ARDC National Data Assets

2021 projects exchange

PRESENTED BY

Sheida Hadavi, Public Sector Bridges Program Manager

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National Data Assets initiative objectives

Six programs, one of which is the **Public Sector to Research Sector Bridges**

Objective: To establish <u>strategic partnerships</u> with research communities and institutions:
- To **develop a portfolio of national-scale data assets** that support leading-edge research
- Leading to **long-lived data assets** that leverage existing research and administrative investment to ensure ongoing sustainability and stewardship

Motivating principle: <u>collections of data can be a national research infrastructure</u> when they:
- support leading edge research (research excellence, impact, priorities)
- are national in scale (multi-organisational aggregation, use, and governance)

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Public Sector to Research Sector Bridges

**Aim:** extend or improve public sector data to better support leading edge research.

Project activities:

- Implementing data standards.

- Extending collections.

- Developing access interfaces.

- Establishing new governance, policy, and access arrangements.

- Connecting with research infrastructure, analytical tools, platforms, modelling environments.

Program Objective

- Addressing data needs of researchers.
- Providing research requirement scenarios to public sector.
- Aligning public sector and research resources.
- Improve public policy, administration, and service delivery.

Adapted from 2016 National Infrastructure Roadmap https://docs.education.gov.au/node/43736
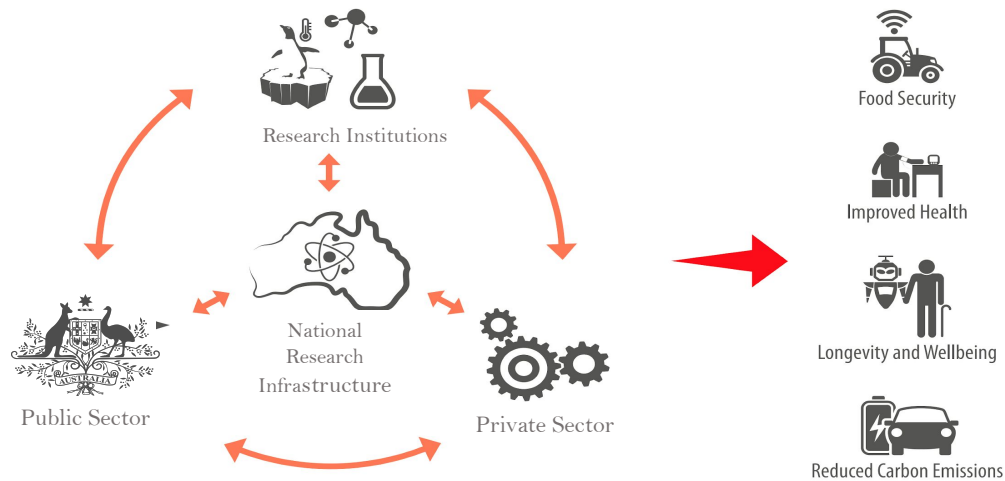
Hospital EMR data as a National Data Asset for Research

Professor Dougie Boyle

dboyle@unimelb.edu.au

The problem

- Hospital EMR data is a valuable data asset for research.

- However, it was not created for research so the data is fragmented.
- The data is also highly sensitive.

- There are two main EMR systems in use in Australia, Cerner & Epic.
- However each have custom implementations of the systems further complicating the structure of the data.

