MACH
Melbourne Academic
Centre for Health

2026 Research Design Webinar Series



We acknowledge the Traditional Owners of the land on which we work, the Wurundjeri People of the Kulin Nation, and we pay our respects to Elders past, present and emerging.

MACH
Melbourne Academic Centre for Health

Visualising health and medical data

THE UNIVERSITY OF MELBOURNE

Edoardo Tescari



Marlaina Read



Damien Mannion



Andrew Siebel



Melbourne Data Analytics Platform

MDAP enables data-intensive, data-informed & collaborative research across disciplines

COLLABORATION
COMPUTING
RESEARCH IMPACT

https://unimelb.edu.au/mdap

Who we are

We are a diverse team of 19 research data specialists with extensive experience in data analytics, offering expert guidance and project support.

Engage with us

Researchers can engage with us via:

- Faculty-supported collaborative projects
- Researcher-funded projects
- Consultation, advice, grant support

Our expertise

We support all stages of the research lifecycle – from research design & data collection to data analysis, visualisation & interpretation.

- Guidance on research software, computing & data storage tools available across the University
- Research study design
- Data collection, analysis, management & curation
- Data governance, ethics & stewardship
- AI, machine learning & natural language processing
- Image & video processing
- Virtual & augmented reality
- Data visualisation
- Software & web development
- High performance computing

The MDAP team



Discipline backgrounds:

Astrophysics

Musicology

Neuroscience

Computer Science

Actuary

Bioinformatics

Data Science

Mathematics

Political History

NLP

Archaeology

Tele communications

Molecular Biology

Visual Arts

Zoology

Which engagement type is for me?

Faculty supported collaborations



- ✓ Have a clear research question or project, requiring digital or data support
- ✓ May not yet have secured direct funding
- ✓ Want to collaborate with MDAP for at least 3 months
- ✓ Project is not time-sensitive, and aligns with call for EOIs

2027 Collaboration round EOIs are now open.

Researcher funded engagements



- ✓ Have a clear research question or project, requiring digital or data support
- ✓ Need immediate technical expertise on a specific part of project
- ✓ May have collaborated with MDAP before, and want to extend that work
- ✓ Have funding available, and the project is time-sensitive

Consultations grant support and advice



- ✓ Have a research question, but don't know where to start
- ✓ Need technical/data-related advice on a grant application
- ✓ Want to learn more about a specific digital or data skill, tool or method
- ✓ Have data, but not sure what to do with it

2027 Collaboration round key dates

14 August	28 August	14 September	24 September – 26 October	Mid-December
EOIs open	Zoom information session	**EOIs close**	**Full applications open and close**	**Outcomes announced**



