

**Financial Fraud among Older Americans:  
Evidence and Implications**

Marguerite DeLiema, Martha Deevy, Annamaria Lusardi, and Olivia S. Mitchell

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**Marguerite DeLiema, PhD** (*Corresponding Author*)

Stanford Center on Longevity  
579 Serra Mall  
Stanford, CA 94305  
Tel: (650) 721-4623  
[deliema@stanford.edu](mailto:deliema@stanford.edu)

**Martha Deevy, MBA**

Stanford Center on Longevity  
579 Serra Mall  
Stanford, CA 94305  
Tel: (415) 794-1328  
[mdeevy@stanford.edu](mailto:mdeevy@stanford.edu)

**Annamaria Lusardi, PhD**

Denit Trust Chair of Economics and Accountancy  
The George Washington University School of Business  
Duquès Hall, Suite 450E, 2201 G Street, NW  
Washington, D.C. 20052  
Tel: (202) 994-8410  
[alusardi@gwu.edu](mailto:alusardi@gwu.edu)

**Olivia S. Mitchell, PhD**

IFEBP Professor of Insurance/Risk Management & Business Economics/Policy  
The Wharton School of the University of Pennsylvania  
3620 Locust Walk, Steinberg Hall-Dietrich Hall  
Philadelphia, PA 19104  
Tel: (215) 898-0424  
[mitchelo@wharton.upenn.edu](mailto:mitchelo@wharton.upenn.edu)

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## **Abstract**

**Objectives:** The consequences of poor financial capability at older ages are serious and include making mistakes with credit, spending retirement assets too quickly, and being defrauded by financial predators. Because older persons are at or past the peak of their wealth accumulation, they are often the targets of fraud.

**Methods:** Our project analyzes a module we developed and fielded on persons age 50+ in the 2016 Health and Retirement Study (HRS). Using this dataset, we evaluated the incidence and prospective risk factors (measured in 2010) for investment fraud and prize/lottery fraud using logistic regression (N=1,220).

**Results:** Relatively few HRS respondents mentioned any single form of fraud over the prior five years, but 5.0% reported at least one form of investment fraud and 4.4% recounted prize/lottery fraud. Greater wealth (non-housing) was associated with investment fraud, whereas lower housing wealth and symptoms of depression were associated with prize/lottery fraud. Hispanics were significantly less likely to report either type of fraud. Other suspected risk factors—low social integration and financial literacy—were not significant.

**Discussion:** Fraud is a complex phenomenon and no single factor uniquely predicts victimization across different types, even within the category of investment fraud. Prevention programs should educate consumers about various types of fraud and increase awareness among financial services professionals.

**Keywords:** investment fraud, lottery scam, financial literacy, health and retirement study

The greying of the U.S. population is ushering in a growing need for assistance with key financial decisions. The consequences of poor financial literacy and capability at older ages are serious (see Agarwal et al., 2009; Karp & Wilson, 2011; Lusardi, Mitchell, & Curto, 2014), particularly when people make mistakes with credit, draw down retirement assets too quickly, and are victims of financial mistreatment. Fraud and financial exploitation are terms sometimes used interchangeably, but they are distinct in that perpetrators of financial exploitation occupy positions of trust and are typically the victims' relatives, friends, caregivers, and neighbors. Fraud is committed by predatory strangers and involves an act of deception using a false promise or a threat (DeLiema, 2018). Older adults may be disproportionately targeted by fraud (Kieffer & Mottola, 2017) because of assumptions that they are more susceptible due to cognitive impairment and social isolation (Ebner et al., 2018; Judges et al., 2017; James, Boyle, & Bennett, 2014).

Although fraud takes many forms, this paper focuses on two schemes that frequently target older people: investment fraud and prize/lottery fraud. In investment fraud, a target is solicited to invest in an opportunity where earnings are grossly misrepresented or the investment is nonexistent. Promises often involve speculative, unregistered products like oil and gas exploration, gold coins, and real estate, and perpetrators use dubious methods such as cold-calling and free meal investment seminars to attract investors. Solicitations may spread through affinity networks as early investors are encouraged to recruit others in their social groups. In bogus prize and lottery scams, targets are told they won a lottery, a sweepstakes, or a prize, but to claim their winnings they must first make advance payments to cover fictitious fees and taxes.

In 2006, the Consumer Fraud Research Group conducted a study profiling lottery scam and investment fraud victims; in 2011, the AARP Foundation conducted a follow-up study comparing investment fraud and lottery scam victims age 50+ to the general population of the same age.

