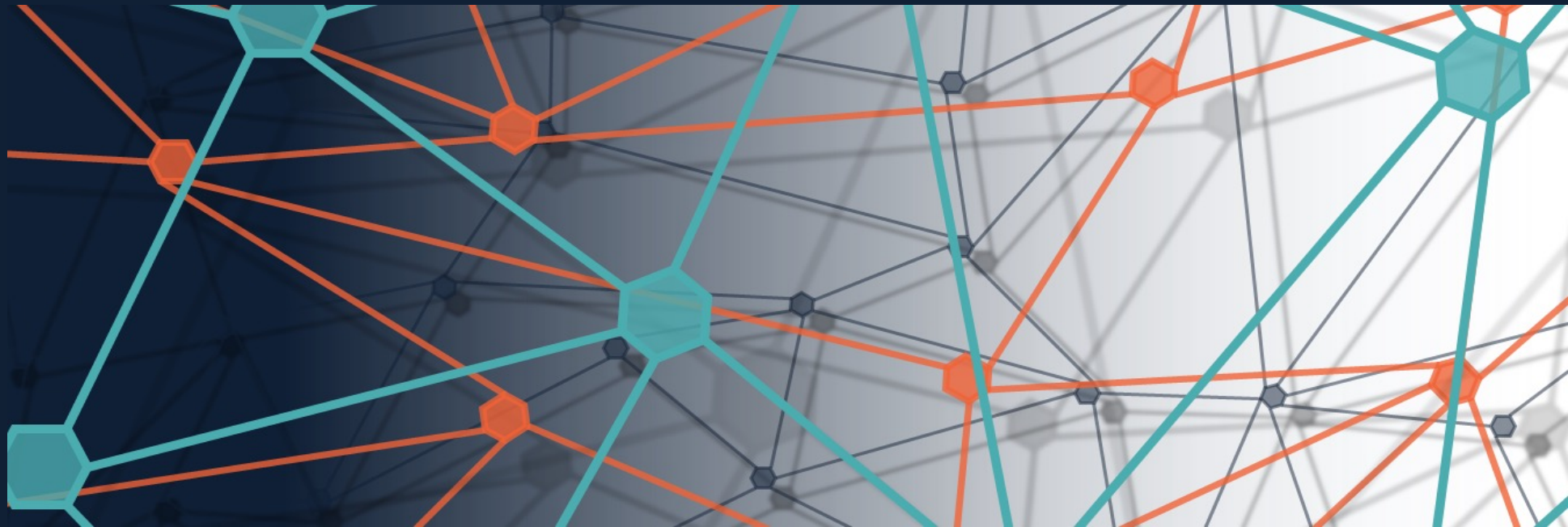
Australian Government
Department of the Prime Minister and Cabinet

Policy Projects & Taskforce Office

NSW GOVERNMENT The Cabinet Office

Service Mapping 101

A 'how to' guide for system stewards, policy makers and service providers working to improve human services



Contents

Anyone working to improve human services can use this guide to understand and use Service Mapping as a tool to support informed and effective decision-making.

Developed in partnership by the Shaping Futures and Data Insights Branch under NSW Cabinet Office and the Department of the Prime Minister and Cabinet's Policy Projects and Taskforce Office.

Chapter 1 | Overview

By the time you have read this guide, you will have learnt how to use Service Mapping as a tool for informed and effective human services planning, evaluation and investment decisions.

Planning or investing in existing services without service mapping is like navigating a new city without a map – you might know where you want to go, but you are likely to get lost and take much longer to get to your destination.

What is Service Mapping?

Service Mapping is an umbrella concept. It is an approach that uses diverse methods to create a locational view of services available across different and complex service systems.

Service maps serve two key functions:

1) To inform system stewards about service needs, availability and effectiveness to support planning and investment, and
2) To support consumers, carers and professionals in navigating services.

What are human services?

The human services sector covers a diverse range of services, encompassing health, education and community services. This includes (but is not limited to) services for:

- Employment
- Social housing
- Corrections
- Early childhood care
- Aged care
- Disability
- Child protection
- Mental health
- Domestic and family violence

Understand services in their broader context

Many individuals or families have multiple or complex needs and are seeking support from a mix of services. Understanding which providers are delivering what kind of services in communities, and to whom, is an essential perspective for government.

This can give system stewards a more holistic understanding of whether, and how, services are working together for people at the community level.

Service Mapping can complement other service design techniques

Service Mapping, service blueprinting and journey mapping are different techniques you can use to understand how a service is designed and working for a user.

These are all useful and important for improving human services and may be used in conjunction with each other.

Service Mapping capability will continue to develop

Capability to safely share and use human services data for the public interest is an important enabler in developing human services maps. There are active programs of work across governments to improve safe data sharing infrastructure and processes. The outcomes of this work should improve the potential scope and comprehensiveness of human services maps over time.

This guide provides information on currently available approaches, methods, tools and resources you can draw on to produce and use human services maps to improve decision-making and outcomes.

This guide is about demystifying Service Mapping, showing you when and how to do it to realise the benefits, and supporting your decisions, engagements and service outcomes.

Support better decision making

Service Mapping, as part of a toolkit of analysis methods, can give you a locational view of services available across various service systems and inform planning, evaluation and investment decisions by answering key questions:

1. What services do people need?
2. What services are available, where?
3. Are services accessible to different cohorts?
4. What does government fund?
5. What is the usage of services?
6. What outcomes are services contributing to?

Complement engagement & design

Government can engage in meaningful conversations with community if the service profile in a community is known through Service Mapping. You can:

Surface access issues
"I can't get there on public transport, so I can't use it"

Test service inclusivity
"That service isn't for people like me"

Find knowledge gaps
"Wait.. I can get support for that?"

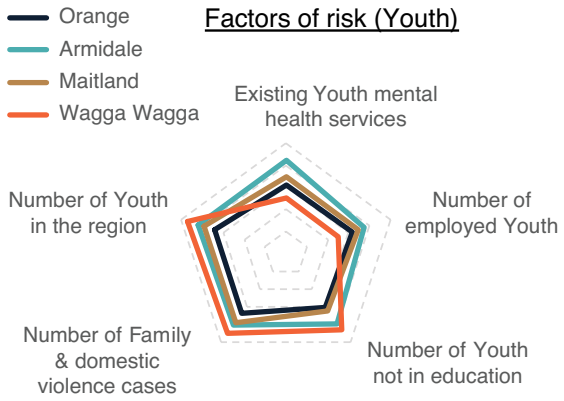
Discuss capacity issues
"I've tried, but there wasn't a place for me"

Target investment for better outcomes

Service Mapping can help you to make decisions about where finite funding would have the greatest impact from the integrated information (policy domains & levels of government).

