Does the Form of Retirement Wealth Matter for Spending? Evidence from HRS/CAMS

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Abstract: This study examines whether holding retirement wealth as annuitized income streams or liquid account-based balances is associated with household consumption among older retirees. Using the RAND Health and Retirement Study Longitudinal survey merged with the RAND Consumption and Activities Survey, the analysis focuses on retired and partly retired respondents aged 65 and older with household consumption data and retirement resources. In weighted pooled regressions with respondent-clustered standard errors, both wealth forms are positively associated with consumption, but the association is significantly larger for liquid account wealth. Holding total measured resources constant, a higher annuitized share is associated with lower consumption. However, person fixed-effects models reduce both wealth associations to statistical insignificance, suggesting that the finding primarily reflects differences across households rather than changes within households over time. The findings offer measured support for a liquidity-and-accessibility view of retirement spending while cautioning that cross-sectional wealth-composition patterns should not be interpreted as causal. Implications for retirement-income and decumulation planning are discussed.

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I. INTRODUCTION

Retirement-income planning has shifted decisively from an accumulation problem to a decumulation problem. Households now enter retirement holding a mixture of Social Security benefits, defined-benefit pension income, Individual Retirement Accounts (IRAs), and other financial assets. The central planning challenge is no longer only whether they have accumulated enough, but how those accumulated resources are converted into sustainable consumption. That conversion is not simply a matter of how much has been accumulated: a growing body of evidence suggests it also depends on the specific form those resources take, since retirees do not appear to treat a dollar of guaranteed income and a dollar of savings as interchangeable when deciding how much to spend. A recurring empirical observation is that retirees with substantial wealth often hesitate to spend it, particularly when spending requires actively drawing down account balances (Hurd & Rohwedder, 2008, 2013; Poterba, Venti, & Wise, 2011). Understanding how different forms of retirement wealth relate to observed household consumption is therefore consequential for researchers, financial planners, and policymakers alike.

A central distinction in this setting is between annuitized resources and liquid, account-based resources. Annuitized resources such as Social Security, defined-benefit pension income, and commercial annuity payments arrive as recurring streams that reduce longevity risk and establish a spending floor that cannot be outlived (Yaari, 1965; Davidoff, Brown, & Diamond, 2005). Liquid account-based resources such as IRA balances and non-housing financial wealth are flexible and accessible but require the retiree to make active and recurring decisions about how much to withdraw and how

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quickly to deplete principal. These differences may shape spending in ways that total wealth alone does not capture.

Two perspectives generate competing predictions. The income-floor perspective holds that guaranteed income should raise spending because dependable payments reduce the fear of outliving assets; under this view, households with more Social Security, pension, and annuity income should consume more. The liquidity-and-accessibility perspective holds instead that liquid account wealth may be more closely tied to observed spending, because accessible balances can fund discretionary purchases, irregular expenses, home repairs, gifts, and travel that exceed routine monthly income. Retirees may also engage in mental accounting (Shefrin & Thaler, 1988; Thaler, 1990), treating recurring income as spendable while regarding account balances as principal to be preserved or, conversely, as the flexible capacity that enables consumption beyond a basic floor.

This study asks whether liquid account-based retirement resources are more strongly associated with retiree consumption than annuitized resources. Using RAND HRS/CAMS data on retired and partly retired respondents age 65 and older, this study compares how annuitized retirement resources and liquid account-based wealth are associated with household consumption. The results show that both wealth forms are positively associated with consumption in the cross-section, that the liquid-wealth association is significantly larger, and that a higher annuitized share predicts lower consumption at a given level of total resources. These cross-sectional patterns are robust. They do not, however, survive the inclusion of person fixed effects.

The theoretical foundation for expecting the form of wealth to matter comes from the behavioral life-cycle hypothesis (Shefrin & Thaler, 1988; Thaler, 1990, 1999). In contrast to the standard life-cycle model (Modigliani & Brumberg, 1954), in which a dollar is fungible regardless of its source, the behavioral life-cycle hypothesis posits that households sort resources into distinct mental accounts, such as current income, current wealth, and future income, and that the marginal propensity to consume differs sharply across these accounts. Resources framed as income are largely consumed, whereas resources framed as wealth are more readily preserved. Empirical tests support this non-fungibility. Levin (1998) found that the marginal propensities to consume out of different asset types differ substantially and that consumption is far less sensitive to changes in illiquid or asset-framed holdings than the standard model predicts. Applied to retirement, this framework implies that annuitized resources, which arrive as a recurring income stream, may be mentally coded as spendable income, while liquid account balances may be coded as wealth to be protected, even though both could in principle fund the same consumption.

A growing body of applied retirement research documents the empirical counterpart to this theory, often described as the retirement consumption puzzle or the decumulation paradox. Using HRS data, Banerjee (2018) found that most retirees preserve rather than draw down their assets, with many leaving the bulk of their pre-retirement savings untouched well into later life. Industry and survey evidence reinforces the role of guaranteed income in this pattern: the Employee Benefit Research Institute's (EBRI) Spending in Retirement series, reported in Banerjee (2018), finds that retirees with more guaranteed income express greater spending confidence and higher well-being, and that the presence of pensions and annuities is associated with materially higher spending even after controlling for total resources. This evidence is frequently read as supporting an income-floor or guaranteed-income interpretation, in which secure recurring payments give retirees the psychological permission to spend. The same evidence, however, fits equally well with the liquidity perspective developed here, because households with guaranteed income may simply feel freer to draw on their accessible balances. Distinguishing these interpretations requires comparing the two forms of wealth directly, which is the aim of this study.

The present study revisits this question with a complementary research design and arrives at a result that, on its surface, runs in the opposite direction. Rather than estimating the share of each resource type that is spent, this study models the level of household consumption as a function of the stock of annuitized wealth and the stock of liquid account-based wealth, holding household characteristics constant. Framed this way, the practical financial planning question is whether retirees' observed spending levels are more closely associated with the size of their guaranteed income streams or with the size of their accessible account balances. As discussed below, the two framings are not strictly contradictory: a household can spend a high

fraction of a modest income stream while a larger pool of liquid wealth still accounts for more of the variation in total consumption across households. Reconciling these perspectives is one contribution of this study.

The study's central contribution is to reframe the retirement-spending question from whether annuitization alone supports consumption to a direct comparison of annuitized and liquid wealth, drawing on recent HRS/CAMS data and survey weights that update the existing evidence base. It further brings person fixed-effects models to bear on this comparison to distinguish how much of the cross-sectional association between wealth form and consumption reflects within-household behavior rather than stable differences across households, a distinction with direct implications for composition-based decumulation advice.