Collectively, the studies revealed that, compared to the general adult population, lottery scam victims were more likely to be single, female, less educated, have poor financial literacy and low income; whereas investment fraud victims were more likely to be male, better educated, and have high financial literacy and income. They concluded that not only do lottery and investment fraud victims differ from non-victims, they also differ from one another.

The victims in these profiling studies were recruited from lists of independently verified fraud victims compiled by law enforcement so they differ from randomly selected Americans who are asked to self-report victimization. Yet prior victim profiling studies on investment fraud (AARP, 2017; Kieffer & Mottola, 2016) and national prevalence surveys that cover multiple fraud types (e.g., Anderson, 2013) are cross-sectional, and these have been unable to differentiate between the predictors and outcomes of fraud, such as poor emotional well-being or financial problems.

Using an experimental module in the 2016 Health and Retirement Study (HRS) that we designed, we evaluated older people's exposure to investment fraud and prize/lottery fraud in the previous 5 years using a nationally representative sample of Americans. We tested the effects of financial literacy, self-rated financial knowledge, depression, and social integration on risk of victimization, controlling for demographic characteristics, cognitive performance, and physical and functional health, all measured prospectively in 2010 (before fraud).

## **Background**

Despite increasing media attention regarding the threat of consumer fraud targeting older people, researchers have made limited progress in identifying at-risk groups for tailored prevention and intervention programs (Deevy, Lucich, & Beals, 2012). One challenge has been inconsistent

findings regarding how age, socioeconomic status, financial sophistication, and other factors relate to fraud susceptibility, as victim profiles tend to vary by fraud type. This suggests that researchers should distinguish fraud types, yet the HRS “Leave Behind” questionnaires asked respondents only one broad question—“Have you been a victim of fraud in the past five years?” (yes/no)—without defining fraud or specifying any particular scam type. Between five and six percent of respondents indicated they were victims across the three waves the question was asked (DeLiema et al., 2017), fewer than in a national telephone survey conducted by the Federal Trade Commission (FTC) that covered multiple fraud subtypes and found prior-year prevalence rates of 6.5% to 14.3% among adults aged 45 and older, with prevalence rates decreasing with age (Anderson, 2013). A limitation of that survey, as true in most fraud victimization studies, is that those data were cross-sectional. By contrast, the HRS data are collected every two years, allowing researchers to analyze the health, social, emotional, and financial antecedents of fraud.

Financial literacy is a debated risk factor for scam victimization. The common assumption is that low financial literacy increases vulnerability (Wood & Litchenberg, 2017), but some studies that examined victimization by type of fraud found that *high* financial literacy was associated with investment fraud (Consumer Fraud Research Group, 2006; Keiffer & Mottola, 2017), and *low* financial literacy was associated with sweepstakes/lottery fraud (Consumer Fraud Research Group, 2006). Other researchers found that low financial literacy was associated with general susceptibility to scams, but they did not examine actual reports of victimization or include different types of scams (James, Boyle, & Bennett, 2014). The link between financial literacy and fraud victimization has never been tested in a nationally representative survey measuring multiple types of fraud.

Prior studies have also indicated an increased risk of fraud among those who are emotionally and socially isolated. Using the single fraud item in the HRS Leave-Behind questionnaires, Lichtenberg and colleagues (2013; 2016) reported that fraud victimization was predicted by higher levels of depression and low social-needs fulfillment. James et al. (2014) found that perceived social support was negatively associated with scam susceptibility, and in a small sample of older telemarketing fraud victims, Alves and Wilson (2008) found that victims reported high levels of loneliness. In an analysis of investigative case files, DeLiema (2018) reported that social isolation was both a risk factor and a tactic used by perpetrators to exert control over their victims. Examining the impact of social and emotional characteristics on vulnerability to different types of fraud in a prospective longitudinal sample is needed to support prior findings.

We consulted with fraud experts to design a module in the 2016 HRS on investment and prize/lottery fraud to determine the past 5-year prevalence and determinants of these two scam types that frequently target older Americans. We predicted that higher financial literacy would be positively associated with investment fraud and negatively associated with prize/lottery fraud based on prior findings using samples of known victims. We also predicted that lower levels of social integration and greater depression in 2010 will increase the risk of subsequent victimization by both fraud types, controlling on baseline sociodemographic, health, and cognitive factors.

## **Methods**

Our HRS module (see Appendix A) was administered to 1,268 randomly selected survey participants age 50+ in the 2016 HRS survey. Only respondents who were enrolled in the HRS in 2010 (pre-fraud) were included in the analyses (n=1,220). The module was administered both by



phone (46.8%) and face-to-face (53.2%). Detailed information on the HRS is available at <http://hrsonline.isr.umich.edu>.

