

# THE ASSOCIATION BETWEEN MEDICAL HARDSHIPS AND EARLY RETIREMENT ACCOUNT WITHDRAWALS

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## ABSTRACT

*Medical hardships are common in the United States due to rising medical expenditures and patient-financial responsibilities. Meanwhile, every year, billions of dollars are lost to penalties from early withdrawals from retirement accounts to pay for these medical bills. Prior research has been devoted to the interrelation between the medical hardships and medical affordability. Separately, attention has been paid to the leakage impact of the early withdrawals from retirement withdrawals. This study explores the linkage between medical hardships and early withdrawals from retirement accounts. We ask whether the medical hardships, such as unpaid medical debt, unfilled prescriptions due to cost, and medical-care avoidance due to cost, are associated with early withdrawals from retirement accounts. We then discuss the negative financial impact of early withdrawals from retirement accounts on retirement readiness. Lastly, we explore the potential impact of the vicious circle among the low-income, uninsured, medical hardship sufferers coupling to their early withdrawals from retirement accounts and retirement readiness.*

## INTRODUCTION

With ever-growing medical expenditures, medical hardships due to cost have become a pressing problem (Cohen, Cohen & Banthin, 2009; Yabroff, Zhao, Han & Zheng, 2019) and the medical expenses from the current COVID-19 pandemic have led many Americans to fall deeply in debt (Wapner, 2020). For decades, researchers have discussed the associations between the medical expenditures and retirement savings or retirement readiness (Fronstin, 2008; Qiu, 2016; VanDerhei, 2012). Goldman, Zissimopoulos & Lu (2011) suggested that medical expenditure was an important factor for understanding retirement decisions, financial preparation for retirement, and healthcare outcome prediction. Zheng, Jemal, Han, Guy, Li, Davidoff, Banegas, Ekwueme & Yabroff (2019) defined medical hardship, or medical financial hardship, in three domains: 1) material, such as inability to pay medical bills, 2) psychological, such as anxiety about paying medical bills, and 3) behavioral, such as medical care delay or avoidance.

Dwyer and Mitchell (1999) reported that the main concern for retirement savings readiness came from medical problems. Early withdrawal from retirement savings has been one method for relieving medical hardship (Salter & Evensky, 2008). Early withdrawals of

retirement savings impact participants' retirement savings readiness in the short term and long term. In the short term, apart from the income taxes on the taxable portion of the amount, IRA owners and participants in 401(k) plans generally need to pay a 10-percent penalty with withdrawals before age 59½ (IRS, 2021). In the long term, early withdrawals permanently remove assets from retirement savings, thereby losing the compounded interest and other potential earning (Jeszeck, Lehrer, McMurray, Fernandez, Miskell, Tessin & Wendel, 2019). IRA owners and 401(k) participants paid \$6.2 billion for the 10-percent penalty in 2013 alone (Jeszeck et al., 2019).

People who lack health insurance were more likely to have less medical care access and have more medical hardships (Asplin, Rhodes, Levy, Lurie, Crain, Carlin & Kellermann, 2005; Kennedy & Morgan, 2006). Uninsured people were more financially fragile when having unexpected medical expenses (Lusardi, Mitchell & Oggero, 2018; Wolman & Miller, 2004). Hence, they faced higher risks of having unpaid medical debt, unfilled prescription, and higher rates of medical-care avoidance due to cost (Doty, Edwards & Holmgren, 2005; Kirking, Lee, Ellis, Briesacher & Mckercher, 2006, p.39; Kraft, Quimbo, Solon, Shimkhada, Florentino & Peabody, 2009; Sood, Long, Terp, Joyce & Arora, 2014). In the United States, young adults 19 to 24 years old were the most likely (31 percent) to be uninsured (Peterson & Grady, 2008). They had higher barriers to obtain medical care and were more likely to have medical hardship (Callahan & Cooper, 2005). Uninsured people also faced higher financial risk because of having fewer assets and little ability to borrow (Wolman & Miller, 2004).

This study examined the relationship between medical hardships due to cost and early withdrawals from retirement savings plans. Previous studies of early withdrawals have considered either only the leakage impact for the retirement security/readiness or compared the degree of medical hardship on insured or uninsured. It is important to investigate the financial characteristics of the individuals who took early withdrawals from their retirement savings, which may then guide policymakers and financial professionals to better understand the financial and socioeconomic status of these individuals, along with the ripple effects on the current retirement and social security system. We believe it is a vicious circle: low-income people cannot afford healthcare insurance, which may make them more likely to have medical hardship and take early withdrawals, thereby making them stuck in perpetual financial plight.

## LITERATURE REVIEW

Medical hardship is increasingly a primary contributor to household and individual financial distress as medical care costs have risen relentlessly and continuously for decades - above the inflation rate, income increases, and the GDP growth rate. The Centers for Medicare & Medicaid Services projected that the medical spending share of GDP would rise from 17.9 percent in 2017 to 19.4 percent by 2027 (Centers for Medicare & Medicaid Services, 2019). The COVID-19 crisis may make this projection worse. Bartsch, Ferguson, McKinnell, O'Shea, Wedlock, Siegmund & Lee (2020) estimated that if 20 percent of Americans are infected with COVID-19, an average of \$163.4 billion indirect costs would be generated. Personal bankruptcy resulting from medical hardship is common despite the Affordable Care Act (Himmelstein,

Lawless, Thorne, Foohey & Woolhandler, 2019). In 2007, 62 percent of personal bankruptcy filings resulted from medical hardship (Himmelstein, Thorne, Warren & Woolhandler, 2009).

### **Retirement and Health Savings**

According to a report from the US Pension Rights Center, less than 1/3 of American workers possessed an employer-sponsored retirement plan (Pension Rights Center, 2019). It is estimated that half of American adults will have insufficient funds with which to sustain their retirement (Warshawsky & Ameriks, 2000); this can largely be explained by low savings rates and inadequate financial risk tolerance (Hallahan, Faff & McKenzie, 2004; Martin & Davari, 2018; VanDerhei, 2015).

Behavior Life Cycle theory holds that individuals tend to place financial assets into different accounts, each of which is mentally assigned to a different purpose or function, a process known as mental accounting. The most common mental accounts used by consumers are current income, current assets, and future income, the latter of which include assets used to produce future income (Shefrin & Thaler, 1988). These accounts appear to exist in a hierarchy whereby current income is the most basal to consumers, followed by current assets, and lastly, future income (Kitces, 2017). This supposition may also help explain why Millennials seem to be far more conservative with their investment choices and appear to have fewer current assets available to them than other age groups (Kirkham, 2015). It may also indicate why people have much more financial fragility (Nicolini, 2016) than they may realize and why, when exposed to unaffordability risks, they move beyond current income, current assets and move into assets held to produce future income to recover.