The remainder of the paper proceeds as follows. Section 2 reviews three literatures: retirement consumption and decumulation, the economics and behavioral analysis of annuitized income, and the role of liquidity and mental accounting. It also situates the present study within them. Section 3 develops the conceptual framework and states the hypotheses. Section 4 describes the RAND HRS/CAMS data, measures, and empirical strategy. Section 5 presents the results, beginning with the cross-sectional models and turning to the person fixed-effects, resource-quartile, and sensitivity analyses. Section 6 discusses the findings and reconciles them with prior work; Section 7 notes limitations and directions for future research; and Section 8 concludes.

II. LITERATURE REVIEW

This study sits at the intersection of three literatures: the empirical study of retirement consumption and wealth decumulation; the economic and behavioral analysis of annuitized income; and the behavioral and financial-planning work on liquidity, mental accounting, and the framing of retirement resources. Each is reviewed in turn, followed by a statement of how the present study extends them.

A. Retirement Consumption and the Decumulation Puzzle

Standard life-cycle theory predicts that households smooth consumption across the life course, drawing down accumulated resources in retirement at a pace governed by expected longevity, returns, and preferences (Yaari, 1965). A substantial body of empirical work finds that observed behavior departs from this benchmark. Many older households reduce spending only slowly, preserve assets well into late life, and exhibit markedly heterogeneous spending responses to retirement (Hurd & Rohwedder, 2008, 2013; Poterba et al., 2011). These departures are commonly grouped under the heading of the retirement-consumption or decumulation puzzle.

Two features of this literature matter for the present study. First, the puzzle is not a single average phenomenon. Hurd and Rohwedder (2013) document substantial heterogeneity in spending change at retirement, varying with wealth, health, and circumstance, which implies that retirement consumption must be understood as a function of resources, constraints, preferences, and shocks rather than a uniform drawdown rule. Second, wealth composition matters. Poterba et al. (2011) show that retirees hold resources in many different forms, including Social Security, defined-benefit pensions, retirement accounts, financial assets, and housing wealth. Because these resources are not drawn down at the same rate, analyses of retirement spending should distinguish among wealth forms rather than treating total net worth as a single measure.

Precautionary motives provide one influential explanation for slow drawdown. Medical-expense risk, health shocks, and the threat of long-term-care costs lead many retirees to preserve assets even when resources appear adequate (Butrica et al., 2009; De Nardi et al., 2010). De Nardi et al. (2010) show that uncertain, age-rising medical expenses can rationalize substantial late-life saving among the elderly, while Butrica et al. (2009) find that health problems are associated with reduced consumption at older ages. These motives make liquidity intrinsically valuable: non-annuitized, accessible assets can serve as a reserve against uncertain late-life needs in a way that an irreversible income stream cannot. This creates a central tension for the present study. Liquid wealth may be associated with higher consumption because it is accessible and can be readily used for spending, but it may also be preserved for precautionary reasons, such as health shocks, long-term-care needs, or other unexpected expenses.

B. Annuitized Wealth and the Income-Floor Argument

A second literature concerns the role of guaranteed lifetime income. The theoretical case for annuitization is long-standing: Yaari (1965) showed that, under idealized conditions, life annuities can substantially raise welfare by insuring against uncertain length of life, and Davidoff

et al. (2005) generalized this result, demonstrating that a strong case for at least partial annuitization survives the relaxation of many of Yaari's assumptions. From this perspective, Social Security, defined-benefit pensions, and annuity payments furnish an income floor that should support more confident spending and reduce the precautionary impulse to hoard.

Yet households annuitize far less than these models predict – a phenomenon known as the annuity puzzle. Behavioral explanations have proven influential: Brown et al. (2008) show that whether annuities are framed in a "consumption" frame or an "investment" frame sharply changes their perceived attractiveness, implying that households do not evaluate guaranteed income on actuarial grounds alone. Framing, loss aversion, and an aversion to surrendering liquidity all depress annuity demand even when longevity insurance would be welfare-improving. The same psychological forces that suppress annuity demand may also shape how retirees spend already-annuitized income relative to liquid account balances. This is the issue the present study examines directly.

The closest antecedent to this study is Butrica and Mermin (2006), who used HRS data linked to a supplemental expenditure survey to examine how expenditures among adults age 65 and older vary with the degree of annuitization. They found that older adults with less annuitized wealth spend more, even after controlling for demographics, income, and total wealth—a result that complicates the simple income-floor prediction that more guaranteed income should mechanically raise consumption. The present analysis builds directly on Butrica and Mermin (2006) in three respects: it uses substantially more recent RAND HRS/CAMS data spanning additional waves; it incorporates CAMS household analysis weights and respondent-clustered inference; and it reframes the question around the liquidity and accessibility of account-based wealth rather than annuitization alone, while subjecting the relationship to a within-household test that the earlier cross-sectional work did not employ.

Recent financial-planning research reaches a complementary conclusion from a different angle. Blanchett and Finke (2025) find that retirees spend a markedly larger share of wealth held as guaranteed lifetime income than wealth held in account-based savings. This suggests that the source and framing of retirement resources, not merely their amount, shape consumption. Their finding that income is more readily spent than savings is, on its face, an income-floor result; the present study's finding that liquid balances correlate more strongly with spending levels is not necessarily in conflict, because the two studies isolate different margins (the propensity to spend from a given source versus the cross-sectional association of stocks of wealth with the level of consumption). Reconciling these margins is itself a contribution, and the present analysis returns to it in the discussion.

C. Liquidity, Mental Accounting, and the Framing of Wealth

A third literature holds that spending depends on the accessibility and framing of assets, not only their magnitude. The behavioral life-cycle hypothesis (Shefrin & Thaler, 1988; Thaler, 1990) argues that households place wealth into separate mental accounts, such as current income, current assets, and future income. These accounts have sharply different marginal propensities to consume, so money is not always treated as fully fungible across categories. Thaler (1990) emphasizes that the temptation to spend, and the self-control deployed against it, differ systematically by account, so that the same dollar is spent more or less readily depending on where it is mentally filed.

The mental-accounting framework did not originate as a retirement-specific theory. Thaler (1985) first showed, using evidence from ordinary consumer purchase decisions, that households evaluate transactions relative to a mentally constructed reference point rather than treating money as fully fungible, and Levin (1998) later provided a direct empirical test in a life-cycle savings setting, finding that the marginal propensity to consume differs substantially across housing wealth, financial wealth, and pension wealth even after controlling for total wealth, a pattern inconsistent with the strict life-cycle prediction that only the level of resources should matter. This non-fungibility connects directly to the precautionary and liquidity-constraint literatures reviewed in Section 2.1: Deaton (1991) and Zeldes (1989) show that liquidity-constrained households consume differently out of liquid versus illiquid resources even when permanent income is held fixed, and the same logic that leads a working-age household to draw down a checking account before an illiquid retirement account

plausibly extends to how retirees treat annuitized income relative to IRA and brokerage balances.