In prior research, analysts framing questions about fraud in a *criminal* context found that it significantly reduced disclosure among women and older adults (Beals et al., 2015). Therefore, unlike the HRS Leave-Behind questionnaires that asked respondents to identify themselves as fraud victims, our module queried everyone about specific types of financial decisions and experiences often equivalent to fraud (see also FINRA, 2013). For example, investment fraud was measured using four items capturing risky investments and solicitation methods—e.g., penny stocks/oil and gas exploration, free meal seminars, friend/relative recommendation, unknown callers—and one general “catch-all” item that asked whether the respondent (or the respondent’s spouse/partner) put money into any type of fraudulent investment, and whether it occurred in the past five years. Those who replied “yes” to any of these five items were classified as *investment fraud victims*. Respondents who paid money to someone in order to obtain supposed lottery winnings or a prize (e.g., money, free vacation, product or service) were classified as *prize/lottery fraud victims*. Relatively more items were needed to assess investment fraud than prize/lottery fraud due to the multiple pathways through which people are solicited—at free meal investment seminars, by phone, through affinity networks, etc., as well as the diversity of investment products that are offered.

In addition to asking about prize/lottery and investment fraud, the module asked respondents to report if someone used or attempted to use an existing account, such as a credit or debit card, checking, savings, telephone, online, or insurance account, without their permission in the past five years. This measure of account misuse may include instances of elder financial

exploitation by perpetrators close to the respondents, as well as identity theft by unknown strangers. As such, it was not included as a dependent variable in the current study.

The HRS module also included the “Big Three” financial literacy questions from Lusardi and Mitchell (2014) and respondents were scored based on their correct number of answers (range = 0-3). Self-rated financial knowledge was reported on a scale of 1-7, with 7 being the most confident.

The core HRS surveys include no direct measure of social isolation or loneliness. Therefore, consistent with Ertel, Glymour, and Berkman (2008), we created a composite variable indicative of “social integration”. One point was assigned for each domain of social activity measured in 2010 (range 0-5): being married, participating in volunteer activities at least one hour in the previous year, weekly or more frequent contact with parents, weekly or more frequent contact with children, and getting together with neighbors to chat or for social visits weekly or more often. We also examined the risk of depression on fraud victimization using CES-D scores (range 0-8) from 2010.

We used weighted multivariable logistic regression to examine the risk factors for each fraud subtype. Some participants did not respond to every fraud question in the module, so sample sizes vary slightly across regression models. Controls include age, sex, race/ethnicity, years of education, cognitive functioning, self-reported health status, owning stocks and mutual funds outside of employer-sponsored retirement accounts, annuities, and IRAs, and net housing as well as net non-housing wealth. Net non-housing wealth includes the value of all stocks, mutual funds, investment trusts, checking, savings, money market accounts, CDs, government savings bonds, Treasury bills, bonds, bond funds, and all other savings minus all debt. The cognitive functioning measure—the Telephone Interview for Cognitive Status (TICS)—is a summative index of

performance (range 0-27) on immediate and delayed word recall tasks, serial 7s test, counting backwards, naming tasks, and vocabulary questions (see Clair et al., 2011 and Fisher et al., 2017). Because being married and contact with children are included in the measure of social integration, marital status and number of children were not included as separate controls in the regression models. Aside from financial literacy and self-rated financial knowledge questions asked in our module, risk factors and controls were collected as part of the 2010 core HRS survey which predated the reported incidents of fraud.

## **Results**

### *Descriptive Statistics*

Table 1 reports descriptive statistics. On average, respondents were correct on 2.2 out of three financial literacy questions. Mean self-rated financial knowledge was 5.0 of 7, indicating a fair amount of self-confidence. Respondents' average age was 62.7; 43.8% were male; 82.8% were White, and 7.8% Hispanic. Average educational attainment was 13.3 years. Mean non-housing net wealth was \$176,996, and total housing wealth was \$169,323. Eighty percent reported their physical health was good to excellent and the average cognition score was 23.9 of a possible 27 points. Thirty percent owned stocks and/or mutual funds outside of their retirement accounts. Average social integration score was 2.6 of 5, and few reported symptoms of depression (average was 1.2 out of 8).

