



ARC CENTRE OF
EXCELLENCE IN
**POPULATION
AGEING
RESEARCH**

Assessing sustainable aged care financing in Australia

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Outline

1. **Motivation and Aim**
2. Methodology
3. Implementation and Analysis
4. Contributions and Limitations

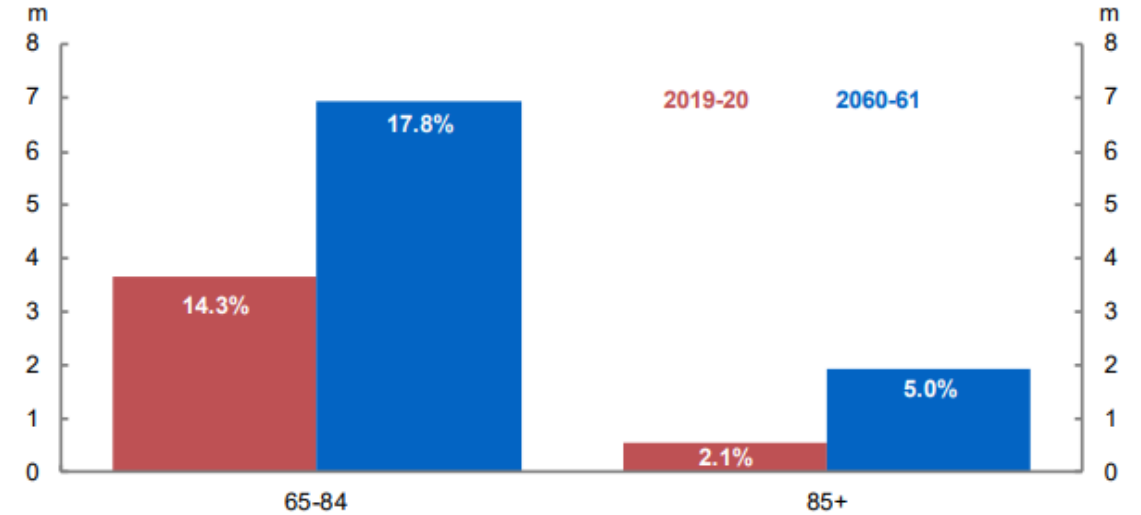
Motivation and Aim

Ageing population

- Disability prevalence rates increase with age
- 'compression of morbidity' or 'dynamic equilibrium' scenario unknown

Need for actuarial model to assess adequacy of alternative financing mechanisms, evaluate sustainability of balance sheet

Chart 2.15 Older Australians by level and share of population



No link between funding and delivering high quality care, subject to fiscal pressures → reduces quality of care

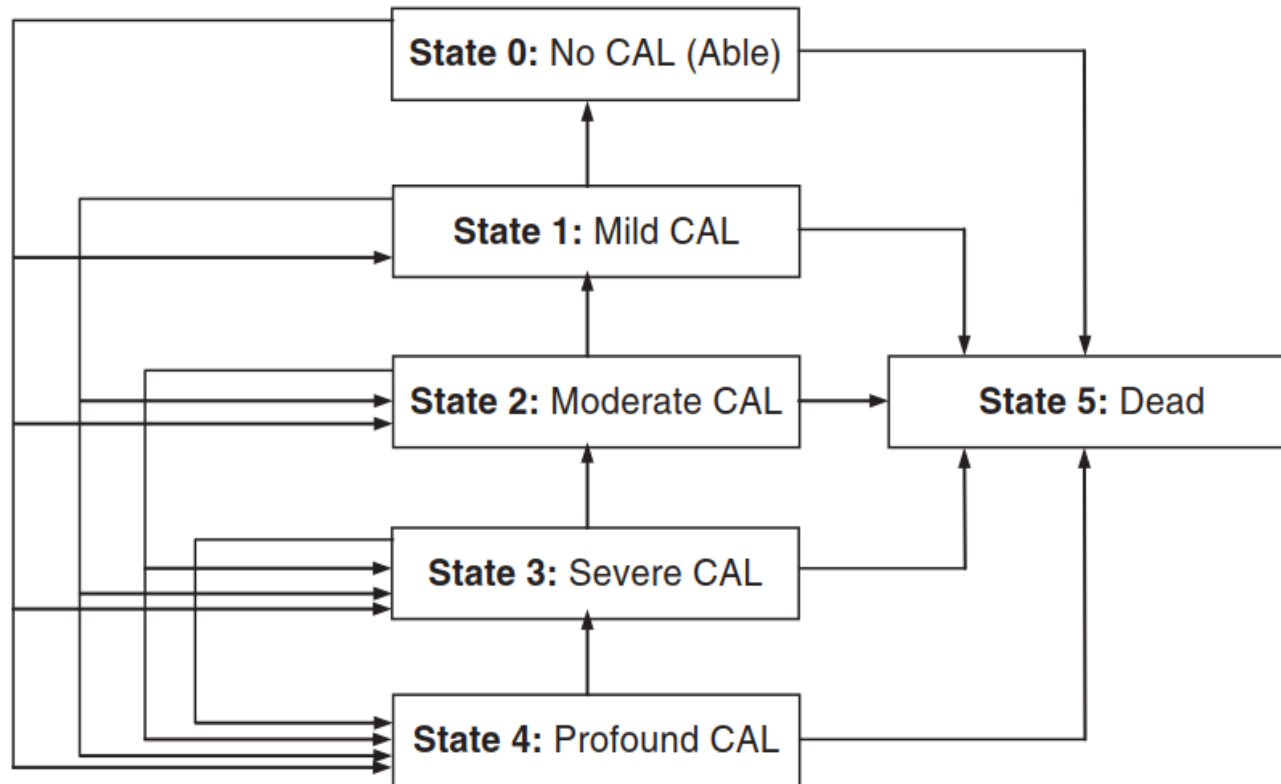
Current cost projections are based on the aged care target provision ratio, a supply constraint

Current academic and policy literature on new aged care financing mechanisms have no methods of actuarial pricing or cost analysis

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Methodology – Disability Transition Model



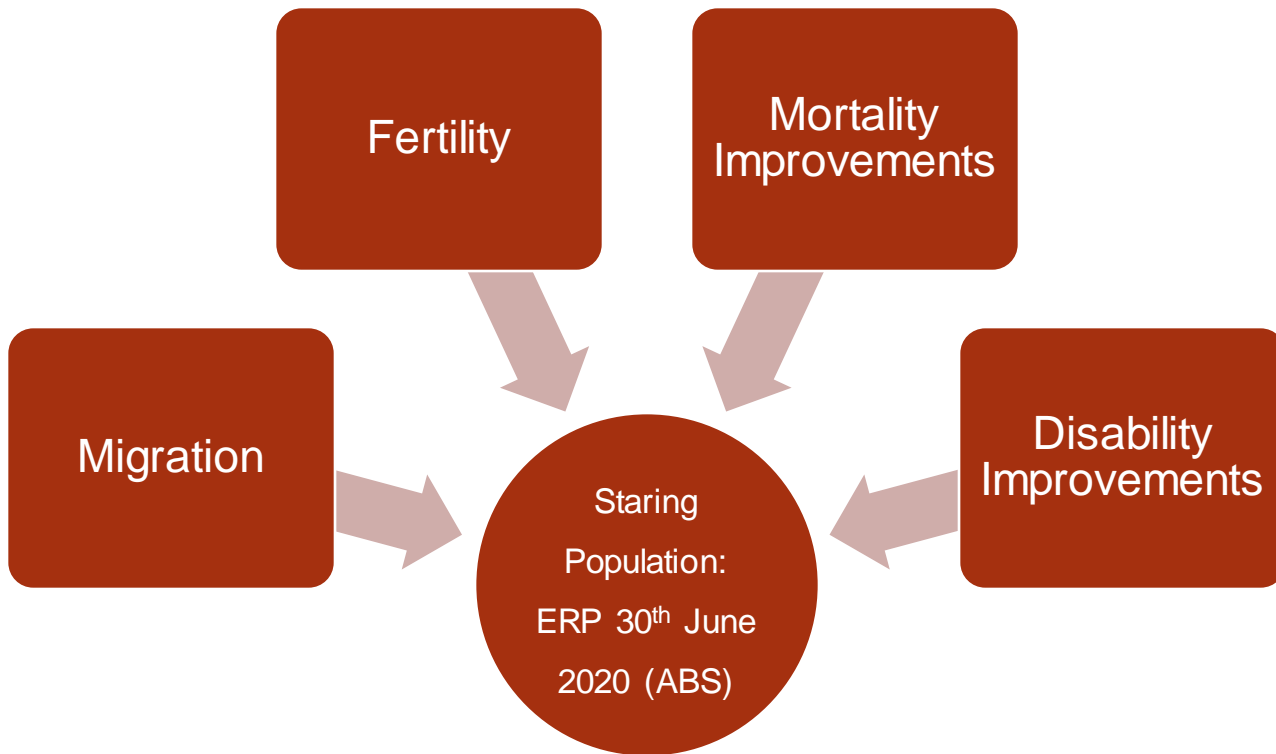
Source: Hariyanto, Dickson and Pitt (2013)