This framework is especially pertinent in retirement, where households must decide whether to treat account balances as spendable resources, precautionary reserves, bequest assets, or principal to be protected. The liquidity perspective does not deny the value of guaranteed income; rather, it implies a division of labor. Annuitized income may be mentally assigned to routine, recurring expenses, while liquid account wealth governs discretionary spending, irregular outlays, and the psychological capacity to spend beyond a basic floor. If so, two households with identical total resources may consume quite differently depending on how those resources are held and perceived—a proposition with direct relevance to financial-services practice, where clients of similar means routinely display divergent spending comfort.

This mechanism also speaks directly to the precautionary motives documented in Section 2.1. Butrica et al. (2009) and De Nardi et al. (2010) show that retirees preserve assets against uncertain medical and long-term-care expenses; the mental-accounting perspective adds that this precautionary preservation is more plausible for balances mentally coded as protected principal than for income mentally coded as spendable, which is one reason liquid account wealth might be held back even as annuitized income of comparable actuarial value is routinely spent. For financial-services practice specifically, mental accounting implies that the same balance sheet can support very different spending behavior depending on how assets are labeled and delivered: automatic, recurring payments (Social Security, pension checks, systematic withdrawal programs) may be treated differently from funds accessed discretionarily from a lump-sum account, a distinction with direct implications for how advisors structure decumulation vehicles and communicate about them, discussed further in Section 6.

Taken together, the three literatures motivate a comparative design. The decumulation literature shows that wealth composition and precautionary motives shape retirement drawdown. The annuitization literature shows that guaranteed income is valued and spent differently than its actuarial value alone would imply. The behavioral literature adds the mechanism: mental accounting and liquidity help explain why the form of wealth, not just its level, may be associated with consumption. What this body of work has not done, and what the present study undertakes, is to compare annuitized and liquid wealth directly within a single recent, weighted HRS/CAMS sample while distinguishing cross-household association from within-household behavior.

D. The Present Study's Contribution

Read together, the three literatures reviewed above leave a specific gap that this study is positioned to fill. Butrica and Mermin (2006) find that older adults with less annuitized wealth spend more, using cross-sectional variation alone. Because that design cannot distinguish a within-household behavioral response from stable across-household heterogeneity correlated with both annuitization and spending, their finding is open to exactly this ambiguity. Neither the decumulation nor the mental-accounting literature reviewed above resolves it. The present study is positioned to resolve it directly: the closely related cross-sectional pattern documented here is shown in Section 5.3 to evaporate under person fixed effects, suggesting that cross-sectional annuitization-spending associations of the kind Butrica and Mermin document, including the pooled estimates reported here, most plausibly reflect persistent differences across households in lifetime earnings, preferences, or planning behavior rather than a within-household spending response to wealth composition.

Blanchett and Finke (2025) reach an apparently opposite conclusion using a different empirical margin: they find that retirees spend a larger share of guaranteed income than of savings, a propensity-to-spend-from-source design. The present finding that liquid wealth is more strongly associated with the level of consumption across households does not conflict with this. The two studies isolate different objects: the propensity to spend a dollar from a given source versus how stocks of differently formed wealth relate to the level of consumption across households. Reconciling these margins, developed further in Section 6, is itself part of this study's contribution. Taken together, this study's distinctive contribution is to show, within a single recent, weighted HRS/CAMS sample, that the composition-consumption associations documented in this literature are cross-household correlates rather than behavioral levers. The within-household design, which neither predecessor employed, provides previously unavailable evidence relevant to how financial-services practitioners should interpret composition-based spending patterns among their clients.

III. CONCEPTUAL FRAMEWORK AND HYPOTHESES

A. *Income Floors and Annuitized Wealth*

Life-cycle models imply that households should smooth consumption by drawing on accumulated resources, yet retirees frequently spend down more slowly than predicted, a pattern linked to longevity risk, health and long-term-care uncertainty, market risk, bequest motives, and discomfort with depleting principal. The form of wealth may bear on these concerns: annuitized resources arrive as payments that are not experienced as withdrawals from a balance, and may therefore be psychologically easier to spend. The income-floor perspective accordingly predicts that guaranteed income supports higher consumption.

H1: Annuitized wealth is positively associated with household consumption in retirement.

B. *Liquidity, Accessibility, and Account-Based Wealth*

A liquidity-and-accessibility perspective emphasizes flexibility. Liquid account-based wealth can fund discretionary purchases, irregular expenses, gifts, travel, home repairs, and health-related costs not fully covered by recurring income. Even when annuitized income supports baseline expenses, liquid wealth may determine the ability and willingness to spend beyond that baseline; in line with mental accounting, retirees may treat income streams and balances as non-fungible.

H2: Liquid account-based wealth is positively associated with household consumption in retirement.

H3: Liquid account-based wealth has a stronger association with consumption than annuitized wealth.

C. *Wealth Composition Net of Total Resources*

Two households may hold similar total resources yet differ in the share held as annuitized income versus liquid wealth. If only the level of resources matters, wealth form should add little once total resources are controlled; if liquidity matters, a larger liquid share should be associated with higher consumption among similarly resourced households.

H4: Holding total measured resources constant, a higher annuitized share is associated with lower consumption.

D. *Household Heterogeneity*

Observed spending differences may reflect persistent differences across households (in lifetime earnings, education, health, risk tolerance, financial literacy, or saving-versus-spending preferences) rather than within-household changes over time. Person fixed-effects models isolate within-person variation; resource-quartile models test whether any liquidity association is confined to high-resource households or appears across the distribution.

H5: The association between wealth form and consumption weakens under person fixed effects, indicating that part of the relationship reflects persistent across-household differences.

H6: Liquid account-based wealth is positively associated with consumption across total-resource quartiles, though the magnitude may vary.

IV. DATA AND METHODS

A. *Data and Sample*

The analysis uses the RAND HRS Longitudinal File and RAND HRS CAMS file, along with HRS public-use documentation and data resources (RAND Corporation, 2024, 2025; University of Michigan, 2025). The HRS is a nationally representative longitudinal survey of older Americans containing demographics, labor-force status, income, wealth, pensions, health, and cognition; CAMS provides detailed household consumption measures linkable to HRS respondents by a common identifier and wave numbering. The final analytic sample uses RAND HRS/CAMS waves 5–15, corresponding to the 2001–2021 CAMS file and coded in the analysis as biennial HRS survey-wave years from 2000 through 2020. The dependent variable is CAMS total household consumption.

The sample is restricted to retired or partly retired respondents age 65 and older with valid CAMS household consumption, positive measured retirement resources, valid CAMS household analysis weights, and non-missing model variables. Retirement status is coded from the RAND labor-force-status variable (partly retired and retired). The weighted analytic sample comprises 14,940 person-wave observations representing 4,136 unique individuals.