The solution: The OMOP common data model
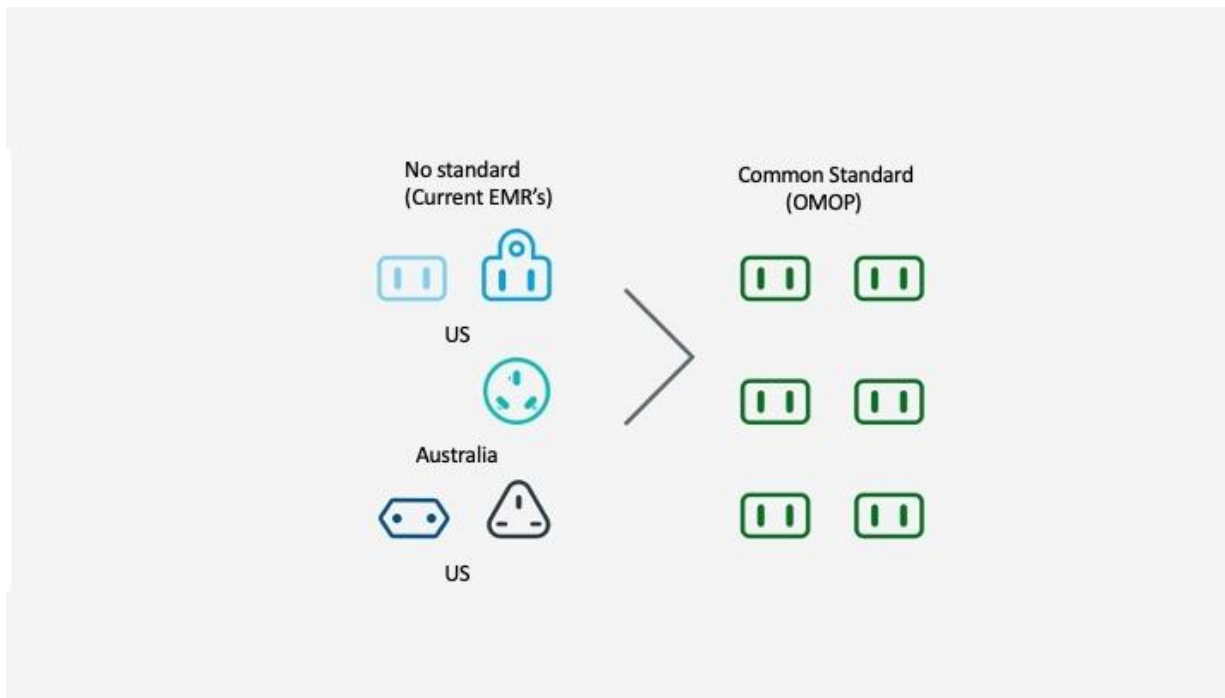
The impact

- Standard data models allow standard analysis to be run across hospitals across Australia and globally e.g. COVID-19 research.
- Governance is simplified - researchers submit their questions and receive answers rather than full data release.
- Access to a huge international community, training materials (the EHDEN Academy) and tools for analysis, visualisation and data quality assessment.
- Outcome: Faster and easier access to data and faster research outcomes.

National Free Access Coronial Findings, Recommendations & Responses

A/Professor Philip Chung, UNSW Law & Justice
Executive Director, AustLII
philip@austlii.edu.au

The problem: Coronial Inquest Findings and Recommendations

- Coroners investigate the cause and circumstances of reported death

Their findings and recommendations make important contributions to public policy and legislation development in such areas as the health system, policing, corrections, workplace safety as well as for human rights concerns such as deaths in custody.

- Coronial findings and recommendations are state and territory based

Access to Coronial Findings are limited. Where these are available they are in different formats and scattered between different state and territory locations. These are not linked or related to any other legal resources of case law or legislation.

- Responses to findings and recommendations are limited and variable

There are only a limited number of responses to recommendations that are generally accessible.They are not always specifically linked to the original coronial recommendation.

The solution: Making Coronial Findings accessible

By placing all coronial findings, recommendations and responses on AustLII:

- Data will be more accessible and usable by a wide range of users for research and public policy purposes.
- Comprehensive integration of the coronial process within the wider Australian legal ecosystem, integrated with both legislative and case law frameworks.
- Findings, recommendations and responses will be processed and metadata extracted to enable a seamless integration with all other primary legal resources on AustLII.
- Where possible, we will digitise and add earlier findings that only exist in paper form.
- Availability will enable the mining of data to track implementation and prevent replication in inquiries and related research.
- Processes and procedures will be developed to allow for the continuous addition of new findings, recommendations and responses integrated into the workflow procedures of Coroners courts.

