christian will not have a significantly different likelihood for owning life insurance than a non-Christian.*

[62] An example of this flipped mindset is evident in this 1870 quote from the renowned Reverend Henry Ward Beecher; *"Once the question was: can a Christian man rightfully seek Life Assurance? That day is passed. Now the question is: can a Christian man justify himself in neglecting such a duty?"* (Zelizer, 1978).

I argue that the unique actions of moral persuasion by leaders of Christian churches throughout the American Colonies shifted Christian consumer sentiment with respect to life insurance in the United States. This resulted in a significant shift in consumer behavior within the secular/commercial life insurance marketplace as well. I posit that via consumer socialization theory, which suggests consumption choices by an individual are formed and influenced by their social structures throughout their life (which includes their family, friends, co-workers, and media inputs), the residual effects of the initial persuasion bias will still be evident when looking at Christian consumer behavior present day (Zelizer, 1979; Moschis, 2012).[63,64] I posit that being Christian is a uniquely positive determinant for life insurance demand for consumers in the United States. As prior research has not provided evidence of Christianity being a significantly positive factor, which may simply be due to it not having been disentangled to study separately before now, this would be a novel finding in life insurance demand literature.

[63]Though a global mindset is arguably crucial for insurers, history teaches us cultural customs, religious and spiritual beliefs, and national political activities factor heavily into both the creation and unique utilization of life insurance and annuity products within each independent country. Working to comprehensively identify determinants of life insurance demand appears to be a non-generalizable endeavor internationally (Douglas and Wildavsky, 1982; Outreville, 1996; Hwang and Greenford, 2005; Chui and Kwok, 2008; Park and Lemaire, 2011; Berry-Stölzle and Xu, 2021)

[64]The Presbyterian Church played a significant role in building the foundation for what would grow to become the strong and important life insurance industry in America. Life insurance uptake was initially slow throughout the 1700s and the early 1800s, not just within the Presbyterian Ministers Fund, but for most life insurers who joined the fledgling industry. The churchs' need to maintain fund solvency to care for their congregations while simultaneously providing capital to fund investments, resulted in a messaging shift to consumers from the very top of American Christian leadership. This messaging shift was prompted by the growth of the Presbyterian Church during the 1700s. As part of their efforts to grow and expand westward across the United States, they voted to create the General Assembly which became the highest form of Presbyterian church governance. Within the many topics and policies addressed and adopted by the General Assembly, the requirement for all Synod ministers to purchase life insurance from the PMF was included. The messaging from the church began to affect the perception of life insurance at that time, resulting in a significant shift around the perceptions of life insurance. The purchasing of life insurance began to be embraced as a way to show piety and morality within the Presbyterian faith. Presbyterianism, a significant denomination within the realm of Protestantism, began to affect marketing messages throughout the life insurance industry, and the beliefs that purchasing life insurance was a pious and moral act spread throughout the United States (Zelizer, 1978, 1979; Steiner, 2009; Heidesch and Carson, 2022).

4.2.2 The Role of Generational Birth Cohorts

Strauss and Howe (1991) examine the difference in attitudes and preferences between generational birth cohorts in America since 1584. Their generational birth cohort theory was developed based on the significant differences there were able to attribute to each unique generation. They define generational birth cohort theory as the aggregate of all people born over a span of roughly 20 years, for which three key criteria are met. The members of one generational birth cohort are identified from the first birth year to the last, and they all share an age location in history, key historical events, and impactful social trends (Strauss and Howe, 1991). Pew Research Center (2015) utilizes a similar definition by defining an age cohort (their term) as spanning 15-20 years, where the members all share political circumstances, societal norms, and economic conditions, that culminate in the members all having similarly unique formative experiences that differ from any other age cohort groups. Hansman and Schutjens (1993) posit that controlling for age within consumer decision analysis, without considering the generational birth cohort membership of individuals, overlooks critical information pertinent to each unique birth cohort. This is especially true when examining consumer purchasing behavior, and working to disentangle whether age and/or birth cohort effects are functioning as determinants affecting consumer decision making (Jansson, 1989; Rentz and Reynolds, 1981; Rentz, Reynolds, and Stout, 1983; Renshaw, Haberman, and Sc, 1986; Rentz and Reynolds, 1991; Strauss and Howe, 1991; Hansman and Schutjens, 1993). Schewe and Meredith (2004) argue that the differences experienced by unique birth cohorts at the time they become economic adults impact their attitudes toward their finances and economic outlook as a unique and specifically identifiable grouping of consumers for the remainder of their lives. They explain that employing methodologies to analyze consumer decisions by birth year helps to group consumers for analysis in the demographic examination of changes across age, and that failing to consider unique birth cohort experiences does not allow for the consideration of consumer motivations by generational birth

cohorts. Wolf, Carpenter, and Qenani-Petrela (2005) demonstrate that consumer purchasing behaviors differ not only by age, but also by generational birth cohort membership.

Chen, Wong, and Lee (2001) point out that cohort analysis has traditionally been used in the field of sociology. In examining life insurance purchasing decisions across generational birth cohorts, they find a decrease in life insurance demand for households with members belonging to more recent birth cohorts. They attribute this to a higher share of individuals living alone without dependents in more recent birth cohorts, paired with a trend toward getting married later in life, which delays the birth of children. They argue that generational birth cohort analysis is appropriate because cross-sectional age differences can be tied to different age groups belonging to different birth cohorts. As these different birth cohorts move through their own respective life cycles, they experience their own environmental forces and exogenous effects unique to each generational birth cohort, thereby shaping their behavior as consumers.

The utilization of the longitudinal data within the HRS in this study allows for unique generational birth cohort analysis. Examining the data in a novel way, as described later, leads to the creation of the second hypothesis tested in this study. Are significant generational birth cohort effects significantly affecting consumer behavior with respect to life insurance demand?[65] The null hypothesis for **H2** reads as follows;

$\mathbf{H2}_0$: *Belonging to separate generational birth cohorts will not have an effect on life insurance demand between the cohorts.*

I posit that by examining life insurance demand across generational birth cohorts within the HRS data, at comparable points along respective life cycles, members of different generational birth cohorts will have different ways in which they utilize life insurance. This examination also aims to extend the work done by Chen, Wong, and Lee (2001).

[65]The author would like to thank Dr. Jacqueline Volkman-Wise for this suggestion during the SRIA 2021 meeting.

4.3 Data

The data utilized for this analysis is from the longitudinal Health and Retirement Survey (HRS).[66,67] The HRS is a survey project focused on Americans 50 years of age and older, and was originally approved by Congress in 1990, with the first survey conducted in 1992. The HRS survey is primarily funded by the National Institute of Aging and is conducted by the Institute for Social Research at the University of Michigan. The HRS functions as a biennial panel survey that adds new cohorts every six years, following the same respondents across the years, with the goal of following them until they pass away. (University of Michigan, 2008).

Utilizing the HRS presents limitations, particularly by focusing on individuals aged 50 and older, however it is a good choice of data for this empirical examination. This is because life cycle questions are able to be captured while the individuals are still of working age and the survey also includes survey questions that allow participants to identify their religion as well as indicate life insurance utilization decisions. In identifying religion, respondents can choose between Protestant, Catholic, Jewish, Other Religion, or No Religion/No Preference. When this study refers to Christian consumers, it references those individuals who identify as either Protestant or Catholic, as Pew Research Center (2019) notes that Protestantism

[66]The HRS (Health and Retirement Study) is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan.

[67]The HRS is a complex survey design scheme which over-samples Hispanics, Blacks, and residents of Florida, and provides weighting variables to help make its sample representative of the community-based population for certain types of analytical methods. Within this analysis, models were run [results not shown in this study] that incorporated the appropriate respondent level HRS supplied sampling weights, however the standard errors increased significantly, producing less efficient estimation results. As these analyses neither examine choice based sets of consumer subgroups nor work to correct for heteroskedasticity, this examination does not include the sampling (probability) weights in the analyses. Depending on the type of examination being performed, sampling weights may be appropriate to incorporate. More discussion on the appropriate times to utilize sampling weights can be found in Leacock (2006), Solon, Haider, and Wooldridge (2015), Sonnega, Faul, Ofstedal, Langa, Phillips, and Weir (2014), and Bollen, Biemer, Karr, Tueller, and Berzofsky (2016).

and Catholicism combined comprise over 80% of the Christian populace within the United States.[68]

There are currently seven active generational birth cohorts within the overall HRS survey, as seen in Table 6 and Figure 8.[69] Each respective cohort is surveyed every two years, and was initially recruited into the Overall HRS survey during its cohorts' respective first "wave". The year in which the first wave of surveys occurred for each respective cohort is described in more detail below. Households from each cohort become eligible to be recruited into said cohort when at least one of the members from that household is over 50 years of age. The **AHEAD cohort** consists of people who were born in 1923 or earlier, were household residents of the contiguous U.S. in the spring 1992, and were still household residents at the time of their first interview in 1993 or 1994, and their spouses or partners at the time of the initial interview or at the time of any subsequent interview. The **Children of Depression Age (CODA) cohort** consists of people who were born 1924 through 1930, were household residents of the contiguous U.S. when first interviewed in 1998, and who, at that time, did not have a spouse or partner who was born before 1924 or between 1931 and 1947, and their spouses or partners at the time of the initial interview or at the time of any subsequent interview. The **Subset HRS cohort** consists of people who were born 1931 through 1941 and were household residents of the conterminous U.S. in the spring 1942. The **War Babies (WB) cohort** consists of people who were born 1942 through 1947, were household residents of the contiguous U.S. in the spring 1992, who, at that time, did not have a spouse or partner born before 1924 or between 1931 and 1941, and were still household residents at the time of the first interview in 1998, and their spouses or partners at the time of the initial interview or at the time of any subsequent interview. The **Early BabyBoomers (EBB) cohort** consists of people who were born in 1948 through 1953, were household residents of the

[68] Appendix A.1 describes the raw HRS and RAND HRS variables used throughout the analyses, and includes the wording of the survey questions when applicable.

[69] Note the potential for confusion in that one of the cohorts studied within the overall HRS is also called the HRS cohort. From here forward, they are differentiated in this analysis by calling the large/full HRS survey the "overall HRS survey" and calling the smaller subset the "Subset HRS cohort" or "HRS Sub-Cohort".

conterminous U.S. when first interviewed in 2004, and who, at that time, did not have a spouse or partner who was born before 1948. The **Middle BabyBoomers (MBB) cohort** consists of individuals who were born in 1954 through 1959, were household residents of the conterminous U.S. when first interviewed in 2010, and who, at that time, did not have a spouse or partner who was born before 1954. The **Late BabyBoomers (LBB) cohort** consists of individuals born 1960 to 1965, and they were first sampled in 2016. The future subsequent and eighth cohort, the "Early Gen-Xers" will begin to be sampled in 2022.

The data I use is drawn from a selected group of respondents within the longitudinal HRS data from 1992-2018. Variables are pulled in from various HRS and RAND HRS data products. Specifically, variables from the imputation data set and the biennial data set are merged with the variables from the HRS RAND Core data, matched by respondent ID (*hhidpn*) and year.[70] As life insurance ownership status and religious identification variables are primary variables of interest, observations missing responses to either of those questions are excluded. The final merged data set the samples are drawn from in the following analyses has a total of 258,985 survey observations across the years, representing 41,734 individuals within 26,360 households.[71,72]

Table 7 and Table 8 show the gender distribution across the entire sample and the average years of education by gender across cohorts, respectively. Table 9 shows the frequency and percentage of each cohort represented within the data, Table 10 shows each respective cohorts' survey wave and year surveyed, and Table 11 shows the mean age by gender for each cohort at each wave of surveys.

[70]Empty survey observations are excluded from the sample. Using Stata (ver. 17), 14 respective "waves" of data are manually constructed in the data for each cohort, with the data reshaped to longitudinal format. Some cohorts have only had a few waves of surveys to complete, however. For instance, the LBB cohort answered wave 1 surveys in 2016 and wave 2 in 2018. So all of their surveys for waves 3 through 14 are "empty", and automatically fall away in this data cleaning step.

[71]Spouses/partners in surveyed married/partnered households become respondents themselves, per the HRS (Sonnega, Faul, Ofstedal, Langa, Phillips, and Weir, 2014).

[72]While the entire longitudinal sample is comprised of 258,985 observations, different model specifications, as well as the cross-section analyses, do not include all these observations. The summary and results tables for each analysis specify the respective number of observations examined.

It is important to note that not each analysis examines all the combined data from this full data sample. All the sample sets examined, however, are drawn from it. Examining different cohort samples from this initial full data sample makes it possible to identify differences between generational birth cohorts to examine the second hypothesis. In their analysis of generational birth cohort effect on life insurance demand, Chen, Wong, and Lee (2001) note the challenge in separating and identifying cohort effects. Utilizing HRS data helps to simplify this by making it possible to disentangle the generational birth cohorts and each of their respective survey waves. Focusing on survey waves unique to each overall HRS generational birth cohort, and then controlling for age within cohort group, presents a unique "life-cycle comparable" snapshot for each generational birth cohort.

The following analyses consist of both dynamic and static examinations. For the static cross-sectional analyses performed, the focus is on each cohort's respective Survey Wave 2 (SW2), as this allows for the measure of changes across time that have occurred since the respondent answered their respective Survey Wave 1 (SW1) questions two years prior. This results in a unique life cycle reflection for each generational birth cohort, which in turn helps to make cohort analysis manageable. Unique exogenous factors effecting different generational birth cohorts, such as war, economic crises, political events, and cultural shifts affecting family structures, among others. Generational birth cohort analysis may help provide an understanding of how these unique exogenous factors may affect consumer behavior with respect to life insurance demand. I also stratify generational birth cohorts against their own SW2 and sort them into cohort groups with comparable mean ages. I do this with the goal of appropriately identifying life-cycle effects potentially effecting their life insurance utilization decisions (Servais, 2004; Sonnega, Faul, Ofstedal, Langa, Phillips, and Weir, 2014). The analyses are intentionally designed to exploit the ability to examine the multiple generational birth cohorts within the HRS at a comparable and static point in their respective life cycles, as well as utilize the robust longitudinal data found within the HRS.

Employing both methods of static and dynamic, may also help elucidate inconsistencies as noted by Zietz (2003) and Liebenberg, Carson, and Dumm (2012).

4.4 Variables and Methodology

Life insurance demand research is comprised of examining both ownership and lapse activities (Yaari, 1965; Fischer, 1973; Pissarides, 1980; Lewis, 1989; Srbinoski, Strozzi, Poposki, and Born, 2020). Therefore this study uses the HRS data to examine the potential of identifying as a Christian (either Protestant or Catholic) for being a determinant for both ownership and lapsation of life insurance policies.[73] To that end, there are two primary sets of variables I focus on, ownership variables and lapse variables. Additionally, within each of these primary sets of variables, there are another two secondary sets of HRS survey variables used within this study, 1992 variables and 2002 variables. Many questions asked of respondents by the overall HRS survey have been consistently asked in each wave since the original survey in 1992. Both the initial ownership models and lapse models employed in this study focus on variables asked since 1992. The summary statistics for these variables for the full panel data set can be found in Table 12, and for each of the Baby Boomer cohorts individually in Table 13.[74]

As Ployhart and Vandenberg (2010) note, there has been much academic debate regarding the optimal way in which to analyze and model longitudinal data. Different types of methodologies can produce different results within similar data. The thorough review of life

[73]The data within the HRS for life insurance ownership lacks the clarification of whose life the policy covers. The specific question asked to each respondent is, "Do you have any life insurance [whole or term policy type], including individual or group policies?". I function on the assumption that a yes implies that the policy covers the life of the respondent. Additionally, I am unable to discern if the policy is employer level or purchased directly from an agent. The HRS asked these questions in 1996 ("*E5293*") and 1998 ("*F6026*") but has not included the questions as part of the survey since.

[74]As can be seen in summaries, the number of respondents that indicate owning life insurance vary. For the time series analyses that pull from the entire sample, 62.9% of observations indicate that life insurance is owned. This translates to 162,902 observations where insurance is owned, and 96,083 where insurance is not owned. For the cross-section analyses of the Baby Boomer cohorts at their respective SW2s; 72.2% of EBB respondents own life insurance (1,966 do own, 757 do not), 62.9% of MBB respondents own life insurance (2,413 do own, 1,423 do not), and 62.6% of LBB respondents own life insurance (1,854 do own, 1,108 do not.

insurance demand literature by Zietz (2003) reveals numerous inconsistencies in findings for many determinants across life insurance demand research. Liebenberg, Carson, and Dumm (2012) point out that the inconsistencies in findings that Zietz (2003) identifies are likely due to the use of time static analyses by the studies she reviews. By looking at snapshots in time, identified determinants only speak to that static point in a consumer's life cycle. While there is certainly merit in understanding the determinants at a snapshot of time for a consumer, a dynamic understanding is equally important as a means to understand shifting consumer trends and behavior around life insurance demand. The dynamic analysis employed by Liebenberg, Carson, and Dumm (2012) for the years between 1983 and 1989 shows how the changes across a consumer's life cycle may affect their decisions around life insurance utilization, particularly in their findings supporting the Emergency Funds Hypothesis.

Newer variables of interest within the HRS began to be asked consistently during the 2002 and 2004 survey waves, and these newer variables are built into additional specifications for each of the Baby Boomer cohorts.[75] Included in the 2002 and newer variables are more detailed questions around life insurance ownership information and lapsation information.[76] Also included are a respondents' approximation of the number of religious services they attend annually, and a question indicating a hardship to disposable income. The variable *svcsattend* is constructed from the respondent's survey answers as a binary variable, with 1 indicating regular church attendance, as defined by at least monthly attendance throughout the year, otherwise it is 0. The *rxconstraint* variable indicates, with a binary 1, that the respondent has skipped filling a prescription due to cost since the last survey was taken, otherwise the variable is 0. A 1 is indicative of economic hardship for the respondent and

[75] Attempting to run models with the more recent 2002 variables against "older" cohorts results in no output when examining SW2, as the first HRS cohort to answer these questions during their respective SW2 is the Early Baby Boomer (EBB) cohort.

[76] It should be duly noted for future research that the number of respondents for many of the questions asked beginning in 2002 can be quite low, which may limit the number of observations available for analysis.

their respective household. The summary statistics for these newer 2002 variables for each of the Baby Boomer cohorts can be found in Table 14.[77]

4.4.1 Examining Ownership Determinants

Following prior literature in life insurance demand, the initial life insurance demand model uses the ownership of life insurance by the respondent as its dependent variable (Zietz, 2003). This allows for examination of respondent level traits that may act as a determinant affecting the likelihood to own life insurance, and makes it possible to fold religious identification into the model to test my first hypothesis. The dependent variable *rlifein* is binary, 1 for owning any life insurance for themselves or 0 otherwise.[78] Due to the binary nature of the dependent variable, past life insurance demand literature commonly employs a standard logit model on a static cross-section of data to examine the likelihood of owning life insurance (Fier and Liebenberg, 2013; Mulholland and Finke, 2014; Mulholland, Finke, and Huston, 2015). However, logit results are output as coefficients which represent a unit increase, or decrease, of the log of the odds ratio, which can be a challenge to interpret (Mood, 2010). In striving to increase ease of result interpretation, I utilize a Linear Probability Model (LPM) for this analysis.[79,80] While this dichotomous form of OLS assumes,

$$P(y = 1 \mid x) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_k x_k, \tag{9}$$

[77] More detailed information on all the raw variables, including their definitions and availability by year within the data, can be found in Appendix A.1.

[78] The survey question that results in the variable *rlifein* is described in greater detail in Appendix A.1. The nature of the question makes it challenging to discern if the respondent is answering about coverage for themselves versus a partner. I build this analysis using the assumption that when a respondent indicates that they own life insurance, the policy(ies) is(are) on the respondent only.

[79] The author would like to thank Dr. Marc Ragin for this suggestion.

[80] Robustness models were run using the Logit method, as discussed in the Appendix, and results were similar in direction and significance with the LPM.

one interprets the results differently by viewing them as probabilities (Hellevik, 2007).[81] Robust standard errors are clustered on respondent level ID ("*hhidpn*") to control for heteroskedasticity.[82]

Following prior literature examining the likelihood for an individual to own life insurance, the initial LPM is built as follows;

$$\begin{aligned} P(rlifein = 1|x)_i = {} & \beta_0 + \beta_1(ReligiousID_i) + \beta_{2-6}(AgeGroups_i) + \beta_7(AgeSq_i) \\ & + \beta_8(Gender_i) + \beta_{9-10}(Race_i) + \beta_{11}(HispanicHeritage_i) \\ & + \beta_{12-15}(MaritalStatus_i) + \beta_{16}(RCollege_i) + \beta_{17}(Bequest_i) \\ & + \beta_{18}(PctStockOwned_i) + \beta_{19}(OwnHome_i) + \beta_{20}(ln(HHIncome)_i) \\ & + \beta_{21}(ln(HHIncomeSq)_i) + \beta_{22}(ln(HHWealth))_i) + \beta_{23}(ln(HHWealthSq))_i) \\ & + \beta_{24}(Children_i) + \beta_{25}(EmployedHH_i) + \beta_{26}(HHResidents_i) \\ & + +\beta_{27}(\Delta HHIncome_i) + \beta_{28}(\Delta HHWealth_i) + \beta_{29}(NewHHJob_i) \\ & + \beta_{30}(NewHHUnemp_i) + \beta_{31}(NewHHRetire_i) \end{aligned} \tag{10}$$

The static cross-section analysis of ownership focuses on each of the three Baby Boomer cohorts separately, but at comparable times in their economic life cycle at their respective Survey Wave 2 (SW2). This allows for a comparison of determinants for each of the three Baby Boomer cohorts at the same place in the economic life cycle for each respective cohort. The goal in examining SW2 is to identify the life insurance ownership likelihood at a specific point in a consumer's economic life cycle. This process results in each unique survey cohort having answered their respective SW2 questions in different years, but at the same average

[81] Utilizing a LPM can pose a challenge when working to obtain valid predicted probabilities, as potential non-linearity allows for resulting probabilities greater than 1 and less than 0. As the primary interest for this analysis is in testing hypotheses with effect estimation, and not predicting probabilities, this challenge poses no problem here (Shmueli, 2010).

[82] The larger sample sizes being analyzed inherently help correct for the potential of non-normality of the dependent variable.

age for each cohort. The disentangling of the Baby Boomer cohorts is done not only to identify life cycle effects but potential generational birth cohort effects as well.

The dynamic time-series analysis on ownership also utilizes the set of HRS variables that have been available since 1992 to allow for an examination of the full panel data.[83,84,85] Numerous specifications are analyzed using the time series with yearly fixed effects. A respondent's religious identification is a time invariant variable, so it does not change for respondents over time within the data. Due to its time invariant nature, it is interacted with different factors across multiple specifications to examine the effect it may, or may not, have on life insurance decisions. To examine potential effects of generational birth cohort theory, one specification also interacts survey waves by cohort. This also allows for the potential to identify life cycle effects.

4.4.2 Examining Lapse Determinants

Fier and Liebenberg (2013) work to identify determinants of voluntary life insurance policy lapses by building on prior work identifying and investigating the Emergency Fund Hypothesis, the Interest Rate Hypothesis, and the Policy Replacement Hypothesis (Outreville, 1990; Russell, Fier, Carson, and Dumm, 2013; Carson and Forster, 2000). They find

[83]Using a dynamic time-series analysis on the panel data within the HRS, also referred to as longitudinal or cross-sectional time-series data, allows for an examination that follows multiple respondents, as members of households, over several units of time. Using panel data analysis allows for more variation across both observations and time and helps to reduce the potential for multi-collinearity. This in turn helps to increase efficiency in estimation, increasing degrees of freedom, and control for respondent and household heterogeneity.

[84]Following prior research, I test the data in Stata with the Hausman test, comparing the statistical difference in coefficients between a fixed effects analysis and a random effects analysis. I find that a yearly fixed effects model with delta gaps of 2 years, and with standard errors clustered at the respondent level, is the most ideal model type (Petersen, 2009; Fier and Liebenberg, 2013). A large and significant Hausman statistic implies a large and significant difference between random fixed effects. It is therefore necessary to reject the null that the two methods are similar and instead go with the alternative hypothesis, that fixed effects is the more appropriate model. As Allison (2019) points out, in a fixed effects model which compares within (not between) units (in this case each respondent or household) observed, each unit essentially becomes its own control which helps to reduce the potential for biased results.

[85]There are limitations in using a fixed effects model that merit mention. The transformation that occurs within a fixed effects analysis means that time invariant variables (i.e., race, gender, religion, etc.) are not possible to model, though they can be used as interaction terms with time variant measures such as wealth, age, or number of children in the household, as is done in this analysis.

income shocks by age to be a significant determinant of the voluntary lapse decision, with income shocks having a larger effect on younger households. Similar to Liebenberg, Carson, and Dumm (2012), they also find support for the EFH.

Following the methodological framework established by Fier and Liebenberg (2013), I employ the following model to examine the likelihood of lapsation for those individuals who indicated owning life insurance in the HRS, and build subsequent specifications to examine the potential effects of identifying as a Christian, as well as membership of a unique Generational Birth Cohort, on Lapse activity. The summary statistics for the lapse analysis can be found in Table 15.

$$\begin{aligned} VLapse = \beta_0 &+ \beta_1(1 \text{ if NewUnemploy for R or SP}) + \beta_2(1 \text{ if 1st quartile of NegInc}) \\ &+ \beta_3(1 \text{ if 2nd quartile of NegInc}) + \beta_4(1 \text{ if 3rd quartile of NegInc}) \\ &+ \beta_5(1 \text{ if 1st quartile of NegNW (negative HH } \Delta \text{ in net worth.)} \\ &+ \beta_6(1 \text{ if 2nd quartile of NegNW}) + \beta_7(1 \text{ if 3rd quartile of NegNW}) \\ &+ \beta_8(1 \text{ if NewLife for R}) + \beta_9(\text{Average Age of HH at Survey Year}) \\ &+ \beta_{10}(1 \text{ if NewDivorced for R}) + \beta_{11}(1 \text{ if NewRetired for R and S}) \\ &+ \beta_{12}(1 \text{ if NewWidowed for R}) + \beta_{13}(\text{LN of HH Inc} > 0) \\ &+ \beta_{14}(\text{LN of HH Wealth} > 0) + \beta_{15}(\text{LN of Respondent Debt}) \\ &+ \beta_{16}(\text{Liquidity Measure}) + \beta_{17}(\text{Number of Children in HH}) \\ &+ \beta_{18}(1 \text{ for R or S Working}) + \beta_{19}(1 \text{ if College Degree R or S}) \end{aligned} \tag{11}$$

4.5 Results

4.5.1 Determinants of Ownership

The initial output for the static cross-section analyses of each of the Baby Boomer cohorts at their respective SW2, using the 1992 variables set, can be seen in Tables 16, 17, and 18,

respectively. The average age for each of the cohorts is 54, which is somewhat lower than the peak age of life insurance ownership at 47 identified by Hartley, Paulson, and Powers (2017). Though the average age for each of the cohorts is older than the peak owning age, 54 is still under traditional retirement age. Therefore, measuring these Baby Boomer cohort respondents at their respective SW2 means they are still likely to be in the labor force and may still have minor children in the home. The output for first model specified represents a primer model without any religious identification variables. The first specification shows the output from Equation 12, the second specification is the output for a simpler primer model without religion, and the third specification examines the interaction effect of being Christian and Married.

The results for religion for the EBB cohort in model 1 show that the null hypothesis for **H1** must be rejected. Identifying as being either Protestant or Catholic, as opposed to not being religious, is significantly positive at the 1% level. Though both Protestant and Catholic are both positive determinants of life insurance ownership for the EBB cohort at SW2, identifying as Catholic has a slightly higher magnitude at 11.6% compared to Protestant's magnitude of 7.7%. The third specification supports this finding by examining the un-interacted and interacted effects for Christian, as well as married, individuals. Christian is defined as a binary variable, equal to 1 if the respondent identifies as either Protestant or Catholic, and 0 otherwise. While the significance level of examining respondents by their denomination is somewhat lessened, identifying as Christian still increases the likelihood of owning life insurance by nearly a percentage point, significant at the 10% level. Being married has a negative direction, however the result is insignificant. Identifying as Christian and being married changes the direction of the magnitude, however the result is also insignificant. The results for those respondents identifying as either Jewish or having "other" religious beliefs are both insignificant, with negligible and negative directions, respectively.

Inconsistencies in determinant significance, and at times direction, become evident when analyzing results of the initial model across each of the three Baby Boomer cohorts: the

EBB (sampled in 2006); the MBB (sampled in 2012); and the LBB (sampled in 2018), each at their respective SW2. While we must reject the null hypothesis for **H1** when examining religious identification for EBB respondents, that is not the case for respondents in the MBB cohort. For those individuals in the MBB cohort, identifying as Protestant yields an insignificant positive result. Identifying as Catholic increases the likelihood of owning life insurance by 4% at the 0% significance level, and identifying as Jewish decreases the likelihood of owning life insurance by 16% at the 1% significance level. Identifying as any other type of religion yields an insignificant negative result. Similarly, the results for those MBB respondents that are Christian and married, while similar in direction to those in the EBB, are all insignificant. And differences are again evident for those in the LBB cohort at their SW2, as only identifying as Protestant yielded any significant result, of an increase of 4.4% likelihood of owning life insurance, at the 1% level. The direction for the other religious identifications were generally negligible, and all were insignificant.

The differences in the significance, and in some cases direction, of the religious identifications by respondents between each of the Baby Boomer cohorts results in the rejection of the null hypothesis for **H2**. The mean age for the respondents in each of the Baby Boomer cohorts is the same (54). All the respondents answered the same questions, at different years, but each at their own respective SW2. For the EBB respondents SW2 was in 2006, MBB was in 2012, and LBB was in 2018. Therefore the inconsistencies in the significance, and at times direction, of the religious identification results are not due to the static cross-section form of analysis. While Liebenberg, Carson, and Dumm (2012) convincingly argue the disparity between static and dynamic form of analyses are a reason driving the inconsistency in outcomes as identified by Zietz (2003), it is also likely that generational birth cohort theory exerts a significant effect as well. Unique exogenous factors across time, both economic and cultural, results in different generational birth cohorts having different determinants of life insurance demand, ceteris paribus. The difference in the correlation of Christian identification with the likelihood to own insurance are likely at least partially attributed the decline

in religiosity reported by adult Americans among more recent birth cohorts (Pew Research Center, 2019). Another cultural shift evident in the results is the effect of being female on the likelihood of owning insurance. Academic research has typically identified being female as decreasing the likelihood of owning life insurance (Zietz, 2003). However, when examining gender across the Baby Boomer cohorts, identifying as female has a slightly negative yet insignificant direction for all the models for the EBB and MBB cohorts, and shifts slightly to a positive direction (yet still insignificant) for the third specification for the LBB cohort.[86]. When taken into consideration together, these culturally relevant findings all support generational birth cohort theory and extend the results of both Chen, Wong, and Lee (2001) and Strauss and Howe (1991).

An exogenous economic factor effecting differences in determinant outcomes between the Baby Boomer cohorts is evident when examining the association between new unemployment on the likelihood of owning insurance. In a dynamic examination of SCF panel data, Wang (2022) finds that during times of economic crisis, households with a newly unemployed resident are more likely to reduce or drop whole life insurance coverage, compared to other households. For those individuals in the EBB cohort (2006), being newly unemployed significantly decreases the likelihood of owning life insurance at the 10% significance level in the first and second specifications, but is insignificant in the third model. For those individuals who are newly unemployed in the MBB cohort (2012), the magnitude of the negative direction increases by nearly 50%, and the significance level narrows to the 1% level. The exogenous economic event occurring between the EBB cohort in 2006 at their SW2 and the MBB cohort in 2012 at their SW2 would have been before the financial crisis of 2008. Though these groups are of comparable age at each respective SW2, and therefore at the same point in their life cycle, these individuals have been affected by the 2008 financial crisis. This is again evidenced by the high significance of new unemployment negatively effecting the

[86]Supplemental analyses performed on older generational birth cohorts, which find a significantly negative effect of female sex on the likelihood of owning life insurance, can be found in Appendix A.4

likelihood to own life insurance. Additional determinants that were inconsistent between the Baby Boomer cohorts included age, being Caucasian, the natural log of income, the natural log of wealth, the percentage change in household wealth, and the effect of a new household job. These findings provide additional support for generational birth cohort theory. The results that maintained consistent significance for all the Baby Boomer cohorts included being Black/African-American (positive), being Hispanic (negative), years of education (positive), indicating an explicit desire to leave a large bequest (positive), owning a home (positive), at least one worker in the household (positive), and the percentage change in household income (positive).

By building on the initial model, expanded models are subsequently specified for each of the Baby Boomer cohorts by incorporating pertinent 2002 variables. Since the 2002 and newer variables have only been asked at SW2 for those individuals in the Baby Boomer cohorts, the expanded cross-section analyses again focus on the EBB, MBB, and LBB cohorts. The results for these models can be found in Tables 19, 20, and 21. The fourth model specified includes a proxy for economic hardship, the "*rxconstraint*" variable, indicating that the respondent has had to forgo getting a prescription filled in the last twelve months due to financial constraints. Respondents in the EBB who experienced this economic hardship were significantly less likely to own life insurance.

The fifth specification includes the un-interacted and interacted terms between religious identification and a binary variable indicating regular attendance of religious services. These results all yield insignificant findings for the EBB and MBB cohorts, with the exception of those individuals who identify as Jewish and regularly attend religious services. These individuals are more likely to own life insurance, significant at the 10% level. This is a particularly interesting finding for those individuals identifying as Jewish in the MBB cohort, as the un-interacted term decreases the likelihood of owning life insurance by 17% and is significant at the 1% level. Another interesting finding is for those in the LBB cohort who attend religious services regularly. Though the significance on religious identification has

fallen away for this particular LBB cohort, it is the only cohort where the un-interacted term of regular attendance of religious services is positively associated with an increased likelihood of owning life insurance at the 5% significance level.

The sixth and final specification for the static cross-section analysis for the Baby Boomer cohorts examines the layered effect of religious identification, regular attendance of religious services, along with the proxy for economic hardship. It also includes the examination of their corresponding un-interacted effects as well.[87]

It is interesting to see that in the output for the EBB cohort the un-interacted factor of regular attendance of religious services, while slightly negative, is insignificant. Identifying as Protestant is positively significant at the 10% level and identifying as Catholic is positively significant at the 1% level. The economic hardship proxy of "*rxconstraint*", while significantly negative in the fourth and fifth specifications, loses its significance in the sixth specification. When looking at the full triple interaction term however, those individuals indicating economic hardship, who regularly attend religious services, and identify as being "not religious", are much less likely to own life insurance, significant at the 1% level.[88] However, those individuals who identified as either Protestant or Catholic and regularly attended religious services, were much more likely to own life insurance despite having experienced economic hardship in the last year, both significant at the 5% level. This again shows the importance of the role of identifying as a Christian and its effect on the likelihood of owning life insurance, especially for the older generational birth cohorts, and supports **H1**. The same finding was true for those respondents who identified as belonging to an unspecified "other religion", at the 10% level of significance. These significant findings fall away for those respondents in the MBB and LBB cohorts, again lending support for the generational birth cohort theory.

[87]It is appropriate to note that research has shown Americans have a tendency to inflate their response to the type of question on a survey that asks about attendance of religious services (Brenner, 2011).

[88]An example of an individual who indicates they attend religious services regularly but indicates they are "not religious", could be a spouse accompanying a religious partner.

The results from the initial time series analysis can be found in Table 22. These results represent the basic model regressed against the number of life insurance policies, the natural log of the total value of all life insurance policies held, the natural log of the average policy value, the number of whole life policies held, and the number of term life policies held.The examination using the total number of life insurance policies as the dependent variable examines the whole group, and does not identify the respective numbers of policies held by households as that analysis is beyond the scope of this study. Future research may find this analysis to be helpful in further examination of life insurance determinants. As these survey questions are answered by some individuals within the HRS and not all, the number of observations in each examination differ considerably. For each of these models, the respondent's religious identification is interacted with their age as a way to identify the time invariant information we seek. Interestingly, the only specification to yield a significantly positive result is when the dependent variable being examined is the number of whole life policies. Identifying as either Protestant or Catholic had a positive effect when interacted with age on the increased likelihood of owning more whole life policies, with both significant at the 5% level. Identifying as Jewish had a slightly negative effect on the total number of life insurance policies and the natural log of the total overall value of policies, when interacted with age, and a negative effect significant at the 5% level when interacted with age for the number of term life policies. Other results include that those respondents that explicitly indicate their intention to leave a large bequest are much more likely to own more whole life policies, and much less likely to own term life policies, significant at the 1% and 5% levels, respectively. The percentage of stock comprising a respondent's financial portfolio only exhibited a significantly positive effect for the total number of whole life policies held, and was insignificant otherwise, and home ownership was only significantly positive against the total number of life policies held, and insignificant otherwise.