Service Mapping enhances government's ability to engage with or contribute to place-based approaches.

Illustrative example of Service Mapping-informed decision making:



"Wagga Wagga is likely the most impactful place to invest in youth mental health services, given the population size, number of current services, and other risk factors."

Policy stewards, advisers and technical experts working to improve human services can use Service Mapping to make better evidence-based system-wide decisions.

Jemima
Senior Executive

Jemima is responsible for families and communities' policy at the Department of Community Services.

To make better decisions Service Mapping can help me to know…

- How are services impacting user outcomes?
- How can I use stakeholder group feedback to inform a whole-of-system view of service effectiveness?
- Are there new stakeholders (e.g. service providers) I can engage with on solutions?
- Are there gaps or duplications within the existing service system?
- Are there gaps or duplication of support offered by services?
- What are the funding profiles of services in specific areas i.e. commonwealth, state/territory or private?

Iris
Policy Advisor

Iris is responsible for providing policy advice on early years education for children with disability.

To make better decisions Service Mapping can help me to know…

- If this cohort's needs change based on location and intersectionality?
- Is there evidence of links between service access and outcomes?
- Where are the service gaps (location, access, inclusivity etc.)?
- How far do people have to travel to access a service?
- What impact does location have on service implementation? Why?
- If existing services are designed to support access and inclusivity for this cohort?
- Who else provides services to this cohort outside of my portfolio? Where are they located?

Ahmed
Technical Expert

Ahmed is a Visual Analytics Specialist in the Data Analysis team for a government agency.

To make better decisions Service Mapping can help me to know…

- Where should policymakers or service providers focus their attention and resources?
- Where are services not being used? why?
- Where is the greatest need for improved service delivery?
- Which proposed reforms or programs should be supported more urgently?
- Are existing human services effective? How can data assist in measuring outcomes?
- How and to what extent are service needs likely to evolve or change in the future?

Designers, community advocates and non-government organisations can use Service Mapping to make impactful decisions for better community outcomes.

Morgan
Program Manager

Morgan is responsible for an Australian youth-focused health program.

To make better decisions Service Mapping can help me to know…

- Who is being serviced and who is missing out?
- What the community-level service usage is (including community comparisons)?
- What constitutes over-servicing and is there evidence of it occurring?
- If existing service designs meet the needs of users?
- Who is providing similar services?
- Where are similar and related services located?
- What might future demand for services look like?

Su Mon
Community Leader

Su Mon is active in her community and also a small business owner facing a shortage of local workers.

To make better decisions Service Mapping can help me to know…

- What skills development and education services are available in my community?
- What does my community want and need now, and in the future?
- Where are the gaps between these needs and supporting services?
- Are community members using available education and training services? If not, why?
- Who is using and accessing services? who is not?
- Can everyone (regardless of gender/age/ ethnicity/social status) access employment and education services?

Jo
NGO Officer

Jo is responsible for deciding which locations to expand disability services to, based on need and funding available.

To make better decisions Service Mapping can help me to know…

- What government funding is available for the next 2 years?
- What does government currently fund?
- What is the uptake and utilisation of existing services?
- What are the outcomes being achieved by existing services?
- Where are gaps for the Non-Government Organisation? Which will have the greatest impact?
- What groups or locations are experiencing the greatest need?
- What might future needs look like?

Undertaking an effective mapping exercise requires a consistent process.

Good Service Mapping is a dynamic, ongoing activity, where data is collected, analysed and insights are drawn to inform your ongoing understanding of a service, community or region. A static, or point-in-time, Service Map can be useful but the information will become out of date quickly.

This 101 Guide has been designed around the four-phase cycle to System Mapping, which you could use to iteratively build an enduring resource.

With your purpose and audience in mind, you can determine the right methods to develop Service Mapping insights and communicate them to stakeholders.

Service Mapping creates a locational view of services available across different and complex service systems. There are a many data sources and analysis methods and tools that can support this objective. You'll achieve the best results with a clear analysis objective, audience, and a combination of data inputs and methods that creates a holistic view of the services system, issues and opportunities.

These methods are by no means exhaustive and are offered as examples to get you started.

Types of Service Mapping methods

Experiences

Experiences type Service Maps help you to understand the service needs, experiences and interactions of a community.

You could use:
- Interviews
- Personal histories
- Workshops
- Journey Maps
- Surveys
- Yarning circles (if suitable)[1]

Geographic

Geographic type Service Maps are the most effective way to visualise proximity, location and physical barriers to services in a community.

You could use:
- Cluster maps
- Integrated atlas
- GIS spatial analysis

Networks

Networks type Service Maps help you to understand interactions and flows within and between individuals, organisations and services, to analyse linkages and explore markets.

You could use:
- System maps
- Social network analysis
- Functional network analysis

Figures

Figures type Service Maps help you to quickly visualise key insights from data gathered to assess performance and make decisions.

You could use:
- Tables
- Comparison matrix
- Heat maps
- Dashboards

Communication matters!

It's important to think about which kinds of products or artefacts will help you communicate your insights with stakeholders and decision-makers. What format will be digestible and compelling for your audience? How can you craft a narrative that supports necessary action?

You might use:
- Data placemats
- Report cards
- Insights reports

1. A yarning circle is a key element of Aboriginal and Torres Strait Islander culture, where decisions are made collaboratively and through inclusive dialogue rather than having one person in a position of power who makes autonomous decisions that may affect others. For more information, see Yarning Circle Meaning and Importance for Australian Indigenous Culture | Evolve Communities Pty Ltd (evolves.com.au)

There are core data, tools and skills required to map services and draw out insights.

