Residential Care Subsidy and Mortality among Aged Residential Care Facility Residents

Wei-Lin Chen

NZ Policy Research Institute at AUT

NZAE
June 2025

Disclaimer

Access to the data used in this study was provided by Stats NZ under conditions designed to give effect to the security and confidentiality provisions of the Data and Statistics Act 2022. The results presented in this study are the work of the author, not Stats NZ or individual data suppliers. These results are not official statistics. They have been cr eated for research purposes from the Integrated Data Infrastructure (IDI) which are carefully managed by Stats NZ. For more information about the IDI please visit: https://www.stats.govt.nz/integrated-data/.

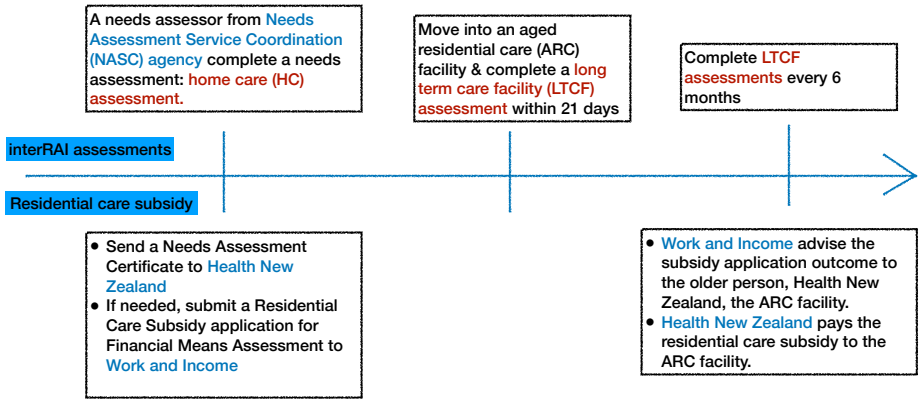
Residential care subsidy

- Access to residential care for vulnerable older people is crucial.
- NZ government provides residential care subsidy to vulnerable people identified by:
  - Health needs: a clinical assessment recommending long-term care
  - Financial means: total assets must be below certain thresholds
- The subsidy may not only grant access to residential care but also:
  - Enable older people to choose "better" Aged Residential Care (ARC) facilities
  - Affect older people's mental health

Research question for today:

Does receiving residential care subsidy affect older people's mortality risk?

Application procedure



- ARC residents can apply for the subsidy after they move in
- Focus on the subsidy receipt since the beginning of moving into ARC (40% of ARC residents).

How much is the subsidy?

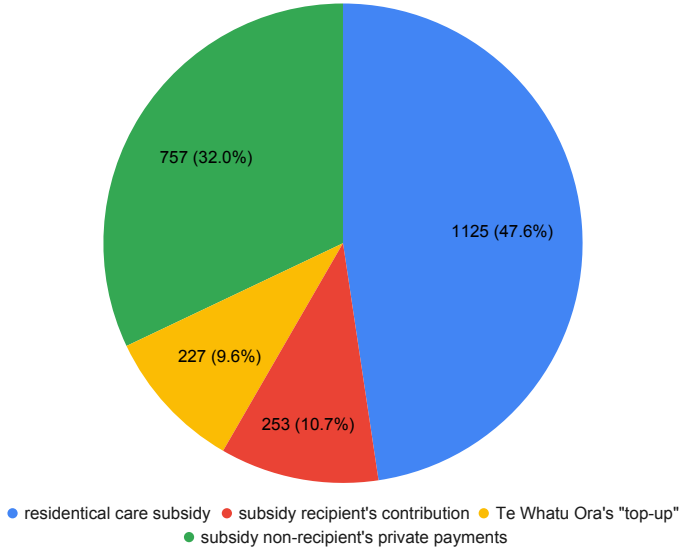
I receive NZ super, single, originally lived alone. I now live in an ARC in Wellington city,

Do not receive a subsidy

- My NZ super is $538.4 per week.
- Privately pay up to $1,476.58 weekly, the maximum contribution (rest home level care)
- Te Whatu Ora covers the "top-up" (dementia, hospital, psychogeriatric level care)
- Privately pay for some other services, e.g., a premium room.

