



Policy modelling and demographic ageing: *Long-term health and social care*



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Whare Wānanga o Tāmaki Makaurau

7th COMPASS Colloquium,
Statistics NZ, Wellington
30 August 2013

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www.compass.auckland.ac.nz



- ▣ **Section 1 (Rationale)**
 - ▣ **What is BCASO?**
 - ▣ **Policy purpose**

- ▣ **Section 2 (Methods)**
 - ▣ **Construction**

- ▣ **Section 3 (Policy application)**
 - ▣ **Policy scenario testing**
 - ▣ **Conclusion**

What is BCASO?



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Whare Wānanga o Tāmaki Makaurau

BCASO = Balance of Care in an Ageing Society

- Data-driven simulation model of health and social care in older people
- *BCASO is funded by the Health Research Council*
- *Investigators: Prof Peter Davis, Prof Ngaire Kerse, Prof Laurie Brown (Canberra), et al*
- *Project team: Roy Lay-Yee (Co-investigator), Janet Pearson (Statistician), Martin von Randow (Analyst), et al*

Policy purpose



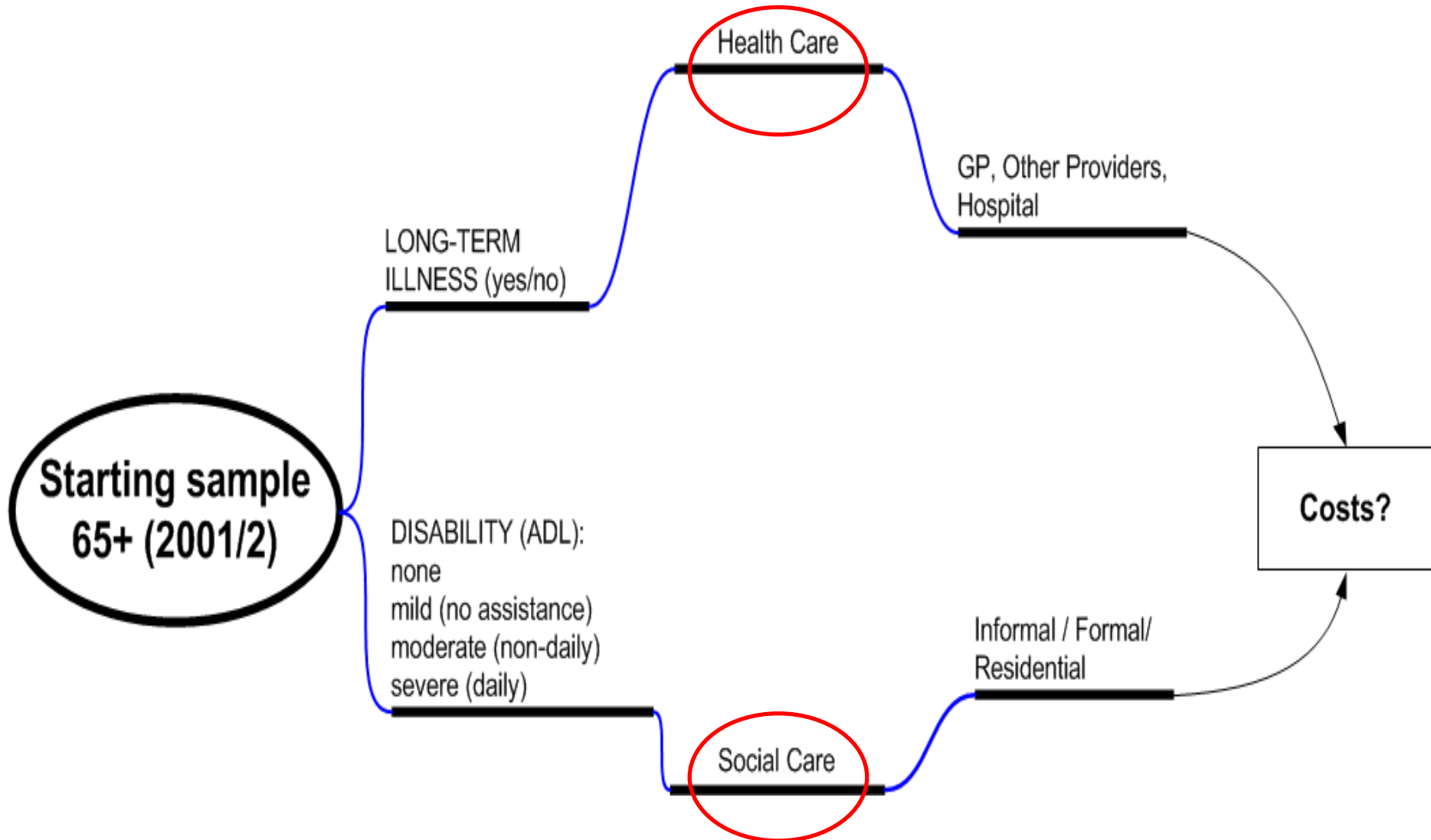
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Whare Wānanga o Tāmaki Makaurau