Because the outcome is household consumption, all models apply CAMS household analysis weights. Standard errors are clustered at the respondent level in both the pooled and fixed-effects models to account for repeated observations of individuals across waves.

B. Measures

Household consumption is CAMS total household consumption, transformed using the inverse hyperbolic sine (IHS), which behaves like the natural logarithm for large values while remaining defined at zero. Annuitized wealth is Social Security retirement income plus pension and annuity income; because these are flows, annual income is converted to a wealth-equivalent by multiplying by an annuity factor of 18 (with 12 and 25 examined in sensitivity analysis). Liquid account-based wealth is IRA assets plus non-housing financial wealth; observations missing required asset components are excluded rather than recoded to zero. The total-resources measure is the sum of the two; annuitized share is annuitized wealth divided by total resources, bounded to [0, 1]. Controls comprise age, gender (an indicator for female), years of education, a cognition score, self-rated health (categorical), and survey year (categorical). Wealth and consumption measures are IHS-transformed.

The fixed capitalization factor of 18 approximates a whole-life annuity-due present-value multiplier; it is consistent with a representative retiree facing a real discount rate near 2.5 percent and a mortality schedule broadly in line with the Social Security Administration's Period Life Table (Social Security Administration, 2024), which for a 65-year-old implies an annuity-due factor of approximately 14.5 (male) to 16.1 (female) at that discount rate. Because a fixed capitalization factor also removes the within-person variation on which the person fixed-effects models depend, Section 5.8 additionally constructs an age- and sex-varying actuarial annuity factor directly from the SSA Period Life Table at discount rates of 2.0, 2.5, and 3.0 percent, and re-estimates the component and share models using this actuarial capitalization in place of the fixed factor. Appendix A reports, for every constructed variable, the specific RAND/HRS variable code and wave-naming pattern underlying it, including Social Security income, pension and annuity income, IRA assets, non-housing financial wealth, cognition, and self-rated health.

C. Empirical Strategy

The primary specification is a weighted pooled regression of IHS consumption on IHS annuitized wealth, IHS liquid account wealth, and controls, directly comparing the two component associations; a Wald test assesses whether the liquid-wealth coefficient differs from the annuitized-wealth coefficient. A composition model regresses IHS consumption on annuitized share and IHS total resources, asking whether the share held in annuitized form is associated with consumption among similarly resourced households.

Person fixed-effects models compare the same respondent over time, absorbing stable unobserved characteristics and providing the central test of whether cross-sectional associations reflect within-household behavior. Resource-quartile models re-estimate the component model within quartiles of total resources; annuity-factor sensitivity analyses re-estimate the share model under factors of 12, 18, and 25; and a final check excludes negative-account-wealth observations. A diagnostic model entering both components and their sum simultaneously is not treated as central, because total resources is by construction the sum of the two components and the resulting near-collinearity yields an unstable, sign-reversed coefficient that is an artifact rather than a finding. All estimates are interpreted as associational.

To state the estimating equations explicitly, the primary component specification (Model 1) is

$$\mathrm{IHS}(\mathrm{Consumption}_{it}) = \beta_0 + \beta_1 \cdot \mathrm{IHS}(\mathrm{AnnuitizedWealth}_{it}) + \beta_2 \cdot \mathrm{IHS}(\mathrm{LiquidWealth}_{it}) + X_{it}'\gamma + \delta_t + \varepsilon_{it}$$

and the composition specification (Model 5) is

$$\mathrm{IHS}(\mathrm{Consumption}_{it}) = \beta_0 + \beta_1 \cdot \mathrm{AnnuitizedShare}_{it} + \beta_2 \cdot \mathrm{IHS}(\mathrm{TotalResources}_{it}) + X_{it}'\gamma + \delta_t + \varepsilon_{it}$$

where X_{it} is the control vector (age, a female indicator, years of education, a cognition score, and categorical self-rated health) and δ_t is a set of survey-year indicators. The person fixed-effects specification (Model 3) is

$$\mathrm{IHS}(\mathrm{Consumption}_{it}) = \alpha_i + \beta_1 \cdot \mathrm{IHS}(\mathrm{AnnuitizedWealth}_{it}) + \beta_2 \cdot \mathrm{IHS}(\mathrm{LiquidWealth}_{it}) + \beta_3 \cdot \mathrm{Age}_{it} + \delta_t + \varepsilon_{it}$$

where α_i is a respondent fixed effect that absorbs all time-invariant respondent characteristics, which is why demographic and health controls are reported as "Absorbed" rather than estimated directly in Table 2. "Weighted pooled regression" denotes ordinary least squares with the RAND CAMS household analysis weight (H#CWGTHH) applied as an analytic probability weight, not weighted least squares with weights derived from estimated residual variance. All reported standard

errors are cluster-robust (heteroskedasticity-consistent, HC1) and clustered on respondent (HHIDPN) in every pooled and fixed-effects specification. The lagged specification used to address the reverse-causality concern in Section 7 replaces the contemporaneous wealth terms above with their wave t−1 values, restricted to observations with an immediately adjacent prior wave, and is reported in Section 5.6. Appendix B reports the weighted correlation matrix of the four IHS-transformed predictors used across these models; annuitized and liquid wealth are only weakly correlated (r = .024), while each is, by construction, more strongly correlated with total resources (r = .524 and .436, respectively) and with annuitized share (r = .370 and −.575, respectively), which supports the collinearity argument above for excluding the combined model.

V. RESULTS

A. *Descriptive Statistics*

Weighted descriptive statistics appear in Table 1. Weighted mean household consumption is approximately $41,640 (median $34,304). Median annuitized wealth (approximately $259,600) exceeds median liquid account wealth (approximately $41,500), reflecting the central role of Social Security and pension income in this cohort. Means substantially exceed medians for the wealth measures, indicating pronounced right-skew and supporting the IHS transformation.

TABLE I
WEIGHTED DESCRIPTIVE STATISTICS

Statistic	**Value**
Person-wave observations	14,940
Unique individuals	4,136
Weighted mean consumption	$41,640
Median consumption	$34,304
Median annuitized wealth	$259,600
Median liquid account wealth	$41,500

Note. Consumption and wealth values are annual household amounts or wealth-equivalent amounts; medians are emphasized for wealth because the distributions are highly skewed. Annuitized wealth equals Social Security retirement income plus pension and annuity income multiplied by 18. Liquid account wealth equals IRA assets plus non-housing financial wealth. The median of total measured resources is approximately $365,000.

B. *Regression Results*

Because annuitized and liquid wealth differ sharply in scale (median $259,600 versus $41,500; Table 1), the interquartile-range comparison provides the more informative interpretation of Model 1 in Table 2: an interquartile move in liquid wealth is associated with an approximately 0.156 increase in IHS consumption, versus roughly 0.014 for annuitized wealth, an association roughly eleven times as large in economic magnitude. The raw coefficients point the same direction: both wealth forms are positive and significant, supporting H1 and H2, but the liquid-wealth coefficient (0.0300) is roughly twice the annuitized-wealth coefficient (0.0161). A Wald test rejects equality of the two coefficients (F = 9.09, p = .003), supporting H3.