Table 2 presents evidence on fraud prevalence in this older population. More than four percent of respondents reported prize/lottery fraud victimization in the past five years. Though each specific form of investment fraud is rare, 5.0% of the respondents indicated that they had made one fraudulent investment in the past five years: 2.8% had invested after a free meal seminar,

0.8% had invested in response to a phone or email solicitation from an unknown person, 1.1% invested in a penny stock or oil-and-gas deal, and 1.1% purchased a fraudulent investment in the past five years (“catch all” item). Only 0.3% reported having bought what turned out to be a fraudulent investment based on a relative’s recommendation. Polyvictimization was rare: Only 12 people reported more than one type of investment fraud, and 13 respondents reported prize/lottery fraud in addition to one or more forms of investment fraud.

### ***Factors Associated with Fraud Victimization***

Table 3 shows that few variables were statistically significant. Financial literacy was positively associated with investing based on a free meal seminar, but not with any other form of investment fraud. It was also not negatively associated with prize/lottery fraud, as predicted. Self-rated financial knowledge was also insignificant. As expected, depression in 2010 was associated with subsequent prize/lottery fraud victimization, yet it was not a predictor of subsequent investment fraud victimization. Social integration was unrelated to all subtypes, such that greater levels of social interaction in 2010 did not protect people from experiencing fraud in the following years.

Among the variables included as controls, there was no association between victimization and age, sex, education, self-rated health, cognitive functioning, or ownership of stocks/mutual funds outside of retirement accounts. The only consistent covariate was that Hispanics were significantly less likely to have reported victimization by investment fraud (any) and prize/lottery fraud. This relationship persisted even after controlling for ownership of non-retirement stocks and/or mutual funds.

*Higher* non-housing wealth in 2010 was associated with being subject to investment fraud (any), and *lower* housing wealth in 2010 was associated with exposure to prize/lottery fraud.

Highly educated White respondents were more likely to report that they put money into a fraudulent investment in the past five years (“catch-all” item), but education and race were not significantly associated with other forms of investment fraud. Indeed, this analysis underscores that few readily-identifiable risk factors are predictive of major subtypes of fraud. (Additional robustness analyses in Appendix B confirm this conclusion.)

## **Discussion**

There has been much recent debate about whether older Americans make well-informed financial decisions and whether they face higher fraud risk than their prime-age counterparts. Prior to this study, there were no studies using the HRS’ rigorous sampling approach to determine the prevalence and predictors of investment fraud and prize/lottery fraud. Our results indicate that relatively few HRS respondents reported experiencing any specific type of investment fraud in the past five years, but 5.0% did report *at least one form* of investment fraud, while 4.4% paid money because they believed they needed to in order to claim a prize or lottery. Overall prevalence (8.6%) was slightly higher than in the HRS Leave Behind questionnaires that only included a single fraud item without offering specific examples of fraudulent behavior (DeLiema et al., 2017). Those lower rates resulted despite the fact that respondents could have reported on a broader range of fraud experiences, such as romance scams, consumer products and services fraud, bogus charities, and many other scam types not included in the module. This suggests that informing people about how one defines fraud is important for obtaining a more precise estimate of victimization.

Similar to Lichtenberg et al. (2013; 2016), we found that depression at baseline was significantly associated with victimization, but this was only true for prize/lottery fraud. Perhaps those who feel depressed are drawn to emotional messages stating they won a large sum of money

or a prize. They may seek opportunities to alleviate negative feelings by engaging in behaviors that promise a positive outcome, even if it means paying a little upfront. Aside from depression, we did not replicate prior findings that used the single item in the Leave-Behind questionnaires to predict fraud victimization (DeLiema, 2017; Lichtenberg et al. 2013; 2016). For example, there was no association between being younger and reporting any of the frauds included in the 2016 module.

In general, few readily-identifiable factors were associated with victimization in the age 50 and older population. Neither financial literacy nor self-reported financial knowledge were consistently and significantly associated with any key outcome, nor were housing and other forms of wealth, education, and race. This is similar to a recent study by Wood and colleagues (2018) where no demographic indicators were associated with the intention to respond to a scam solicitation. We did find that respondents with more non-housing wealth were more likely to report investment fraud, and that respondents with less housing wealth were more likely to report prize/lottery fraud. While these relationships were in the expected directions—investment fraud victims may have had more assets to invest and prize/lottery fraud victims may have been looking to improve their financial situations—it is puzzling that housing wealth was unrelated to investment fraud, and that non-housing wealth was unrelated to prize/lottery fraud. These findings should be treated with caution given that the reported fraud occurred sometime between 2011 and 2016, whereas wealth estimates were drawn from the 2010 survey. Housing and non-housing wealth fluctuated widely following the 2008 financial crisis, and a respondent’s financial situation in 2010 may have differed from the year s/he experienced fraud. Having a snapshot of each respondent’s financial situation exactly prior to when fraud occurred would lead to more accurate conclusions.

