

Design Options for a New Microsimulation Model for Retirement Income in Canada

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The government of Canada has proposed building a new large-scale microsimulation model which would allow for analysis of retirement income outcomes, with an early focus on the Canadian Pension Plan (CPP). Two previous dynamic microsimulation models existed in the government of Canada addressing these issues: DYNACAN and LifePaths. The termination of both projects has left a gap for policy analysis in government. SIMUL, a model developed by academics, started with a Quebec focus and is still being maintained. Concerning model design, SIMUL, DYNACAN and LifePaths followed very different approaches, a diversity also observed in existing pension microsimulation models internationally. This variety reflects differing priorities, data availability and restrictions, as well as current or past technical choices and limitations.

Some of the design options relate to model architecture. How should a population be created? When should a simulation start? How does time evolve in the simulation? Should families be modelled one at a time, or should the entire population be run at the same time? Does the model allow for alignment? Should spouses be found within a closed population?

Other design options relate to what data should be used. Administrative data which would restrict the accessibility of the model due to confidentiality? Public-use data which would restrict the level of detail that is available and are of limited sample size, but increase accessibility? Synthetic data which might overcome sample size and confidentiality issues, but requires additional modeling efforts and might be difficult to communicate?

The aim of this paper is to develop some concrete design options, identify their trade-offs, and compare them applying a set of criteria being considered. As some design goals cannot be achieved simultaneously, we also explore some hybrid models, which can be run in alternative modes.