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The impact: An Investment in the Rule of Law in Australia

- Making coronial findings with recommendations available will allow more comprehensive integration of the coronial process within the wider legal ecosystem, integrated with both legislative and case law frameworks in all Australian jurisdictions, with existing legal scholarship and with Australia's treaty obligations.
- Easy free access to coronial findings and recommendations will assist legal practitioners, courts and tribunals to carry out their functions in other levels of the justice system, transforming and improving the way investigations are conducted leading to more informed responses to findings and recommendations.
- Use of this data extends beyond the legal sector and impacts individuals and communities that may be affected by the outcomes of coronial proceedings.
- Access to these resources will enhance accountability and transparency, supporting civil society and enabling greater understanding of how justice is delivered through the coronial inquest function and of the redress systems and recommendations that result.

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Sensitive Species Data Pathways for Research and Decision Making

Dr Lu JIN | Manager, Strategic Managers
lu.jin@csiro.au

The problem

- Sensitive/threatened species data is central to significant research and policy effort. (e.g. biodiversity, climate change, EPBC Act assessment, bushfire recovery and biosecurity)

- Sensitive/threatened species data sharing across the nation has some challenges:

  – Sensitive species data is often held/stored in silos

  – No agreeable framework to share the data (access, license, etc.)

  – The limited data being shared is often de-natured

The solution

• A group of partners have committed working collaboratively to address the challenges in sensitive species data: ARDC, Commonwealth, State and Territory jurisdictions, ALA/CSIRO, WABSI, CHAH, CHAFC, EcoCommons Australia and Pawsey.

1

National Framework for Sensitive Species Data

• Agreed framework for sharing full resolution species data between government entities, NCRIS & research infrastructures and collection facilities

2

Sensitive Species Data Service

• Research and other accesses to the sensitive species data through ALA and (if desired) jurisdictional partners databases and services

3

Safe Data Haven for Modelling

• A demonstrator through the Collaborative Species Distribution Modelling (CSDM) using the Shared Analytical Framework for the Environment (SAFE).

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Atlas of Living Australia
ala.org.au

The impact

- Economic:
  - Improve the economic development efficiency
  - Better utilisation of natural resources for the prosperity of Australia
  - Reduce risks of biosecurity issues in economic activities
- Environmental:
  - Protect Australia's natural environment and biodiversity
  - Counter the progression of climate change
  - More informed and efficient recovery activities
- Social:
  - Improve the quality of life through a more prosper Australia
  - Better planned human-environment interactions
  - A more sustainable environment for human leisure activities

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Atlas of Living Australia
ala.org.au

Integrated national air pollution and health data (Air Health Data)