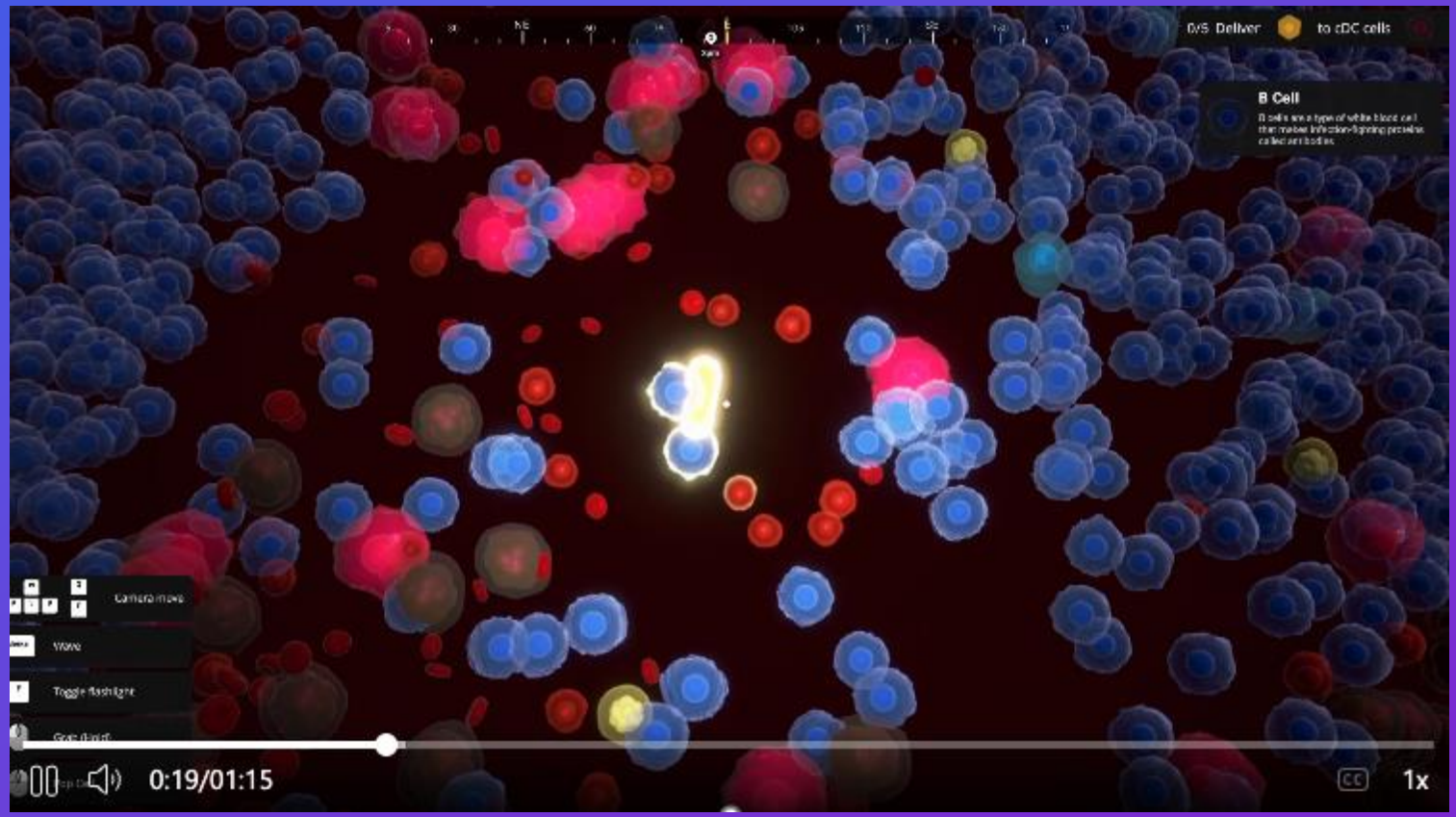
Use case: Development of SPLEEN ATTACK!!

Immersive Immunology

A/Prof Ashraful Haque
Doherty Institute, MDHS

Our work

- Ingestion and pre-processing of real data from non-infected and infected mouse spleens
- Co-design and development of an educational game built on the Unity game engine
- VR implementation planned
- Multi-layered approach:
  - Outreach
  - Education
  - Showcase of research



