



Evaluating the Australian Government's Pension Loans Scheme

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Introduction

A reverse mortgage can **help boost incomes** in **retirement**

- Borrowers **receive loan payments** using their **home as security**
- No loan repayments are required until home is sold (which could be upon death)
- Allows retirees to continue to **age in place**

We develop **a multi-period simulation model** and use **scenario analysis** to study a **unique public reverse mortgage scheme**

- Model **considers financial uncertainty** and **health and longevity risks**
- Investigate and compare how **different methods of PLS use** impact the **welfare of different types of retiree households**
- Explore how **PLS design** can be **improved** to increase **potential welfare gains**
- Compare model results against **PLS data** from industry partner Pension Boost

Introduction

Our key contributions:

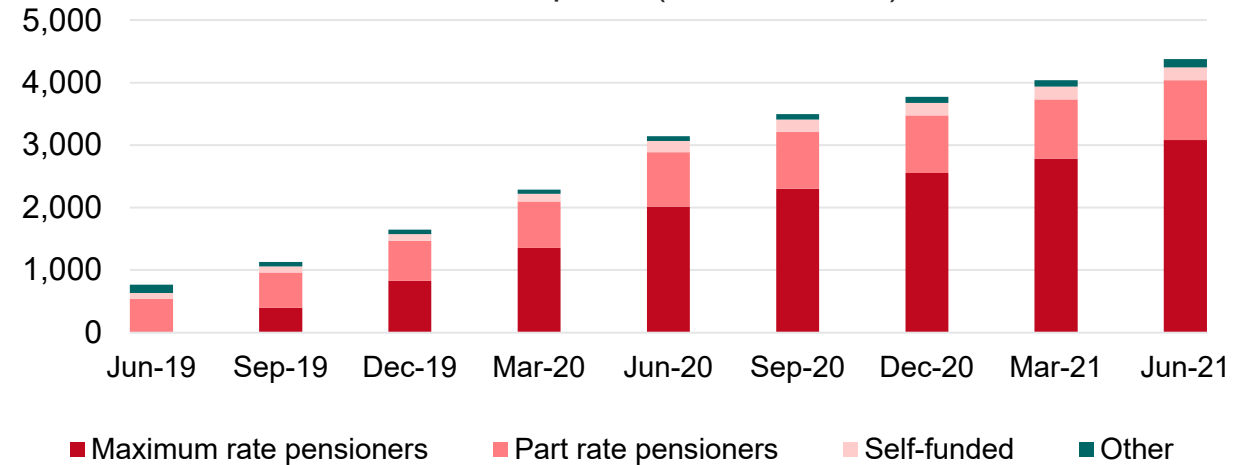
1. **First academic work** on the **current and future** (from 1 July 2022) **PLS**. One of few academic studies **modelling reverse mortgage use in Australia**.
2. Consideration of **reverse mortgage design and payment methods** different to those used in most papers (based on U.S. products).
3. Framework for **modelling housing equity withdrawals** in the **Australian** setting.

Background

Features of the current PLS include:

- Open to property-owning Australians above Age Pension Age
- Regular fortnightly payments only
- 4.5% p.a., compounding fortnightly
- Fortnightly payment + public pension payments \leq 1.5 maximum Age Pension
- Maximum outstanding loan balance related to property value and age, but no NNEG

PLS Participants (End of Month)



