

Applying Multi-State Models to Understand Changes in Home Care Client and Caregiver Health

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Introduction

- In 2015/16, 729,357 Ontarians received publicly funded home care¹
 - 11.5% were served in the Hamilton Niagara Haldimand Brant (HNHB) region²

- Most home care clients receive services in their homes — either in their private homes or congregate settings such as retirement homes — although most research does not look at these care settings separately

Figure 1. Hamilton Niagara Haldimand Brant (HNHB) Local Health Integration Network (LHIN) is located in southwestern Ontario and covers Hamilton, Niagara, Haldimand, Brant, Burlington, and most of Norfolk



- To our knowledge, Poss et al. (2017) was the first study in Ontario that linked RAI-Home Care assessment data to home care address records³

- Home care clients living in retirement homes are more likely to be older, female, widowed, have greater degree of physical and cognitive impairment, report fewer depressive symptoms, and less likely to live with their informal caregiver

- However, these descriptive findings only show that health status differs by residence type at a single point in time...



Study question:

Does retirement home residence among home care clients influence risk factors for long-term care placement over time?

Client depressed or lonely

- Significant depressive symptoms (Depression Rating Score 3+), OR
- Client says or indicates that he/she feels lonely

Caregiver distressed

- Caregiver is unable to continue in caring activities, OR
- Primary caregiver expresses feelings of distress, anger, or depression

These risk factors were chosen because they are known to predict long-term care placement based on published literature⁴⁻⁷

Methods

Sample

- Time 1: RAI-HC assessments from Jan 2014 to Dec 2016 that were done in a “private dwelling” or “retirement home” AND active home care client on the day of assessment and for at least 30 days following
- Time 2: subsequent RAI-HC assessment that was done between 1 and 12 months after time 1 assessment AND in the same residence type as time 1

Analysis

- Multi-state model consisting of three states for clients who have a time 2 assessment and five absorbing states for clients who do not have a time 2 assessment
- Estimated using multinomial logistic regression models for each initial state

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Results

Table 1. Sample characteristics (n=66,503)

(* significant at <0.001)		Retirement Home n=10,525 (16%)	Private Home n=55,978 (84%)
* Age 75+		89.4% (9,410)	64.1% (35,873)
* Female		70.1% (7,374)	60.6% (33,939)
* Caregiver relation	Child	68.1% (7,166)	41.6% (23,303)
	Spouse	9.4% (991)	37.7% (21,101)
* Caregiver co-resides		12.4% (1,304)	60.6% (33,908)
* Impaired in physical functioning (ADL Hierarchy Scale 3+)		30.5% (3,205)	25.5% (14,287)
* Impaired in cognitive functioning (Cognitive Performance Scale 3+)		16.3% (1,711)	14.3% (7,997)
* Significant depressive symptoms (Depression Rating Scale 3+)		13.3% (1,401)	17.8% (9,940)