### **Uninsured**

In 2018, 9.2 percent of the US population remained medically uninsured (Freund & Choi, 2018). Uninsured nonelderly individuals increased from 27.7 million in 2016 to 28.9 million in 2019 (Tolbert, Orgera & Damico, 2020). Most uninsured people were low-income families and have at least one worker in the family. Working-age adults (19 to 64 years old) were the largest uninsured population segment (84.6 percent) (Berchick, 2018). Even with the ACA, the high cost of insurance is still the main driver for coverage inaccessibility (Bosworth, Finegold & Ruhter, 2021).

### **Unpaid Medical Debt**

Although the proportion of families that face medical bill problems remained stable, the proportion of nonelderly people with medical bill problems has increased considerably since 2003 (Sommers & Cunningham, 2011). There were 137.1 million Americans facing financial hardship in 2019 because of medical costs (Yabroff et al., 2019). The Commonwealth Fund Biennial Health Insurance Survey revealed that 25 percent of working-age adults with adequate coverage for the full year struggled to pay their medical bills or debts, while 50 percent adults without adequate coverage for the full year had trouble paying their medical bills in 2019 (Commonwealth Fund, 2020). Shen & McFeeters (2006) claimed that people who had no private group coverage had a high out-of-pocket burden, regardless of income level and that low-income adults who had employer-sponsored insurance had heavier out-of-pocket burden than the uninsured. Nevertheless, Dranove and Millenson (2006) argued that medical debt was a causal

contributor for most bankruptcy filings. Dobkin, Finkelstein, Kluender & Notowidigdo (2018) found that the uninsured non-elderly individuals were more likely to have increases in unpaid medical bills and bankruptcy rates after hospital admission compared to the insured non-elderly. Medically uninsured individuals had the highest rates of medical debt, and there were significantly higher rates of medical debt in working-age adults than 65-year-old and older (Doty et al., 2005).

### **Unfilled Prescriptions**

Patients with unfilled prescriptions are an important public health consideration (Belletti, 2011; Goldsmith, Kolhatkar, Popowich, Holbrook, Morgan & Law, 2017; Zheng, Poulouse, Fulford & Holbrook, 2012). Approximately 30 percent of Americans failed to fill prescriptions because of high medicine price barriers (Gadkari & McHorney, 2010; Kirzinger, Lopes, Wu, & Brodie, 2019; Tamblyn, Egual, Huang, Winslade & Doran, 2014). One report showed that U.S. prescription sales in the calendar year 2018 totaled \$476.2 billion and were expected to rise by 4.0-6.0 percent in 2019 (Schumock, Stubbings, Hoffman, Wiest, Suda, Rim, Tadrous, Tichy, Cuellar, Clark, Matusiak, Hunkler & Vermeulen, 2019). Moreover, research has suggested that the uninsured were more likely to delay care and have unfilled prescriptions (Schoen & DesRoches, 2000). Sood et al. (2014) argued that cost variation was a barrier for uninsured patients for filling prescriptions. Moreover, the unfilled rate was higher among working-age disabled beneficiaries than those aged 65 years or older (Kennedy, Tuleu & Mackay, 2008).

### **Medical Care Avoidance**

Another main concern for medical care is the delay or avoidance in care. High cost is the core driver for medical care delay or avoidance (Rahimi, Spertus, Reid, Bernheim & Krumholz, 2007; Tipirneni, Politi, Kullgren, Kieffer, Goold & Scherer, 2018; Weinick, Byron & Bierman, 2005). Federman, Vladeck & Siu (2005) stated that in the Qualified Medicare Beneficiary (QMB) program, part of the Medicare Savings Program, the enrollees were half as likely as non-enrollees in avoiding physician visits because of cost. The anxiety caused by the high cost of medical care also contributed to the avoidance of medical preventive and non-preventive care (Tipirneni et al., 2018). Moreover, Weissman, Stern, Fielding & Epstein (1991) stated that the odds of delays in care from black, poor, uninsured, or without a regular physician were 40 percent to 80 percent greater than others. Further research has shown that those who had low confidence in health insurance affordability were likely to have higher medical care and medication avoidance (Tipirneni, Solway, Malani, Luster, Kullgren, Kirch, Singer & Scherer, 2020).

### **Early Withdrawals**

Studies have pointed out that a retirement crisis is coming in the U.S. (Ellis, Munnell & Eschtruth, 2014; Miller, 2020; Oakley & Kenneally, 2015; Rhee & Boivie, 2015) due to inadequate retirement funding for many people. The U.S. Government Accountability Office (Jeszeck et al., 2019) found that individuals in their prime working years (ages 25 to 55) executed early withdrawals of \$69 billion from their retirement savings in 2013. The amount of IRA early withdrawals was \$39.5 billion, which was the largest source of early withdrawals.

\$29.2 billion has been depleted from 401(k) plans. There was nearly a 1.5 percent leakage occurring from the 401(k)/ IRA system each year (Munnell & Webb, 2015).

Leakages occur in three ways: in-service withdrawals, cashouts, and loans (IRAs do not allow loans). Hardship withdrawals and withdrawals after age 59½ are both in-service withdrawals. In general, hardship withdrawals are subjected to income tax, the 10-percent penalty tax, and a 20-percent withholding for income tax (withdrawals after age 59½ can eliminate the 10-percent penalty tax) (Tacchino, 2020).

A hardship withdrawal consists of the employee's elective contributions and employer matching contribution. Hence, hardship withdrawals are very costly since they are not repayable and will permanently reduce the retirement savings from both individual and employer and deprive any compound interest accrued (Brown, Medeiros & Bruce, 2015; Butrica, Zedlewski & Issa, 2010). As an example, if an adult takes a withdrawal of \$1,000 when he is age 25, he will lose \$10,285 in his retirement savings by age 65 if his return on revenue is 6 percent per year. He will lose \$45,259 if his return on revenue is 10 percent per year (Tacchino, 2019).

Cashouts are subjected to the 10-percent early withdrawal penalty (if under age 59½), and a 20-percent withholding tax which is credited against the federal and state tax liability on the distribution. The U.S. Government Accountability Office estimated that about 2.7 percent of assets were lost each year through cashouts (Jeszeck et al., 2019).

