

# **Simulating policy options for an ageing society**

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Whare Wānanga o Tāmaki Makaurau

## Introduction

Demographic ageing in New Zealand, like other developed countries, has greatly increased the proportion of older people with major implications for the provision of health and social care (Rechel et al 2009). A policy response has been a call to change the *balance of care* (Wanless et al 2006).

Our aim was to test two areas relevant to older people with major policy implications:

- The impact of changing morbidity (reducing long-term illness and disability) on use of care;
- The impact of changing the balance between different modalities within health care (increasing practice nurse visits over GP visits and hospital admissions), and within social care (increasing informal, and reducing formal and residential).

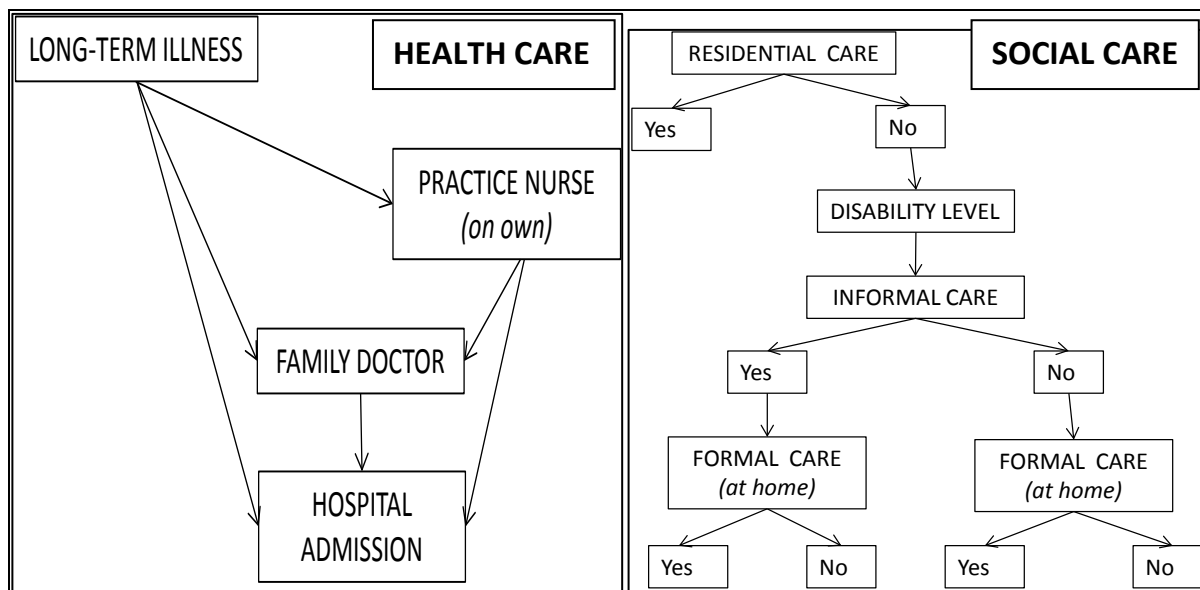
To do this, we constructed a dynamic *micro-simulation* model of the later life course (ages 65+), providing a virtual laboratory that could be used to test policy options by changing inputs or parameters and observing their effect on the overall system (Davis, Lay-Yee, & Pearson 2010).

## Methods

*Micro-simulation* relies on data from the real world to create an artificial one that mimics the original (Pearson et al 2011). Our model used data on older people from a real sample (n=2807). Each person had a set of attributes as a starting point – e.g. age and gender. A set of rules - statistical equations and transition probabilities derived from real data - was then applied stochastically to simulate changes in state over time. This generated synthetic data that replicated the original data and parameter settings.

The model was built on recent data from two New Zealand official series of surveys on health (Ministry of Health 2004) and disability (Statistics NZ 2002).