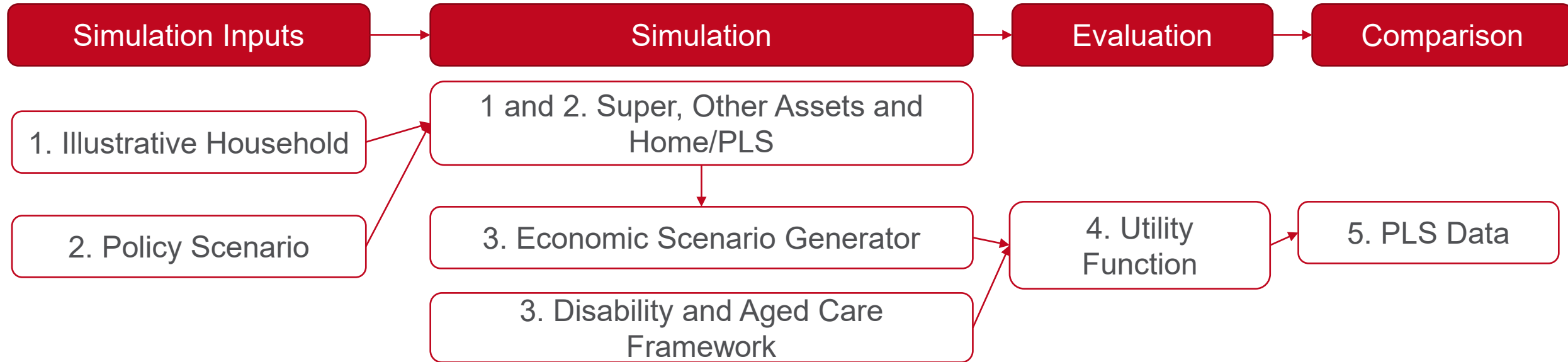
Source: Department of Social Services data. Own calculations.
Note: "Participants" refers to anyone with an outstanding PLS loan.

2021-22 Federal Budget committed to 'improved public messaging and branding' and proposes:

- Lump-sum advances (up to twice a year, up to a total of 0.5 maximum Age Pension)
- NNEG

Methodology

We develop a **multi-period simulation model** to estimate welfare gains for a range of **illustrative households** in different **policy scenarios**.



Illustrative Households

We model **single and couple homeowners**. All household members are assumed to be eligible for the Age Pension and PLS, and are aged 67 at the beginning of the simulation.

20 different household types with **wealth** from **superannuation, home equity** and **other assets**:

- Couple or single female
- With or without children
- Housing wealth quintile

Households receive **income** from **superannuation, other assets**, the **Age Pension** and the **PLS**

Policy Scenarios

Policy scenarios compared against the baseline, where the household does not use the PLS.

Existing PLS (fortnightly payments, no NNEG)

- Policy Scenario 1 – fixed \$5000/year
- Policy Scenario 2 – ASFA comfortable retirement standard
- Policy Scenario 3 – 70% replacement rate
- Policy Scenario 4 – maximum fortnightly (and hence annual) amount

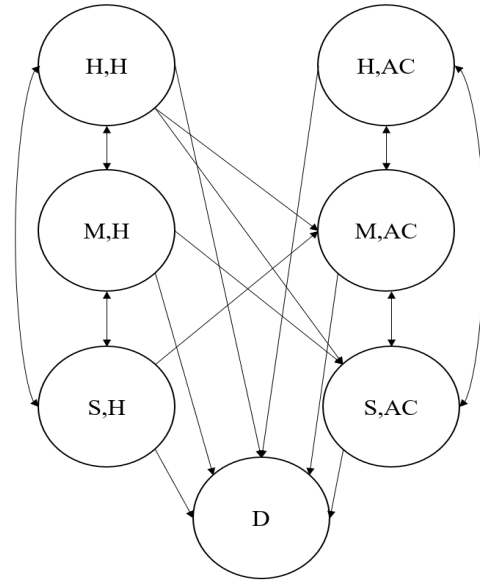
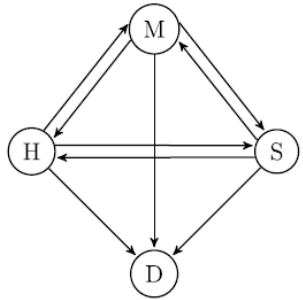
Future PLS (fortnightly payments, lump-sum advances and NNEG)

- Policy Scenario 5 – single lump-sum at the start of retirement
- Policy Scenario 6 – lump-sum when disabled at-home to cover additional health-related expenditure
- Policy Scenario 7 – policy scenario 2 + policy scenario 6

Policy Experiments

- Policy Scenario 8 – halving interest rate to 2.25% p.a., compounding fortnightly
- Policy Scenario 9 – increase maximum fortnightly/annual cap from 1.5 times to 2 times the maximum Age Pension

Simulations



Health and longevity risks captured by 7-state model defined by health state and aged care.

