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From Data Linkage to Simulation: A New Framework for Evaluating Aged Care Policies

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Background

The global rise in older populations has profound implications for health and social systems. Governments are investing in policies to support ageing in the community, yet robust evidence of effectiveness is limited.

policies, while pioneering innovative data-enhancement techniques.

Approach

We are conducting population-level comparative effectiveness studies of Australian government policies in delaying transition to residential aged care (RAC). A comprehensive regional Electronic Health Record dataset will be established within the National Centre for Healthy Ageing (NCHA) and linked to national aged care, health and social data, the first linkage of this kind in Australia. A policy-specific framework for target trial emulation, according to the TARGET Statement, will be developed. Patient journey mapping and expert consensus will identify high-value covariates for statistical models. Uncoded covariates will be AI-derived from unstructured clinical notes using Natural Language Processing. The trial emulation framework and enriched linked dataset will underpin agent-based modelling to simulate diverse future policy scenarios.

Results

>200,000 older residents (2015–2026) have been identified for linkage (median age 70, 55% female) providing 80% power to detect a 5.5% reduction in RAC transitions. A reference committee of government, consumer, provider, and clinical representatives meets quarterly to guide data strategy and policy relevance. Journey mapping with ~50 older people and carers in receipt of relevant policies is underway and a preliminary framework of simulation modelling established.

Conclusion

This project harnesses advances in data linkage, simulation modelling, AI, and research infrastructure at the NCHA to deliver rapid, robust evaluation and simulation of aged care