	Requirements	*Where to find them*	*Considerations*
	✓ Data sets on human services (national, cohort or community specific, provider or industry specific) ✓ Australian demographic data (ABS has a range of data publicly available and ready for use) More detail available here.	Agencies often hold and maintain specific data which can be accessed on request[2]: • Data.gov.au • ABS Data Services • Australian Institute of Health and Welfare • Australian Bureau of Statistics Health Data • Vocational National Data Asset • National Disability Insurance Service • Person Level Integrated Data Asset • National Disability Data Asset	➢ Data cannot be mapped without first being geocoded (latitude and longitude). ➢ Postcode areas are not useful for meaningful insights – use ABS statistical areas. ➢ Understand what data limitations exist in the data sets. Understand any ethics requirements.
	✓ Geospatial mapping tool ✓ Data visualisation tool ✓ Dashboard tool ✓ Communications tools More detail available here.	With many different tools available, first look at what is already available. The National Map Digital Atlas of Australia (DAA) Power BI data visualisation Health and Aged Care Geospatial Data Hub Community Insight Australia • Open Street Maps • QGIS • Leaflet • ESRI offer 'off the shelf' software to build maps • QLIK dashboards, visualisation and maps • Child Development Atlas • CARTO	➢ Available tools may require a subscription to access. (e.g. Community Insight Australia) ➢ Some tools will allow uploading of data sets. (e.g. The National Map & Community Insight Australia) ➢ Available tools may require a licence and ongoing costs. (e.g. ESRI & Power BI)
	✓ Human-centred design ✓ Social or user research ✓ Place-based thinking ✓ Analysis (e.g. markets, networks, statistics, modelling, supply and demand, financial) ✓ Performance monitoring and evaluation ✓ Process design More detail available here.	Find capability within your agency: • Data analytics or geospatial teams • Evaluation teams • Finance teams (market analysis capability) • Service design teams (user research skills) • Community engagement • Design teams	➢ Central agencies may support skills gaps through guides, tools or teams. (e.g. Human-centred design | Digital Profession) ➢ Communities of practice exist across the public service and may be a good source of information on where to find skills. (e.g. Commonwealth evaluation units | evaluation.treasury.gov.au)

2. The sources listed on this page mainly refer to Commonwealth or National data sources. State and Territory governments have their own data sources and tools.

Chapter 2 | Process

The following guide has been designed around the four-phase cycle to System Mapping – Understand → Gather → Analyse → Communicate

Understand | **Gather** | **Analyse** | **Communicate**

Overview

Purpose

To clarify the purpose of your project, understand your information gaps and choose the Service Map that suits the information needed.

Key Question

It is important for you to create a Key Question for your Service Map to answer. Designing an effective question may take time, collaboration and require refining.

Consider the cohort, service type, community, actions, detail, timelines, milestones, and work that you can build upon.

Ask yourself if the Key Question is clear and concise, realistic, has a goal, and acknowledges constraints and boundaries.

Actions to understand the environment, reduce duplication, identify knowledge gaps, and focus effort.

Understand Your Question

Break down your Key Question into smaller, more manageable chunks. An 'issues tree' is a useful method to do this (template in CHAPTER 5.2).

- ❑ What sub-questions or issues do you need to know to answer the Key Question?
- ❑ Ensure sub-questions or sub-issues don't overlap and don't have gaps – MECE (mutually exclusive and collectively exhaustive).
- ❑ Are there any gaps that key decision makers will want to know?

Identify Your Data Requirements

Define your critical data requirements.

- ❑ What information is required to answer your sub-questions or sub-issues?
- ❑ Where are the gaps?

Identify Outcomes

Define the markers of success to drive action.

- ❑ What outcomes do you need to understand?
- ❑ What actions should your map support?

Understand Your Environment

Build on existing work and consider who you might need to engage with.

- ❑ Has this been mapped previously?
- ❑ What relevant research is there?
- ❑ Are there lessons that can be drawn upon?
- ❑ What similar examples could apply?
- ❑ Who are the key stakeholders for my map?
- ❑ Who has the skills to help me?

Define Your Governance & Sharing

Governance allows for effective communication, clarity and accountability.

- ❑ Identify your sponsor and decision maker(s).
- ❑ Identify leading and supporting teams (consider policy, program, service delivery, design, data, and analytics teams).
- ❑ Establish collaboration or partnerships.
- ❑ Consider cross-jurisdictional sharing arrangements. *Who has information that would benefit your map? Who might be interested in using your map? What barriers to access are there? How could you overcome barriers?*

Understand | **Gather** | **Analyse** | **Communicate**

Overview

Purpose

To assemble the inputs and tools required to build your Service Map using the identified Data Requirements.

Gather Sources

Identify information sources[1] needed to answer your questions. Consider sources from within your team, your agency, inter- and intra-government[2], academia and the private sector.

DATA SOURCE IDEAS

Tools

Identify the right tool(s) for your Service Map. Look first for what is available in your agency.

EXAMPLE TOOL OPTIONS

Actions to build your relationships, gather the information required and establish the tools you will use.

Is Quantitative data right?

Numbers-based information that is countable or measurable.

- ❑ Various formats available from government, public and private sources.
- ❑ May oversimplify or ignore meanings, motivations, emotions or experiences.
- ❑ May be influenced by measurement errors, sampling bias or ethical issues.

Is Qualitative data right?

Language-based information that is descriptive and requires interpretation.

- ❑ Options include focus groups, interviews, discussions, surveys, feedback, social media, correspondence and case studies. Information can be sourced from individuals, communities and experts.
- ❑ May take significant time to interpret and be influenced by the researcher's values.
- ❑ May lack rigid causal links and be difficult to compare across data sets.

When in doubt, use both!

Undertake Community Engagement[3]

Community insights are vital if you are looking to make decisions around equity, sustainability and liveability of communities.

- ❑ Consider who to engage (include a variety of perspectives and experiences), how (e.g. co-design, consultation), and identify the desired outcome of their participation.
- ❑ Consider the risks and benefits from the participants' perspective – prepare to adapt your approach as needed. Plan for the safety of you and your participants.
- ❑ Allow time for genuine engagement and inform participants on how feedback was used.
- ❑ Ensure engagement is conducted in a culturally appropriate and ethical manner.

Get Support

You may need specialist skillsets to build your Service Map or gather and analyse information.