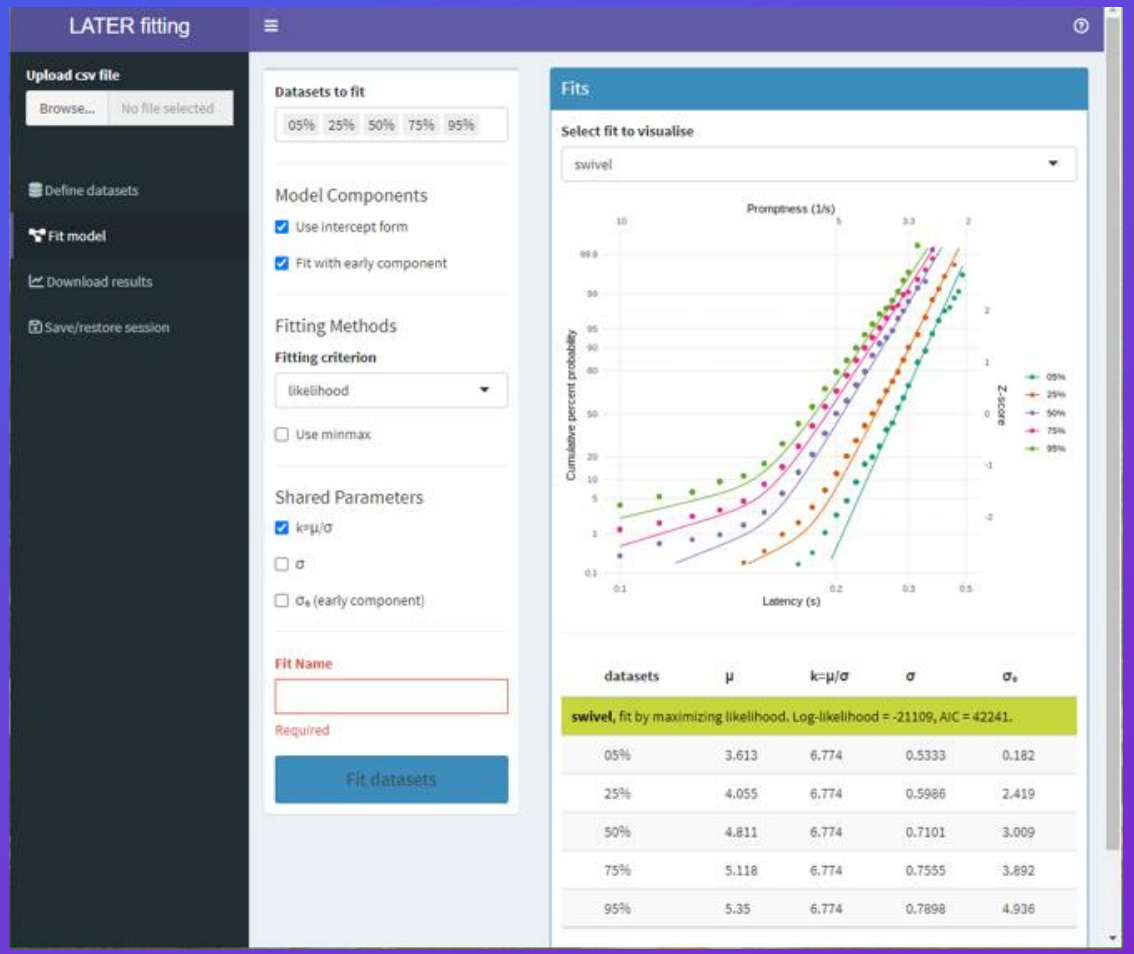
Use case: LATER

LATER – Linear Approach to Threshold with Ergodic Rate

A/Prof Andrew Anderson
Department of Optometry & Vision Sciences, MDHS

Our work

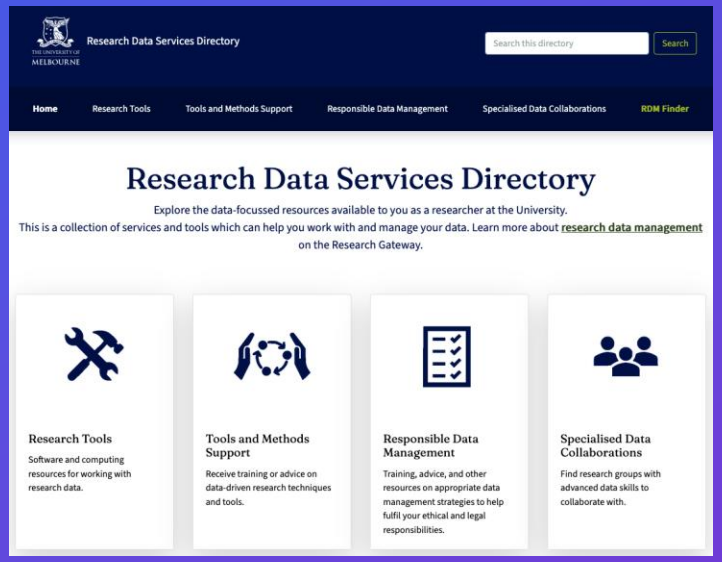
- Reimplement and modernise legacy code to enable wide community access
- Code optimisation and porting
- Developed Python (pylater) and R (LATERmodel) packages and web interface



