



# ECONOMIC SECURITY IN RETIREMENT: DOES BORROWING FROM HOME EQUITY AFTER A HEALTH SHOCK AFFECT HEALTH OUTCOMES?

*Research conducted by*  
*Stephanie Moulton, Caezilia Loibl, Joshua Joseph, and Donald Haurin*  
*The Ohio State University*  
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The onset of a costly disease in retirement can present a significant threat to economic security. Older adults often self-insure against these risks by accumulating wealth, including home equity. This study investigates the use of housing wealth as a resource to mitigate the economic hardship created by a health shock, ultimately leading to better health outcomes.

## **Housing Wealth and the Ability to Manage a Costly Disease**

About 35 percent of older adults are diagnosed with a major disease by age 65, rising to 65 percent by age 90 (Poterba et al. 2018). These health shocks are costly. While the majority of older adults receive Medicare, nearly 20 percent of health expenditures are paid out of pocket (DeNardi et al. 2016)<sup>1</sup>. Older adults often self-insure against these risks by accumulating wealth, including home equity. Several studies document a decline in home equity after a health shock (Gilligan et al. 2018; Gupta et al. 2018; Poterba et al. 2018).<sup>2</sup> However, these studies do not identify the mechanisms or the extent to which liquidating home equity improves health following a shock—insights that are critical to inform policy. In this study, we ask: *To what does the liquidation of home equity through borrowing or home sale mitigate the economic burden created by a health shock, ultimately leading to better health outcomes?*

To inform this question, we use data from the Health and Retirement Study (HRS) from 1998 to 2016. This dataset includes comprehensive survey information collected every two years for a panel of adults aged 50 and older, such as extensive information on respondents' wealth and income, housing tenure, health status, and detailed socio-demographic characteristics. The HRS also collects blood-based biomarker and physical indicators of health from respondents every four years, beginning in 2006 or 2008. For this study, we follow respondents beginning the survey wave prior to the onset of one of four costly diseases (diabetes, heart disease, lung disease or cancer) through 2016 or when they exit the sample. We use biomarker and physical health indicators to identify whether or not a disease is

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<sup>1</sup> De Nardi, Mariacristina, Eric French, John Bailey Jones, and Jeremy McCauley. (2016). Medical Spending of the U.S. Elderly. *Fiscal Studies*. 37:3-4:717-747

<sup>2</sup> Poterba, J., Venti, S., & Wise, D. A. (2018). Longitudinal determinants of end-of-life wealth inequality. *Journal of public economics*, 162, 78-88; Gilligan, A. M., Alberts, D. S., Roe, D. J., & Skrepnek, G. H. (2018). Death or debt? National estimates of financial toxicity in persons with newlydiagnosed cancer. *The American Journal of Medicine*; Gupta, A., Morrison, E., Fedorenko, C. & Ramsey, S. (2018). Leverage, Default, and Mortality: Evidence from Cancer Diagnoses. *Columbia Law and Economics Working Paper No. 514*, SSRN: <https://ssrn.com/abstract=2583975>



adequately controlled in subsequent survey waves based on medically defined thresholds. Our focal sample is adults aged 65 and older at the time of disease diagnosis.

Our first set of specifications estimate the reduced form relationship between home equity held immediately prior to the onset of a new disease and subsequent disease outcomes. Our second set of specifications investigates the causal relationship between liquidating home equity following a health shock on disease outcomes.

We model the amount of home equity extracted following a health shock through borrowing or home sale as an endogenous variable, exploiting intertemporal and geographic changes in house prices during our study period to construct instruments. Instruments include lagged two-year ZIP code level house price trends, lagged house values, and a lagged indicator for being borrowing constrained based on the loan-to-value ratio.

### Older Adults Struggle to Control Disease Following a Health Shock

Across disease types, 27 percent of adults aged 65 and older at the time of diagnosis have biomarkers that indicate that the disease is not adequately controlled in subsequent periods. For these same individuals, out of pocket annual health expenditures increase by more than \$2,126 per year beginning the survey wave of diagnosis, relative to a baseline level of \$1,927. This increase in health expenditures is not offset by an increase in earnings, as earnings remain flat post diagnosis.

By contrast, there is a statistically significant increase in non-housing debt post diagnosis and significant decrease in home equity beginning three survey waves post diagnosis.

Disease	Biomarker	Threshold	% Uncontrolled
Lung	Peak Expiratory Flow Rate	≤50%	31.1%
Heart	Blood Pressure	≥140/≥90 mmHg	36.3%
Diabetes	Hemoglobin A1c	≥7%	20.7%
Cancer	C-Reactive Protein	≥5 mg/L	21.4%

Table 1

Note: Biomarker thresholds to identify disease control and the percent uncontrolled in the waves after the shock.

### Mortgage Borrowing Reduces the Probability of a Disease Being Uncontrolled

For those aged 65 and older at time of diagnosis, we find a significant, negative effect of new mortgage borrowing after diagnosis on the probability of the disease being uncontrolled, with instruments in the first stage meeting accepted criteria for valid identification. We estimate that each additional \$10,000 in new mortgage borrowing reduces the likelihood of the disease being uncontrolled by 9.3 percentage-points—a 33 percent decrease in the base rate of not controlling a disease. By contrast, we observe no significant relationship between the level of home equity prior to diagnosis and biomarker indicators for the disease being uncontrolled post diagnosis.



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## Implications

- It is not the stock of home equity but the extraction of home equity, particularly through borrowing, which is associated with the ability to manage a disease. This finding has important implications for public policy and the role of home equity as a resource to enable economic security and well-being in older age.
- Borrowing through a new mortgage is not accessible to all older adults. Some homeowners are constrained by their existing levels of mortgage debt and lack of liquidity for monthly payments.
- Future policy and market innovations could consider pathways to increase access safely and effectively to home equity for older homeowners.

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