- ❑ Find specialists who can help with research, citizen engagement, survey design, data and analytics, geospatial mapping or IT systems.
- ❑ There are many experts across the public service – use your networks to find support.

1. Consider the cost, access, trust in data source, limitations of the data, governance and access requirements. Privacy and legal requirements typically define appropriate use.
2. Look for cross-jurisdictional data sharing agreements already in place. What are barriers to access, how will you mitigate those?
3. The Australian Public Service Commission has guides and templates which may be useful in planning for successful community engagement.

Overview

Purpose

To build insights from collected data, the Service Map and stakeholders.

Analyse

Your analysis will adapt to your questions. Areas to consider include availability, accessibility, usage, effectiveness against objectives, efficiency, and future trends.

Host a 'data party' to quickly build insights and test assumptions.

Methods

There are many methods of analysis available, use the one(s) that will work for your information, questions and desired outcomes.

METHODS OF ANALYSIS

Actions to answer the sub-questions identified, draw together evidence and insights, and create maps.

Availability

Identify duplications, gaps and met needs.

- ❑ Compare physical locations and populations.
- ❑ Identify clear service 'deserts' or 'floods'.
- ❑ Find where needs are met, and the gaps.

Accessibility

Look for access issues impacting service use.

- ❑ Compare access criteria and costs.
- ❑ Assess inclusivity of services (e.g. disability, gender, age, language, culture).
- ❑ Assess travel times to access the service.
- ❑ Determine adaptability of service offerings.

Efficiency

Look for effective use of available resources.

- ❑ Find and compare service provision costs.
- ❑ Identify ways resources could be used better.

Usage

Look at why services are used (or not).

- ❑ Identify services that are over or under used.
- ❑ Look for patterns to explain variations across providers, locations and cohorts.

Effectiveness

Seek evidence of links to outcomes.

- ❑ Were key objectives or milestones met?
- ❑ Look for measurable impacts. Are there direct or indirect links between actions and impacts?
- ❑ Identify unintended impacts (positive, neutral and negative)

Future Trends

Consider how needs might change over time.

- ❑ Find forecast population growth.
- ❑ Identify trends about future needs.
- ❑ What changes over time are required?

Your analysis should be tailored, fit-for-purpose and quality assured. If needed, seek technical expertise and capability to help you build quality analysis.

Understand | Gather | Analyse | Communicate

Overview

Purpose

To present your Service Map and insights in the most impactful way.

Present for Impact

Your communication product should consider:

- Who your audience is,
- What they want to know, and
- The action you want them to take from the gathered insights.

Principles

An engaging product has:

- Clear and concise text,
- Relevant and useful information,
- Structure that is easy to read and navigate,
- Appealing design, data visuals and graphics.

Actions to choose the right medium to accurately communicate complex insights to support decision making.

Know Your Intended Audience

Tailor your communication for your audience.

- ❑ How much detail is required?
- ❑ How do they intend to use the information?
- ❑ How much interactivity is needed?
- ❑ Will this be enduring and need maintaining?
- ❑ Is the text and graphics balanced?
- ❑ What accessibility is needed?

Display Your Insights

Raw data can be confusing, so translate your insights into easy-to-understand visuals.

- ❑ Use the right format to convey your message.
- ❑ Ensure your presentation is not misleading.
- ❑ Highlight the caveats, assumptions and limitations of your data.
- ❑ Align your recommendations with evidence in a clear and logical way.

INSIGHTS EXAMPLES

Demonstrate Quality Assurance

Build trust with your audience.

- ❑ Ensure you have accurate information, with references to source evidence used.
- ❑ Clearly articulate your problem(s) and driver(s).
- ❑ Ensure your key messages are clear and consistent, and evidence-based.
- ❑ Link your 'facts' to the original sources..
- ❑ Ensure a logical link between your problem(s) and your recommendations or solution(s).
- ❑ Proofread spelling, grammar, and formatting.

Make it Easy to Read

Use consistent layouts to increase understanding.

- ❑ Consistent heading locations, that aptly describe the insights, information or data.
- ❑ Include 'keys' to understand your diagrams.
- ❑ Use consistent colours for emphasis.
- ❑ Use formatting to draw the audience's eye to your key messages.

Seek Help | Look for areas with skills in data analytics, data visualisation, graphic design, user experience design, copy writing and editing.

Chapter 3 | Personas

The following Personas have been created to show how different people might use Service Mapping depending on their needs, skills, and influence.

Picking the right methods to answer your key question, target your audience and use available resources is critical to successfully using Service Maps.

To illustrate how you could use the different options available, we have built six personas who each use different methods to map services.

Type of service map method	Decision-maker	Policy adviser	Program designer	Technical expert	Community member	NGO officer
Experiences					✓	
Geographic		✓	✓			
Networks						✓
Figures	✓			✓		

Remember these are just examples, and not an exhaustive list of the methods you can use, or the people who could use Service Maps. To make better impacts for users and influence decision makers, use a combination of methods to build your story and evidence.

Jemima, Senior Executive

Jemima is responsible for families and communities policy at the Department of Community Services.

Project scope: Evaluate effectiveness of programs and determine eligibility for ongoing funding.

Project duration: 9–12 months.

Resources required: 20% of Jemima's time, 80% of three staff members.

Timeframe for data access: 6–9 months.

Understand

A number of programs in the Department of Community Services are up for budgetary review.

With Budget limitations in mind, Jemima commissioned evaluations of existing programs in Family and Communities Policy Division to understand their effectiveness. Jemima will provide advice to Government on the validity of continued funding.

Jemima had to be aware of:

- Key program criteria to be met
- Different needs across communities and inadequacy of a one-size-fits-all model
- A range of services families and communities use at the same time (or transition from one to another as their needs change)
- Procurement considerations

Jemima was unsure of how transitions would look in practice, or what the key pain points were for service users.

Jemima decided to use a Heat Map to compare outcomes.

Gather

Jemima's team gathered original grant applications, funding agreements and service proposals.

Jemima values community consultations and organises:

- A satisfaction survey
- Multiple 'town hall' discussions
- Community group meetings
- Interviews with users

Jemima wanted the most effective indicators of success and measurement techniques identified. The team undertook a literature review to distil key insights and learnings from previous reports, evaluations and academic literature.