Discrete-time multi-state model, following methodology in Hariyanto et al. (2013) and Leung (2004)

Functional forms for transition probabilities, estimated to minimise sum of squared difference in prevalence rates between the model and the 2018 Survey for Disability Ageing and Caring

Methodology – Projection Methodology

Apply the cohort-component method



Migration and fertility are assumed to be constant after 10 years; 30 years for mortality and disability improvements

Migration & Fertility

- Centre for Population Projections (Pre-COVID19, Central and Extended Restrictions scenarios)
- All migrants enter/leave State 0 (No CAL/Able)

Mortality

- 5 year historical average for ages 0 to 84
- 25 year historical average for ages 85+ due to volatility in 5-year average

Disability

- Use overseas HRS data to inform interaction of disability and mortality, lack of longitudinal data in Australia
- Multi-state disability transition model with time trend from Li et al. (2017)

Methodology – Future Aged Care Costs

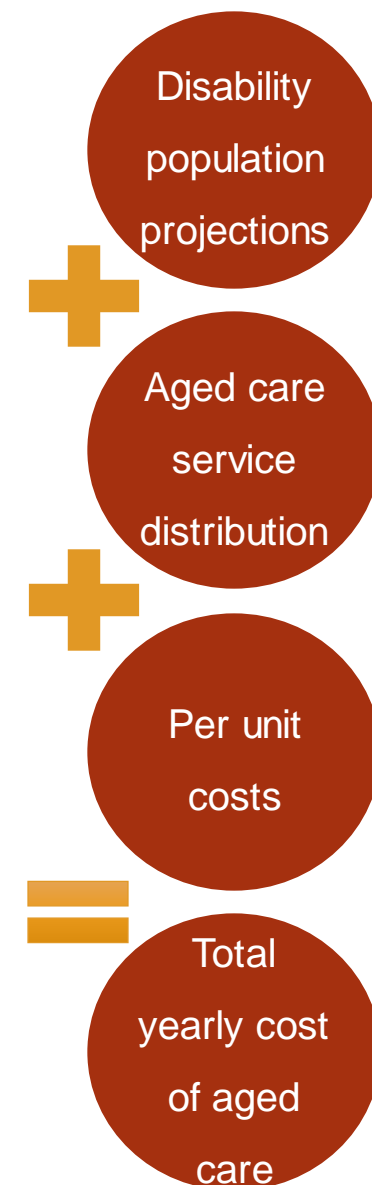
Migration & Fertility	Mortality & Disability	Aged Care Distribution	Indexation
Pre-COVID19	No Improvements	Scenario 1 (Base)	Mean
Central	Mortality with low disability improvements	Scenario 2 (Home)	Upper
Extended Restrictions	Mortality with high disability improvements		

(gov. subsidy plus average co-contribution)

2016) for future inflation and GDP growth = 3%

(10-year historical average) and CPI

scenarios



Methodology – Cost Sharing Mechanisms (Levy)

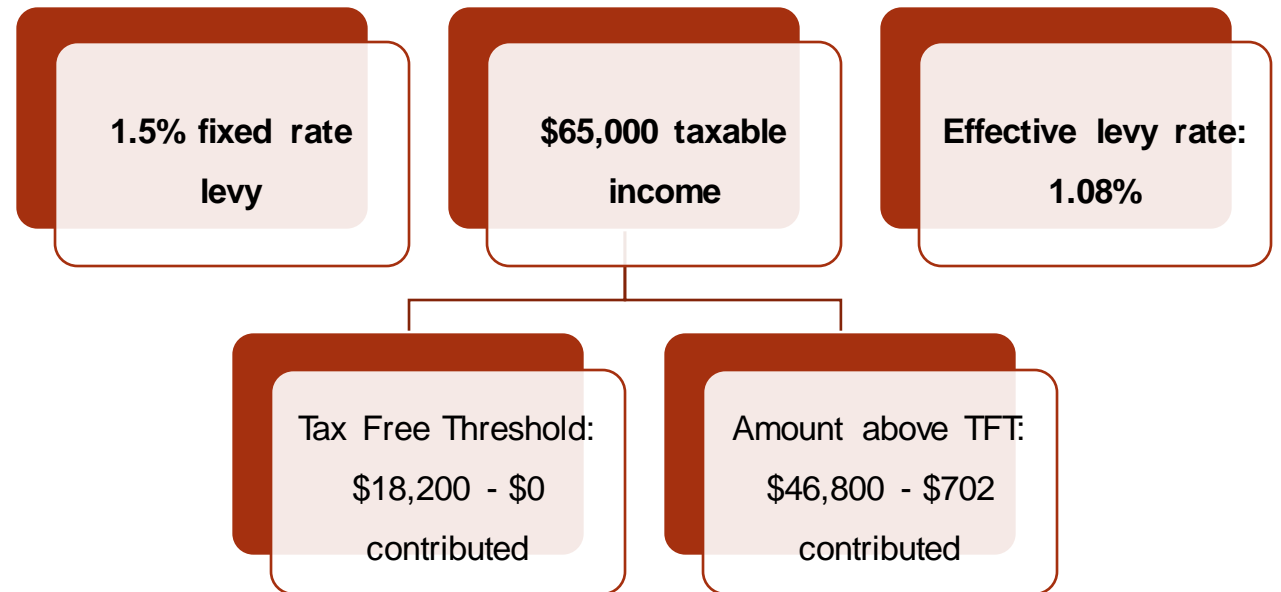
% of population with a taxable income, by age and sex; ATO Taxation Statistics and ERP (ABS)

Distribution of taxable income by age and sex; ATO Taxation Statistics, 3-year average

Current taxation rates, not indexed

Growth of taxable income; CPI (from VAR) plus 1.5% productivity growth

Assume participation rate, income distribution and taxation rates constant throughout projection



Methodology – Cost-Sharing Mechanisms (Means Testing)

Current means testing is very complex, different income tests for home and residential care



Lack of age-specific income and assets data for individuals above 65 (and 85)