Although the leakage from 401(k) plan loans has not been the main contributor to the retirement savings imbalance; the amount of unpaid plan loans was significant (Jeszeck et al., 2019). Not every 401(k) plan allows for loans (Beshears, Choi, Laibson & Madrian, 2012), loans are limited to the lesser of \$50,000 or 50 percent of the vested account balance, and the common minimum loan amount is \$1,000. When participants borrow money from 401(k) plans, no immediate tax is involved. However, when participants pay off the loan, usually in 5 years, the loan payments are after-tax, and are typically made through payroll deductions.

### **Pre-retirement liquidity**

Moore and Turner (2021) suggested that retirement savings may be impacted by pre-retirement liquidity needs, and that the U.S. retirement public policy should be improved because pre-retirement liquidity can be shown to directly lead to the leakage from the pension system. Pre-retirement liquidity is a double-edged sword issue. First, inadequate liquidity or indebtedness would contribute to the insufficiency of the retirement savings balance, particularly when meeting an economic shock (Cavanagh & Sharpe, 2002; Moore & Turner, 2021; Ofili, 2017). People would have to take money either from their current accounts, or long-terms savings, such as retirement savings of 401(k) or IRA to ride out the economic shock. Theoretically, the higher the degree of illiquidity, the higher is the probability for stripping from the retirement saving. On the other hand, excessive liquidity also impacts retirement savings since people were more likely to overconsume and make irrational or over-optimistic decisions for their savings and retirement savings (Wertenbroch, Soman & Nunes, 2001; World Bank Group, 2019). Argento, Bryant & Sabelhaus (2015) identified that low-income families were more inclined to have an illiquidity issue and more likely to be led to early withdrawals for retirement savings when they experience economic shocks.

## THEORETICAL ASSUMPTIONS

Understanding the relative importance of the underlying mechanisms responsible for the relationships studied here is hampered by the lack of a sufficient comprehensive theory. Case and Deaton (2005) argue that it was extremely difficult to understand the relationships between health, education, income, wealth, and labor-force status without some guiding theoretical framework. Consequently, our variable selection was guided by a number of theories.

### **Behavioral Life-Cycle Theory**

Behavioral Life-Cycle Theory (Bernheim, Skinner & Weinberg, 2001; Biggs, 2017; Graham & Isaac, 2002; Shefrin & Thaler, 1988; Statman, 2017) is centered on the hypothesis that even people who want smooth spending during their entire life cycle find it difficult to balance needs for spending now and wants for saving for tomorrow. Behavioral life-cycle theory says that individuals reconcile these conflicts via personal devices and are helped by policies of government and employers. Personal devices include framing, mental accounting, and self-control rules that prohibit dips into other-than-designated accounts. Yet, these do not always work. Shefrin & Thaler (1988) found that faculty deciding whether to receive their salary in 9 versus 12 month payments fell into two distinct groups: 30 percent make the wealth-maximizing choice of pay cycle and 70 percent make the sub-optimal choice (in terms of wealth maximization), and give no weight to the economically relevant cost of their decision.

Public policies include such things as automatic enrollment into retirement plans, penalties for withdrawal from such plans, and mandatory Social Security, etc. Turner, Zhang, Hughes & Rajnes (2019) studied attitudes toward Social Security in Canada, Ireland, and the United States. In all three countries, with differing systems of financing and differing politics concerning the programs, surveys found a surprising degree of pessimism and lack of trust in social security programs. Although rhetoric in the United States about Social Security being “broken” may be part of the explanation there, that rhetoric was not present in Canada and Ireland. Employer policies include limits on retirement account withdrawal, loans, and required and shared contributions to retirement accounts.

Behavior Life Cycle Theory is designed to predict how consumers address their more complicated lifetime financial planning problems but makes no specific allowance for medical hardship which can disrupt all plans to smooth spending patterns regardless of personal self-control or government and employer constraints on retirement accounts.

Galama & Van Kippersluis (2019) developed an economic model to explain the observed disparities in health by social economic status (SES). In their model, lifestyle factors (preventive care, healthy and unhealthy consumption), working conditions (physical and psychosocial health stresses), living conditions (housing, neighborhood social environment), curative care and the constraining effect of health on work are mechanisms through which SES (endowed wealth, lifetime earnings and education) and health are related. The main mechanism through which lower SES translates into health is by increasing the marginal cost of and the demand for curative care. Further, as health declines with age, the demand for curative care increases. They suggest that

the effect of deteriorating health on investment in curative care shows that young individuals invest little in curative care, the middle-aged more, and the elderly the most. They did not measure medical hardship directly and did not explicitly include racial and gender disparities in health. Differences in SES between racial groups may account for most of the observed racial disparities in health. Just 12 percent of the working Americans reported that they took potential healthcare costs into their retirement planning (Harlow, 2015). Harlow and Brown (2017) opined that the health status of an individual was a pivotal factor when doing retirement-saving planning.

### **Financial Fragility**

Financial fragility refers to a financial status in which an individual is exposed to unaffordability risks, which differentiate with financial troubles and financial difficulties (Nicolini, 2016). Hasler, Lusardi & Oggero (2018) found that 36 percent of Americans were financially fragile, and they cannot cope with a \$2,000 unexpected need. Among this financially fragile population, 35 percent are Millennials, aged 18 to 35. Some middle-income households also faced the financial fragility issue; additionally, even those having full-time employment or solid income cannot be exempt from financial fragility (Hasler & Lusardi, 2019; Lin, Bumcrot, Ulicny, Mottola, Walsh, Ganem, Kieffer & Lusardi, 2019; Lusardi, 2019). We expect the extent of financial fragility to be an ever-increasing phenomenon in the near future.

Researchers have discussed the reasons that cause financial fragility, including a) inadequate assets (Fasianos, Godin, Kinsella & Wu, 2014; Hasler et al., 2018; Yilmazer & DeVaney, 2005); b) illiquidity (Allen & Gale, 2004; Aspachs, Goodhart, Tsomocos & Zicchino, 2007; Brunetti, Giarda & Torricelli, 2016; Jappelli, Pagano & Di Maggio, 2013), for example, households or individuals do not have sufficient savings to pay an unexpected expense, such as medical treatment or car repair; and c) indebtedness (Christelis, Jappelli, Paccagnella & Weber, 2009; Faruqui, 2008; Jappelli et al., 2013; Skiba & Tobacman, 2019). Indebtedness can come from a series of financial loans that people were struggling to repay such as escalating student loan debt (Domma & Giordano, 2012). These reasons were robust determinants of financial stress on households (Anderloni & Vandone, 2008; Del-Río & Young, 2005; Fasianos et al., 2014). People can feel psychological stress and anxiety even if they can still afford their bills because they are aware of potentially unforeseeable financial or medical crises (Lusardi et al., 2018; Nicolini, 2016). Moreover, when people become financially fragile, especially when having too much debt, they were more likely to carry their debt into retirement, thereby negatively impacting their retirement well-being (Lusardi, et al., 2018).

