Marital Transitions, Housing, and Long-Term Care in Old Age

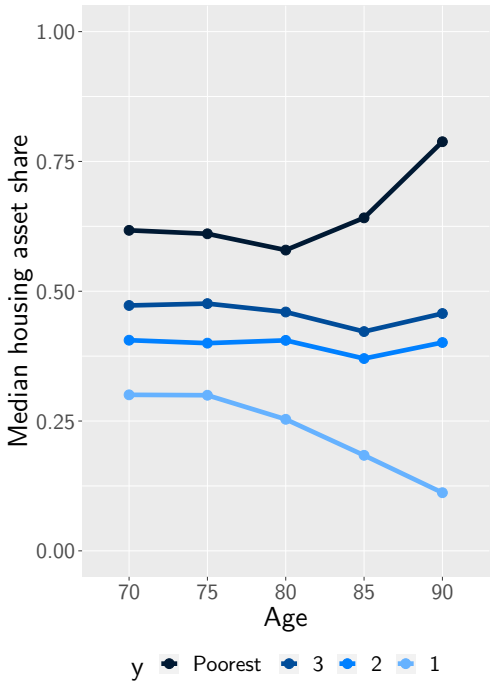
Minsu Chang (Georgetown) Ami Ko (Georgetown)

August 2021
DSE Conference

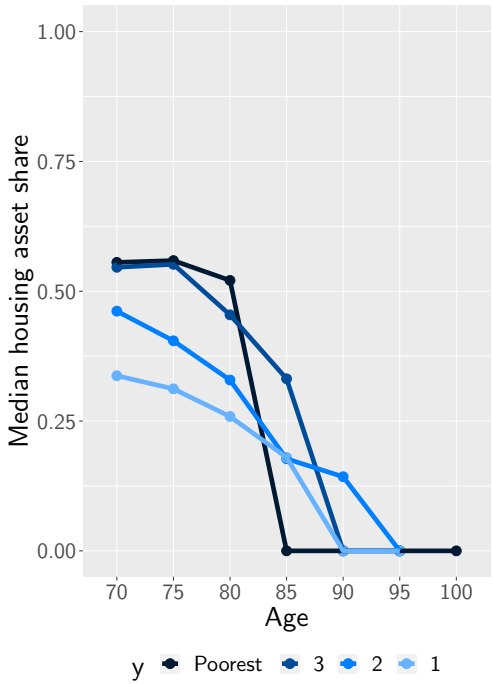
Motivation

- Retirement saving puzzle: retirees hold on to substantial amounts of wealth in late life.
  - Medical expenditure, bequest motives etc.
- Most of retirement wealth is in housing, and there is a stark difference in dissaving of housing wealth by marital status.
  - Married retirees dissave housing wealth at a much slower rate than their single counterparts.
- Understanding how marital transitions affect housing decisions of retirees is important for policy reform evaluations.
  - Welfare programs often distinguish housing from liquid assets and treat married and single individuals asymmetrically.

Housing asset share: couples vs. singles



Currently Couples

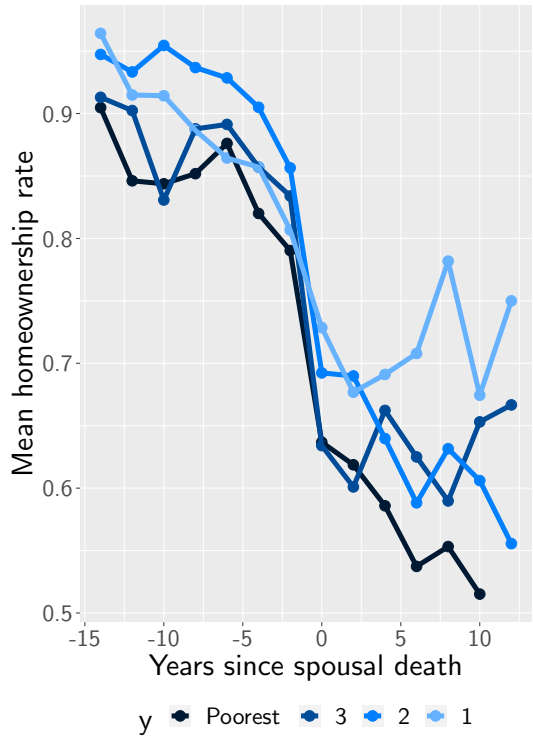


Currently Singles

Notes: Data = HRS 1998-2014. Median housing asset share by marital status, income, and age.

- Housing asset share = housing assets/total assets.
- Faster dissaving among singles is restricted to housing assets only.

Marital transition and homeownership



Notes: Data = HRS 1998-2014. Sample consists of initial couples who experience spousal death and never remarry.

- Huge reduction in the homeownership rate around the time of spousal death.

Our question

How do marital transitions affect homeownership in retirement?

1. Marital transitions substantially change long-term care prospects
   - While most disabled couples rely on spousal care, singles are much more likely to enter into a nursing home.
2. Medicaid treats houses differently for couples and singles.
   - Housing counted for singles, but exempt for couples.
3. Heterogeneous bequest motives by marital status.
   - Houses as bequests may be more valuable when they are left to a surviving spouse than to children.

What we do

1. Using HRS data, provide descriptive evidence that spousal caregiving, Medicaid, and bequest motives strengthen couples' incentive to own a home.
2. Develop and estimate a life-cycle model featuring savings, housing decisions, and spousal caregiving of retirees.
3. Quantify the importance of each mechanism in explaining the homeownership gap between couples and singles.
4. Welfare analysis of counterfactual government policies.

Related literature

- Old age savings
  - Hubbard, Skinner, and Zeldes (1995), Palumbo (1999) and De Nardi, French, and Jones (2010), Lockwood (2018).
  - De Nardi, French, Jones and McGee (2018), McGee (2019), Barczyk, Fahle and Kredler (2020).
- Family long-term care
  - Skira (2015), Barcyzk and Kredler (2018), Ko (2020), Mommaerts (2020).

Long-term care arrangements

	Married	Single
Caregiving by spouse	0.82	0.00
Caregiving by children	0.34	0.71
Nursing home care	0.30	0.53
Paid home care	0.38	0.42
Homeowner	0.76	0.34
Observations	2433	4274

Notes: HRS 2000-2014. Sample consists of disabled individuals who receive long-term care.

- Informal care is the backbone of LTC delivery
  - Couples: spouses
  - Singles: adult children
- Nursing home care risk is greater for singles.