Use full, part and non-age pensioner distribution to apply means testing

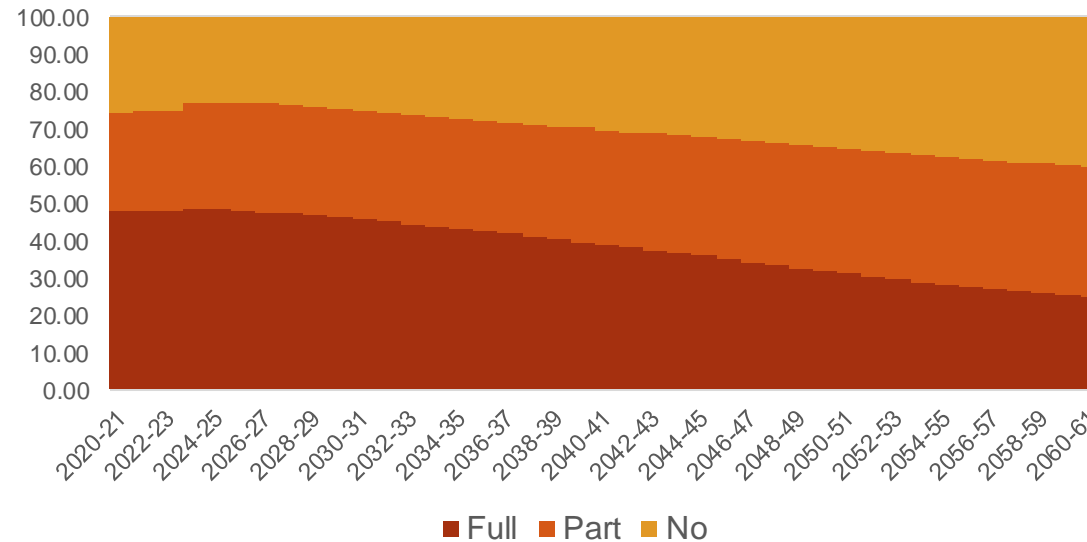
Home	1.9% from BDF	17.5% of Age Pension
	1.1% from income-tested care fee	\$15.5/day – Part \$31/day - Full
Residential	45% from BDF	85% of Age Pension
	45% from income-tested care fee (care + accommodation)	\$162/day – Part \$324/day - Full

Current

Max

Universal Entitlement

Age Pension Distribution



Age Group	% on Age Pension
65-69	40.95
70-74	64.75
75-79	74.85
80-84	81.3
85+	73.75

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Disability Transition Model

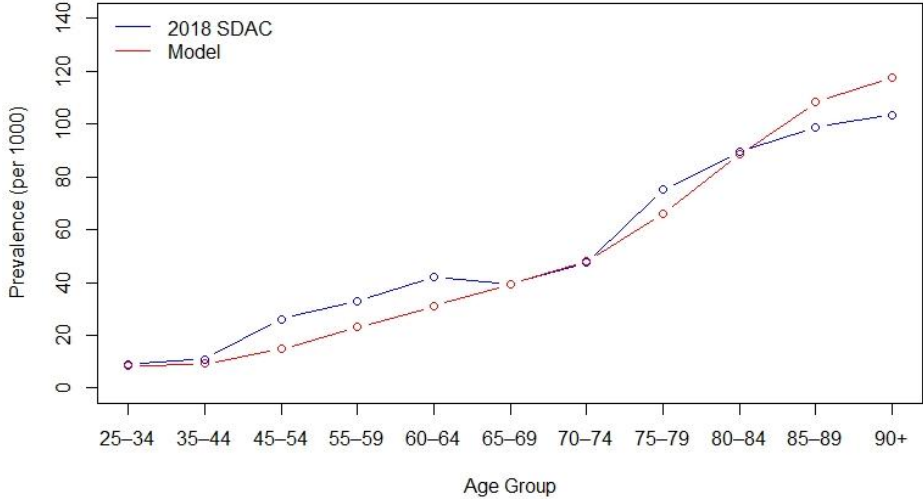
Profound and severe CAL contribute the most to aged care costs – important these trends are captured

Exact fit not possible due to data limitations and recovery assumptions

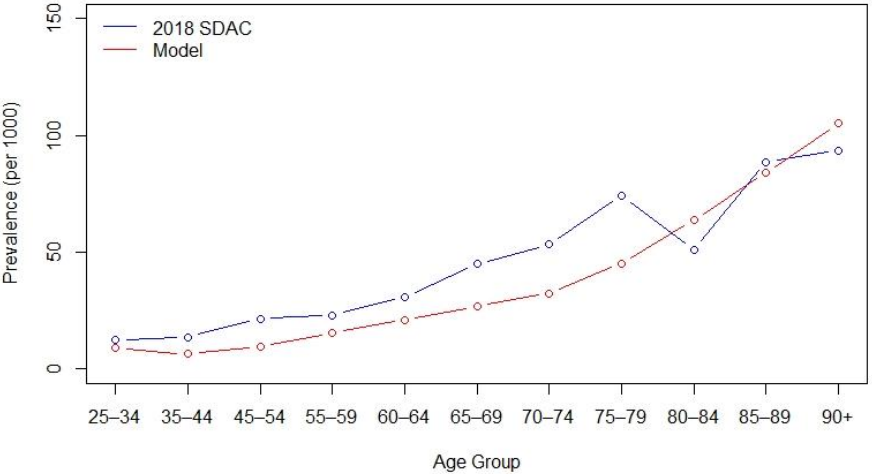
Difference between model and 2018 SDAC is below 5% for almost all age groups and CAL categories

Overall, model captures the overall trend in prevalence rates for both sexes

Females - Severe CAL



Males - Severe CAL



Population Projections – Ageing Population

Individuals Aged 85+

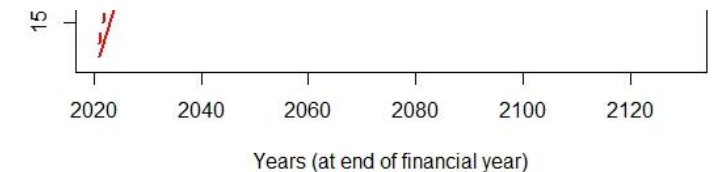
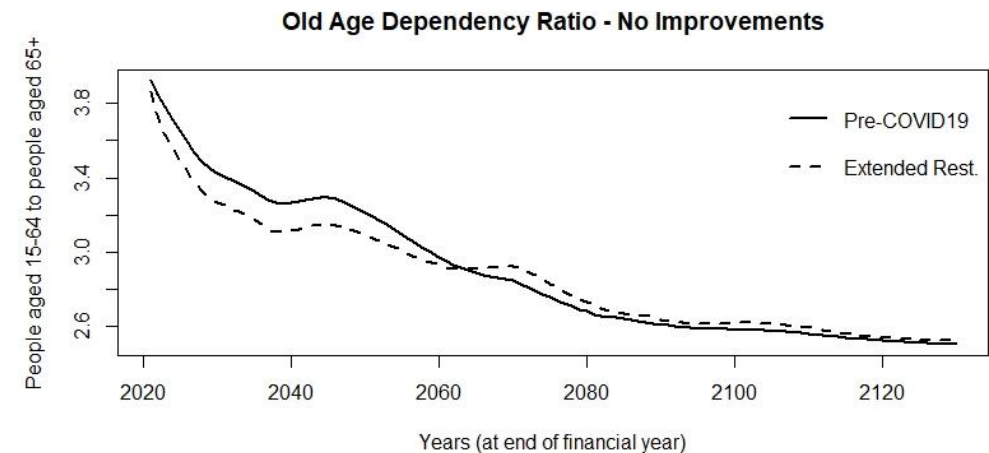
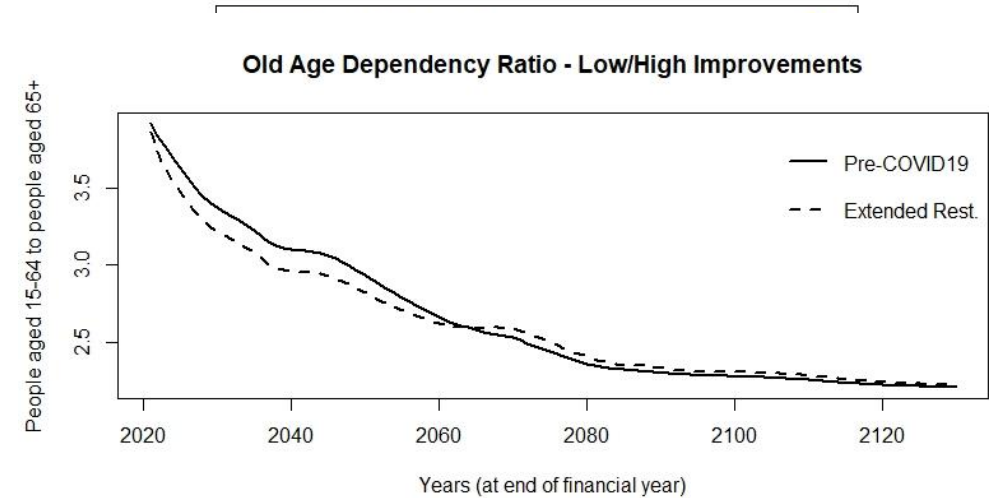
By 2077-78, 25% of the population will be aged 65 and above (Pre-COVID19 w/ mortality improvements)

