

Position Description

Position title:	Senior Discrete Event Simulation Modeller, Decision Analytics Program
Date established:	July 2022
Reports to:	Lead Modeller, Decision Analytics Program
Direct reports:	Nil
Employment status:	2-year maximum term contract, full-time (1.0 FTE)

Background

The Sax Institute is a leading Australian expert body in helping decision makers find and make best use of research to solve real-world health and social problems.

We connect individuals and organisations with research, we build research platforms that generate new knowledge for use in decision making, and we lead thinking and knowledge around how to ensure more research has a real-world impact.

We are a transformative organisation established to develop innovative ways of better connecting knowledge from research with those who can use it.

Program Area – Decision Analytics

The Sax Institute's Decision Analytics team uses dynamic simulation modelling (system dynamics, discrete event simulation and agent-based modelling) and other analytical methods to develop adaptable decision support tools. These tools are developed in partnership with government departments, policy agencies and program planners in health and social sectors, providing them with a low-risk virtual environment to test potential impacts of different decisions before they are implemented in the real world.

Decision Analytics applies a unique participatory approach to developing the simulation models. This allows for integration of qualitative real-world knowledge and priorities from a diverse range of stakeholders and quantitative inputs from best available data and published literature, enabling an investigation into the complex and dynamic nature of our most challenging health and social problems. In addition, a user-friendly interface is layered on the complex model and has the functionality to not only view model assumptions but also to change and test alternative assumptions and strategies, making it a true decision-support tool. Our process and methodology aim to ensure the quality and transparency of the model, and to ultimately make the simulation decision-support tools *useful* and *usable*.

Purpose of position

The Senior Discrete Event Simulation Modeller develops model-based decision support tools for governmental, non-governmental and service delivery organisations, using high-level mathematical modelling and data analytics skills. They work as part of a collaborative team with diverse expertise in policy and planning, participatory and consensus building approaches, and evidence synthesis.

They assist with the preparation of model dash boards, project reports and journal manuscripts by providing modelling insights, assumptions, output tables and graphs. They will also contribute to internal capacity building, external presentations, development of good practice standards in DES modelling and methodological innovation.

Key accountabilities

Key accountabilities	Performance expectations
<p>Lead the analytic work in developing decision support tools for policy and planning (through development of DES models), including updates to and expansion of existing tools.</p>	<p>Source / collect, manage, and analyse data from a variety of sources to support the development of DES models.</p> <p>Independently design, deliver and implement DES modelling solutions according to project requirements.</p> <p>Update or expand existing DES models.</p> <p>Deliver high quality DES models and user friendly model dashboards within the timeline specifications outlined in agreements for commissioned work or collaborative research.</p>
<p>Lead the development of approaches for managing DES model data, components, user interface and displays</p>	<p>Research and develop standardised approaches to manage code, model changes and releases.</p> <p>Research, develop and code standardised algorithms to extract parameters from source data and for graphical user interfaces</p>
<p>Support stakeholder engagement in model development</p>	<p>Contribute to stakeholder workshops and project team meetings to assist in the synthesis of knowledge and data into models, and to ensure model alignment with stakeholder needs.</p> <p>Document and communicate findings to internal and external stakeholders, including technical and non-technical audiences.</p> <p>Support development of materials and resources to support end user interaction with the models and use of findings.</p> <p>Liaise with policy agencies and stakeholders.</p>
<p>Contribute to the dissemination of the work of Decision Analytics</p>	<p>Publish and present findings from the program of research (in consultation with policy partners).</p> <p>Contribute to communication materials to raise the profile and reputation of the work of Decision Analytics.</p>
<p>Contribute to tenders and applications for new work</p>	<p>Provide technical advice to the development of research protocols, grant applications and government tenders.</p>
<p>Contribute to capacity building and innovation</p>	<p>Contribute to technical meetings and resources to support capacity building, including training and/or providing technical guidance to junior staff and students.</p> <p>Contribute to efforts of Decision Analytics to make analytic advances and efficiency improvements.</p>

Qualifications, Skills, Experience and Personal qualities

Essential

To be successful the Senior Discrete Event Simulation Modeller should demonstrate the following technical and behavioural competencies:

- Relevant tertiary qualifications or demonstrated equivalent professional experience
- A minimum of 2 years professional experience developing Discrete Event Simulation models.
- Experience with common simulation software packages, (e.g., AnyLogic (preferred), Vensim, FlexSim, Simio, Simul8, insightMaker)
- Proven high-level analytical skills and a methodical approach to data management, and analysis
- Good knowledge of data privacy and security issues and the ability to maintain the strictest confidentiality when dealing with sensitive data or reports with restricted access.
- High-level organisational and time management skills with demonstrated expertise in managing input from multiple stakeholders
- A strong service orientation with proven ability to build successful working relationships with a variety of people, both internal and external, and to deliver on commitments made
- Strong interpersonal and communication skills, both written and verbal.

Desirable

- PhD degree in Operations Research, Mathematics, Statistics, Computer Science, Data Science, Public Health or related quantitative discipline
- Experience in a health research or policy environment
- Knowledge and/or experience in epidemiology and/or biostatistics, relevant to population health
- Experience with multiple dynamic simulation modelling methods
- Experience using advanced statistical /simulation tools and developing codes (java, python or another object-oriented language) for data analysis, simulation, and modelling algorithms
- Experience with statistical packages such as Stata or R Studio and data visualisation software such as PowerBI or Tableau