Receive a subsidy

- My NZ super mostly covers the ARC cost, my net total weekly allowance is $63.4.
- Te Whatu Ora pays the remaining part through subsidies.
- Privately pay for some other services, e.g., a premium room.



Spending on ARC services in 2022 (in million), source: Moore *et al* (2024)

Data and target parameter

Sample

- People whose first LTCF assessment was between 2016-2019
- People who had an HC assessment before their LTCF assessment, with less than one year between assessments

Assuming subsidy eligibility affects ARC move-in (treatment) decisions, this project compares:

- Always-taker who receive subsidy + Complier who receive subsidy
- Always-taker who do not receive subsidy

Data

interRAI assessment: IDI MoH interRAI
Residential care subsidy: IDI adhoc MSD
Socioeconomic variables:

- Homeownership status by 2013 census
- Deprivation index of the individual's residence two years before moving into an ARC facility

Linear regression: selection on observables

$$\text{Mortality}_i = \beta \times \text{Subsidy}_i + \delta X_i + \epsilon_i$$

- Mortality: binary outcome (1 = deceased, 0 = alive), measured at 1, 2, 3, and 4 years after the HC assessment assessed before entering an ARC facility
- Subsidy: 1 if receive subsidy since the beginning of the ARC residence
- Heteroskedasticity robust standard errors

Linear regression: selection on observables

$$\text{Mortality}_i = \beta \times \text{Subsidy}_i + \delta X_i + \epsilon_i$$

X:

- Age, sex, prioritised ethnicity
- home ownership and deprivation index of residence
- DHB-specific and HC assessment year-specific dummy variables
- Health dimension from the HC assessments:
  - HC assessments held in hospitals or not, home condition, living arrangement, helper stress
  - A health index that measures the three-year mortality risk since moving into ARC facilities, using outcome scales measured in the residents' first LTCF assessment

Health index

Step 1: regression estimation

$$\text{ThreeYearMortality}_i = \gamma W_i + \epsilon_i$$

- Sample: residents who did *not* receive subsidies when moved into ARC facilities
- ThreeYearMortality: 1 if deceased within three years since moving into ARC facilities
- W: health measures measured in the residents' first LTCF assessment
  - Health measures that appear in both HC and LTCF assessments
  - 20 disease indicators + 11 outcome scales (capture both mental and physical health needs)

Step 2:
Apply the regression coefficients ($\hat{\gamma}$) to the HC assessment data collected right before the residents move into ARC facilities.

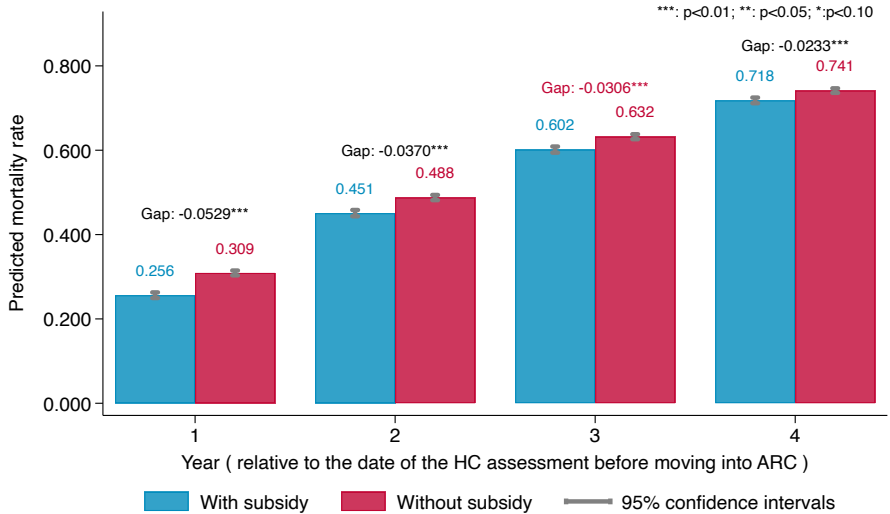
Compare subsidy recipients with others

Compared to non-recipients, those who receive the subsidy are:

- Health:
  - Healthier at the time of HC assessment in terms of the health index
  - Lonelier
  - Helper is more stressed
- Economic status:
  - Less likely to own a home
  - More likely to live in deprived areas
- Home condition:
  - More likely to have a squalid home, inadequate heating/cooling
- Demographics:
  - Less likely to be European and female

$\longrightarrow$ Must control for economic status and initial health conditions

Receiving subsidy is correlated with lower mortality risk



Coefficient size too large to be simply selection bias

Receiving subsidy is correlated with 3.06 p.p. reduction in three-year mortality rate

- 4.8% compared to people without subsidy
- 4 times as big as the initial health index differences (0.78 p.p.)