The composition model (Model 5) provides the net-of-resources test. Annuitized share carries a negative, significant coefficient (−0.6789, p < .001) while total resources is positive, meaning that among similarly resourced households a higher annuitized share (equivalently, a smaller liquid share) is associated with lower consumption, as H4 predicts. This should not be read as evidence that Social Security or pensions reduce spending; it indicates that the liquid-versus-annuitized composition of resources is associated with consumption at a given resource level.

TABLE II
WEIGHTED REGRESSION RESULTS

Predictor	**Model 1: Components**	**Model 3: Person FE**	**Model 5: Share**
Annuitized wealth (IHS)	0.0161*** (0.0043)	0.0012 (0.0022)	—
Liquid account wealth (IHS)	0.0300*** (0.0014)	0.0012 (0.0009)	—
Annuitized share	—	—	−0.6789*** (0.0284)
Total resources (IHS)	—	—	0.2074*** (0.0096)
Demographic & health controls	Yes	Absorbed	Yes

Year controls	Yes	Yes	Yes
Person fixed effects	No	Yes	No
Observations	14,940	13,937	14,940
Adjusted R^2	0.355	0.813	0.440
Within R^2	—	0.0003	—

Note: Dependent variable is IHS-transformed household consumption. All models apply CAMS household analysis weights; standard errors (in parentheses) are clustered at the respondent level. Model 3 includes respondent and year fixed effects, absorbing time-invariant controls. A Wald test rejects equality of the annuitized- and liquid-wealth coefficients in Model 1 ($F = 9.09$, $p = .003$). *** $p < .001$.

C. *Person Fixed-Effects Results*

The person fixed-effects model (Model 3) is central for interpretation and supports H5. When the same respondent is compared over time, both wealth associations collapse: the annuitized-wealth and liquid-wealth coefficients fall to 0.0012 and are not statistically significant, and the within-R^2 is approximately 0.0003. This near-null partly reflects the limited within-household variation available for identification: across the biennial waves, most variation in annuitized and liquid wealth lies between households. The fixed-effects estimates therefore rest on limited within-person movement in wealth composition, which both motivates caution in reading the null as a precise zero and underscores that the cross-sectional associations are fundamentally between-household. In other words, changes in a household's wealth composition over time account for virtually none of the change in its consumption. The strong cross-sectional associations are therefore consistent with persistent differences across households in lifetime earnings, preferences, health, financial literacy, or planning behavior rather than a behavioral response operating within households.

To help distinguish a precisely estimated null from an underpowered specification, we compute the within-person share of variance in each IHS wealth measure among the 3,133 respondents observed in more than one wave: 49.5 percent of the variance in IHS annuitized wealth and 27.4 percent of the variance in IHS liquid wealth occurs within person, indicating that the fixed-effects estimates are not simply unidentified for lack of within-person movement. The 95 percent confidence intervals for the fixed-effects coefficients are correspondingly narrow relative to the coefficient scale (annuitized wealth: −0.0031 to 0.0055; liquid wealth: −0.0005 to 0.0029), which points to a precisely estimated near-zero association rather than a wide, uninformative interval. Accordingly, the within-household null documented here is better read as evidence against a within-household behavioral response than as evidence of insufficient statistical power.

D. *Resource-Quartile Models*

Within each total-resource quartile, Table 3 re-estimates the component model separately. As H6 anticipates, liquid account wealth is positive and significant in all four quartiles (from 0.0118 in Q3 to 0.0300 in Q4). The association appears throughout the resource distribution rather than being confined to high-resource households; it is not, however, monotonic across quartiles, so the evidence speaks to breadth rather than to a clean gradient. Annuitized wealth is negative and significant in the second and third quartiles, marginal in the lowest, and insignificant in the highest; these coefficients warrant caution, since within a resource quartile higher annuitized wealth typically corresponds to lower liquid wealth. The robust pattern is the consistently positive liquid-wealth association.

TABLE III
WEIGHTED RESOURCE-QUARTILE MODELS

Resource Quartile	**Annuitized Wealth**	**Liquid Account Wealth**	**N**
Q1: Lowest	−0.0103† (0.0061)	0.0152*** (0.0024)	3,735
Q2	−0.0553*** (0.0119)	0.0172*** (0.0020)	3,735
Q3	−0.0441*** (0.0097)	0.0118*** (0.0022)	3,735
Q4: Highest	−0.0096 (0.0113)	0.0300*** (0.0051)	3,735

Note: Each row reports coefficients from a separate weighted OLS model estimated within the total-resource quartile, including age, gender, education, cognition, health, and year controls. Respondent-clustered standard errors in parentheses. † $p < .10$; *** $p < .001$.

E. *Sensitivity and Robustness*

The composition result also holds up against a basic modeling choice: the annuity-capitalization factor. Table

4 shows that across factors of 12, 18, and 25, annuitized share remains negative and significant and total resources remains positive and significant, with the share coefficient ranging from −0.572 to −0.778. A further check, in Table 5, excludes negative-account-wealth observations. The annuitized-share result is essentially unchanged, but the component-model liquid-wealth coefficient more than doubles (to 0.0708); households with negative liquid balances evidently exert meaningful downward leverage on the pooled liquid-wealth estimate. The qualitative conclusion that liquid wealth carries the stronger association is reinforced, though the precise magnitude of the component coefficient is sensitive to these observations. The conclusions are not driven by the choice of annuity factor or by negative-wealth observations.

TABLE IV
WEIGHTED ANNUITY-FACTOR SENSITIVITY CHECKS

Annuity Factor	Annuitized Share	Total Resources
12	−0.572*** (0.027)	0.201*** (0.010)
18	−0.679*** (0.028)	0.207*** (0.010)
25	−0.778*** (0.030)	0.215*** (0.010)

Note: Sensitivity models use the weighted annuitized-share specification with respondent-clustered standard errors. *** p < .001.

TABLE V
NONNEGATIVE ACCOUNT-WEALTH ROBUSTNESS CHECK

Model	Key Predictor	Coefficient
Component model	Annuitized wealth	0.0119** (0.0040)
Component model	Liquid account wealth	0.0708*** (0.0025)
Share model	Annuitized share	−0.671*** (0.0288)
Share model	Total resources	0.211*** (0.0098)

Note: Models exclude observations with negative account wealth, apply CAMS household analysis weights, and use respondent-clustered standard errors. ** p < .01; *** p < .001.