### Conceptual models



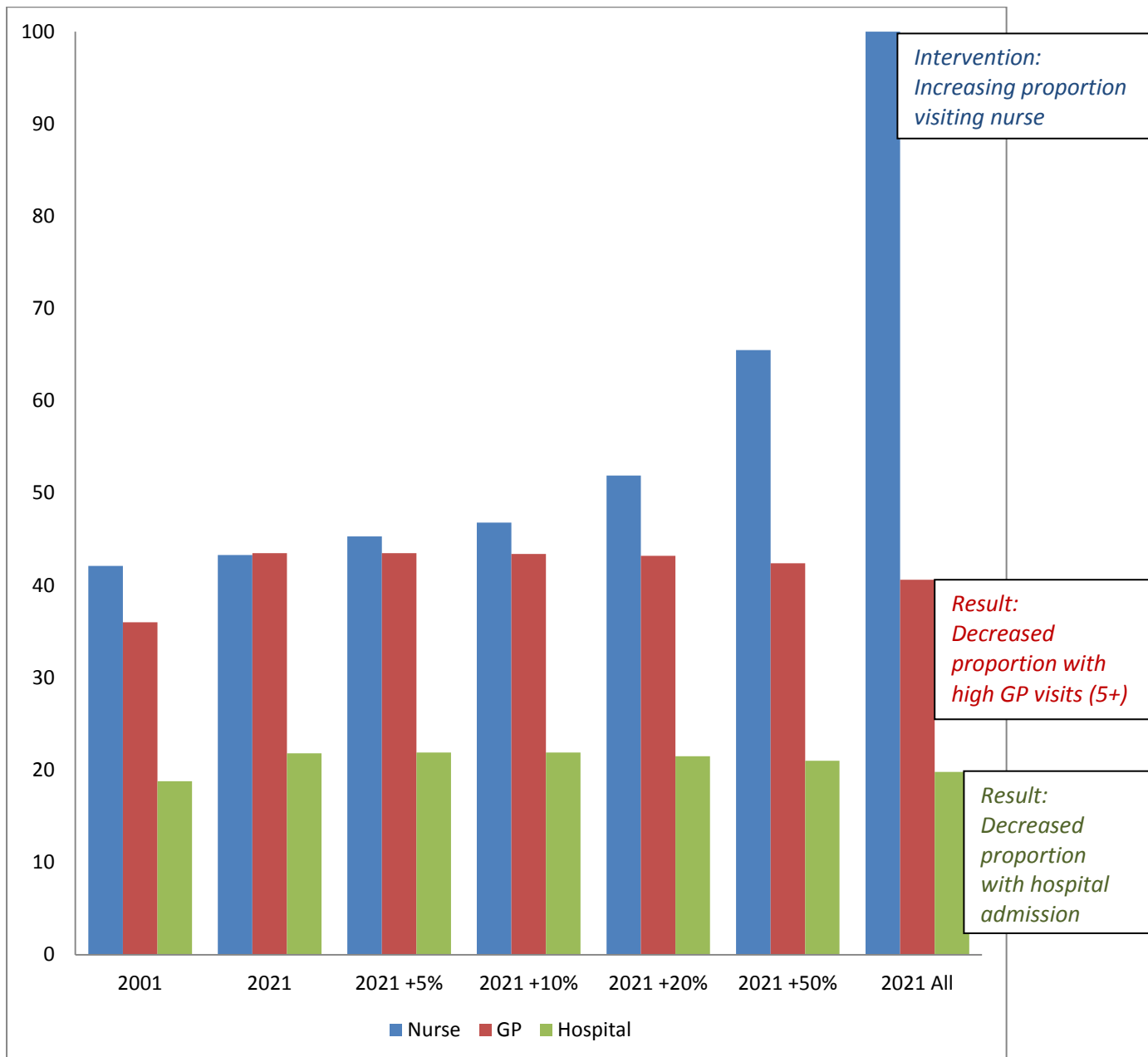
## Results

### Morbidity levels for people aged 65+ living in the community: Projection 2001 to 2021

	Morbidity				
	Long-term illness (%)	Disability level (%)			
		none	mild	moderate	severe
<b>2001:</b>	85.6	49.2	14.8	27.8	8.2
<b>Base simulation</b>					
<b>2021:</b>	87.4	43.8	15.4	28.7	12.1
<b>Projected simulation (morbidity expansion)</b>					
<b>Change 2001 to 2021</b>	1.8	-5.4	0.6	0.9	3.9