- Existing health state model from Shao, Sherris and Fong (2015), calibrated on U.S. data
- Movement to aged care estimated using data from SDAC

Source: Shao, Sherris and Fong (2015)

Economic Scenario Generator captures financial risks.

- Simulation of Uncertainty for Pension Analysis (SUPA) model from Chen et al. (2020)
- Calibrated on Australian data from 1992-2018 and includes house prices

Simulate 5000 paths with SUPA model and health/aged care model from 2019-2052 (ages 67 to 100)

- Assume events e.g. withdraw income, disability, movement to aged care occur at beginning of year
- All household members dead by the end of the simulation

Utility Function

Housing and Non-Housing Consumption

$$U(C_t, H_t) = \frac{(C_t^\eta H_t^{1-\eta})^{1-\gamma}}{1-\gamma}$$

$$C_t = \begin{cases} S_t + AP_t + FA_t + RM_t - D_t; & \text{single households} \\ \frac{S_t + AP_t + FA_t + RM_t - D_t}{\psi}; & \text{couple households} \end{cases}$$

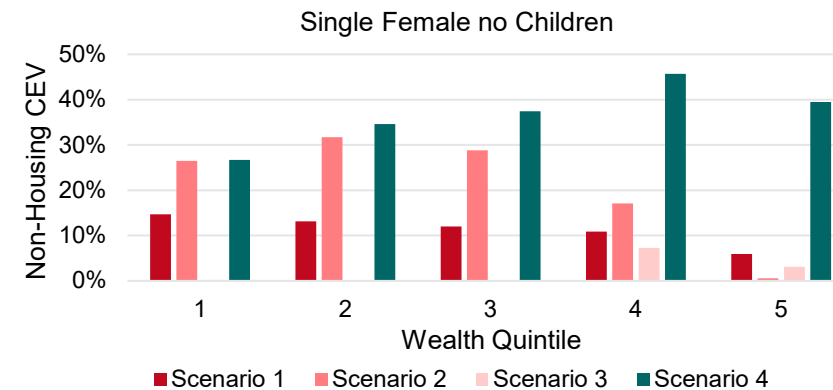
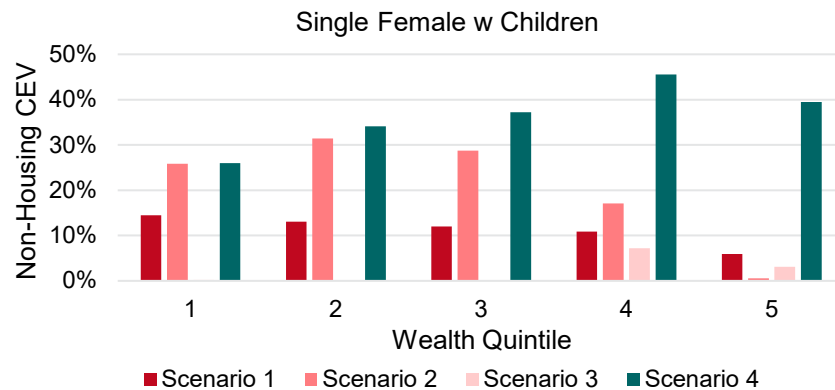
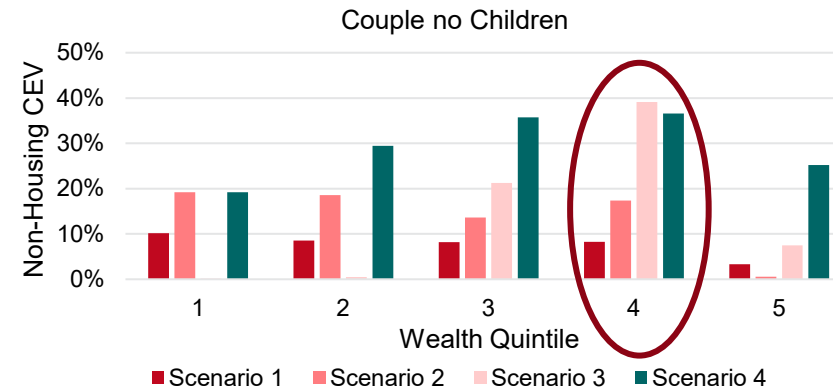
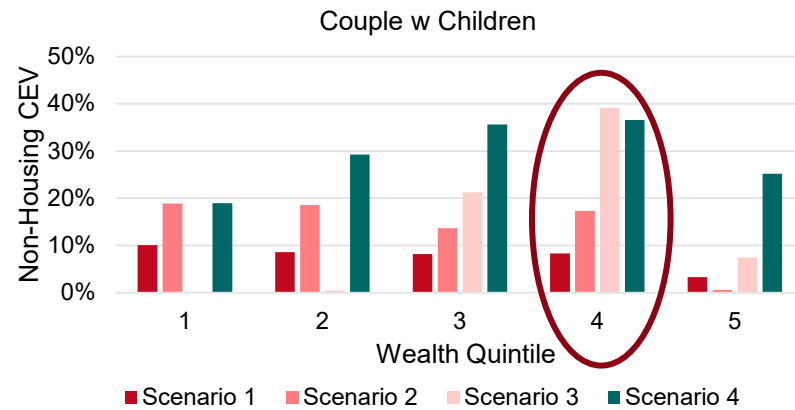
$$H_t = \begin{cases} e^{\alpha A_t} h_0; & \text{single household, at home state} \\ \max(\frac{1}{2} h_0 \times E_t, 10\,000); & \text{single household, aged care} \\ \frac{e^{\alpha A_t} h_0}{\psi}; & \text{couple household, at home state} \\ \frac{\max(\frac{1}{2} h_0 \times E_t, 10\,000)}{\psi}; & \text{couple household, aged care} \end{cases}$$