Research computing infrastructure at UoM

- Cloud computing
- High performance computing (HPC)
- Secure research environment
- Storage solutions
- dataservices.research.unimelb.edu.au
- Management of sensitive data





University-provided systems

	Data Classification Levels			
Research Systems	**Green**	**Yellow**	**Orange**	**Red**
General data storage and management systems				
Microsoft OneDrive	✓	✓	✓	✗
Microsoft SharePoint	✓	✓	✓	✗
Network File Share (Research – NAS)	✓	✓	✓	✗
Electronic lab notebook	✓	✓	✓	✗
Local University-managed devices (e.g., University-provided laptops, desktops)	✓	✓	✗	✗
Surveys and participant-based research				
REDCap	✓	✓	✓	✓

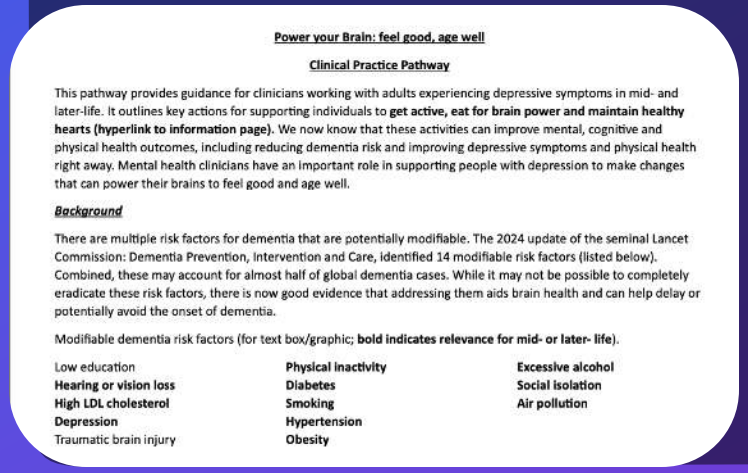
Use case: Clinical information design

ENGAGED Dementia Risk Reduction

Dr Eleanor Curran, Department of Psychiatry, MDHS

Our work

- Translating clinical information into visual forms
- Layout and design of consumer information for pamphlet, clinical pathways booklet and web
- Accessible design leveraging pre-attentive processing and small ‘chunks’ of information



Power your Brain: feel good, age well

Clinical Practice Pathway

This pathway provides guidance for clinicians working with adults experiencing depressive symptoms in mid- and later-life. It outlines key actions for supporting individuals to **get active, eat for brain power and maintain healthy hearts (hyperlink to information page)**. We now know that these activities can improve mental, cognitive and physical health outcomes, including reducing dementia risk and improving depressive symptoms and physical health right away. Mental health clinicians have an important role in supporting people with depression to make changes that can power their brains to feel good and age well.