Financial fragility can be measured by the capability to cope with unexpected expenses or income shock (Lusardi, Schneider & Tufano, 2011). Some scholars used negative net worth to measure the probability of household financial fragility, namely, if the total debt outweighs financial assets that would be the threshold of financial fragility (Brown & Taylor, 2008). Jappelli et al. (2013) measured the sensitivity of household financial fragility to indebtedness and found there was a positive association between the two. Ghilarducci, Radpour & Webb (2019) estimated that 20 percent of the early withdrawals from retirement accounts is caused by unexpected expenses or income shock.

Morrison, Gupta, Olson, Cook & Keenan (2013) emphasized that risk heterogeneity was a determinant for financial fragility and claimed that an individual's pre-shock financial status significantly associated with his health shock possibility. Automobile accidents were one of the common health shocks; many scholars have discussed this impact (Doyle, 2005; Lenhart, 2019; Morrison et al., 2013). In 2010, more than 30,000 people died, and nearly 4 million people were injured from vehicular accidents in the United States. The economic cost totaled \$242 billion which included lost productivity, medical cost, litigation cost, and property cost (Blincoe, Miller, Zaloshnja & Lawrence, 2015). Dobkin et al. (2018) also found that health shock was the main contributor to adults' financial risk in the U.S. Interestingly, other scholars remarked that there was no correlation between self-reported health issues and the possibility of financial fragility (bankruptcy filing) when debt levels were controlled (Fay, Hurst & White, 2002).

## RESEARCH QUESTIONS

The literature supports the potential linkage between medical hardship and early withdrawals from retirement accounts. As outlined above, we have provided several theoretical rationales for why this may be present. Medical hardships include unpaid medical debt, unfilled prescription, and medical-care avoidance. While previous studies of early withdrawals usually consider only the leakage impact for the retirement security/readiness or compare the degree of medical hardship on insured or uninsured, the present study seeks to quantitatively describe the population that uses early retirement account withdrawals – specifically to determine any association with individuals suffering from a medical hardship. Building on the literature review we hypothesize that early retirement account withdrawals are associated with medical hardships and other socio-economic characteristics that traditionally are associated with lower healthcare access.

## METHOD

### Data Source

Analyses were conducted using data from the 2018 FINRA National Financial Capability Study (FINRA Investor Education Foundation, n.d.). The study was funded by the FINRA Investor Education Foundation and conducted by Applied Research and Consulting. The objectives of the study were to benchmark key indicators of financial capability and how they vary with demographic, behavioral, attitudinal, and financial literacy factors. The survey was conducted online from June through October 2018, among a national sample of 27,091 American Adults. Prior to 2018, the National Financial Capability Study was conducted in 2009, 2012, and 2015. Weights were calculated by Census distributions according to the American Community Survey. The entries were weighted to be representative of each state by age, gender, ethnicity, and education, and Census Division.

### Study Variables

All study variables used in this analysis came from questions from the 2018 FINRA National Financial Capability Study related to medical hardship, uninsured status, and early



hardship withdrawals from retirement accounts. We constructed three models: starting with healthcare independent variables only, then building to other individual-characteristics, then finally a complete model with the inclusion of personal finance variables. The initial model used Unpaid Medical Loans, Not Going to the Doctor, Not Filling a Prescription, and Health Insurance beneficial as independent variables driving the dependent variable of Retirement Account Early Withdrawal. All dependent and independent study variables were coded as [1: Yes; 2: No; 98: Don't Know; and 99: Prefer not to say]. Missing main independent and dependent variables (respondents that replied that they either "Don't Know" or "Prefer not to say" were counted at 846 for "Not going to the doctor due to cost", 820 for "Not filling a Prescription due to cost", 857 for "Having unpaid medical debt", and 109 for "Early Hardship Withdrawal from retirement account". This was out of a total respondent count of 27,091.

### **Statistical Analyses**

Initial analysis described the study sample across certain personal finance variables (as mentioned above). Bivariate differences were tested using Wald Chi Square Tests. Multivariate logistic regression analyses (PROC SURVEYLOGISTIC) were performed to determine individual and financial characteristics of retirement hardship withdrawals.

All analyses were conducted with SAS (SAS Institute Inc., Cary, North Carolina). Weights were provided by the National Financial Capability Study and were applied based on the probabilistic factors affecting the selection of the survey. PROC SURVEYLOGISTIC allows for the use of weights to account for the data's complex survey design. The weights incorporated: gender, age, ethnicity, and education.

## **RESULTS**

Table 1 presents the description of this study sample that reported medical hardships. Within group significant differences were measured using Wald-Chi Square Tests. The total number of respondents were 27,091. Among them, (a) those with unpaid medical debt account for 22.77%, (b) those that reported not going to the doctor due to cost account for 21.28%, and (c) those that reported not filling a prescription due to cost account for 16.86%.