Jemima's team applied to access the ABS DataLab using the Departmental budget. Once granted, the team used this to find data on similar programs to create standards for measuring outcomes. This was compared to the performance of programs run by the Family and Communities Policy Division.

Note: data availability in DataLab varies greatly by program. Select the tool that best serves the desired purpose.

Analyse

Jemima's team summarised all the program objectives, highlighting where they were aligned or in conflict. From this analysis, key gaps in knowledge and services were identified.

Using a heat map the team weighed up the pros and cons of different indicators of success and measurement techniques.

The best option was selected, and using relevant industry service averages, a baseline 'success scale' was set for each indicator.

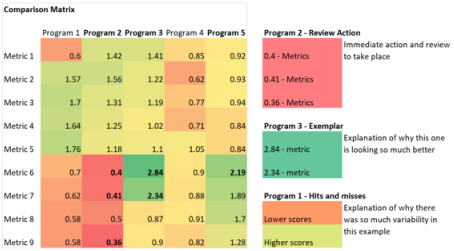
Each of the Family and Communities Policy Division's programs were analysed to determine their performance against these targets.

The performance was summarised in a heat map to succinctly display strengths and weaknesses of every program against each indicator.

Jemima used these insights to support her funding advice to Government.

Communicate

Jemima's team translated snapshots of their heat map findings into a placemat to quickly draw focus to key insights and cross comparisons.



The visually compelling format made it easy to digest the information, supporting Jemima's evidence-based recommendations.

The colour scale of Jemima's heat map made it easy to identify programs meeting community needs, which prompted discussion on what changes are necessary.

Iris, Policy Advisor

Iris is responsible for providing policy advice on early years education for children with disability.

Project scope: Assess community access to services.

Project duration: 4–7 months.

Resources required: Iris full time, 50% of a junior staff member. Full time data analyst.

Timeframe for data access: 1–2 months.

Understand

The Panel (appointed to advise on early childhood education for children with disability) asked about a community which reports limited access to services.

Iris wanted to understand:

- Education services for children (under 9), including details such as:
  - Number
  - Location
  - Either government, community or private provider delivered
  - Do they have structures to support children with disability?
- Community and provider outcomes, and funding profiles for the:
  - Affected community.
  - Comparison communities.
  - State averages.
  - National averages

Iris decided to partner with a Data Analysis expert to build an Integrated Atlas.

Gather

Relevant available data within Iris' Department included:

- Geocoding
- Funding profiles (with loadings for children with disability)
- Grants
- NAPLAN results
- Australian Early Development Census (AEDC) results

For accurate number profiles, Iris used the ABS Table Builder tool. Census data can have issues with double counting children, so was not used in this case.

To clarify community reports of limited access, Iris collected relevant Ministerial Correspondence (Min-Corro) and social media posts.

Iris asked her Data Analysis expert to filter the collected data using the ABS SA2 based on the defined community location and boundaries.

Analyse

Using the information gathered, Iris worked with her Data Analysis expert to create an Integrated Atlas service map, overlaying population and socio-economic factors onto a geographic map.

Iris examined the number and location of services in the community, compared to the number of children with disability in the community. Iris identified a potential service gap of 30 places in the community.

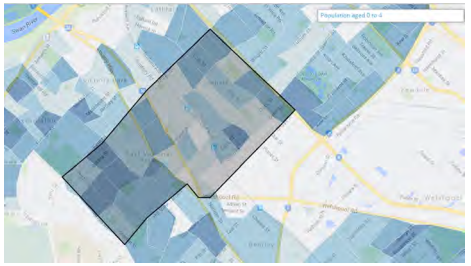
Iris compared outcomes in the community with those in other locations and broader socio-economic indicators. Iris identified apparent differences and trends over time to determine where intervention may be most impactful.

Iris created a sentiment analysis using the Min-Corro and social media posts collected. This confirmed the reporting the Panel received with key issues of availability, accessibility and funding.

Iris identified inadequate Government information to accurately map service inclusivity. More detailed information from service providers would be required to do this.

Communicate

Iris summarised the key insights into a briefing note for the Panel, providing the Integrated Atlas map to support her findings and recommendations.



Ahmed, Technical Expert

Ahmed is a Visual Analytics Specialist in the Data Analysis team for a government agency.

Project scope: Analyse homelessness services and populations across Australia.

Project duration: 3–6 months.

Resources required: 60% of Ahmed's time, 20% of policy team's time.

Timeframe for data access: 3–6 weeks.

Understand

Ahmed has received multiple requests for bespoke data analysis from different policy teams. In general, all of these requests are seeking to understand how effective homelessness services are in delivering long-term outcomes for young people.

Policy teams want to understand:

- Where homelessness services are having the greatest long-term impact
- How long-term outcomes for young people can be measured
- Benchmarking for homelessness service providers across Australia based on community needs (and whether these needs are being met or not)

Ahmed sought to build a tool that all the policy teams could use for their different purposes, focused on maximising outcomes for young people experiencing homelessness.

Ahmed decided to create a dynamic dashboard.

Gather

Relevant available data within Ahmed's Agency included:

- Data from NGO homelessness service providers
- Grant and funding expenditure detailed in annual reports of both homelessness service providers and relevant government agencies

Ahmed further populated his dashboard with publicly available data, including census data and pre-populated geocoding.

To fill in gaps for the analysis, Ahmed requested data from key NGOs on the number and demographics of people using homelessness services.

Ahmed brainstormed with the relevant policy teams and other data experts to establish appropriate metrics that show the desired long-term outcomes.

Analyse

Using the data gathered, Ahmed built a dashboard using the PowerBI tool. The agency-specific, standard census and geocoding data was pre-loaded into the data warehouse. Ahmed applied a data cleanse on the NGO data received to ensure it was accurate, de-identified and integrable.

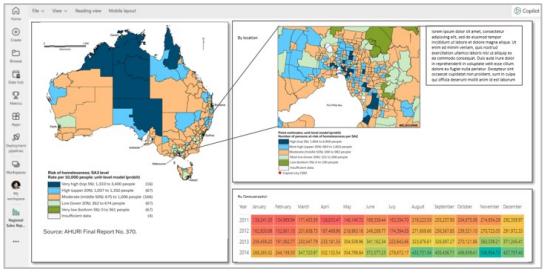
Ahmed performed spatial analysis of the data, creating a heat map showing the distribution of homelessness services across Australia in relation to homeless populations. This was overlaid on a geographic map using ArcGIS Maps, and integrated into the PowerBI Dashboard.