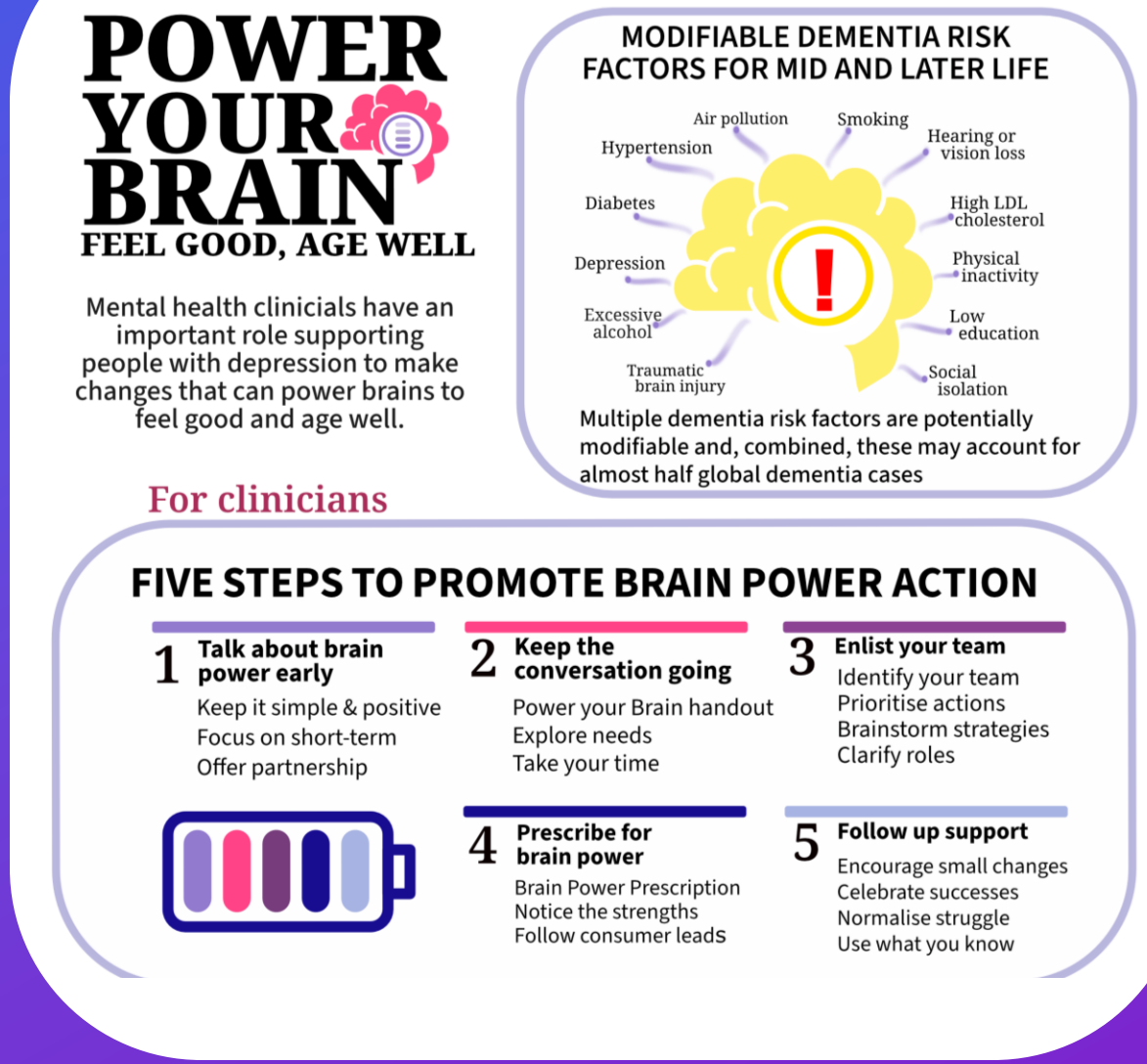
Background

There are multiple risk factors for dementia that are potentially modifiable. The 2024 update of the seminal Lancet Commission: Dementia Prevention, Intervention and Care, identified 14 modifiable risk factors (listed below). Combined, these may account for almost half of global dementia cases. While it may not be possible to completely eradicate these risk factors, there is now good evidence that addressing them aids brain health and can help delay or potentially avoid the onset of dementia.

Modifiable dementia risk factors (for text box/graphic; **bold indicates relevance for mid- or later- life**).