The time series specification above is extended further by adding in an interaction for education for low and high wealth and income groups respectively. Holding the achievement

of a high school diploma, the middle income earners, and the middle wealth holders as the referents, the results for the specification can be seen in Table 23. An interesting result is that those individuals who fall into the high wealth category are less likely to own life insurance overall (significant at the 10% level), more likely to own whole life policies (significant at the 5% level), and less likely to own term life policies (significant at the 5% level). However, no significant effects on ownership are seen for those in the low wealth category, or those in the high income category. When examining the interaction of education with low wealth, having earned as Associates degree and holding low wealth is associated with a significant decrease in the total number of life insurance policies held (significant at the 5% level). However, individuals holding low wealth who have achieved either a Masters or Doctorate degree are associated with a significant increase in the likelihood of hold a higher number of life insurance policies (both significant at the 5% level). Additionally, those who have earned their Doctorate and hold low wealth are more likely to own more term policies (significant at the 5% level). For those in the low income category however, the natural log of the total value of all policies held decreases (significant at the 1% level) as does the natural log of the average policy value (significant at the 5% level). There are no significant effects evident for those individuals in the high income category with the exception of when examining those individuals who have a high income and have not earned a high school diploma, as they are significantly less likely to hold term policies (significant at the 10% level).

The results for the subsequent specification (1) examining the likelihood to own life insurance, where the DV is binary and 1 represents owning life insurance and zero otherwise, can be found in Table 24. This examines the data for cohorts 3 through 6 (HRS-Sub Cohort through MBB). Time invariant demographic variables are omitted, however similar results for time varying factors are similar to what is seen in much of the static cross-section analysis. Explicitly intending to leave a large bequest is a significant factor in the likelihood of owning life insurance. Owning a home, having a worker in the home, and the natural log of total wealth are also significantly positive determinants of life insurance ownership. The natural

log of household income is a negative determinant, though its square indicates there is a maximum inflection point, likely where income surpasses constraints and wealth begins to grow. Other significantly negative determinants include new unemployment, new retirement, and a new job since the last survey. Years are broken out as a way to possibly identify a financial crisis effect, but in this specification there is no significance to the years themselves.

In the second time-series model examining the likelihood to own life insurance, a respondent's religious identification is interacted with their gender and the number of children reported by the household. The results, shown in Table 25 show that being Protestant has a positive effect on the likelihood of owning life insurance when interacted with the number of children reported by the household for both men (significant at the 5% level) and women (significant at the 10% level). The same is true for Catholics, with comparable magnitudes and significance for both genders. Jewish male respondents had an insignificant effect, however being a Jewish female had a negative effect when interacted with the number of children, significant at the 10% level. Finally, there was a positive effect on the likelihood of owning life insurance for females who identified as being "not religious" when interacted against the number of children, significant at the 10% level. This may be driven by the inverse of the findings by Scheve and Stasavage (2006) which show that individuals may utilize religious networks as substitutes for social insurance, which would include life insurance. The females who do no identify "not religious" are therefore lacking in religious network support that they could turn toward in an adverse life event, resulting in them being more likely to purchase life insurance.

The third time series specification, the results of which can be found in Table 26, analyzes the effect of a respondent's religious identification, gender, and marital status. Divorced men who identify as being either Protestant or in an "other religion", are positively associated, significant at the 1% level. Other interacted factors with a positive effect on the likelihood of owning life insurance, significant at the 5% level, are males that are Protestant and married, males that are Jewish and married, females that are Protestant and divorced, and males

that are Catholic and married. Those interacted factors positive at the 10% significance level are Protestant males that are separated, Catholic males that are divorced, and Jewish females that are divorced. Two interacted factors that had significantly negative effects on the likelihood of owning life insurance are Protestant females who have never married (5% significance level) and Catholic females who have never married (10% significance level).

Table 27 shows the summary of the final life insurance ownership model specification that extends the basic model by examining the effect of interacting survey waves by cohort, across the entire time series for all the cohorts, on the likelihood of owning life insurance. The reason for constructing this interaction is two-fold. First, to potentially identify life-cycle effects by survey wave for each cohort. The second reason is to analyze if there are differences between cohorts by comparing them at their same respective survey waves, to potentially find support for generational birth cohort theory. With the sub-HRS cohort (cohort 3) acting as the point of reference, there are no significant results found in between the interactions of survey waves in either the AHEAD or CODA cohorts. That leaves the War Babies (WB) cohort, and all the Baby Boomer cohorts. The only two cohorts with any significant effect on the likelihood of owning life insurance when interacted with survey waves are the WB and EBB cohorts. The WB cohort is significant at the 1% level when interacted with survey waves 2 through 8. Waves 9 and 10 are still significant at the 5% level. Magnitude of the positive effect increases until it reaches its peak at survey wave 4 (SW4), and then gradually declines again. At SW2, the mean age for respondents in the WB cohort is 58. At survey wave 8 (SW8) for the WB cohort, the last interacted factor significant at the 1% level, the mean age of respondents is 66, which is past the retirement age for most individuals in this cohort. The only other cohort to have significant results with this interacted factor is the EBB cohort, which shows a positive effect of the interacted term at the 1% significance level from survey waves 2 through 5, with a magnitude peak at SW2. The mean age of respondents at their respective SW5 is 60. The magnitude and significance continues to decrease through survey waves 6 and 7, at the 5% level before significance falls away. Following guidance

from Korn and Graubard (1990) and Medeiros (2020), I jointly test the differences between each interacted term within each cohort [results not shown] to see if the differences for each subsequent wave interaction term are significant for the WB and EBB cohorts, respectively. I find that, for the joint testing between the interaction terms for the WB cohort, the null for the joint tests can be rejected at the 1% level from survey wave 2 through survey wave 8, and at the 5% level through survey wave 10. Similarly, for the EBB cohort the null for the joint test can be rejected at the 1% level for each comparison from survey wave 2 through survey wave 5, and at the 5% level through survey wave 7. The effect of interacting the MBB and LBB cohorts with their respective survey waves yield insignificant results. These results are interesting in that they paint the picture of a life cycle effect for only two cohorts, WB and EBB. Additionally, the evident differences in results between each of the cohorts also support generational birth cohort theory. Cultural effects may have uniquely affected the behavioral economic actions of respondents born in the WB and EBB cohorts, and may have led to those generations using life insurance in a different way than more recent birth cohorts. The WB and EBB cohorts were not only born to parents who fought in a World War and lived through a depression, but they would also go on to fight in their own wars and/or be affected by those wars (Vietnam and Korea). It is also possible these results can be attributed, at least somewhat, to supply side effects from the life insurance industry itself via changes in response to new regulations, changes in product offerings and pricing structures, technological innovations, and the economic market cycle of the life insurance industry itself Dionne and Harrington (1992); Chang and Lee (2012); Brown and Goolsbee (2002). Identifying the potential effects these events may have had on consumer behavior is beyond the scope of this paper, though may be of interest in future research.

4.5.2 Determinants of Lapse

Table 28 show the results from the primary model built using Equation 11, which examines the likelihood of voluntary lapse based on the variables of interest and appropriate

controls. The first two specifications shown in the table represent all survey observations who had lapsed a policy since the previous survey wave and had answered the survey question indicating whether or not that lapse had been voluntary, across all cohorts. The primary model shows that retirement was significantly associated with a voluntary lapse, as was getting a new life insurance policy, supporting Policy Replacement Hypothesis (Fier and Liebenberg, 2013). The second specification adds survey waves to examine potential effects of a life cycle effect. Survey waves 5, 6, and 7 are all significantly associated with the likelihood of the lapse being voluntary at the 10% level, likely correlating with the positive result seen for a new retiree in the household. The remaining four specifications examine the HRS Sub-Cohort, WB, EBB, and MBB cohorts independently.[89] The interaction of religious identification and regular attendance of religious services is added to evaluate a potential effect, however, no significance is evident.

A secondary examination can be seen in Table 29, which shifts voluntary lapse into the model as an independent variable to examine the impact it has on the new dependent variable of any lapse by the respondent, whether voluntary or not, since the last survey wave. Again, the significance of association is evident for those who have gotten new life insurance since the last survey wave and those who have a new retiree in the household, however we also see the effect of unemployment in the household now. This makes sense as we are now including those individuals who did not lapse voluntarily, and this indicates that those did not lapse voluntarily likely did so due to becoming unemployed. Differences are also evident across generational birth cohorts when looking at the effect of having at least one worker in the household on the likelihood of lapsing a policy, whether voluntary or not.

[89]Note that the LBB cohort was intentionally omitted from this examination due to a lack of an appropriate number of surveys to run a time series analysis.

4.6 Limitations

As Sonnega, Faul, Ofstedal, Langa, Phillips, and Weir (2014) address, there are many benefits in utilizing the data from the Health and Retirement Survey. It is not void of limitations, however. Fisher and Ryan (2018) point out that the robust amount of data coupled with the number of questions asked of respondents challenges the consistency of both reliability and validity researchers strive to achieve within data. They also point out that numerous inconsistencies exist in how the questions are asked from survey wave to survey wave across the years, which makes it challenging for researchers to accurately assess and follow the variables and meanings across the years. As those recruited into the survey are, by definition, older Americans (typically just over the age of 50 at the time of their first survey), any findings from analyzing the HRS data must be limited to older individuals. They also point out the immense size and complexity of the HRS data poses challenges. The HRS data is spread out across numerous data sets, and it takes considerable time to learn how to both navigate and manage HRS data. The way in which the HRS questions respondents about both life insurance and religion, however, make it quite useful to this specific analysis. Breaking out the choice for Protestant and Catholic helps to differentiate the sample in a way that supports the empirical process as a means to work to identify if being a Christian in America has a significant effect on life insurance demand.

Omitted variables, unavailable within the data, may further explain the consumer behavior for those individuals who identify as either Protestant or Catholic, with respect to life insurance decisions. Academic work within economics has long acknowledged the effect of the Protestant Work Ethic (PWE) theory. Weber (1905) documented and coined the term "Protestant Work Ethic", arguing that Protestantism was part of the foundation supporting the development of rationalism[90]. To assess one's level of PWE, empirical analyses commonly employ a 19 item 7-point agree/disagree Likert survey. One of the usual questions

[90]It is interesting to note many well-respected economists chose opposing viewpoints on Weber's argument, ie. Merton vs Samuelson (Hassan, 1971).

asked includes a question regarding an individual's responsibility to provide insurance for her/his family should s/he perish[91]. The stronger the magnitude of this belief, the stronger the measure of PWE overall (Furnham, 1984). There are numerous other factors comprising the identifcation of individuals with PWE which are not all identifiable within the HRS. Therefore, other factors associated with being a Protestant and having PWE, are not considered within this study. For Catholic individuals, Bennett (2009) argues that Catholic doctrinal disputes around social and cultural policies between the Pope and the Congregation for the Doctrine of Faith frequently intersect with secular ideals, which are challenging to disentangle from theological discourse.

With respect to those individuals who identify as Jewish, there are numerous possibilities for the inconsistencies of determinant significance across generational birth cohorts. Friedlander, Friedman, Miller, Ellis, Friedlander, and Mikhaylov (2010) show how American Jews experience their identity at an intersection of culture and religion, with varying degrees per individual. This creates potential limitations for interpretation of the individuals who self-identified as Jewish within the HRS, as they may be doing so from the perspective of cultural identity instead of a religious one. There are also other factors that may be affecting the self-perceived religious salience for Jewish individuals dependent upon where they reside. Alper and Olson (2013) shows the positive association between rates of synagogue attendance and Jewish population density. Further working to disentangle the religious salience of Jewish Americans, Weisskirch, Yeong Kim, Schwartz, and Krauss Whitbourne (2016) point out that these individuals struggle with ethnic/cultural identification differently than White Americans. They describe how, throughout American history, Jews have been identified as a group using race, ethnicity, members of a religion and a culture. Using the defining perspective of Jewish Americans comprising an ethnic group, Weisskirch et al. (2016) examine religious

[91]One of the two original PWE scales developed to assess PWE, was a 47 question, 5-point agree/disagree Likert scale, where question number 38 read; "A man should have enough insurance to take care of his family in case he dies" (Hassan, 1971). Though in recent years, academic literature has favored the PWE/MWEP scales found in either Mirels and Garrett (1971) or Miller, Woehr, and Hudspeth (2002) which omit any bequest questions (Townsend and Thompson, 2014; Hazzouri, Main, and Sinclair, 2019).

participation within a sample of Jewish Americans. When compared against other ethnic groups comprised of African Americans, Asian Americans, White Americans, Jewish Americans, and Hispanic Americans, they find Jewish Americans were significantly less likely to have attended religious services, prayed, or followed religious customs compared with any of the other ethnic groups studied. Therefore, interpreting the results for Jewish Americans is somewhat limited in this study, as it is possible that a respondent who identified as Jewish may have done so for cultural, ethnic, or racial reasons instead of a religious one, making it challenging to assess the true level of religious identification of the respondent.

4.7 Conclusion and Discussion

This study contributes to extant life insurance demand literature that works to identify determinants of life insurance demand of consumers. This is an important venture for academia, as results from our collective efforts may help identify the factor(s) behind the consistently falling life insurance coverage rates across America.[92] Significant academic findings could potentially help industry experts reverse that trend. Coverage gaps for families, meaning they are either uninsured or underinsured, can have dire consequences on the financial futures for those families who lose an earner to death.[93]

[92] A recent industry survey by LIMRA and Life Happens (2020) revealed that nearly half of the individuals surveyed (46%) did not own any form of life insurance at all, and over the ten years of prior surveys, ownership of life insurance within the lower and middle-income households (under $100,000) had declined by 25%. The individuals surveyed who do not own life insurance indicate financial constraints and competing financial obligations are the top reasons for not owning any life insurance (LIMRA and Life Happens, 2020). The survey respondents that did own life insurance indicated that paying for one's burial costs and final expenses was the primary reason for owning life insurance, followed by bequest motives, replacing wages, supplementing retirement, and paying off a mortgage.

[93] O'Donnell (2021) describes the significant drop in life insurance coverage over the last decade, from 63% of American adults being covered in 2011 to only 52% of Americans having coverage in 2021. O'Donnell (2021) goes on to describe how industry stakeholders are working together to address the significant drop in life insurance coverage over the last decade, which include industry wide operational changes resulting from the Covid-19 pandemic. More than a third of life insurers expanded automated underwriting practices and waived paramedical requirements, and 8 in 10 finance professionals began offering virtual visits to facilitate communication convenience for clients (O'Donnell, 2021). While financial professionals/advisors/agents are seen as helpful by 82% of American consumers, only 26% of Americans utilize their services (O'Donnell, 2021).

Extant research has generally found religion to be a negative determinant of life insurance demand, therefore I believe this study is the first to find a positive association between a consumer identifying as a Christian and their increased likelihood to own life insurance. Additionally, the relationship between identifying as a Christian and the likelihood of owning life insurance is most pronounced for consumers that are members of older generational birth cohorts, despite the different generation members being surveyed at comparable points in their respective life cycles. While the decrease in significant association between more recent birth cohorts identifying as Christian and owning life insurance may be attributable to the decrease in religiosity over the last several decades, and may also be a reflection of lowered utilization of life insurance overall (Pew Research Center, 2019; American Council of Life Insurers, 2021). Though I do believe this study's primary finding yields an important contribution toward extant life insurance research, the reasons for which I detail below, I do not believe the decrease in religiosity across the United States is a driving factor behind the overall decrease in the utilization of life insurance. I argue the decrease in religiosity is attributable to cultural changes across generational birth cohort memberships over time and is only a small reflection of a much greater change happening for consumers that are members of subsequent birth cohorts, which I also describe in greater detail below.

The novel finding within this study, that consumers who identify as Christian have significantly higher likelihoods of owning life insurance, is a useful contribution to the literature on life insurance demand, however, it is my hope that the key takeaway for readers of this study is that the novel finding differs from numerous previous academic works due to the disentangling of religious denominations. It is important to consider the nature, cultural background, and identifiable demographic features of the consumers in any group (ie. religious), and work to consider that information along with the economic development knowledge for their respective geographic location. This creates the means to most accurately work to understand their behavior as consumers. Understanding the nuances that can potentially affect purchasing decisions, particularly in developing economies, may help academics, as well as industry

professionals, understand why consumers make the decisions they do (Outreville, 2013).[94,95] Future academic works examining culture, and specifically religion, may be able to more narrowly identify relationships and determinants by making the effort to disentangle and identify denominations when possible. This is true for other identifying features of consumers as well, since consumer centric marketing efforts continue to grow as a strategy for industry leaders (Sheth, Sisodia, and Sharma, 2000). Therefore, I hope to impart readers with the understanding that identified determinant findings in extant literature that were previously defined in very broad terms (ie. "religion"), may benefit from being disentangled and more narrowly re-examined, where the data allow.

The findings in this study also support generational birth cohort theory, particularly with respect to life insurance decisions. This extends the work of Chen, Wong, and Lee (2001) who find a decrease in the purchase of life insurance for households whose members belong to more recent birth cohorts. They argue that factors in more recent birth cohorts that contribute to their finding include a higher share of individuals living alone without dependents, the trend toward getting married later in life, and the delaying of having children until later in life. They state that as different birth cohorts move through their own respective life cycles, they experience their own environmental forces and exogenous impacts unique to each birth cohort, thereby shaping their behavior as consumers. In their study examining factors behind the decline in life insurance ownership, Hartley, Paulson, and Powers (2017) examine Survey and Consumer Finance (SCF) data from 1989 through 2013 and find that overall life insurance ownership fell by 16.5 percentage points across that time frame. Term life ownership fell from 58.1% to 50.2% and permanent life ownership fell from 37.4% to

[94] Ostrom (2000) discusses theories around cultural evolution and the potential genetic underpinnings that may relate to it. While genetic information is contained within the HRS data, I do not utilize it in this study. The examination of how that information might correlate with life insurance demand is beyond the scope of this work. I leave it for future research to investigate.

[95] Alborn and Murphy (2013) point out that the Protestant embrace of life insurance ownership in the early years of the life insurance industry in America, also occurred in Britain. Therefore, there is reason to think Christianity may have been associated with, and may still be, an increased utilization of life insurance across Great Britain as well. Future empirical efforts may find it interesting to examine this further.

18.7%. They also find life insurance ownership has declined within each race, education, and income subgroup for both term and permanent policies, with the largest declines in term coverage generally being in those households with lowest education and income, and the largest declines in permanent coverage being in the households with higher education and lower income. Consistent with industry trends, Hartley, Paulson, and Powers (2017) also find the face values for both types of coverages have increased from 1989 through 2013 with the average face value for term policies increasing 126.5% and the average face value for permanent policies increasing 43.1%. These findings are reinforced with data from (The American Council of Life Insurers, 2020), which finds that despite a significant decrease in the number of in-force policies from 1990 through 2019, the total face amount value of in-force policies increased as did the total average policy coverage.

I concur that the cultural factors discussed by Chen, Wong, and Lee (2001) are affecting the differences seen with more recent birth cohorts with respect to life insurance demand. I also believe the growing wealth disparity that has been widening throughout the United States over the last several decades is another contributing factor driving changes for members of newer birth cohorts. While examining wealth disparity empirically is beyond the scope of this study, it is important to discuss. Per life cycle theory, consumption is a function of wealth plus expected lifetime earnings divided by the number of years until retirement (or death, depending on the model used). Therefore, wealth levels, by definition, play a significant role in the consumption of life insurance products. As the number of life insurance policies purchased has consistently dropped in recent years throughout the United States, wealth disparity has continued to widen. Figure 9 shows the widening of wealth disparity for the United States across the last several decades. Storesletten, Telmer, and Yaron (2004) examine the widening wealth disparity that increases with age across income and consumption and find that individual-specific earnings can provide at least one coherent explanation for the disparity.

In an examination of racial and ethnic differences in wealth, using HRS data, Smith (1995) finds racial and ethnic wealth disparities are large, and attributes them, in part, to differential inheritance and bequest inequities that persist for these demographic groups across generations. Eisenhauer and Halek (1999) find that increasing household wealth has a positive effect on the demand for life insurance, and Bertaut and Starr-McCluer (2000) find that households with the highest likelihood to own permanent insurance are those that are wealthier. In reviewing the participation in life insurance ownership by low to moderate income (LMI) households, Brobeck (2011) determine there is need for concern regarding the lack of coverage for those households. Saez and Zucman (2014) examine wealth in the United States via income tax returns from 1913 through 2012 and find wealth inequality has increased considerably since the mid-1980s. They attribute this growing disparity to the rise of the share of wealth owned by the top 0.1% richest families.

Similar to Bertaut and Starr-McCluer (2000), Mulholland, Finke, and Huston (2015) find that households who own cash value policies are on average wealthier and more financially sophisticated. They argue this finding lends support to their hypothesis that permanent life insurance is increasingly being used as a tax shield rather than as a hedge against a loss in human capital. This could signal a difference in utilization of different types of policies by wealthy households, which would be further widened by the growing wealth disparity within the nation. Wang (2019) finds that for married couples whose husband is in the middle to high income earning brackets, life insurance demand decreases monotonically as wealth increases. Wang argues this indicates a substitution effect between net wealth and life insurance. She also finds that for those married-couple households with husbands in the low earning income group, life insurance demand first increases as wealth grows and then significantly decreases.

The above research shows how important wealth is for individuals when deciding to consume life insurance. Therefore, the changes being seen with subsequent generational birth cohort members utilizing less life insurance is arguably not only attributable to cultural

changes, but exogenous economic ones as well. Future academic efforts may find it interesting and helpful to continue to examine potential differences in life insurance utilization potentially driven by differences in generational birth cohorts. In "Millennials Rising: The Next Great Generation", Howe and Strauss (2000) identify unique characteristics and traits of the Millennial generation. Born between 1982 and 2003, they range in age from 20 to 40 years old at the time of this writing. It can be inferred from life cycle theory that their present-day spectrum of physical ages means they are currently employed, hopefully increasing their wealth, likely growing their family size, and actively planning their financial futures. The traits and characteristics unique to their generational birth cohort are also pertinent in working to identify the determinants that will affect their life insurance demand. Howe and Strauss (2000) argue that Millennials have seven uniquely identifying characteristics that reflect the cultural focus onto children in the 1980s within the United States. These traits distinctly set them apart from Generation X individuals, currently aged 41 to 56, who were generally treated with indifference culturally, resulting in independence. The Millennial traits include being special, sheltered, confident, team oriented, achieving, pressured, and conventional. Looking forward beyond Millennials, McKinsey & Company (2022) have found consumers in Generation Z (currently aged 16 to 24) have a uniquely low outlook on their future lives and they struggle as a generation with lower levels of emotional and social well-being than any previous generation. How might these generational traits, unique to each birth cohort, affect their life insurance utilization as consumers throughout their lives, particularly when combined with exogenous economic landscapes unique to their own respective generation? I will leave this question for future research.

Table 6 Overall HRS Survey Cohort Descriptions

Cohort Nickname	**Description**	**Born**	**First Year Surveyed**
AHEAD	The Study of Assets and Health Dynamics Among the Oldest Old	1923 or earlier	1993
CODA	Children of Depression Age	1924 to 1930	1998
HRS	Initial/Original HRS Cohort	1931 to 1941	1992
WB	War Babies	1942 to 1947	1998
EBB	Early Baby Boomers	1948 to 1953	2004
MBB	Mid Baby Boomers	1954 to 1959	2010
LBB	Late Baby Boomers	1960 to 1965	2016

Table 7 Gender Distribution across Cohorts

	Male	Female	Total
AHEAD	6.26%	13.17%	19.43%
CODA	2.60%	4.31%	6.91%
HRS	20.48%	26.00%	46.48%
War Babies	3.81%	4.38%	8.19%
Early BB	4.33%	5.26%	9.59%
Mid BB	3.18%	3.76%	6.94%
Late BB	1.11%	1.35%	2.46%
Total	41.77%	58.23%	100.00%

Table 8 Average Years of Education by Cohort at First Survey Wave

	AHEAD	CODA	HRS	War Babies	Early BB	Mid BB	Late BB	Total
Male	10.76	11.92	12.06	13.23	13.34	12.88	12.82	12.22
Female	10.78	11.82	12.01	13.02	13.16	12.93	13.08	12.09
Total	10.77	11.86	12.03	13.12	13.25	12.91	12.96	12.15

Table 9 Overall HRS Survey Cohorts in Sample: Grouped by their own Respective Cohort Survey Waves

	Cohort Specific Survey Wave														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Cohort Name (Wave 1 Year)															
AHEAD (1993)															
Frequency	7,928	6,848	5,766	4,810	3,921	3,220	2,568	2,015	1,412	1,083	782	471	266		41,090
Percent	3.06%	2.64%	2.23%	1.86%	1.51%	1.24%	0.99%	0.78%	0.55%	0.42%	0.30%	0.18%	0.10%		15.87%
CODA (1998)															
Frequency	2,278	2,098	1,932	1,758	1,599	1,428	1,224	1,085	873	626	424				15,325
Percent	0.88%	0.81%	0.75%	0.68%	0.62%	0.55%	0.47%	0.42%	0.34%	0.24%	0.16%				5.92%
HRS (1992)															
Frequency	12,335	11,278	10,800	10,458	9,903	9,565	9,230	8,739	8,345	7,759	7,249	6,484	5,588	4,455	122,188
Percent	4.76%	4.35%	4.17%	4.04%	3.82%	3.69%	3.56%	3.37%	3.22%	3.00%	2.80%	2.50%	2.16%	1.72%	47.18%
War Babies (1998)															
Frequency	2,501	2,391	2,363	2,278	2,217	2,147	2,113	2,039	1,914	1,722	1,474				23,159
Percent	0.97%	0.92%	0.91%	0.88%	0.86%	0.83%	0.82%	0.79%	0.74%	0.66%	0.57%				8.94%
Early BB (2004)															
Frequency	3,269	2,994	2,931	4,148	4,028	3,880	3,612	3,121							27,983
Percent	1.26%	1.16%	1.13%	1.60%	1.56%	1.50%	1.39%	1.21%							10.80%
Mid BB (2010)															
Frequency	4,720	4,667	4,437	4,133	3,405										21,362
Percent	1.82%	1.80%	1.71%	1.60%	1.31%										8.25%
Late BB (2016)															
Frequency	4,275	3,603													7,878
Percent	1.65%	1.39%													3.04%
Total															
Frequency	37,306	33,879	28,229	27,585	25,073	20,240	18,747	16,999	12,544	11,190	9,929	6,955	5,854	4,455	258,985
Percent	14.40%	13.08%	10.90%	10.65%	9.68%	7.82%	7.24%	6.56%	4.84%	4.32%	3.83%	2.69%	2.26%	1.72%	100.00%

Table 10 Overall HRS Survey Cohort Frequency: By Year to Cohort Specific Survey Wave

	Cohort Group Name						
	AHEAD	CODA	HRS	War Babies	Early BB	Mid BB	Late BB
Cohort Specific Wave							
1							
Year							
1992			12,335				
1993	7,928						
1998		2,278		2,501			
2004					3,269		
2010						4,720	
2016							4,275
2							
Year							
1994			11,278				
1995	6,848						
2000		2,098		2,391			
2006					2,994		
2012						4,667	
2018							3,603
3							
Year							
1996			10,800				
1998	5,766						
2002		1,932		2,363			
2008					2,931		
2014						4,437	
4							
Year							
1998			10,458				
2000	4,810						
2004		1,758		2,278			
2010					4,148		
2016						4,133	
5							
Year							
2000			9,903				
2002	3,921						
2006		1,599		2,217			
2012					4,028		
2018						3,405	
6							
Year							
2002			9,565				
2004	3,220						
2008		1,428		2,147			
2014					3,880		
7							
Year							
2004			9,230				
2006	2,568						
2010		1,224		2,113			
2016					3,612		
8							
Year							
2006			8,739				
2008	2,015						
2012		1,085		2,039			
2018					3,121		
9							
Year							
2008			8,345				
2010	1,412						
2014		873		1,914			
10							
Year							
2010			7,759				
2012	1,083						
2016		626		1,722			
11							
Year							
2012			7,249				
2014	782						
2018		424		1,474			
12							
Year							
2014			6,484				
2016	471						
13							
Year							
2016			5,588				
2018	266						
14							
Year							
2018			4,455				

Table 11 Average Age by Gender per Cohort to Cohort Specific Wave

	AHEAD	CODA	HRS	War Babies	Early BB	Mid BB	Late BB
Cohort Specific Wave							
1							
Gender							
Male	77.4	71.4	57.3	53.5	52.8	53.5	53.9
Female	76.9	70.4	54.1	51.3	51.4	52.0	52.7
2							
Gender							
Male	78.7	73.3	59.1	55.5	54.8	55.3	55.4
Female	78.5	72.4	55.9	53.1	53.4	53.6	54.3
3							
Gender							
Male	80.7	75.3	61.1	57.4	56.8	57.2	
Female	80.3	74.2	57.9	55.0	55.3	55.5	
4							
Gender							
Male	82.2	77.2	62.9	59.4	59.2	59.4	
Female	81.5	76.1	59.7	56.9	57.5	57.5	
5							
Gender							
Male	83.7	79.2	64.7	61.4	61.1	61.2	
Female	82.8	78.1	61.6	58.8	59.3	59.4	
6							
Gender							
Male	85.0	81.3	66.5	63.3	63.0		
Female	84.1	80.1	63.4	60.7	61.2		
7							
Gender							
Male	86.4	83.3	68.3	65.4	65.1		
Female	85.4	82.0	65.3	62.8	63.3		
8							
Gender							
Male	87.7	84.8	70.3	67.2	67.0		
Female	86.7	83.6	67.3	64.6	65.2		
9							
Gender							
Male	88.9	86.7	72.0	69.1			
Female	87.9	85.4	69.2	66.5			
10							
Gender							
Male	90.0	88.7	74.1	71.1			
Female	89.0	87.3	71.2	68.6			
11							
Gender							
Male	91.3	90.4	75.6	72.8			
Female	89.9	89.0	72.8	70.5			
12							
Gender							
Male	92.5		77.2				
Female	90.7		74.7				
13							
Gender							
Male	92.3		79.0				
Female	91.0		76.5				
14							
Gender							
Male			80.6				
Female			78.2				

Table 12 Summary Statistics: All Cohorts in the Overall HRS Survey Sample: 1992 - 2018*

Variable	N	Mean	Std. dev.	Min	Max
Resp. Owns Life Insurance	258,985	0.629	0.483	0	1
Religious Identity					
Protestant	258,985	0.618	0.486	0	1
Catholic	258,985	0.270	0.444	0	1
Jewish	258,985	0.020	0.141	0	1
Other Religion	258,985	0.018	0.134	0	1
Not Religious	258,985	0.073	0.261	0	1
Age	258,985	66.715	11.395	19	110
Age Squared	258,985	4580.790	1565.954	361	12100
Age Groups					
Less than 45	258,985	0.011	0.106	0	1
45-54	258,985	0.122	0.327	0	1
55-64	258,985	0.344	0.475	0	1
65–74	258,985	0.449	0.497	0	1
75-84	258,985	0.074	0.262	0	1
Race					
White/Causcasian	258,666	0.773	0.419	0	1
Black/African-American	258,666	0.165	0.372	0	1
Other Race	258,666	0.062	0.241	0	1
Sex					
Female	258,985	0.583	0.493	0	1
Male	258,985	0.417	0.493	0	1
Ethnicity					
Hispanic/Latin	258,985	0.108	0.311	0	1
non-Hispanic/non-Latin	258,985	0.892	0.311	0	1
Years of Education	258,492	12.298	3.329	0	17
# of Children	255,307	3.159	2.101	0	11
Marital Status					
Never Married	258,757	0.038	0.192	0	1
Married/Partnered	258,757	0.652	0.476	0	1
Separated	258,757	0.026	0.160	0	1
Divorced	258,757	0.099	0.299	0	1
Widowed	258,757	0.184	0.388	0	1
Economic LC Variables					
Bequest$100KIntention	258,985	0.675	0.468	0	1
Percent of Stocks/Mutuals	246,726	0.063	0.297	-40	80
OwnHome	258,985	0.767	0.422	0	1
ln(HHIncome)	256,070	10.460	1.070	-2.120	17.910
ln(HHIncome)squared	256,070	110.565	21.894	0	320.772
ln(HHWealth)	232,199	11.759	1.806	4.615	19.327
ln(HHWealth)squared	232,199	141.530	39.977	21.299	373.519
ln(AbsValHHNegWealth)	258,985	0.440	1.974	0	15.293
ZeroHHWealth	258,985	0.054	0.227	0	1
WorkerinHH	258,985	0.497	0.500	0	1
#HHResidents	258,981	2.297	1.255	1	19
ΔHHIncome	214,948	10.948	1733.389	-1	683415.7
ΔHHWealth	207,233	4.473	1136.621	-75996	500749
NewHHJob	258,985	0.096	0.295	0	1
NewHHUnemployed	258,985	0.027	0.163	0	1
NewHHRetiree	258,985	0.163	0.369	0	1
Cohort Name					
AHEAD	258,985	0.159	0.365	0	1
CODA	258,985	0.059	0.236	0	1
HRS	258,985	0.472	0.499	0	1
War Babies	258,985	0.089	0.285	0	1
Early BB	258,985	0.108	0.310	0	1
Mid BB	258,985	0.082	0.275	0	1
Late BB	258,985	0.030	0.172	0	1

*This sample is post-data-cleaning as described in Section 4.3.