An unexpected finding was that Hispanic respondents were significantly less likely to report victimization. We examined whether this was driven by lack of exposure to investment schemes given their lower rate of stock market participation in general (Hong et al. 2004), by controlling for whether the respondent owned shares of stocks/mutual funds outside of an employer-sponsored retirement plan, annuity, or IRA. The negative association persisted even when this variable was included in the models. It is possible that Hispanic respondents are buffered from fraud attempts by being more deeply embedded in protective family networks compared to non-Hispanic older adults, although social integration was not a significant protective factor in this study overall. Because relatively few Hispanic respondents were included in the module (7.8%), and none reported victimization in three of the investment fraud sub-types, results should be interpreted with caution and be tested in a larger sample. Another interpretation is that Hispanic older adults are less likely report fraud victimization than other race/ethnic groups. Underreporting has also been used to explain the consistent inverse relationship between fraud victimization and age in most random-sample surveys that rely on self-report (see Anderson, 2013; Titus, Heinzemann, & Boyle, 1995), but there are no nationally representative data sources that are cross-validated with law enforcement data or proxy reports to test this assumption.

For investment fraud there was a significant effect of the mode of survey administration. Those who completed the survey face-to-face were more likely to report victimization than those who completed the telephone interview. This could have significant implications for consumer protection and fraud assessment efforts. Individuals may be more comfortable speaking about their experience with someone in person who can establish the credibility of the organization and build rapport, versus over the phone where the caller's identity and intentions are harder to verify. If this is the case, fraud surveys administered only by phone may be underestimating prevalence rates.

AARP (2011) reported that the majority of investment fraud victims were male, married, well-educated, and relatively high income, whereas lottery fraud victims had the opposite characteristics. We did not replicate those results, but respondents in that study were recruited from a sample of known fraud victims independently identified by law enforcement. By contrast, our HRS module was administered to a randomly selected nationally representative subset of older Americans. Accordingly, our findings are more reflective of the older population at large, rather than a subset of victims, and we can be relatively confident that our results are likely to be generalizable. That said, generalizability assumes that HRS participants accurately disclosed their prior experience with investment and prize/lottery fraud, but underreporting poses a serious threat to these findings (AARP, 2011; AARP, 2017). To minimize underreporting in future studies, researchers should cross-validate respondents' self-reports of fraud with proxy reports by spouses, caregivers, and adult children, as well as with law-enforcement and consumer protection agency records.

## **Conclusion**

Our research illustrates that more financially literate and educated older adults are not necessarily immune to investment fraud and prize/lottery fraud, and that predicting financial victimization is not a simple matter. The findings lend further support for the practice of separating and defining fraud types when examining prevalence and risk factors. Lack of significant predictor variables and the small effect sizes of the variables that were statistically significant suggest that unmeasured situational factors can play a larger role, such as whether the respondent was alone when solicited or in a state of high emotional arousal increasing susceptibility (Kircanski et al., 2018). Another determinant might be lack of knowledge of specific scams or the tactics scammers



use to deceive targets. If context and prior knowledge are more prognostic of victimization than demographic factors, socioemotional factors, and financial literacy, then consumer education messages should focus on training in strategies for resisting persuasion. Preventing fraud is a shared responsibility between consumers, banks, and investment firms holding and managing customer accounts. Accordingly, it is incumbent on financial institutions to offer tools for monitoring accounts for unusual spending and withdrawal patterns, and to train staff to recognize suspicious requests.

Little research has been done to understand the impact of fraud on victims' overall well-being, and no studies on fraud use longitudinal data to examine outcomes. When additional waves of the HRS become available, researchers will be able to link fraud victimization as measured in this module to subsequent changes in wealth and emotional status.