Spousal caregiving and homeownership

- We conjecture that spousal caregiving strengthens homeownership.
- Hypothesis: "Individuals would be more likely to sell home upon entering widowhood if they provided LTC to their deceased spouse."
- Dependent variable = sell home upon spousal death.
- Key control = provision of spousal caregiving before spousal death.
- Control individual characteristics, year and birth cohort FE.
- Regression result: positive correlation between caregiving and home sales upon spousal death. Details

Medicaid estate recovery programs and homeownership

- Medicaid is a means-tested public insurance program which covers formal LTC costs for eligible individuals.
- It requires states to recover Medicaid-financed LTC costs from the beneficiary's home upon permanent nursing home entry or death.
- Major exception: recoveries from home are prohibited during the lifetime of a surviving spouse.
- Medicaid may induce couples to put more assets in housing (Greenhalgh-Stanley, 2012).
- Hypothesis: "Individuals would be more likely to sell home upon spousal death if their deceased spouses were Medicaid enrollees."
- Regression result: positive correlation between Medicaid use before spousal death and home sales upon entering into widowhood. Details

Bequests and homeownership

- We conjecture that singles put less value on leaving housing bequests than couples.
- Hypothesis: "In response to an increase in mortality risk, singles will be more likely to sell home."
- Proxy for increase in mortality risk using self-reported changes in health.
- Regression result: singles liquidate housing wealth in response to an increase in mortality risk, while couples don't. Details

Model: summary (1/2)

- Everybody starts as a retired couple (husband age $= 65$).
- Health and mortality risk.
- Collective household framework to incorporate different precautionary savings motives between husbands and wives.
- Flow utility: $u(c, h)$. Caregiving wives: $u(c, h) - \psi_{\text{homeowner}}$. Details
- Bequest utility: $v^M(a, \tilde{h})$ if die as married, $v^S(a)$ if die as single.
  - Singles only value bequeathing liquid assets. Details

Model: summary (2/2)

- Make consumption-savings and housing decisions.
  - Homeowners: keep vs. sell, renters: value of rented property.
  - Premium on homeownership, economies of scale in couples' consumption.
- LTC arrangements
  - Husbands can receive spousal care. Wives use formal LTC.
  - Singles use formal LTC iff caregiving from children not available.
- No borrowing and no reverse mortgages.
- Medicaid incorporated as a consumption floor.
  - Homestead exemption given to couples only. Details

Recursive formulation for couples

$$
\begin{aligned}
V_t^M(z_t) \quad = \max_{q_t} \quad & \kappa u(c_t^H, h_t^H) + (1-\kappa)\left[u(c_t^W, h_t^W) - \psi_{\tilde{h},y} P^W\right] \\
& + \beta \pi_t^H \pi_t^W E[V_{t+1}^M(z_{t+1})|z_t, q_t] \\
& + \beta (1-\pi_t^H) \pi_t^W E\left[\kappa v^M(a_{t+1}, \tilde{h}_t) + (1-\kappa) V_{t+1}^{S,W}(z_{t+1})|z_t, q_t\right] \\
& + \beta \pi_t^H (1-\pi_t^W) E\left[\kappa V_{t+1}^{S,H}(z_{t+1}) + (1-\kappa) v^M(a_{t+1}, \tilde{h}_t)|z_t, q_t\right] \\
& + \beta (1-\pi_t^H)(1-\pi_t^W)\left[v^S(b_{t+1})|z_t, q_t\right]
\end{aligned}
$$

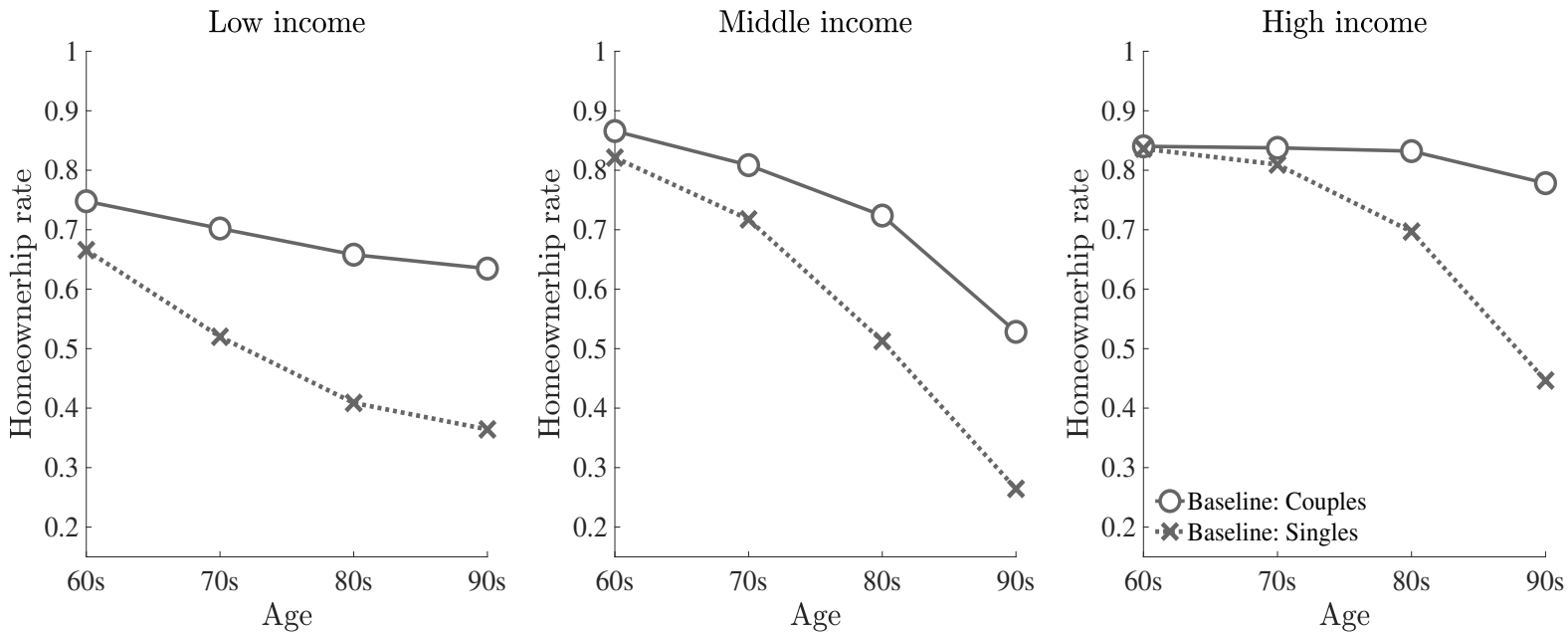
subject to budget constraints.

- State vector $z_t = (a_t, \tilde{h}_{t-1}, s_t^H, s_t^W; y, ic_{child})$.
  - $a_t, \tilde{h}_{t-1}$: liquid and housing assets.
  - s_t^H, s_t^W: health statuses of the husband and wife.
  - y: income.
  - ic_{child}: availability of informal care from children.
- Choice vector $q_t = (D_t, R_t, P_t^W, \hat{c}_t^H, \hat{c}_t^W)$.
  - D_t, R_t = house selling and rent decision.
  - P_t^W = spousal caregiving.
  - $\hat{c}_t^j$ = general consumption.
- Survival probability π_t: varies by health, age, gender, and income.