	Subsidy	Female	Lives with spouse	Feel lonely
coeff. size (p.p)	-3.06	-10.4	3.64	-2.01

Next steps

Better health index

- Use regression tree models

Research design: regression discontinuity design

- Subsidy application data: recommended for residential care or not, asset value

Other health outcomes based on the periodic LTCF assessments

- Cases where older people lacked an LTCF assessment due to hospitalization or returning to the community

Mechanisms

- Which ARC facility the subsidy recipients choose
- Hospitalisation and other health care utilisation

Thank you for your attention. I look forward to your feedback.

My e-mail: wei-lin.chen@aut.ac.nz
My website: https://www.weilinchen.com/

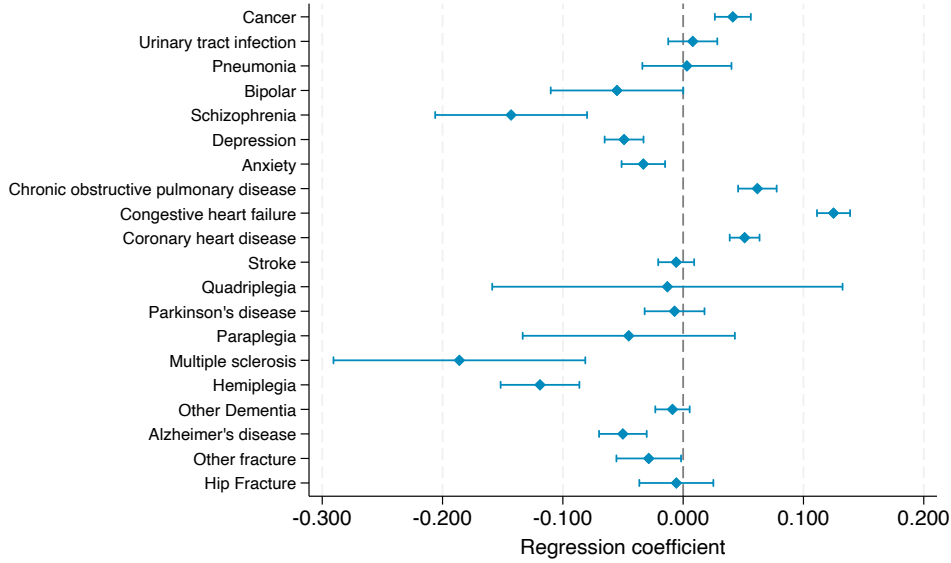
Health index input

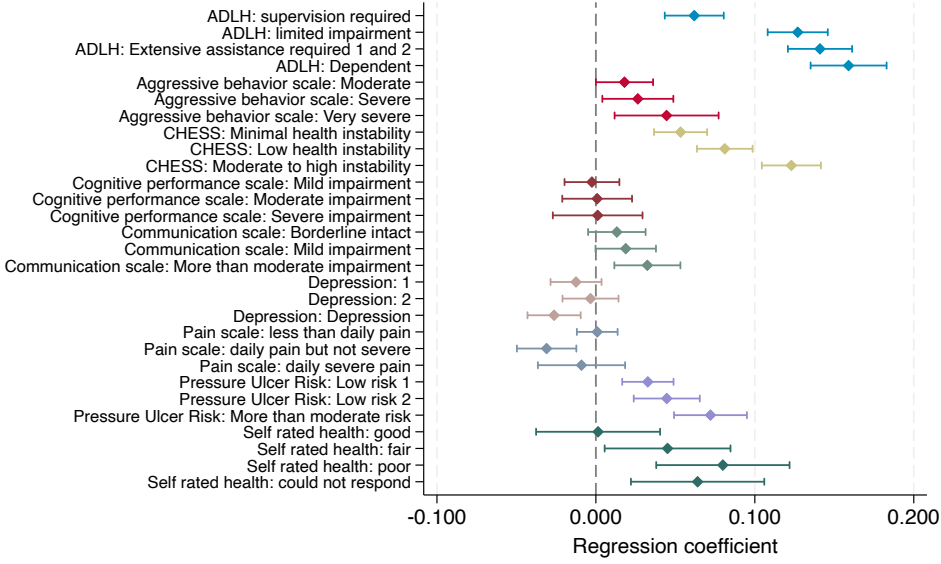
Disease indicators:

- Hip Fracture, Other fracture, Alzheimer's disease, Other Dementia, Hemiplegia, Multiple sclerosis, Paraplegia, Parkinson's disease, Quadriplegia, Stroke, Coronary heart disease, Congestive heart failure, Chronic obstructive pulmonary disease, Anxiety, Depression, Schizophrenia, Bipolar, Pneumonia, Urinary tract infection, Cancer

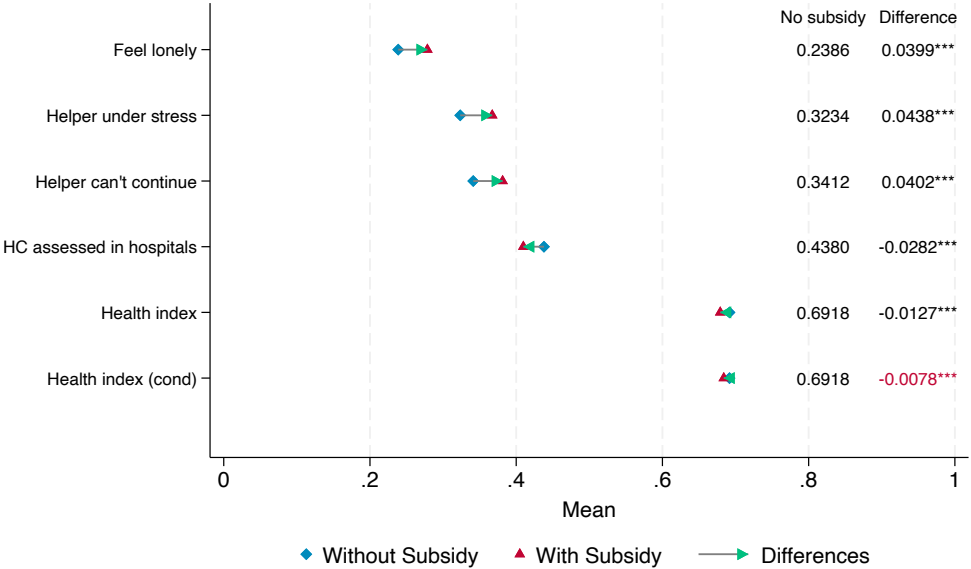
Outcome scales:

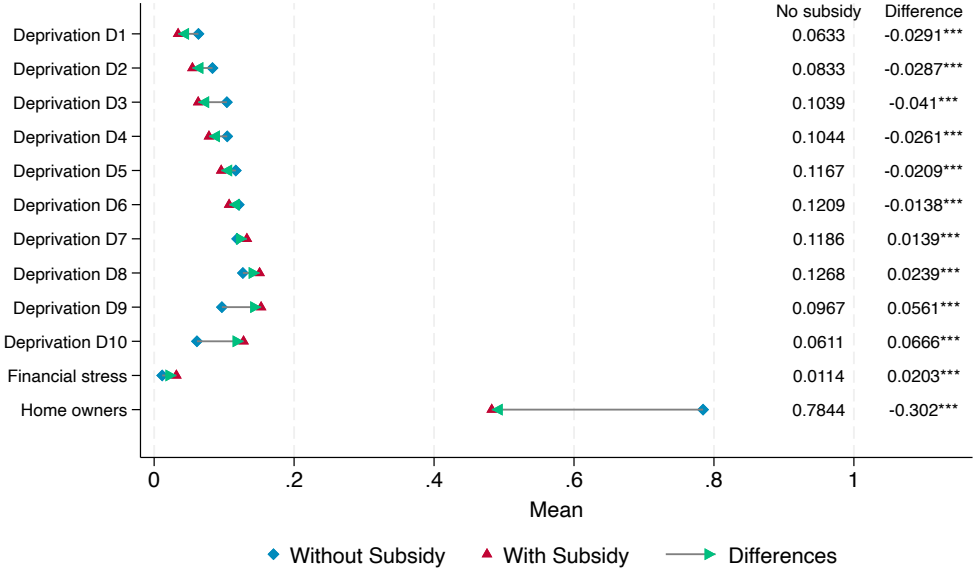
- Self-rated health, ADL hierarchy scale, Aggressive behavior scale, BMI, Changes in health, end-stage disease and signs and symptoms scale (CHESS), Cognitive performance scale, Communication scale, Depression rating scale, Pain scale, Pressure ulcer risk scale