Ivan Hanigan

ivan.Hanigan@sydney.edu.au

The problem:
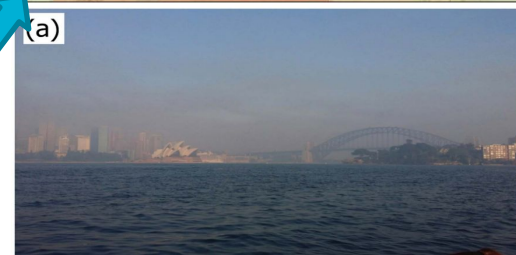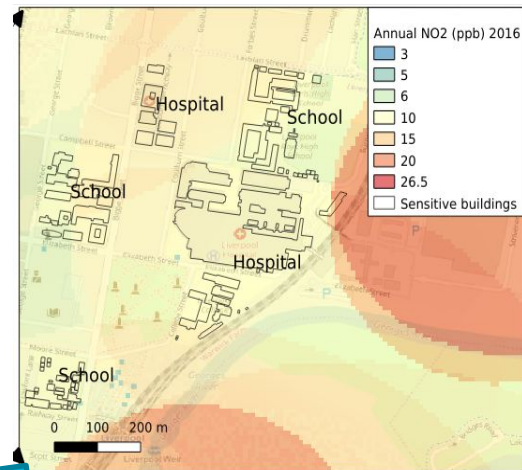# Air pollution health impacts
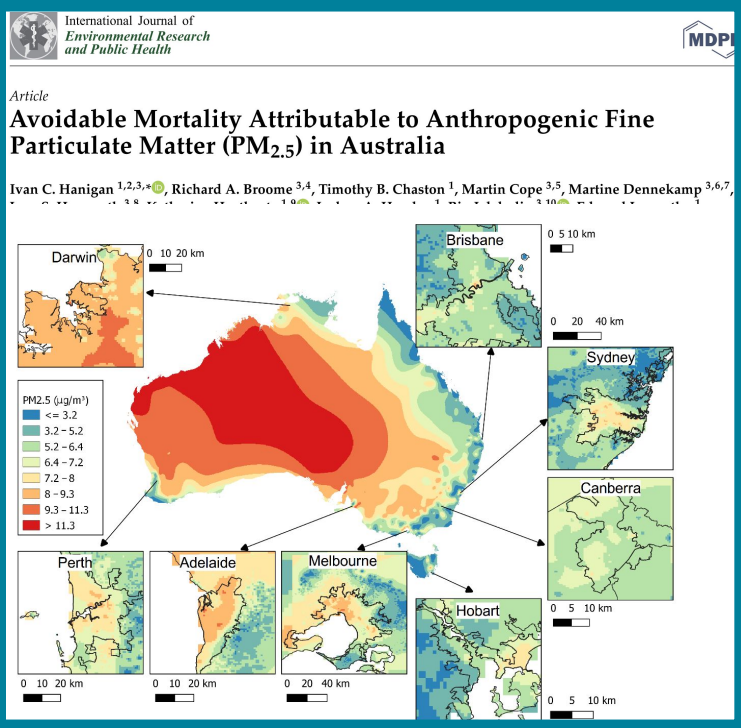
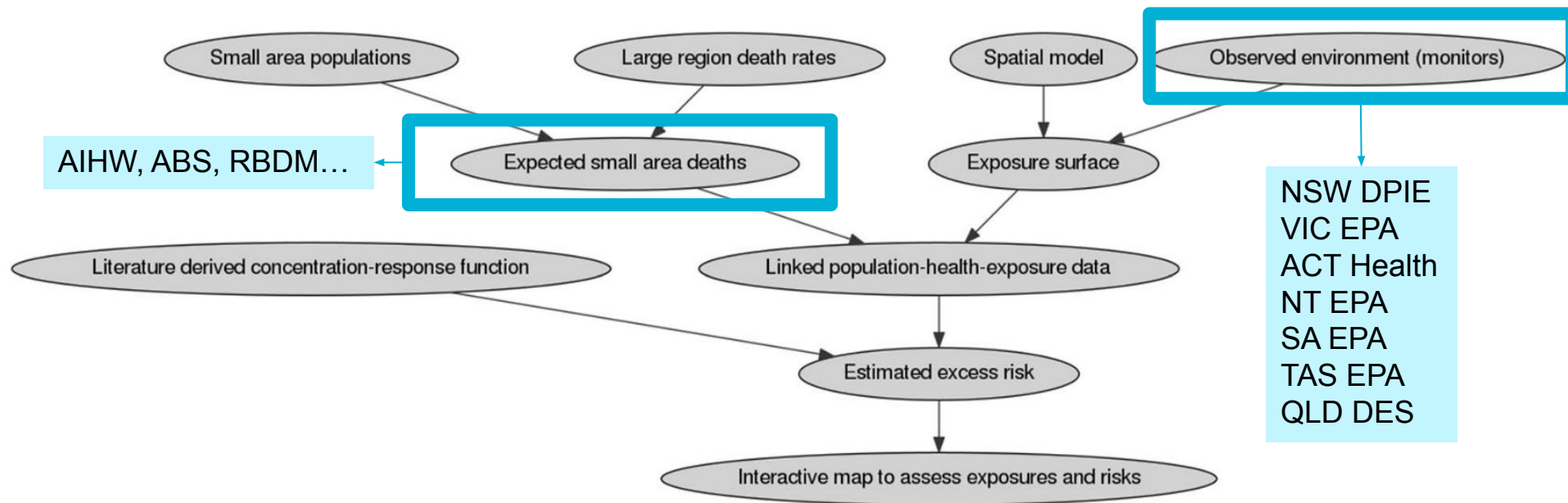Our recent study found ~2600 deaths, reduced life expectancy and $6.2 billion costs annually due to human emissions.