Next 20 to 40 years sees steepest rise in individuals 65-85 and 85+, regardless of mortality improvements – increased pressure on the current system

Number of individuals 65+ unaffected by COVID-19 migration and fertility falls in the short term

Old age dependency ratio falls due to COVID-19 migration shock on younger cohorts (15-39) – eventual convergence to pre COVID-19 levels.

Projections in line with 2021 IGR and Centre for Population 2020 Population Statement



Population Projections – Age and Disability Distribution

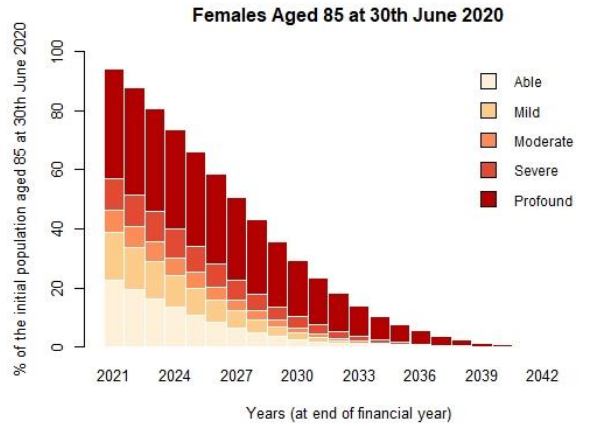
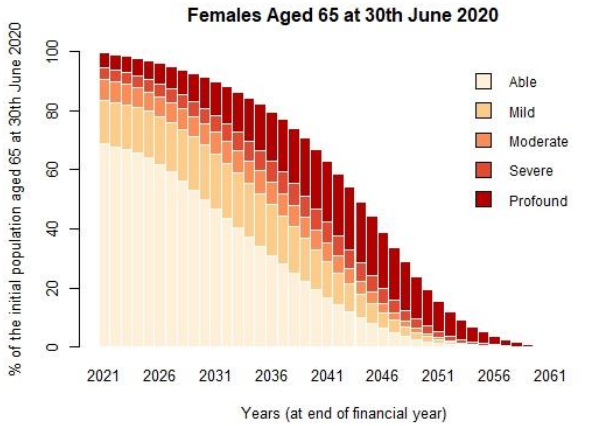
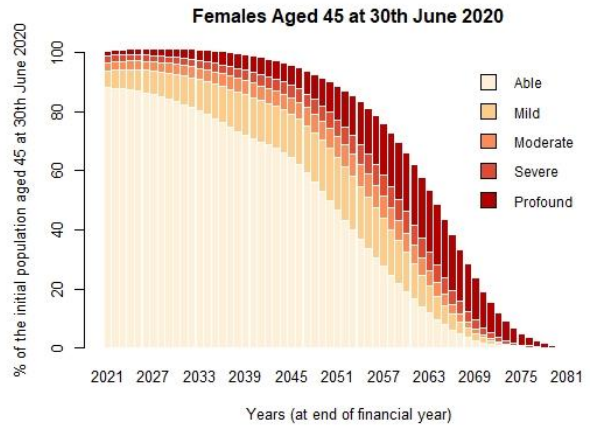
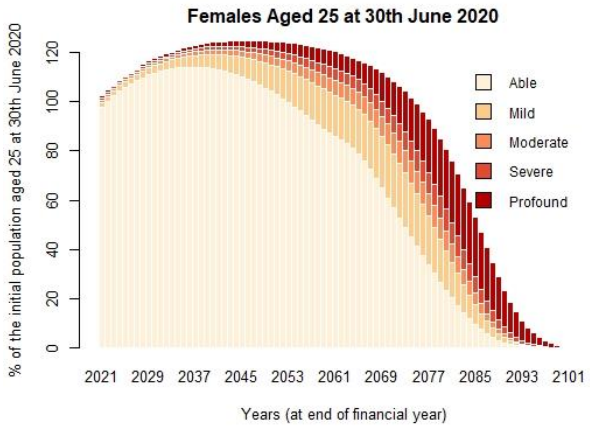
Projections at 2030-31 similar for all improvement scenarios (No, Low & High)

Mortality/disability improvement effects seen in later projection years and younger cohorts

Females live longer but likely to spend this time with a severe disability, compared to males

Profound CAL has the largest growth by age

Interaction between disability and mortality has a large effect on older individuals in CAL states



Pre-COVID19 – No Improvements

Population Projections – Age and Disability Distribution

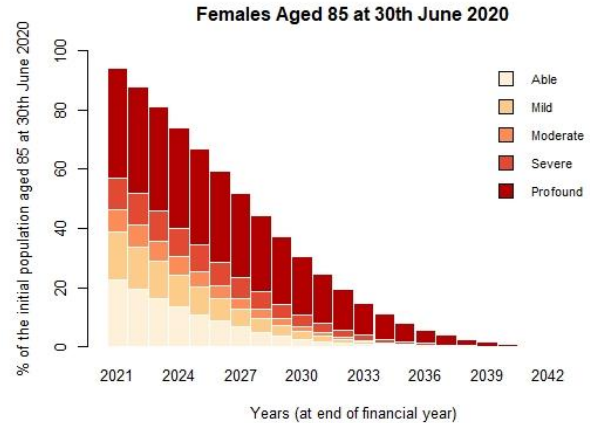
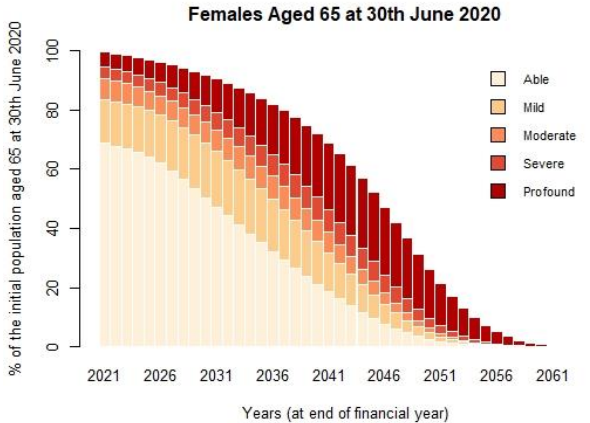
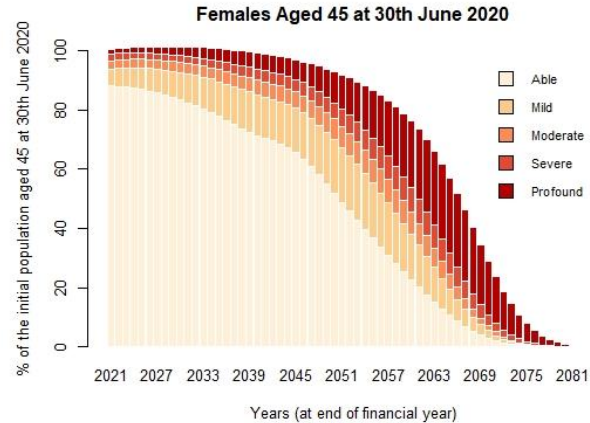
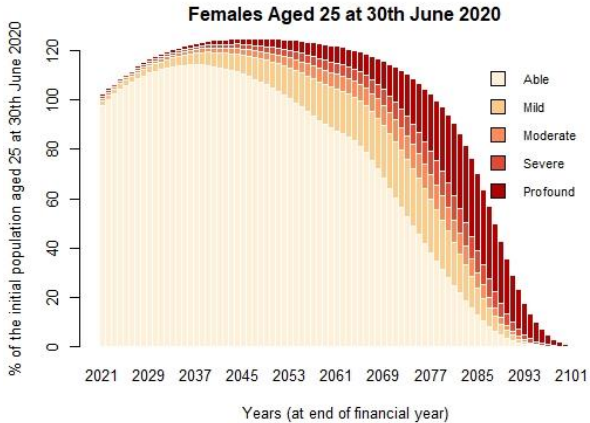
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Pre-COVID19 – Low Improvements