Two-stage estimation

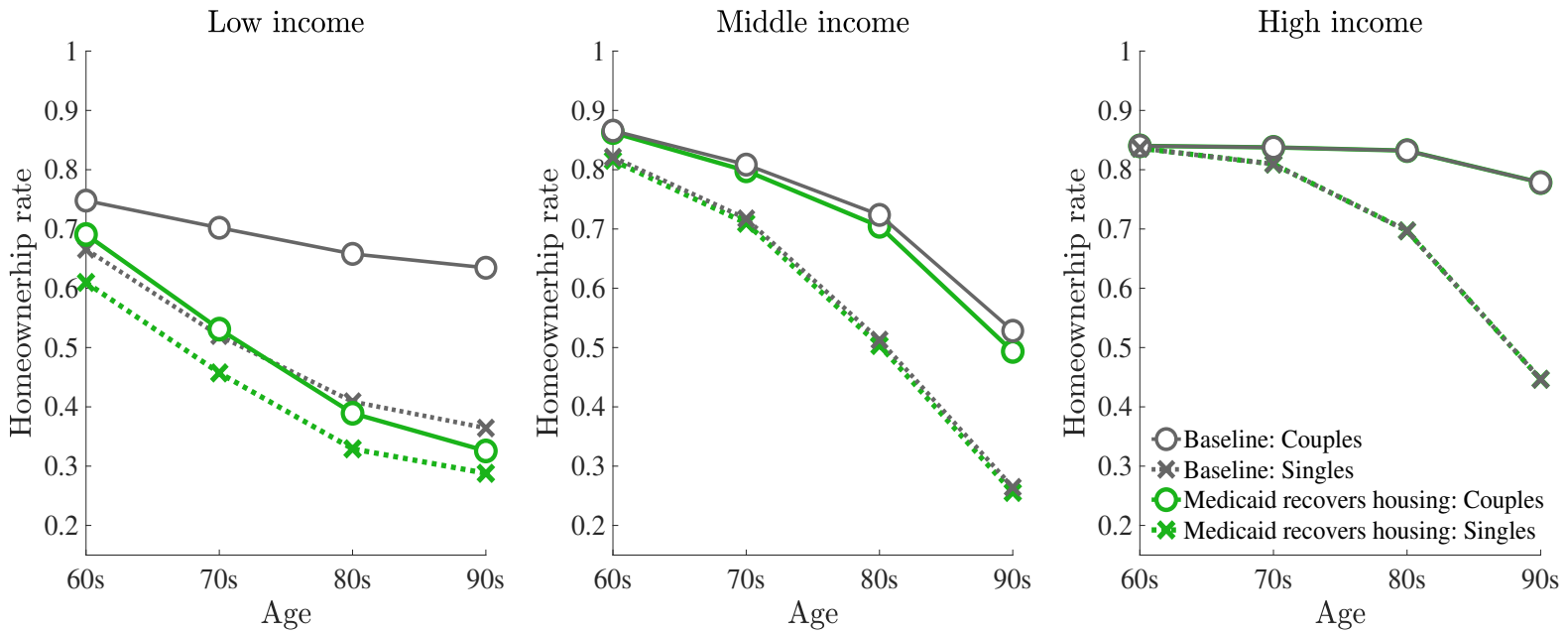
- 1st stage: fix or estimate parameters outside the model
  - Health and mortality risk estimated outside the model.
  - Discount factor, CRRA coefficient, formal care costs, consumption floor, real interest rates, housing transaction costs, economies of scale.
- 2nd stage: estimate the rest within the model by Simulated Method of Moments.
  - Caregiving disutility, Pareto weight, bequest utility, and weight on housing utility. Identification Estimates
- Estimated model replicates key patterns of the data.
  - LTC arrangements, homeownership rate over life-cycle and around spousal death conditional on marital status and income. Model fit

Homeownership gap: baseline



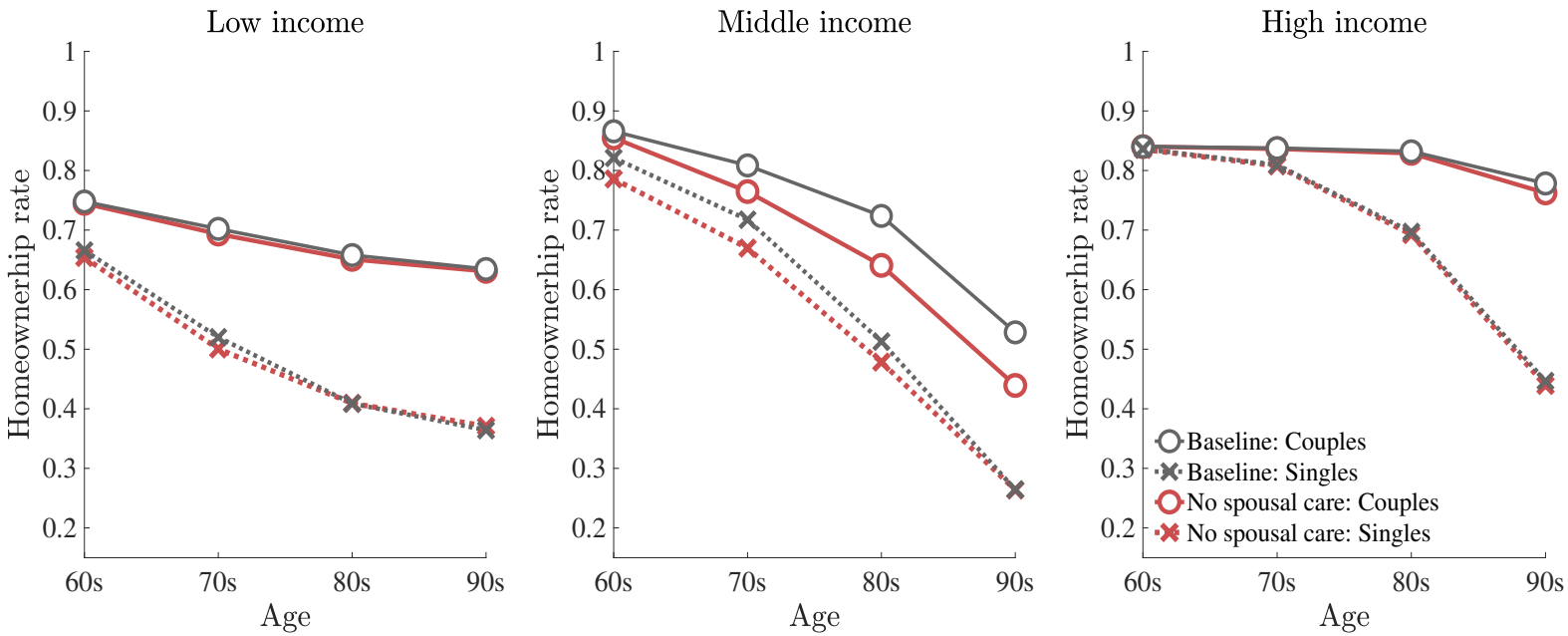
- Which mechanism explains the gap in homeownership between couples and singles?
- Shut down each mechanism one at a time and examine counterfactual homeownership rate.