Table 13 Survey Wave 2 Summary Statistics for Baby Boomer Cohorts

Cross-Section Statistics for Survey Wave 2	Early Baby-Boomers: 2006					Mid Baby-Boomers: 2012					Late Baby-Boomers: 2018				
Variable	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**N**	**Mean**	**Std. dev.**	**Min**	**Max**
Resp. Owns Life Insurance	2,723	0.722	0.458	0	1	3,836	0.629	0.483	0	1	2,962	0.626	0.484	0	1
Religious Identity															
Protestant	2,723	0.577	0.494	0	1	3,836	0.516	0.500	0	1	2,962	0.489	0.500	0	1
Catholic	2,723	0.263	0.440	0	1	3,836	0.265	0.441	0	1	2,962	0.226	0.418	0	1
Jewish	2,723	0.020	0.139	0	1	3,836	0.012	0.109	0	1	2,962	0.011	0.107	0	1
Other Religion	2,723	0.010	0.101	0	1	3,836	0.055	0.228	0	1	2,962	0.080	0.271	0	1
Not Religious	2,723	0.134	0.337	0	1	3,836	0.152	0.358	0	1	2,962	0.194	0.389	0	1
Age	2,723	54.028	3.483	31	59	3,836	54.368	41.315	27	77	2,962	54.764	3.724	28	71
Age Squared	2,723	2931.142	354.129	961	3481	3,836	2972.955	433.285	729	5929	2,962	3012.924	382.253	784	5041
Sex															
Female	2,723	0.544	0.498	0	1	3,836	0.553	0.498	0	1	2,962	0.553	0.497	0	1
Male	2,723	0.456	0.498	0	1	3,836	0.447	0.498	0	1	2,962	0.447	0.497	0	1
Race															
White/Caucasian	2,723	0.745	0.436	0	1	3,836	0.611	0.494	0	1	2,962	0.556	0.500	0	1
Black/African-American	2,723	0.151	0.358	0	1	3,836	0.258	0.437	0	1	2,962	0.242	0.429	0	1
Other Race	2,723	0.104	0.305	0	1	3,836	0.132	0.338	0	1	2,962	0.201	0.401	0	1
Ethnicity															
Hispanic/Latin	2,723	0.129	0.349	0	1	3,836	0.179	0.383	0	1	2,962	0.193	0.395	0	1
non-Hispanic/non-Latin	2,723	0.871	0.349	0	1	3,836	0.821	0.400	0	1	2,962	0.807	0.404	0	1
Marital Status															
Never Married	2,723	0.049	0.222	0	1	3,836	0.092	0.294	0	1	2,962	0.098	0.319	0	1
Married/Partnered	2,723	0.753	0.431	0	1	3,836	0.700	0.458	0	1	2,962	0.668	0.471	0	1
Separated	2,723	0.026	0.159	0	1	3,836	0.038	0.190	0	1	2,962	0.040	0.196	0	1
Divorced	2,723	0.141	0.348	0	1	3,836	0.143	0.354	0	1	2,962	0.168	0.374	0	1
Widowed	2,723	0.030	0.172	0	1	3,836	0.027	0.163	0	1	2,962	0.026	0.158	0	1
Years of Education	2,723	13.453	2.908	0	17	3,836	13.213	2.925	0	17	2,962	13.344	3.214	0	17
# of Children	2,723	2.636	1.743	0	11	3,836	2.705	1.821	0	11	2,962	2.587	1.873	0	11
Economic LC Variables															
Bequest$100KIntention	2,723	0.725	0.447	0	1	3,836	0.688	0.464	0	1	2,962	0.713	0.452	0	1
Percent of Stocks/Mutuals	2,723	0.042	0.142	-1.25	3.571	3,836	0.028	0.110	-0.435	1	2,962	0.027	0.235	-11	1.388889
OwnHome	2,723	0.813	0.390	0	1	3,836	0.702	0.457	0	1	2,962	0.678	0.467	0	1
ln(HHIncome)	2,723	10.968	1.097	3.219	17.049	3,836	10.814	1.210	1.386	14.286	2,962	10.902	1.362	0.693	15.395
ln(HHIncome)squared	2,723	121.501	23.236	10.361	290.658	3,836	118.426	24.719	1.922	204.076	2,962	120.698	27.285	0.480	237.012
ln(HHWealth)	2,723	10.932	3.683	0.000	16.487	3,836	9.383	4.558	0	16.912	2,962	10.016	4.244	0	18.422
ln(HHWealth)squared	2,723	133.058	56.075	0.000	271.82	3,836	108.812	61.887	0	286.006	2,962	118.320	60.570	0	339.352
WorkerinHH	2,723	0.888	0.315	0	1	3,836	0.837	0.369	0	1	2,962	0.836	0.370	0	1
#HHResidents	2,723	2.705	1.380	1	14	3,836	2.845	1.476	1	12	2,962	2.859	1.509	1	12
ΔHHIncome	2,723	1.904	34.292	-1	1095	3,836	6.159	274.278	-1	16821.25	2,962	13.115	369.541	-1	17084.03
ΔHHWealth	2,723	-0.802	58.756	-1544.563	887.889	3,836	1.501	103.620	-1271	4208.6	2,962	-5.946	299.336	-15395	1399
NewHHJob	2,723	0.296	0.457	0	1	3,836	0.282	0.450	0	1	2,962	0.270	0.444	0	1
NewHHUnemployed	2,723	0.039	0.193	0	1	3,836	0.073	0.261	0	1	2,962	0.044	0.204	0	1
NewHHRetiree	2,723	0.072	0.258	0	1	3,836	0.080	0.271	0	1	2,962	0.080	0.272	0	1

Table 14 Survey Wave 2 Summary Statistics for BB Cohorts: 2002 and Newer Variables

Cross-Section Statistics for Survey Wave 2 with Variables 2002 or Newer	Early Baby-Boomers: 2006					Mid Baby-Boomers: 2012					Late Baby-Boomers: 2018				
Variable	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**N**	**Mean**	**Std. dev.**	**Min**	**Max**
Dependent Variable															
Respondent Owns LI	2,721	0.722	0.448	0	1	3,834	0.629	0.483	0	1	3,603	3.14E-01	0.464	0.0E+00	1
Economic Hardship															
Rx Constraint	2,721	0.130	0.337	0	1	3,834	0.164	0.370	0	1	3,601	0.137	0.344	0	1
Religious Services Attendance															
Routine Attendance	2,721	0.333	0.472	0	1	3,834	0.320	0.466	0	1	3,603	3.14E-01	0.464	0.0E+00	1
Interaction: Religion ## Routine Services Attended															
Protestant ## Attendance	2,721	0.229	0.420	0	1	2,380	0.206	0.405	0	1	3,603	0.251	0.434	0	1
Catholic ## Attendance	2,721	0.094	0.292	0	1	1,290	0.078	0.269	0	1	3,603	0.156	0.363	0.0E+00	1
Jewish ## Attendance	2,721	0.007	0.027	0	1	47	0.001	0.028	0	1	3,603	0.175	0.380	0	1
Other ## Attendance	2,721	0.004	0.066	0	1	245	0.022	0.146	0	1	3,603	0.104	0.306	0	1
Interaction: Religion ## Economic Rx Constraint															
Protestant ## Rx Constraint	2,721	0.079	0.270	0	1	3,834	0.098	0.298	0	1	3,603	0.251	0.434	0	1
Catholic ## Rx Constraint	2,721	0.028	0.165	0	1	3,834	0.031	0.172	0	1	3,603	0.156	0.363	0.0E+00	1
Jewish ## Rx Constraint	2,721	0.001	0.038	0	1	3,834	0.001	0.028	0	1	3,603	0.175	0.380	0	1
Other ## Rx Constraint	2,721	0.002	0.043	0	1	3,834	0.120	0.325	0	1	3,603	0.104	0.306	0	1
Interaction: Routine Services Attendance ## Economic Rx Constraint															
Routine Att ## Rx Constraint	2,721	0.039	0.194	0	1	4,667	0.259	0.438	0	1	3,603	3.14E-01	0.464	0.0E+00	1
Interaction: Religion ## Routine Services Attended ## Economic Rx Constraint															
Protestant ## Att ## Rx	2,721	0.029	0.167	0	1	4,667	0.249	0.432	0	1	3,603	0.251	0.434	0	1
Catholic ## Att ## Rx	2,721	0.008	0.092	0	1	4,667	0.167	0.373	0	1	3,603	0.156	0.363	0.0E+00	1
Jewish ## Att ## Rx	2,721	n/a	n/a	0	1	4,667	0.205	0.404	0	1	3,603	0.175	0.380	0	1
Other ## Att ## Rx	2,721	0.007	0.026	0	1	4,667	0.120	0.325	0	1	3,603	0.104	0.306	0	1
Life Insurance Policy Ownership															
# of LI Policies	2,069	1.593	0.841	1	5	2,721	1.531	0.791	1	5	2,055	1.516	0.767	1	5
# of Whole LI Policies	413	1.504	0.829	1	5	466	1.453	0.770	1	5	335	1.490	0.754	1.0E+00	5
Total Value of all LI	1,737	176539.2	322592.6	0	8000000	2,432	210311.6	388893.4	1	8250000	2,072	1.21E+08	3.26E+08	0	1.00E+09
Average LI Policy Value	1,735	110488.9	154606.7	0	2000000	2,429	132812.9	189009	0.5	2500000	2,055	9.13E+07	2.69E+08	0	1.00E+09
Own Whole Life (yes/no)	1,959	0.361	0.480	0	1	2,624	0.351	0.477	0	1	1,962	0.319	0.466	0	1
Total Value of Whole Life	301	123941.6	507802.6	70	8000000	380	123310.2	269252.7	20	3000000	259	136588.7	200835.3	0.0E+00	2000000
TotalAnnPremium	2,994	227.514	1598.091	0	55800	4,667	198.822	1327.392	0	60000	3,603	245.466	2023.856	0	96000
New LI Policy	2,090	0.083	0.276	0	1	2,740	0.076	0.265	0	1	2,067	0.081	0.273	0.0E+00	1
Face Value of New LI	151	123947.400	179737.800	50	1000000	189	169518.5	382461.8	1000	4000000	167	1.09E+07	3.11E+07	1000	1.00E+08
Life Insurance Policy Lapsation															
New Lapse by Respondent	2,985	0.048	0.213	0	1	4,655	0.069	0.254	0	1	3,600	0.0581	0.2339	0	1
Was the Lapse Voluntary															
VolLapse Yes	142	0.690	0.464	0	1	317	0.625	0.485	0	1	209	0.632	0.484	0	1
If voluntary, why lapse?															
Too Expensive	94	0.532	0.502	0	1	196	0.628	0.485	0	1	132	0.470	0.501	0	1
Not Needed	94	0.170	0.378	0	1	196	0.173	0.380	0	1	132	0.159	0.367	0	1
Replaced with New Policy	94	0.096	0.296	0	1	196	0.031	0.173	0	1	132	0.015	0.123	0	1
Took Cash Out	94	0.053	0.226	0	1	196	0.026	0.158	0	1	132	0.008	0.087	0	1
Employer Related	94	0.053	0.226	0	1	196	0.036	0.186	0	1					
Dissatisfied with Plan	94	0.096	0.296	0	1	196	0.107	0.310	0	1	132	0.348	0.478	0	1

Table 15 Summary Statistics for Lapse Analysis: 1998 - 2018

Variable (n=78,079)	Mean	Std. dev.	Min	Max
RNewLapse	0.0338759	0.180911	0	1.000
VolLapse	0.0247314	0.1553062	0	1.000
NewHHUnemp	0.018968	0.1364127	0	1.000
NegInc1	0.1615927	0.3680792	0	1.000
NegInc2	0.1576224	0.3643889	0	1.000
NegInc3	0.1554323	0.3623186	0	1.000
NegNW1	0.1674458	0.3733758	0	1.000
NegNW2	0.1695078	0.3752022	0	1.000
NegNW3	0.1655503	0.3716788	0	1.000
NewLI	0.0474647	0.2126321	0	1.000
NewDivorce	0.0061988	0.0784889	0	1.000
NewHHRetiree	0.1713393	0.3768076	0	1.000
NewWidow	0.0054816	0.0738353	0	1.000
ln(HHIncome)	10.72719	0.999154	0	16.423
ln(Wealth)	11.53258	2.850891	0	18.323
ln(Debt)	2.868745	4.106666	0	14.557
Liquidity	0.2140462	0.7809945	-60	100.000
HHAgeAvg	67.27202	9.821023	27	108.000
Age Sq	4639.723	1411.21	441	11664.000
Worker in HH	0.5468948	0.4977992	0	1.000
College Degree	0.3042816	0.4601054	0	1.000
Children to HH	3.180766	1.978168	0	11.000
1998	0.0918173	0.2887697	0	1
2000	0.1004239	0.3005663	0	1
2002	0.0983363	0.2977707	0	1
2004	0.0896656	0.2857039	0	1
2006	0.0914587	0.2882621	0	1
2008	0.0857721	0.280029	0	1
2010	0.0779467	0.2680894	0	1
2012	0.0846194	0.2783163	0	1
2014	0.0812126	0.2731631	0	1
2016	0.0691351	0.2536854	0	1
2018	0.0627185	0.2424576	0	1
SW3	0.152128	0.3591472	0	1
SW4	0.1450326	0.352136	0	1
SW5	0.1308034	0.3371874	0	1
SW6	0.1077242	0.3100338	0	1
SW7	0.0966713	0.2955116	0	1
SW8	0.0830697	0.2759893	0	1
SW9	0.0605797	0.2385592	0	1
SW10	0.0533562	0.2247442	0	1
SW11	0.0436865	0.204398	0	1
SW12	0.0298031	0.170045	0	1
SW13	0.0235787	0.1517334	0	1

Table 16
EBB SW2 Cross-Section (2006): Models 1 - 3

	EBB 1	EBB 2	EBB 3
Protestant	0.077***		
	(0.027)		
Catholic	0.116***		
	(0.029)		
Jewish	0.009		
	(0.058)		
Other Religion	-0.171		
	(0.104)		
Age at Interview	-0.049***	-0.048***	-0.049***
	(0.018)	(0.018)	(0.018)
Age Squared	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
Female	-0.025	-0.021	-0.022
	(0.017)	(0.017)	(0.016)
Caucasian/White	0.018	0.016	0.019
	(0.033)	(0.033)	(0.033)
Black/African-American	0.099**	0.094**	0.089**
	(0.039)	(0.039)	(0.039)
Hispanic	-0.162***	-0.134***	-0.143***
	(0.034)	(0.033)	(0.033)
Married/Partnered	0.013	0.014	
	(0.045)	(0.046)	
Separated	-0.026	-0.026	
	(0.070)	(0.070)	
Divorced	0.057	0.052	
	(0.047)	(0.047)	
Widowed	0.083	0.077	
	(0.063)	(0.064)	
Years of Education	0.018***	0.018***	0.018***
	(0.003)	(0.003)	(0.003)
Planning Large Bequest	0.097***	0.103***	0.097***
	(0.023)	(0.023)	(0.023)
% Stock/Mutual Held	-0.016	-0.019	-0.014
	(0.056)	(0.058)	(0.055)
Own Home	0.141***	0.142***	0.143***
	(0.029)	(0.029)	(0.029)
Natural Log of HH Income	0.149*	0.154*	0.154*
	(0.087)	(0.087)	(0.085)
LN of HH Inc Squared	-0.003	-0.003	-0.003
	(0.004)	(0.004)	(0.004)
Natural Log of Total Wealth	0.017*	0.018**	0.017*
	(0.009)	(0.009)	(0.009)
LN of Wealth Squared	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)
Number of Children	-0.004	-0.004	-0.004
	(0.005)	(0.005)	(0.005)
At Least 1 Worker in HH	0.149***	0.145***	0.148***
	(0.034)	(0.034)	(0.034)
# of HH Residents	-0.006	-0.005	-0.006
	(0.006)	(0.007)	(0.006)
Percentage Change in HH Income	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
New HH Job	-0.059***	-0.063***	-0.059***
	(0.018)	(0.018)	(0.018)
New HH Unemployment	-0.081*	-0.090*	-0.078
	(0.048)	(0.047)	(0.048)
New HH Retiree	0.029	0.031	0.031
	(0.035)	(0.035)	(0.035)
Christian			0.081*
			(0.048)
Married			-0.046
			(0.052)
Christian and Married			0.021
			(0.054)
R-Squared	0.777	0.774	0.776
Number of observations	2,723	2,723	2,723

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 17
MBB SW2 Cross-Section (2006): Models 1 - 3

	MBB 1	MBB 2	MBB 3
Protestant	0.018		
	(0.021)		
Catholic	0.040*		
	(0.022)		
Jewish	-0.164***		
	(0.064)		
Other Religion	-0.058		
	(0.036)		
Age at Interview	-0.003	-0.002	-0.002
	(0.009)	(0.009)	(0.009)
Age Squared	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Female	-0.003	-0.002	-0.003
	(0.014)	(0.014)	(0.014)
Caucasian/White	0.069***	0.077***	0.072***
	(0.024)	(0.024)	(0.024)
Black/African-American	0.159***	0.167***	0.157***
	(0.028)	(0.028)	(0.028)
Hispanic	-0.142***	-0.129***	-0.136***
	(0.024)	(0.024)	(0.023)
Married/Partnered	-0.001	0.001	
	(0.030)	(0.030)	
Separated	-0.027	-0.024	
	(0.047)	(0.047)	
Divorced	0.039	0.041	
	(0.031)	(0.031)	
Widowed	0.077	0.080	
	(0.052)	(0.052)	
Years of Education	0.011***	0.010***	0.010***
	(0.003)	(0.003)	(0.003)
Planning Large Bequest	0.128***	0.131***	0.129***
	(0.018)	(0.018)	(0.018)
% Stock/Mutual Held	0.032	0.030	0.031
	(0.064)	(0.064)	(0.064)
Own Home	0.111***	0.114***	0.114***
	(0.020)	(0.020)	(0.020)
Natural Log of HH Income	-0.087*	-0.088*	-0.089**
	(0.046)	(0.045)	(0.045)
LN of HH Inc Squared	0.009***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)
Natural Log of Total Wealth	0.013**	0.014**	0.014**
	(0.007)	(0.006)	(0.006)
LN of Wealth Squared	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.001)
Number of Children	-0.006	-0.005	-0.005
	(0.004)	(0.004)	(0.004)
At Least 1 Worker in HH	0.144***	0.143***	0.143***
	(0.025)	(0.025)	(0.025)
# of HH Residents	-0.011**	-0.011**	-0.012**
	(0.005)	(0.005)	(0.005)
Percentage Change in HH Income	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
New HH Job	-0.067***	-0.067***	-0.066***
	(0.016)	(0.016)	(0.016)
New HH Unemployment	-0.115***	-0.115***	-0.112***
	(0.029)	(0.029)	(0.029)
New HH Retiree	-0.035	-0.036	-0.035
	(0.028)	(0.028)	(0.028)
Christian			0.046
			(0.033)
Married			-0.028
			(0.036)
Christian and Married			0.005
			(0.038)
R-Squared	0.722	0.720	0.721
Number of observations	3,836	3,836	3,836

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 18
LBB SW2 Cross-Section (2006): Models 1 - 3

	LBB 1	LBB 2	LBB 3
Protestant	0.044*		
	(0.022)		
Catholic	-0.000		
	(0.027)		
Jewish	0.003		
	(0.063)		
Other Religion	-0.007		
	(0.034)		
Age at Interview	-0.004	-0.004	-0.004
	(0.009)	(0.009)	(0.009)
Age Squared	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Female	-0.002	0.001	0.001
	(0.017)	(0.016)	(0.017)
Caucasian/White	0.015	0.017	0.015
	(0.022)	(0.022)	(0.022)
Black/African-American	0.121***	0.132***	0.125***
	(0.027)	(0.026)	(0.026)
Hispanic	-0.150***	-0.158***	-0.163***
	(0.026)	(0.024)	(0.024)
Married/Partnered	0.001	0.000	
	(0.034)	(0.034)	
Separated	0.031	0.029	
	(0.049)	(0.049)	
Divorced	0.043	0.043	
	(0.035)	(0.035)	
Widowed	0.049	0.045	
	(0.060)	(0.060)	
Years of Education	0.012***	0.012***	0.012***
	(0.003)	(0.003)	(0.003)
Planning Large Bequest	0.125***	0.124***	0.126***
	(0.022)	(0.022)	(0.022)
% Stock/Mutual Held	-0.022	-0.019	-0.020
	(0.021)	(0.021)	(0.021)
Own Home	0.061***	0.063***	0.061***
	(0.023)	(0.023)	(0.023)
Natural Log of HH Income	-0.078*	-0.080*	-0.076*
	(0.042)	(0.043)	(0.043)
LN of HH Inc Squared	0.007***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)
Natural Log of Total Wealth	0.012	0.013*	0.012*
	(0.007)	(0.007)	(0.007)
LN of Wealth Squared	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)
Number of Children	-0.004	-0.003	-0.001
	(0.005)	(0.005)	(0.005)
At Least 1 Worker in HH	0.184***	0.180***	0.182***
	(0.029)	(0.029)	(0.029)
# of HH Residents	0.010	0.010	0.010
	(0.006)	(0.006)	(0.006)
Percentage Change in HH Income	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
New HH Job	-0.025	-0.024	-0.024
	(0.018)	(0.018)	(0.018)
New HH Unemployment	-0.131***	-0.130***	-0.130***
	(0.041)	(0.041)	(0.041)
New HH Retiree	-0.018	-0.019	-0.017
	(0.033)	(0.033)	(0.033)
Christian			0.038
			(0.032)
Married			-0.025
			(0.035)
Christian and Married			-0.009
			(0.038)
R-Squared	0.709	0.709	0.709
Number of observations	2,962	2,962	2,962

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 19
EBB SW2 Cross-Section (2006): Models 4 - 6

	EBB 4	EBB 5	EBB 6
Protestant	0.073***	0.050*	0.054*
	(0.026)	(0.028)	(0.030)
Catholic	0.110***	0.095***	0.094***
	(0.029)	(0.031)	(0.033)
Jewish	0.007	0.001	0.008
	(0.057)	(0.059)	(0.059)
Other Religion	-0.173	-0.150	-0.247*
	(0.105)	(0.140)	(0.149)
Age at Interview	-0.046***	-0.045**	-0.045**
	(0.018)	(0.018)	(0.018)
Age Squared	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Caucasian/White	0.018	0.018	0.015
	(0.033)	(0.033)	(0.033)
Black/African-American	0.100**	0.090**	0.087**
	(0.039)	(0.040)	(0.040)
Hispanic	-0.161***	-0.166***	-0.173***
	(0.034)	(0.034)	(0.034)
Years of Education	0.018***	0.017***	0.017***
	(0.003)	(0.003)	(0.003)
Planning Large Bequest	0.094***	0.094***	0.094***
	(0.023)	(0.023)	(0.023)
Own Home	0.144***	0.141***	0.140***
	(0.029)	(0.029)	(0.029)
Natural Log of HH Income	0.148*	0.148*	0.149*
	(0.086)	(0.087)	(0.088)
LN of HH Inc Squared	-0.003	-0.003	-0.003
	(0.004)	(0.004)	(0.004)
Natural Log of Total Wealth	0.016*	0.016*	0.016*
	(0.009)	(0.009)	(0.009)
LN of Wealth Squared	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)
At Least 1 Worker in HH	0.144***	0.142***	0.141***
	(0.034)	(0.034)	(0.034)
# of HH Residents	-0.008	-0.008	-0.007
	(0.006)	(0.006)	(0.007)
Percentage Change in HH Income	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
New HH Job	-0.056***	-0.057***	-0.059***
	(0.018)	(0.018)	(0.018)
New HH Unemployment	-0.077	-0.080*	-0.081*
	(0.048)	(0.048)	(0.048)
Regularly attend religious services.		-0.098	-0.003
		(0.120)	(0.134)
Protestant # Regularly attend religious services.		0.152	0.055
		(0.121)	(0.136)
Catholic # Regularly attend religious services.		0.133	0.041
		(0.124)	(0.138)
Jewish # Regularly attend religious services.		0.235*	0.126
		(0.132)	(0.145)
Other Religion # Regularly attend religious services.		0.040	-0.088
		(0.239)	(0.250)
Rx Constraint	-0.080***	-0.078***	-0.068
	(0.027)	(0.027)	(0.076)
Protestant # Rx Constraint			-0.028
Catholic # Rx Constraint			0.012
Jewish # Rx Constraint			-0.094
Other Religion # Rx Constraint			0.513*
Regularly attend religious services. # Rx Constraint			-0.491***
Protestant # Regularly attend religious services. # Rx Constraint			0.499**
Catholic # Regularly attend religious services. # Rx Constraint			0.458**
Jewish # Regularly attend religious services. # Rx Constraint			0.000
Other Religion # Regularly attend religious services. # Rx Constraint			0.753*
All Other Controls in Models 1 - 3	yes	yes	yes
R-Squared	0.778	0.779	0.780
Number of observations	2,721	2,721	2,721

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 20
MBB SW2 Cross-Section (2012): Models 4 - 6

	MBB 4	MBB 5	MBB 6
Protestant	0.019	0.015	0.020
	(0.021)	(0.023)	(0.024)
Catholic	0.039*	0.036	0.043
	(0.022)	(0.024)	(0.026)
Jewish	-0.165***	-0.176***	-0.180***
	(0.064)	(0.067)	(0.070)
Other Religion	-0.058	-0.085*	-0.095*
	(0.036)	(0.046)	(0.049)
Age at Interview	-0.003	-0.003	-0.003
	(0.009)	(0.009)	(0.009)
Age Squared	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Caucasian/White	0.069***	0.069***	0.070***
	(0.024)	(0.024)	(0.024)
Black/African-American	0.159***	0.154***	0.155***
	(0.028)	(0.028)	(0.028)
Hispanic	-0.142***	-0.146***	-0.146***
	(0.024)	(0.024)	(0.024)
Years of Education	0.011***	0.011***	0.011***
	(0.003)	(0.003)	(0.003)
Planning Large Bequest	0.127***	0.127***	0.127***
	(0.018)	(0.018)	(0.018)
Own Home	0.111***	0.110***	0.110***
	(0.020)	(0.020)	(0.020)
Natural Log of HH Income	-0.087*	-0.085*	-0.084*
	(0.046)	(0.046)	(0.046)
LN of HH Inc Squared	0.009***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)
Natural Log of Total Wealth	0.013**	0.013**	0.013**
	(0.007)	(0.007)	(0.007)
LN of Wealth Squared	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.001)
At Least 1 Worker in HH	0.143***	0.142***	0.142***
	(0.025)	(0.025)	(0.025)
# of HH Residents	-0.011**	-0.011**	-0.011**
	(0.005)	(0.005)	(0.005)
Percentage Change in HH Income	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
New HH Job	-0.067***	-0.066***	-0.067***
	(0.016)	(0.016)	(0.016)
New HH Unemployment	-0.115***	-0.115***	-0.115***
	(0.029)	(0.029)	(0.029)
Regularly attend religious services.		0.038	0.029
		(0.066)	(0.067)
Protestant # Regularly attend religious services.		-0.018	-0.007
		(0.068)	(0.070)
Catholic # Regularly attend religious services.		-0.013	-0.001
		(0.071)	(0.073)
Jewish # Regularly attend religious services.		0.168*	0.187*
		(0.093)	(0.095)
Other Religion # Regularly attend religious services.		0.039	0.081
		(0.091)	(0.096)
Rx Constraint	-0.025	-0.024	0.006
	(0.020)	(0.020)	0.055
Protestant # Yes			-0.031
Catholic # Yes			-0.047
Jewish # Yes			0.098
Other Religion # Yes			0.052
Regularly attend religious services. # Yes			0.041
Protestant # Regularly attend religious services. # Yes			-0.049
Catholic # Regularly attend religious services. # Yes			-0.061
Jewish # Regularly attend religious services. # Yes			0.000
Other Religion # Regularly attend religious services. # Yes			-0.227
All Other Controls in Models 1 - 3	yes	yes	yes
R-Squared	0.722	0.722	0.722
Number of observations	3,834	3,834	3,834

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$.

Table 21
LBB SW2 Cross-Section (2018): Models 4 - 6

	LBB 4	LBB 5	LBB 6
Protestant	0.043*	0.034	0.030
	(0.022)	(0.025)	(0.027)
Catholic	-0.002	0.001	0.009
	(0.027)	(0.030)	(0.031)
Jewish	0.003	0.011	0.045
	(0.063)	(0.064)	(0.065)
Other Religion	-0.006	-0.004	0.009
	(0.034)	(0.038)	(0.041)
Age at Interview	-0.005	-0.005	-0.006
	(0.009)	(0.009)	(0.009)
Age Squared	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Caucasian/White	0.016	0.018	0.016
	(0.022)	(0.022)	(0.022)
Black/African-American	0.121***	0.112***	0.111***
	(0.027)	(0.027)	(0.027)
Hispanic	-0.151***	-0.160***	-0.161***
	(0.026)	(0.026)	(0.026)
Years of Education	0.012***	0.012***	0.012***
	(0.003)	(0.003)	(0.003)
Planning Large Bequest	0.124***	0.120***	0.120***
	(0.022)	(0.022)	(0.022)
Own Home	0.062***	0.059**	0.059**
	(0.023)	(0.023)	(0.023)
Natural Log of HH Income	-0.075*	-0.070*	-0.068
	(0.042)	(0.042)	(0.042)
LN of HH Inc Squared	0.007***	0.007***	0.006***
	(0.002)	(0.002)	(0.002)
Natural Log of Total Wealth	0.012	0.011	0.011
	(0.007)	(0.007)	(0.007)
LN of Wealth Squared	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)
At Least 1 Worker in HH	0.180***	0.181***	0.181***
	(0.029)	(0.029)	(0.029)
# of HH Residents	0.010	0.010	0.010
	(0.006)	(0.006)	(0.006)
Percentage Change in HH Income	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
New HH Job	-0.025	-0.027	-0.026
	(0.018)	(0.018)	(0.018)
New HH Unemployment	-0.131***	-0.132***	-0.134***
	(0.041)	(0.041)	(0.041)
Regularly attend religious services.		0.132**	0.156**
		(0.065)	(0.070)
Protestant # Regularly attend religious services.		-0.071	-0.077
		(0.068)	(0.073)
Catholic # Regularly attend religious services.		-0.088	-0.099
		(0.075)	(0.080)
Jewish # Regularly attend religious services.		-0.025	-0.077
		(0.090)	(0.093)
Other Religion # Regularly attend religious services.		-0.095	-0.162*
		(0.090)	(0.098)
Rx Constraint	-0.041	-0.042*	-0.006
	(0.025)	(0.025)	0.057
Protestant # Rx Constraint			0.031
Catholic # Rx Constraint			-0.063
Jewish # Rx Constraint			-0.358
Other Religion # Rx Constraint			-0.113
Regularly attend religious services. # Rx Constraint			-0.158
Protestant # Regularly attend religious services. # Rx Constraint			0.031
Catholic # Regularly attend religious services. # Rx Constraint			-0.019
Jewish # Regularly attend religious services. # Rx Constraint			0.000
Other Religion # Regularly attend religious services. # Rx Constraint			0.382
All Other Controls in Models 1 - 3	yes	yes	yes
R-Squared	0.709	0.711	0.712
Number of observations	2,961	2,961	2,961

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 22
Time Series for All Cohorts Combined: Yearly FE

Dependent Variable	Number of Life Policies	ln(Total Value of Policies)	ln(Average Policy Value)	# of Whole Policies	# of Term Policies
Total Annual Premium Paid for LI	0.000***	0.000***	0.000***	0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Protestant # Age at Interview	0.003	0.011	0.008	0.014**	-0.008
	(0.002)	(0.007)	(0.007)	(0.006)	(0.006)
Catholic # Age at Interview	0.003	-0.006	-0.007	0.017**	-0.005
	(0.002)	(0.007)	(0.007)	(0.007)	(0.007)
Jewish # Age at Interview	-0.009**	-0.030*	-0.020	0.017	-0.024**
	(0.005)	(0.016)	(0.015)	(0.012)	(0.012)
Other Religion # Age at Interview	0.004	0.036**	0.025	0.023	-0.013
	(0.005)	(0.018)	(0.017)	(0.017)	(0.017)
Age at Interview	-0.023***	-0.213***	-0.194***	0.000	-0.038***
	(0.004)	(0.014)	(0.014)	(0.012)	(0.012)
Age Squared	0.000*	0.002***	0.002***	-0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married/Partnered	0.050	-0.373**	-0.405**	0.241	0.037
	(0.050)	(0.162)	(0.157)	(0.166)	(0.164)
Separated	0.050	-0.492***	-0.497***	0.328*	0.068
	(0.053)	(0.173)	(0.168)	(0.177)	(0.175)
Divorced	0.002	-0.363**	-0.374**	0.104	0.120
	(0.052)	(0.168)	(0.163)	(0.170)	(0.168)
Widowed	0.035	-0.411**	-0.458***	0.276*	0.020
	(0.050)	(0.163)	(0.158)	(0.166)	(0.164)
Planning Large Bequest	0.033***	0.102***	0.073***	0.071***	-0.043**
	(0.007)	(0.024)	(0.023)	(0.021)	(0.021)
% Stock/Mutual Held	-0.003	-0.002	0.003	0.124***	-0.064
	(0.012)	(0.038)	(0.036)	(0.044)	(0.044)
Own Home	0.042***	0.046	0.026	0.021	0.005
	(0.012)	(0.039)	(0.038)	(0.034)	(0.033)
Natural Log of HH Income	-0.036*	-0.203***	-0.086	0.007	-0.068
	(0.020)	(0.068)	(0.066)	(0.071)	(0.070)
LN of HH Inc Squared	0.003***	0.012***	0.005	-0.000	0.004
	(0.001)	(0.003)	(0.003)	(0.003)	(0.003)
Natural Log of Total Wealth	-0.001	0.001	-0.001	-0.020*	0.021**
	(0.004)	(0.012)	(0.011)	(0.011)	(0.010)
LN of Wealth Squared	0.000	0.000	0.001	0.002**	-0.002**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
# of Children in Household	0.011**	-0.056***	-0.060***	0.033**	0.006
	(0.005)	(0.017)	(0.017)	(0.016)	(0.016)
At Least 1 Worker in HH	0.029***	0.149***	0.127***	0.000	0.010
	(0.008)	(0.027)	(0.026)	(0.021)	(0.021)
# of HH Residents	0.002	-0.003	-0.006	-0.003	0.013
	(0.003)	(0.011)	(0.011)	(0.010)	(0.010)
Percentage Change in HH Income	-0.000	0.000**	0.000***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	-0.000**	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
New HH Job	0.007	0.006	0.011	0.020	-0.028
	(0.008)	(0.027)	(0.026)	(0.022)	(0.022)
New HH Unemployment	-0.030*	-0.092*	-0.091*	0.006	-0.015
	(0.016)	(0.054)	(0.052)	(0.045)	(0.045)
New HH Retiree	-0.035***	-0.047**	-0.031	0.009	-0.032*
	(0.006)	(0.021)	(0.020)	(0.017)	(0.016)
R-Squared	0.017	0.042	0.044	0.008	0.022
Number of observations	87,284	77,932	77,388	19,017	18,955

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$.

Table 23
Time Series for All Cohorts Combined: Education: Yearly FE

Dependent Variable	Number of Life Policies	ln(Total Value of Policies)	ln(Average Policy Value)	# of Whole Policies	# of Term Policies
All Previous Controls	yes	yes	yes	yes	yes
Low Wealth (LW)	0.002	0.018	0.027	0.030	-0.010
	(0.011)	(0.037)	(0.036)	(0.030)	(0.030)
No Diploma # LW	0.016	0.128	0.096	-0.006	-0.057
	(0.026)	(0.088)	(0.086)	(0.076)	(0.075)
Associates # LW	-0.079**	-0.062	-0.004	0.008	-0.035
	(0.033)	(0.110)	(0.106)	(0.088)	(0.087)
Bachelors # LW	-0.007	-0.019	-0.005	-0.074	0.050
	(0.024)	(0.078)	(0.076)	(0.061)	(0.060)
Masters # LW	0.063**	0.052	0.003	0.046	-0.029
	(0.031)	(0.102)	(0.098)	(0.077)	(0.076)
Doctorate # LW	0.148**	-0.166	-0.221	-0.034	0.427**
	(0.066)	(0.217)	(0.209)	(0.177)	(0.175)
High Wealth (HW)	-0.024*	-0.020	-0.024	0.079**	-0.070**
	(0.014)	(0.046)	(0.044)	(0.035)	(0.034)
No Diploma # HW	0.010	0.015	-0.065	-0.138	0.096
	(0.042)	(0.145)	(0.141)	(0.119)	(0.118)
Associates # HW	0.018	0.050	0.087	0.098	-0.054
	(0.039)	(0.129)	(0.125)	(0.101)	(0.100)
Bachelors # HW	-0.023	-0.092	-0.056	-0.137**	0.037
	(0.024)	(0.080)	(0.077)	(0.055)	(0.054)
Masters # HW	0.016	-0.150	-0.161*	-0.005	0.020
	(0.030)	(0.098)	(0.095)	(0.072)	(0.071)
Doctorate # HW	-0.067	-0.141	-0.107	-0.089	0.063
	(0.046)	(0.155)	(0.150)	(0.094)	(0.093)
Low Income (LI)	-0.014	-0.088***	-0.064**	-0.009	-0.000
	(0.010)	(0.033)	(0.032)	(0.026)	(0.025)
No Diploma # LI	-0.031	0.051	0.076	-0.014	-0.056
	(0.024)	(0.081)	(0.078)	(0.067)	(0.066)
Associates # LI	-0.018	0.201**	0.211**	-0.013	-0.031
	(0.030)	(0.097)	(0.094)	(0.080)	(0.079)
Bachelors # LI	-0.019	0.073	0.075	0.064	-0.048
	(0.021)	(0.069)	(0.066)	(0.050)	(0.049)
Masters # LI	-0.013	0.285***	0.247***	-0.000	0.034
	(0.028)	(0.091)	(0.088)	(0.067)	(0.066)
Doctorate # LI	0.026	0.242	0.300*	0.046	0.086
	(0.054)	(0.179)	(0.173)	(0.117)	(0.115)
High Income (HI)	0.010	0.025	0.011	0.049	-0.018
	(0.013)	(0.043)	(0.042)	(0.033)	(0.032)
No Diploma # HI	-0.043	0.102	0.137	0.084	-0.179*
	(0.039)	(0.135)	(0.130)	(0.109)	(0.108)
Associates # HI	-0.034	-0.042	0.015	-0.044	0.081
	(0.033)	(0.107)	(0.104)	(0.086)	(0.085)
Bachelors # HI	0.009	0.064	0.068	-0.021	-0.007
	(0.021)	(0.069)	(0.067)	(0.048)	(0.048)
Masters # HI	0.018	0.068	0.065	-0.031	-0.035
	(0.025)	(0.083)	(0.081)	(0.062)	(0.061)
Doctorate # HI	0.054	-0.166	-0.137	-0.115	0.087
	(0.045)	(0.149)	(0.143)	(0.089)	(0.088)
R-Squared	0.018	0.042	0.045	0.010	0.023
Number of observations	87,284	77,932	77,388	19,017	18,955

Note: $^{*}p < .1,^{**}p < .05,^{***}p < .01$.