Population Projections – Age and Disability Distribution

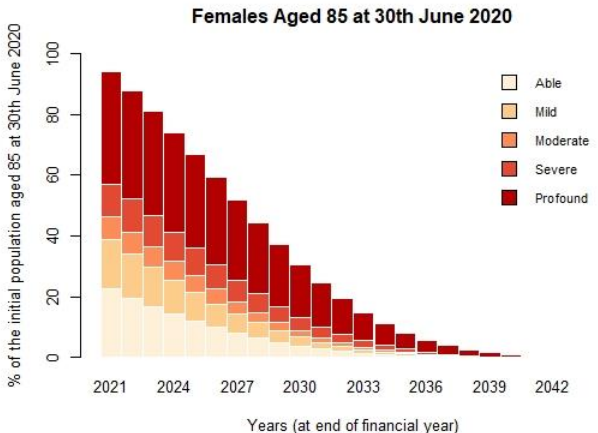
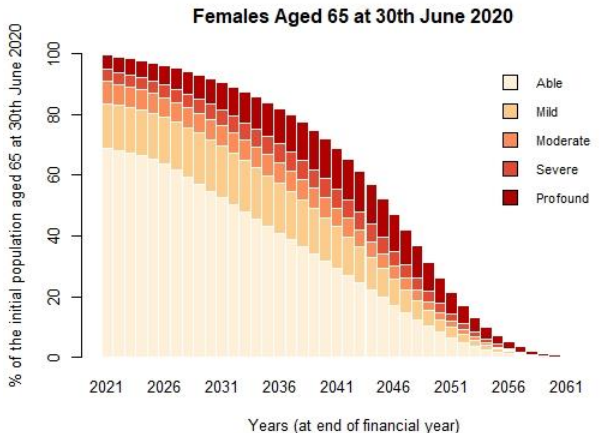
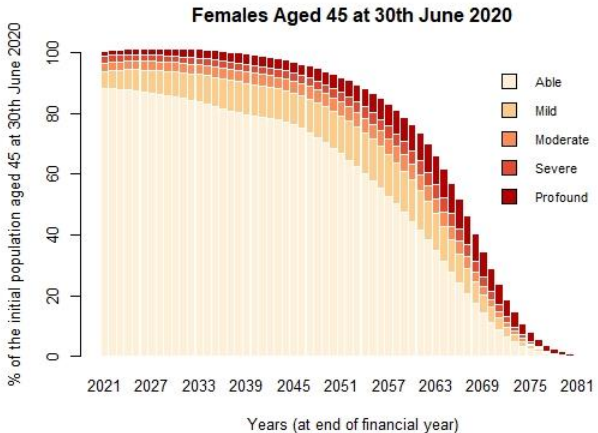
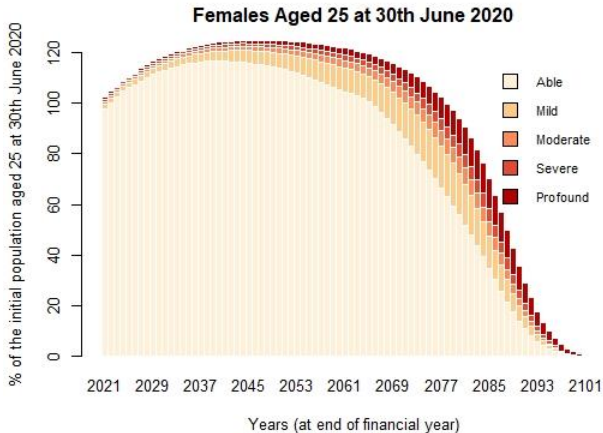
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Pre-COVID19 – High Improvements

Aged Care Demand

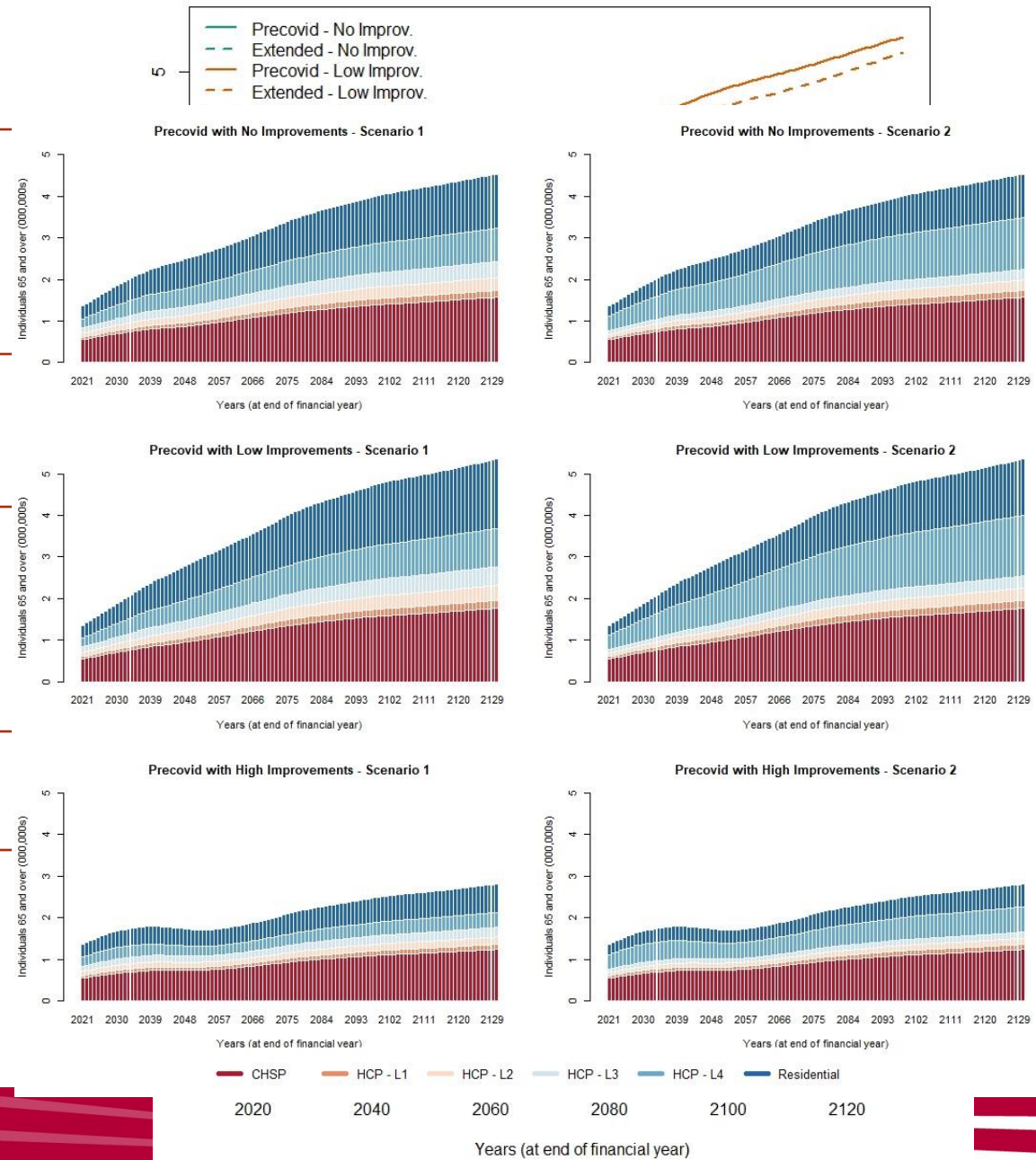
Interaction between mortality and disability has a large influence on future aged care demand – important to understand if disability prevalence for older ages is increasing, decreasing or stable over time.