Ahmed enabled filters to show the differences over time of both services provided and homeless populations, as well as filters by broad age categories. Where data was unavailable, limited or less reliable, Ahmed created a pop up message to advise the user.

Communicate

Ahmed used his dashboard and analysis to reveal where homelessness services are not adequately meeting community needs, and where there were issues of duplication or over-saturation.

Using the dashboard design, Ahmed highlighted key areas of interest to draw the policy teams' attention.



Ahmed ran an in-person demonstration of how to navigate the dynamic tool with the policy teams. This enabled the policy advisors to filter and explore the gathered data to suit their specific focus or need and reveal other key insights to inform policy.

Morgan, Program Manager

Morgan is responsible for an Australian youth-focused health program.

Project scope: Critically analyse and understand the program effectiveness in a community.

Project duration: 3 months.

Resources required: 80% of Morgan's time and 100% of two team members.

Timeframe for data access: nil.

Understand

Morgan was concerned his program was not meeting its original objectives or operating effectively, including reports of failure from similar programs elsewhere.

During a 3-month strategic project, Morgan wanted to understand if:

- Youth are receiving the 'right' services to meet their needs
- Other trends were emerging in relation to accessibility and provision of services

Morgan was aware that a mix of governments and NGOs provide relevant services, often used together.

Morgan wanted to map the locations of relevant services and overlay other services (e.g. transport) to understand trends and behaviours.

Morgan decided to use a Geographic method.

Gather

Morgan's team holds health program specific data including number, location, users, staff, satisfaction ratings and funding allocations.

Morgan accessed ABS Table Builder to find de-identified census data on young people and the communities they live in.

Morgan investigated similar services across governments and NGOs and found that Community Insights Australia held data on other health programs.

Morgan wanted to collect community feedback, so scheduled consultations with young Australians and providers to collect information on concerns, choice patterns, pain and gain points, and lessons learnt.

Morgan wanted to explore expert feedback in the lessons learnt from failed similar programs. In addition to any formal reporting, Morgan arranged for consultation with previous program managers to draw out lessons learnt.

Analyse

Morgan purchased a subscription to Community Insights Australia to analyse information already available, and upload the information collected. Using this, Morgan looked for:

- Clusters of services and gaps
- Population data and the average travel distances to access existing services
- Service usage and access criteria compared to similar health services
- Service objectives, success indicators and current performance
- Inefficiencies and opportunities to make the service more effective

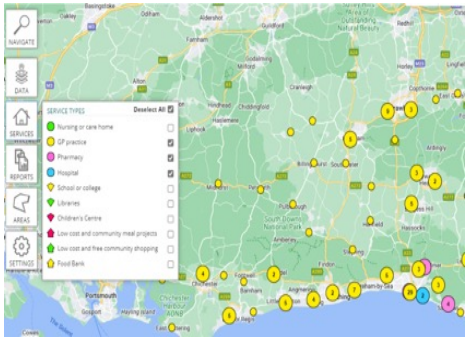
Morgan found three key insights about the program:

1. It is 20% less effective than similar services due to more restrictive criteria.
2. There are 50% less university students accessing the program since a bus route changed (now requires 2 buses to attend).
3. Employing a psychologist would streamline service use for 35% of users through a more holistic health program.

Communicate

Morgan summarised the key insights (barriers and opportunities) together in an interactive map. The map will be maintained as an ongoing asset, providing a dynamic communication tool.

Other similar programs expressed interest in expanding on what Morgan built.



Su Mon, Community Member

Su Mon is active in her community and also a small business owner facing a shortage of local workers.

Project scope: Understand causes of skilled worker shortages in the local community.

Project duration: 3 months.

Resources required: Su Mon 70% of time outside business hours.

Timeframe for data access: nil - public.

Understand

Su Mon has been trying to employ people in her small business, but has been struggling to find applicants. Chatting with her business community network, Su Mon discovers her community appears to be facing a wide-ranging shortage for both skilled and unskilled roles, and particularly of young workers.

In light of this problem, Su Mon sought to understand:

- Why are younger skilled workers choosing to leave the community?
- What could entice young skilled workers to stay or migrate out to the community?
- What gaps in employment and education services exist?
- Where could additional government support or investment, help with this issue?

Su Mon decided to build a journey map to capture the experiences in her community.

Gather

Su Mon wanted to understand the scale and impact of this skill shortage issue, so built a standardised survey to quickly collect opinions from her community. She targeted young people, local business owners, education service providers, and general community members.

Su Mon arranged a series of interviews with key community members representing different groups. Using these interviews she collected insights on underlying factors influencing decisions of young skilled workers. Su Mon anonymised her data but drew out key quotes and common themes as she conducted interviews.

Realising that there might be a gap in supports provided for young workers, Su Mon looked up publicly available data on government funding of education and employment services.

Analyse

Su Mon's research revealed the top three reasons why young skilled workers are leaving the community:

1. Lack of job opportunities
2. Financial incentives of big cities
3. Lack of prospects for raising a family/ future prospects

Su Mon also discovered that her community receives less funding than similar-sized communities in her state.

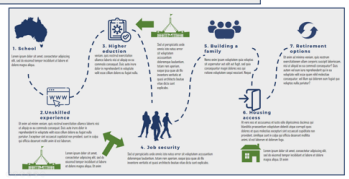
Wanting to petition her local government for support, Su Mon decided to translate her collected insights into a journey map that illustrates the gaps and barriers for young workers.

Su Mon built two journey maps, the first focusing on the current system and the second including suggestions from her community that would help to employ, upskill and retain workers.

Communicate

Su Mon met with her local Member of Parliament, using the journey maps to justify the support and funding request to meet the community's needs. She ensured her journey map and discussion highlighted the inadequate resources for upskilling and training, and the flow-on effects this has on small business owners such as herself.

A journey mapped with gaps



An improved journey

Su Mon shared copies of her journey maps with the local community – acknowledging their contributions and encouraging them to join her petition.

Jo, NGO Officer

Jo is responsible for deciding which locations to expand disability services to, based on need and funding available.

