



REGIONAL MODELLING

The National Centre for Social and Economic Modelling (NATSEM) is based at the Institute for Governance and Policy Analysis (IGPA) at the University of Canberra. Over recent years, NATSEM has developed capabilities to allow us to model the social and economic characteristics of communities in Australia, as well as model the impact of various policies on these communities. We work closely with colleagues in NGO's, State Government and Federal Government. We also collaborate closely with the Australian Urban Research Infrastructure Network (AURIN), staff at the SMART Infrastructure facility at the University of Wollongong, and staff at the Smart Cities Unit at the University of NSW.

MODELLING INDICATORS FOR SMALL AREAS

NATSEM uses a spatial microsimulation model to derive modelled estimates of indicators like poverty, inequality and subjective wellbeing for small areas (Tanton et al, 2010). These are then used in many of our indexes (see separate page on Modelling Wellbeing and Disadvantage), but are also used by policy makers and NGO's. Recent work using our spatial modelling has included collaborations with ACTCOSS, VCOSS, NCOSS and UnitingCare.

Our model can also bring in population projections from each State to derive projections of different population groups (Harding et al, 2011).

Publications



Tanton, Harding & McNamara. (2010). Urban and Rural Estimates of Poverty: Recent Advances in Spatial Microsimulation in Australia. *Geographical Research*, 48(1), 52–64.



Harding, Vidyattama & Tanton. (2011). Demographic change and the needs-based planning of government services: projecting small area populations using spatial microsimulation. *Journal of Population Research*, 28, 203–224.

MODELLING THE IMPACT OF POLICIES FOR SMALL AREAS

Extending this work, rather than identifying where poverty is, the next obvious question is what policies have the greatest impact on poverty? Combining NATSEM's Tax and Transfer model (see separate one pager) with our spatial microsimulation model allows us to test the impact of different policies on Australian suburbs. An example is modelling showing where the impact of an increase in the couple age pension was the greatest (Tanton et al, 2009). This model is also used every year to identify where the Commonwealth Budget has the greatest impact on incomes.

Publications



Tanton, Vidyattama, McNamara, Vu & Harding (2009). Old, Single and Poor: Using Microsimulation and Microdata to Analyse Poverty and the Impact of Policy Change among Older Australians. *Economic Papers: A journal of applied economics and policy*, 28(2), 102–120.

THE AUSTRALIAN URBAN RESEARCH INFRASTRUCTURE NETWORK (AURIN)

www.aurin.org.au

AURIN is infrastructure for researchers, government and industry, which aims to accelerate research into our towns, cities and communities. They provide the data and tools to allow evidence-based decisions to be made quickly and confidently, and they provide a point of contact to world leading urban experts in Australia.

NATSEM has been involved with AURIN since it started, and has been involved in a number of projects supplying small area modelled data to AURIN. This has included modelled small area estimates of poverty; inequality; and subjective wellbeing using NATSEM's spatial microsimulation model.

NATSEM has collaborated with the City Futures Unit on papers about AURIN, and was part of a national ARC Linkage Infrastructure grant with AURIN and other Australian experts in 2016.

Publications



Pettit, C. J., Tanton, R., & Hunter, J. (2016). An online platform for conducting spatial-statistical analyses of national census data across Australia. *Computers, Environment and Urban Systems*. doi:10.1016/j.compenurbsys.2016.05.008

ESTIMATING THE IMPACT OF A MACRO-ECONOMIC CHANGES ON COMMUNITIES

As part of a large Collaborative Research Network (CRN), NATSEM developed a linked macro-economic CGE and spatial microsimulation model, which allowed us to identify the impacts of macro-economic shifts and policies on Australian communities. An example showed the impact of a changing terms of trade on communities in Australia.

Publications



Vidyattama, Rao & Tanton. (2014). Modelling the impact of declining Australian terms of trade on the spatial distribution of income. *International Journal of Microsimulation*, 7, 100-126.

PLANNING SUPPORT SYSTEMS

In a collaboration with SMART Infrastructure at University of Wollongong and the City Futures unit at University of NSW, NATSEM has been working on the next spatial planning support system, using an innovative full synthetic Census. The system would allow the user to model the impact of different spatial plans (eg, a change in housing densities, planning regulations, etc). In future, links to 3D visualisations could be used for planners to see the impact of proposed changes to the look and feel of a city.

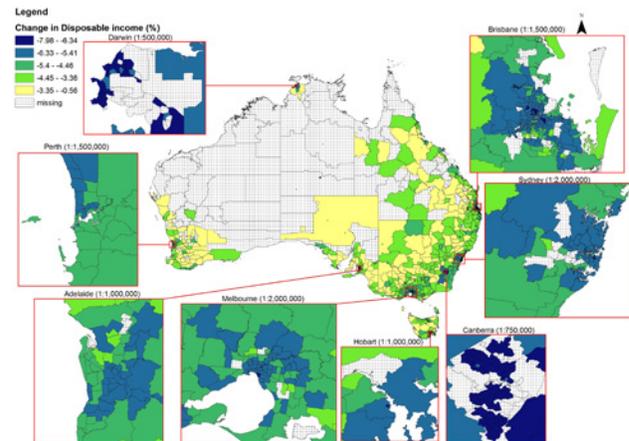
Publications

Tanton, R., Perez, P., & Pettit, C. (2017). A framework for integrating collaborative city design with individual centred modelling. In *Agent Based Modelling of Urban Systems*. Sao Paulo, Brazil, May 8 - 9 2017.

A SYNTHETIC CENSUS?

In collaboration with staff at the University of Leeds in the UK, NATSEM has been developing a synthetic unit record file of all people in Australia, at the suburb level. This will feed into our planning support models and small area indicators of the future, with the aim of making this synthetic population dynamic, providing more accurate projections for suburbs across Australia than previously available.

Change in Disposable Income as a result of a change in the Terms of Trade



MORE INFORMATION

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