Bequest Function

$$U(B_t) = b \frac{(B_t + \kappa)^{1-\gamma}}{1-\gamma}$$

Results – Existing Scheme

Policy Scenarios 1, 2, 3 and 4
(fixed \$5000, ASFA standard, 70% replacement and maximum payment)



Results – Future Scheme

Rankings of Non-Housing CEV for All Households for Policy Scenarios 1-4 (with an NNEG) and 5-7

Couple (with and without children)

Wealth Quintile	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Scenario 1 (with NNEG)	4	4	5	5	3
Scenario 2 (with NNEG)	3	3	4	4	7
Scenario 3 (with NNEG)	7	7	2	1	2
Scenario 4 (with NNEG)	2	1	1	2	1
Scenario 5	5	5	6	6	4
Scenario 6	6	6	7	7	6
Scenario 7	1	2	3	3	5

Single Female (with and without children)

Wealth Quintile	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Scenario 1 (with NNEG)	4	4	4	4	2
Scenario 2 (with NNEG)	3	3	3	3	7
Scenario 3 (with NNEG)	7	7	7	5	3
Scenario 4 (with NNEG)	1	1	1	1	1
Scenario 5	5	5	5	6	5
Scenario 6	6	6	6	7	6
Scenario 7	2	2	2	2	4