Low education	**Physical inactivity**	**Excessive alcohol**
Hearing or vision loss	**Diabetes**	**Social isolation**
High LDL cholesterol	**Smoking**	**Air pollution**
Depression	**Hypertension**	
Traumatic brain injury	**Obesity**	

From dense text to image and text, using the metaphor of a battery



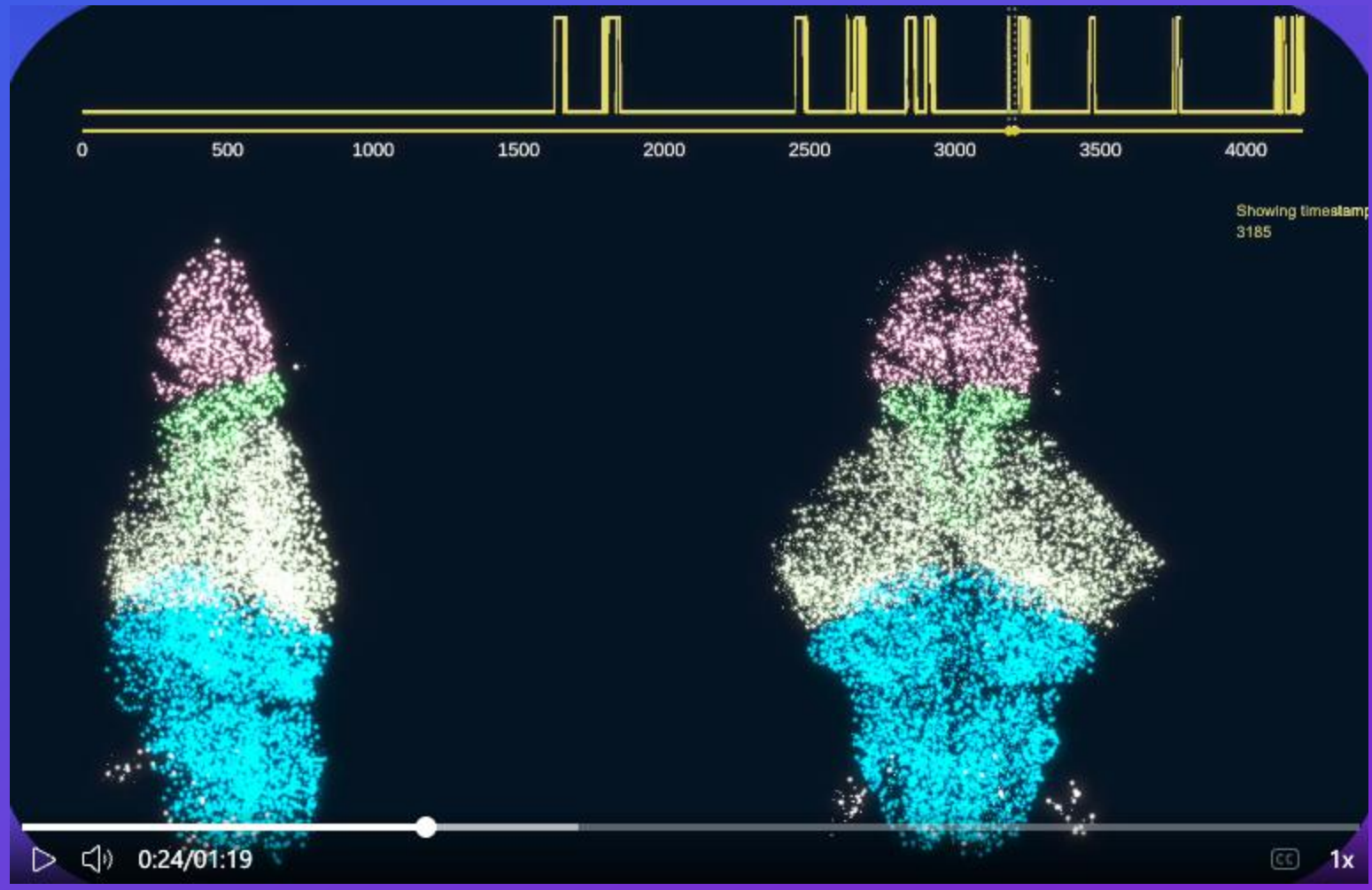
Use case: 3d viz of neuronal data

ZEBRAFISH Visualising intricacy of a functioning brain

Prof Ethan Scott & Dr Wei Qin, School of Biomedical Sciences, MDHS

MDAP's work:

- Translating neuronal data into 3d
- Animating seizure data in 3d using Unity game engine
- Generating 2d videos with flythrough
- Connecting artists and neuroscientists for creative workshop on Data Possibilities



Learning matters: Universal learning design for data visualisation (Amanda Belton)