<b>Table 1. Percentage of Respondents that Reported Medical Hardships</b>				
		Unpaid Medical Debt	Did not go to doctor due to cost	Did not fill a prescription due to cost
Overall (n=27,091)		22.77%	21.28%	16.86%
Sex	Male (n=13,253)	20.38%**	19.04%*	14.87%*
	Female (n=13,837)	<b>25.07%**</b>	<b>23.42%*</b>	<b>18.77%*</b>
Age	18-24 (n=3086)	22.86%*	<b>30.60%*</b>	<b>20.89%*</b>
	25-34 (n=5037)	<b>33.54%*</b>	<b>32.30%*</b>	<b>24.72%*</b>
	35-44 (n=4337)	<b>30.99%*</b>	<b>27.07%*</b>	<b>21.01%*</b>
	45-54 (n=4460)	<b>25.49%*</b>	<b>22.22%*</b>	<b>17.54%*</b>
	55-64 (n=4852)	17.86%*	15.15%*	12.15%*
	65+ (n=5315)	8.03%*	5.50%*	7.42%*
Ethnicity	White (n=19,281)	20.93%*	20.09%*	15.60%*
	Non-White (n=7809)	<b>27.34%*</b>	<b>24.21%*</b>	<b>19.99%*</b>
Education	No HS (n=747)	<b>32.39%*</b>	<b>27.52%*</b>	<b>24.76%*</b>
	HS Grad – Regular (n=5,277)	<b>24.63%*</b>	20.26%*	<b>16.34%*</b>
	HS Grad – GED (n=2073)	<b>28.73%*</b>	<b>24.01%*</b>	<b>19.98%*</b>
	Some College (n=7947)	<b>28.38%*</b>	<b>25.17%*</b>	<b>20.26%*</b>
	Associate’s Degree (n=3137)	<b>23.19%*</b>	<b>22.54%*</b>	<b>17.72%*</b>
	Bachelor’s Degree (n=4,947)	14.49%*	17.39%*	12.61%*
	Post-Grad Degree (n=2,960)	11.21%*	14.32%*	10.68%*
Marital Status	Married (n=14,100)	<b>21.55%</b>	18.81%	15.31%
	Single (n=8,443)	<b>23.90%</b>	<b>26.22%</b>	<b>19.14%</b>
	Separated (n=401)	<b>39.03%</b>	<b>28.71%</b>	<b>27.26%</b>
	Divorced (n=2,975)	<b>24.50%</b>	<b>20.93%</b>	<b>17.32%</b>
	Widowed (n=1,170)	19.47%	13.66%	14.35%
Income	< \$15,000 (n=3,248)	<b>27.47%*</b>	<b>26.14%*</b>	<b>21.78%*</b>
	\$15k-\$25k (n=2,901)	<b>31.74%*</b>	<b>26.89%*</b>	<b>22.52%*</b>
	\$25k-\$35k (n=3,006)	<b>28.61%*</b>	<b>26.82%*</b>	<b>21.42%*</b>
	\$35k-\$50k (n=3,983)	<b>25.38%*</b>	<b>24.40%*</b>	<b>18.71%*</b>
	\$50k-\$75k (n=5,256)	21.16%*	19.50%*	14.42%*
	\$75k-\$100k (n=3,783)	<b>23.18%*</b>	20.56%*	<b>16.90%*</b>
	\$100k-\$150k (n=3,255)	12.20%*	13.25%*	9.50%*
	>\$150k (n=1,656)	6.00%*	7.42%*	6.76%*
Employment	Self-Employed (n=2,024)	<b>26.10%**</b>	<b>27.24%*</b>	<b>20.72%*</b>
	Full-time for employer (n=10,825)	<b>25.10%**</b>	<b>23.87%*</b>	<b>17.43%*</b>
	Part Time for employer (n=2,406)	<b>24.73%**</b>	<b>25.29%*</b>	<b>18.04%*</b>
	Homemaker (n=2,037)	<b>30.97%**</b>	<b>26.32%*</b>	<b>21.56%*</b>
	Full time student (n=1,020)	17.28%**	<b>27.73%*</b>	16.39%*
	Sick, disabled, unable (n=1,486)	<b>39.59%**</b>	<b>26.50%*</b>	<b>28.82%*</b>
	Unemployed (n=1,332)	<b>28.64%**</b>	<b>29.16%*</b>	<b>22.95%*</b>
	Retired (n=5,957)	9.26%**	7.03%*	8.18%*
*= $p < .0001$				
**= $p < .05$				

We found the common individual characteristics of respondents who were burdened with unpaid medical bills, did not go to the doctor due to income, or did not fill a prescription due to cost that was above the average rate, were: female, age between 25 and 54, ethnicity non-white, education level associate degree or below, income level below \$100,000, employment status all types except full-time students and retirees.

Table 2 presents the description of this study sample that reported spending more than their income or having various debt. Among these variables were (a) those spent more than their income account for 18.83%, (b) those who routinely carry a credit card balance account for 46.48%, (c) those have auto loans account for 33.82%, (d) those who carried student loans account for 18.45%, and (e) those expressing that they had “too much debt” (with a score of 6 or 7 in a Likert scale of 1-7) account for 27.37%.

		Spending More than Income	Credit Card Balance	Auto Loan	Student Loan	Too much debt (6&7 on Likert Scale)
Overall (n=27,091)		18.83%	46.48%	33.82%	18.45%	27.37%
Sex	Male (n=13,253)	18.50%*	43.79%	<b>34.77%**</b>	17.70%**	25.83%**
	Female (n=13,837)	<b>19.15%*</b>	<b>49.26%</b>	32.91%**	<b>19.17%**</b>	<b>28.83%**</b>
Age	18-24 (n=3086)	<b>22.21%*</b>	36.07%*	20.58%*	<b>35.19%*</b>	22.75%*
	25-34 (n=5037)	<b>26.70%*</b>	<b>54.27%*</b>	<b>41.51%*</b>	<b>37.74%*</b>	<b>40.87%*</b>
	35-44 (n=4337)	<b>22.28%*</b>	<b>56.59%*</b>	<b>41.82%*</b>	<b>27.09%*</b>	<b>36.76%*</b>
	45-54 (n=4460)	17.82%*	<b>56.30%*</b>	<b>38.06%*</b>	11.90%*	<b>30.80%*</b>
	55-64 (n=4852)	13.89%*	44.14%*	32.13%*	4.67%*	20.51%*
	65+ (n=5315)	11.94%*	32.25%*	25.66%*	1.48%*	12.96%*
Ethnicity	White (n=19,281)	17.05%**	44.81%*	<b>34.41%*</b>	15.07%*	26.12%*
	Non-White (n=7809)	<b>23.23%**</b>	<b>50.97%*</b>	32.35%*	<b>26.81%*</b>	<b>30.47%*</b>
Education	No HS (n=747)	<b>25.09%*</b>	<b>48.28%*</b>	15.84%*	3.89%*	<b>27.43%*</b>
	HS Grad – Regular (n=5,277)	17.43%*	45.86%*	30.32%*	7.00%*	24.24%*
	HS Grad – GED (n=2073)	<b>19.69%*</b>	<b>48.33%*</b>	28.52%*	7.94%*	<b>28.05%*</b>
	Some College (n=7947)	<b>21.05%*</b>	<b>54.32%*</b>	<b>35.98%*</b>	<b>23.60%*</b>	<b>32.40%*</b>
	Associate’s Degree (n=3137)	<b>19.43%*</b>	<b>52.99%*</b>	<b>37.47%*</b>	<b>23.30%*</b>	<b>28.85%*</b>
	Bachelor’s Degree (n=4,947)	16.92%*	40.41%*	<b>35.52%*</b>	<b>23.01%*</b>	23.68%*
	Post-Grad Degree (n=2,960)	15.71%*	32.84%*	<b>35.81%*</b>	<b>23.34%*</b>	23.51%*
Marital Status	Married (n=14,100)	16.79%**	44.49%**	<b>43.27%**</b>	13.46%	25.23%
	Single (n=8,443)	<b>22.54%**</b>	<b>47.18%**</b>	23.10%**	<b>30.50%</b>	<b>30.67%</b>
	Separated (n=401)	<b>25.33%**</b>	<b>60.62%**</b>	28.07%**	<b>19.37%</b>	<b>38.64%</b>
	Divorced (n=2,975)	18.10%**	<b>55.41%**</b>	25.36%**	13.09%	<b>29.54%</b>
	Widowed (n=1,170)	16.21%**	43.58%**	20.74%**	4.97%	19.95%