Figure 2. Initial states by residence type

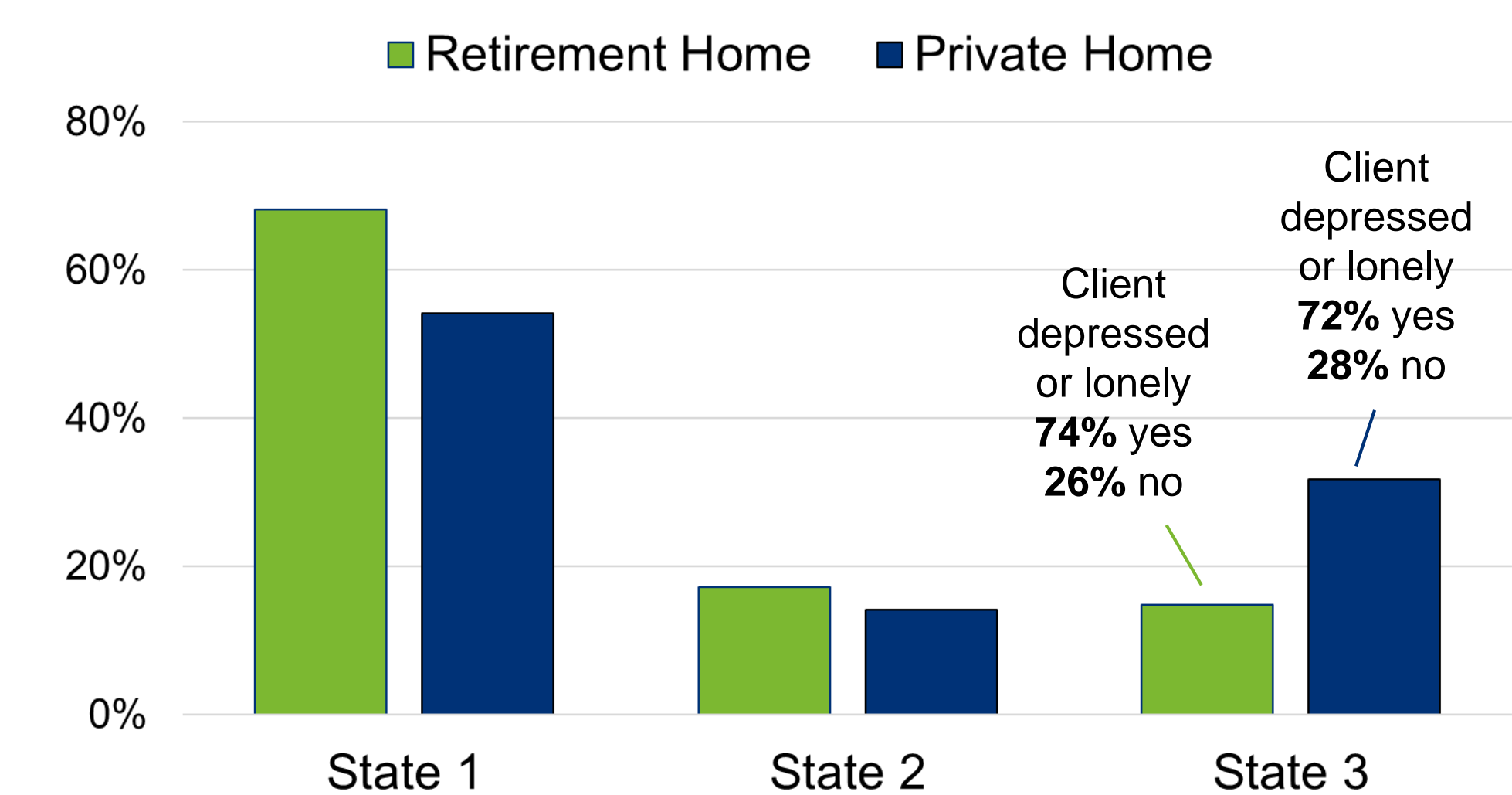


Figure 3. Effect of residence type on state transition probabilities: retirement home vs. private home (reference)

Controlling for age, sex, ADLH, CPS, MAPLe, CHESS, Alzheimer's or related dementia diagnosis, caregiver relation, caregiver co-resides, alone during the day, previous ED visit or hospital stay

Initial State	Next State							
	State 1	State 2	State 3	Long-Term Care Home	Hospital	Died	Home Care Service Complete	Other
State 1 Client depressed or lonely Caregiver distressed	REF	n.s.	0.46 [0.41, 0.52]	1.67 [1.05, 2.66]	n.s.	n.s.	0.52 [0.47, 0.58]	0.80 [0.74, 0.87]
State 2 Client depressed or lonely Caregiver distressed	1.34 [1.11, 1.63]	REF	0.62 [0.49, 0.77]	n.s.	1.31 [1.04, 1.65]	n.s.	0.58 [0.47, 0.72]	0.82 [0.70, 0.97]
State 3 Caregiver distressed	1.55 [1.26, 1.91]	1.86 [1.34, 2.57]	REF	2.00 [1.34, 2.59]	n.s.	n.s.	n.s.	n.s.

Summary of Findings

Compared to home care clients living in private homes, those living in retirement homes are...

- More** likely to be discharged to long-term care, if discharged from home care services
- Less** likely to report new caregiver distress
- More** likely to resolve client's depressive symptoms or loneliness
- More** likely to resolve caregiver distress

- Retirement home residents are more likely to move to long-term care when discharged, but less likely to develop risk factors for long-term care placement

- Retirement homes appear to consistently benefit caregivers who may be at risk of developing distress or to reduce distress

- Questions to consider in your practice:
 - How/when do you bring up alternative living arrangements in your conversations?
 - What do you do when the client and caregiver's wish to move out or stay in their home are incongruent?
 - Is enough being done in the community to support caregivers?