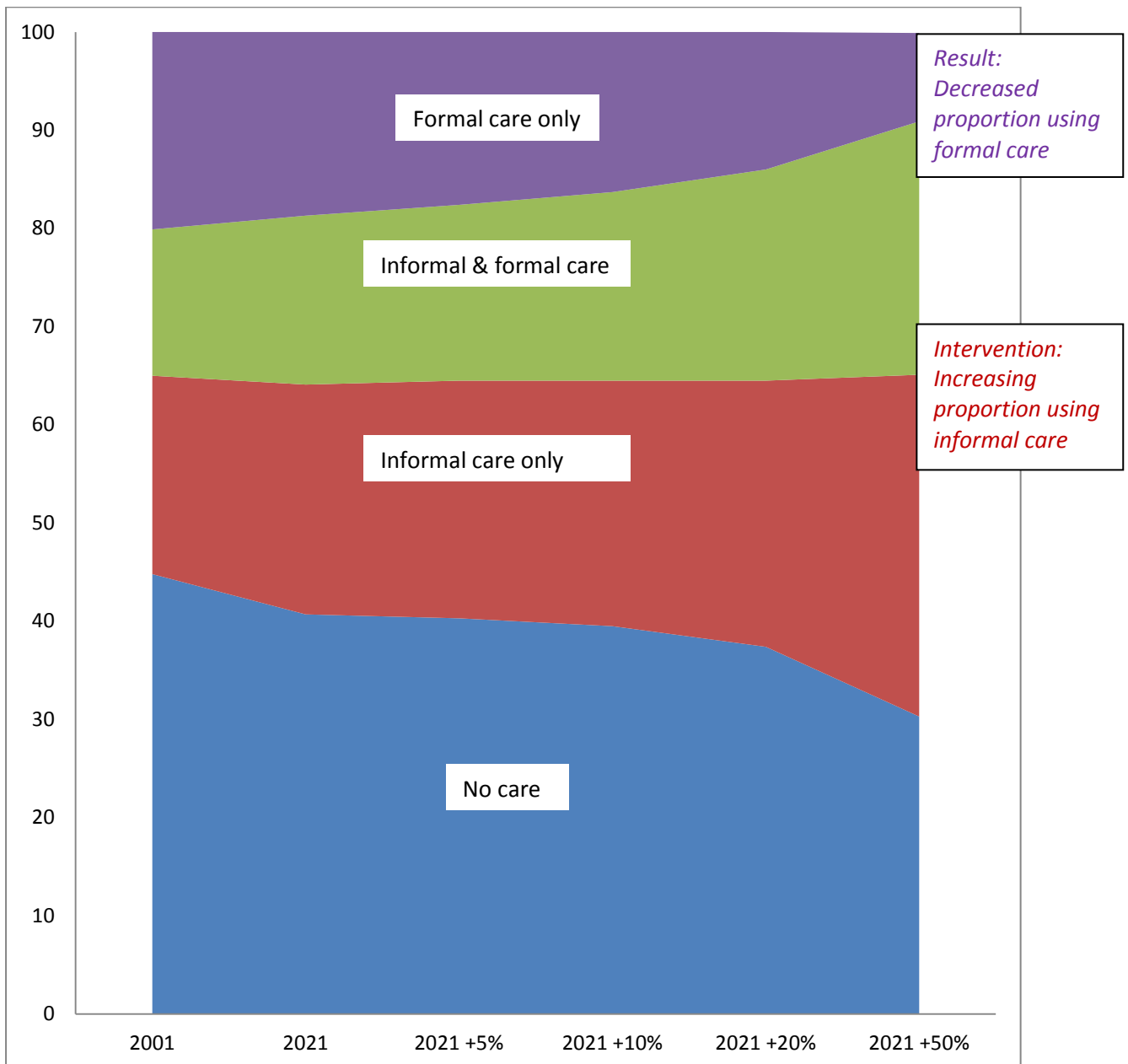
- Projected simulation from 2001 to 2021 shows a small increase in morbidity (long-term illness, and disability) - i.e. expansion
- This resulted in a concomitant small increase in use of health care (practice nurse, GP, hospital) and social care (informal, formal).
- Scenarios implemented by decreasing morbidity levels – i.e. compression - only slightly reduced the use of health and social care (not shown).