Table 24
Time Series for All Cohorts Combined: Yearly FE (Ownership Model 1)

DV: Ownership of Life Insurance (1/0)	
Age at Interview	0.002
	(0.004)
Married/Partnered	0.014
	(0.015)
Separated	-0.012
	(0.016)
Divorced	0.010
	(0.015)
Widowed	0.025*
	(0.015)
Planning Large Bequest	0.006***
	(0.002)
% Stock/Mutual Held	0.003
	(0.002)
Own Home	0.016***
	(0.004)
Natural Log of HH Income	-0.018**
	(0.007)
LN of HH Inc Squared	0.002***
	(0.000)
Natural Log of Total Wealth	0.006***
	(0.001)
LN of Wealth Squared	-0.000***
	(0.000)
# of Children in Household	0.001
	(0.001)
At Least 1 Worker in HH	0.049***
	(0.003)
# of HH Residents	0.003**
	(0.001)
Percentage Change in HH Income	0.000
	(0.000)
Percentage Change in HH Wealth	-0.000
	(0.000)
New HH Job	-0.010***
	(0.003)
New HH Unemployment	-0.049***
	(0.005)
New HH Retiree	-0.010***
	(0.002)
Year=1995	-0.008
Year=1996	0.010
Year=1998	0.007
Year=2000	-0.018
Year=2002	-0.025
Year=2004	-0.029
Year=2006	-0.043
Year=2008	-0.059
Year=2010	-0.087
Year=2012	-0.103
Year=2014	-0.111
Year=2016	-0.122
Year=2018	-0.129
R-Squared	0.051
Number of observations	202,393

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 25
Time Series for All Cohorts Combined: Yearly FE
(Ownership Model 2)

DV: Ownership of Life Insurance (1/0)	
Protestant # Male # # of Children in Household	0.020**
	(0.008)
Protestant # Female # # of Children in Household	0.015*
	(0.008)
Catholic # Male # # of Children in Household	0.021**
	(0.009)
Catholic # Female # # of Children in Household	0.014*
	(0.009)
Jewish # Male # # of Children in Household	0.013
	(0.019)
Jewish # Female # # of Children in Household	-0.028*
	(0.016)
Not Religious # Female # # of Children in Household	0.021*
	(0.012)
Other Religion # Male # # of Children in Household	-0.018
	(0.021)
Other Religion # Female # # of Children in Household	0.010
	(0.017)
Age at Interview	-0.003***
	(0.001)
Age Squared	-0.000***
	(0.000)
Married/Partnered	0.015
	(0.015)
Separated	-0.011
	(0.016)
Divorced	0.012
	(0.015)
Widowed	0.027*
	(0.015)
Planning Large Bequest	0.007***
	(0.002)
% Stock/Mutual Held	0.003
	(0.002)
Own Home	0.015***
	(0.004)
Natural Log of HH Income	-0.019***
	(0.007)
LN of HH Inc Squared	0.002***
	(0.000)
Natural Log of Total Wealth	0.005***
	(0.001)
LN of Wealth Squared	-0.000***
	(0.000)
# of Children in Household	-0.015*
	(0.008)
At Least 1 Worker in HH	0.050***
	(0.003)
# of HH Residents	0.002**
	(0.001)
Percentage Change in HH Income	0.000
	(0.000)
Percentage Change in HH Wealth	-0.000
	(0.000)
New HH Job	-0.009***
	(0.003)
New HH Unemployment	-0.050***
	(0.005)
New HH Retiree	-0.009***
	(0.002)
R-Squared	0.050
Number of observations	202,393

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 26
Time Series for All Cohorts Combined: Yearly FE
(Ownership Model 3)

DV: Ownership of Life Insurance (1/0)	
All Other Controls	yes
Protestant # Male # Never Married	-0.097
Protestant # Male # Married/Partnered	0.061**
Protestant # Male # Separated	0.071*
Protestant # Male # Divorced	0.099***
Protestant # Male # Widowed	0.000
Protestant # Female # Never Married	-0.143**
Protestant # Female # Married/Partnered	0.021
Protestant # Female # Separated	0.045
Protestant # Female # Divorced	0.079**
Protestant # Female # Widowed	0.000
Catholic # Male # Never Married	-0.061
Catholic # Male # Married/Partnered	0.051**
Catholic # Male # Separated	0.025
Catholic # Male # Divorced	0.078*
Catholic # Male # Widowed	0.000
Catholic # Female # Never Married	-0.124*
Catholic # Female # Married/Partnered	0.039
Catholic # Female # Separated	0.068
Catholic # Female # Divorced	0.058
Catholic # Female # Widowed	0.000
Jewish # Male # Never Married	-0.041
Jewish # Male # Married/Partnered	0.111**
Jewish # Male # Separated	0.081
Jewish # Male # Divorced	0.041
Jewish # Male # Widowed	0.000
Jewish # Female # Never Married	0.328
Jewish # Female # Married/Partnered	0.040
Jewish # Female # Separated	0.063
Jewish # Female # Divorced	0.118*
Jewish # Female # Widowed	0.000
Other Religion # Male # Never Married	0.242
Other Religion # Male # Married/Partnered	0.060
Other Religion # Male # Separated	0.032
Other Religion # Male # Divorced	0.379***
Other Religion # Male # Widowed	0.000
Other Religion # Female # Never Married	-0.077
Other Religion # Female # Married/Partnered	0.016
Other Religion # Female # Separated	0.035
Other Religion # Female # Divorced	0.114
Other Religion # Female # Widowed	0.000
Not Religious # Female # Never Married	-0.036
Not Religious # Female # Married/Partnered	0.012
Not Religious # Female # Separated	0.047
Not Religious # Female # Divorced	0.041
Not Religious # Female # Widowed	0.000
R-Squared	0.050
Number of observations	202,393

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 27 A Focus on Survey Wave by Cohort Interaction: Time Series Year FE: All Cohorts

Survey Wave	Cohort	Avg Age	Coeff. (std error)	Survey Wave	Cohort	Avg Age	Coeff. (std error)
2	WB	54.3	0.036 ***	2	EBB	54.1	0.065 ***
			(0.013)				(0.011)
3	WB	56.2	0.059 ***	3	EBB	56.1	0.047 ***
			(0.013)				(0.011)
4	WB	58.2	0.061 ***	4	EBB	58.4	0.049 ***
			(0.013)				(0.011)
5	WB	60.1	0.053 ***	5	EBB	60.2	0.034 ***
			(0.013)				(0.010)
6	WB	62	0.048 ***	6	EBB	62.1	0.025 **
			(0.013)				(0.010)
7	WB	64.1	0.043 ***	7	EBB	64.2	0.021 **
			(0.013)				(0.010)
8	WB	66	0.034 ***				
			(0.013)				
9	WB	67.8	0.022 **				
			(0.013)				
10	WB	69.9	0.028 **				
			(0.013)				

Table 28
Time Series Lapse Analysis, Yearly FE
DV: Voluntary Lapse

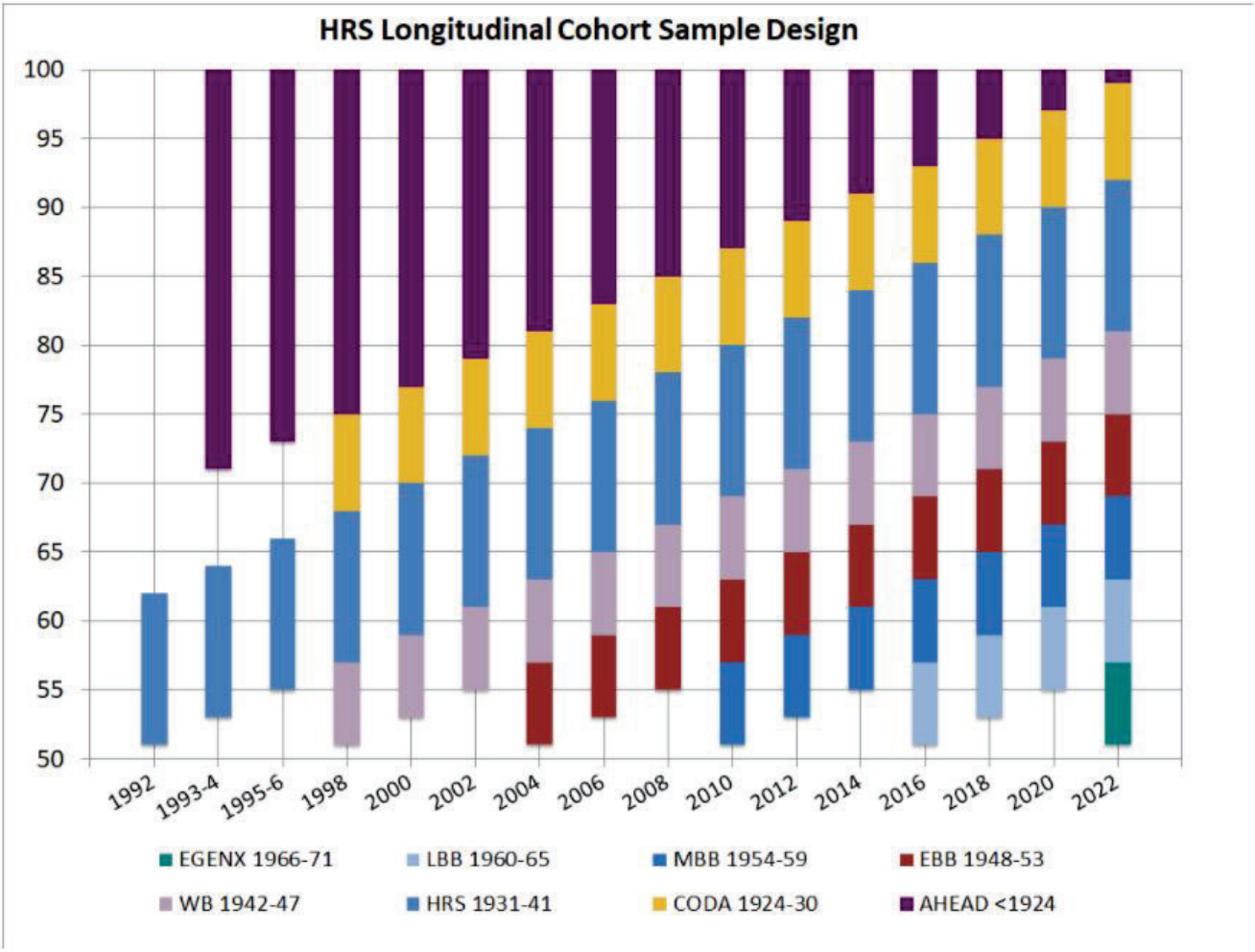
	All 1	All 2	HRS Sub-Cohort	WB	EBB	MBB
New HH Unemployment	0.000	0.000	0.004	-0.013	0.001	0.008
	(0.005)	(0.005)	(0.007)	(0.011)	(0.013)	(0.018)
NegInc1	0.001	0.000	0.002	-0.006	0.001	-0.008
	(0.002)	(0.002)	(0.003)	(0.005)	(0.007)	(0.010)
NegInc2	-0.003	-0.003	-0.005**	0.002	0.000	-0.015
	(0.002)	(0.002)	(0.003)	(0.005)	(0.007)	(0.010)
NegInc3	0.002	0.002	0.001	-0.001	0.003	0.005
	(0.002)	(0.002)	(0.003)	(0.005)	(0.007)	(0.010)
NegNW1	0.001	0.001	0.002	-0.004	0.005	0.011
	(0.002)	(0.002)	(0.003)	(0.005)	(0.007)	(0.009)
NegNW2	-0.002	-0.001	0.001	-0.007	-0.001	-0.006
	(0.002)	(0.002)	(0.002)	(0.005)	(0.007)	(0.009)
NegNW3	-0.002	-0.002	-0.003	-0.003	-0.010	0.005
	(0.002)	(0.002)	(0.002)	(0.005)	(0.007)	(0.010)
New Life Insurance	0.096***	0.096***	0.098***	0.078***	0.130***	0.070***
	(0.003)	(0.003)	(0.004)	(0.008)	(0.010)	(0.013)
NewDivorce	0.008	0.009	-0.000	0.023	0.028	0.009
	(0.009)	(0.009)	(0.012)	(0.019)	(0.030)	(0.033)
NewHHRetiree	0.006***	0.005***	0.004*	0.007	0.016**	0.010
	(0.002)	(0.002)	(0.002)	(0.005)	(0.007)	(0.012)
NewWidow	-0.003	-0.003	-0.005	0.018	-0.009	0.007
	(0.009)	(0.009)	(0.011)	(0.038)	(0.049)	(0.103)
Natural Log of HH Income	-0.000	-0.000	-0.002	0.000	0.008*	0.002
	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)	(0.005)
Natural Log of Total Wealth	0.000	0.000	0.000	0.000	0.000	-0.001
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.002)
Natural Log of Total Debt	0.000	0.000	0.000	0.001**	-0.000	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Liquidity	-0.001*	-0.001*	-0.003**	-0.000	-0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.007)
HHAvgAge	0.000	-0.000	-0.000	0.001**	0.001*	0.003**
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)
At Least 1 Worker in HH	-0.003	-0.003	-0.001	-0.001	-0.024**	-0.027
	(0.002)	(0.002)	(0.003)	(0.006)	(0.010)	(0.020)
College	-0.006	-0.006	-0.013	0.035	-0.011	0.023
	(0.009)	(0.009)	(0.012)	(0.026)	(0.038)	(0.068)
# of Children in Household	0.002*	0.002	0.003*	-0.003	-0.003	0.006
	(0.001)	(0.001)	(0.002)	(0.004)	(0.006)	(0.010)
Regular Religious Service Attendance		0.001	0.022	-0.027	-0.028	0.075
		(0.017)	(0.029)	(0.034)	(0.255)	(0.061)
Protestant # Do not regularly attend religious services.		0.005	0.021	-0.014	-0.025	0.078
		(0.017)	(0.029)	(0.035)	(0.255)	(0.063)
Catholic # Do not regularly attend religious services.		0.010	0.029	-0.020	-0.008	0.091
		(0.018)	(0.029)	(0.035)	(0.255)	(0.067)
Jewish # Do not regularly attend religious services.		0.011	0.055	-0.063	0.316	0.000
		(0.023)	(0.036)	(0.053)	(0.290)	(0.000)
Not Religious # Regularly attend religious services.		-0.018	-0.032	0.009	-0.032	-0.076
		(0.019)	(0.031)	(0.038)	(0.258)	(0.076)
Cohort Specific Wave=3		0.003				
Cohort Specific Wave=4		0.006				
Cohort Specific Wave=5		0.010*				
Cohort Specific Wave=6		0.013*				
Cohort Specific Wave=7		0.014*				
Cohort Specific Wave=8		0.013				
Cohort Specific Wave=9		0.014				
Cohort Specific Wave=10		0.017				
Cohort Specific Wave=11		0.016				
Cohort Specific Wave=12		0.011				
Cohort Specific Wave=13		0.012				
Cohort Specific Wave=14		0.023				
R-Squared	0.017	0.018	0.018	0.018	0.038	0.018
Number of observations	78,079	77,810	41,488	9,405	8,368	5,164

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$.

Table 29
Time Series Lapse Analysis, Yearly FE
DV: Respondent New Lapse

	All: 1	All: 2	HRS Sub-Cohort	WB	EBB	MBB
Intercept	-0.028	-0.031**	-0.013	-0.049	-0.066	0.055
	(0.029)	(0.014)	(0.020)	(0.036)	(0.143)	(0.086)
New HH Unemployment	0.023***	0.023***	0.018***	0.016**	0.040***	0.019
	(0.006)	(0.003)	(0.004)	(0.007)	(0.008)	(0.013)
NegInc1	-0.003	-0.004***	-0.002	-0.006	-0.016***	0.000
	(0.002)	(0.001)	(0.002)	(0.004)	(0.005)	(0.008)
NegInc2	-0.004*	-0.001	-0.001	0.002	0.001	-0.003
	(0.002)	(0.001)	(0.001)	(0.003)	(0.004)	(0.007)
NegInc3	0.001	-0.000	-0.000	-0.001	0.001	0.006
	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)	(0.007)
NegNW1	0.003	0.002*	-0.002	0.003	0.012***	0.010
	(0.002)	(0.001)	(0.002)	(0.004)	(0.004)	(0.006)
NegNW2	-0.001	-0.000	-0.000	0.003	0.002	-0.002
	(0.002)	(0.001)	(0.001)	(0.003)	(0.004)	(0.007)
NegNW3	-0.002	-0.001	0.000	-0.002	-0.002	0.000
	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)	(0.008)
New Life Insurance	0.136***	0.043***	0.035***	0.044***	0.063***	0.066***
	(0.004)	(0.002)	(0.002)	(0.005)	(0.006)	(0.010)
NewDivorce	0.014	0.006	0.009	0.001	-0.021	0.020
	(0.010)	(0.005)	(0.007)	(0.013)	(0.018)	(0.024)
NewHHRetiree	0.013***	0.008***	0.007***	0.008**	0.014***	0.012
	(0.002)	(0.001)	(0.001)	(0.003)	(0.004)	(0.009)
NewWidow	-0.003	-0.000	-0.005	0.038	-0.001	0.176**
	(0.010)	(0.005)	(0.007)	(0.026)	(0.030)	(0.075)
Natural Log of HH Income	0.002	0.002***	0.003***	0.001	0.005*	-0.002
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)
Natural Log of Total Wealth	0.001	0.000	-0.000	0.001	0.000	0.002*
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Natural Log of Total Debt	0.000	0.000	-0.000	-0.000	0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Liquidity	0.000	0.002***	0.001	-0.000	0.005***	-0.009*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.005)
HHAvgAge	0.000	0.000***	0.000	0.000	0.000	-0.000
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
At Least 1 Worker in HH	-0.006**	-0.003**	-0.001	-0.005	-0.013**	-0.046***
	(0.003)	(0.001)	(0.002)	(0.004)	(0.006)	(0.015)
College	-0.000	0.006	0.006	0.017	0.009	0.067
	(0.010)	(0.005)	(0.007)	(0.018)	(0.023)	(0.050)
Children per Household	0.001	-0.001	-0.002**	-0.000	0.002	-0.004
	(0.002)	(0.001)	(0.001)	(0.003)	(0.004)	(0.008)
Regular Religious Service Attendance		0.000	-0.017	0.022	-0.012	0.010
		(0.011)	(0.017)	(0.024)	(0.158)	(0.044)
Lapse was Voluntary		0.975***	0.980***	0.977***	0.963***	0.936***
		(0.003)	(0.003)	(0.008)	(0.008)	(0.014)
Protestant # Do not regularly attend religious services.		-0.002	-0.020	0.026	-0.024	0.014
		(0.011)	(0.017)	(0.024)	(0.158)	(0.046)
Protestant # Regularly attend religious services.		0.000	0.000	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Catholic # Do not regularly attend religious services.		0.003	-0.014	0.028	-0.001	0.004
		(0.011)	(0.017)	(0.024)	(0.159)	(0.049)
Catholic # Regularly attend religious services.		0.000	0.000	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Jewish # Do not regularly attend religious services.		0.000	-0.012	0.018	0.027	0.000
		(0.014)	(0.020)	(0.036)	(0.180)	(0.000)
Jewish # Regularly attend religious services.		0.000	0.000	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Not Religious # Regularly attend religious services.		0.002	0.019	-0.019	0.038	-0.036
		(0.012)	(0.018)	(0.026)	(0.160)	(0.055)
Other Religion # Do not regularly attend religious services.		0.000	0.000	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Other Religion # Regularly attend religious services.		0.000	0.000	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-Squared	0.027	0.727	0.750	0.677	0.725	0.639
Number of observations	78,079	77,810	41,488	9,405	8,368	5,164

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$.



This graphic depicts the longitudinal cohort sample design of HRS. The initial 1992 HRS cohort consisted of persons born 1931 to 1941, who were then aged 51 to 61, and their spouses of any age. Members of this first HRS cohort, now in their 80s and 90s, have been interviewed every two years since 1992. A second study was added in 1993, the Asset and Health Dynamics Among the Oldest Old, or AHEAD, which captured those born before 1924, who were 70 and older at the time. Then in 1998, the HRS and AHEAD cohorts were merged, and two new cohorts were enrolled to bridge the study age gaps for Americans 50 and older. These birth cohorts are the Children of the Depression, or CODA, for those born 1924 to 1930, and the War Babies, for those born 1942 to 1947. HRS now employs a steady-state design, replenishing the sample every six years with younger cohorts. In 2004 HRS added the Early Baby Boomers (EBB), born 1948 to 1953, and in 2010 added the Mid Baby Boomers (MBB), born 1954 to 1959. The Late Baby Boomers (LBB), born 1960 to 1965, were added in 2016. Early Generation X (EGENX), born 1966-71, will be enrolled in 2022. For all cohorts, both members of a couple are included in the sample.

Figure 8 HRS Longitudinal Cohort Sample Design

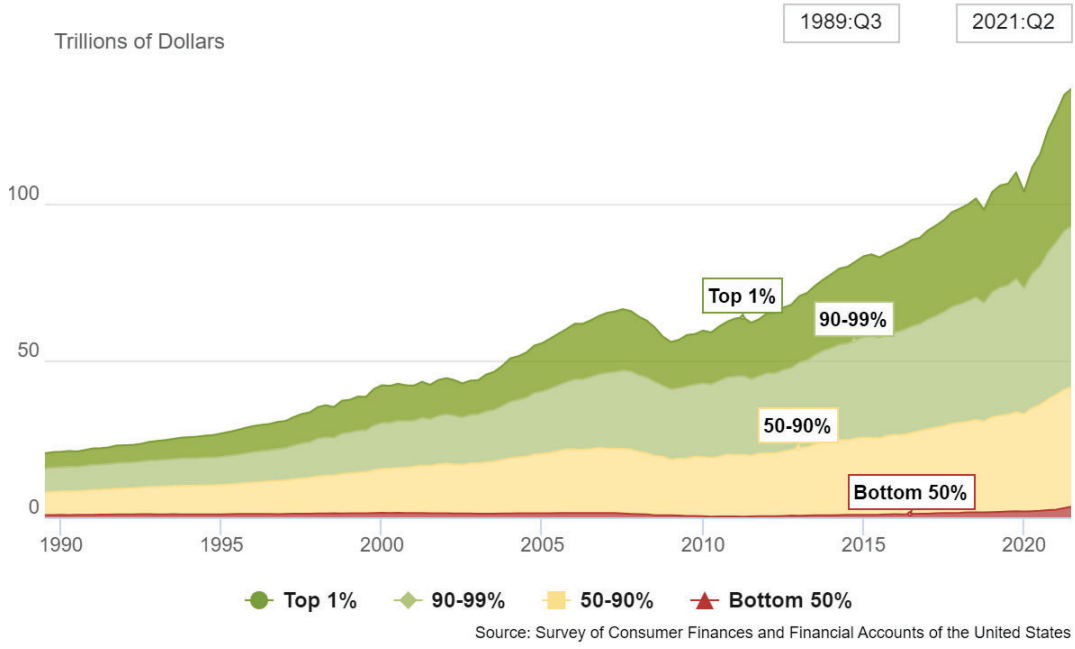


Figure 9
Wealth by Wealth Percentile Group Trends: 1989 - 2021

5 Life Insurance Demand at the Intersection of Race and Sex

5.1 Introduction

What effect does being a Black female have on life insurance demand? This subgroup of consumers, demographically identified at the intersection of race and sex, is typically overlooked in life insurance demand research.[96] Extant research empirically examining determinants of life insurance demand, generally tend to use Caucasian males as the consumer demographic base of reference within their respective empirical analyses (Zietz, 2003). Though prior research typically and appropriately controls for gender, race, and ethnicity as the data allows, different consumer subgroups are treated as homogeneous segments within an overall population. Consumer socialization theory (Ward, 1974; Moschis and Churchill, 1978; Moschis, 1985; John, 1999) suggests consumers acquire their knowledge of how to both choose and consume products from their families and social groups. These formative inputs begin at a very young age, and subsequently influence the tastes and consumption choices each consumer makes as they age through their lifetime. Consumer socialization theory suggests the social structures the consumer functions within throughout life, which includes their family, friends, co-workers, and the types of advertising and media they surround themselves with, will continue to affect their consumption choices throughout their lives (Moschis, 2012). Consumer socialization theory supports the argument that different demographic groups of consumers, referred to throughout this study as "consumer subgroups", should not be assumed to have homogeneous consumption experiences, preferences, or tastes.

[96]Much debate exists regarding proper terminology with respect to race. Throughout this paper I intentionally and respectfully strive to capitalize "Black" when referring to Black/African-American individuals, as suggested by Williams (2022).

Forehand, Reed II, and Saint Clair (2020) argue it is critical to consider a consumer's multiple identities when examining their decisions. For example, a consumer not only identifies as an individual through their race, but also their sex, culture, marital status, parental status, status within their family (are they responsible for other family members as a caretaker?), age, belief system, wealth level, hobbies, and a plethora of other identifiable factors. These multiple identities comprise the consumer's multiple-identity network, as defined by Forehand, Reed II, and Saint Clair (2020), and the relative importance of each unique identity association for each consumer, will undoubtedly affect their respective consumption decisions (Reed, Forehand, Puntoni, and Warlop, 2012). Working to examine consumer decisions within subgroups is a vital step to take in empirical analysis. Crenshaw (1989) and Gopaldas, Prasad, Hunt, Woodard, Fischer, Kaplan, Kozinets, and Belk (2013) both importantly identify that it is also necessary to consider the intersectionality of demographic attributes that have contributed to multiple factors affecting discrimination and disadvantage.

This perspective of focusing on the intersectionality of factors determining consumer behavior is particularly relevant to the life insurance marketplace. Stark differences exist in how, and particularly when, American consumer subgroups first began to utilize life insurance policies. For example, Caucasian males have had the privilege of being able to purchase life insurance in the United States since its inception. Caucasian females legally entered the life insurance marketplace at a significantly later point in time than Caucasian males, and Black/non-white consumers even later in time. An opposing viewpoint to the need to examine consumer subgroups independently may argue that academic research examining determinants of life insurance demand do generally control for sex and race. However, what about the consumer subgroup comprised of Black/non-white females? This specific consumer subgroup has experienced both legal and economic discrimination and disadvantages based on the intersection of their race and sex. The consumer subgroup of Black/non-white females

is typically not controlled for in life insurance demand analysis, and is generally overlooked as a consumer segment, or subgroup, across most academic research.

Using data from the Health and Retirement Survey (HRS), I work to examine the relevance and importance of incorporating independent analysis of consumer subgroups, specifically at the intersection of race and gender, when empirically working to accurately identify determinants of life insurance demand for consumers with uniquely identifiable demographic factors.[97,98] I posit that independent analysis of consumer subgroups, particularly at the intersection of race and sex, will likely yield important and pertinent findings unique to different consumer subgroups. I also incorporate generational birth cohort theory to examine the cultural and economic effects that may have uniquely affected different generational birth cohorts within independent consumer subgroups.

The following empirical analysis contributes to the literature by identifying differences in determinants of life insurance ownership for consumer subgroups at the intersection of race and sex. I also identify generational birth cohort trends within consumer subgroups, as well as show that consumer socialization factors may be affecting life insurance demand for different groups of consumers. The rest of this study proceeds as follows. Section 5.2 provides more detailed rationale behind the empirical analyses and explains the development of the hypotheses. Section 5.3 describes the data and empirical methodology. Sections 5.5, 5.6, and 5.7 discuss the findings, limitations, and conclusion, respectively.

[97] As noted in Section 5.6, analysis of consumer subgroups is limited by restrictions on the choices available to respondents when they answer consumer surveys. This typically restricts broad identification within the data for variables such as race, gender identity, sexual orientation, culture, etc., though consumer surveys are beginning to offer more appropriate variation in answer choices for each individual consumer.

[98] While this analysis focuses on independently examining consumer subgroups at the intersection of race and gender, future research may be well served by identifying consumer subgroups even more specifically as the data will allow. Sheth, Sisodia, and Sharma (2000) show the importance of consumer centric marketing, defined as emphasizing the importance of understanding the needs, wants, and resources of individual consumers instead of focusing on one homogeneous mass market. They go on to argue the importance of implementing consumer centric marketing processes will only continue to grow in importance for marketers.

5.2 Background and Hypothesis Development

Srbinoski, Strozzi, Poposki, and Born (2020) point out that though academic efforts to identify determinants of life insurance demand have made significant progress, many questions remain unanswered.[99] Sheth, Sisodia, and Sharma (2000) show the growing importance of consumer centric marketing, yet few academic works that use consumer surveys as data in their life insurance demand research have considered consumer subgroups independently. In working to assess the efficacy of incorporating diversity in consumer research, Henderson and Rank-Christman (2016) define diversity as the "real or perceived differences among people in race, ethnicity, sex, age, physical and mental ability, sexual orientation, religion, work and family status, weight and appearance, and other identity-based attributes...". They find diversity contributes to how consumers see themselves which results in the creation a multitude of different consumer identities. Subsequently, homogeneous factors of consumer behavior will exist within each consumer group, but heterogeneity in those factors arises when comparing against other consumer subgroups. Many of the factors of diversity, including race and sex, are contributing factors within consumer socialization theory. This study focuses on both race and sex as socialization processes and examines their potential subsequent effect on life insurance demand, specifically for the consumer subgroup intersected at race and sex, Black females.

Consumer socialization theory was first introduced by Ward (1974), who defines it as "processes by which young people acquire skills, knowledge, and attitudes relevant to their functioning as consumers in the marketplace." Ward initially focused on childhood development, though he did allow for the incorporation of continued social influences on consumer choices throughout one's consumption life. Moschis and Churchill (1978) create a conceptual model of consumer socialization theory, as seen in Figure 10, and work to empirically exam-

[99] Just as there is still much to learn in working to identify determinants of life insurance demand, in her review of 25 years of consumer socialization theory research, John (1999) points out that while much has been learned, many questions still persist in that field of study. It is this author's hope that the findings from this study's efforts may help contribute in a small way to their field as well.

ine the theory. They analyze the effect of socialization on consumer skills and ideologies of over 800 adolescents between the ages of 12 and 18. Their findings include that family is the most important factor in teaching "rational" aspects of consumption. The amount and types of media consumed, as well as peer effects, are all significant contributors to consumption skills and attitudes for the adolescents. A student's school environment however, yields little influence over the learning of consumer skills. The authors suggest consumer educators tailor content of consumer-related teaching materials to the students' needs, which differ based on socioeconomic and demographic characteristics.

While it is a generally accepted practice to control for gender, race, and ethnicity when the data allows for it, there are only a few academic works across life insurance literature, such as Luciano, Outreville, and Rossi (2016) and Harris and Yelowitz (2018), that have focused on consumer-sub groups individually with respect to life insurance demand. Luciano, Outreville, and Rossi (2016) examine women's likelihood to own life insurance in Italy, and find women are less likely to be insured than men. They also find that financial proximity plays a very significant role in the willingness to purchase insurance, with no difference between the preference of whole versus term policies. Harris and Yelowitz (2018) find that Black consumers are more likely to hold any type of life insurance, with higher values for whole life products.

The demographic factors of both race and sex have affected the accessibility to the life insurance marketplace for female and Black consumers. Caucasian men have had the longest access to life insurance, in relation to time, compared to any other consumer demographic. Caucasian females were the next to enter the marketplace, followed by Black/non-white consumers. Another difference beyond marketplace access timing, is that different types of life insurance products were promoted to different consumer subgroups. Instead of the higher value term or whole type of policies life insurers typically marketed to Caucasian men, primarily industrial or lower value term/burial types of life insurance policies were promoted to Caucasian females and Black/non-white individuals (Heen, 2011, 2014).

Consumer socialization theory supports the argument that these differences experienced by consumers in each subgroup, differences in both in marketplace accessibility and product promotions, resulted in homogeneous patterns of life insurance demand unique within each subgroup, yet heterogeneous across the entire population of consumers (Ward, 1974; Moschis and Churchill, 1978; Moschis, 1985; John, 1999; Moschis, 2012; Bush, Smith, and Martin, 2013; Henderson and Rank-Christman, 2016; Forehand, Reed II, and Saint Clair, 2020). Therefore, examining the potential determinants of life insurance demand for each of these consumer subgroups independently, is warranted as a means to identify any differences between them. Building on the foundation of consumer socialization theory, and analyzing data from the Health and Retirement Survey (HRS), this study examines life insurance ownership by consumer subgroups independently, at the intersection of race and sex. The following sections describe each facet of the defining demographic at the intersection of their unique consumer subgroup in greater detail.

5.2.1 Female Consumers and Life Insurance

During the onset of life insurance creation in the United States, between the mid to late-1700s, Caucasian females were especially prone to have a negative perspective of life insurance. It was not uncommon for women to view life insurance as "blood money" proceeds against the value of their husband's lives (Zelizer, 1978). Shifts in marketing messaging over the next several decades were successful in pivoting the mindsets and attitudes of women toward a positive perspective around the purchase of life insurance (Zelizer, 1979). It would take nearly a century, however, before women could legally own life insurance themselves, and in many states even longer than that. Though some states began to make statutory changes allowing women to own life insurance in the 1840s, it was not legally allowed throughout the majority of states until the late 1890s, and most of those early policies were initially cost prohibitive (Heen, 2011). Insurers began focusing sales of industrial policies to working women in the 1890s and slowly began hiring women into the industry during the same time

period (Heen, 2011; Blundell, 2011).[100] However, Black females, though females, were still Black. Though their white female counterparts could begin purchasing life insurance in some states as early as the 1840s, Black females were delayed in entering the marketplace due to their race.

5.2.2 Black/non-white Consumers and Life Insurance

Understanding the journey to legally be allowed to initially purchase life insurance for Black and non-white individuals, and the challenges to do so equitably, is pertinent to understanding why Black females are likely to have unique determinants of life insurance demand within their own consumer subgroup. People of color, Black and non-white men and women, gained legal access to the life insurance marketplace in the United States considerably later than either Caucasian males or females, and would then go on to be subjected to race-based discrimination for decades (National Association of Insurance Commissioners, 1912; Weems, 1993; Dawson, 1994a; Hoffman, 2003; Murphy, 2005; Wolff, 2006; Heen, 2009; Bouk, 2011; Alborn and Murphy, 2013; Heen, 2014; Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020). Murphy (2005) documents the first known life insurance policy to cover the life of an enslaved Black West African in the United States. The policy was purchased in 1831, on behalf of his owner. Prior to this policy, enslaved persons in America were generally insured as perishable goods.[101] The marketplace for slave life insurance grew considerably throughout the mid-1800s, particularly in the Antebellum South. The industry adopted policy standards that a life insurance policy's coverage amount for an enslaved person could not exceed two-thirds of actual life value. By 1850, a significant number of life insurance companies, and almost all the Southern ones, offered slave life insurance Murphy (2005). All these policies on enslaved persons lives were void after Emancipation (1863 in

[100] For a more detailed timeline of how Caucasian females historically began to access and utilize life insurance, see Section Heidesch and Carson (2022).

[101] For a more detailed review of the timeline regarding the relationship between enslaved persons and the life insurance industry in the United States, see Heidesch and Carson (2022).

the North, and 1865 in the South), and the marketplace for slave life insurance immediately ceased to exist.

It bears noting, the individuals who had previously been enslaved, and had slave life insurance purchased on them, had not themselves been consumers of life insurance. Their former owners were typically the purchasers of the slave life insurance that had covered their lives. While the business of marketing slave insurance policies ended after the Civil War, the precedent of implementing race-based discriminatory practices had been set. Throughout the efforts of the Reconstruction Era in the late 1860s and early 1870s, approximately a century after Caucasian males first had access to legally purchase life insurance in the United States, Black and non-white consumers began to be legally allowed to purchase their own life insurance, though equitable marketplace access was still a long ways off. Race-based discriminatory practices persisted for decades, and may still be occurring present day in some instances (Gale, Logue, Cahill, Gu, and Joshi, 2022).[102]

Industry wide discriminatory pricing against Black and non-white consumers became common throughout the early 1900s, as did the absolute and explicit refusal by insurers to even write life policies for these consumer subgroups.[103] A 1940 trade journal survey of life

[102]The policy coverage amounts of life insurance for Black and non-white consumers initially covered the full value of their lives, however the premium amounts being charged to Black and non-white consumers were significantly higher than their Caucasian counterparts (Murphy, 2005; Heen, 2014; Garrett-Scott, 2016). Progress toward equitable life insurance marketplace access was reversed in 1881, when Prudential Life Insurance of New Jersey and Metropolitan Life Insurance of New York together decided that the coverage amounts of all existing policies for Black and non-white adults would immediately be valued at one-third less, with premiums remaining unchanged. The policy coverage amounts of Black and non-white children remained unchanged, however the premiums for those policies were increased significantly. The policy values and premiums for whites remained unaffected (Wolff, 2006; Heen, 2014). Most of the industry followed suit, citing the published essays of a self-taught actuary recruited and employed by Prudential Life Insurance, (Hoffman, 1896; Wolff, 2006; Heen, 2014). The actuary's essays claimed to show evidence of the higher mortality rates of Blacks, however, as many prestigious academics counter-argued at the time, he failed to stratify his data appropriately (Miller, 1897; DuBois, 1899; Wolff, 2006; Heen, 2009). The industry would use the fallacy of higher mortality rates for Blacks for decades as reasoning to support the notion that Blacks and non-whites should either be charged more, insured for less, or both (National Association of Insurance Commissioners, 1912; Hoffman, 2003; Wolff, 2006; Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020).