Project scope: Make evidence-informed decisions on expansion options for the NGO.

Project duration: 9 months.

Resources required: Jo full-time and 50% one junior NGO team member, with additional funding for university partner.

Timeframe for data access: 3 months.

Understand

Jo has been tasked with exploring locations to expand the NGO's disability services. They want to use Service Mapping to find out:

- Where will be a strategic area of growth for the NGO over the next 2–5 years?
- Where are there service gaps for NGO investment to have the greatest impact?
- Where can the next project for the NGO have the greatest and most immediate impact on the community?

Jo is aware that evidence and proof of need is critical to gaining support for her proposals. They also want to include available competition and government supports that might be leveraged.

Jo is familiar with research on the NDIS that has used functional network analysis (FNA) to identify thin markets and collaborates with a university research partner to undertake a similar analysis.

Gather

Relevant data available within Jo's NGO included:

- Surveys of current users of NGO-run disability services
- Internal NGO data on clientele and service use

Jo's team rounded out their data sets with:

- Census data on distribution of populations with disability
- ABS data on the socio-economic status of existing and potential service locations

To provide context to their analysis, the team carried out desktop research including:

- Research on what 'better outcomes' look like for those experiencing disability
- An environmental scan of competitors and contextual factors that may influence needs in the next 2–5 years

Analyse

The team developed an analysis to understand the number, total cost, average cost, and average utilisation of claims for different categories of disability need and different types of services. The analysis helped identify gaps where certain categories of service appeared to be limited.

Jo's research partner overlaid analysis with population trend data to understand the extent of current gaps in the market, and where gaps may emerge in the future.

The analysis identified that many of the NGO-delivered supports have overlaps with aged care services. Using their FNA, the team identified geographical areas with the largest gaps in aged care services.

Communicate

Jo synthesised the findings into a short insights report and used this data to present a business case to the Board of the NGO and major investors.

The insights report includes the FNA to provide an evidence base for Jo's decision as to where the NGO should establish its next service facility.

Chapter 4 | Methods

4.1 | Experiences

4.2 | Geographic

4.3 | Networks

4.4 | Figures

Many methods are available to produce Service Maps – choose the one or combination that can best answer your service questions.

Service Maps are not a one-size-fits-all tool. Different methods are better suited to different areas of focus. The following chapter will take you through four different types of Service Maps with different purposes, and some of the methods you can use to develop a Service Map that meets your needs. Pick the approach that will work for you at a program, portfolio or whole-of-system level, which correspond to scales of decision making across government, defined as micro, meso, and macro-levels, respectively.

Type	Purpose	Need	Availability	Location	Usage	Accessible	Effective
Experiences	Experiences-based Service Maps help you to understand the context of the interactions, experiences and needs of a community.	yes	yes	no	no	yes	partial
Geographic	Geographic-based Service Maps are the most effective way to visualise proximity, location and physical barriers to services in a community.	no	yes	yes	partial	partial	partial
Networks	Networks-based Service Maps help you to understand more complex market structures and service interconnections to identify 'thin markets'.	partial	partial	no	yes	no	no
Figures	Figures-based Service Maps help you to quickly visualise the key insights from the information gathered to assess performance and make decisions.	partial	no	partial	yes	no	yes

yes partial no

4.1 | Experiences options

Overview → Process → Method Case Study 1 → Method Case Study 2

- Method Case Study 1: Burnie Works
- Method Case Study 2: Greater Shepparton Lighthouse Project

***The following chapter uses case studies that are publicly available or were developed with the Australian Government*

Experiences-based Service Maps help you to understand the context of the interactions, experiences and needs of a community.

Experiences-based Service Maps are a powerful source of lived experience not easily captured by other methods.

Purpose

- Understand needs of the community or providers.
- Prioritise needs and action with the community or providers.
- Establish close ties with, and buy-in from, the community.
- Effective for micro- and meso-level reporting.

Benefits

- ❑ Prioritise services with greatest positive impacts.
- ❑ Quickly identify ineffective services.
- ❑ Visualise 'on the ground' experiences.
- ❑ Can paint both a current and future state to highlight actions and system changes required.
- ❑ Gain insights into effectiveness, access and efficiency.

Limitations

- ❑ Requires significant time and resources to build genuine engagement.
- ❑ Lived experienced information is highly contextual and will not represent the whole community or services.
- ❑ Disadvantaged communities may experience survey fatigue.

Ideal Key Questions for Experiences Service Maps

- ❑ What services are needed in this community?
- ❑ Do people have access to existing services in this community?
- ❑ How effective are existing services in this community?
- ❑ What are the aspirations or hopes for this community?
- ❑ Who is best placed to speak to the needs of the community?
- ❑ Whose voices are not being heard?
- ❑ How can communities prioritise their needs and actions?
- ❑ What are the strengths of this community?

Sources

Community insights:

- ✓ What needs?
- ✓ Are needs met?
- ✓ What barriers?

Geocoded data:

- ✓ Markets?
- ✓ Demographics?

Tools

- ✓ Survey *(e.g. Qualtrics)*
- ✓ Communication *(e.g. website for info, surveys & to publish findings)*
- ✓ Analysis *(e.g. using NVivo or Quirkos)*

Skills

- ✓ Trauma-informed engagement
- ✓ Cultural capability
- ✓ Interview/survey design
- ✓ Qualitative analysis
- ✓ Visualisation

Use the standardised process to build your Experiences-based Service Map.

Communities know a lot about what they do and do not need. Leverage place-based prioritisation practices and planning for more impactful and effective service provision. Provider feedback can highlight barriers in operations and regulatory environments.

Understand

Define your Key Question around the actions or decisions you want to influence.

Determine the unique nature, make-up and dynamics of the community you are mapping to decide:

- What will be the most effective way to engage with this community?
- Who has the power and voice in this community, and how will we hear quiet voices?
- Is a co-design or community-led approach that goes beyond consultation more appropriate?

Explore existing sources of information by looking at:

- What data/information does the community hold?
- Would it be appropriate to ask for access to this data?

Gather

Determine your data or information needs.

- What data will you need to gather for the community's priority area?

Consider data sensitivities and need for community ownership and control of their data, as well as the impact of telling lived experience stories on individuals and communities.