Monday 31st August, 2-3pm via Zoom
Details & registration link is available via RDU Portal

Use case: Participatory data collection

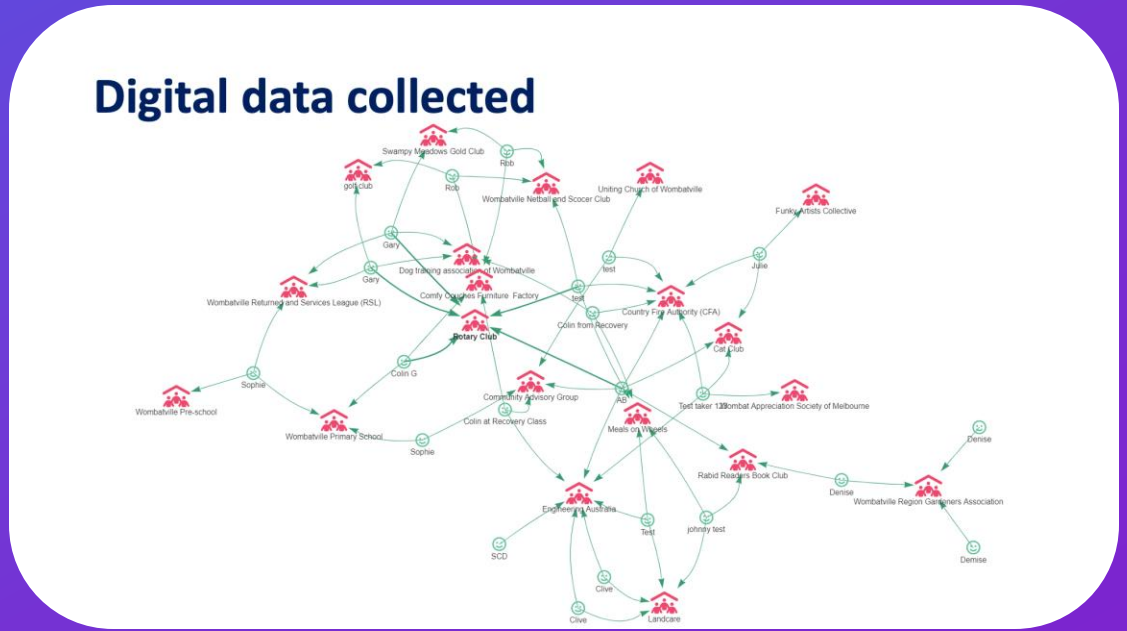
Bushfire resilience

Dr Colin Gallagher, School of Population and Global Health, MDHS

MDAP's work

- Website for secure digital data collection of social networks in bushfire recovery
- Data visualisations of social network data
- Community workshop with communal sensemaking with physical representation of networks
- Physicalisation designed to prompt memory recall





Get in touch

MELBOURNE DATA ANALYTICS PLATFORM | THE UNIVERSITY OF MELBOURNE

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Engage with us

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Survey for feedback