[103]In the late 1800s, some states attempted to introduce legislation forbidding discriminatory practices, however the efforts were not productive (Wolff, 2006). In 1912, the NAIC worked to address the abuses by Fraternal Benefit Societies targeting Blacks with high-premium/low-value policies, though these efforts were also

insurers found that 40% of life insurers still did not accept Black policyholders (Pearson and Richardson, 2019). In response to the institutionally prescribed race-based discrimination practices, a Black-owned life insurance industry began to emerge and thrive, with over 40 large and successful Black-owned life insurance companies established across the U.S. by the 1920s (Heen, 2009; Garrett-Scott, 2016; Marsh & McLennan Companies, 2018). Garrett-Scott (2016) describes how Minnie Geddings Cox, a Black woman, played a significant role in the development of Black American-owned life insurance companies, as well as in both the employment and life insurance coverage of Black females. After launching the first Black-owned life insurance company in Mississippi in 1908, Cox grew the company to become the third-largest life insurance company in the United States with Black American ownership by 1923 (Garrett-Scott, 2016). By the 1920s there were over 40 large insurance companies across the U.S. that were Black-owned, and the industry thrived in Black communities, although the industry was later subsumed by larger white insurance companies (Heen, 2009; Marsh & McLennan Companies, 2018).[104] Insurance companies that did write policies covering the lives of Black and non-white individuals, typically promoted industrial life insurance coverage that offered only enough value to cover burial costs and charged significantly higher premiums than those charged to white consumers (Heen, 2009; Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020).

Bush, Smith, and Martin (2013) use consumer socialization theory to identify numerous socialization factors that result in Black and non-white consumers having different experiences as consumers than their Caucasian contemporaries. In reviewing the financial mar-

not productive (National Association of Insurance Commissioners, 1912; Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020).

[104]There was a great need for this marketplace, as discriminatory practices against Blacks and non-whites blatantly persisted throughout the white life insurance industry until the U.S. Congress passed the Civil Rights Act in 1964. Ironically, the Civil Rights Act of 1964, which federally prohibited discrimination on the basis of race, color, religion, sex, or national origin, had an unfortunate negative effect on the Black-owned life insurance industry in the United States. As the new federal regulations forbade any life insurance company from refusing coverage or discriminating against individuals based on race, large white insurance companies expanded into the Black-owned life insurance marketplace. The majority of the Black-owned life insurance industry was subsumed as a result (Heen, 2014).

ketplace shifts affected by the urbanization of Black Americans between 1940 and 1970, Dawson (1994c) shows the correlation between the high increase of the urbanization rate of Blacks, from a rate of 49% in 1940 to over 60% by 1973, and a rapid increase of Blacks in industry. By 1970, 81% of the jobs held by Blacks in industry were in service and blue-collar industries Dawson (1994b). There are additional factors specific to the life insurance industry that arguably increase the difference in consumer experiences between these consumer subgroups even further. The restricted amount of time in the marketplace access has not allowed for comparable increases in inter-generational wealth across Black/non-white demographic groups, and historical promotional efforts toward industrial policies paired with discriminatory underwriting and pricing practices likely resulted in the Black and non-white consumer subgroups utilizing life insurance in very different ways than Caucasians. Smith (1995) examines racial and ethnic differences in wealth using the Health and Retirement Survey (HRS) data, and finds racial and ethnic wealth disparities are large, and attributes them, in part, to differential inheritances and bequest inequities persisting across generations for these demographic groups.

Outreville (2013) shows how highly correlated economic growth is with the accessibility to an insurance marketplace. It is therefore pertinent to consider the amount of time each consumer subgroup has had to access to any insurance marketplace, and life insurance is certainly no exception. A comparatively limited time in the life insurance marketplace by a consumer subgroup not only shortens time to collect and transfer inter-generational wealth, but also affects how consumer socialization skills are passed down generationally within the consumer subgroup that was restricted. In an examination between consumer groups by race, Gutter and Hatcher (2008) find that white households tend to insure a significantly larger proportion of their human capital than Black households. In their effort to evaluate racial differences in life insurance coverage, Harris and Yelowitz (2018) examine data from the Survey of Income and Program Participation between 2001 and 2010. They find that Blacks are more likely to hold life insurance than whites and more likely to hold whole life

insurance than term. They also point out the significant wealth disparity that exists between Black households to white households while controlling for earnings and family structure. They offer several possible reasons for this wealth gap including differential savings behavior, asset composition, and bequest differences.

5.2.3 Black Females as a Unique Consumer Group

Crenshaw (1989) and Gopaldas, Prasad, Hunt, Woodard, Fischer, Kaplan, Kozinets, and Belk (2013) stress the importance of considering intersectionality when examining different groups of individuals. Intersectionality helps researchers to identify and examine the historical economic imbalances for different respective groups of consumers. Consumers who identify as Black and female, an intersection of two disadvantaged demographic groups, form their own unique consumer subgroup with their own unique consumer socialization processes.

With respect to life insurance, women in general, regardless of race, have experienced differences in life insurance marketplace accessibility, differences in the types of life insurance products being promoted to them, and an increased likelihood to undervalue their own life's worth when purchasing a life insurance policy (Heidesch and Carson, 2022; Heen, 2011; Blundell, 2011; Haven Life Insurance Agency LLC, 2019).

By being a Black consumer, regardless of sex, there are differences in life insurance marketplace accessibility, a history of race-based discriminatory practices within the life insurance industry, and unique consumer socialization processes learned generationally within the consumer subgroup defined by race (Crenshaw, 1989; Heen, 2009, 2014; Campbell, Czajkowski, Mitchell, Nordman, Roland, and Tetrault, 2020; Sheth, Sisodia, and Sharma, 2000; Chinn, Martin, and Redmond, 2021; Gale, Logue, Cahill, Gu, and Joshi, 2022).[105]

[105]It is undetermined if modern day Black females have experienced, or currently experience, race-based discrimination from the life insurance industry. Research is ongoing to identify if these practices still occur implicitly (Gale, Logue, Cahill, Gu, and Joshi, 2022). Even if they have not experienced it directly however, their foremothers and forefathers have, which informs their consumer socialization processes as they grow into consuming adults, which may subsequently affect the consumer behavior of Black females (Ward, 1974; John, 1999).

Black females, as a unique consumer subgroup, have been subject to the challenges faced by both women (sexism) and Blacks (racism). Jones (2020) describes the challenges Black females as a group have overcome to achieve liberties, obtain good educations, increase wage levels, and other achievements not legally possible for former generations. As their economic progress as a consumer subgroup grows, then per consumer socialization theory, so too do the societal processes informing their decisions as consumers. Also, though economic progress has been made, there are still many disparities Black females have to face in the United States. They earn less and experience higher unemployment than their white female counterparts. The continued potential discrimination challenges they face intersect via sexism and racism, which culminates into its own form of gendered racism (Spates, Evans, Akilah James, and Martinez, 2020; Chinn, Martin, and Redmond, 2021). This results in the demographic intersection of Black females being a unique consumer subgroup, as Black men have never faced sexism, and Caucasian females have never faced race-based discriminatory practices (such as redlining). Coles and Pasek (2020) finds that as a demographic group, Black females are frequently overlooked and underdifferentiated. I therefore posit that examining the consumer subgroup of Black females independently, at the demographic intersection of sex and race, will identify significantly unique determinants of life insurance demand for Black females as a consumer subgroup. This leads to the creation of the first null hypothesis.

H1_0: *A consumer in the consumer subgroup comprised of Black females will not have different determinants of life insurance demand than either the consumer subgroup of white females or the consumer subgroup of Black males.*

Since the point in time, not so terribly long ago, when Black females first were allowed to enter the life insurance marketplace, to present day, much has shifted culturally within the United States. It is no longer uncommon for women in general to achieve college degrees, become entrepreneurs or achieve white collar employment, remain single, postpone

childbearing or avoid it altogether, and they are earning higher wages than ever before. The Civil Rights Act of 1965 helped to level the playing field with respect to institutionally racist underwriting and pricing practices, and the industry is striving to achieve and maintain equitable practices (Marsh & McLennan Companies, 2018; Campbell et al., 2020). Per consumer socialization theory, these cultural and societal changes have likely informed the consumption skills of the consumer subgroup of Black females.

5.2.4 Generational Birth Cohort Theory

Generational birth cohort theory, first introduced by Strauss and Howe (1991), suggests there are likely changes in consumption patterns when examining demand across a set of generational birth cohorts. Generational birth cohort theory posits that different generational birth cohorts evolve in unique ways that can be discerned by identifying differences between the cohorts. Strauss and Howe (1991) examine the difference in attitudes and preferences between generational birth cohorts in America since 1584. They define generational birth cohort theory as the aggregate of all people born over a span of roughly 20 years, for which three key criteria are met. The members of one generational birth cohort are identified from the first birth year to the last, and they all share an age location in history, key historical events, and impactful social trends (Strauss and Howe, 1991). Pew Research Center (2015) utilizes a similar definition by defining an age cohort (their term) as spanning 15-20 years, where the members all share political circumstances, societal norms, and economic conditions, that culminate in the members all having similarly unique formative experiences than any other age cohort groups. Hansman and Schutjens (1993) posit that failing to consider the generational birth cohort membership of individuals, despite controlling for age within consumer decision analysis, overlooks critical information pertinent to each unique birth cohort. An effort to disentangle generational birth cohort effects when examining consumer purchasing behavior, as well as consumer subgroup affiliation, is important when analyzing consumer decision making (Jansson, 1989; Rentz and Reynolds, 1981; Rentz, Reynolds, and

Stout, 1983; Renshaw, Haberman, and Sc, 1986; Rentz and Reynolds, 1991; Strauss and Howe, 1991; Hansman and Schutjens, 1993). Schewe and Meredith (2004) argue that the differences experienced by unique birth cohorts at the time they become economic adults affect their attitudes toward their finances and economic outlook as a unique and specifically identifiable grouping of consumers for the remainder of their lives. They explain that working to analyze consumer decisions by birth year helps group consumers more appropriately for analysis, and that failing to do so omits the potential consideration of consumer motivations driven by generational birth cohort membership. Wolf, Carpenter, and Qenani-Petrela (2005) demonstrate that consumer purchasing behaviors differ not only by age, but also by generational birth cohort. I believe support for generational birth cohort theory will be evident via changes in determinants, unique to a generational birth cohort, within specific consumer subgroups. This leads to the formation of the second null hypothesis.

H2_0: *More recent generational birth cohorts, within the consumer subgroup of Black females, will not have differences in their determinants of life insurance demand than those in earlier generational birth cohorts within the same subgroup.*

Dawson (1994b) argues that the stark difference in economic classes of individuals that exist across the country were created as a result of the historic divisions of race within the United States. Functioning on the assumption that he is correct then allows for the foundational work of Mossin (1968) to support the argument that different consumer subgroups, stratified by the demographic of race, should be expected to behave differently from each other with respect to life insurance utilization. As Mossin elucidates, this expectation of difference is due to the differences for each subgroups' derived utility function, ψ. The derivation of the utility functions between two individuals from separate consumer subgroups should then be expected to differ, as they depend on the probability distributions that each individual (a product of the consumer socialization processes within their own consumer subgroup) will encounter (Mossin, 1968; Ward, 1974; John, 1999).

5.3 Data

The respondent level survey data used in this analysis is from the Health and Retirement Survey (HRS).[106] The HRS is a survey project focused on Americans 50 years of age and older, and was originally approved by Congress in 1990, with the first survey conducted in 1992. The HRS survey is primarily funded by the National Institute of Aging and is conducted by the Institute for Social Research at the University of Michigan. The HRS functions as a biennial panel survey that adds new cohorts every six years, following the same respondents across the years, with the goal of following them until they pass away. (University of Michigan, 2008).

There are currently seven active generational cohorts surveyed every two years within the overall HRS survey, as seen in Table 30 and Figure 13.[107] Each respective cohort was recruited by the HRS using its cohorts' respective first "wave", and the year in which the first wave of surveys occurred for each respective cohort is described in more detail below. Households from each cohort become eligible to be recruited into said cohort when at least one of the members from that household is over 50 years of age. The **AHEAD cohort** consists of people who were born in 1923 or earlier, were household residents of the contiguous U.S. in the spring 1992, and were still household residents at the time of their first interview in 1993 or 1994, and their spouses or partners at the time of the initial interview or at the time of any subsequent interview. The **Children of Depression Age (CODA) cohort** consists of people who were born 1924 through 1930, were household residents of the contiguous U.S. when first interviewed in 1998, and who, at that time, did not have a spouse or partner who was born before 1924 or between 1931 and 1947, and their spouses or partners at the time of the initial interview or at the time of any subsequent interview. The **Subset HRS**

[106] The HRS (Health and Retirement Study) is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan.

[107] One of the cohorts studied within the overall HRS is also called the HRS cohort. From here forward, they are differentiated in this analysis by calling the large/full HRS survey the "overall HRS survey" and calling the smaller subset the "Subset HRS cohort".

cohort consists of people who were born 1931 through 1941 and were household residents of the conterminous U.S. in the spring 1942. The **War Babies (WB) cohort** consists of people who were born 1942 through 1947, were household residents of the contiguous U.S. in the spring 1992, who, at that time, did not have a spouse or partner born before 1924 or between 1931 and 1941, and were still household residents at the time of the first interview in 1998, and their spouses or partners at the time of the initial interview or at the time of any subsequent interview. The **Early BabyBoomers (EBB) cohort** consists of people who were born in 1948 through 1953, were household residents of the conterminous U.S. when first interviewed in 2004, and who, at that time, did not have a spouse or partner who was born before 1948. The **Middle BabyBoomers (MBB) cohort** consists of individuals who were born in 1954 through 1959, were household residents of the conterminous U.S. when first interviewed in 2010, and who, at that time, did not have a spouse or partner who was born before 1954. The **Late BabyBoomers (LBB) cohort** consists of individuals born 1960 to 1965, and they were first sampled in 2016. The future subsequent and eighth cohort, the "Early Gen-Xers" will begin to be sampled in 2022. For the purposes of this study, the AHEAD and CODA cohorts are removed from the sample due to the considerably older ages of the respondents within those two cohorts.[108]

To examine potential differences between consumer subgroups, this study performs both cross-section analyses and time-series analyses on the likelihood of owning life insurance as well as the likelihood of lapsing life insurance. The summary statistics for the survey weighted variables used in the cross-section analysis examining ownership at SW2, for cohorts 3-6, can be found in Table 31. The summary statistics for the unweighted variables used in the time series analysis examining ownership, for cohorts 3-7, can be found in Table 32.[109] The

[108] Note that observations for respondents who indicate their race as being "Other Race" are also dropped from the sample.

[109] As can be seen in summaries, the number of respondents that indicate owning life insurance vary. For the time series analyses that pull from the entire sample and is unweighted data: 69.1% of Black female observations indicate that life insurance is owned. This translates to 15,371 where insurance is owned, and 6,873 where it is not owned.; 61.8% of Caucasian female observations indicate that life insurance is owned. This translates to 51,531 observations where insurance is owned, and 31,851 where insurance is not

summary statistics for the unweighted data utilized in the time series analysis examining potential differences between consumer subgroups with respect to determinants affecting the likelihood of lapsing life insurance can be found in Table 33.

5.3.1 Survey Waves by Cohort

This examination draws from the longitudinal RAND HRS data set from 1992 through 2018, and omits the AHEAD and CODA cohorts.[110] All responses are categorized into their respective cohorts and sorted into survey waves. The HRS has variables representing 14 respective "waves" of data.[111] However some cohorts have only had a few waves of surveys to complete. For instance the LBB cohort answered their first wave 1 surveys in 2016 and wave 2 in 2018. As the "waves" used by the HRS represent the number survey they are giving cumulatively, they are matched with year, and do not accurately represent which "wave" each respective survey is in. So LBB for 2006 will show a response for "waves" 13 and 14 (for 2016 and 2018, respectively) and their "waves" 1 through 12 will be empty. To address this with a goal of being able to identify which survey wave each specific cohort is answering within the survey, I construct a variable to represent each of appropriate 14 survey waves per household. This variable *"surveywave"*, differs from the "wave" variable supplied by the HRS, in that it represents which survey wave is being answered by each cohort. So when looking at the LBB cohort, when "surveywave" is "1" (SW1), it represents the first round of surveys answered by respondents in LBB, during 2016. When looking at the entire

owned; 71.2% of Caucasian male observations indicate that life insurance is owned. This translates to 48,698 observations where insurance is owned, and 19,695 where insurance is not owned; and 68.6% of Black male observations indicate that life insurance is owned. This translates to 9,841 observations where insurance is owned, and 4,505 where insurance is not owned. For the cross-section analyses of subgroups at SW2 using weighted data; 71.5% of Black female respondents own life insurance (116,138 do own, 46,293 do not), 71.1% of Caucasian female respondents own life insurance (121,683 do own, 49,460 do not), 76.9% of Caucasian male respondents own life insurance (131,602 do own, 39,532 do not, and 66.8% of Black male respondents own life insurance (112,230 do own, 55,779 do not).

[110] Additional variables are merged in, matched by respondent ID (*hhidpn*) and year, from the imputation data set and biennial survey data sets as appropriate.

[111] These are cleanly reconstructed by STATA (version 17) within the data for each cohort when reshaping the data to longitudinal format.

sample, SW2 represents the second survey wave answered by respondents in their respective cohort. In this study I focus on responses given during Survey Wave 2 (SW2) for the five cohorts examined. The mean age for the 5 cohorts studied at SW2 is still below retirement age, which increases the likelihood of having at least one worker in the home, which is a well accepted determinant of life insurance ownership (Zietz, 2003). It also allows for changes to be identified since the previous survey, SW1.

It is necessary to organize the sample into generational birth cohorts that are comparable with each other in order to analyze its potential effects. Though the HRS already identifies which generational birth cohort each respondent belongs to, it is important to identify the differences between the mean ages of each cohort. Significant gaps between mean age for each cohort can exist between the differing cohorts surveyed within the overall HRS sample. Simply controlling for age or age groups may initially appear to be the appropriate analytical strategy, doing so without first stratifying to identify generational birth cohorts loses a dimension of data available for analysis. When possible, generational birth cohorts are important to identify when evaluating consumer choices such as life insurance demand. I not only identify the different generational birth cohorts throughout the analyses, I also stratify generational birth cohorts against the same respective Survey Wave (Servais, 2004; Sonnega, Faul, Ofstedal, Langa, Phillips, and Weir, 2014).

5.4 Methodology

Initially, a cross-section analysis, at SW2, is performed to examine the likelihood of life insurance ownership for the four consumer subgroups independently. The data for the cross-section analysis is survey weighted data from the combined sub-HRS, WB, EBB, and MBB cohorts. A time-series analysis is then performed to potentially identify differences in determinants between the consumer subgroups across time. The data for the time series analysis is unweighted and examines the sub-HRS, WB, EBB, and MBB cohorts combined.

A initial Linear Probability Model (LPM) is used to examine life insurance ownership, which follows Harris and Yelowitz (2018) who build on the work of Liebenberg, Carson, and Dumm (2012). As the consumer subgroups are analyzed as subpopulations within the HRS data, it is necessary to use a binary dependent variable for life insurance ownership (1 if yes, 0 otherwise).[112,113] This allows for examination of respondent level traits that may act as a determinant affecting the likelihood to own life insurance. While this dichotomous form of OLS assumes,

$$P(y = 1 \mid x) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_k x_k, \tag{12}$$

one interprets the results differently by viewing them as probabilities (Hellevik, 2007).[114]

The static cross-section model is examined at the same respective point in the life-cycle for respondents, at their respective Survey Wave 2 (SW2) for each of the respective cohorts. As previously described, the AHEAD and CODA cohorts are omitted from this analysis. Therefore, the initial model, which incorporates variables that have been asked on the survey since 1992, are measured for each of the 4 consumer sub-groups independently and across time.

[112]When using subpopulation analysis in survey data in Stata, using the command "varname == 1" at the end of the model, will bias the results. This occurs because part of the data is removed from the analysis, so the resulting standard errors are incorrect, as not all the data is available. Instead, the subpop command should be used to specify the sample within the svy command after using svyset to prep the data. In that instance, only the designated subpopulation cases as defined are analyzed to calculate the estimates, however all the observations are used in the calculation of the standard errors. (StataCorp, 2021; Williams, 2021).

[113]The survey question that results in the variable *rlifein* is described in greater detail in Appendix A.1. The nature of the question makes it challenging to discern if the respondent is answering about coverage for themselves versus a partner. I build this analysis using the assumption that when a respondent indicates that they own life insurance, the policy(ies) are on the respondent only.

[114]Utilizing a LPM can pose a challenge when working to obtain valid predicted probabilities, as potential non-linearity allows for resulting probabilities greater than 1 and less than 0. As the primary interest for this analysis is in testing hypotheses, and not predicting probabilities, this challenge poses no problem here (Shmueli, 2010).

Following prior literature examining the likelihood for an individual to own life insurance, the initial LPM is built as follows;

$$\begin{aligned} P(rlifein = 1|x)_i = {} & \beta_0 + \beta_1(Age_i) + \beta_2(AgeSq_i) + \beta_3(ProfOccupation_i) \\ & + \beta_4(RCollege_i) + \beta_{5-8}(MaritalStatus_i) + \beta_9(ReligiousID_i) \\ & + \beta_{10}(Bequest_i) + \beta_{11}(PctStockOwned_i) + \beta_{12}(OwnHome_i) \\ & + \beta_{13}(ln(HHIncome)_i) + \beta_{14}(ln(HHIncomeSq)_i) + \beta_{15}(ln(HHWealth))_i) \\ & + \beta_{16}(ln(HHWealthSq))_i) + \beta_{17}(Children_i) + \beta_{18}(EmployedHH_i) \\ & + \beta_{19}(HHResidents_i) + \beta_{20}(\Delta HHIncome_i) + \beta_{21}(\Delta HHWealth_i) \\ & + \beta_{22}(NewHHJob_i) + \beta_{23}(NewHHUnemp_i) + \beta_{24}(NewHHRetire_i) \end{aligned} \tag{13}$$

To examine consumer subgroups at the intersection of race and sex, the independent variables representing race and age are removed as independent variables from the model, and they are instead used to defined the consumer subgroup populations within the survey. Information on how the variables are defined and their availability by year within the data, can be found in Appendix A.[115] The resulting model is then measured against four consumer subgroups independently, Black females, Caucasian females, Caucasian males, and Black males. Since the HRS utilizes a complex survey design, and the goal of this study is to analyze consumer subgroups, the "svyset" command in Stata is used along with HRS supplied survey weights.[116] The consumer subgroups are examined independently, using the

[115]Note that all monetary variables in RAND HRS data products are reported in nominal dollars. This includes wage rate in the Employment section of the RAND HRS Longitudinal File and all Income and Wealth variables appearing in the RAND HRS Longitudinal File and the RAND HRS Detailed Imputations File.

[116]Solon, Haider, and Wooldridge (2015) argue that sampling weights are often over-utilized in econometric analyses of survey data. As they point out, one of the three motivations driving the appropriate incorporation of survey weights includes the examination of choice based sets of individuals within the survey data. As these analyses examine consumer subgroups, as defined within Stata as subpopulations within the overall sample, sampling weights are utilized within the analyses, as recommended by the HRS. HRS constructs its sampling/probability weights to make the HRS weighted sample representative of all US households containing at least one person in the age-eligible range (in the case of household weights) or of all non-institutionalized individuals in the US population age 51 years and older (in the case of respondent weights). The data within the HRS is intentionally designed as a complex survey design. A survey that is designed as a random sample does not necessarily result in a representative sample. The goal behind the HRS complex

appropriate subpopulation command (*"subpop"*), along with the svyset function (StataCorp, 2005; Kreuter and Valliant, 2007; Williams, 2021).[117,118] At the time of this study, the survey weights for the 2018 survey responses for the LBB cohort art not yet available from RAND, therefore their data is omitted from the cross-section analysis.

5.5 Results

The results from the primer model built as a precursor to the model specified in Equation 13, to examine the likelihood of owning insurance at the cross-section of SW2, can be found in Table 34. The results show the survey weighted output for cohorts 3-6 (sub-HRS, WB, EBB, and MBB) cohorts combined, at their respective SW2s, for each of the four consumer subgroups being analyzed, Black Females (BF), Caucasian Females (CF), Caucasian Males (CM), and Black Males (BM). In this model specification, Caucasian respondents, regardless of sex, are more likely to own life insurance when their occupations are listed as professional occupations. Black males are also slightly more likely to own life insurance when they have a

survey design is to have a sample that is both random and representative. Survey sampling uses probability sampling. A sampling frame approximates the target population (the main target population we wish to measure effects within). The sampling frame is N, while the population we actually have data for is n. Therefore, probability sampled = n/N. Whereas, non-probability sampling (a non-survey sample of data) would be = $n/?$. Without using the "svyset" command in Stata to incorporate sampling weights, the sampling is simple random sampling. While the advantage of this process is that it requires little knowledge of the overall population, it can be limited due to being logistically inefficient, it may neglect certain groups of interest, and it can be costly.

[117] As a note to fellow researchers wishing to examine weighted subgroups of choice sets within survey data when using Stata, incorporate survey weights using the command svyset, weighting with the appropriate variables as instructed by the survey data home institution. Placing "svy" at the beginning of your model(s) will ideally adjust all of the parameter estimates and standard errors with consideration for the survey weights. To examine a sub-population, as was done in this study to analyze consumer subgroups, avoid using the "if" option when using the "svy" command. If using the margins command be sure to use vce (unconditional) command to reflect the population rather than the sample. The svy prefix command picks up the component of variance due to sampling differing numbers of elements with zeroânonzero weights.

[118] When pulling HRS data from RAND, as is done in this analysis (as opposed to pulling the data from HRS directly), the weighting variables have different names. The RAND variable *RAESTRAT* replaces *STRATUM* found in HRS data and the RAND variable *RAEHSAMP* replaces *SECU* from HRS. The sampling unit is then *RAEHSAMP* and the strata is *RAESTRAT*. Per the RAND codebook, *RAWTSAMP* is the sampling weight for the HRS cohort in 1992 only (n=12652): *RAESTRAT* is the standard error stratum (n=42233): *RAEHSAMP* is the stratum half sample code (n=42,233), person level weights taken directly from the tracker is *R*WTREST*. Also note, while the HRS provides cross sectional weights, at present time there are no longitudinal ones.

professional occupation, however having a professional occupation is not associated with an increased likelihood of owning life insurance for Black females. The number of years of education is positively significant for all the consumer subgroups, as is being married/partnered. Identifying as a Christian is a significantly positive determinant for both Caucasian consumer subgroups, however it is insignificant for both Black consumer subgroups. When examining the year variables for each SW2, Caucasian males were less likely to own life insurance during their 2006 survey, however all the consumer subgroups were significantly less likely to own life insurance in 2012, which may possibly be a lingering economic constraint effect due to higher than average unemployment levels, caused by the 2008 financial crisis. This result is significant at the 1% level for both male consumer subgroups, and significant at the 5% and 10% significance levels for Black and Caucasian females, respectively. Table 35 shows the results from a comparison of the previous specification performed on the full sample pooled, while still weighted for the subpopulation at SW2, against the four consumer subgroups examined independently. The difference in the outputs between the consumer subgroups against the pooled sample shows the importance of examining them independently at the intersection of race and sex.

Table 36 shows the results of the full LPM model, for all four consumer subgroups. The analysis is survey weighted and examines cohorts 3-6 at their respective SW2 cross-section. Age is an insignificant determinant for Black females, despite being a significantly negative determinant (with a positive squared effect) for the other three consumer subgroups. Years of education is significant for all the consumer subgroups, however, only at the 10% level of significance for Black females and the 5% level of significance for Black males. Years of education is positively significant at the 1% level for both Caucasian subgroups. Being married/partnered is only significant for Caucasian males, and insignificant for all the other subgroups. Identifying as Christian is again significantly positive at the 1% level for both Caucasian groups, and in this specification, it is also significant at the 10% level for Black females. For Black males it is insignificant. Explicitly sharing an intention to leave a large

bequest had an insignificant effect on the Black female consumer subgroup's likelihood to own life insurance, yet it was positively significant at the 1% level for all the other consumer subgroups. Owning a home was a significantly positive determinant for both Caucasian subgroups yet was insignificant for both Black females and Black males. The natural log of household income was insignificant for the Black female consumer subgroup, with a negative direction, while it had a significantly positive effect on the other three consumer subgroups studied. The natural log of total wealth was insignificant for both Black consumer subgroups and significantly positive for both Caucasian subgroups. The number of children reported by the household, but not necessarily residing in the home, was insignificant for all the consumer subgroups. Having at least one worker in the home significantly increased the likelihood of owning life insurance for each consumer subgroup, except for the Black male consumer subgroup, for which it was insignificant. The percentage change in household income and the percentage change in wealth were also part of the model, and the effects, while negligible were interesting. The percentage change in household income was an insignificant effect on the likelihood for owning life insurance by the Black female consumer subgroup, yet significantly positive for all the other consumer subgroups. However, the total percentage of household wealth, which was insignificant for both Caucasian subgroups and the Black male subgroup, was positively significant for the Black female subgroup. The cohorts were also stratified within this model to examine the potential effects of generational birth cohort differences. Each subsequent generation yields an increased negative effect in magnitude, as well as significance. The most pronounced negative effect can be found in the MBB cohort, whose SW2 was performed in 2012. As seen in the previous model, these results show the increased magnitude in the decreased likelihood of owning life insurance by the respondent. These differences support generational birth cohort theory and may also reveal a prolonged effect of the 2008 financial crisis.

The results for the expanded model stratifying education, and incorporating more recent variables available after 2002, can be found in Table 37. Completion of a GED has a

positive effect on the likelihood of owning life insurance for both Black females and Caucasian males, and then higher educational attainment becomes significantly positive for all the consumer subgroups, until college. Achieving a four year college degree, or higher, has a significantly positive effect for all the consumer subgroups, except Black females, for which the effect is insignificant. Working in a professional occupation also has an insignificant effect on the likelihood for Black females to own life insurance, as well as Black males, though working in a professional occupation has a significantly positive effect on the likelihood for both Caucasian consumer subgroups. Being married had an insignificant effect on both female consumer subgroups, with a negative direction, and a significantly positive effect on both male subgroups, significant at the 10% level for Caucasian males and the 5% level for Black males. Being widowed was only a significant (positive) factor for Caucasian males, and identifying as Christian was only a significant (positive) factor for Caucasian females. Similar to the prior model, the intention to leave a large bequest was insignificant for the Black female consumer subgroup, while it was positively significant for all the three other consumer subgroups. Owning a home had an insignificant effect on the likelihood for both the Black consumer subgroups, and had a significantly positive effect on the likelihood for both Caucasian subgroups. Indicating that a life insurance policy had lapsed since their first respective survey wave was had a significantly negative effect for all the consumer subgroups except Caucasian males. I leave to future research to examine if this may be the result of policy replacement theory for one consumer subgroup (Caucasian males), but emergency fund theory for the others.

The results for the unweighted time series analyses performed to examine the likelihood of a respondent within a consumer subgroup of owning life insurance can be found in Tables 38, 39, and 40, respectively. These time series models all examine the combined cohorts of the sub-HRS cohort and the WB, EBB, and MBB cohorts.[119] The explicit intention to leave

[119]Note, the LBB cohort currently only has only answered two survey waves (years) of data, and is therefore excluded from this time series analysis.

a large bequest is consistently insignificant for the Black female consumer subgroup for each model specified. In examining the changes across time, the interacted factor of being newly divorced with the number of children reported by the household, significantly decreases the likelihood of owning life insurance for Black females and remains insignificant for the other three consumer subgroups. The likelihood of owning life insurance is significantly affected by the natural log of household income for the Black female consumer subgroup; however, this effect becomes insignificant when interacted with the respondent holding a professional occupation.

The output from the examination of the potential effect of generational birth cohort membership on specific consumer subgroups can be found in Table 41. A life cycle effect of decreasing likelihood to own life insurance as one ages through their economic life can be seen for Caucasian males in the HRS cohort. However, that is the only generational birth cohort for Caucasian males to exhibit the effect. A similar effect is also evident for members of the Caucasian female subgroup, but not in the HRS cohort. The effect is significant for Caucasian females who are members of the WB, EBB, and MBB cohorts. No life cycle effect is evident for either of the Black consumer subgroups. The output from this table supports both consumer socialization theory and generational birth cohort theory, while reflecting life cycle theory for two consumer subgroups at two different points in their marketplace life cycle. Caucasian females lagged behind men in their timing to legally access the life insurance marketplace, and Black consumers lagged behind Caucasian females. Perhaps future work will be able to identify the economic life cycle pattern in life insurance utilization for these consumer subgroups.

The results from the time series analysis examining the likelihood of higher life insurance coverage by consumer subgroup can be found in Table 42. Both female consumer subgroups were significantly more likely to have higher coverage amounts when they explicitly planned to leave a large bequest, while the bequest effect was insignificant for both male consumer subgroups. Both Caucasian consumer subgroups were more likely to own whole life policies

with higher levels of coverage, while the effects for both Black consumer subgroups were insignificant. All the consumer subgroups, with the exception of Black females, were more likely to have higher coverage amounts with at least one worker in the household. Black females were the only consumer subgroup where the natural log of total household income had a significantly positive, albeit negligible, effect on the likelihood to have higher life insurance coverage. An extended specification of this analysis can be seen in Table 43, in which the individual's education is interacted with owning whole life insurance, holding the achievement of a High School diploma as the referent. Adding this whole life and education interaction term slightly increases the R^2 for the consumer subgroups of Black females and Black males, however neither of the Caucasian subgroups have their explanatory power increased. In the output, we can see that Black females who have earned a Doctorate degree are significantly more likely to have higher levels of life insurance coverage. The same is true for Caucasian women who have attained a Bachelors degree. For Caucasian men, owning whole life products increases the likelihood of having higher levels of life insurance coverage, however interacting their education with their ownership of whole life is not associated with their total life insurance coverage. For the consumer subgroup of Black males, owning whole life products and having achieved either a Bachelors or Doctorate degree are both associated with an increased likelihood of having higher levels of life insurance coverage.

Tables 44 and 45 show the results from a time series and a cross-sectional examination, respectively. The results show there are differences between the consumers subgroups with respect to the likelihood of lapsing an insurance policy. Using a similar model to the one developed by Fier and Liebenberg (2013), I choose to make the dependent variable a lapse of life insurance by the respondent since the last survey wave, whether voluntary or not (instead of voluntary lapse). The time series results, which draw from all cohorts, show that unemployment has an insignificant effect on the likelihood of lapse for the Black female subgroup, and has a positively significant association for the other three subgroups. As would be expected per the Policy Replacement Hypothesis, the acquisition of a new life

insurance policy is positively associated with a lapse since the last survey wave for all the consumer subgroups. Being newly divorced was positively associated for only the Caucasian male consumer subgroup. Increased liquidity, and having a new retiree in the household, both had significantly positive associations for both male and female Caucasians, while it was insignificant for both Black subgroups. When looking at the effect of years to potentially identify effects from the financial crisis of 2008, only Caucasian females as a consumer subgroup showed a significant increase in the likelihood to have lapsed a policy during those years. Results from coefficient joint testing (not shown) reveal that between each of the surveys beginning in 2006, the coefficients are significantly different between each survey taken for Caucasican females at the 10% level through 2014. Between 2014 to 2016 the difference between the year coefficients is significantly different at the 5% level, and then again at the 10% level from 2016 through 2018. The cross-section results, taken at each individuals survey wave 2, show that for both the Black and Caucasian female subgroups, being newly divorced resulted in a significant decrease in the likelihood of having lapsed a policy, as were the natural log of both these subgroups wealth levels. Interestingly, having acquired a new life insurance policy between survey wave 1 and survey wave 2 had an insignificant association with the likelihood of having lapsed a policy for Black females, though it was positively significant at the 1% level for both Caucasian subgroups and at the 10% level for the Black male subgroup.

5.6 Limitations

As is noted in the description of the data, working with the HRS poses some immediate limitations. First, the overall age of those recruited has a lower bound of 50. While younger individuals may be included as spouses of respondents, the lower bound in recruitment does skew the average age of the population toward older ages than the general population. Additionally, while this study stresses the importance of examining consumer

subgroups independently, as opposed to an analysis of the overall consumer market, there are omissions of other potential intersections of demographic factors that may prove useful in further understanding determinants of life insurance demand for different types of consumers across the United States. Many surveys have not historically included these types of factors. Consumers may identify with a culture not given as an answer choice on the surveys they complete. Additionally, other factors comprising the consumer's multiple-identity network may not be available as answer selections, including the ability to indicate sexual orientation or gender fluidity. Many large scale surveys are currently working on broadening their answer selections, and future research may help elucidate which ones are most useful to researchers and industry alike.