- Basic model accounting for core processes involved in determining levels of health and social care in older people
- Representative of the NZ population
- Can be used to test policy scenarios, e.g. what happens if we change the balance of care

NZ model: Architecture



What can the model produce?



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Whare Wānanga o Tāmaki Makaurau

- ❑ Description - range & balance of care in NZ 65+ population (base year=2001/2)
- ❑ Projection – impact of demographic ageing (to 2021 and beyond)
- ❑ Scenario testing – ‘what if’ questions, esp. re balance of care

Policy questions: Health and social care



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Whare Wānanga o Tāmaki Makaurau

- ❑ What will be future levels of health and social care use for older people under the status quo?
- ❑ How will changing the prevalence of / transition to long-term illness / disability affect levels of health and social care use for older people?
- ❑ How will changing the balance among providers affect levels of health and social care use?

Questions



- Section 1 (Rationale)
 - What is BCASO?
 - Policy purpose

Outline



- ❑ Section 1 (Rationale)
 - ❑ What is BCASO?
 - ❑ Policy purpose

- ❑ **Section 2 (Methods)**
 - ❑ **Construction**

- ❑ Section 3 (Policy application)
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Construction



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Whare Wānanga o Tāmaki Makaurau

- ❑ Data sources
- ❑ Creating a virtual cohort using microsimulation
- ❑ 2 modules: 'Health' & 'Social' care
- ❑ Each module has:
 - ⊕ A change element (2001 to 2006, etc)
 - ⊕ A constant, cross-sectional element

Data Sources



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Whare Wānanga o Tāmaki Makaurau

- No longitudinal data available – repeated cross-sectional surveys only – health (MoH) & disability (SNZ)
- Age group: 65+ (450,000, 12% of NZ pop in 2001)
- Starting sample (n=2400):
 - NZHS 2002 – living in households (n=1500)
 - + NZDS 2001 – residential (n=900)
- Deriving parameters (for the simulation):
 - NZHS 2002, 2006; NZDS 1996, 2001

Creating a virtual cohort (that is representative)



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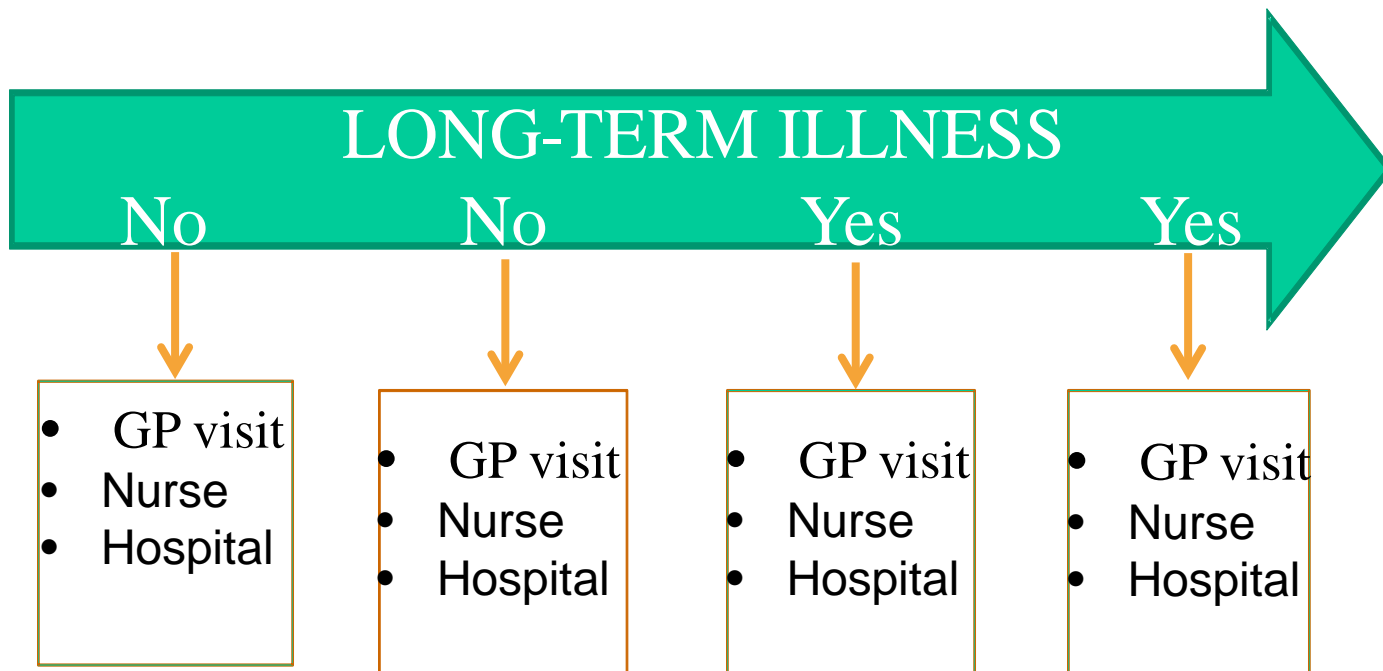
Whare Wānanga o Tāmaki Makaurau