F. Lagged Specification

Section 7 notes that consumption and liquid wealth are determined jointly within a wave, since higher spending mechanically draws down accessible balances; the same concern applies to the annuitized-share result, since a household that has just spent heavily mechanically shows a higher annuitized share. To address this directly, Table 6 re-estimates the component and share models using wave t−1 wealth to predict wave t consumption, restricted to observations with an immediately adjacent prior wave. The lagged coefficients closely track the contemporaneous estimates from Table 2 in both sign and magnitude. Because spending in wave t cannot mechanically alter wealth measured in wave t−1, this pattern indicates that the cross-sectional associations reported above are not primarily an artifact of within-wave reverse causation.

TABLE VI
LAGGED (WAVE T−1) VERSUS CONTEMPORANEOUS WEALTH EFFECTS

Predictor	Contemporaneous	Lagged (t−1)
Annuitized wealth (IHS)	0.0161*** (0.0043)	0.0190*** (0.0051)
Liquid account wealth (IHS)	0.0300*** (0.0014)	0.0308*** (0.0017)
Annuitized share	−0.6789*** (0.0284)	−0.661*** (0.0336)
Total resources (IHS)	0.2074*** (0.0096)	0.208*** (0.0128)

Note: Lagged models predict wave t consumption from wave t−1 annuitized wealth, liquid wealth, annuitized share, and total resources, restricted to observations with an immediately adjacent prior wave (wave gap = 1). All models apply CAMS household analysis weights and include age, gender, education, cognition, health, and year controls; standard errors (in parentheses) are clustered at the respondent level. *** p < .001.

G. Household Composition, Risk Tolerance, and Retirement-Status Robustness

This section extends the baseline specification by considering household composition, risk tolerance, and the possibility that partly retired respondents' labor earnings and housing wealth, neither of which is captured in the two wealth measures, could bias the results. Table 7 first addresses household composition: adding marital or partnered status and household size to the component and share models leaves the core wealth coefficients positive and significant, and both composition variables

are themselves large, precisely estimated predictors of consumption.

Risk tolerance is measured in HRS only in waves 1 and 4 through 8, via the hypothetical income-gamble module, not every wave. Because risk aversion is treated in this literature as a stable trait, each respondent is assigned a single risk-tolerance value from the first wave in which it was measured and that value is carried forward; it is available for 11,711 of the 14,940 person-wave observations (78.4 percent) in the analytic sample. Adding this risk-tolerance measure alongside the composition controls (Table 7) leaves the wealth coefficients essentially unchanged, and the risk-tolerance coefficient itself is not statistically distinguishable from zero in either specification, indicating that risk preference does not account for the liquidity association. Two additional robustness checks were also estimated. Restricting the component and share models to fully retired respondents (excluding the partly retired) leaves both coefficients close to or slightly larger than the full-sample estimates in Table 2: annuitized wealth (0.0230, SE = 0.0048, p < .001) and liquid wealth (0.0318, SE = 0.0015, p < .001) in the component model, and annuitized share (−0.686, SE = 0.0301, p < .001) and total resources (0.212, SE = 0.0102, p < .001) in the share model. Adding household earnings and housing wealth directly to the component model leaves annuitized wealth (0.0134, SE = 0.0038, p < .001) and liquid wealth (0.0209, SE = 0.0012, p < .001) positive and significant, while household earnings (0.0097, SE = 0.0017, p < .001) and housing wealth (0.0452, SE = 0.0017, p < .001) are themselves significant predictors of consumption, indicating that neither confound accounts for the core liquidity association.

TABLE VII
HOUSEHOLD COMPOSITION AND RISK-TOLERANCE MODELS

Predictor	**Component Model**	**Share Model**	**Component + Risk**	**Share + Risk**
Annuitized wealth (IHS)	0.0232*** (0.0042)	—	0.0213*** (0.0043)	—
Liquid account wealth (IHS)	0.0268*** (0.0013)	—	0.0255*** (0.0014)	—
Annuitized share	—	−0.536*** (0.0279)	—	−0.533*** (0.0315)
Total resources (IHS)	—	0.214*** (0.0101)	—	0.216*** (0.0115)
Married / partnered	0.372*** (0.0199)	0.334*** (0.0181)	0.386*** (0.0225)	0.348*** (0.0206)
Household size	0.0519*** (0.0095)	0.0507*** (0.0087)	0.0448*** (0.0103)	0.0446*** (0.0096)
Risk tolerance	—	—	0.0047 (0.0094)	−0.0005 (0.0085)

Note: All models apply CAMS household analysis weights and include age, gender, education, cognition, health, and year controls; standard errors (in parentheses) are clustered at the respondent level. The composition-only columns retain nearly the full analytic sample; the risk-tolerance columns are estimated on the 11,711 observations (78.4 percent of the analytic sample) with a non-missing risk-tolerance value. *** p < .001.

H. Actuarial Capitalization of Annuitized Wealth

The fixed capitalization factor is unavoidably a simplification. As an alternative, we construct an age- and sex-varying actuarial present-value annuity factor from the SSA Period Life Table (Social Security Administration, 2024), following the standard whole-life annuity-due valuation $a_x = \Sigma^k \, v^k \cdot {}_kp_x$, where ${}_kp_x$ is the probability a person age x survives to age x + k and v = 1 / (1 + i) at a real discount rate i. At age 65 this yields a factor of approximately 14.5 for men and 16.1 for women at a 2.5 percent discount rate, comparable in magnitude to the fixed factor of 18 used in the primary specification, and the factor falls smoothly with age thereafter. Re-estimating the component and share models with this actuarial measure in place of the fixed factor leaves the substantive results unchanged (Table 8, Panel A), and the share-model result is also stable across discount-rate assumptions of 2.0, 2.5, and 3.0 percent (Table 8, Panel B), mirroring the stability already documented for the fixed factor across values of 12, 18, and 25 (Table 4).

TABLE VIII
ACTUARIAL CAPITALIZATION OF ANNUITIZED WEALTH

Panel A. Component and Share Models (2.5% Discount Rate)		
Predictor	**Component Model**	**Share Model**
Annuitized wealth, actuarial (IHS)	0.0169*** (0.0044)	—
Liquid account wealth (IHS)	0.0305*** (0.0014)	—
Annuitized share, actuarial	—	−0.535*** (0.0269)
Total resources, actuarial (IHS)	—	0.194*** (0.0092)
Panel B. Discount-Rate Sensitivity (Share Model)		
Discount Rate	**Annuitized Share**	**Total Resources**
2.0%	−0.543*** (0.0269)	0.195*** (0.0092)
2.5%	−0.535*** (0.0269)	0.194*** (0.0092)
3.0%	−0.528*** (0.0269)	0.194*** (0.0093)

Note: All models apply CAMS household analysis weights and include age, gender, education, cognition, health, and year controls; standard errors (in parentheses) are clustered at the respondent level. *** p < .001.