Homeownership gap: no homestead exemption by Medicaid



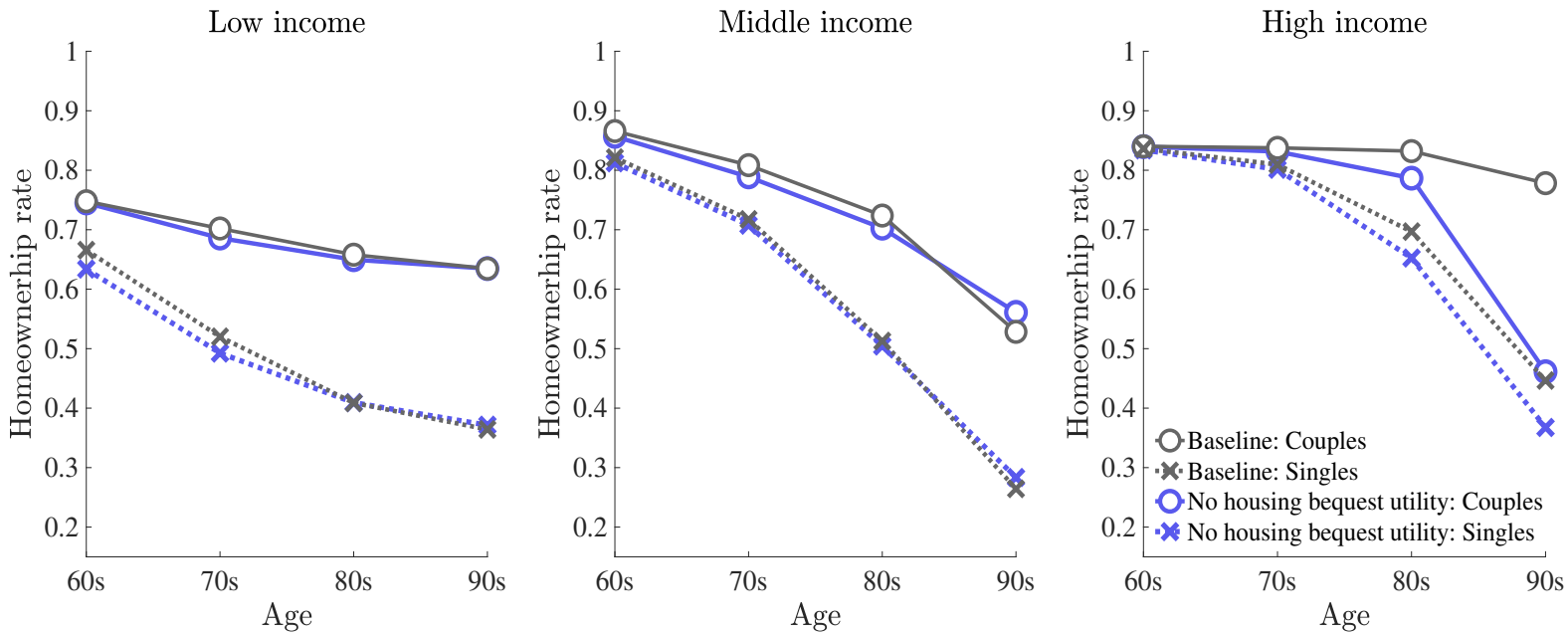
- Counterfactual: couples' housing no longer disregarded by Medicaid.
- Result: low-income couples liquidate housing early in retirement to qualify for Medicaid.

Homeownership gap: no spousal caregiving



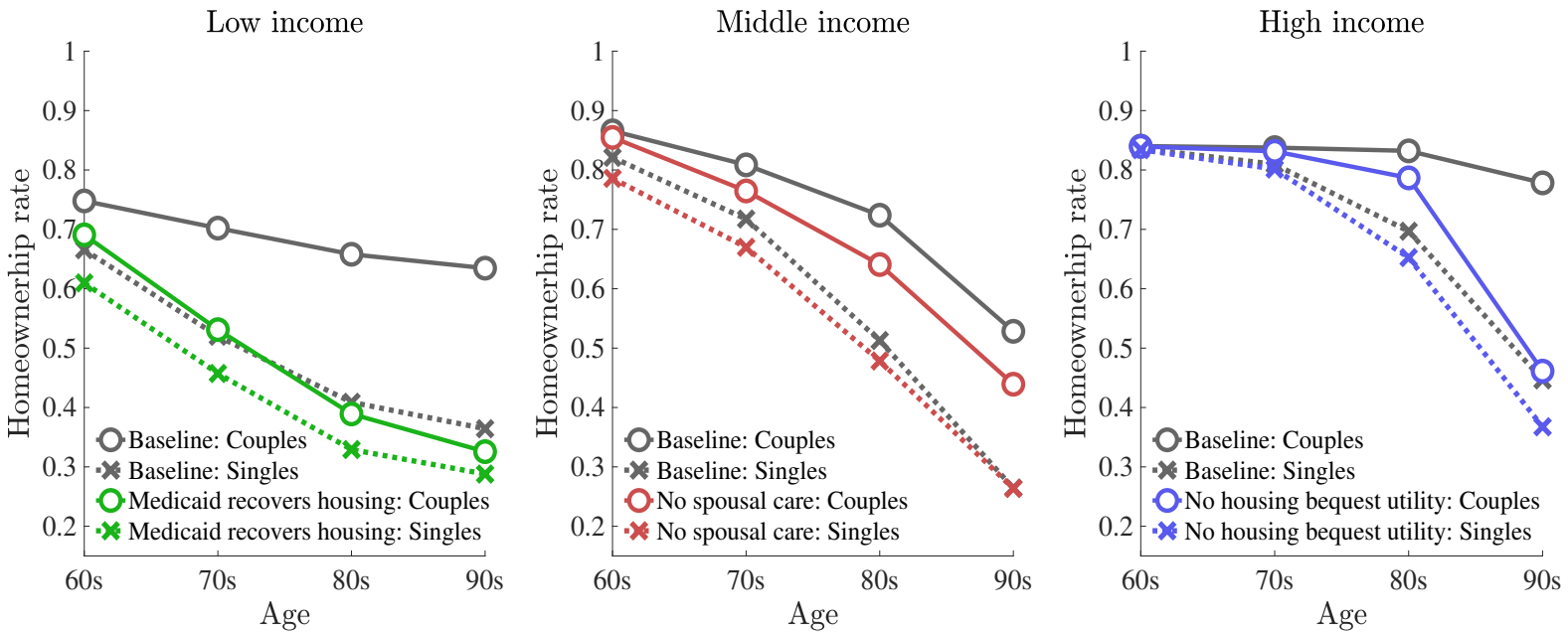
- Counterfactual: no spousal caregiving.
- Result: middle-income couples liquidate housing due to increased nursing home risk.

Homeownership gap: no housing bequest utility



- Counterfactual: couples only value bequeathing liquid assets.
- Result: high-income couples liquidate at the very late stage of life.

Summary: dominant channel



- Substantial heterogeneity in why couples hold onto housing assets
  - Low income: to qualify for Medicaid without exhausting all of their retirement wealth.
  - Middle income: for spousal caregiving.
  - High income: due to bequest motives toward surviving spouse.