- Policy needs data for health impact assessments and environmental modelling for:

  a) Urban planning.

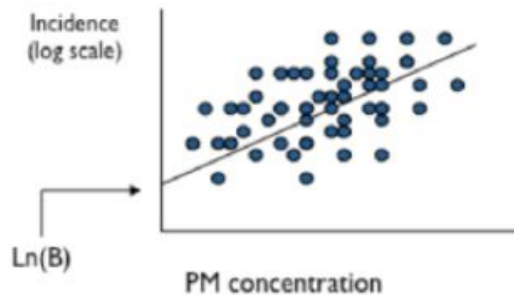 b) Prescribed burns for bushfire protection.

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The solution: integrated environment/health database

AIHW, ABS, RBDM…

NSW DPIE
VIC EPA
ACT Health
NT EPA
SA EPA
TAS EPA
QLD DES

Small area populations

Large region death rates

Spatial model

Observed environment (monitors)

Expected small area deaths

Exposure surface

Literature derived concentration-response function

Linked population-health-exposure data

Estimated excess risk

Interactive map to assess exposures and risks

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The impact

Epidemiology study

Incidence (log scale) vs PM concentration
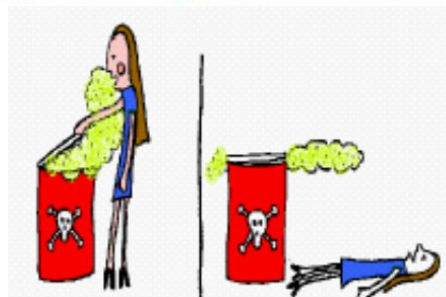
Ln(B)

$$Ln(y) = Ln(B) + \beta(PM)$$

Pollution change

Population exposed

Health impact assessment

& $$$

Leveraging data to support young people's education and wellbeing

Presented by: Sheida Hadavi

The problem

→ Lack of evidence-based understanding of young people's wellbeing over time

- Data includes different aspects of wellbeing such as school attendance, engagements and academic achievements.

- Datasets are not connected.

- Data are held in different state government departments.

- Data is not available in an accessible, comprehensive form.

→ Data quality, linkage, governance are some of the key challenges.

The solution

Linking education records from multiple databases over time

- Student enrolment and attendance,
- Behaviour management,
- Wellbeing and engagement,
- Disability
- Access to psycho-social services and
- Academic achievement.

This project will start with South Australia and will be extended to Tasmania, Western Australia and probably Australian Capital Territory.

All the data sets will be evaluated to meet the quality standards and they will be documented.

The impact

Improving the awareness, documentation, and timely access to linked data to:

- provide an understanding of how our education system is performing,

- plan targeted prevention and intervention initiatives,

- evaluate the effect of interventions delivered in schools,

- monitor and report on the impacts of events such as pandemics or bushfires.

Researchers, government, policy makers and our future society and economy are all beneficiaries of these impacts.

CONTACT

Julia Martin, PSB Program Manager

+61 02 6125 1214
Julia.martin@ardc.edu.au
ardc.edu.au