Policy Experiments

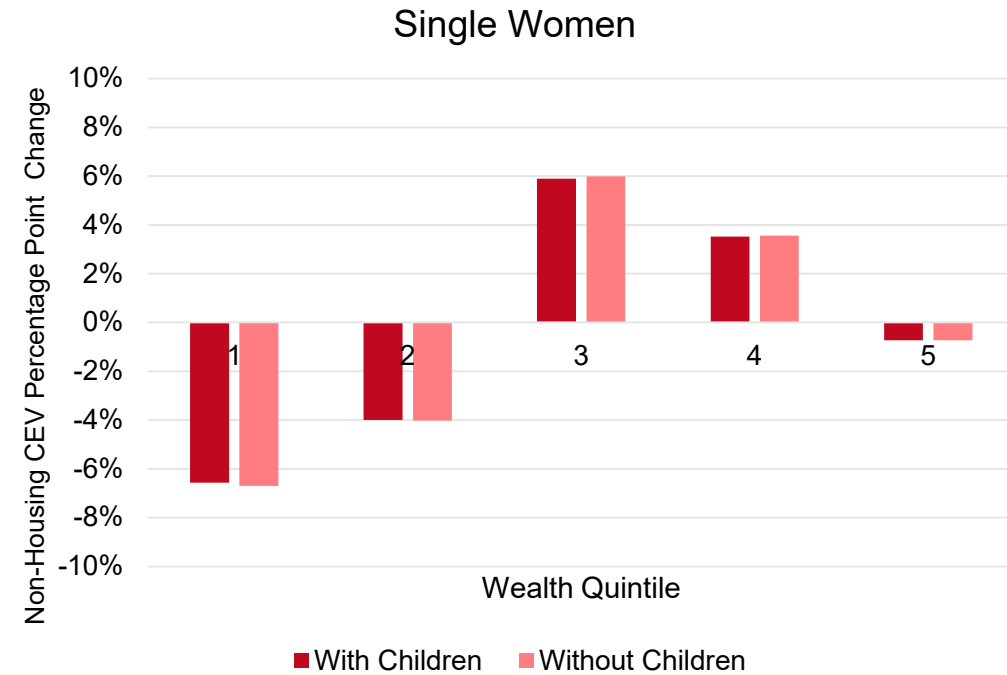
Policy Scenario 8
(halving the interest rate)



Policy Experiments

Policy Scenario 9 (increasing fortnightly/annual maximum policy scenario)

- Graphs show the non-housing CEV percentage point change from policy scenario 4 (with an NNEG) to policy scenario 9



PLS Data

- Data set has 379 loans (580 participants)
- **Many different household types** (couples vs single, wealth levels) use the PLS, though **pensioners are over-represented among PLS participants** (compared to general population over 65)
- **91% of loans receiving the maximum PLS amount.** Remaining 9% are on fixed payments.

Conclusions

Key Results:

1. The PLS is a **welfare-enhancing method of boosting retirement incomes**. Most households should choose to receive **maximum payments** from the PLS, under both the existing and future PLS.
2. **Increasing fortnightly/annual maximum does not result in welfare gains** for most households, compared to receiving payments at current maximums (exceptions are single women in quintiles 3 and 4).
3. **Reduction of interest rate results in increases to welfare** (comparing receiving maximum payments at the current interest rate, and at a new, lower interest rate).

Key Contributions:

1. **First academic study** to perform **welfare-modelling on reverse mortgages in Australia**, and of existing and future **PLS**.
2. The model constructed provides a useful **framework for modelling of older Australians** in the **Australian setting**.
3. **Results are informative for policy-making**

Thank you!