Potential for those requiring aged care to be 5-10% of the population

CHSP, HCP L4 and residential care significant contributors of demand (mild and profound CAL)

Next 10 years, all improvement scenario's have similar trajectories

COVID-19 does not affect disability distributions, only the total population – assumption of modelling



Aged Care Costs

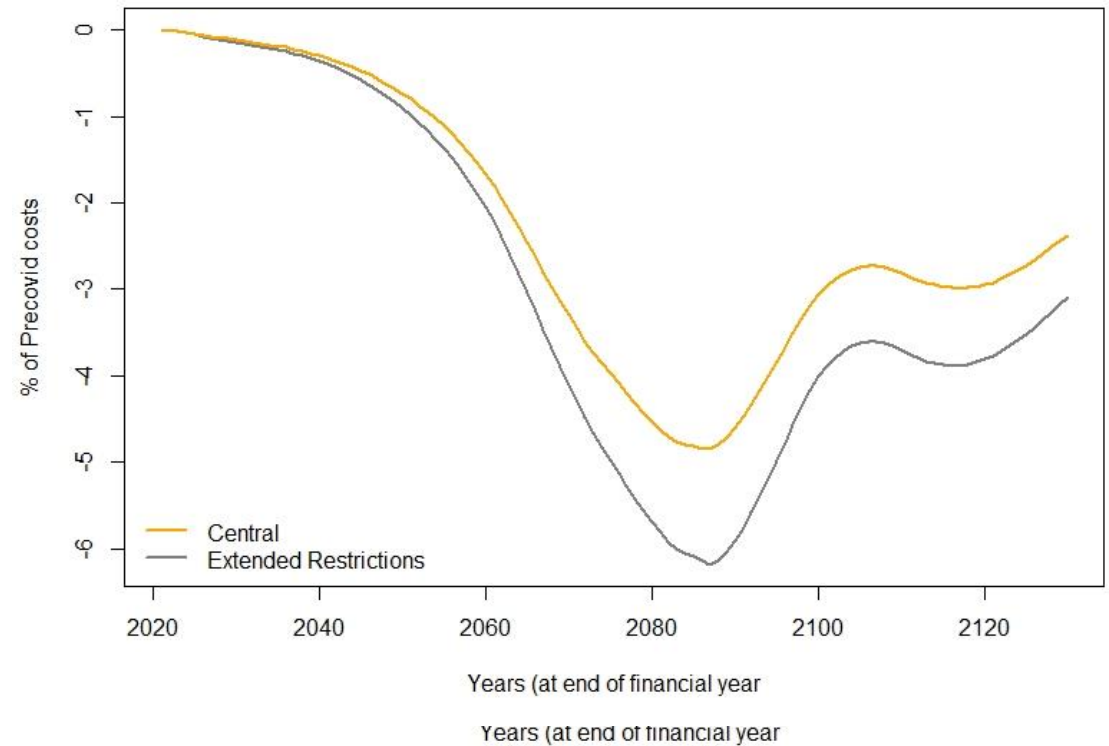
Costs very sensitive to disability improvement assumptions

Costs largely driven by residential care and higher level HCP's (L3 and L4)

Increased preference for home care may not always lead to less costs, increase in HCP L3 and L4 is greater than the reduction in residential care costs due to indexation.

COVID-19 impacts lead to lower costs over time (cohort affects), but largely indifferent in the next 20 years.

Comparison of Extended Res. and Central to Precovid Scenario



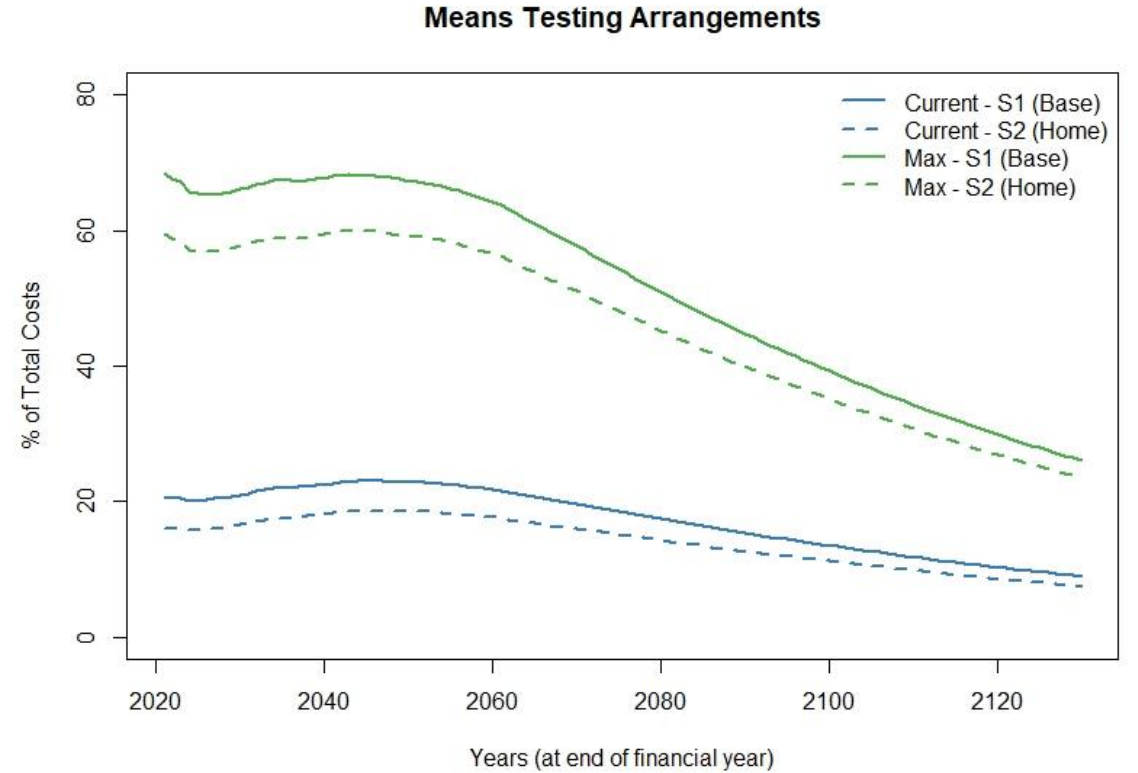
Cost-Sharing- Means Testing

Means-testing

Initial rise in % of total costs covered due to more part and non-pensioners

Aged care costs grow faster than Age Pension, causing the % of total costs means testing covers to fall over time

Only dependent on indexation and pensioner distribution



In Scenario 2 (Home), a higher preference for home care, specially HCP L4, causes means-testing to cover less costs under current arrangements

Levy generates a similar amount in all improvement scenarios – risk of mortality and disability improvement levels placed on government.