All channels

Welfare analysis of counterfactual policies

- Our measure of welfare = Mean wealth transfer needed to make a household under the baseline regime indifferent *minus* mean change in government expenses.
- German-like subsidies for spousal caregiving: \$5,000/year.
- Alternative treatment of housing by Medicaid
  1. Always recover housing
  2. Always disregard housing
  3. Favor singles

Welfare analysis of counterfactual policies

	(1) Baseline	(2) Care subsidy	(3) Medicaid 1	(4) Medicaid 2	(5) Medicaid 3
Homestead exemption	Couples	Couples	Nobody	Everybody	Singles
Wealth transfer ($)					
: Low income	-	19457	-12450	4451	-11462
: Middle income	-	7250	-168	3177	1471
: High income	-	4451	0	17	1
: **All (A)**	-	**8667**	**-2836**	**1980**	**-2111**
Government expenses ($)					
: Medicaid	51362	44891	51868	64099	56662
: Care subsidy	0	6865	0	0	0
: Total	51362	51756	51868	64099	56662
: Change from baseline (B)	-	**394**	**506**	**12737**	**5300**
Welfare = A-B	-	**8273**	**-3341**	**-10757**	**-7411**

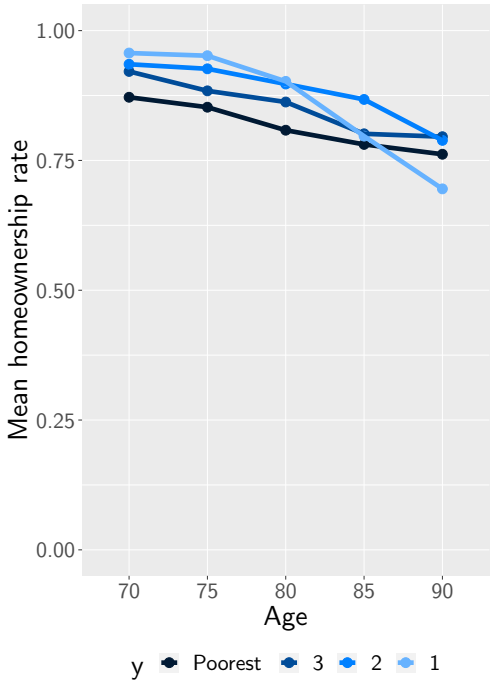
- Spousal care subsidy ($5,000/year) increases household welfare, while remaining almost budget-neutral.
- Providing homestead exemption to couples only (baseline) encourages slower dissaving of housing wealth, which decreases the overall impoverishment risk in retirement.

Conclusion

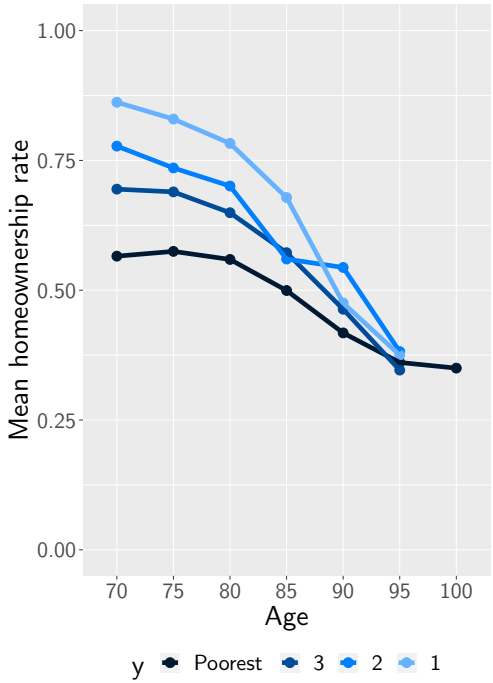
- We found substantial heterogeneity in why couples dissave housing wealth at a much slower rate than singles.
  - Low income: to qualify for Medicaid without exhausting all of their retirement wealth.
  - Middle income: for spousal caregiving.
  - High income: due to bequest motives toward surviving spouse.
- Provision of care subsidies increases household welfare, while remaining almost budget neutral.
- The current treatment of housing wealth by Medicaid (homestead exemption to couples only) is desirable in the sense that it reduces the incentive to spend down to Medicaid threshold.

Additional slides

Homeownership: couples vs. singles



Currently Couples

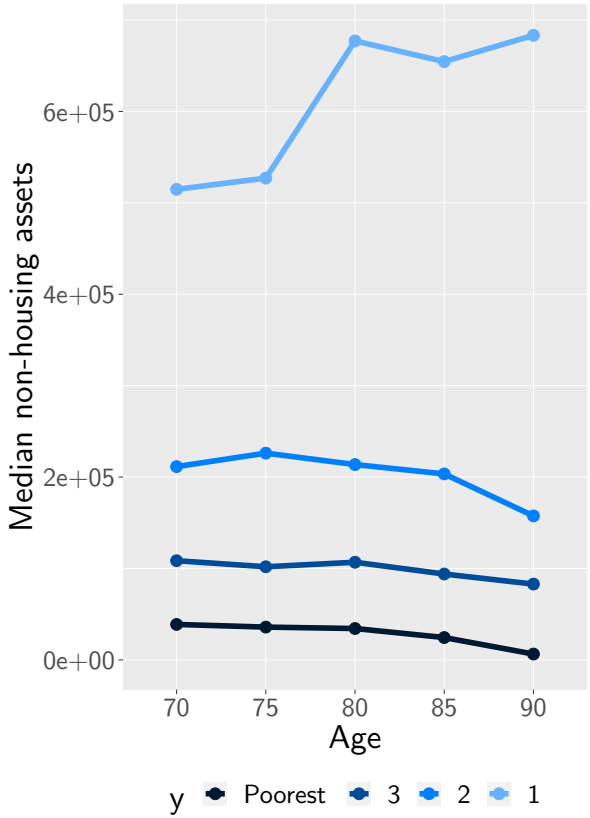


Currently Singles

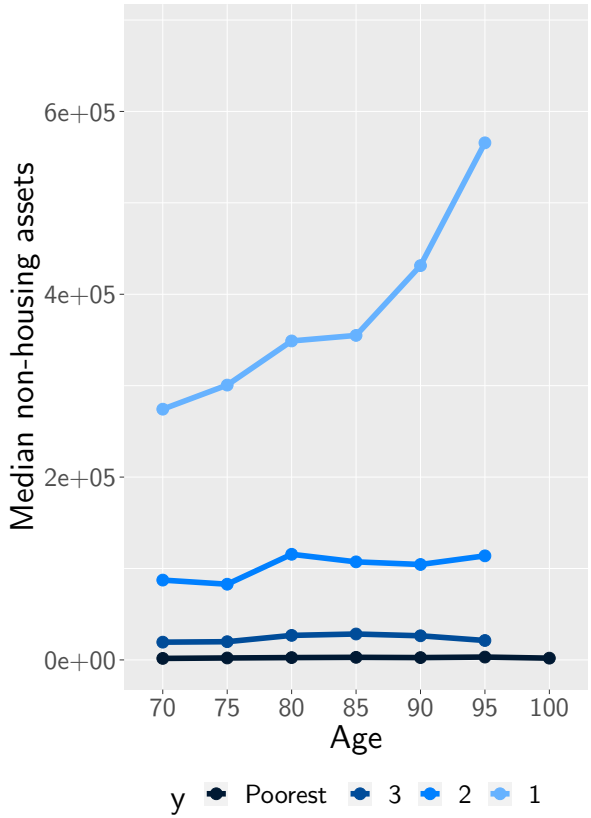
Notes: Data = HRS 1998-2014. Mean homeownership rate by marital status, income, and age.