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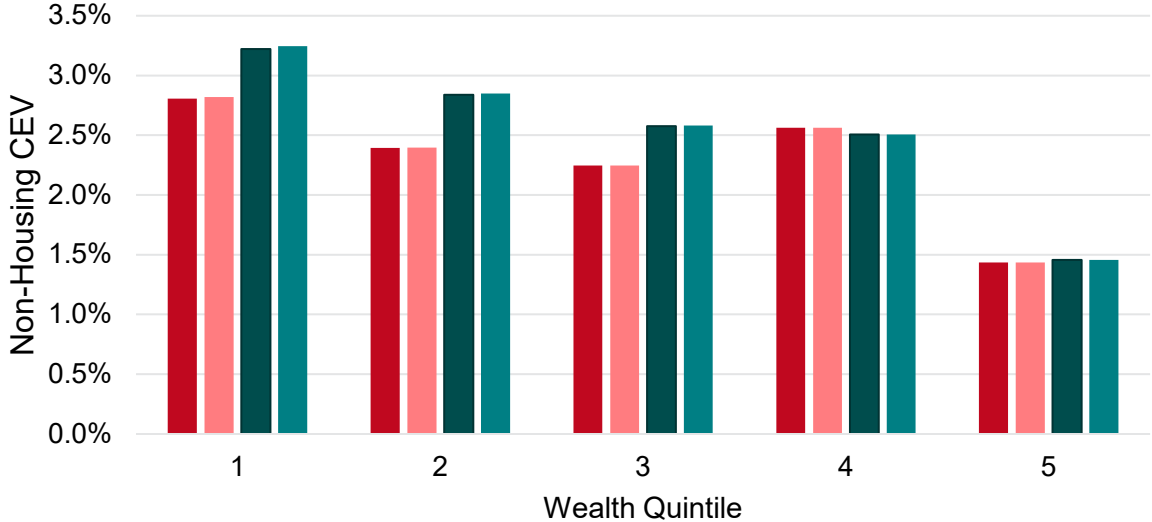
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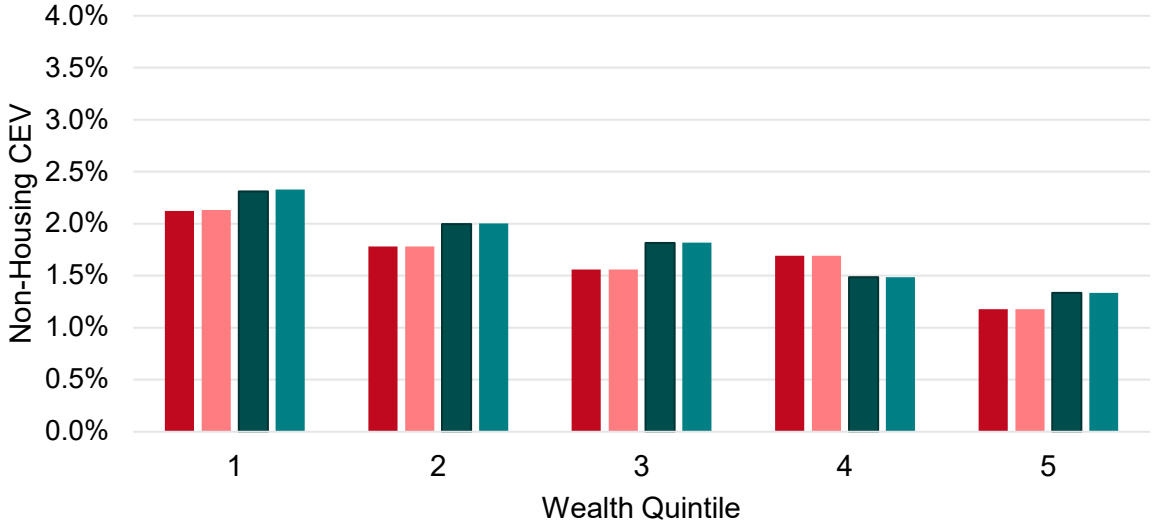
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Spares – Policy Scenarios 5 and 6 Non-Housing CEV

Policy Scenario 5



Policy Scenario 6



■ Couple w Children ■ Couple no Children
■ Single Female w Children ■ Single Female no Children

■ Couple w Children ■ Couple no Children
■ Single Female w Children ■ Single Female no Children