5.7 Conclusion and Discussion

The findings in this study result lead to the rejection of the null hypotheses for both $H1_0$ and well as $H2_0$. The consumer subgroup of Black females indeed has numerous unique determinants that are significant for only their demographic intersection of race and sex, and vice versa. While a higher proportion of Black females owned life insurance within their subgroup compared to Caucasian females, Black females seem to be using it differently. Attaining a college degree has an insignificant effect on the likelihood of owning life insurance for Black females. Additionally, for Black females who do own life insurance, their intention to leave a large bequest is significantly correlated with the likelihood of increased total coverage, but not with an increased likelihood of owning whole life insurance. Via consumer socialization theory, socialization processes have likely affected the consumer subgroup of Black females in a way that has taught them to use life insurance products differently from other consumer subgroups. I believe this to be a novel finding, and it also presents opportunities for future research to work to identify consumer subgroup specific determinants.

Additionally, when incorporating the factor of generational birth cohort into the analysis, as each younger generational birth cohort begins to own life insurance, significant differences emerge not only by generational birth cohort, but also by cohort within each consumer subgroup. An example of this is the life cycle effect evident across generational birth cohorts for the Caucasian male and female subgroups, at separate times in their marketplace life-cycle, while no significant effect was seen for either Black subgroup. Culturally, and legally, as wages continue to increase toward equal pay for equal work for females, more comparable patterns may begin emerging into the future. While identifying the definitive reasons for this are beyond the scope of this work and left for future researchers, it is certainly worth considering the increase in wages for women paired with the cultural shifts toward independence for women. One interesting way to disentangle these effects could be to examine the utilization of life insurance through and after Covid-19. The reasoning behind this idea is that culturally, the independence of a female was not generally affected. Wages are a different story however, as the Covid-19 pandemic negatively impacted the wage welfare of females significantly. The result of the economic contraction resulted in a significant slide in the labor force participation rate for females, particularly Black/non-white and Hispanic females (Jones, 2021).

There is evidence that females in general tend to under value their lives even when they do carry life insurance on themselves. A 2019 industry survey by Haven Life Insurance Company reveals differences in life insurance utilization between genders continues to persist present day. They find that the majority of respondents, regardless of gender, believe their premature death would have a substantially negative impact on their surviving family. However, only 67% of the women surveyed owned life insurance (15% less than men) (Haven Life Insurance Agency LLC, 2019). The average income for the men in the Haven Life survey was $72,482 while the average income for the women was $52,484 (28% less). The average amount of coverage for men in the survey with policies was $423,102, while the average amount of coverage for the women was $231,342 (approximately 45% less). Interestingly, when the

survey asked those who did not have insurance what coverage value they believed would be appropriate for them in a "what-if" scenario, the men's average chosen coverage amount was $355,348 while the women's was $175,423 (51% less). A contributing factor to this difference may be the fact that women in the United States still consistently earn less than men, as can be seen in Figures 11 and 12. The American Council of Life Insurers (2018) recommends a general rule of thumb for deriving an appropriate amount of life insurance coverage is to base it on 10 times an individual's annual income. Therefore, simply earning less would result in a woman undervaluing her worth in deciding on a life insurance amount. Another factor could be the differing roles in childcare and the lack of identified monetary value attached to said roles. Within the Haven Life survey, 83% of women indicated they play a primary role in childcare compared to 57% of the male respondents (31% less). A part-time or full-time stay-at-home parent may not adequately assess their intrinsic value to their families simply because they do not earn a salary from an employer. When a parent with a diminished "employee" role earns less because they are contributing to their family via childcare instead of earning a W2 reported paycheck, the market value for that role for the family should be computed into the needs for life insurance coverage. The results of the Haven Life Insurance survey indicate these market values are likely being missed by many, resulting in underinsurance or uninsurance.[120]

The importance of examining consumer subgroups in academic research will continue to grow as consumer heterogeneity continues to increase (Molander, Ostberg, and Peñaloza, 2022).[121] Additionally, considering the amount of time a consumer subgroup has historically had access to a product or marketplace is important, as it likely affects unique consumer

[120] Calculations on salary.com for the market value of roles including supply logistics, project manager, dietitian, housekeeper, network administrator, day care teacher, developmental therapist, etc., yield needed coverage for life insurance at the minimum amount of $1M and even higher. (Haven Life Insurance Agency LLC, 2019)

[121] The importance of identifying individuals at their demographic intersections is being addressed in other fields as well. Blumenthal and James (2022) address the lack of appropriate representation and analysis of patients in medical clinical trials, particularly at the intersections of underrepresented race and ethnicity, which can lead to significantly poorer outcomes for underrepresented groups of individuals. They propose a new data infrastructure as a means to achieve representative diversity in analyses of subgroups within populations.

subgroups differently. The empirical examination performed by Sheth, Sisodia, and Sharma (2000) shines a light on the importance of consumer centric marketing and the importance of its continued growth, within bounds. This is especially true for the insurance industry. Insurers are bimodal marketers, selling products to first time consumers, and working to renew or appropriately up-sell existing consumers. Controlling for, and stratifying by, pertinent demographics when available, may well be the most efficient empirical process to yield the truest results for all pertinent consumer subgroups. Future research may be well served to consider this when working to produce generalizable findings.

Table 30 Overall HRS Survey Cohort Descriptions

Cohort Nickname	**Description**	**Born**	**First Year Surveyed**
AHEAD	The Study of Assets and Health Dynamics Among the Oldest Old	1923 or earlier	1993
CODA	Children of Depression Age	1924 to 1930	1998
HRS	Initial/Original HRS Cohort	1931 to 1941	1992
WB	War Babies	1942 to 1947	1998
EBB	Early Baby Boomers	1948 to 1953	2004
MBB	Mid Baby Boomers	1954 to 1959	2010
LBB	Late Baby Boomers	1960 to 1965	2016

Table 31 Summary Statistics (weighted) for the 4 Consumer Subgroups: Cross-Section at SW2: Cohorts 3 - 6

	Black Female Subgroup				Caucasian Female Subgroup				Caucasian Male Subgroup				Black Male Subgroup			
	Mean	std. err.	[95% conf.	interval]	Mean	std. err.	[95% conf.	interval]	Mean	std. err.	[95% conf.	interval]	Mean	std. err.	[95% conf.	interval]
R Owns Life Insurance	0.715	0.021	0.672	0.757	0.711	0.013	0.686	0.736	0.769	0.014	0.742	0.797	0.668	0.040	0.588	0.749
Age	55.457	0.088	55.280	55.634	55.308	0.074	55.160	55.456	55.630	0.077	55.475	55.785	55.851	0.197	55.453	56.249
Age*Age	3079.067	9.883	3059.148	3098.985	3062.334	8.384	3045.493	3079.174	3099.276	9.026	3081.147	3117.405	3126.392	24.893	3076.155	3176.628
Professional Occupation	0.070	0.011	0.047	0.092	0.105	0.010	0.084	0.125	0.127	0.011	0.106	0.149	0.055	0.012	0.031	0.079
Years of Education	13.353	0.164	13.022	13.683	13.916	0.130	13.655	14.177	13.909	0.123	13.663	14.155	13.252	0.151	12.948	13.556
Marital Status																
Never Married	0.209	0.021	0.167	0.251	0.076	0.009	0.058	0.095	0.085	0.009	0.066	0.104	0.109	0.016	0.077	0.141
Married/Partnered	0.354	0.032	0.289	0.419	0.650	0.016	0.618	0.681	0.755	0.016	0.723	0.788	0.672	0.030	0.612	0.733
Separated	0.085	0.014	0.057	0.113	0.019	0.004	0.012	0.026	0.021	0.004	0.013	0.029	0.047	0.010	0.027	0.068
Divorced	0.249	0.022	0.205	0.293	0.213	0.013	0.187	0.238	0.130	0.011	0.109	0.151	0.153	0.020	0.112	0.194
Widowed	0.103	0.014	0.074	0.132	0.042	0.005	0.032	0.053	0.009	0.002	0.004	0.014	0.019	0.004	0.010	0.028
Religion																
Protestant	0.830	0.024	0.781	0.879	0.543	0.018	0.506	0.579	0.494	0.016	0.462	0.527	0.780	0.023	0.734	0.826
Catholic	0.042	0.011	0.020	0.064	0.276	0.016	0.245	0.307	0.270	0.016	0.238	0.302	0.040	0.010	0.020	0.060
Jewish	0.001	0.001	-0.001	0.003	0.028	0.007	0.015	0.042	0.027	0.006	0.014	0.039	0.001	0.001	-0.001	0.002
Other Religion	0.038	0.011	0.016	0.060	0.021	0.005	0.011	0.031	0.023	0.004	0.014	0.032	0.024	0.008	0.008	0.040
Christian	0.872	0.021	0.831	0.913	0.819	0.014	0.791	0.846	0.765	0.013	0.738	0.791	0.820	0.020	0.780	0.860
Large Bequest Intention	0.527	0.028	0.470	0.584	0.748	0.018	0.712	0.784	0.801	0.016	0.770	0.833	0.649	0.027	0.594	0.704
% stock/fin holdings	0.015	0.006	0.003	0.027	0.048	0.005	0.039	0.057	0.053	0.005	0.043	0.062	0.012	0.005	0.002	0.021
Own Home	0.553	0.033	0.487	0.619	0.824	0.014	0.797	0.852	0.855	0.012	0.832	0.878	0.606	0.030	0.545	0.667
ln(HH Income)	10.206	0.094	10.016	10.397	11.028	0.044	10.940	11.117	11.180	0.043	11.093	11.266	10.663	0.052	10.558	10.768
ln(HH Income)sq	105.857	1.667	102.497	109.217	122.874	0.916	121.035	124.713	126.168	0.942	124.276	128.060	114.989	1.104	112.760	117.217
ln(HH Wealth)	7.990	0.294	7.398	8.582	10.886	0.136	10.612	11.160	11.181	0.143	10.895	11.468	8.877	0.226	8.420	9.334
ln(HH Wealth)sq	86.270	3.716	78.780	93.760	132.493	2.296	127.882	137.104	137.789	2.386	132.996	142.581	98.624	3.277	92.010	105.238
Children reported by HH	2.800	0.142	2.513	3.087	2.267	0.052	2.163	2.371	2.357	0.054	2.248	2.465	3.319	0.155	3.006	3.632
At least 1 HH Worker	0.725	0.021	0.683	0.767	0.878	0.009	0.860	0.896	0.900	0.007	0.885	0.914	0.813	0.021	0.769	0.856
# of HH Residents	2.548	0.071	2.406	2.690	2.463	0.042	2.379	2.546	2.603	0.045	2.513	2.693	2.745	0.097	2.550	2.941
%age change HH Income	6.434	4.219	-2.069	14.936	5.553	3.318	-1.111	12.217	1.296	0.633	0.024	2.568	0.549	0.158	0.230	0.867
%age change HH Wealth	14.489	20.419	-26.663	55.641	0.011	0.424	-0.842	0.864	0.313	0.419	-0.528	1.154	-1.465	6.554	-14.691	11.762
New Job in HH	0.191	0.020	0.151	0.231	0.263	0.013	0.237	0.289	0.299	0.012	0.275	0.324	0.277	0.033	0.211	0.344
New Unemp in HH	0.050	0.012	0.027	0.074	0.045	0.006	0.033	0.056	0.049	0.006	0.036	0.061	0.061	0.009	0.042	0.079
New Retiree in HH	0.113	0.013	0.087	0.138	0.061	0.008	0.046	0.076	0.057	0.006	0.045	0.069	0.127	0.022	0.082	0.172
Rx Constraint	0.239	0.022	0.195	0.283	0.155	0.009	0.137	0.173	0.093	0.010	0.072	0.113	0.150	0.020	0.110	0.191
New Life Ins Lapse	0.087	0.013	0.062	0.113	0.057	0.007	0.042	0.071	0.043	0.005	0.033	0.054	0.071	0.014	0.043	0.098

Table 32
Summary Statistics (non-weighted) for Variables Used in Time-Series Analysis

	Black Female Subgroup			Caucasian Female Subgroup			Caucasian Male Subgroup			Black Male Subgroup		
Variable	Obs	Mean	Std. dev.	Obs	Mean	Std. dev.	Obs	Mean	Std. dev.	Obs	Mean	Std. dev.
R Owns Life Insurance	22,244	0.691	0.462	83,382	0.618	0.486	68,393	0.712	0.453	14,346	0.686	0.464
Age	22,244	61.456	8.686	83,382	62.430	9.194	68,393	64.437	8.787	14,346	62.893	8.503
Age Sq	22,244	3852.311	1090.911	83,382	3982.004	1167.720	68,393	4229.338	1162.495	14,346	4027.842	1108.861
Professional Occupation	22,244	0.058	0.234	83,382	0.109	0.312	68,393	0.140	0.347	14,346	0.049	0.216
Years of Education	22,187	12.301	2.792	83,223	12.679	2.950	68,220	12.917	3.223	14,287	11.703	3.311
Education Level												
No GED	22,243	0.274	0.446	83,375	0.168	0.374	68,386	0.169	0.375	14,329	0.330	0.470
GED	22,243	0.055	0.227	83,375	0.047	0.211	68,386	0.057	0.231	14,329	0.051	0.221
High School	22,243	0.273	0.445	83,375	0.340	0.474	68,386	0.278	0.448	14,329	0.268	0.443
Some College	22,243	0.250	0.433	83,375	0.242	0.428	68,386	0.220	0.414	14,329	0.228	0.419
College and more	22,243	0.148	0.356	83,375	0.203	0.402	68,386	0.275	0.447	14,329	0.123	0.328
Marital Status												
Never Married	22,191	0.104	0.306	83,324	0.027	0.163	68,360	0.032	0.175	14,332	0.073	0.260
Married/Partnered	22,191	0.428	0.495	83,324	0.689	0.463	68,360	0.832	0.374	14,332	0.678	0.467
Separated	22,191	0.063	0.243	83,324	0.018	0.134	68,360	0.017	0.128	14,332	0.056	0.231
Divorced	22,191	0.198	0.399	83,324	0.117	0.321	68,360	0.077	0.267	14,332	0.124	0.330
Widowed	22,191	0.207	0.405	83,324	0.149	0.356	68,360	0.043	0.202	14,332	0.069	0.253
Religious ID												
Protestant	22,197	0.868	0.339	83,096	0.598	0.490	68,159	0.570	0.495	14,250	0.800	0.400
Catholic	22,197	0.061	0.239	83,096	0.305	0.460	68,159	0.292	0.455	14,250	0.071	0.257
Jewish	22,197	0.001	0.031	83,096	0.021	0.143	68,159	0.021	0.144	14,250	0.001	0.037
Other Religion	22,197	0.024	0.154	83,096	0.010	0.099	68,159	0.012	0.110	14,250	0.029	0.167
Not Religious	22,197	0.046	0.210	83,096	0.066	0.248	68,159	0.104	0.306	14,250	0.099	0.298
Christian	22,197	0.929	0.258	83,096	0.903	0.296	68,159	0.862	0.345	14,250	0.871	0.335
Bequest Intention	22,244	0.496	0.500	83,382	0.693	0.461	68,393	0.781	0.414	14,346	0.619	0.486
%stock/fin holdings	19,404	0.015	0.157	81,340	0.065	0.394	67,387	0.067	0.262	12,926	0.021	0.317
Own Home	22,244	0.585	0.493	83,382	0.828	0.377	68,393	0.860	0.347	14,346	0.632	0.482
ln(HH Income)	22,244	9.866	1.754	83,382	10.529	1.482	68,393	10.736	1.369	14,346	10.142	1.805
ln(HH Income)sq	21,834	102.297	21.634	82,562	114.171	21.742	67,869	118.044	20.959	14,059	108.274	21.561
ln(HH Wealth)	22,244	7.965	4.887	83,382	11.099	3.506	68,393	11.471	3.180	14,346	8.764	4.572
ln(HH Wealth)sq	22,244	87.323	60.185	83,382	135.470	53.362	68,393	141.696	50.315	14,346	97.709	58.442
Children from HH	21,891	3.506	2.345	82,140	3.130	1.955	67,471	3.088	1.967	14,093	3.644	2.479
Kids Joined Residence	21,071	0.291	0.454	78,224	0.238	0.426	63,709	0.248	0.432	13,488	0.305	0.460
Kids Left Residence	21,071	0.094	0.292	78,224	0.069	0.253	63,709	0.066	0.248	13,488	0.082	0.275
At least 1 HH Worker	22,244	0.517	0.500	83,382	0.592	0.492	68,393	0.637	0.481	14,346	0.586	0.493
HH Residents	22,244	2.522	1.531	83,381	2.303	1.184	68,391	2.373	1.105	14,345	2.544	1.451
%age change in HH Income	18,090	48.876	5108.006	71,487	10.875	1120.452	57,939	7.890	1156.704	11,339	12.323	738.163
%age change in HH Wealth	16,104	-3.817	684.199	70,404	1.578	183.930	57,498	11.226	2105.739	10,455	3.141	171.425
New Job in HH	22,244	0.097	0.295	83,382	0.119	0.324	68,393	0.127	0.333	14,346	0.117	0.322
New Unemp in HH	22,244	0.039	0.194	83,382	0.028	0.166	68,393	0.031	0.173	14,346	0.047	0.212
New Retiree in HH	22,244	0.159	0.365	83,382	0.158	0.365	68,393	0.165	0.372	14,346	0.173	0.379
Rx Constraint	16,602	0.179	0.383	57,730	0.113	0.316	45,847	0.068	0.252	10,530	0.128	0.334
New Life Ins Lapse	19,215	0.070	0.254	69,258	0.044	0.205	56,697	0.049	0.216	12,234	0.055	0.227
ln(total covarege amt)	9,653	11.147	2.893	30,043	10.779	2.350	27,939	11.259	2.087	6,161	11.285	2.731
Own Whole Life	10,287	0.484	0.500	31,168	0.424	0.494	29,363	0.462	0.499	6,467	0.473	0.499

Table 33 Summary Statistics (not weighted) for the Time Series Lapse Analysis Cohorts 3 - 6

BF n = 8,063					CF n = 32,913					CM n = 28,941					BM n = 5,035				
Variable	**Mean**	**Std. dev.**	**Min**	**Max**	**Variable**	**Mean**	**Std. dev.**	**Min**	**Max**	**Variable**	**Mean**	**Std. dev.**	**Min**	**Max**	**Variable**	**Mean**	**Std. dev.**	**Min**	**Max**
NewLapse	0.0400595	0.196111	0	1	NewLapse	0.0290463	0.1679388	0	1	NewLapse	0.0376974	0.1904667	0	1	NewLapse	0.028997	.1678147	0	1
Lapse was Voluntary	0.0295175	0.1692626	0	1	Lapse was Voluntary	0.020539	0.1418371	0	1	Lapse was Voluntary	0.0284717	0.1663191	0	1	Lapse was Voluntary	0.0190665	.1367725	0	1
NewHHUnemp	0.0200918	0.140323	0	1	NewHHUnemp	0.0159511	0.1252884	0	1	NewHHUnemp	0.0184859	0.1347026	0	1	NewHHUnemp	0.0272095	.1627097	0	1
NegInc1	0.185911	0.3890589	0	1	NegInc1	0.1556832	0.3625602	0	1	NegInc1	0.1565945	0.3634243	0	1	NegInc1	0.1793446	.3836787	0	1
NegInc2	0.1535409	0.3605304	0	1	NegInc2	0.1561389	0.3629925	0	1	NegInc2	0.1579766	0.3647253	0	1	NegInc2	0.1660377	.3721515	0	1
NegInc3	0.1390301	0.3459994	0	1	NegInc3	0.1592988	0.36596	0	1	NegInc3	0.1602225	0.3668186	0	1	NegInc3	0.1328699	.3394678	0	1
NegNW1	0.2785564	0.4483165	0	1	NegNW1	0.1492116	0.3563023	0	1	NegNW1	0.1334439	0.3400597	0	1	NegNW1	0.2611718	.439317	0	1
NegNW2	0.1365497	0.3433926	0	1	NegNW2	0.1714824	0.3769357	0	1	NegNW2	0.1800214	0.3842119	0	1	NegNW2	0.1497517	.3568633	0	1
NegNW3	0.1158378	0.3200501	0	1	NegNW3	0.1718774	0.3772796	0	1	NegNW3	0.1831312	0.3867807	0	1	NegNW3	0.1209533	.3261054	0	1
NewLI	0.0527099	0.2234676	0	1	NewLI	0.0480053	0.2137808	0	1	NewLI	0.0451263	0.2075847	0	1	NewLI	0.045283	.2079448	0	1
NewDivorce	0.0083096	0.0907829	0	1	NewDivorce	0.0053778	0.0731372	0	1	NewDivorce	0.0062541	0.0788366	0	1	NewDivorce	0.0065541	.0806998	0	1
NewHHRetiree	0.17016	0.3757966	0	1	NewHHRetiree	0.1654361	0.3715794	0	1	NewHHRetiree	0.1771881	0.3818344	0	1	NewHHRetiree	0.1902681	.3925516	0	1
NewWidow	0.0111621	0.1050661	0	1	NewWidow	0.0062589	0.0788666	0	1	NewWidow	0.0027297	0.052176	0	1	NewWidow	0.0053625	.0730395	0	1
ln(HHInc)	10.24229	1.055455	0	15.197	ln(HHInc)	10.691	0.9970537	0	15.479	ln(HHInc)	10.93113	0.9150473	0	16.423	ln(HHInc)	10.5645	.9915966	0	15.197
ln(HHWealth)	9.812769	3.616587	0	16.542	ln(HHWealth)	11.68512	2.669077	0	18.323	ln(HHWealth)	12.11063	2.372643	0	18.272	ln(HHWealth)	10.32894	3.289108	0	16.542
ln(Debt)	3.75659	4.27145	0	13.305	ln(Debt)	2.675638	4.015823	0	13.816	ln(Debt)	2.597635	4.01854	0	14.221	ln(Debt)	3.816772	4.353748	0	13.122
Liquidity	0.1487613	0.5505756	-14.789	20.105	Liquidity	0.2361762	0.9516105	-60	100.000	Liquidity	0.2266133	0.6726179	-41	75	Liquidity	0.1464777	.5895878	-5.563706	31
HHAvgAge	66.59413	9.277664	37	108	HHAvgAge	68.21924	10.2068	27	104	HHAvgAge	67.12928	9.662422	36	101	HHAvgAge	65.44508	8.73109	41	101
AgeSq	4418.411	1328.658	961	11664	AgeSq	4628.234	1489.306	441	10816	AgeSq	4786.906	1369.939	729	10201	AgeSq	4550.724	1225.729	1089	10201
WorkerinHH	0.5094878	0.499941	0	1	WorkerinHH	0.5186704	0.4996589	0	1	WorkerinHH	0.5670502	0.4954924	0	1	WorkerinHH	0.5924528	.4914269	0	1
College	0.2026541	0.4020018	0	1	College	0.2892778	0.453434	0	1	College	0.3577623	0.47935	0	1	College	0.2284012	.4198441	0	1
ChildrenperHH	3.484187	2.317668	0	11	ChildrenperHH	3.079756	1.877893	0	11	ChildrenperHH	3.097509	1.859034	0	11	ChildrenperHH	3.839126	2.407597	0	11

Table 34
Cross-Section LPM (Model 1): SW2 - Weighted Analysis: Cohorts 3 - 6
DV: Own Life Insurance (1/0)

	BF	CF	CM	BM
Age at Interview	0.008	0.007**	0.004	-0.001
	(0.008)	(0.003)	(0.003)	(0.006)
Age Squared	-0.000	-0.000*	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Professional Occupation	0.056	0.087***	0.049***	0.080*
	(0.045)	(0.016)	(0.014)	(0.046)
Years of Education	0.030***	0.028***	0.030***	0.030***
	(0.005)	(0.003)	(0.003)	(0.007)
Married/Partnered	0.123***	0.099**	0.275***	0.256***
	(0.033)	(0.045)	(0.045)	(0.057)
Separated	-0.004	-0.066	-0.011	-0.065
	(0.066)	(0.070)	(0.068)	(0.100)
Divorced	0.058	0.028	0.110**	0.043
	(0.045)	(0.044)	(0.044)	(0.069)
Widowed	0.104**	0.034	0.188**	0.139
	(0.049)	(0.045)	(0.071)	(0.109)
Christian	0.036	0.134***	0.054***	0.056
	(0.058)	(0.023)	(0.013)	(0.035)
Year=2000	-0.024	0.009	0.003	-0.051
	(0.041)	(0.017)	(0.016)	(0.043)
Year=2006	-0.038	-0.001	-0.052***	-0.061
	(0.036)	(0.019)	(0.016)	(0.046)
Year=2012	-0.101**	-0.039*	-0.050***	-0.164***
	(0.040)	(0.020)	(0.019)	(0.061)
R-Squared	0.711	0.725	0.814	0.715
Number of Observations	162,431	171,143	171,134	168,009

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 35
Cross-Section LPM (Pooled Sample vs Subgroups): SW2 - Weighted Analysis: Cohorts 3 - 6: DV: Own Life Insurance (1/0)

	Full Sample: BF referent	Full Sample: CF referent	Full Sample: CM referent	Full Sample: BM referent	BF	CF	CM	BM
Black Female		0.060***	-0.006	0.047**				
		(0.016)	(0.016)	(0.020)				
Caucasian Female	-0.060***		-0.065***	-0.013				
	(0.016)		(0.010)	(0.022)				
Caucasian Male	0.005	0.065***		0.053**				
	(0.016)	(0.010)		(0.022)				
Black Male	-0.048**	0.012	-0.053**					
	(0.020)	(0.022)	(0.022)					
Age at Interview	0.005**	0.003	0.006**	0.004	0.008	0.007**	0.004	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.008)	(0.003)	(0.003)	(0.006)
Age Squared	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000*	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Professional Occupation	0.069***	0.069***	0.069***	0.069***	0.056	0.087***	0.049***	0.080*
	(0.009)	(0.009)	(0.009)	(0.009)	(0.045)	(0.016)	(0.014)	(0.046)
Years of Education	0.029***	0.029***	0.029***	0.029***	0.030***	0.028***	0.030***	0.030***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.003)	(0.003)	(0.007)
Married/Partnered	0.199***	0.198***	0.199***	0.198***	0.123***	0.099**	0.275***	0.256***
	(0.028)	(0.028)	(0.028)	(0.028)	(0.033)	(0.045)	(0.045)	(0.057)
Separated	-0.028	-0.028	-0.028	-0.028	-0.004	-0.066	-0.011	-0.065
	(0.039)	(0.039)	(0.039)	(0.039)	(0.066)	(0.070)	(0.068)	(0.100)
Divorced	0.082***	0.082***	0.082***	0.082***	0.058	0.028	0.110**	0.043
	(0.026)	(0.026)	(0.026)	(0.026)	(0.045)	(0.044)	(0.044)	(0.069)
Widowed	0.123***	0.123***	0.123***	0.123***	0.104**	0.034	0.188**	0.139
	(0.030)	(0.030)	(0.030)	(0.030)	(0.049)	(0.045)	(0.071)	(0.109)
Christian	0.083***	0.083***	0.083***	0.083***	0.036	0.134***	0.054***	0.056
	(0.012)	(0.012)	(0.012)	(0.012)	(0.058)	(0.023)	(0.013)	(0.035)
Year=2000	0.006	0.006	0.006	0.006	-0.024	0.009	0.003	-0.051
	(0.011)	(0.011)	(0.011)	(0.011)	(0.041)	(0.017)	(0.016)	(0.043)
Year=2006	-0.027**	-0.027**	-0.027**	-0.027**	-0.038	-0.001	-0.052***	-0.061
	(0.011)	(0.011)	(0.011)	(0.011)	(0.036)	(0.019)	(0.016)	(0.046)
Year=2012	-0.049***	-0.049***	-0.049***	-0.049***	-0.101**	-0.039*	-0.050***	-0.164***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.040)	(0.020)	(0.019)	(0.061)
R-Squared	0.766	0.766	0.766	0.766	0.711	0.725	0.814	0.715
Number of Observations	170,803	170,803	170,803	170,803	162,180	170,884	170,875	167,761

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 36
Cross-Section LPM (Model 2): SW2 - Weighted Analysis: Cohorts 3 - 6

	BF	CF	CM	BM
Age at Interview	0.010	-0.042***	-0.036**	-0.051**
	(0.017)	(0.015)	(0.014)	(0.019)
Age Squared	0.000	0.000***	0.000**	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Professional Occupation	-0.034	0.027	0.007	-0.017
	(0.045)	(0.016)	(0.012)	(0.046)
Years of Education	0.009*	0.012***	0.016***	0.017**
	(0.005)	(0.003)	(0.003)	(0.007)
Married/Partnered	-0.025	-0.024	0.148***	0.101
	(0.056)	(0.046)	(0.046)	(0.065)
Separated	0.013	-0.005	-0.051	-0.108
	(0.071)	(0.070)	(0.076)	(0.103)
Divorced	0.017	0.037	0.077*	0.004
	(0.056)	(0.043)	(0.041)	(0.078)
Widowed	0.045	0.043	0.159**	0.132
	(0.063)	(0.045)	(0.069)	(0.119)
Christian	0.103*	0.117***	0.058***	0.053
	(0.054)	(0.022)	(0.013)	(0.050)
Planning Large Bequest	0.014	0.066***	0.059***	0.126***
	(0.037)	(0.019)	(0.021)	(0.030)
% Stock/Mutual Held	-0.032	-0.003	0.013	0.220*
	(0.098)	(0.005)	(0.029)	(0.119)
Own Home	0.072	0.141***	0.088***	0.059
	(0.050)	(0.026)	(0.022)	(0.050)
Natural Log of HH Income	-0.097	0.195**	0.165**	0.239*
	(0.100)	(0.080)	(0.077)	(0.125)
LN of HH Inc Squared	0.008	-0.006	-0.004	-0.009
	(0.005)	(0.004)	(0.004)	(0.006)
Natural Log of Total Wealth	0.001	0.029***	0.017**	0.017
	(0.013)	(0.007)	(0.008)	(0.016)
LN of Wealth Squared	-0.000	-0.002***	-0.001*	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Number of Children	-0.005	-0.002	-0.006	0.006
	(0.007)	(0.004)	(0.004)	(0.008)
At Least 1 Worker in HH	0.125***	0.157***	0.064**	0.066
	(0.028)	(0.028)	(0.028)	(0.050)
# of HH Residents	0.001	0.002	-0.006	-0.011
	(0.010)	(0.007)	(0.005)	(0.012)
Percentage Change in HH Income	0.000	0.000***	0.001***	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000***	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
New HH Job	-0.055*	-0.049**	-0.052***	-0.070*
	(0.032)	(0.020)	(0.015)	(0.036)
New HH Unemployment	-0.089	-0.107**	-0.081*	-0.157**
	(0.069)	(0.043)	(0.047)	(0.078)
New HH Retiree	-0.058	0.004	-0.011	0.009
	(0.049)	(0.024)	(0.021)	(0.058)
War Babies	0.009	-0.043**	-0.028*	-0.083**
	(0.040)	(0.018)	(0.016)	(0.040)
Early BB	-0.018	-0.049**	-0.077***	-0.075*
	(0.036)	(0.019)	(0.018)	(0.041)
Mid BB	-0.090***	-0.090***	-0.090***	-0.167**
	(0.033)	(0.024)	(0.019)	(0.064)
R-Squared	0.771	0.754	0.831	0.772
Number of Observations	162,107	170,771	170,827	167,790

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 37
Cross-Section LPM: SW2: Weighted Analysis: Cohorts 3 - 6

	BF	CF	CM	BM
45-54	-0.301	-0.348	-0.091	-0.134
	(0.248)	(0.211)	(0.155)	(0.254)
55-64	-0.263	-0.334*	-0.073	-0.049
	(0.210)	(0.194)	(0.141)	(0.228)
GED	0.222**	0.139	0.211***	-0.085
	(0.090)	(0.084)	(0.073)	(0.085)
High School	0.256***	0.268***	0.274***	0.133**
	(0.075)	(0.052)	(0.053)	(0.062)
Some College	0.209***	0.260***	0.264***	0.149**
	(0.072)	(0.054)	(0.053)	(0.068)
College and above	0.151	0.274***	0.274***	0.182**
	(0.098)	(0.057)	(0.058)	(0.086)
Professional Occupation	0.028	0.082***	0.078***	-0.050
	(0.064)	(0.030)	(0.022)	(0.091)
Married/Partnered	-0.087	-0.070	0.116*	0.260**
	(0.056)	(0.056)	(0.063)	(0.099)
Separated	-0.098	0.026	-0.060	-0.018
	(0.073)	(0.098)	(0.101)	(0.134)
Divorced	-0.005	0.033	0.053	0.135
	(0.054)	(0.054)	(0.054)	(0.095)
Widowed	0.022	-0.034	0.285***	0.220
	(0.081)	(0.081)	(0.089)	(0.210)
Christian	0.085	0.092***	0.031	-0.004
	(0.070)	(0.026)	(0.019)	(0.060)
Planning Large Bequest	0.050	0.086**	0.081**	0.193***
	(0.048)	(0.037)	(0.038)	(0.037)
% Stock/Mutual Held	-0.096	-0.191**	0.120**	0.030
	(0.074)	(0.082)	(0.045)	(0.269)
Own Home	0.065	0.138***	0.139***	-0.024
	(0.060)	(0.043)	(0.037)	(0.069)
Natural Log of HH Income	0.039	0.084	-0.021	0.006
	(0.137)	(0.088)	(0.067)	(0.101)
LN of HH Inc Squared	0.002	0.000	0.005	0.000
	(0.007)	(0.005)	(0.003)	(0.005)
Natural Log of Total Wealth	0.027	0.029***	0.018	0.004
	(0.019)	(0.010)	(0.013)	(0.020)
LN of Wealth Squared	-0.002	-0.003***	-0.002*	0.000
	(0.002)	(0.001)	(0.001)	(0.002)
Number of Children	0.001	-0.001	-0.005	0.001
	(0.010)	(0.009)	(0.009)	(0.009)
At Least 1 Worker in HH	0.152***	0.164***	0.088	0.181**
	(0.051)	(0.050)	(0.055)	(0.067)
# of HH Residents	-0.000	0.002	-0.007	-0.012
	(0.009)	(0.011)	(0.009)	(0.015)
Percentage Change in HH Income	0.001**	0.000***	0.000***	-0.005
	(0.000)	(0.000)	(0.000)	(0.010)
Percentage Change in HH Wealth	0.000***	-0.000	-0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
New HH Job	-0.016	-0.042	-0.044	-0.081
	(0.040)	(0.032)	(0.026)	(0.049)
New HH Unemployment	0.025	-0.142**	-0.040	-0.059
	(0.086)	(0.058)	(0.074)	(0.093)
Taken Less Meds than Prescribed Due to Cost?	-0.021	-0.057*	0.009	-0.095
	(0.047)	(0.033)	(0.043)	(0.079)
Policy Lapse Since Last Wave	-0.282***	-0.159***	-0.090	-0.189**
	(0.059)	(0.054)	(0.059)	(0.088)
R-Squared	0.788	0.772	0.816	0.758
Number of Observations	131,657	156,590	156,626	129,880

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 38
Time Series (Model 1), Year FE: 1992 - 2018: Unweighted
DV = Own Any Life Insurance (1=yes/0=no)

	BF 1	CF 1	CM 1	BM 1
Age at Interview	0.008	-0.008***	-0.012***	0.027***
	(0.005)	(0.002)	(0.003)	(0.007)
Age Squared	-0.000**	-0.000	0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Married/Partnered	0.042	0.051*	-0.064*	0.072
	(0.036)	(0.031)	(0.033)	(0.044)
Separated	0.033	0.028	-0.081**	0.022
	(0.038)	(0.033)	(0.035)	(0.047)
Divorced	0.047	0.050	-0.066*	0.029
	(0.036)	(0.031)	(0.034)	(0.046)
Widowed	0.073**	0.065**	-0.061*	0.055
	(0.036)	(0.031)	(0.034)	(0.046)
Planning Large Bequest	0.000	0.013***	0.004	0.028***
	(0.007)	(0.004)	(0.004)	(0.009)
% Stock/Mutual Held	0.004	-0.000	0.010*	0.001
	(0.022)	(0.003)	(0.005)	(0.010)
Own Home	0.024*	0.013**	0.006	-0.001
	(0.014)	(0.006)	(0.007)	(0.017)
Natural Log of HH Income	-0.052**	-0.018	-0.007	-0.031
	(0.021)	(0.012)	(0.014)	(0.033)
LN of HH Inc Squared	0.004***	0.002***	0.002**	0.003*
	(0.001)	(0.001)	(0.001)	(0.002)
Natural Log of Total Wealth	0.005	0.011***	0.001	-0.002
	(0.004)	(0.002)	(0.002)	(0.005)
LN of Wealth Squared	-0.000	-0.001***	-0.000	0.001
	(0.000)	(0.000)	(0.000)	(0.000)
# of Children	0.009*	-0.006**	0.003	0.002
	(0.005)	(0.003)	(0.003)	(0.005)
Child(ren) Joined HH	-0.003	-0.010**	-0.020***	-0.013
	(0.009)	(0.004)	(0.004)	(0.011)
Child(ren) Left HH	-0.006	0.014***	-0.005	-0.011
	(0.010)	(0.005)	(0.006)	(0.013)
At Least 1 Worker in HH	0.036***	0.065***	0.049***	0.005
	(0.010)	(0.004)	(0.005)	(0.012)
# of HH Residents	-0.001	0.007***	0.001	0.004
	(0.003)	(0.002)	(0.002)	(0.004)
Percentage Change in HH Income	-0.000	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
New HH Job	-0.002	-0.012***	-0.008*	-0.009
	(0.010)	(0.004)	(0.004)	(0.012)
New HH Unemployment	-0.063***	-0.040***	-0.057***	-0.060***
	(0.019)	(0.009)	(0.009)	(0.021)
New HH Retiree	0.012	-0.013***	-0.009**	-0.027***
	(0.008)	(0.004)	(0.004)	(0.010)
R-Squared	0.018	0.061	0.076	0.029
Number of observations	15,588	68,750	56,337	10,139