Cost-Sharing – Sustainability

Universal entitlement is financially unsustainable and would require a high fixed rate levy to be placed

Means-testing reduces the pressure on government expenditure and is necessary for a sustainable aged care financing system

If aged care supply were to be uncapped, current financing is unsustainable

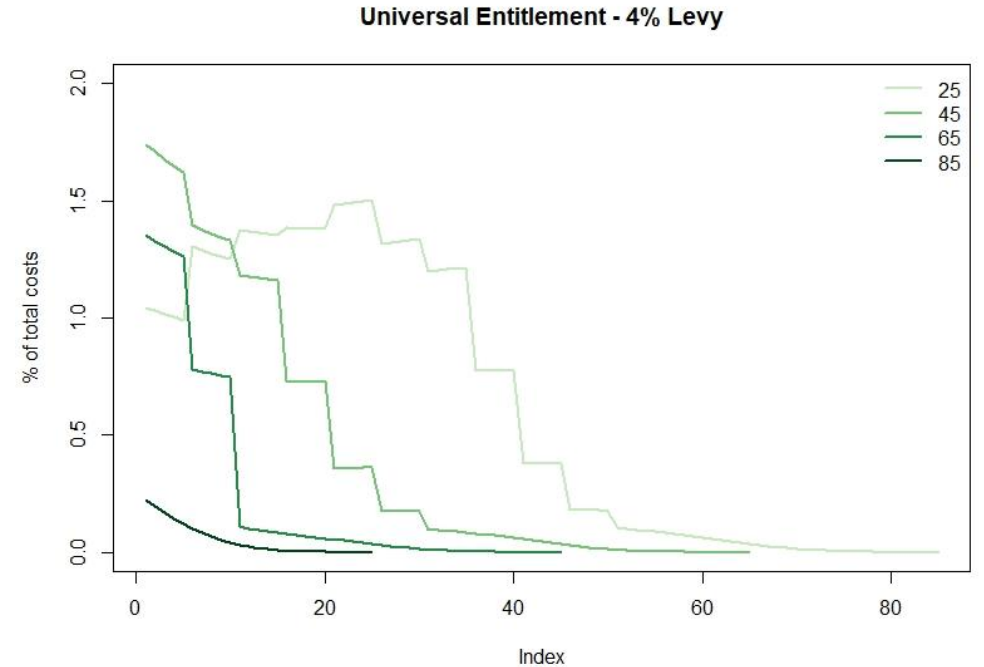
Fixed rate levy required for Pre-COVID19 & S2 (Home);

	No Improvements			Low Improvements		
Means Testing	Universal Entitlement	Current	Max	Universal Entitlement	Current	Max
2021 IGR	4%	3.00%	0%	5%	3-4%	0-1.5%
Full Coverage	>5%	>5%	2.5% - 3%	>5%	>5%	3-4%

	High Improvements		
Means Testing	Universal Entitlement	Current	Max
2021 IGR	1.5% (2047-) 2% (2044-), 2.5% (2040-)	1.5% (2040-) 2% (all years)	0% (under the 2021 IGR)
Full Coverage	4% (2052-) 5% (2043-)	4% (2042-) 5% (2032-)	1.5% (2052-2063) 2% (2041-2081) 2.5% (2032-2107) 3% (all years)

Cost-Sharing - Equity

Universal entitlements with a levy in place is not equitable. A higher levy is needed for sustainability, meaning younger cohorts will contribute more to their own aged care than current cohorts in aged care.

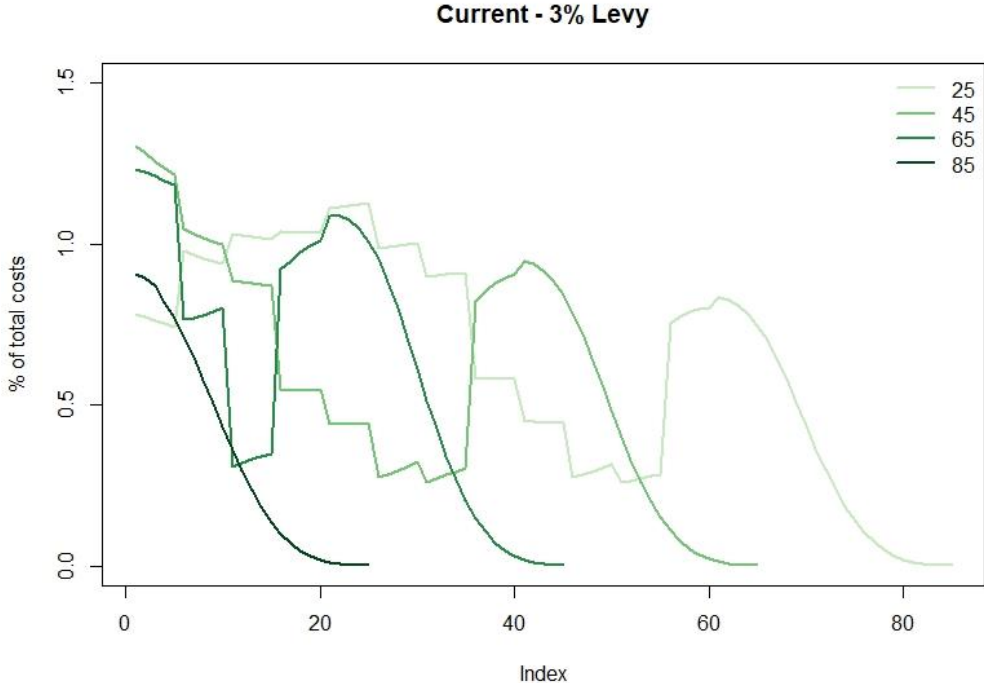


	No Improvements			Low Improvements			High Improvements		
Means Testing	Universal Entitlement (4%)	Current (3%)	Max (0%)	Universal Entitlement (5%)	Current (4%)	Max (1.5%)	Universal Entitlement (2.5%)	Current (2%)	Max (0%)
25	0.63	0.64	1.04	0.72	0.75	0.77	0.57	0.63	1.10
45	0.44	0.57	1.15	0.53	0.68	0.98	0.33	0.51	1.24
65	0.26	0.62	1.44	0.32	0.71	1.61	0.17	0.58	1.55
85	0.05	0.35	0.83	0.06	0.36	0.86	0.03	0.34	0.86

Cost-Sharing - Equity

Means testing creates a more equitable situation, older cohorts bear a higher % of total costs, reducing the levy needed