Spares – Policy Scenario 7 Non-Housing CEV



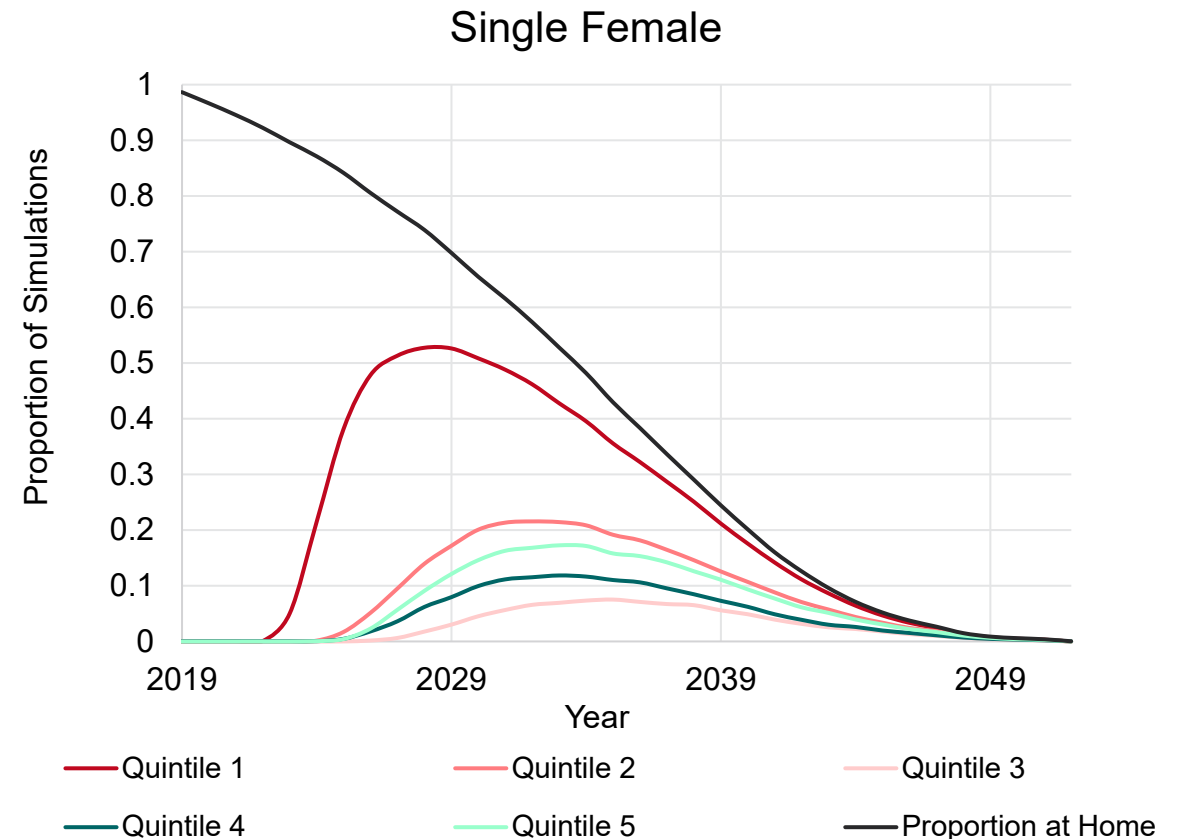
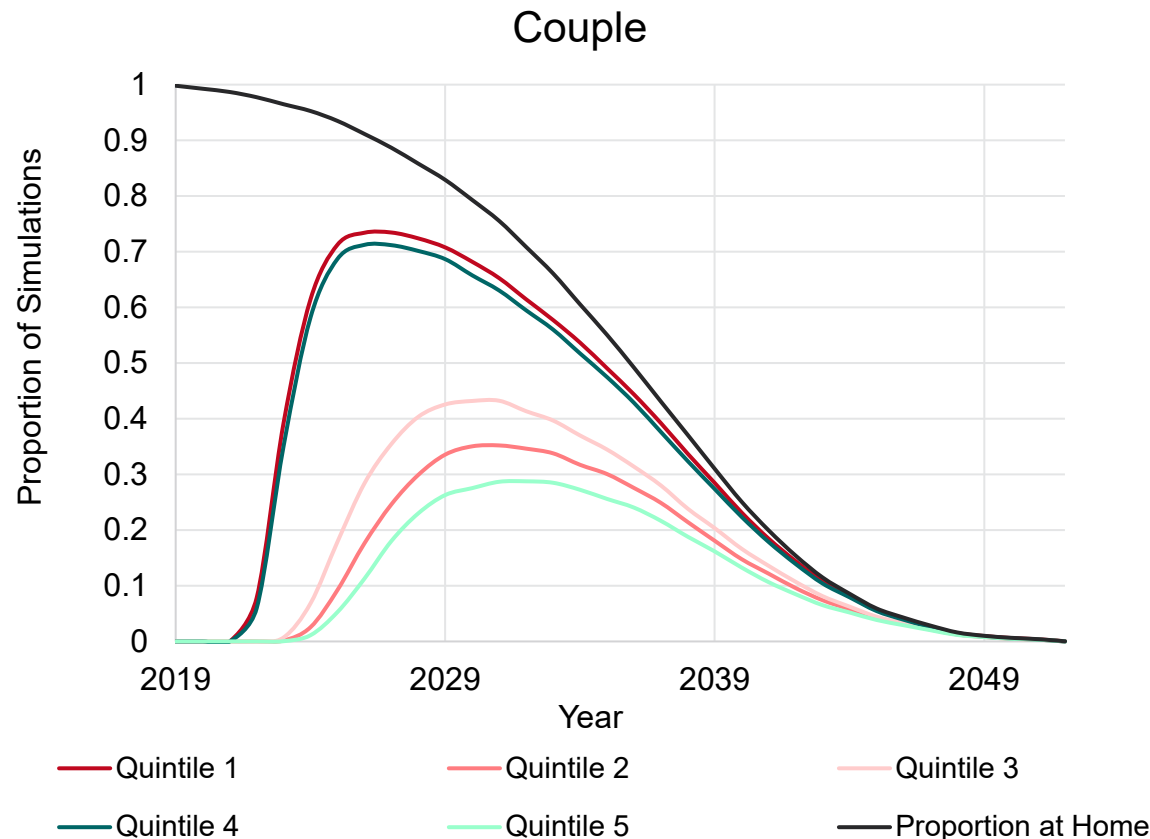
Spares – Explaining Differences Across Households in Welfare Gains from Lump-Sum Advances

