

Health care costs before and after a supportive housing intervention: An interrupted time series analysis

McBrien, K. (MD, MPH)¹, Hofmeister, M. (MSc)¹, Quinn, A. (PhD)¹, Punungwe, F.M. (Dr. PH)¹, Sampson, M. (MA)¹, McInnes, A. (PhD)¹, Kelly, M. (MD, PhD)¹, Henderson, R. (PhD)¹, Drummond, N. (PhD)^{1,2}, Nixon, L. (MD)¹.

¹ University of Calgary, Cumming School of Medicine ² University of Alberta, Department of Family Medicine



UNIVERSITY OF CALGARY

Context/Problem

- North American older adults are experiencing homelessness at growing rates
- These individuals have complex physical and mental health challenges, including active substance use.
- **Chronic homelessness is associated with high health system costs.**
- The **Harm Reduction Housing for Older People with Experiences of Homelessness (HR HOPEH)** project is exploring how housing with embedded primary care supports can address the needs of this distinct population.



Objective

- To examine the change in health care utilization and cost associated with (“Harbour House”).

Study design

- **Interrupted time series analysis of health service use and costs**, 3 years pre- and post- move-in to “Harbour House”.
- Data from 2002 to 2019 was aggregated to mean cost per month before and after move-in date.
- Resource intensity weight was used to estimate the cost of ED visits and hospital admissions; physician billing claims were used to estimate physician care costs; AB Blue Cross reimbursement scales were used to estimate the cost of dispensed prescriptions.
- **Primary Outcome Measure:** change in mean monthly health care costs following move-in; immediate change vs trend change.

Data Sources



Discharge Abstract Database (hospitalizations)



Pharmaceutical Information Network (dispensed prescriptions)



National Ambulatory Care Reporting System (Urgent/ED/Ambulatory Care)



Provincial Population Registry (mortality)



Practitioner Claims (fee-for-service payments)



Program Administrative Data (de-identified demographics)

Setting/Intervention

- **“Harbour House”** (pseudonym), located in a Western Canadian urban centre, is a 70-bed, low-barrier permanent supportive housing site for older people with experiences of homelessness and/or addiction and mental health challenges
- **Harm reduction** policy underpins all operations.
- **On-site primary care:** outreach family physicians and LPN from a local non-profit; Home Care RN and Health Care Aids.
- Visiting specialist services, including psychiatry, available but limited.
- Harm reduction services include voluntary managed alcohol and managed tobacco supports.

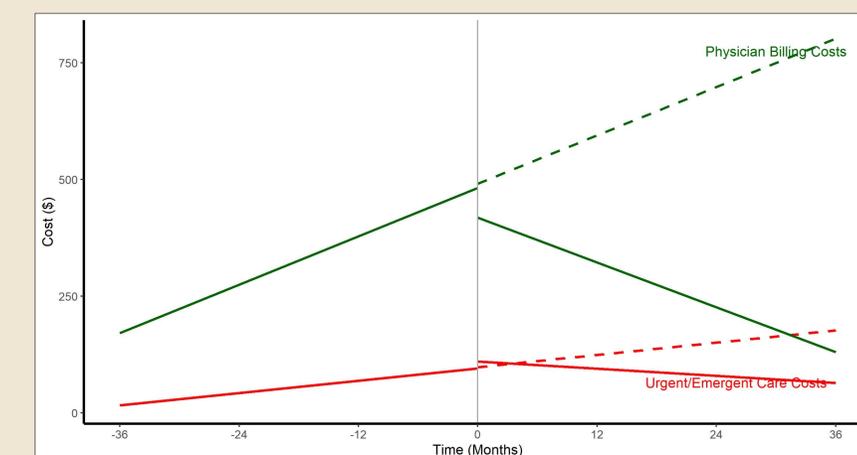
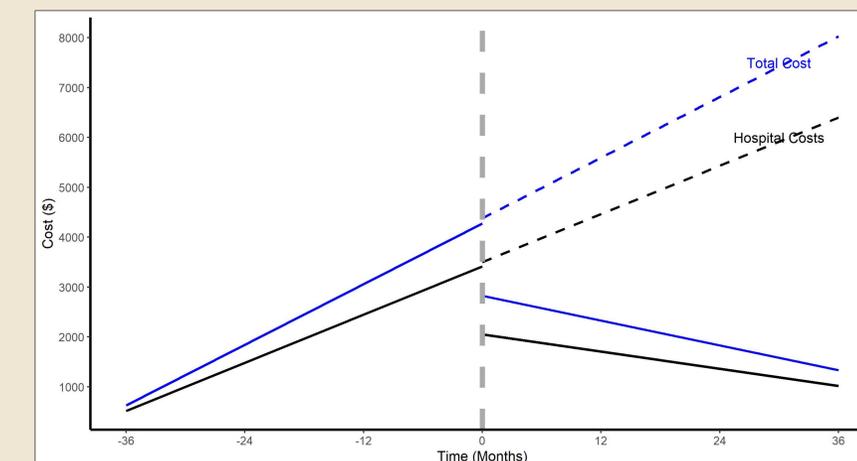
Participants

- Individuals living in “Harbour House” between June 1, 2005, and January 1, 2019 – 184 total residents
- With at least 3 years of available post period data – N = 158

Self-reported characteristics

Median Age	61.5
Female	24%
Male	76%
History of Homelessness	31%
Mental Health Diagnosis	39%
History of Substance Use – Alcohol	13.9%
History of Substance Use – Drugs	5.7%
Visual Impairment	47.5%
Hearing Impairment	16.5%
Unable to Transfer Independently	4.4%
Unable to Eat Independently	3.2%
Unable to Dress Independently	3.2%
Incontinence	5.7%
Not Independent in Mobility	13.9%
Requiring Respiratory Supplies/Oxygen	3.8%
Requiring Medication Reminders	24.7%

Results



- **\$1412 immediate decrease in monthly health care costs** after move-in, with continued decline thereafter.
- Hospital and physician costs significantly lower after move-in.
- **Mean, unadjusted, health care cost per resident is \$14,828 lower in the 3 years post move-in compared to the 3-years pre move-in.**

Conclusion

- Moving into “Harbour House” is associated with an immediate and on-going change in healthcare costs, driven primarily by lower hospital costs.
- This analysis includes the cost of physician care delivered at “Harbour House” and in the community but does not include the cost of housing or other community health and social services.