- Homeownership rate at age 90 is over 75% for couples, less than 50% for singles.

Non-housing assets: couples vs. singles



Currently Couples



Currently Singles

Notes: Data = HRS 1998-2014. Median non-housing assets by marital status, income, and age.

Related literature

- Old age savings
  - Hubbard, Skinner, and Zeldes (1995), Palumbo (1999), De Nardi, French, and Jones (2010), Kopecky and Koreshkova (2014), Lockwood (2018), Nakajima and Telyukova (2013, 2020), De Nardi, French, Jones and McGee (2018), McGee (2019), Barczyk, Fahle and Kredler (2020), Achou (2021).
- Family long-term care
  - Skira (2015), Barcyzk and Kredler (2018), Ko (2020), Mommaerts (2020).

Spousal caregiving and homeownership

	(1) Sell home	(2) Sell home	(3) Sell home
Spousal care before death	0.210***	0.134**	0.102*
	(0.057)	(0.059)	(0.057)
Age		0.020***	0.019***
		(0.004)	(0.004)
Have LTC needs		0.168***	0.167***
		(0.040)	(0.038)
Female		0.031	0.037
		(0.031)	(0.030)
Have children		0.080	0.079
		(0.062)	(0.060)
Income		0.000	0.000
		(0.000)	(0.000)
Non-housing assets		-0.000**	0.000
		(0.000)	(0.000)
Housing assets			-0.000***
			(0.000)
Mean of dep. var	0.333	0.332	0.332
Observations	1121	1102	1102

Notes: Standard errors in parentheses. Liner probability model. Year fixed effects and birth cohort fixed effects included in all specifications. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

- Positive correlation between caregiving and home sales upon spousal death. Return

Medicaid estate recovery programs and homeownership

	(1) Sell home	(2) Sell home	(3) Sell home
Medicaid before spousal death	0.128***	0.088***	0.063**
	(0.033)	(0.033)	(0.032)
Age		0.016***	0.015***
		(0.003)	(0.003)
Have LTC needs		0.129***	0.123***
		(0.032)	(0.031)
Female		-0.002	0.006
		(0.026)	(0.025)
Have children		0.087*	0.098**
		(0.052)	(0.050)
Income		0.000	0.000
		(0.000)	(0.000)
Non-housing assets		-0.000***	0.000
		(0.000)	(0.000)
Housing assets			-0.000***
			(0.000)
Mean of dep. var	0.343	0.340	0.340
Observations	1706	1678	1678

Notes: Standard errors in parentheses. Liner probability model. Year fixed effects and birth cohort fixed effects included in all specifications. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

- Positive correlation Medicaid receipt before spousal death and home sales upon spousal death. Return

Bequests and homeownership

	(1) Sell home	(2) Sell home	(3) Sell home
Married	-0.048***	-0.042***	-0.039***
	(0.004)	(0.011)	(0.011)
Health deteriorates x Single	0.060***	0.043***	0.041***
	(0.006)	(0.006)	(0.006)
Health deteriorates x Married	0.010***	-0.004	-0.004
	(0.003)	(0.003)	(0.003)
Have children x Single		0.022***	0.023***
		(0.008)	(0.008)
Have children x Married		0.016*	0.018**
		(0.008)	(0.009)
Age		0.004***	0.004***
		(0.000)	(0.000)
Have LTC needs		0.071***	0.066***
		(0.005)	(0.005)
Income		0.000	0.000*
		(0.000)	(0.000)
Non-housing assets		-0.000***	0.000**
		(0.000)	(0.000)
Housing assets			-0.000***
			(0.000)
Mean of dep. var	0.062	0.062	0.062
Observations	38087	37576	37576

Notes: Standard errors in parentheses, clustered at the household level. Liner probability model. Year fixed effects and birth cohort fixed effects included in all specifications. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

- Singles sell home in response to an increase in mortality risk, while couples don't. Return

Preferences

- Singles

$$u(c,h) = \frac{c^{1-\gamma}-1}{1-\gamma} + \sigma\frac{h^{1-\gamma}-1}{1-\gamma}$$

  - c = consumption, h = housing services.

- Couples are endowed with their own separate utility

$$\begin{aligned} \text{Husbands:} \quad & u(c^H, h^H) \\ \text{Wives:} \quad & u(c^W, h^W) - \psi_{\tilde{h},y} P^W \end{aligned}$$

  - P^W = indicator for providing spousal care to disabled husband.
  - $\psi_{\tilde{h},y}$ = caregiving disutility. Interacts with housing assets $\tilde{h}$ and income y.

Return

Terminal utility

- Couples

$$v^M(a, \tilde{h}) = \delta_1 \left(\frac{(a_{b1} + a)^{1-\gamma} - 1}{1-\gamma} + \sigma \frac{(h_b + \tilde{h})^{1-\gamma} - 1}{1-\gamma} \right)$$

  - a = non-housing assets.
  - $\tilde{h}$ = housing assets.

- Singles

$$v^S(b) = \delta_2 \frac{(a_{b2} + b)^{1-\gamma} - 1}{1-\gamma}$$

  - b is total cash bequeathed, $b = a + (1-\tau)\tilde{h}$. Housing assets of deceased singles are always liquidated.

Return

Consumption

- Individual consumption of non-housing goods

$$c = \begin{cases} \hat{c} & \text{if not in NH} \\ c_{nh} & \text{if in Medicaid NH} \\ c_{nh} + \hat{c} & \text{if in private NH} \end{cases}$$

  - $\hat{c}$ = consumption expenditure choice.
  - c_{nh} = consumption value from nursing home care (basic food).

- Household consumption expenditure of married households

$$x = [(\hat{c}^H)^\rho + (\hat{c}^W)^\rho]^{\frac{1}{\rho}}$$

  - $\rho \geq 1$ means there are economies of scale.