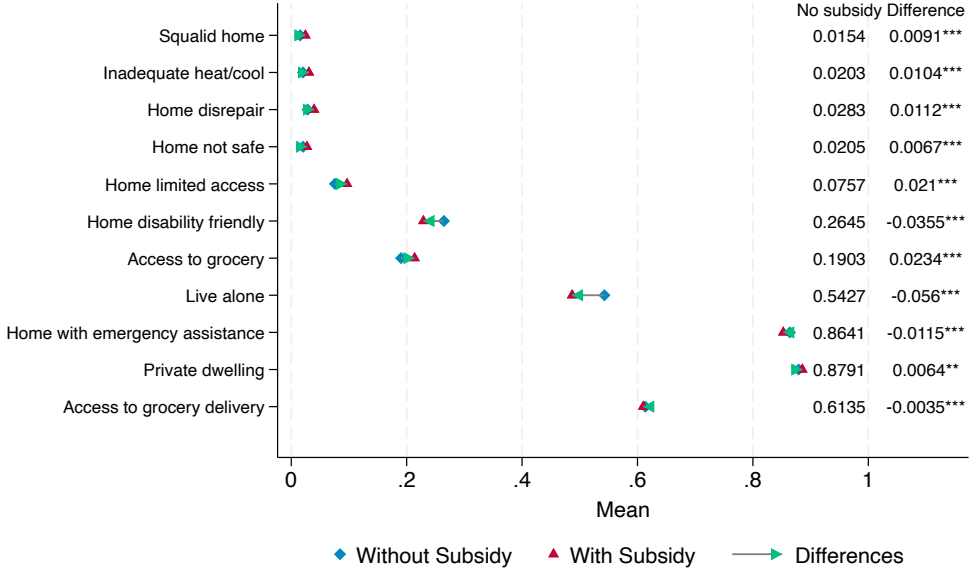

Cancer
Urinary tract infection
Pneumonia
Bipolar
Schizophrenia
Depression
Anxiety
Chronic obstructive pulmonary disease
Congestive heart failure
Coronary heart disease
Stroke
Quadriplegia
Parkinson's disease
Paraplegia
Multiple sclerosis
Hemiplegia
Other Dementia
Alzheimer's disease
Other fracture
Hip Fracture
-0.300
-0.200
-0.100
0.000
0.100
0.200
Regression coefficient