## References

- AARP. (2011). *AARP Foundation national fraud victim study*. Report by K. Pak and D. Shadel. Washington, D.C.
- AARP. (2017). *AARP investment fraud vulnerability study*. Report by D. Shadel and K. Pak. Washington, D.C.
- Agarwal, S., Driscoll, J. C., Gabaix, X., & Laibson, D. (2009). The age of reason: Financial decisions over the life cycle and implications for regulation. *Brookings Papers on Economic Activity*, 2, 51-117.
- Alves, L. M., & Wilson, S. R. (2008). The effects of loneliness on telemarketing fraud vulnerability among older adults. *Journal of Elder Abuse & Neglect*, 20(1), 63-85.
- Anderson, K. B. (2013). *Consumer fraud in the United States, 2011: The third FTC survey*. The Federal Trade Commission. Washington, DC.
- Beals, M. E., Carr, D. C., Mottola, G. R., Deevy, M. J., & Carstensen, L. L. (2015). How does survey context impact self-reported fraud victimization? *The Gerontologist*, 57(2), 329-340.
- Consumer Fraud Research Group. (2006). *Investor fraud study final report*. Prepared for WISE Senior Services and the NASD Investor Education Foundation. Washington, DC.
- Clair, P. S., Bugliari, D., Campbell, N., Chien, S., Hayden, O., Hurd, M., & Pantoja, P. (2011). *RAND HRS data documentation-Version L*. Santa Monica: RAND Corporation.
- Deevy, M., Lucich, S., & Beals, M. (2012). *Scams, schemes, & swindles: A review of consumer fraud research*. Stanford Center on Longevity. Stanford, CA.

- DeLiema, M., Deevy, M., Lusardi, A., & Mitchell, O. S. (2017). *Exploring the risks and consequences of elder fraud victimization: Evidence from the Health and Retirement Study*. Report for the TIAA Institute.
- DeLiema, M. (2018). Elder fraud and financial exploitation: Application of routine activity theory. *The Gerontologist*, 58(4), 706–718.
- Ebner, N. C., Ellis, D. M., Lin, T., Rocha, H. A., Yang, H., Dommaraju, S., ... & Oliveira, D. S. (2018). Uncovering susceptibility risk to online deception in aging. *The Journals of Gerontology: Series B*, gby036.
- Ertel, K. A., Glymour, M. M., & Berkman, L. F. (2008). Effects of social integration on preserving memory function in a nationally representative U.S. elderly population. *American Journal of Public Health*, 98(7), 1215–1220.
- FINRA Investor Education Foundation. (2013). *Financial fraud and fraud susceptibility in the United States. Research Report from a 2012 National Survey*. Applied Research and Consulting: New York, NY.
- Fisher, G. G., Hassan, H., Faul, J. D., Rodgers, W. L., & Weir, D. R. (2017). *HRS Imputation of Cognitive Functioning Measures: 1992 – 2014 Data Description* (Final Release Version). <http://hrsonline.isr.umich.edu/modules/meta/xyear/cogimp/desc/COGIMPdd.pdf>
- Hong, H., Kubi, J., & Stein, J. (2004). Social interaction and stock market participation. *Journal of Finance*, 59(1), 137-163.
- James, B. D., Boyle, P. A., & Bennett, D. A. (2014). Correlates of susceptibility to scams in older adults without dementia. *Journal of Elder Abuse & Neglect*, 26(2), 107-122.
- Judges, R. A., Gallant, S. N., Yang, L., & Lee, K. (2017). The role of cognition, personality, and trust in fraud victimization in older adults. *Frontiers in Psychology*, 8, 588.

- Karp, N., & Wilson, R. (2011). *Protecting older investors: The challenge of diminished capacity*. AARP Public Policy Institute Working Paper.
- Kieffer, C. & Mottola, G. (2017). Understanding and combating investment fraud. In O.S. Mitchell, P.B. Hammond, and S.P. Utkus, eds., *Financial Decision Making and Retirement Security in an Aging World*, (pp. 185-216). Oxford, UK: Oxford University Press,.
- Kircanski, K., Notthoff, N., DeLiema, M., Samanez-Larkin, G. R., Shadel, D., Mottola, G., & Gotlib, I. H. (2018). Emotional arousal may increase susceptibility to fraud in older and younger adults. *Psychology and Aging*, 33(2), 325-337.
- Lichtenberg, P. A., Stickney, L., & Paulson, D. (2013). Is psychological vulnerability related to the experience of fraud in older adults?. *Clinical Gerontologist*, 36(2), 132-146.
- Lichtenberg, P. A., Sugarman, M. A., Paulson, D., Ficker, L. J., & Rahman-Filipiak, A. (2016). Psychological and functional vulnerability predicts fraud cases in older adults: Results of a longitudinal study. *Clinical Gerontologist*, 39(1), 48-63.
- Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52(1), 5-44.
- Lusardi, A., Mitchell, O. S. & Curto V. (2014). Financial literacy and financial sophistication in the older population. *Journal of Pension Economics and Finance*, 13(4), 347-366.
- Titus, R. M., Heinzemann, F., & Boyle, J. M. (1995). Victimization of persons by fraud. *Crime & Delinquency*, 41(1), 54-72.
- Wood, S., & Lichtenberg, P. A. (2017). Financial capacity and financial exploitation of older adults: Research findings, policy recommendations and clinical implications. *Clinical Gerontologist*, 40(1), 3-13.