- We use a starting cohort of 2400 older people representing the 65+ NZ population
- We apply statistical rules to 'age' the cohort (at 5-year intervals)
- We apply mortality based on health expectancy, disability-adjusted
- We rejuvenate the cohort by bringing in new entrants to the youngest 65-69-year age group in proportion to the population
- In future years, we re-weight by demographics according to official projections

Health Care module

2001

2006



Health Care module – modes of care



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Whare Wānanga o Tāmaki Makaurau

☒ Practice nurse visit (yes/no)

~ long-term illness + age + gender + ethnicity + deprivation
+ partnership status

☒ GP visit (ordinal categories)

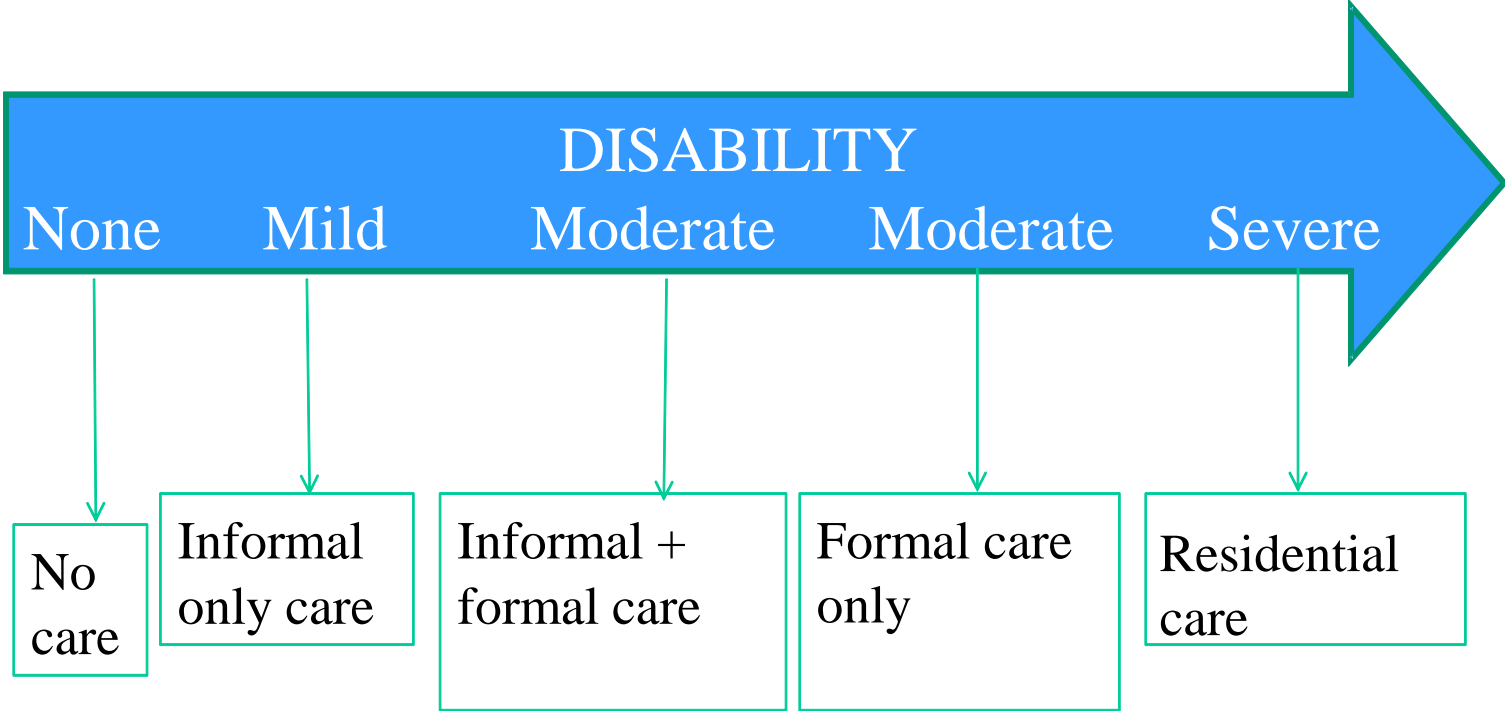
~ practice nurse visit + long-term illness + age + gender +
ethnicity + deprivation + partnership status