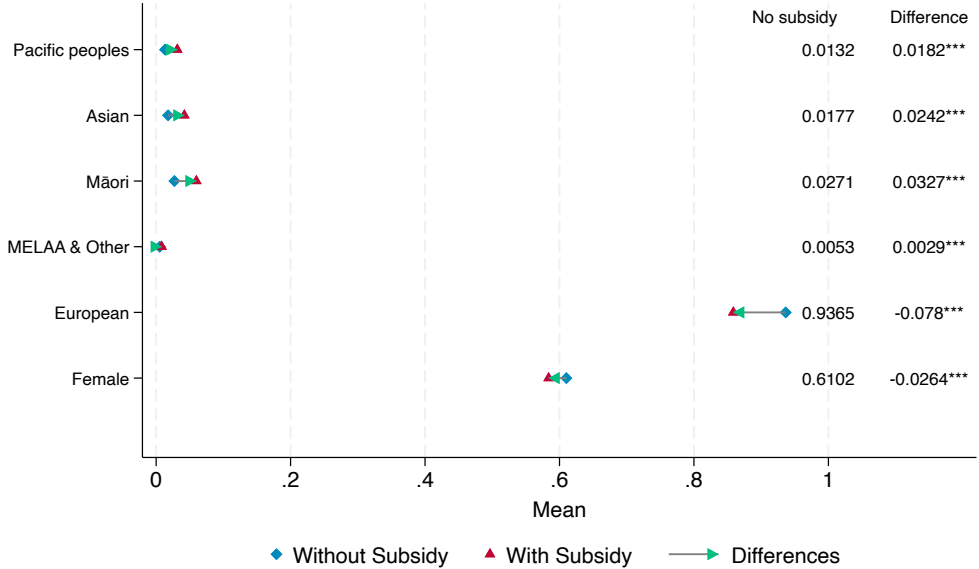

ADLH: supervision required
ADLH: limited impairment
ADLH: Extensive assistance required 1 and 2
ADLH: Dependent
Aggressive behavior scale: Moderate
Aggressive behavior scale: Severe
Aggressive behavior scale: Very severe
CHESS: Minimal health instability
CHESS: Low health instability
CHESS: Moderate to high instability
Cognitive performance scale: Mild impairment
Cognitive performance scale: Moderate impairment
Cognitive performance scale: Severe impairment
Communication scale: Borderline intact
Communication scale: Mild impairment
Communication scale: More than moderate impairment
Depression: 1
Depression: 2
Depression: Depression
Pain scale: less than daily pain
Pain scale: daily pain but not severe
Pain scale: daily severe pain
Pressure Ulcer Risk: Low risk 1
Pressure Ulcer Risk: Low risk 2
Pressure Ulcer Risk: More than moderate risk
Self rated health: good
Self rated health: fair
Self rated health: poor
Self rated health: could not respond
-0.100
0.000
0.100
0.200
Regression coefficient

Back


No subsidy
Difference
Feel lonely
0.2386
0.0399***
Helper under stress
0.3234
0.0438***
Helper can't continue
0.3412
0.0402***
HC assessed in hospitals
0.4380
-0.0282***
Health index
0.6918
-0.0127***
Health index (cond)
0.6918
-0.0078***
0
.2
.4
.6
.8
1
Mean
Without Subsidy
With Subsidy
Differences


No subsidy
Difference
Deprivation D1
0.0633
-0.0291***
Deprivation D2
0.0833
-0.0287***
Deprivation D3
0.1039
-0.041***
Deprivation D4
0.1044
-0.0261***
Deprivation D5
0.1167
-0.0209***
Deprivation D6
0.1209
-0.0138***
Deprivation D7
0.1186
0.0139***
Deprivation D8
0.1268
0.0239***
Deprivation D9
0.0967
0.0561***
Deprivation D10
0.0611
0.0666***
Financial stress
0.0114
0.0203***
Home owners
0.7844
-0.302***
0
.2
.4
.6
.8
1
Mean
Without Subsidy
With Subsidy
Differences


No subsidy Difference
Squalid home
0.0154
0.0091***
Inadequate heat/cool
0.0203
0.0104***
Home disrepair
0.0283
0.0112***
Home not safe
0.0205
0.0067***
Home limited access
0.0757
0.021***
Home disability friendly
0.2645
-0.0355***
Access to grocery
0.1903
0.0234***
Live alone
0.5427
-0.056***
Home with emergency assistance
0.8641
-0.0115***
Private dwelling
0.8791
0.0064**
Access to grocery delivery
0.6135
-0.0035***
0
.2
.4
.6
.8
1
Mean
Without Subsidy
With Subsidy
Differences


No subsidy
Difference
Pacific peoples
0.0132
0.0182***
Asian
0.0177
0.0242***
Māori
0.0271
0.0327***
MELAA & Other
0.0053
0.0029***
European
0.9365
-0.078***
Female
0.6102
-0.0264***
0
.2
.4
.6
.8
1
Mean
Without Subsidy
With Subsidy
Differences

Greater mortality reduction among those in poorer initial health