Income	< \$15,000 (n=3,248)	<b>23.75%*</b>	45.25%*	9.92%*	<b>22.79%*</b>	<b>30.23%*</b>
	\$15k-\$25k (n=2,901)	<b>24.68%*</b>	<b>55.31%*</b>	17.29%*	<b>19.24%*</b>	<b>33.12%*</b>
	\$25k-35k (n=3,006)	<b>22.75%*</b>	<b>51.80%*</b>	27.40%*	<b>20.11%*</b>	<b>30.94%*</b>
	\$35k-\$50k (n=3,983)	<b>19.82%*</b>	<b>49.50%*</b>	<b>34.58%*</b>	<b>18.76%*</b>	<b>29.43%*</b>
	\$50k-\$75k (n=5,256)	16.87%*	<b>48.19%*</b>	<b>39.37%*</b>	17.66%*	25.99%*
	\$75k-\$100k (n=3,783)	17.99%*	<b>47.98%*</b>	<b>48.27%*</b>	<b>20.22%*</b>	<b>28.82%*</b>
	\$100k-\$150k (n=3,255)	13.16%*	39.49%*	<b>47.53%*</b>	14.97%*	21.10%*
	>\$150k (n=1,656)	8.69%*	29.68%*	<b>41.88%*</b>	10.10%*	13.61%*
Employment	Self-Employed (n=2,024)	<b>19.62%*</b>	<b>48.46%*</b>	30.85%*	<b>19.51%*</b>	<b>30.62%*</b>
	Full-time for employer (n=10,825)	<b>19.61%*</b>	<b>52.79%**</b>	<b>46.08%*</b>	<b>25.13%*</b>	<b>32.57%*</b>
	Part Time for employer (n=2,406)	<b>22.60%*</b>	45.24%**	29.66%*	<b>20.60%*</b>	<b>28.08%*</b>
	Homemaker (n=2,037)	<b>19.88%*</b>	<b>51.31%**</b>	<b>35.19%*</b>	15.71%*	<b>29.97%*</b>
	Full time student (n=1,020)	<b>21.82%*</b>	34.38%**	15.92%*	<b>49.20%*</b>	20.94%*
	Sick, disabled, unable (n=1,486)	<b>25.77%*</b>	<b>67.51%**</b>	19.76%*	12.44%*	<b>40.30%*</b>
	Unemployed (n=1,332)	<b>22.80%*</b>	<b>51.30%**</b>	13.41%*	<b>20.70%*</b>	<b>31.50%*</b>
	Retired (n=5,957)	12.12%*	31.71%**	24.90%*	1.76%*	12.57%*
*= $p < .0001$						
**= $p < .05$						

We found the common characteristics of the respondents who overspent their income were: gender female, age younger than 45, ethnicity non-white, education level neither high school nor high school GED, married status either single or separated, income level \$50,000 or below, employment status non-retired.

The common characteristics of the respondents who had a credit card balance that was above the average rate were: age between 25 and 54, ethnicity non-white, education level below high school, high school GED, some college and associate degree, married status either single, separated, or divorced, income level between \$15,000 and \$75,000, employment status self-employed, full-time employed, homemaker, sick, disabled, unable to work, or jobless.

The common individual characteristics of the respondents who took on an auto loan that was above the average rate were: age between 25 and 54, ethnicity white, education level some college or better, married status married, income level \$35,000 or above, employment status full-time employment and homemaker.

The common individual characteristics of the respondents who incurred a student loan that was above the average rate were: gender female, age between 18 and 44, ethnicity non-white, education level some college or better, income level in two ranges: between \$15,000 and \$50,000, and between \$75,000 and \$100,000, employment status including self-employed, full-time or part-time employment, full-time students, or jobless.

The common individual characteristics of the respondents who had heavy debts that were above the average rate were: female, age between 25 and 54, ethnicity non-white, education level

high school GED, some college, or associate degree, income level below \$50,000, employment status including all types except full-time students and retirees.

Overall (n=27,091)		19.88%
Sex	Male (n=13,253)	19.11%
	Female (n=13,837)	<b>20.62%</b>
Age	18-24 (n=3086)	<b>25.99%*</b>
	25-34 (n=5037)	<b>30.44%*</b>
	35-44 (n=4337)	<b>24.66%*</b>
	45-54 (n=4460)	19.70%*
	55-64 (n=4852)	14.82%*
	65+ (n=5315)	7.19%*
Ethnicity	White (n=19,281)	17.26%*
	Non-White (n=7809)	<b>26.34%*</b>
Education	No HS (n=747)	<b>29.12%*</b>
	HS Grad – Regular (n=5,277)	<b>20.46%*</b>
	HS Grad – GED (n=2073)	<b>23.27%*</b>
	Some College (n=7947)	<b>23.76%*</b>
	Associate’s Degree (n=3137)	19.05%*
	Bachelor’s Degree (n=4,947)	14.61%*
	Post-Grad Degree (n=2,960)	13.39%*
Marital Status	Married (n=14,100)	17.18%
	Single (n=8,443)	<b>25.02%</b>
	Separated (n=401)	<b>30.95%</b>
	Divorced (n=2,975)	18.41%
	Widowed (n=1,170)	15.23%
Income	< \$15,000 (n=3,248)	<b>29.38%*</b>
	\$15k-\$25k (n=2,901)	<b>28.12%*</b>
	\$25k-35k (n=3,006)	<b>22.25%*</b>
	\$35k-\$50k (n=3,983)	<b>20.85%*</b>
	\$50k-\$75k (n=5,256)	16.01%*
	\$75k-\$100k (n=3,783)	<b>19.23%*</b>
	\$100k-\$150k (n=3,255)	12.55%*
	>\$150k (n=1,656)	8.33%*
Employment	Self-Employed (n=2,024)	<b>30.02%</b>
	Full-time for employer (n=10,825)	<b>19.57%</b>
	Part Time for employer (n=2,406)	<b>26.89%</b>
	Homemaker (n=2,037)	<b>22.68%</b>
	Full time student (n=1,020)	<b>23.50%</b>
	Sick, disabled, unable (n=1,486)	<b>21.95%</b>
	Unemployed (n=1,332)	<b>38.83%</b>
	Retired (n=5,957)	7.84%
*= $p < .0001$		
**= $p < .05$		

Table 3 presents the description of this study sample that experienced a drop in income over the past 12 months; those with an income drop in the last year accounted for 19.88%.

