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Decision Analytics Factsheet

The Sax Institute's Decision Analytics team uses dynamic systems modelling to develop interactive, evidence-informed decision-support tools to assist policy makers in analysing complex problems. These tools forecast the impact of alternative decision options before implementing them in the real world, and allow clients to test the effect of combining specific interventions in different ways.

We apply a unique participatory approach to provide better transparency of our models and their assumptions, enabling us to draw on evidence, data and real-world knowledge to build robust and accessible tools. We work in partnership with government departments, policy agencies, program planners, academic experts, non-government organisations, and community representatives across health and social sectors.

Dynamic Systems Modelling

Decision Analytics uses the latest advancements in system dynamics modelling, agent-based modelling and discrete event simulation to examine the most challenging and complex policy and planning issues.

Our models provide a virtual representation of the real world, characterising complex pathways and interactions within specific social and demographic contexts. Using advanced modelling software and user-friendly interfaces, our models become powerful, accessible and transparent decision-support assets for decision makers to forecast, monitor and evaluate the effectiveness of policies and programs.

Our interactive decision-support tools have been used to:

> Provide advanced, high-quality systems analysis to identify where best to focus limited resources and investments
> Facilitate engagement with key stakeholders to inform policy dialogues, strengthen relationships, and build consensus for collaborative action
> Support recommendations in ministerial briefs and policy documents
> Better inform evidence-based, context specific strategies and policies within population health
> Build a compelling case for longer-term investment in programs and services
> Help identify priorities for new data collection and research.

Our Participatory Approach

Our participatory approach allows stakeholders and policy partners to understand the interplay of causal factors and intervention combinations within a virtual environment. We believe that developing models that are driven by policy priorities and partnering with decision makers from the beginning provides better transparency, robustness and utility of our decision-support tools, delivering greater confidence in their insights and outputs.

Examples of Our Work

> Suicide prevention and mental health service planning (national and regional levels)
> Health system service planning
> How best to reduce childhood overweight and obesity (state and national levels)
> Ongoing reductions in smoking prevalence and related harms and reducing health inequalities among disadvantaged populations (state level)
> How best to reduce the incidences of diabetes in pregnancy (state level)
> An investment case for primary prevention of lifestyle related chronic disease (national level)
> Strategic planning to improve child protection systems (state level)
> Strategic planning to reduce alcohol-related harms (both acute and chronic) (state level).

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Decision Analytics Dynamic Systems Modelling Process

1 Participatory Approach

A modelling consortium is convened by engaging stakeholders in the model-building process, bringing together diverse perspectives and knowledge

Knowledge

- Research Evidence
- Primary and Secondary Data
- Expert Knowledge
- Local Practice Experience

People

- Government departments
- Policy agencies
- Program planners
- Academic experts
- Non-government organisations
- Community representatives

2 Model-Building Process

The model-building process transforms conceptual maps into computational models. The final product converts into an interactive decision-support tool, integrating research evidence, model data and expert knowledge from multidisciplinary stakeholders

Systems Mapping and Modelling

Conceptual Mapping → Computational Model

Calibration and Validation

Reproduce Historical Data Patterns → Refining Model

Testing

Scenario Testing → Build Consensus for Action

3 Decision Support Tool

Participants can test alternative assumptions and experiment with different policy scenarios in the model using an online user interface

Decision making

- High-quality systems analysis
- Test "what-if" scenarios
- Forecast and identify cost-effective options

Engagement

- Engage with key stakeholders
- Facilitate strategy dialogues and consensus-building
- Identify priorities for further research and data

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