Wood, S., Liu, P. J., Hanoch, Y., Xi, P. M., & Klapatch, L. (2018). Call to claim your prize:

Perceived benefits and risk drive intention to comply in a mass marketing scam. *Journal of Experimental Psychology: Applied*, 24(2), 196-206.

**Table 1. Sample Characteristics (N=1,220)**

| <b>Variable</b>                                     | <b>Mean/Frequency</b> | <b>Sd. Dev.</b> |
|---|-----------------------|-----------------|
| Age   | 62.65                 | 9.06            |
| Male  | 43.82%                |                 |
| White   | 82.76%                |                 |
| Hispanic  | 7.82%                 |                 |
| Education (yrs.)                                    | 13.29                 | 2.96            |
| Cognition score (1-27)                              | 23.89                 | 4.26            |
| Social integration (0-5)                            | 2.57                  | 1.17            |
| Depression symptoms (0-8)                           | 1.23                  | 1.91            |
| Self-rated health good-excellent (vs. fair-poor)    | 80.26%                |                 |
| Non-housing wealth (/100k)                          | 1.77                  | 6.36            |
| Housing wealth (/100k, 2014\$)                      | 1.69                  | 2.27            |
| Own stock or mutual funds (non-retirement accounts) | 29.78%                |                 |
| *Financial literacy score (0-3)                     | 2.16                  | 0.91            |
| *Self-rated financial knowledge (1-7)               | 4.96                  | 1.52            |
| *Face-to-face interview                             | 53.23%                |                 |

*Note:* Final sample excludes 55 respondents who were not enrolled in the HRS in 2010.

\*Measured in the 2016 module; all other variables measured in 2010. All data weighted by HRS-supplied weights.

**Table 2. Past 5-year prevalence of fraud by subtype (N=1,220)**

| <b>Variable</b>  | <b>N</b> | <b>Frequency</b> |
|--|----------|------------------|
| Invested based on a free meal seminar                    | 1,208    | 2.8%             |
| Invested based on a phone call/email from unknown person | 1,212    | 0.8%             |
| Invested in penny stocks and/or oil-gas exploration      | 1,205    | 1.1%             |
| Fraud investment recommended by a relative               | 1,208    | 0.3%             |
| Put money in fraudulent investment                       | 1,206    | 1.1%             |
| Investment fraud total: Any fraudulent investment        | 1,196    | 5.0%             |
| Paid to receive a prize/lottery/award                    | 1,209    | 4.4%             |
| Total: Any successful/attempted fraud in past 5 years    | 1,212    | 8.7%             |