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 39
Time Series (Model 2), Year FE: 1992 - 2018: Unweighted
DV = Own Any Life Insurance (1=yes/0=no)

	BF 2	CF 2	CM 2	BM 2
Age at Interview	0.007	-0.011***	-0.017***	0.027***
	(0.005)	(0.002)	(0.003)	(0.008)
Age Squared	-0.000**	0.000	0.000*	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Married/Partnered	0.041	0.067**	-0.056	0.055
	(0.037)	(0.032)	(0.035)	(0.046)
Separated	0.018	0.051	-0.081**	-0.001
	(0.040)	(0.034)	(0.037)	(0.049)
Divorced	0.048	0.053*	-0.080**	0.009
	(0.038)	(0.032)	(0.036)	(0.048)
Widowed	0.062*	0.072**	-0.059*	0.040
	(0.037)	(0.032)	(0.035)	(0.047)
Planning Large Bequest	-0.002	0.013***	0.006	0.024**
	(0.008)	(0.004)	(0.005)	(0.010)
% Stock/Mutual Held	0.004	0.000	0.007	0.001
	(0.022)	(0.003)	(0.006)	(0.010)
Own Home	0.019	0.009	0.003	-0.007
	(0.014)	(0.007)	(0.008)	(0.018)
Natural Log of HH Income	-0.057***	-0.013	0.005	-0.037
	(0.022)	(0.012)	(0.014)	(0.035)
LN of HH Inc Squared	0.004***	0.002***	0.001	0.003*
	(0.001)	(0.001)	(0.001)	(0.002)
Natural Log of Total Wealth	0.005	0.009***	0.001	-0.004
	(0.004)	(0.002)	(0.002)	(0.005)
LN of Wealth Squared	-0.000	-0.001***	-0.000	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)
Newly Divorced	0.102*	0.015	0.023	-0.007
	(0.062)	(0.033)	(0.032)	(0.077)
# of Children	-0.003	-0.007	-0.016*	-0.029
	(0.024)	(0.009)	(0.008)	(0.018)
Newly Divorced x # of Children	-0.043***	-0.003	-0.001	-0.010
	(0.015)	(0.008)	(0.008)	(0.016)
Christian x # of Children	0.015	-0.001	0.019**	0.033*
	(0.024)	(0.010)	(0.009)	(0.019)
At Least 1 Worker in HH	0.033***	0.065***	0.047***	0.007
	(0.010)	(0.005)	(0.005)	(0.013)
# of HH Residents	-0.003	0.006***	0.000	0.004
	(0.003)	(0.002)	(0.002)	(0.004)
Percentage Change in HH Income	-0.000	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
New HH Job	-0.002	-0.010**	-0.006	-0.013
	(0.011)	(0.005)	(0.005)	(0.012)
New HH Unemployment	-0.063***	-0.039***	-0.052***	-0.056**
	(0.020)	(0.009)	(0.010)	(0.022)
New HH Retiree	0.011	-0.014***	-0.008**	-0.031***
	(0.008)	(0.004)	(0.004)	(0.010)
R-Squared	0.020	0.058	0.077	0.031
Number of observations	14,654	63,930	52,026	9,423

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 40
Time Series (Model 3), Year FE: 1992 - 2018: Unweighted
DV = Own Any Life Insurance (1=yes/0=no)

	BF 3	CF 3	CM 3	BM 3
Age at Interview	0.009*	-0.004**	-0.009***	0.028***
	(0.005)	(0.002)	(0.003)	(0.007)
Age Squared	-0.000***	-0.000*	-0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Married/Partnered	0.042	0.060**	-0.060*	0.073
	(0.036)	(0.030)	(0.033)	(0.044)
Separated	0.033	0.034	-0.079**	0.020
	(0.038)	(0.033)	(0.035)	(0.047)
Divorced	0.046	0.054*	-0.066*	0.027
	(0.036)	(0.031)	(0.034)	(0.046)
Widowed	0.073**	0.067**	-0.062*	0.053
	(0.036)	(0.031)	(0.034)	(0.046)
Planning Large Bequest	0.000	0.013***	0.005	0.029***
	(0.007)	(0.004)	(0.004)	(0.009)
% Stock/Mutual Held	0.004	0.000	0.010*	0.001
	(0.022)	(0.003)	(0.005)	(0.010)
Own Home	0.024*	0.012*	0.006	-0.003
	(0.014)	(0.006)	(0.007)	(0.017)
Professional Occupation	0.216	-0.086	-0.096	0.269
	(0.172)	(0.067)	(0.067)	(0.254)
Natural Log of HH Income	-0.053**	-0.014	0.001	-0.035
	(0.021)	(0.012)	(0.014)	(0.033)
Professional Occ. x ln(HH Income)	-0.019	0.016***	0.012**	-0.021
	(0.016)	(0.006)	(0.006)	(0.022)
LN of HH Inc Squared	0.004***	0.002***	0.001*	0.004**
	(0.001)	(0.001)	(0.001)	(0.002)
Natural Log of Total Wealth	0.005	0.010***	0.000	-0.002
	(0.004)	(0.002)	(0.002)	(0.005)
Yes # Natural Log of Total Wealth	-0.003	-0.003	-0.001	-0.009**
	(0.003)	(0.002)	(0.002)	(0.004)
LN of Wealth Squared	-0.000	-0.001***	0.000	0.001
	(0.000)	(0.000)	(0.000)	(0.000)
# of Children	0.009*	-0.006**	0.004	0.002
	(0.005)	(0.003)	(0.003)	(0.005)
At Least 1 Worker in HH	0.034***	0.054***	0.044***	0.003
	(0.010)	(0.004)	(0.005)	(0.012)
# of HH Residents	-0.001	0.005***	-0.001	0.004
	(0.003)	(0.002)	(0.002)	(0.004)
Percentage Change in HH Income	-0.000	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
New HH Job	-0.002	-0.009*	-0.005	-0.009
	(0.010)	(0.004)	(0.004)	(0.012)
New HH Unemployment	-0.063***	-0.036***	-0.054***	-0.060***
	(0.019)	(0.009)	(0.009)	(0.021)
New HH Retiree	0.012	-0.010***	-0.007*	-0.027***
	(0.008)	(0.004)	(0.004)	(0.010)
R-Squared	0.018	0.065	0.077	0.030
Number of observations	15,588	68,750	56,337	10,139

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 41
Time Series (Cohort by Survey Wave), Year FE: 1992 - 2018: Unweighted
DV = Own Any Life Insurance (1=yes/0=no)

	BF 4	CF 4	CM 4	BM 4
All Other Controls	yes	yes	yes	yes
Only Significant Interactions Are Shown				
HRS @ SW3	0.039	-0.015	0.047***	0.024
	(0.031)	(0.014)	(0.015)	(0.036)
HRS @ SW4	0.064	-0.021	0.066**	-0.007
	(0.055)	(0.026)	(0.028)	(0.064)
HRS @ SW5	0.040	-0.047	0.068*	-0.004
	(0.079)	(0.039)	(0.040)	(0.093)
HRS @ SW7	0.048	-0.076	0.111*	-0.075
	(0.131)	(0.064)	(0.067)	(0.153)
War Babies @ SW3	-0.105	0.206**	-0.078	0.144
	(0.212)	(0.104)	(0.108)	(0.248)
War Babies @ SW4	-0.003	0.186**	-0.055	0.187
	(0.187)	(0.091)	(0.095)	(0.219)
War Babies @ SW5	-0.014	0.134*	-0.041	0.152
	(0.161)	(0.078)	(0.082)	(0.189)
War Babies @ SW6	-0.013	0.139**	-0.047	0.152
	(0.136)	(0.066)	(0.069)	(0.160)
War Babies @ SW7	-0.062	0.094*	-0.054	0.112
	(0.111)	(0.053)	(0.055)	(0.130)
War Babies @ SW9	-0.028	0.054*	-0.032	0.026
	(0.066)	(0.031)	(0.032)	(0.079)
Early BB @ SW2	-0.041	0.155**	-0.003	0.131
	(0.159)	(0.078)	(0.081)	(0.187)
Early BB @ SW3	-0.045	0.132**	0.006	0.093
	(0.134)	(0.066)	(0.068)	(0.157)
Early BB @ SW4	-0.061	0.107**	0.005	0.022
	(0.106)	(0.052)	(0.054)	(0.126)
Early BB @ SW5	-0.072	0.072*	0.018	-0.014
	(0.081)	(0.041)	(0.042)	(0.095)
Mid BB @ SW4	-0.052	0.039**	0.002	-0.034
	(0.033)	(0.019)	(0.019)	(0.039)
R-Squared	0.022	0.066	0.079	0.035
Number of observations	15,588	68,750	56,337	10,139

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 42
Time Series, Year FE: 2004 - 2018: Unweighted
DV = Natural Log of Total Life Insurance Coverage

	BF	CF	CM	BM
Age at Interview	-0.317***	-0.230***	-0.147***	-0.024
	(0.064)	(0.024)	(0.022)	(0.078)
Age Squared	0.003***	0.002***	0.001***	0.001
	(0.000)	(0.000)	(0.000)	(0.001)
Married/Partnered	-0.716*	0.000	-0.515*	0.107
	(0.399)	(0.350)	(0.302)	(0.485)
Separated	-0.794*	-0.117	-0.617*	0.568
	(0.435)	(0.368)	(0.323)	(0.529)
Divorced	-0.403	-0.179	-0.581*	0.161
	(0.413)	(0.358)	(0.311)	(0.514)
Widowed	-0.305	-0.223	-0.595*	0.067
	(0.398)	(0.353)	(0.304)	(0.500)
Planning Large Bequest	0.224***	0.115***	0.000	0.153*
	(0.080)	(0.041)	(0.038)	(0.091)
Own a Whole Life Policy	-0.078	0.076**	0.185***	-0.060
	(0.078)	(0.035)	(0.032)	(0.087)
% Stock/Mutual Held	-0.005	0.149	-0.044	0.025
	(0.182)	(0.103)	(0.081)	(0.065)
Own Home	0.021	-0.039	0.041	0.160
	(0.149)	(0.066)	(0.063)	(0.175)
Natural Log of HH Income	-0.056	-0.250**	-0.203*	-0.268
	(0.211)	(0.116)	(0.118)	(0.329)
LN of HH Inc Squared	0.003	0.014**	0.014**	0.015
	(0.012)	(0.006)	(0.006)	(0.017)
Natural Log of Total Wealth	-0.006	0.016	-0.005	-0.096**
	(0.039)	(0.020)	(0.019)	(0.046)
LN of Wealth Squared	0.002	-0.001	0.001	0.009**
	(0.003)	(0.002)	(0.001)	(0.004)
# of Children	-0.007	-0.052*	-0.035	-0.125**
	(0.058)	(0.030)	(0.026)	(0.053)
Child(ren) Joined HH	-0.142	0.000	-0.010	0.161
	(0.116)	(0.062)	(0.057)	(0.134)
Child(ren) Left HH	0.145	-0.015	-0.025	-0.058
	(0.101)	(0.046)	(0.040)	(0.114)
At Least 1 Worker in HH	0.013	0.171***	0.113***	0.271**
	(0.106)	(0.044)	(0.037)	(0.115)
# of HH Residents	0.007	-0.003	-0.008	0.015
	(0.037)	(0.020)	(0.019)	(0.046)
Percentage Change in HH Income	0.000***	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Percentage Change in HH Wealth	-0.000	0.000**	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.001)
New HH Job	0.118	0.066	-0.054	-0.163
	(0.110)	(0.042)	(0.035)	(0.110)
New HH Unemployment	-0.149	-0.103	-0.109	-0.236
	(0.201)	(0.089)	(0.075)	(0.193)
New HH Retiree	-0.136	-0.066*	-0.042	0.119
	(0.088)	(0.034)	(0.028)	(0.091)
R-Squared	0.074	0.035	0.013	0.037
Number of observations	7,133	24,985	24,063	4,614

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$. Standard errors in parentheses.
Consumer subgroups legend: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 43
Time Series, Year FE: 2004 - 2018: Unweighted
DV = Natural Log of Total Life Insurance Coverage
Education and Whole Life Interaction

	BF	CF	CM	BM
All previous controls?	yes	yes	yes	yes
Own Whole Life	-0.033	0.035	0.167***	-0.152
	(0.103)	(0.045)	(0.044)	(0.120)
Whole Life# No Diploma or Degree	-0.279	0.126	-0.165	0.110
	(0.200)	(0.108)	(0.102)	(0.200)
Whole Life# Associates	0.072	0.087	0.141	-0.430
	(0.332)	(0.141)	(0.145)	(0.358)
Whole Life# Bachelors	0.182	0.234**	0.092	0.617*
	(0.265)	(0.112)	(0.090)	(0.334)
Whole Life# Masters	-0.364	-0.084	0.147	1.173**
	(0.345)	(0.131)	(0.118)	(0.515)
Whole Life# Doctorate	2.327**	0.009	0.058	0.867
	(1.186)	(0.315)	(0.174)	(1.015)
R-Squared	0.076	0.035	0.013	0.040
Number of observations	7,133	24,985	24,063	4,614

Note: $^{*}p < .1,^{**}p < .05,^{***}p < .01$. SEs in parentheses.
Consumer subgroups: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 44
Time Series, Year FE: Unweighted
DV = New Lapse Since Last Wave (whether voluntary or not)

	BF	CF	CM	BM
Intercept	-0.107	0.174**	-0.089	0.045
	(0.159)	(0.077)	(0.107)	(0.180)
New HH Unemployment	-0.016	0.016*	0.041***	0.035**
	(0.018)	(0.009)	(0.010)	(0.017)
NegInc1	-0.002	-0.004	-0.001	-0.011
	(0.007)	(0.003)	(0.004)	(0.008)
NegInc2	-0.006	-0.007**	0.001	-0.001
	(0.007)	(0.003)	(0.004)	(0.008)
NegInc3	-0.003	0.002	0.002	0.002
	(0.008)	(0.003)	(0.004)	(0.008)
NegNW1	0.000	0.003	0.004	0.002
	(0.006)	(0.003)	(0.004)	(0.007)
NegNW2	-0.014*	0.002	-0.003	-0.005
	(0.007)	(0.003)	(0.003)	(0.008)
NegNW3	0.002	0.002	-0.005	-0.016*
	(0.008)	(0.003)	(0.003)	(0.008)
New Life Insurance	0.121***	0.123***	0.160***	0.110***
	(0.011)	(0.005)	(0.006)	(0.013)
Newly Divorced	-0.013	-0.020	0.041**	0.037
	(0.029)	(0.015)	(0.017)	(0.034)
New HH Retiree	-0.007	0.021***	0.012***	0.008
	(0.007)	(0.003)	(0.003)	(0.007)
Newly Widowed	-0.017	0.005	-0.025	0.042
	(0.023)	(0.014)	(0.025)	(0.037)
Natural Log of HH Income	0.003	0.004*	0.001	-0.001
	(0.004)	(0.002)	(0.003)	(0.005)
Natural Log of Total Wealth	0.001	-0.000	0.002**	0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Natural Log of Total Debt	0.001	-0.000	0.001	0.001
	(0.001)	(0.000)	(0.000)	(0.001)
Liquidity	-0.001	0.003***	-0.005***	0.001
	(0.005)	(0.001)	(0.002)	(0.004)
HHAge	0.001	-0.003**	0.003*	-0.002
	(0.003)	(0.001)	(0.002)	(0.003)
Age Squared	0.000	-0.000	-0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
At Least 1 Worker in HH	-0.014	-0.008**	-0.002	-0.010
	(0.009)	(0.004)	(0.004)	(0.009)
College	0.031	0.005	-0.012	0.036
	(0.062)	(0.012)	(0.022)	(0.036)
# of Children per Household	-0.002	0.001	0.004	-0.003
	(0.004)	(0.003)	(0.003)	(0.004)
Year=1998	-0.031**	0.012*	0.005	-0.019
Year=2000	-0.016	0.009	0.007	-0.026
Year=2002	-0.036	0.017	0.007	-0.028
Year=2004	-0.049	0.026*	0.011	-0.036
Year=2006	-0.049	0.036**	0.012	-0.024
Year=2008	-0.046	0.046**	0.010	-0.049
Year=2010	-0.035	0.058**	0.018	-0.032
Year=2012	-0.057	0.062**	0.014	-0.033
Year=2014	-0.063	0.065**	0.023	-0.063
Year=2016	-0.074	0.082**	0.022	-0.051
Year=2018	-0.093	0.092**	0.030	-0.048
R-Squared	0.026	0.028	0.033	0.032
Number of observations	8,063	32,913	28,941	5,035

Note: $^{*}p < .1$,$^{**}p < .05$,$^{***}p < .01$. SEs in parentheses.
Consumer subgroups: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

Table 45
Cross Section Analysis of SW2: Weighted
DV = New Lapse Since Last Wave

	BF	CF	CM	BM
New HH Unemployment	0.010	0.075*	0.081*	0.005
	(0.036)	(0.042)	(0.044)	(0.021)
NegInc1	-0.024	-0.012*	-0.016	-0.013*
	(0.022)	(0.007)	(0.011)	(0.007)
NegInc2	-0.046***	0.000	-0.007	-0.002
	(0.017)	(0.010)	(0.010)	(0.010)
NegInc3	-0.037**	-0.010	-0.001	0.015
	(0.018)	(0.010)	(0.013)	(0.032)
NegNW1	0.012	0.001	0.025*	-0.005
	(0.014)	(0.012)	(0.013)	(0.008)
NegNW2	-0.015	0.006	-0.000	0.017
	(0.012)	(0.009)	(0.007)	(0.029)
NegNW3	0.055	0.015	0.015	-0.019**
	(0.041)	(0.012)	(0.013)	(0.008)
New Life Insurance	0.086	0.138***	0.149***	0.062*
	(0.057)	(0.035)	(0.028)	(0.033)
Newly Divorced	-0.060**	-0.043***	-0.016	0.100
	(0.028)	(0.015)	(0.017)	(0.062)
New HH Retiree	0.016	0.003	0.012	-0.005
	(0.037)	(0.007)	(0.010)	(0.014)
Newly Widowed	-0.059*	-0.019*	-0.015**	-0.048
	(0.030)	(0.011)	(0.006)	(0.030)
Natural Log of HH Income	0.015	0.003	0.001	0.000
	(0.010)	(0.003)	(0.003)	(0.004)
Natural Log of Total Wealth	-0.004*	-0.006**	-0.000	0.001
	(0.002)	(0.002)	(0.002)	(0.001)
Natural Log of Total Debt	-0.001	0.000	0.000	-0.000
	(0.002)	(0.001)	(0.001)	(0.001)
Liquidity	0.015	-0.014	-0.005	-0.000
	(0.017)	(0.015)	(0.005)	(0.001)
HHAvgAge	-0.002	0.002**	0.000	-0.000
	(0.003)	(0.001)	(0.001)	(0.001)
Age Squared	0.000	-0.000**	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
At Least 1 Worker in HH	-0.011	0.002	0.001	-0.006
	(0.018)	(0.008)	(0.010)	(0.013)
College	0.018	0.019**	0.011	0.012
	(0.022)	(0.009)	(0.009)	(0.018)
# of Children per Household	0.001	-0.001	0.003	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
R-Squared	0.082	0.089	0.087	0.047
Number of observations	68,866	73,181	73,181	68,981

Note: $^{*}p < .1,^{**}p < .05,^{***}p < .01$. SEs in parentheses.
Consumer subgroups: "BF" = Black Females: "CF" = Caucasian Females: "CM" = Caucasian Males: "BM" = Black Males

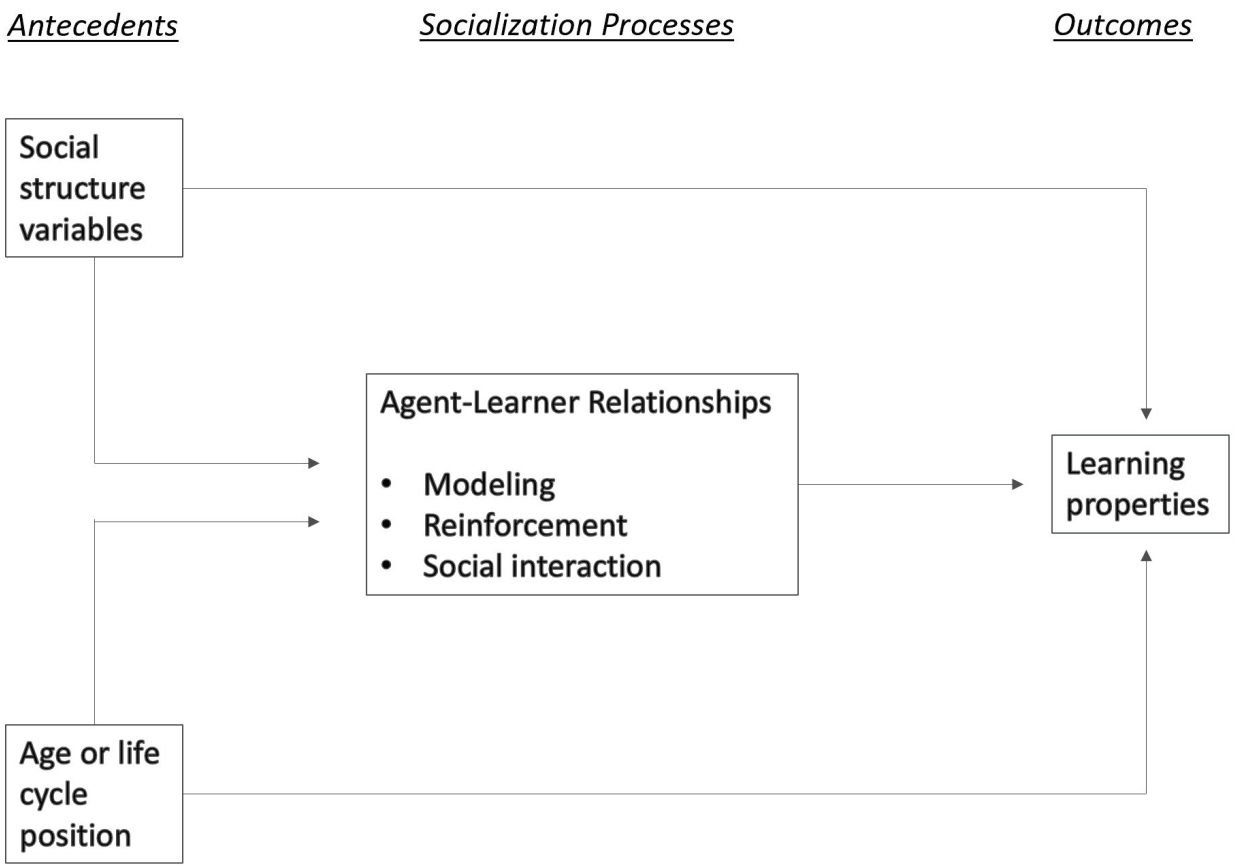


Figure 10
Conceptualization of Consumer Socialization Theory.
Socialization "agents" include parental communication, social utility of advertising, media consumption/television viewing, and peer communications.
Source: Moschis and Churchill (1978)

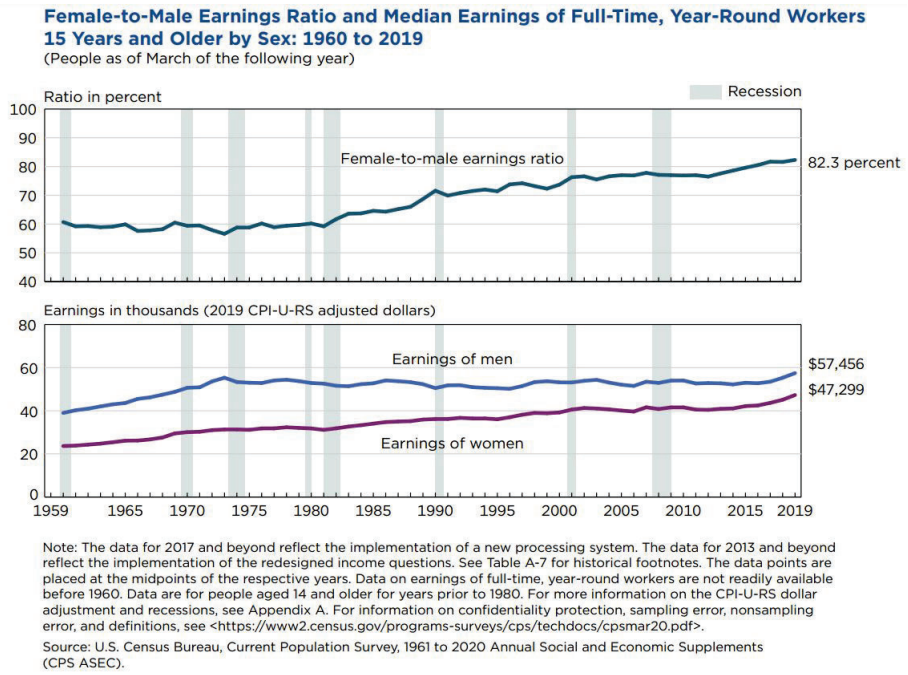


Figure 11
Earnings by Gender: 1960-2019
Source: Semega, Kollar, Shrider, and Creamer (2020)

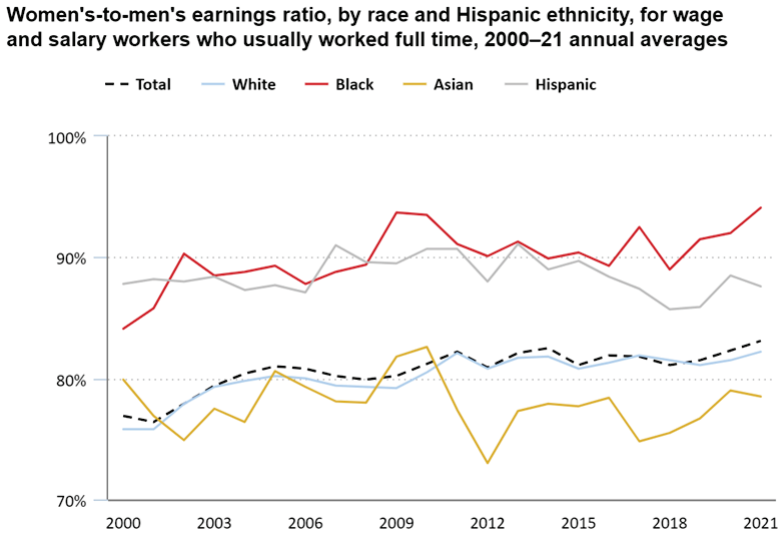
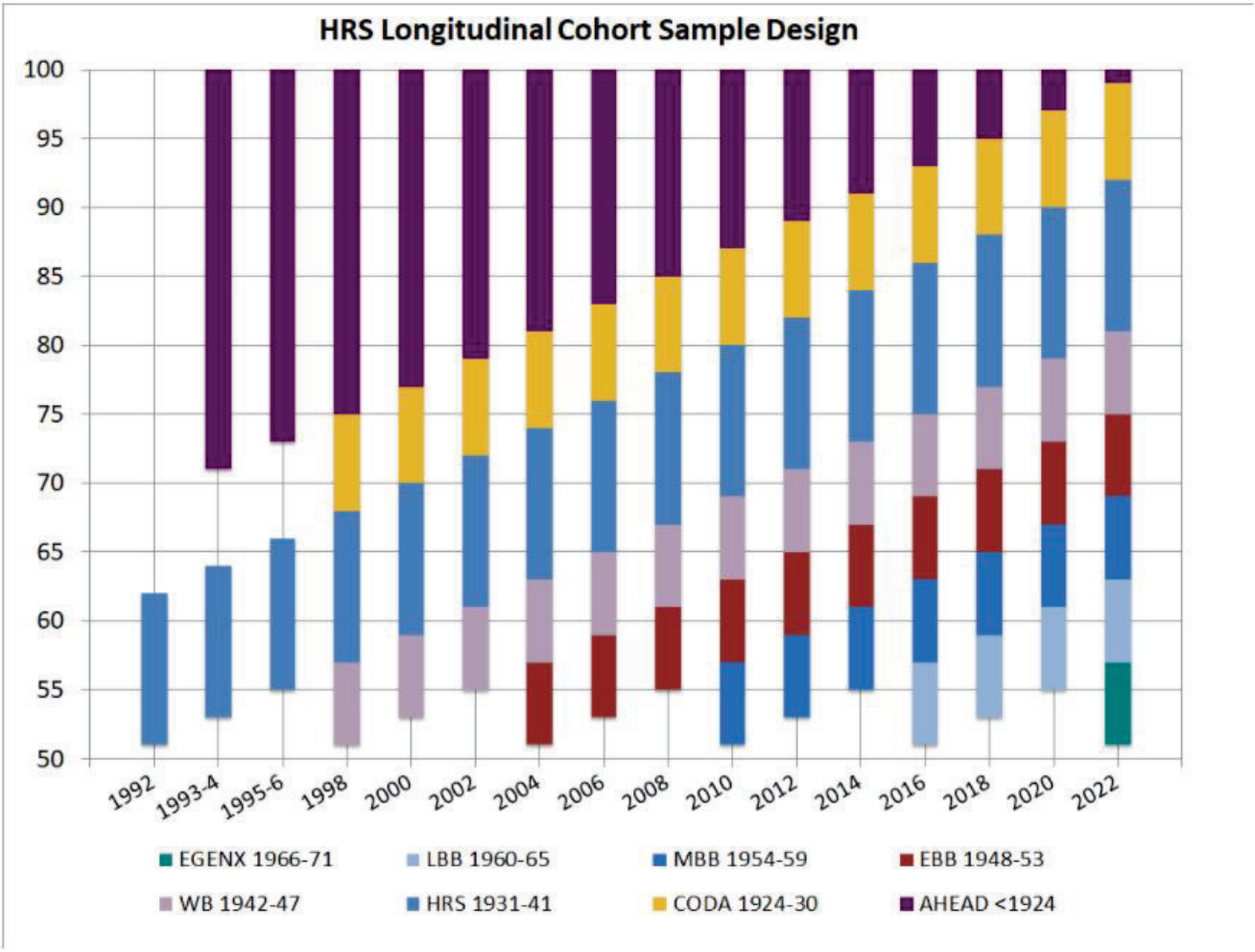


Figure 12
Earnings Ratio for Females by Race and Hispanic Ethnicity.
Source: Bureau of Labor Statistics (2022)



This graphic depicts the longitudinal cohort sample design of HRS. The initial 1992 HRS cohort consisted of persons born 1931 to 1941, who were then aged 51 to 61, and their spouses of any age. Members of this first HRS cohort, now in their 80s and 90s, have been interviewed every two years since 1992. A second study was added in 1993, the Asset and Health Dynamics Among the Oldest Old, or AHEAD, which captured those born before 1924, who were 70 and older at the time. Then in 1998, the HRS and AHEAD cohorts were merged, and two new cohorts were enrolled to bridge the study age gaps for Americans 50 and older. These birth cohorts are the Children of the Depression, or CODA, for those born 1924 to 1930, and the War Babies, for those born 1942 to 1947. HRS now employs a steady-state design, replenishing the sample every six years with younger cohorts. In 2004 HRS added the Early Baby Boomers (EBB), born 1948 to 1953, and in 2010 added the Mid Baby Boomers (MBB), born 1954 to 1959. The Late Baby Boomers (LBB), born 1960 to 1965, were added in 2016. Early Generation X (EGENX), born 1966-71, will be enrolled in 2022. For all cohorts, both members of a couple are included in the sample.

Figure 13
HRS Longitudinal Cohort Sample Design

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A Appendix

A.1 Insurance Related Variables

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Variable Name	**Data File Source & Description of Variable**	**Raw HRS or RAND Variable**
rlifein	LF: Indicates whether the respondent owns any Life Insurance for the respective survey year. *"Do you have any life insurance [whole or term policy type], including individual or group policies?"*.	r*lifein since 1992
bequest	BF: Indicates the expectation of leaving a large bequest of more than $100,000. 1 for yes, otherwise zero.	r*beq100 since 1993
numlifepol	Indicates the number of life insurance policies the respondent recorded owning.	*t012 since 2002
wholelifeyes	BF: If the respondent owns life insurance, are any of the policies whole or cash value policies? *"[Is this a life insurance policy that builds/Are any of these life insurance policies ones that build] up a cash value that you can borrow against, or that you would receive if the policy were to be cancelled?" (yes/no)*	*t018 since 2002
numwholelife	BF: The number of whole life policies owned by respondent. *"(How many such policies do you have?)" (number of policies).*	*t019 since 2002
totalvalueofli	BF: The total value of all life insurance policies. *[What/Altogether, what] is the total face value of [this policy/these policies], that is, the amount of money the beneficiary would get if you were to die? (amount)*	*t013 since 2002
totalwholevalue	BF: What is the current face value of the whole policy(ies) owned by respondent? *"(What is the current face value of [these policies/this policy]?)" (amount)*	*t020 since 2002

Continuation of Table 46

Variable Name	Data File Source & Description of Variable	Raw HRS or RAND Variable
avgpolicyval	BF: Constructed from the total face value of all policies divided by the number of all life insurance policies.	n/a
totalannprem	BF: Constructed to represent annual amount respondent pays for all their life insurance, using the following respective two questions. [1) *"(Altogether, about how much in total do you pay for [these policies/this policy] each month or year?)" (amount)]*2) [*Does the respondent pay the previous amount monthly or annually?.*]	*t024 since 2002 *t025 since 2002
newli	BF: Has respondent obtained any new life insurance policies since the previous wave? *"[Since [Prev Wave IW Month], [Prev Wave IW Year]/In the last two years], have you obtained any new life insurance policies?" (yes/no)*	*t031 since 2002, G6441 in 2000, F6027 in 1998, E5294 in 1996
facevaluenewli	BF: What is the face value of the respondent's new policy(ies)? *"What is the total face value of (this policy/all of these policies)?" (amount)*	*t032 since 2002, G6442 in 2000, F6028 in 1998, E5295 in 1996
rnewlapse	BF: Have any policies lapsed or been cancelled? *"[Since [Prev Wave IW Month], [Prev Wave IW Year]/In the last two years], have you allowed any life insurance policies to lapse or have any been cancelled?" (yes/no)*	*t036 since 2002, G6447 in 2000, F6033 in 1998, E5301 in 1996
vollapse	BF: Constructed to indicate a voluntary lapse with 1, and 0 otherwise. Allows the respondent to indicate who lapsed the policy. *"Was this lapse or cancellation something you chose to do, or was it done by the provider, your employer, or someone else?".*	*to41 since 2002 G6455 in 2000 F6041 in 1998 E5308 in 1996
whylapsed	BF: If the respondent indicates a voluntary lapse, this asks why the respondent let it lapse.: *"Was it because the policy was too expensive, because you did not need the coverage or some other reason?" (expense, need, replaced, cash, employment, other)*	*t042 since 2002 G6456 in 2000 F6042 in 1998 E5309 in 1996

End of Table

A.2 Respondent Level Demographic & Control Variables

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Variable Name	Data File Source & Description of Variable	Raw HRS or RAND Variable
hhidpn	LF[122]: respondent level id resulting from household id + person id number	hhidpn since 1992
hacohort	LF: Cohort respondent was recruited into.	hacohort since 1992
surveywave	Constructed variable, built to represent the survey number being taken by the individual based on their Cohort membership and the year of the study. NOTE, this is NOT the "wave" variable supplied by the overall HRS RAND Core data. The supplied "wave" variable counts what survey wave is represented from the count of the first survey ever administered for the overall survey. It does not correlate with each individual cohort's wave.	Constructed with data available since 1992
religiousid	LF: Indicates the religion the respondent self-identified with. Choices are Protestant, Catholic, Jewish, Other Religion, or None/No Preference	rarelig since 1992
age	Constructed variable, subtracting birth year from survey year, to represent the age of the respondent for the respective beginning year of the survey being answered.	rabyear since 1992
agesq	Represents the squared age of the respondent for the respective survey year answers were supplied.	n/a
agegroups	Constructed using the variable *age* to breakdown ages into groups younger than 45, 45 to 54, 55 to 64, 65 to 74, 75 to 84, and 85 and older.	n/a
year	Constructed variable created to represent the year the survey was completed by the respondent per their corresponding wave the survey was completed.	r*iwbeg since 1992 wave since 1992
raracem	Indicates respondent level race self-identification, with the choices being Caucasian, Black/African-American, or Other Race.	raracem since 1992
gender	Represents the chosen gender by the respondent. 1 for female or 0 for male.	ragender since 1992

[122]LF = RAND HRS Longitudinal File: BF (aka FF) = RAND HRS Biennial Files: IF = RAND HRS Imputation File.