I. Full Regression Results, Including Models 2 and 4

The three models used to test H1 through H5 appear in Table 2, which labels demographic and health controls as "Yes" or "Absorbed" for readability. For full transparency, Table 9 reports every coefficient underlying Table 2, together with the two diagnostic specifications referenced in Section 4.3 and labeled there as Model 2 (components plus total resources) and Model 4 (person fixed effects plus total resources). Because total resources is by construction the sum of the two wealth components, Models 2 and 4 are collinear by design; their sign-reversed component coefficients are reported here for transparency rather than treated as substantive findings, in keeping with the associational interpretation of the collinearity issue discussed in Section 4.3.

TABLE IX
FULL REGRESSION RESULTS FOR MODELS 1 THROUGH 5

Predictor	**Model 1**	**Model 2 (diagnostic)**	**Model 3 (FE)**	**Model 4 (FE diagnostic)**	**Model 5**
Intercept	10.284*** (0.130)	7.911*** (0.179)	—	—	8.723*** (0.158)
Annuitized wealth (IHS)	0.0161*** (0.0043)	−0.0491*** (0.0062)	0.0012 (0.0022)	−0.0035 (0.0028)	—
Liquid account wealth (IHS)	0.0300*** (0.0014)	0.0170*** (0.0014)	0.0012 (0.0009)	0.0008 (0.0009)	—
Total resources (IHS)	—	0.268*** (0.0153)	—	0.0205* (0.0094)	0.2074*** (0.0096)
Annuitized share	—	—	—	—	−0.6789*** (0.0284)
Age	−0.0106*** (0.0013)	−0.0104*** (0.0012)	0.0040 (0.0100)	0.0043 (0.0100)	−0.0093*** (0.0011)
Female	−0.1583*** (0.0193)	−0.0950*** (0.0183)	Absorbed	Absorbed	−0.1126*** (0.0178)
Education	0.0691*** (0.0037)	0.0508*** (0.0036)	Absorbed	Absorbed	0.0469*** (0.0035)
Cognition	0.0150*** (0.0021)	0.0104*** (0.0020)	Absorbed	Absorbed	0.0101*** (0.0019)
Self-rated health: very good	−0.0693* (0.0282)	−0.0482† (0.0270)	Absorbed	Absorbed	−0.0388 (0.0258)
Self-rated health: good	−0.1262*** (0.0300)	−0.0848** (0.0288)	Absorbed	Absorbed	−0.0668* (0.0275)

Self-rated health: fair	−0.2006*** (0.0327)	−0.1424*** (0.0313)	Absorbed	Absorbed	−0.1313*** (0.0302)
Self-rated health: poor	−0.1730*** (0.0414)	−0.1253** (0.0395)	Absorbed	Absorbed	−0.1425*** (0.0384)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Person fixed effects	No	No	Yes	Yes	No
Observations	14,940	14,940	13,937	13,937	14,940
Adjusted / Within R^2	.355	— (n.r.)	.813 / .0003	.813 / .0011	.440

Note: Dependent variable is IHS-transformed household consumption. All models apply CAMS household analysis weights; standard errors (in parentheses) are clustered at the respondent level. Models 3 and 4 include respondent and year fixed effects, which absorb time-invariant controls ("Absorbed"). Self-rated health reference category is excellent. Adjusted R^2 for the diagnostic Model 2 was not computed in the underlying analysis output and is marked "n.r." (not reported); it is not needed for interpretation since Model 2 is not treated as a substantive specification. † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

VI. DISCUSSION

The form of retirement wealth is associated with household consumption across older retirees, though this association is cross-sectional and does not persist within households over time. In the weighted baseline model, both annuitized and liquid account-based wealth are positively associated with spending, offering partial support for the income-floor view. However, the liquid-wealth association is larger, the interquartile magnitude far greater, and the Wald test rejects equality of the two coefficients. The stronger and more consistent cross-sectional finding is that liquid account-based wealth is more closely associated with observed consumption.

The composition model sharpens the point: holding total measured resources constant, households with a higher annuitized share consume less. This challenges a simple version of the income-floor argument, under which more guaranteed income should raise spending confidence and consumption. The result does not imply that annuitized resources reduce spending; it indicates that, among similarly resourced households, the liquid-versus-annuitized composition of wealth is associated with how much is consumed, which fits the liquidity-and-accessibility view and the behavioral notion that accessible balances are more closely associated with spending.

This cross-sectional reading is consistent with Butrica and Mermin (2006) and complements Blanchett and Finke (2025). The apparent tension with Blanchett and Finke (2025), who find that guaranteed income is spent more readily than savings, dissolves once the margins are distinguished: their result concerns the propensity to spend from a given income source, whereas the present cross-sectional association concerns how stocks of differently formed wealth relate to the level of consumption across households. Both can hold simultaneously, and together they reinforce the central message that retirement resources are not treated as fully fungible.

The fixed-effects results tell a different story. When the analysis compares the same respondent over time, the wealth associations shrink to insignificance and the within-R^2 is near zero. The cross-sectional relationships are therefore largely between households. Households with more liquid wealth may differ from others in durable characteristics, including lifetime earnings, preferences, health, education, financial literacy, risk tolerance, and planning behavior, all of which may be correlated with spending. The findings should not be read as causal evidence that increasing a household's liquid wealth would raise its spending. They establish wealth form as a meaningful correlate of consumption across retired households, not as a behavioral lever within them.

For financial-services practice, the implications are correspondingly measured. Retirement-income planning should attend to both income security and liquidity: a spending floor from Social Security, pensions, or annuities remains valuable for managing longevity risk, while the consistently stronger cross-sectional association of liquid wealth suggests that the accessibility and structure of account-based assets are closely bound up with observed spending. Practitioners may help clients translate balances into sustainable spending through withdrawal guidelines, spending guardrails, dedicated cash reserves, or bucket strategies that make account wealth feel usable without compromising sustainability.

These associations also carry implications for how advice is delivered, not only what is recommended. Because the cross-sectional composition-consumption pattern does not survive person fixed effects, advisors should be cautious about inferring that reallocating a specific client toward more liquid holdings will, by itself, change that client's spending behavior; the pattern more plausibly reflects durable differences across households in preferences, planning horizon, and financial background rather than a mechanism that can readily be altered within a given household. A more defensible use of these findings is diagnostic and segmentation-oriented: clients whose resources are heavily annuitized may be more prone to under-spending relative to their means and could benefit from structured permission to draw down principal. By contrast, clients with substantial liquid wealth but limited guaranteed income may benefit from products or planning strategies, such as partial annuitization or systematic withdrawal plans, that supply some of the psychological floor that annuitized income appears to provide. Plan sponsors and product designers face a parallel implication: because guaranteed and liquid resources appear to be treated differently even when their actuarial values are comparable, decumulation products that combine a guaranteed-income component with a flexible, clearly labeled liquid reserve may better match how retirees actually behave than products that simply maximize expected lifetime income.