The common individual characteristics of the respondents who had their salaries reduced during the last year with above average rates were: age 44 or younger, ethnicity non-white, education level some college or below, income level below \$50,000.

Adjusted odds ratios and their 95% confidence intervals for taking a Hardship Retirement Withdrawal are represented in Table 4-6. Odds ratios greater than 1 (with corresponding confidence intervals also greater than 1) are interpreted as significantly more likely to take an early retirement hardship withdrawal. Similarly, odds ratios less than 1 (with corresponding confidence intervals also less than 1) are interpreted as significantly less likely to take an early retirement hardship withdrawal. Any variable with a confidence interval that crosses over “1” (above AND below) does not have a significant association. Tables 4-6 show three models: starting with healthcare independent variables only, then building to other individual-characteristics, then finally a complete model with the inclusion of personal finance variables.

<b>Table 4. Adjusted Odds of Retirement Early Hardship Withdrawal by Medical Factors Only</b>			
<b>Factor Group</b>	<b>Variable</b>	<b>Label</b>	<b>Retirement Hardship Withdrawal</b>
	Unpaid Medical Loans	Yes	<b>8.838 (7.483 - 10.438)</b>
	Not Going to the Doctor	Due to Cost	<b>2.557 (2.102 - 3.110)</b>
	Not Filling a Prescription	Due to Cost	<b>3.435 (2.816 - 4.188)</b>
	Health Insurance	No	0.821 (0.534 - 1.263)

Across all three models (Tables 4-6), starting with Model 1 (Table 4), having unpaid medical debt, not going to the doctor due to cost, not filling a prescription due to cost had higher odds of making retirement hardship withdrawals as opposed to their counterparts.

<b>Table 5. Adjusted Odds of Retirement Early Hardship Withdrawal by Medical and Socio-Economic Factors</b>			
<b>Factor Group</b>	<b>Variable</b>	<b>Label</b>	
	Unpaid Medical Loans	Yes	<b>7.086 (5.903 - 8.504)</b>
	Not Going to the Doctor	Due to Cost	<b>2.114 (1.727 - 2.588)</b>
	Not Filling a Prescription	Due to Cost	<b>3.074 (2.504 - 3.773)</b>
	Health Insurance	No	0.751 (0.504 - 1.118)
Individual-Level	Sex	Male	<b>2.399 (2.013 - 2.858)</b>
	Age	25-34	<b>1.745 (1.232 - 2.472)</b>
		35-44	0.813 (0.566-1.168)
		45-54	<b>0.467 (0.312 - 0.700)</b>
		55-64	<b>0.482 (0.318 - 0.730)</b>
		65+	<b>0.485 (0.312 - 0.752)</b>
	Ethnicity	Non-White	<b>1.513 (1.265 - 1.810)</b>
	Education	HS Grad – Regular	0.998 (0.446 - 2.230)
		HS Grad – GED	0.975 (0.415 - 2.291)
		Some College	1.018 (0.461 - 2.248)
		Associate’s Degree	0.646 (0.283 - 1.477)
		Bachelor’s Degree	0.817 (0.368 - 1.817)
		Post-Grad Degree	1.041 (0.466 - 2.326)
		Marital Status	Married
	Separated		1.848 (0.845 - 4.043)
Divorced	0.960 (0.652 - 1.413)		
Widowed	0.933 (0.412 - 2.115)		

In Model 2 (Table 5), while adjusted for individual-characteristics only, being male, being 25-34 years of age, and being of Non-White Ethnicity had higher odds of retirement hardship withdrawals as compared to their referent group counterparts. Conversely, being 45 years of age or older had lower odds of retirement hardship withdrawals as compared to their referent group counterparts.

<b>Table 6. Adjusted Odds of Retirement Early Hardship Withdrawal by all Study Variables</b>			
<b>Factor Group</b>	<b>Variable</b>	<b>Label</b>	
	Unpaid Medical Loans	Yes	<b>3.119 (2.525 - 3.853)</b>
	Not Going to the Doctor	Due to Cost	<b>1.546 (1.235 - 1.936)</b>
	Not Filling a Prescription	Due to Cost	<b>2.126 (1.696 - 2.666)</b>
	Health Insurance	No	0.638 (0.418 - 0.974)
Individual-Level	Sex	Male	<b>1.846 (1.515 - 2.250)</b>
	Age	25-34	1.368 (0.912 - 2.051)
		35-44	0.792 (0.522 - 1.203)
		45-54	0.633 (0.396 - 1.012)
		55-64	0.943 (0.582 - 1.528)
		65+	1.166 (0.660 - 2.058)
	Ethnicity	Non-White	<b>1.257 (1.027 - 1.540)</b>
	Education	HS Grad – Regular	1.655 (0.708 - 3.870)
		HS Grad – GED	1.497 (0.586 - 3.825)
		Some College	1.374 (0.590 - 3.201)
		Associate’s Degree	1.069 (0.447 - 2.560)
		Bachelor’s Degree	1.395 (0.597 - 3.260)
		Post-Grad Degree	1.501 (0.635 - 3.546)
		Marital Status	Married
	Separated		1.934 (0.796 - 4.699)
Divorced	0.976 (0.647 - 1.473)		
Widowed	1.173 (0.569 - 2.416)		
Financial Factors	“I have too much debt”	2	1.527 (0.984 - 2.370)
		3	<b>1.757 (1.079 - 2.863)</b>
		4 – Neutral	<b>1.814 (1.200 - 2.741)</b>