Housing

- Individual consumption of housing services

$$h = \begin{cases} \omega\tilde{h} & \text{if not in NH and } \tilde{h} > 0 \\ R & \text{if not in NH and } \tilde{h} = 0 \\ h_{nh} & \text{if in NH (Medicaid or private)} \end{cases}$$

  - $\omega \geq 1$ captures homeownership premium.
  - R is the rented housing service.
  - h_{nh} = housing value from nursing home care.
- Sales of home incurs transaction costs $\tau\tilde{h}$.
- Renting is an absorbing state.
- Housing expenditure

$$e(\tilde{h}, R) = \begin{cases} \delta\tilde{h} & \text{if } \tilde{h} > 0 \\ (r+\delta)R & \text{if } \tilde{h} = 0 \end{cases}$$

Means-tested government transfers

- Let $\tilde{a}$ denote cash-at-hand after housing and LTC decisions.
- Singles qualify for gov transfers if

$$\begin{aligned} \tilde{a} &\leq \bar{a}_{nh=0} && \text{and not in NH} \\ \tilde{a} + (1-\tau)\tilde{h} &\leq \bar{a}_{nh=1} && \text{and in NH} \end{aligned}$$

  - $\bar{a}_{nh=0} > \bar{a}_{nh=1}$: NH residents receive basic food and housing.

- Couples qualify if

$$\begin{aligned} \tilde{a} &\leq 2\bar{a}_{nh=0} && \text{and none in NH} \\ \tilde{a} &\leq \bar{a}_{nh=0} + \bar{a}_{nh=1} && \text{and one in NH} \\ \tilde{a} + (1-\tau)\tilde{h} &\leq 2\bar{a}_{nh=1} && \text{and both in NH} \end{aligned}$$

  - For couples with a community spouse, house is not counted against eligibility.

Return

Asset accumulation law

- Cash-at-hand after government transfers

$$\hat{a} = \begin{cases} \tilde{a} & \text{if not on welfare programs} \\ \text{guaranteed consumption floor} & \text{if on welfare programs} \end{cases}$$

- Non-housing assets tomorrow

$$a' = (1 + r)(\hat{a} - x)$$

where

$$x = \begin{cases} [(\hat{c}^H)^\rho + (\hat{c}^W)^\rho]^{\frac{1}{\rho}} & \text{for couples} \\ \hat{c} & \text{for singles} \end{cases}$$

- No borrowing constraint.

Identification strategy

- Wife's caregiving utility: frequency of spousal care provision by income group and homeownership status.
- Weight on housing utility: housing asset share.
- Bequest utility: dissaving of non-housing and housing assets over life-cycle by marital status
- Pareto weight: change in homeownership rate before/after spousal death from low-income people.
  - Little room for bequest motives to kick in.
  - Savings decisions primarily driven by the tension between husbands' wish to consume and wives' wish to transfer assets to their widowhood.
  - If the weight on wives is large, lock more assets in illiquid housing while couple, then liquidate after husband's death.

Return

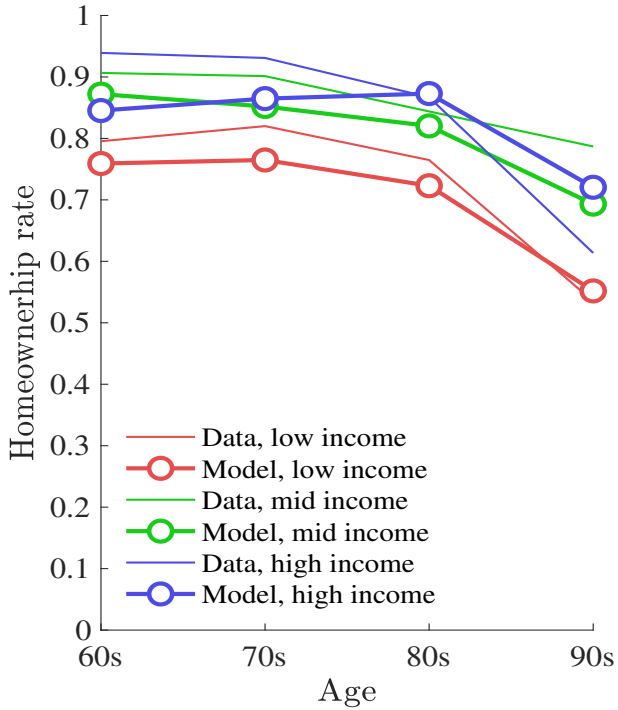
Parameter estimates

Parameter	Estimate	[5th, 95th percentile]
Wife's caregiving disutility		
$\psi_{renter,low}$	10.300e-9	[10.219e-9, 10.350e-9]
$\psi_{renter,middle}$	7.035e-9	[6.966e-9, 7.203e-9]
$\psi_{renter,high}$	5.737e-9	[5.663e-9, 5.775e-9]
$\psi_{howner}/\psi_{renter}$	0.9388	[0.9143, 0.9455]
Weight on housing consumption		
σ	0.9942	[0.9823, 0.9990]
Husband's relative Pareto weight		
κ	0.7813	[0.7787, 0.7841]
Bequest parameters		
δ_1	0.3328	[0.3256, 0.3364]
a_{b1}	8,214	[8,096, 8,249]
h_b	11,430	[11,365, 11,482]
δ_2	0.0769	[0.0722, 0.0877]
a_{b2}	2,904	[2,851, 2,941]

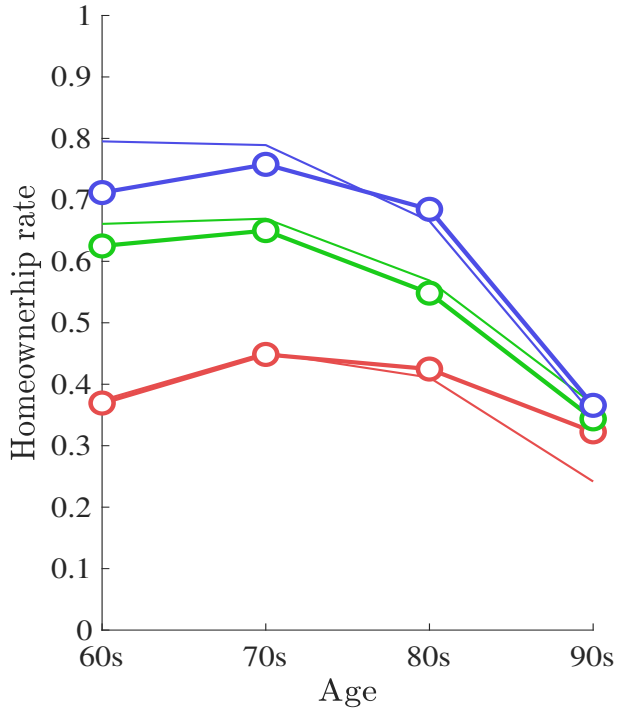
- Complementarity between spousal caregiving and homeownership.
- Larger bargaining weight on husbands.
- Stronger bequest motives for couples.