## Increasing practice nurse use for people aged 65+ living in the community



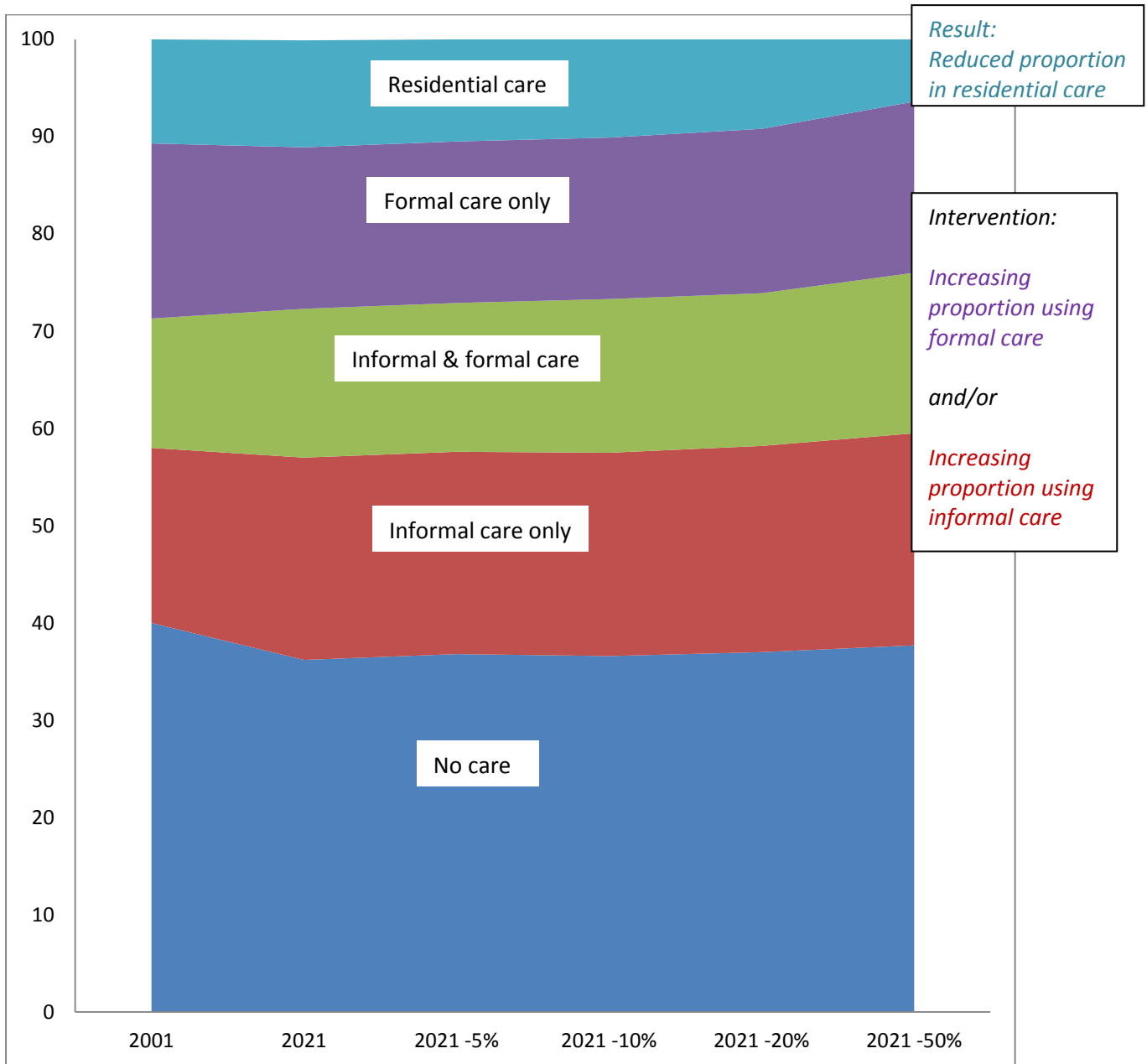
Scenarios implemented by increasing levels of practice nurse use reduced high GP-users (5+ visits) and public hospital admission (particularly for 85+).

## Increasing informal care use for people aged 65+ in the community needing assistance in daily living



Scenarios implemented by increasing the use of informal care reduced the use of formal care (particularly with increasing age).

## Achieving reductions in residential care for people aged 65+



Scenarios implemented by setting reduced levels of residential care show that such reductions can be achieved by small increases in informal and formal care (particularly for 85+).



## Conclusions

- Our simulation model, using existing publicly accessible data, was useful in testing policy options for care under different ageing scenarios.
- Demographic ageing does not have a major negative impact on system resources especially with healthier populations over time.
- While facilitating ageing in place, changing the balance of care (shifting to less costly modalities) can make better use of finite system resources.
- Potential policy interventions:
  - At least one visit to the practice nurse per year for 85+ - could reduce proportion of high GP-users (5+ visits) by 6%, and proportion with at least one public hospital admission by 60%
  - Supporting community care for 85+ – increasing informal (by 15%) & formal (by 18%) could reduce residential care use by 50%

## References

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## Further information

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