		5	<b>2.064 (1.356 - 3.140)</b>
		6	<b>2.979 (1.984 - 4.472)</b>
		7 – Strongly Agree	<b>3.735 (2.610 - 5.344)</b>
	Household Income	\$15,000-\$24,999	1.067 (0.556 - 2.047)
		\$25,000 - \$34,999	0.830 (0.434 - 1.586)
		\$35,000 - \$49,999	0.580 (0.315 - 1.067)
		\$50,000 - \$74,999	0.783 (0.436 - 1.405)
		\$75,000 - \$99,999	1.211 (0.680 - 2.158)
		\$100,000 - \$149,999	0.945 (0.521 - 1.713)
		\$150,000 +	0.871 (0.453 - 1.675)
	Employment	Self employed	<b>0.590 (0.434 - 0.801)</b>
		Part time for employer	0.729 (0.463 - 1.150)
		Homemaker	0.557 (0.309 - 1.004)
		Full time student	0.863 (0.454 - 1.643)
		Permanently sick disabled	0.761 (0.366 - 1.581)
		Unemployed	0.989 (0.456 - 2.147)
		retired	<b>0.509 (0.318 - 0.817)</b>
	Spending and Income	Spending > income	<b>1.521 (1.209 - 1.913)</b>
		Spending = income	1.036 (0.830 - 1.294)
	Income Drop	Yes	0.995 (0.986 - 1.005)
	Credit Card Balance	Not carrying a CC balance	1.156 (0.929 - 1.438)
	Auto Loan	Yes	<b>1.589 (1.291 - 1.955)</b>
	Student Loans	Yes	<b>1.621 (1.312 - 2.002)</b>
	Predatory Loans	Yes	<b>4.727 (3.869 - 5.777)</b>

Model 3 (Table 6) incorporated healthcare, individual, and personal finance-related characteristics in measuring retirement hardship withdrawals. As was the case in Models 1 and 2,

having unpaid medical debt, not going to the doctor due to cost, not filling a prescription due to cost, being male, and being of Non-White Ethnicity all had higher odds of retirement hardship withdrawals as compared to their referent groups. Adding to these variables, Model 3 resulted in higher debt loads, spending more than income, having an auto loan, having a student loan, and using predatory loans all were associated with higher odds of retirement hardship withdrawals.

## DISCUSSION

More than 50 percent of states are dedicating to establishing programs to address the deficiency of retirement saving in the US (Biggs, 2019). Retirement savings are important because they provide more freedom and control over our lifestyle and life quality (Mayer, Zick & Marsden 2011; Schnaubelt, 2018). With the decreasing level of pre-retirement liquidity in recent years (Moore & Turner, 2021), especially with the current COVID-19 crisis, the leakage from retirement savings has substantially worsened.

The relationship between medical hardship and retirement hardship withdrawals is a relatively unexplored research area. The importance of this association goes beyond current healthcare-financial troubles into longer-term retirement readiness issues. We demonstrate that people who are financially fragile and unable to cope with unexpected expenses caused by medical hardship become weaker towards retirement readiness. Financial fragility, especially indebtedness, is a driver for retirement hardship withdrawals and also impact retirement readiness eventually.

Behavioral life cycle theory assumes that people make current financial decisions, such as work, consumption, and savings, in terms of their predication or assumptions about their individual future financial status (Statman, 2017). Life cycle theory suggests that people should be more rational and realistic in moderating their financial decisions when they experience economic shocks (Carroll, 1997). However, the general income growth often experienced in the earlier time span of one's life would inevitably incite the misconception that income can only go up monotonically as a function of time, but in reality, real earning reaches a peak followed by earning decline for a decade before retirement. The variation of one's real earning across the life cycle can be detrimental for retirement readiness (Tharp & Kitces, 2018), but such a variation from misplaced expectation also can influence retirement readiness. Therefore, current medical hardship coupling to this misplaced expectation (misprediction for the future) may lead people to "borrow" future assets to sacrifice their future living standard to address their current financial plight. To address this issue, we support the idea of encouraging people to start contributing to retirement saving as earlier as possible (Dahlheim-Englund, Carlsson, Nyström, Gillsjö, Eriksson & Palmér, 2019). We also agree with the argument of rethinking the pros and cons of the current pre-retirement liquidity policy (Moore & Turner, 2021). A recent study found that if people begin and then uninterruptedly contribute to their retirement saving starting at age 25, their retirement saving account would be quarter of million dollars higher than the current average retirement saving account balance (Biggs, 2019). This highlights the importance of not only starting to save early for retirement, but also to not take early withdrawals.

The present study also may have implications in public policy. By allowing individuals to fall into financial hardship from healthcare needs, and to address those healthcare needs by either borrowing against or withdrawing from their own retirement savings, they suffer in the long term by lower retirement readiness. Compounding this issue is the 10-percent early withdrawal penalty (before age 59½). Applying this to the current COVID-19 pandemic, many people who have been laid off (due to COVID-19) may have a need to withdraw their retirement funds early to meet medical needs due to lack of employer-sponsored health insurance. This 10-percent penalty for early withdrawals is waived for coronavirus-related distributions. Medicaid and other safety net systems may be put under more strain due to increased expectation and demand. Future studies should focus in these areas.

While the cause of the healthcare-related financial independent variables (unpaid medical debt, not going to the doctor due to cost, and not filling a prescription due to cost) cannot fully be attained with this data, their significant positive association with retirement hardship withdrawals is worrisome. By being more likely to take an early retirement hardship withdrawal, these individuals not only suffer from lack of health services at present, but also will have a lower likelihood to be retirement-ready due to lack of retirement savings. It is yet to be seen how the COVID-19 crisis will affect these relationships, but we expect to see both situations worsen in the future.

### **LIMITATIONS**

The present study had several limitations. First, while the 2018 NFCS data surveyed over 27,000 people, the survey was a cross-sectional research design. Therefore, no causal relationships should be inferred from this study. Moreover, while the sampling design attempts to reduce bias, it is possible that the sample may be biased in some unknown way. While causal relationships generally offer more and stronger insights, we believe that the association with this study offers significant preliminary steps to future research related to the linkage between the medical hardship and retirement readiness.

A second limitation to this study is the lack of information regarding why individuals have unpaid medical debt. Due to data limitations (cross-sectional design and limited health-related survey questions), we cannot attain the reason why the survey respondent replied affirmatively towards medical debt, not going to the doctor due to cost, and not filling a prescription due to cost. We also do not know (due to data limitations) the medical debt balance or how long a person has neglected medical care due to cost. Further inquiry is warranted to investigate effects of these longitudinal issues.

### **CONCLUSION**

The purpose of the present study was to document the associated characteristics of people who take early hardship withdrawals from their retirement accounts. We were particularly interested in the association between early hardship withdrawals and medical hardships (unpaid medical debt, not going to a doctor due to cost, and not filling a prescription due to cost). We

found that having unpaid medical debt, not going to the doctor due to cost, not filling a prescription due to cost had higher odds of making retirement hardship withdrawals as opposed to their counterparts, even while controlling across multiple personal finance and socio-related variables.

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