Return

Model fit: homeownership rate over life-cycle



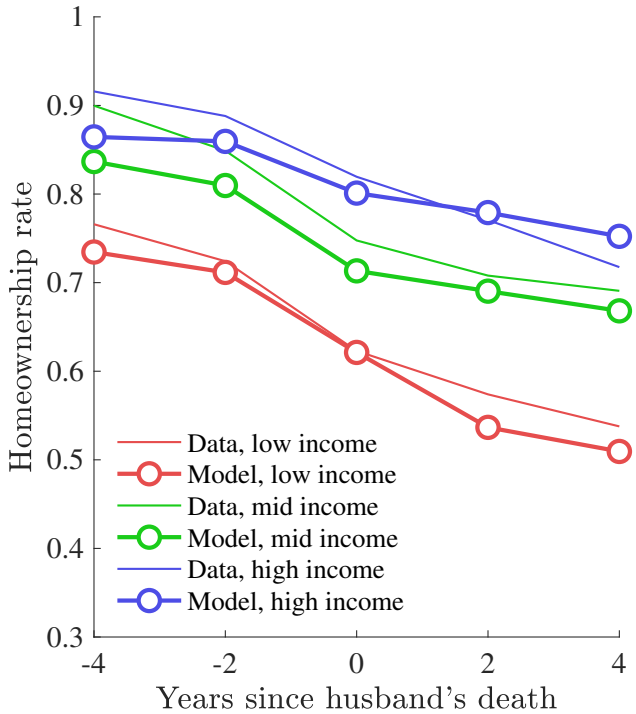
Currently couples



Currently singles

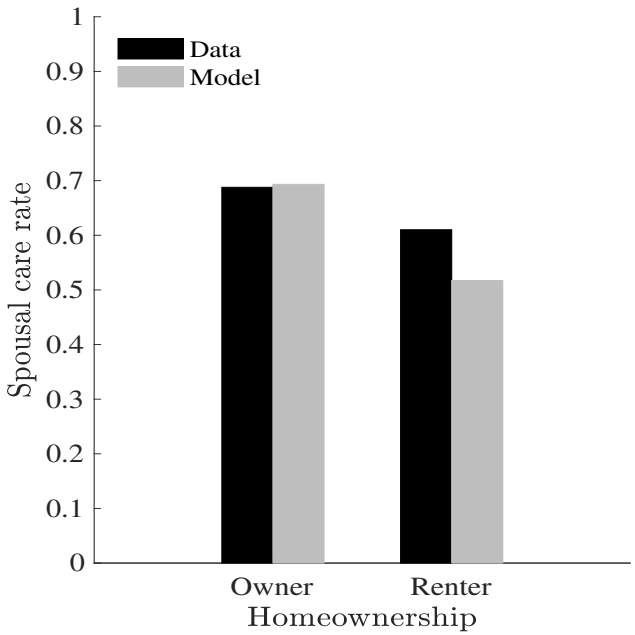
Return

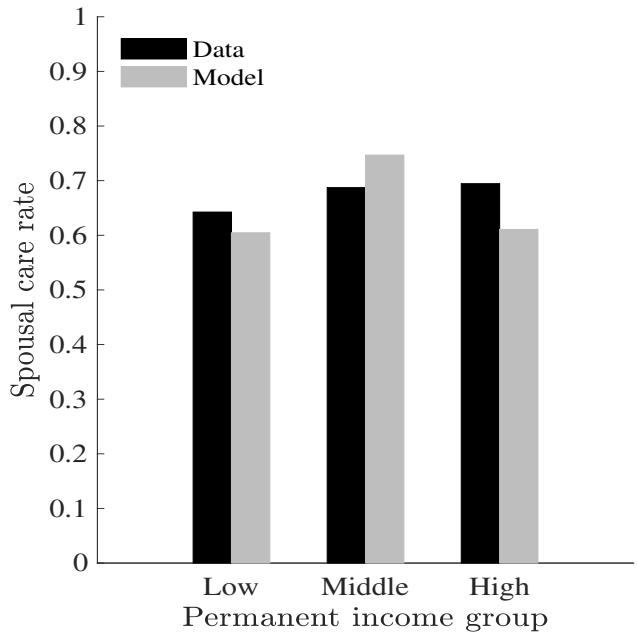
Model fit: homeownership rate around spousal death



Return

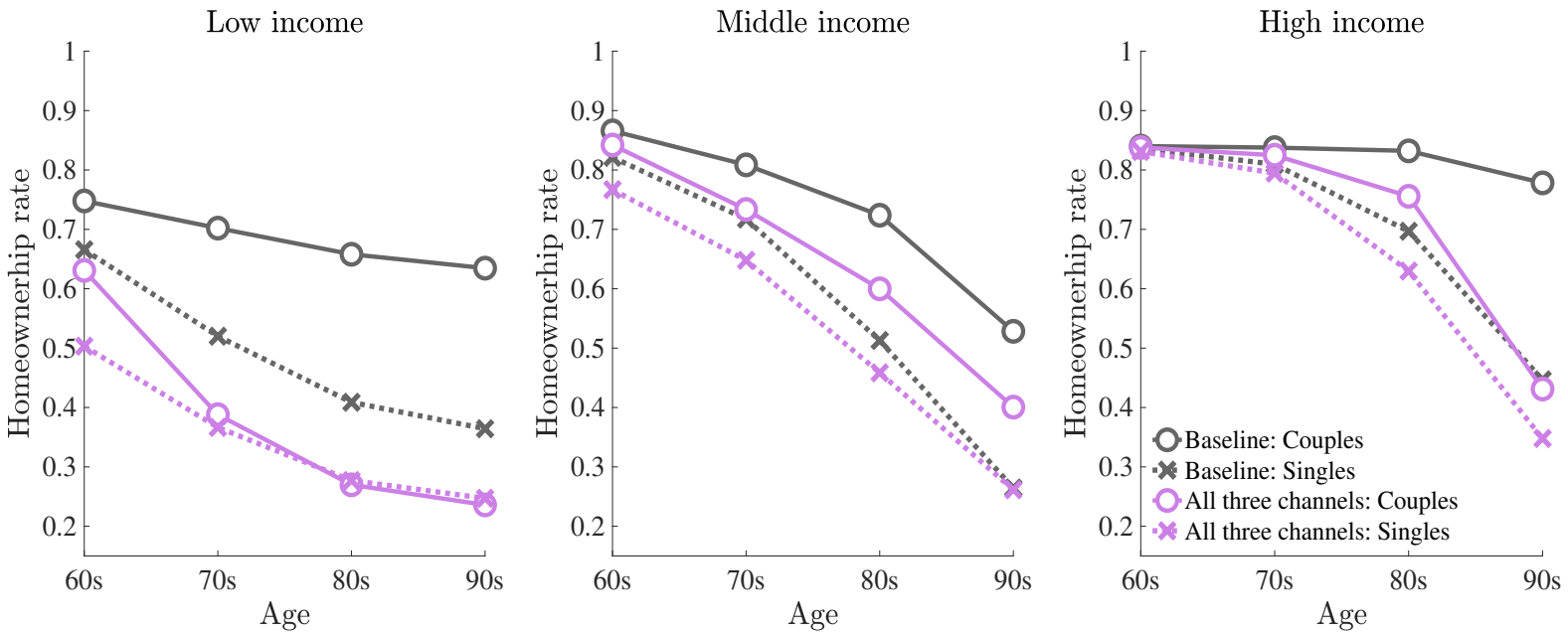
Model fit: spousal care provision





Return

Homeownership gap: all channels



Return