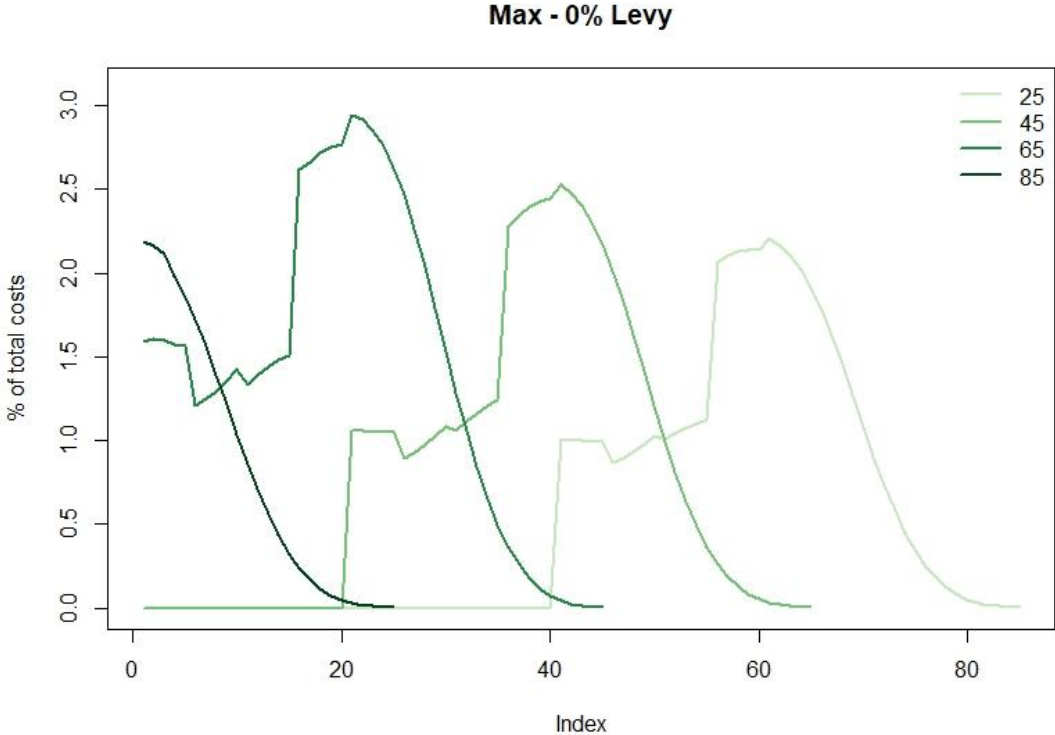
A combination of means-testing for current cohorts with a levy and transition to universal entitlement for future cohorts is likely to be more equitable.



	No Improvements			Low Improvements			High Improvements		
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Cost-Sharing - Equity

Applying the maximum (with 0% levy) while equitable across generations and sustainable, is likely to be politically infeasible and create more unspent funds in HCP's.

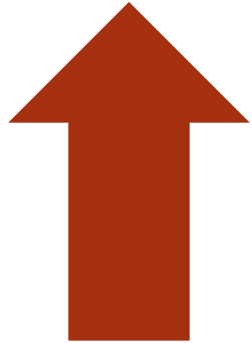


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Contribution and Limitations

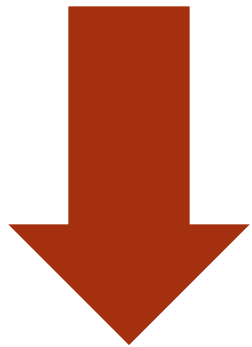


Literature;

- Expands existing research in disability rates to cover more recent data
- Adds to limited research surrounding aged care financing

Policy

- Aids the Royal Commission in actuarially assessing an Aged Care Levy
- Provides estimates for future demand of aged care
- Evaluates sustainability and equity of current means-testing and uncapping supply



- Level of publicly available data, especially for older ages, leads to more assumptions made
- Estimates, especially at longer years, have a significant amount of uncertainty to them, especially from economic assumptions
- New home care system in response to the Royal Commission may require re-assessment of costs and sustainability

Need to investigate interaction of mortality and disability improvements as it significantly impacts the sustainability of the aged care system

References

- Aged Care Financing Authority 2020, *Eighth Report on the Funding and Financing of the Aged Care Industry*, Department of Health, viewed 3 March 2021, <https://www.health.gov.au/sites/default/files/documents/2020/07/eighth-report-on-the-funding-and-financing-of-the-aged-care-industry-july-2020-eighth-report-on-the-funding-and-financing-of-the-aged-care-industry-may-2020_0.pdf>.
- Australian Treasury 2015, *2015 Intergenerational Report Australia in 2055*, Commonwealth of Australia, Canberra, viewed 3 March 2021, <https://treasury.gov.au/sites/default/files/2019-03/2015_IGR.pdf>
- Australian Bureau of Statistics 2018, *Population Projections*, Australia, Cat.no. 3222.0, Australian Bureau of Statistics, Canberra.
- Australian Government Actuary, 2019, *Australian Life Tables 2015-17*
- Chomik, R & Piggott, J 2020, *Submission to the Royal Commission on Aged Care Quality: Aged Care Financing*, viewed 19 October 2020, <<https://www.cepar.edu.au/publications/reports-government-submissions/submission-royal-commission-aged-care-quality-aged-care-financing>>.
- Deloitte Access Economics, 2020, *Aged Care Reform: Projecting Future Impacts*, viewed 3 March 2021, <Research Paper 11 – Aged care reform: projecting future impacts | Royal Commission into Aged Care Quality and Safety>.
- Dyer SM, Valeri M, Arora N, Ross T, Winsall M, Tilden D, Crotty M 2019. *Review of International Systems for Long-Term Care of Older People*, Flinders University, Adelaide, viewed 15 October 2020, <<https://agedcare.royalcommission.gov.au/sites/default/files/2020-09/Research%20Paper%20-%20Review%20of%20international%20systems%20for%20long-term%20care%20of...pdf>>.
- Ergas, H & Paolucci, F 2011, 'Providing and financing aged care in Australia', *Risk management and healthcare policy*, vol. 4, pp. 67–80.
- Howe, A, 2019, *Addressing pressures on aged care expenditure through an Aged Care Levy*, Australian Treasury, viewed 25 February 2021, <<https://treasury.gov.au/sites/default/files/2020-02/howe240120.pdf>>.
- Ikegami, N., 2019. Financing long-term care: lessons from Japan. *International journal of health policy and management*, 8(8), p.462
- Schut, F.T. and van den Berg, B., 2012. Long-term care insurance in the Netherlands. In *Financing Long-Term Care in Europe* (pp. 103-124). Palgrave Macmillan, London.

References

- Rickayzen, B.D. and Walsh, D.E., 2002. A multi-state model of disability for the United Kingdom: implications for future need for long-term care for the elderly. *British Actuarial Journal*, pp.341-393.
- Hariyanto, E.A., Dickson, D.C. and Pitt, D.G., 2014. Estimation of disability transition probabilities in Australia I: Preliminary. *Annals of Actuarial Science*, 8(1), pp.131-155.
- Leung, E., 2004. Projecting the needs and costs of long term care in Australia. *Australian Actuarial Journal*, 10(2), pp.343-385.
- Pagone, T. and Briggs, L., 2021, *Royal Commission into Aged Care Quality and Safety Final Report: Volume 3b*
- StewartBrown 2020, *Aged Care Financial Performance March 2020 Survey Sector Report*, viewed 15 October 2020, <https://www.stewartbrown.com.au/images/documents/StewartBrown_-_Aged_Care_Financial_Performance_Survey_Sector_March_2020.pdf>.
- Tune, D. 2017, *Legislated Review of Aged Care 2017 Report*, Department of Health, viewed 19 October 2020, <<https://www.health.gov.au/sites/default/files/legislated-review-of-aged-care-2017-report.pdf>>.
- Cho, D., Hanewald, K. and Sherris, M., 2015. Risk Analysis for Reverse Mortgages with Different Payout Designs. *Asia-Pacific Journal of Risk and Insurance*, 9(1).
- Productivity Commission 2013, *Productivity Commission Research Paper; An Ageing Australia: Preparing for the Future*, Commonwealth of Australia, Canberra
- Productivity Commission 2011, *Productivity Commission Inquiry Report; Caring for Older Australians*, Commonwealth of Australia, Canberra
- Barr, N., 2010. Long-term Care: A Suitable Case for Social Insurance. *Social Policy & Administration*, 44(4), pp.359-374.
- Schut, F. and Van Den Berg, B., 2010. Sustainability of Comprehensive Universal Long-term Care Insurance in the Netherlands. *Social Policy & Administration*, 44(4), pp.411-435.
- Costa-Font, J., Courbage, C. and Zweifel, P., 2016. Policy Dilemmas in Financing Long-term Care in Europe. *Global Policy*, 8, pp.38-45.