VII. LIMITATIONS AND FUTURE RESEARCH

Several limitations qualify these findings. First, the results are associational, not causal. The fixed-effects models show that within-household variation in wealth composition explains little variation in consumption. A related limitation is that consumption and liquid wealth are determined jointly within a wave: higher spending mechanically draws down accessible balances, so the cross-sectional association between liquid wealth and consumption may partly reflect reverse causation rather than wealth shaping spending. This simultaneity is distinct from the omitted-variable concern that the fixed-effects models address, and it reinforces the associational interpretation. Second, the primary specification approximates annuitized wealth by capitalizing annual income at a fixed factor. Although the results are robust both to alternative fixed factors and to the age- and sex-varying actuarial capitalization examined in Section 5.8, the measure does not fully capture features such as survivor provisions, inflation protection, individual mortality expectations, or contract-specific terms. Third, the data do not identify the account from which spending was funded, so the analysis cannot directly observe whether consumption was financed from Social Security, pensions, IRA withdrawals, or taxable accounts.

Future research could test whether financial advice moderates the relationship between liquid wealth and spending, since planners may help retirees convert balances into sustainable income and ease the discomfort of drawdown. Other promising directions include direct withdrawal and required-minimum-distribution measures, health shocks, longevity expectations, bequest motives, and disaggregated spending categories. Mixed-method work could illuminate how retirees mentally separate Social Security, pensions, IRA balances, taxable assets, and emergency reserves, clarifying the behavioral mechanisms this study can only infer.

VIII. CONCLUSION

This study examined whether liquid account-based wealth or annuitized resources are more strongly associated with household consumption among older retirees. Using weighted RAND HRS/CAMS data, both forms are positively associated with consumption in the cross-section, but liquid account wealth shows the larger association, a Wald test confirms the difference, and a composition model holding total resources constant finds that a higher annuitized share predicts lower consumption.

The cross-sectional evidence offers measured support for a liquidity-and-accessibility view and challenges the strongest form of the income-floor argument without rejecting it. But the within-household evidence is equally important: once persistent household differences are held constant, the associations vanish. Wealth form is a meaningful correlate of retirement spending across households, and liquidity deserves a place alongside income security in retirement-income planning; yet the evidence does not demonstrate a corresponding within-household behavioral response. For financial-services professionals, the practical message is to attend not only to how much retirees have, but to the form, accessibility, and psychological usability of those resources while remembering that the deepest drivers of spending lie in durable household characteristics that no single portfolio adjustment will quickly change.

AI USE DISCLOSURE

Generative artificial intelligence (Claude, Anthropic) was used to assist with language editing, improving clarity, organization, and refinement of the revised manuscript in response to reviewer comments. All statistical analyses, coding, interpretation of results, and conclusions were performed by the authors and independently verified prior to submission.

APPENDIX A
VARIABLE CONSTRUCTION AND RAND/HRS CODES

Table A1 maps every constructed variable used in the analysis to the specific RAND HRS or RAND CAMS variable code and wave-naming pattern underlying it.

TABLE A1
VARIABLE CONSTRUCTION AND RAND/HRS CODES

Construct	**RAND Variable Stem**	**Wave Pattern**	**Description**
Household consumption (dependent variable)	cctot	h#cctot	RAND CAMS total household consumption, annual $, IHS-transformed for all models.
Social Security retirement income	isret	r#isret	RAND HRS respondent-level Social Security retirement income, annual $.
Pension and annuity income	ipena	r#ipena	RAND HRS respondent-level pension and annuity income, annual $.
Annuitized wealth (constructed)	isret + ipena, × annuity factor	n/a	Sum of the two income flows above, capitalized to a wealth-equivalent using either the fixed factor (12/18/25) or the SSA-life-table actuarial factor (Section 5.8).
IRA assets	aira	h#aira	RAND HRS household-level IRA/Keogh account assets, $.
Non-housing financial wealth	atotf	h#atotf	RAND HRS household-level non-housing financial wealth (checking/savings, CDs, bonds, stocks, business, other assets net of non-mortgage debt), $.
Liquid account-based wealth (constructed)	aira + atotf	n/a	Sum of the two asset measures above.
Cognition score	cogtot	r#cogtot	RAND HRS respondent-level total cognition score (composite memory/mental-status measure).
Self-rated health	shlt	r#shlt	RAND HRS respondent-level self-rated health, five-category (excellent to poor), entered as a factor.
Age	agey_e	r#agey_e	RAND HRS respondent age in years at interview.
Gender	ragender	constant (person-level)	RAND HRS respondent gender; recoded to a female indicator.
Education	raedyrs	constant (person-level)	RAND HRS respondent years of education.
Labor force / retirement status	lbrf	r#lbrf	RAND HRS respondent labor force status; retired = 5, partly retired = 4 (both included in the analytic sample; the latter is flagged for the Section 5.7 robustness check).
Marital / partner status	mstat	r#mstat	RAND HRS respondent marital status; collapsed into married/partnered (codes 1-3) versus not married/partnered.
Household size	hhres	h#hhres	RAND HRS household-level count of household residents.

Household earnings	iearn (respondent) + s#iearn (spouse)	r#iearn / s#iearn	RAND HRS respondent and spouse earnings, summed to a household total (used only in the Section 5.7 earnings/housing robustness check).
Housing wealth	ahous	h#ahous	RAND HRS household-level net value of primary residence, already net of mortgage in RAND's construction.
Risk tolerance	risk	r#risk (waves 1, 4-8 only)	RAND HRS respondent income risk-aversion category from the hypothetical-income-gamble module. Treated as a stable, time-invariant trait using each respondent's first observed value, carried to all waves (Section 5.7).
CAMS analysis weight	cwgthh	h#cwgthh	RAND CAMS household analysis weight; applied as the analytic (probability) weight in every model.

Note: r# and h# denote respondent-level and household-level RAND HRS variables, respectively, prefixed by the survey wave number; s# denotes the spouse's respondent-level variable.

APPENDIX B
CORRELATION MATRIX OF IHS-TRANSFORMED PREDICTORS

Table B1 reports the weighted correlation matrix of the four IHS-transformed predictors used across the component and share models, supporting the collinearity argument in Section 4.3 for excluding the combined specification.

TABLE B1
WEIGHTED CORRELATION MATRIX OF IHS-TRANSFORMED PREDICTORS

	Annuitized Wealth	**Liquid Wealth**	**Total Resources**	**Annuitized Share**
Annuitized wealth (IHS)	1.000	0.024	0.524	0.370
Liquid account wealth (IHS)	0.024	1.000	0.436	−0.575
Total resources (IHS)	0.524	0.436	1.000	−0.322
Annuitized share	0.370	−0.575	−0.322	1.000

Note: Weighted correlations computed using CAMS household analysis weights across the full analytic sample (N = 14,940).

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