**Table 3. Weighted logit models predicting fraud victimization by subtype**

| <b>Independent variables</b>        | <b>Invested: free meal</b> | <b>Invested: phone call/ unknown person</b> | <b>Invested: penny stocks/oil-gas exploration</b> | <b>Invested: relative's recommendation</b> | <b>Investment: Put \$ into fraudulent investment</b> | <b>Any investment fraud past 5-yrs.</b> | <b>Paid to receive prize/ lottery</b> |
|-------------------------------------|----------------------------|---|---|--|--|---|---------------------------------------|
| <b>Age</b>                          | 0.0006<br>(0.0004)         | 0.0000<br>(0.0001)                          | -0.0001<br>(0.0001)                               | 0.0000<br>(0.0000)                         | 0.0000<br>(0.0001)                                   | 0.0007<br>(0.0006)                      | -0.0004<br>(0.0006)                   |
| <b>Male</b>                         | 0.0055<br>(0.0085)         | -0.0014<br>(0.0030)                         | -0.0008<br>(0.0009)                               | 0.0003<br>(0.0005)                         | 0.0010<br>(0.0028)                                   | 0.0144<br>(0.0134)                      | 0.0144<br>(0.0105)                    |
| <b>White</b>                        | -0.0072<br>(0.0112)        | -0.0032<br>(0.0038)                         | -0.0007<br>(0.0015)                               | 0.0000<br>(0.0004)                         | 0.0035 *<br>(0.0021)                                 | -0.0126<br>(0.0157)                     | -0.0237<br>(0.0176)                   |
| <b>Hispanic</b>                     | -0.0129<br>(0.0081)        |   |   | 0.0002<br>(0.0008)                         |  | -0.0322 ***<br>(0.0112)                 | -0.0291 ***<br>(0.0072)               |
| <b>Education (yrs.)</b>             | -0.0019<br>(0.0014)        | 0.0004<br>(0.0003)                          | 0.0002<br>(0.0003)                                | 0.0000<br>(0.0001)                         | 0.0016 **<br>(0.0008)                                | 0.0021<br>(0.0028)                      | -0.0004<br>(0.0016)                   |
| <b>Non-housing wealth (/100k\$)</b> | 0.0000<br>(0.0005)         | -0.0003<br>(0.0004)                         | 0.0001<br>(0.0001)                                | 0.0000<br>(0.0000)                         | -0.0004<br>(0.0004)                                  | 0.0018 **<br>(0.0009)                   | 0.0007<br>(0.0007)                    |
| <b>Housing wealth (/100k)</b>       | -0.0001<br>(0.0004)        | 0.0001<br>(0.0001)                          | -0.0003<br>(0.0003)                               | -0.0001<br>(0.0002)                        | -0.0011<br>(0.0011)                                  | -0.0039<br>(0.0037)                     | -0.0054 **<br>(0.0027)                |
| <b>Social integration score</b>     | -0.0021<br>(0.0050)        | 0.0007<br>(0.0017)                          | 0.0002<br>(0.0002)                                | -0.0001<br>(0.0002)                        | 0.0002<br>(0.0011)                                   | 0.0002<br>(0.0067)                      | -0.0021<br>(0.0046)                   |
| <b>Depression score</b>             | -0.0024<br>(0.0033)        | 0.0007<br>(0.0008)                          | 0.0001<br>(0.0002)                                | -0.0001<br>(0.0002)                        | 0.0003<br>(0.0007)                                   | -0.0002<br>(0.0035)                     | 0.0059 ***<br>(0.0023)                |
| <b>Cognition score</b>              | 0.0008<br>(0.0014)         | 0.0000<br>(0.0003)                          | 0.0001<br>(0.0001)                                | 0.0001<br>(0.0001)                         | -0.0004<br>(0.0004)                                  | 0.0004<br>(0.0018)                      | -0.0007<br>(0.0016)                   |
| <b>Good/excellent health</b>        | 0.0113<br>(0.0108)         | -0.0030<br>(0.0048)                         | -0.0005<br>(0.0014)                               | -0.0005<br>(0.0005)                        | -0.0116<br>(0.0110)                                  | -0.0218<br>(0.0239)                     | 0.0052<br>(0.0109)                    |
| <b>Financial literacy score</b>     | 0.0138 **<br>(0.0066)      | -0.0017<br>(0.0014)                         | 0.0001<br>(0.0003)                                | -0.0003<br>(0.0004)                        | -0.0016<br>(0.0023)                                  | 0.0051<br>(0.0087)                      | -0.0049<br>(0.0065)                   |
| <b>Self-rated fin. knowledge</b>    | -0.0027<br>(0.0033)        | -0.0004<br>(0.0007)                         | 0.0004<br>(0.0003)                                | -0.0001<br>(0.0002)                        | -0.0004<br>(0.0009)                                  | -0.0011<br>(0.0043)                     | 0.0014<br>(0.0032)                    |



|   |                     |                      |                    |                    |                    |                     |                       |
|---|---------------------|----------------------|--------------------|--------------------|--------------------|---------------------|-----------------------|
| <b>Own stock &amp; stock mutual funds</b> | 0.0074<br>(0.0117)  | 0.0071<br>(0.0060)   | 0.0072<br>(0.0052) | 0.0018<br>(0.0019) | 0.0069<br>(0.0084) | 0.0247<br>(0.0187)  | 0.0158<br>(0.0163)    |
| <b>Face-to-face interview</b>             | -0.0071<br>(0.0096) | 0.0068 *<br>(0.0036) | 0.0008<br>(0.0008) | 0.0008<br>(0.0007) | 0.0015<br>(0.0032) | -0.0015<br>(0.0134) | 0.0230 **<br>(0.0112) |
| <b>N</b>                                  | 1,208               | 1,212                | 1,205              | 1,208              | 1,206              | 1,196               | 1,209                 |
| <b>Pseudo R-sq</b>                        | 0.060               | 0.102                | 0.371              | 0.268              | 0.150              | 0.063               | 0.080                 |

Note: \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. Dummies included for missing variables; standard errors clustered at household level; and weights supplied by the HRS. Hispanic is dropped in phone call/unknown person fraud, penny stocks/oil and gas fraud, and Put \$ into fraudulent investment due to none reporting victimization by these subtypes.