☒ (Hospital admission)

Social Care module

2001

2006



Social Care module: a continuum of care



❑ Informal care (y/n)

~ **disability** + age + gender + ethnicity + deprivation +
partnership status

❑ Formal care (y/n)

~ informal care + **disability** + age + gender + ethnicity +
deprivation + **partnership status**

❑ (Residential care)

Questions



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Policy scenario testing



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- **Base simulation** (projection of status quo) - people live longer but suffer same pattern of illness (~ expansion of morbidity)
- **Morbidity scenario** - years of disability at end of life are reduced by improvement in health (~ compression of morbidity)
- **Care scenario** – changing the balance of care

Reprise ... Policy questions: Health care



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Whare Wānanga o Tāmaki Makaurau

- ❑ What will be future levels of health service use for older people under the status quo?
- ❑ How will changing the prevalence of / transition to long-term illness / disability affect levels of health service use for older people?
- ❑ How will changing the balance among providers affect levels of health service use?

Health Care: scenarios (What if?)



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- ❑ Long-term illness; disability
 - health service use (practice nurse, GP, hospital)
- ❑ Practice nurse (only) visit
 - GP visits
- ❑ Outcome: proportion visiting or admitted

Reprise ... Policy questions: Social care



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Whare Wānanga o Tāmaki Makaurau

- ❑ What will be future levels of social care use for older people under the status quo?
- ❑ How will changing the prevalence of / transition to long-term illness / disability affect levels of social care use for older people?
- ❑ How will changing the balance among providers affect levels of social care use?



- ▣ Long-term illness; disability
→ social care use (informal, formal)
- ▣ Informal care → formal care
- ▣ Outcome: proportion in care

Conclusion: Technical



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Whare Wānanga o Tāmaki Makaurau

- We model long-term illness, disability & a range of care in older people 65+
- We use microsimulation to bring together real data from various sources
 - adding value to data in the process
 - starting cohort made from NZHS (householders) and NZDS (resid)
 - having to use repeated cross-sectional surveys (5-yrly)
- Strength – representative of NZ pop.
- Limitation - lack of rich detail, finer grain
- We create a virtual cohort – data platform - that can be:
 - enhanced with richer data, e.g. longitudinal cohort studies of ageing
 - used to test policy-relevant scenarios

Conclusion: Substantive



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- Projection to 2021 – small increase in morbidity & use of care
- Morbidity scenario - decreasing morbidity slightly reduces health & social care use
- *demographic ageing may not have the assumed disastrous impact on system resources, esp. with healthier ageing?*
- Health care scenario - increasing practice nurse use has little effect on GP use
- Social care scenario - increasing informal care slightly reduces formal care
- *changing the balance of social care may make better use of limited system resources?*

Questions



- ▣ Section 3 (Policy application)
 - ▣ Policy scenario testing
 - ▣ Conclusion

- ▣ Anything else?