* Represents the wave respective designation linked to its corresponding survey wave/year data set.

Continuation of Table 47

Variable Name	Data File Source & Description of Variable	Raw HRS or RAND Variable
raedyrs	Represents the years of education received by the respondent.	raedyrs since 1992
hispanic	Indicates if the respondent self-identifies as having a Hispanic/Latino or non-Hispanic/latino ethnic heritage.	rahispan since 1992
rmstat	Respondent's reported marital status for each respective survey wave.	r*mstat since 1992.
hchild	Represents the number of living children for the respondent (includes both children and stepchildren).	h*child since 1992
svcsattend	BF: Constructed to equal 1 if the respondent indicates visiting religious services routinely, otherwise 0. *About how often have you attended religious services during the past year?*	*b082 since 2002
newmarriage	BF: Indicates if the respondent has gotten married since the last wave. *"Were you married at any time since [Prev Wave IW Month], [Prev Wave IW Year]?" (yes/no)*	*b055 since 2002 G1146 in 2000 F1059 in 1998 E739 in 1996 D739 in 1995
newdivorce	BF: Constructed to indicate with a 1 that the respondent has divorced since the last wave, otherwise 0. *Did you divorce or become widowed since [Prev Wave IW Month], [Prev Wave IW Year]?*	*b058 since 2002 G1153 in 2000 F1066 in 1998 E746 in 1996 D746 in 1995
newwidow	BF: Constructed to indicate with a 1 that the respondent has been widowed since the last wave, otherwise 0. *Did you divorce or become widowed since [Prev Wave IW Month], [Prev Wave IW Year]?*	*b058 since 2002 G1153 in 2000 F1066 in 1998 E746 in 1996 D746 in 1995
residentkids	BF: Represents the number of resident children at time of interview.	*a099 since 2002, G886 in 2000, F809 in 1998, E506 in 1996
changekids	Constructed using a lag for *residentkids* to indicate the departure or addition of resident children.	n/a
kidsnew	BF: Constructed to indicate an increase in the number of resident children to the household since the previous wave.	since 2004
kidsbye	BF: Constructed to indicate an decrease in the number of resident children to the household since the previous wave.	since 2004

Continuation of Table 47

Variable Name	**Data File Source & Description of Variable**	**Raw HRS or RAND Variable**
profocc	BF: Constructed to represent a binary of 1 if the respondent indicates currently working in a "professional" role for their occupation, or 0 otherwise. Defined by the HRS as "Managerial specialty operation,"or "Professional specialty operation and technical support".	r*jcocc since 1992

End of Table

A.3 Household Level Control Variables

Top of Table 48		
Variable Name	**Data File Source & Description of Variable**	**Raw HRS or RAND Variable**
hhworker	LF: Indicates that either the respondent, their partner, or both, are employed at the time of the survey. 1 for yes, otherwise 0.	r*work since 1992 s*work since 1992
hhres	Indicates the additional number of household residents. *"Other than you [and your (husband/wife/partner)], how many people are living with you?"*	h*hhres since 1992
college	Indicates that either the respondent and/or their spouse/partner completed a college degree. *"What is the highest grade of school or year of college you completed?" and "What is the highest grade of school or year of college your spouse completed?"*	r*educ since 1992 and s*educ since 1992
lnhitot	The natural log of total household income for the respective survey year if the value is greater than zero, otherwise 0.	since 1992
lnhitotsq	The square of *lnhitot*.	n/a
Δ*hhincome*	Constructed as the percentage change in household income from the previous wave.	n/a
NegInc1	Binary variable taking a value of 1 if the HH income falls within the first quartile of negative changes in HH income, 0 otherwise.	n/a
NegInc2	Binary variable taking a value of 1 if the HH income falls within the second quartile of negative changes in HH income, 0 otherwise.	n/a
NegInc3	Binary variable taking a value of 1 if the HH income falls within the third quartile of negative changes in HH income, 0 otherwise.	n/a
Δ*hhwealth*	Constructed as the percentage change in household wealth from the previous wave.	n/a
lnhhwealth	Indicates the natural log of total wealth of the Household if the value is greater than zero, otherwise 0. [123]	since 1992

[123] The net value of wealth is calculated by RAND as the sum of total assets (excluding second home) less all debt. They do this through the following calculations of the HRS variables. HwATOTA = Sum (HwAHOUS, HwARLES, HwATRAN, HwABSNS, HwAIRA, HwASTCK, HwACHCK, HwACD, HwABOND, HwAOTHR) - Sum (HwAMORT, HwAHMLN, HwADEBT). The value of the primary residence, secondary residence, mortgages, and home loans are NOT included.

Continuation of Table 48

Variable Name	Data File Source & Description of Variable	Raw HRS or RAND Variable
lnhhwealthsq	The square of the variable *lnwealth*.	n/a
NegNW1	Binary variable taking a value of 1 if the HH net worth falls within the first quartile of negative changes in HH net worth, 0 otherwise.	n/a
NegNW2	Binary variable taking a value of 2 if the HH net worth falls within the second quartile of negative changes in HH net worth, 0 otherwise.	n/a
NegNW3	Binary variable taking a value of 2 if the HH net worth falls within the third quartile of negative changes in HH net worth, 0 otherwise.	n/a
liquidity	Constructed as the proportion of stock values, checking account values, CD values, and bond values to total assets.	h*astock (937) h*achck (942) h*acd (947) h*abond (952) h*atota since 1992
ln(Debt	Natural logarithm of total HH debt reported.	h*adebt since 1992
pctstock	BF: Constructed as the ratio of hastck (net value of stocks and mutual funds held) to hatota, as reported in nominal dollars. *"1) Do you [or your (husband/wife/partner)] have any shares of stock or stock mutual funds?"; 2) Per the HRS: "The net value of total wealth (excluding second home) HwATOTA is calculated as the sum of all wealth components less all debt."*	h*astock since 1992 h*atota since 1992
hhoopmd	IF: The annual household out-of-pocket medical expenses. Created by summing the respondent and spouse/partner annual amounts.	r*oopmd since 1992 s*oopmd since 1992
ownhome	IF: A binary variable representing home ownership. 1 for yes, and 0 otherwise.	h*wohous since 1993.
newhhjob	Constructed to indicate whether or not the respondent or their spouse/partner changed jobs since the previous survey. 1 for yes, and 0 otherwise.	r*samejob since 1994 s*samejob since 1994
newhhunemp	Constructed to indicate whether or not the respondent or their spouse/partner became unemployed since the previous survey. 1 for yes, zero otherwise	r*lbrf since 1994 s*lbrf since 1994
newhhretire	Constructed to indicate whether or not the respondent or their spouse/partner retired since the previous survey. 1 for yes, zero otherwise	r*lbrf since 1994 s*lbrf since 1994

Continuation of Table 48

Variable Name	**Data File Source & Description of Variable**	**Raw HRS or RAND Variable**
rxconstraint	BF: Indicates the respondent has skipped filling a prescription due to cost since the last wave. *"Sometimes people delay taking medication or filling prescriptions because of the cost. At any time [since [R's Last IW Month], [R's Last IW Year]/in the last two years] have you ended up taking less medication than was prescribed for you because of the cost?" (yes/no)*	*n188 since 2002 G2632 in 2000 F2355 in 1998 E1822 in 1996 D1755 in 1995

End of Table

A.4 Supplemental Analyses for Section 4

This supplemental section reviews the results from additional analyses performed with the data sample utilized in Section 4. There were no unexpected findings in these results and they are consistent with the results from the more detailed analyses. Due to differences in recruitment parameters for the AHEAD and CODA cohorts in the overall HRS survey from all the other cohorts, their mean ages at SW2 are significantly higher. The combined mean age at the time of the first survey for participants in the AHEAD and CODA cohorts is 77. This contrasts starkly against the mean ages for the remaining cohorts, with mean ages in the lower 50s, during the time of their respective first surveys. Therefore, comparing the AHEAD and CODA cohorts against the five other cohorts based on SW2, while simply controlling for age or age groups may initially appear to be the appropriate analytical strategy. However, doing so without first stratifying to identify generational birth cohorts loses a dimension of data available for analysis and may confound results. When examining the cohorts together without including the AHEAD and CODA cohorts, the average age of respondents during their respective SW2 is in their mid to late 50s. Therefore, the majority of individuals in this age group are more likely to have a worker in labor force within the household. When possible, generational birth cohorts are important to identify, and control for, when evaluating consumer choices such as life insurance demand. This is because the 20 year difference between the some of the cohort groups results in the individuals being at different stages of their economic life cycle. This will likely result in differing factors driving their life insurance utilization decisions when examining their respective SW2 life insurance decisions.

The summary statistics for the sorted groups can be found in Table 49. We can see that when examining **"All Cohorts"** at their respective SW2, the mean age is 61 and 63%

of households have at least one resident in the labor force. When we disentangle the cohorts by sorting them into age/life-cycle respective groups however, a 20 year difference in age becomes evident between the means. **"Group 1"** is composed of the AHEAD and CODA generational cohorts. They were recruited for their initial first survey wave with a much older age requirement in their recruitment parameter by the overall HRS survey. This results in a mean age at SW2 of 77 years old, with only 16% of those households still having a household resident participating in the labor force. **"Group 2"** is composed of the Subset HRS cohort, which at its SW2 has a mean age of 57 years with 76% of households having a household resident in the labor force. Finally **"Group 3"** is composed of the War Babies generational cohort as well as all three (early, mid, and late) Baby Boomer generational cohorts. These four cohorts comprising Group 3 all had extremely similar age parameters for their initial recruitment into the Overall HRS survey which makes them comparable in consumer life cycle traits when compared at their respective SW2s. This also allows to identify differences between the generational cohorts. The collective mean age within Group 3 is 54 years of age and 83% of the households in Group 3 have at least one resident still in the labor force, and employment is expected to positively affect the likelihood of owning life insurance. Though they are still likely in the labor force at this age, they are older than the average peak age of owning life insurance of 47, as identified by Hartley, Paulson, and Powers (2017). Using the model found in equation 12, the cross section of time for SW2 first for "All Cohorts", and then for Groups 1, 2, and 3, are examined, respectively.

Table 51 show the results from a logit analysis by examining each survey wave as unique to each cohort. For instance, the Wave 1 column represents each respondent's answers for their unique cohort specific survey wave 1. In examining the data in this manner, and by excluding the older age ranges of the AHEAD and CODA cohorts as this

analysis does, it is again possible to visually see a life cycle effect against the likelihood of owning (or not owning) life insurance.

Tables 52 and 53 are a similar representation, however they break the *Christian* variable down into its different denominations in two different groupings of cohorts. This breakdown was done to examine if it was either Protestantism or Catholicism alone driving the positive effects seen with the Christian variable. The results show that both the *Protestant* and *Catholic* variables are significant components of the *Christian* variable, with comparable significance levels and magnitude effects. Therefore, the analyses that progress beyond this, focus on the *Christian* variable for ease of analysis and interpretation.

When examining the results from the static cross-section analysis for the four sorted cohort groups, at their respective SW2s, using the 1992 variables, the output from the basic model specified in Equation 12 with *ReligiousID* included, can be seen in Table 50. Numerous factors are found to be consistently positive and significant across the four groups examined. These factors include the novel finding that individuals who identify as a Christian (either Protestant or Catholic) are associated with a higher likelihood of owning life insurance than an individual who does not consider themselves religious, resulting in a rejection of the null hypothesis for **H1**. Respondents who identify as Jewish were significantly less likely to own life insurance in all the groups, and those who identified with a different religion were significantly less likely to own life insurance in three of the four groups.

Black/African-American respondents were consistently more likely to own life insurance across all the groups, as were those individuals who indicated being widowed. Group 1, which consisted of the older AHEAD and CODA cohorts show differences in determinants from Groups 2 and 3 in ways that reflect their older ages, and support life

cycle theory. The number of children and having a worker in the household were both insignificant for Group 1. The results from Groups 2 and 3, which are closely aligned in mean age, show consistent results finding support for years of education being a positive determinant. The result for age is inconsistent across the groups, which is expected for a static analysis (Liebenberg, Carson, and Dumm, 2012). In Group 3, divorced individuals have a uniquely significant increased effect on the likelihood of owning life insurance. Culturally, the proportion of divorces increased across these generations, and as a result, so did single parenting. Therefore, this finding unique to this cohort group, also offers support for generational birth cohort theory.

Economic factors positively effecting the likelihood to own life insurance include owning a home for all the groups. As it directly correlates to the level of disposable monies available, the natural log of wealth (to a point), but not income, is also positively associated with the likelihood to own insurance for all the groups. The results from both Groups 2 and 3 show consistent results finding the intention to leave a large bequest is significantly correlated with the likelihood to own life insurance. Group 3 was the only group that showed a positive association between life insurance ownership and the percentage of stocks held within all mutual holdings, significant at the 10% level. This finding may also support generational birth cohort theory, as the individuals in Group 3 represent some the savviest tech consumers in the entire sample.

Identifying as a female consistently yields negative effects against the likelihood of owning insurance, across all the groups, as does being Hispanic. However, it is notable that both the significance level and magnitude effect on the findings for females have decreased with more recent cohorts surveyed. Females in Group 1 had a -0.16 less likelihood of owning life insurance, significant at the 1% level. For females in Group 2, the magnitude

decreased to -0.064 at the 1% significance level, and the magnitude decreased further for females in Group 3, to -0.020, with a widened significance level of 5%. This likely captures the cultural cohort effects of women working more and earning more, further supporting generational birth cohort theory.

Table 49 Survey Wave 2 Summary Statistics for All Cohorts and Groups 1, 2, & 3

Cross-Section Statistics for Survey Wave 2 (SW2)	ALL COHORTS					Group 1: AHEAD & CODA					Group 2: Sub-HRS Cohort					Group 3: War Babies and All Baby Boomers				
Variable	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**N**	**Mean**	**Std. dev.**	**Min**	**Max**
Resp. Owns Life Insurance	33,879	0.661	0.473	0	1	8,946	0.591	0.492	0	1	11,278	0.739	0.439	0	1	13,655	0.643	0.479	0	1
Religious Identity																				
Protestant	33,879	0.603	0.489	0	1	8,946	0.643	0.479	0	1	11,278	0.658	0.474	0	1	13,655	0.531	0.499	0	1
Catholic	33,879	0.265	0.441	0	1	8,946	0.261	0.439	0	1	11,278	0.268	0.443	0	1	13,655	0.264	0.441	0	1
Jewish	33,879	0.021	0.143	0	1	8,946	0.037	0.190	0	1	11,278	0.017	0.131	0	1	13,655	0.013	0.114	0	1
Other Religion	33,879	0.025	0.156	0	1	8,946	0.013	0.115	0	1	11,278	0.008	0.090	0	1	13,655	0.046	0.210	0	1
Not Religious	33,879	0.087	0.281	0	1	8,946	0.045	0.208	0	1	11,278	0.048	0.214	0	1	13,655	0.146	0.353	0	1
Age	33,879	61.408	10.924	23	106	8,946	77.200	6.482	37	106	11,278	57.382	5.608	23	84	13,655	54.388	4.067	24	85
Age Squared	33,879	3890.331	1449.904	529	11236	8,946	6001.866	1017.968	1369	11236	11,278	3324.108	634.180	529	7056	13,655	2974.628	424.642	576	7225
Age Groups																				
Less than 45	33,879	0.019	0.136	0	1	8,946	0.001	0.026	0	1	11,278	0.0210	0.1434	0	1	13,655	0.029	0.168	0	1
45-54	33,879	0.259	0.438	0	1	8,946	0.004	0.065	0	1	11,278	0.2640	0.4408	0	1	13,655	0.421	0.494	0	1
55-64	33,879	0.432	0.495	0	1	8,946	0.002	0.050	0	1	11,278	0.6428	0.4792	0	1	13,655	0.540	0.498	0	1
65–74	33,879	0.252	0.434	0	1	8,946	0.849	0.359	0	1	11,278	0.0722	0.2588	0	1	13,655	0.010	0.098	0	1
75-84	33,879	0.038	0.191	0	1	8,946	0.144	0.351	0	1						13,655	0.000	0.009	0	1
Race																				
White/Causcasian	33,820	0.750	0.433	0	1	8,945	0.856	0.351	0	1	11,278	0.803	0.398	0	1	13,597	0.636	0.481	0	1
Black/African-American	33,820	0.176	0.380	0	1	8,945	0.119	0.324	0	1	11,278	0.160	0.366	0	1	13,597	0.226	0.418	0	1
Other Race	33,820	0.074	0.262	0	1	8,945	0.025	0.156	0	1	11,278	0.037	0.189	0	1	13,597	0.138	0.345	0	1
Sex																				
Female	33,879	0.569	0.495	0	1	8,946	0.633	0.482	0	1	11,278	0.544	0.498	0	1	13,655	0.547	0.498	0	1
Male	33,879	0.431	0.495	0	1	8,946	0.367	0.482	0	1	11,278	0.456	0.498	0	1	13,655	0.453	0.498	0	1
Ethnicity																				
Hispanic/Latin	33,879	0.111	0.315	0	1	8,946	0.057	0.232	0	1	11,278	0.086	0.280	0	1	13,655	0.168	0.374	0	1
non-Hispanic/non-Latin	33,879	0.889	0.315	0	1	8,946	0.943	0.232	0	1	11,278	0.914	0.280	0	1	13,655	0.832	0.374	0	1
Years of Education	33,796	12.242	3.391	0	17	8,946	11.154	3.638	0	17	11,278	12.105	3.214	0	17	13,572	13.073	3.139	0	17
# of Children	33,688	2.966	2.058	0	11	8,907	2.902	2.178	0	11	11,278	3.301	2.151	0	11	13,503	2.730	1.849	0	11
Marital Status																				
Never Married	33,841	0.050	0.217	0	1	8,923	0.028	0.166	0	1	11,278	0.029	0.169	0	1	13,640	0.080	0.271	0	1
Married/Partnered	33,841	0.689	0.463	0	1	8,923	0.532	0.499	0	1	11,278	0.794	0.404	0	1	13,640	0.706	0.456	0	1
Separated	33,841	0.028	0.165	0	1	8,923	0.017	0.130	0	1	11,278	0.025	0.156	0	1	13,640	0.038	0.191	0	1
Divorced	33,841	0.103	0.304	0	1	8,923	0.057	0.232	0	1	11,278	0.088	0.283	0	1	13,640	0.146	0.353	0	1
Widowed	33,841	0.130	0.336	0	1	8,923	0.365	0.481	0	1	11,278	0.063	0.244	0	1	13,640	0.030	0.171	0	1
Economic LC Variables																				
Bequest$100KIntention	33,879	0.622	0.485	0	1	8,946	0.587	0.492	0	1	11,278	0.573	0.495	0	1	13,655	0.684	0.465	0	1
Percent of Stocks/Mutuals	32,298	0.060	0.401	-11	56.667	8,487	0.085	0.184	0	1.198	10,935	0.061	0.332	-8.217	20	12,876	0.044	0.536	-11	56.667
OwnHome	33,879	0.754	0.430	0	1	8,946	0.748	0.434	0	1	11,278	0.816	0.387	0	1	13,655	0.707	0.455	0	1
ln(HHIncome)	33,375	10.445	1.144	0.693	17.049	8,926	9.928	0.870	3.178	13.967	11,127	10.426	1.040	3.434	15.004	13,322	10.808	1.249	0.693	17.049
ln(HHIncome)squared	33,375	110.415	23.329	0.480	290.658	8,926	99.325	17.474	10.1	195.083	11,127	109.781	20.936	11.792	225.125	13,322	118.376	25.432	0.480	290.658
ln(HHWealth)	30,033	11.537	1.747	4.673	18.422	8,240	11.515	1.789	4.7	17.524	10,482	11.521	1.590	4.673	16.519	11,311	11.568	1.850	4.787	18.422
ln(HHWealth)squared	30,033	136.157	38.027	21.835	339.352	8,240	135.787	38.205	22.095	307.084	10,482	135.270	34.630	21.835	272.874	11,311	137.248	40.782	22.920	339.352
ln(AbsValHHNegWealth)	33,879	0.542	2.187	0	15.293	8,946	0.150	1.096	0	12.319	11,278	0.307	1.632	0	15.293	13,655	0.992	2.921	0	14.604
ZeroHHWealth	33,879	0.054	0.225	0	1	8,946	0.060	0.237	0	1	11,278	0.035	0.184	0	1	13,655	0.065	0.247	0	1
WorkerinHH	33,879	0.630	0.483	0	1	8,946	0.158	0.365	0	1	11,278	0.764	0.425	0	1	13,655	0.830	0.376	0	1
#HHResidents	33,875	2.492	1.344	1	14	8,946	1.923	1.047	1	13	11,274	2.574	1.239	1	14	13,655	2.797	1.478	1	14
ΔHHIncome	32,271	2.691	147.794	-1	17084.03	8,679	0.285	11.338	-1	1036.5	10,948	0.821	13.709	-1	1031.258	12,644	5.961	235.550	-1	17084.03
ΔHHWealth	31,221	0.381	106.473	-15395	4208.6	8,254	1.662	50.685	-601.083	2874	10,754	0.767	34.999	-341	2133.093	12,213	-0.824	161.754	-15395	4208.6
NewHHJob	33,879	0.182	0.386	0	1	8,946	0.013	0.114	0	1	11,278	0.204	0.403	0	1	13,655	0.274	0.446	0	1
NewHHUnemployed	33,879	0.035	0.184	0	1	8,946	0.004	0.062	0	1	11,278	0.037	0.190	0	1	13,655	0.054	0.225	0	1
NewHHRetiree	33,879	0.141	0.348	0	1	8,946	0.194	0.395	0	1	11,278	0.166	0.372	0	1	13,655	0.087	0.282	0	1

Table 50
Linear Probability Model (LPM) Cross-Section Analysis of Survey Wave 2
DV = Respondent Owns Life Insurance (1 = yes: 0 = no)

	All Cohorts	All Cohorts R	Group 1	Group 1 R	Group 2	Group 2 R	Group 3	Group 3 R
Age at Interview	0.019***	0.018***	0.012	0.011	-0.005	-0.005	-0.006	-0.007
Age Squared	-0.000***	-0.000***	-0.000**	-0.000**	0.000	0.000	0.000*	0.000**
Gender (M=1:F=2)	-0.068***	-0.072***	-0.154***	-0.160***	-0.060***	-0.064***	-0.017**	-0.020**
Caucasian/White	0.065***	0.051***	0.011	0.007	0.048*	0.021	0.054***	0.045***
Black/African-American	0.131***	0.119***	0.108**	0.112**	0.115***	0.086***	0.127***	0.116***
Married/Partnered	0.071***	0.068***	0.047	0.071*	0.045	0.043	0.032*	0.029
Separated	0.002	0.002	-0.027	-0.000	0.007	0.006	0.004	0.002
Divorced	0.052***	0.055***	-0.038	-0.012	0.047	0.048	0.057***	0.058***
Widowed	0.104***	0.100***	0.073**	0.093**	0.121***	0.117***	0.080***	0.078***
Hispanic	-0.205***	-0.224***	-0.228***	-0.270***	-0.186***	-0.198***	-0.164***	-0.174***
Years of Education	0.005***	0.005***	-0.000	0.001	0.007***	0.008***	0.012***	0.013***
Planning Large Bequest	0.030***	0.030***	-0.038***	-0.037***	0.019**	0.019**	0.112***	0.111***
% Stock/Mutual Held	-0.002	-0.002	-0.036	-0.017	-0.007	-0.006	0.004**	0.003*
Own Home	0.108***	0.102***	0.063***	0.056***	0.095***	0.090***	0.116***	0.112***
Natural Log of HH Income	-0.089***	-0.097***	0.085	0.055	0.043	0.035	-0.034	-0.038
LN of HH Inc Squared	0.007***	0.008***	-0.002	0.000	0.001	0.002	0.005***	0.005***
Natural Log of Total Wealth	0.025***	0.024***	0.014*	0.014*	0.018***	0.017***	0.015***	0.014***
LN of Wealth Squared	-0.002***	-0.002***	-0.002***	-0.002***	-0.001***	-0.001***	-0.001***	-0.001***
Number of Children	-0.001	-0.002	-0.002	-0.003	-0.006***	-0.007***	-0.001	-0.002
At Least 1 Worker in HH	0.094***	0.093***	0.015	0.018	0.068***	0.065***	0.173***	0.173***
# of HH Residents	-0.006***	-0.006***	0.002	0.000	-0.002	-0.002	-0.005	-0.005
Percentage Change in HH Income	0.000***	0.000***	0.001***	0.001***	0.001***	0.001***	0.000***	0.000***
Percentage Change in HH Wealth	0.000***	0.000**	0.000***	0.000***	0.000	0.000	0.000***	0.000**
New HH Job	-0.043***	-0.043***	-0.047	-0.037	-0.017*	-0.018*	-0.055***	-0.055***
New HH Unemployment	-0.133***	-0.127***	0.023	0.024	-0.107***	-0.100***	-0.124***	-0.120***
New HH Retiree	-0.001	-0.003	-0.002	-0.003	-0.011	-0.013	-0.009	-0.008
Protestant		0.088***		0.138***		0.088***		0.059***
Catholic		0.116***		0.205***		0.095***		0.067***
Jewish		-0.074***		-0.036		-0.068*		-0.071**
Other Religion		-0.030		0.118**		-0.136**		-0.042*
R-Squared	0.725	0.727	0.627	0.632	0.783	0.785	0.746	0.747
Number of Observations	30,551	30,551	8,190	8,190	10,622	10,622	11,739	11,739

Note: $^{*}p < .1,^{**}p < .05,^{***}p < .01$.
The combined analysis of "All Cohorts" for SurveyWave 2 represents an average age of 61. Group 1, represented by the AHEAD and CODA cohorts in SW 2, has an average age of 77. Group 2 is composed of only the sub-HRS specific cohort in SW2 and has an average age of 57. Group 3, composed of the WBB, EBB, and MBB cohorts in SW2, has an average age of 54. This table presents the results of the Logit Survey Sub-Population estimation of Equation (12).

Table 51 Partial Cohort (no AHEAD or CODA): DV = Respondent Life Insurance: (1 = yes: 0 = no): Christian

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8	Wave 9	Wave 10	Wave 11	Wave 12	Wave 13	Wave 14
Intercept	-5.85***	-6.40***	-4.89***	-4.92***	-4.31***	-3.36***	-1.41	-0.88	-1.71	-2.27	-1.01	1.91	0.59	-2.72
Christian	0.43***	0.49***	0.60***	0.70***	0.62***	0.62***	0.59***	0.60***	0.57***	0.54***	0.62***	0.67***	0.70***	0.67***
Jewish	-0.04	-0.30**	-0.22*	-0.07	-0.07	-0.20	-0.18	-0.31**	-0.43**	-0.18	-0.42**	-0.29	-0.63**	-0.80***
Other Religion	-0.38***	-0.19*	-0.10	0.06	-0.11	0.21	-0.01	-0.14	-0.60***	-0.24	-0.28	-0.29	-0.46	-0.84**
Age at Interview	0.10***	0.11***	0.09***	0.09***	0.07***	0.05	-0.00	-0.01	0.04	0.06	0.02	-0.07	-0.02	0.07
Age Squared	-0.00***	-0.00***	-0.00**	-0.00**	-0.00**	-0.00	0.00	0.00	-0.00	-0.00	-0.00	0.00	0.00	-0.00
Gender	-0.37***	-0.26***	-0.36***	-0.28***	-0.30***	-0.31***	-0.27***	-0.28***	-0.38***	-0.35***	-0.31***	-0.30***	-0.33***	-0.28***
African American	0.25***	0.30***	0.31***	0.37***	0.52***	0.54***	0.61***	0.68***	0.65***	0.64***	0.59***	0.63***	0.72***	0.77***
Other Race	-0.37***	-0.34***	-0.28***	-0.32***	-0.21***	-0.09	-0.05	-0.11	0.04	0.06	-0.09	-0.14	-0.18	-0.13
Hispanic	-1.01***	-0.99***	-1.08***	-1.10***	-0.99***	-1.00***	-1.02***	-0.94***	-0.96***	-0.85***	-0.92***	-0.90***	-0.93***	-0.94***
Years of Education	0.08***	0.07***	0.06***	0.06***	0.06***	0.05***	0.04***	0.04***	0.02**	0.02***	0.02**	0.02	0.02*	0.02
# of Children in Household	-0.02**	-0.01	-0.01	-0.00	-0.02**	-0.01	-0.01	-0.02	-0.03**	-0.02*	-0.03**	-0.00	-0.01	0.01
Never Married	-0.60***	-0.56***	-0.59***	-0.61***	-0.60***	-0.44***	-0.49***	-0.63***	-0.55***	-0.54***	-0.80***	-0.77***	-0.65***	-0.45**
At Least 1 Worker in Houeshold	0.79***	0.80***	0.67***	0.62***	0.60***	0.45***	0.41***	0.41***	0.37***	0.25***	0.25***	0.17**	0.14*	0.33***
Natural Log of Total Wealth	0.17***	0.18***	0.14***	0.13***	0.09***	0.09***	0.07***	0.03***	0.02	0.01	-0.01	0.00	-0.00	-0.01
Increase in Wealth		-0.08**	-0.09**	-0.12***	0.01	0.01	-0.02	-0.02	0.12***	-0.01	0.04	-0.04	0.00	-0.04
Number of Observations	23,289	21,749	18,321	18,412	17,112	14,035	13,486	12,434	9,318	8,521	7,818	5,852	4,941	3,895

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 52 Partial Cohort (no AHEAD or CODA): DV = Respondent Life Insurance (1 = yes: 0 = no): Denomination

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8	Wave 9	Wave 10	Wave 11	Wave 12	Wave 13	Wave 14
Intercept	-5.86***	-6.40***	-4.89***	-4.92***	-4.29***	-3.34***	-1.40	-0.87	-1.67	-2.28	-1.01	1.89	0.63	-2.71
Protestant	0.44***	0.48***	0.59***	0.70***	0.61***	0.60***	0.59***	0.59***	0.55***	0.54***	0.62***	0.68***	0.67***	0.66***
Catholic	0.41***	0.51***	0.61***	0.70***	0.66***	0.66***	0.60***	0.65***	0.64***	0.54***	0.63***	0.65***	0.76***	0.69***
Jewish	-0.04	-0.30**	-0.22*	-0.07	-0.07	-0.20	-0.18	-0.31**	-0.43**	-0.18	-0.42**	-0.29	-0.62**	-0.80***
Other Religion	-0.38***	-0.19*	-0.10	0.06	-0.11	0.20	-0.01	-0.14	-0.61***	-0.24	-0.28	-0.29	-0.46	-0.84**
Age at Interview	0.10***	0.11***	0.09***	0.09***	0.07***	0.05	-0.00	-0.01	0.04	0.06	0.02	-0.07	-0.02	0.07
Age Squared	-0.00***	-0.00***	-0.00**	-0.00**	-0.00**	-0.00	0.00	0.00	-0.00	-0.00	-0.00	0.00	0.00	-0.00
Gender	-0.37***	-0.26***	-0.36***	-0.28***	-0.30***	-0.31***	-0.27***	-0.28***	-0.38***	-0.35***	-0.31***	-0.30***	-0.33***	-0.28***
African American	0.25***	0.31***	0.31***	0.37***	0.53***	0.55***	0.61***	0.69***	0.67***	0.64***	0.59***	0.62***	0.73***	0.77***
Other Race	-0.37***	-0.34***	-0.28***	-0.32***	-0.21***	-0.09	-0.05	-0.11	0.04	0.06	-0.09	-0.14	-0.19	-0.13
Hispanic	-1.00***	-1.00***	-1.09***	-1.10***	-1.01***	-1.03***	-1.02***	-0.97***	-1.00***	-0.84***	-0.93***	-0.88***	-0.98***	-0.96***
Years of Education	0.08***	0.07***	0.06***	0.06***	0.06***	0.05***	0.04***	0.04***	0.02**	0.02***	0.02**	0.02	0.02*	0.02
# of Children in Household	-0.02**	-0.01	-0.01	-0.00	-0.02**	-0.01	-0.01	-0.02	-0.03***	-0.02*	-0.03**	-0.00	-0.01	0.01
Never Married	-0.60***	-0.56***	-0.59***	-0.61***	-0.61***	-0.45***	-0.49***	-0.63***	-0.56***	-0.54***	-0.80***	-0.77***	-0.66***	-0.45**
At Least 1 Worker in Houeshold	0.79***	0.80***	0.67***	0.62***	0.60***	0.45***	0.41***	0.41***	0.37***	0.25***	0.25***	0.17**	0.14*	0.33***
Natural Log of Total Wealth	0.17***	0.18***	0.14***	0.13***	0.09***	0.09***	0.07***	0.03**	0.02	0.01	-0.01	0.00	-0.00	-0.01
Increase in Wealth		-0.08**	-0.09**	-0.12***	0.01	0.01	-0.02	-0.02	0.12***	-0.01	0.04	-0.04	0.00	-0.04
Number of Observations	23,289	21,749	18,321	18,412	17,112	14,035	13,486	12,434	9,318	8,521	7,818	5,852	4,941	3,895

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.

Table 53 Four Cohorts (WB, EBB, MBB, LBB): DV = Respondent Life Insurance (1 = yes: 0 = no)

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8	Wave 9	Wave 10	Wave 11
Intercept	-9.13***	-10.61***	-10.83***	-9.36***	-7.65***	-6.97***	-6.39***	-5.08**	-9.31***	-9.07**	-6.61
Protestant	0.39***	0.38***	0.45***	0.64***	0.57***	0.63***	0.57***	0.63***	0.71***	0.83***	0.60***
Catholic	0.40***	0.39***	0.48***	0.58***	0.55***	0.66***	0.47***	0.62***	0.77***	0.86***	0.48**
Jewish	0.05	-0.34*	-0.23	0.01	-0.20	-0.36	-0.03	-0.07	-0.49	0.33	-1.18**
Other Religion	-0.37***	-0.09	-0.09	0.17	0.00	0.53**	0.21	0.00	-0.49	0.12	-0.20
Age at Interview	0.20***	0.24***	0.29***	0.21***	0.16***	0.13**	0.14**	0.10	0.27***	0.26**	0.20
Age Squared	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00**	-0.00**	-0.00	-0.00***	-0.00**	-0.00
Gender	-0.12***	-0.16***	-0.12**	-0.13**	-0.18***	-0.16**	-0.10	-0.10	-0.15	-0.26**	-0.24*
African American	0.33***	0.35***	0.22***	0.31***	0.54***	0.61***	0.74***	0.92***	0.84***	0.84***	0.79***
Other Race	-0.35***	-0.30***	-0.28***	-0.35***	-0.10	0.04	-0.01	-0.07	0.26	0.44	0.41
Hispanic	-1.04***	-0.92***	-1.09***	-1.02***	-0.93***	-0.94***	-0.75***	-0.84***	-0.59***	-0.58**	-0.69***
Years of Education	0.10***	0.10***	0.09***	0.09***	0.09***	0.08***	0.07***	0.07***	0.02	0.03	0.05**
# of Children in Household	0.00	-0.00	-0.02	0.00	-0.03*	0.00	0.01	-0.03	-0.05	-0.06*	-0.06*
Never Married	-0.61***	-0.48***	-0.54***	-0.56***	-0.48***	-0.33**	-0.32**	-0.63***	-0.98***	-1.02***	-1.33***
At Least 1 Worker in Houeshold	1.10***	1.13***	0.79***	0.78***	0.72***	0.58***	0.46***	0.51***	0.56***	0.42***	0.44***
Natural Log of Total Wealth	0.19***	0.19***	0.15***	0.15***	0.11***	0.12***	0.09***	0.05**	0.05*	0.03	-0.02
Increase in Wealth		-0.17***	-0.13**	-0.12**	0.05	-0.08	-0.06	-0.07	-0.02	-0.21*	-0.02
Number of Observations	11,956	11,230	8,277	8,726	7,935	5,212	4,963	4,407	1,750	1,562	1,294

Note: $^{*}p < .1, ^{**}p < .05, ^{***}p < .01$.