Proportion of Simulations in which Desired PLS Payment is Not Received by Single Women in Policy Scenario 2 due to PLS Loan Maximums



Spares – Explaining Differences Across Households in Impacts from Policy Experiments (Policy Scenarios 8 and 9)

Proportion of Simulations in which Desired PLS Payment is Not Received in Policy Scenario 4 due to PLS Loan Maximums



Spares – Sensitivity Analysis House Price Appreciation

When we assume **house price appreciation is 0** in all periods of the simulation:

- **Current PLS** – fewer illustrative households see their highest welfare from maximum payments
 - Households that do not have highest welfare gain (non-housing CEV) from maximum payments – couples in wealth quintiles 1, 3 and 4 and single females in wealth quintiles 1 and 2.
 - In main results, only couples in wealth quintile 4 did not have highest welfare in maximum payment scenario
 - For couples in wealth quintiles 1 and 3, and single females in wealth quintiles 1 and 2, their highest non-housing CEV (of studied policy scenarios) is less than 0.15 percentage points higher than their non-housing CEV from maximum payments (policy scenario 4)
- **Future PLS** – similar to changes in current PLS (**fewer illustrative households see highest welfare from maximum payments**)
 - In main results, only couple households in wealth quintiles 1 and 4 did not have highest welfare in maximum payment scenario

Spares – Sensitivity Analysis House Price Appreciation

- **Halving interest rate (policy scenario 8)** – percentage increase in non-housing CEV due to lower interest rate is **much higher than main results** across all households
 - Range of 3-24% increases in non-housing CEV when receiving maximum payments at the halved interest rate (compared to receiving maximum payments at the existing, higher interest rate) in the main results, to around 18-45% increases when there is no house price appreciation.
- **Increasing fortnightly/annual maximums (policy scenario 9)** – when receiving payments at the new, higher maximums, **all households have lower non-housing CEV than when they receive payments at the existing maximum**
 - Recall: in main results, single women in quintiles 3 and 4 saw higher non-housing CEV when receiving the new, higher maximums (compared to receiving payments at existing maximums)

Spares – Sensitivity Analyses Summary

Key conclusions from main results are generally robust to sensitivity analyses

Model Assumption	Model Value	Sensitivity Analyses
Disability and Aged Care Model	Own Model	Shen and Ziveyi (2021) model
At-home Disability Cost Adjustments	See Appendix A.2.	At-home disability costs removed from model
House Price Appreciation	SUPA model	No house price appreciation
Risk Aversion γ	3	2, 5
Non-housing consumption aggregation η	0.762	0.5, 0.9
Ageing in place benefit α	0.019	0
Utility discount β	0.97	0.95, 0.99
Bequest strength b	12	24
Wealth component of housing consumption (h_0 is halved upon movement to aged care)	See equation 8	No halving of h_0 (and floor value of \$20,000) upon movement to aged, 25% of h_0 (and floor value of \$5000) upon movement to aged care
Aged care housing consumption floor	10,000	5000