- How will you support the community while you collect their information? (e.g. involve trauma-informed experts).

Gather data from the community using an appropriate method.

- Identify and access existing data and information
- Collect new data sets to address information gaps through surveys, engagements, interviews and/or workshops. (Could be in-person, virtual, individual or in groups).

Analyse

It is important to provide the opportunity for **community participation** in your analysis.

- Try testing your insights with the community to determine if you have accurately represented them.

Qualitative analysis of interview or survey insights can include:

- Key word or phrase filters
- Sentiment analysis
- Opinion percentages.

Draw together insights on the **areas of priority** for the community (e.g. accessibility, effectiveness, inter-operability or funding approach).

Consider **expected community impacts** of policies, services or no action.

- Try comparing the existing journey to an ideal journey – what are key differences?

Communicate

You have two key audiences for your Interaction Service Map:

1. The **community you consulted**, and
2. The **decision makers** who can take action.

For this reason, make sure your map and insights:

- Use simple and clear English.
- Use the language, words and voices of the community.
- Use pictures and visuals to help describe experiences.
- Balance the data with the story the community wants to tell.
- Be clear about next steps and expected actions.

The Burnie and Pataway communities used experience mapping to identify issues and opportunities for place-based work through this collective impact initiative.

Project Objective

Burnie Works leverages local knowledge to inform and evaluate current programs, co-design future programs, and effectively adapt to population and system changes.

Roadmaps and progress reports are developed leveraging community insights. These are tested and published to inform individuals, government and providers.

Key drivers for youth services[1]

- Higher than average population of young people (aged 10–19 years).
- Higher divorce and separation rates (vs state or national average).
- Lower rates of educational attainment (vs state or national average).
- Higher rates of unemployment for those 15 years and older (vs state or national average) and high rates of unpaid care.
- Lower median weekly incomes (vs state or national average).
- Higher First Nations population than across Tasmania.

Project Findings[2]

Burnie Works consistently brings people together by using extensive networks of parents, families, young people and service providers - both drawing upon existing relationships and seeking new ones. Examples of connected, facilitated, co-designed actions that were seed funded, project managed, and facilitated advocacy include:

- The Premier's Child Youth Wellbeing Strategy
- Neighbor Day
- Harmony Week and IDAHOBIT
- University First 1,000 Days
- Justice
- Education Readiness for Learning
- Education Aspiration
- Employment
- Community Knowledge Collector Project

Lessons Learned[2]

Collective impact is achieved by learning together, aligning and integrating actions for wide change.

Use systems thinking to investigate factors and relationships.

Place-based practices recognise differences and support advocacy for community-led and controlled functions.

You won't always have the knowledge or understanding of what is creating an issue.

Trauma-informed approaches are the cornerstone to working with the community.

The Burnie Approach

1. 2021 Census 2021 Burnie, Census All persons QuickStats | Australian Bureau of Statistics (abs.gov.au)
2. Home - Burnie Works

The Greater Shepparton Lighthouse Project used service provider insights and experiences to find strengths and weaknesses in existing youth services to inform future actions.

Project Objective[1]

Identify and describe the relationships, use, access and gaps of existing providers and services in the Greater Shepparton area for youth (12 to 18 years old). Insights into the factors that enable or constrain services were highlighted as strengths and weaknesses.

Key drivers for mapping youth services[2]

- High rates of disengaged youth.
- Low rates of employment-ready young people.
- Higher than average population of young people (aged 10–19 years).
- Higher divorce and separation rates (vs state or national average).
- Lower rates of educational attainment (vs state or national average).
- Higher rates of unemployment for those 15 years and older (vs state or national average) and high rates of unpaid care.
- Lower median weekly incomes (vs state or national average).

Project Findings

- 39 providers were identified delivering 118 services.
- Services are delivered by paid providers, the majority not for profit – there is limited service delivery by young people themselves.
- There was no duplication of services but gaps were identified.
- There were delays in accessing services.
- Face-to-face contact was the most effective when delivering services to young people.
- Federal and state governments are the majority of funding sources for youth services.
- The sector's structure has not evolved from an overall strategic plan or agreed outcomes, but in response to funding initiatives, personal relationships and competition.

Lessons Learned

A large number of the organisations were very reticent to provide detailed information. Reasons cited included competition and competitive advantage, confidentiality and data accuracy.

Rivalries were found between organisations driven by short-term funding cycles, rapid changes in a funder's priorities, few funding sources, the ease with which funders can move from one provider to another, declining funding availability and the large perceived need for services.

1. Lighthouse Project – Helping children realise their potential (gslp.com.au)
2. 2021 Census data 2021 Greater Shepparton , Census All persons QuickStats | Australian Bureau of Statistics (abs.gov.au)

4.2 | Geographic options

Overview → Process → Method Case Study 1 → Method Case Study 2

- Geographic Information System (GIS)
- Integrated Atlas

Geographic-based Service Maps are the most effective way to visualise proximity, location and physical barriers to services in a community.

Geographic-based Service Maps help to make the abstract tangible, generating easier to understand insights by linking data to locations.

Purpose

- Leverage and combine geocoded data to display information visually on digital cartographic maps.
- A geographic information system (GIS) can embed spatial analysis tools to analyse and model information to highlight territorial-based decisions and planning.
- Effective for micro, meso and macro level maps.

Benefits

- ❑ Any geocoded data can be used.
- ❑ Abstract concepts are made tangible, like access limitations caused by geographic or infrastructure features.
- ❑ Doesn't require high levels of technical skill to read or translate the map insights.

Limitations

- ❑ The availability and quality of data will limit your final map.
- ❑ Cartography often needs to be adjusted for services in specific zones.
- ❑ Defining geographic boundaries can be contentious when working with Aboriginal communities, requiring dual-coding.
- ❑ Service administrative and registered offices may be differently located to actual service delivery locations.

Ideal Key Questions for Interactions Service Maps

- ❑ What services are available and where?
- ❑ Where are services clustered, and where are there gaps?
- ❑ What physical barriers are there in an area? How do these impact service use?
- ❑ What does the system of services look like in a community (multiple service types)?
- ❑ What services do people use together?
- ❑ Who provides services?
- ❑ Is the service sector operating effectively?

Sources

You can use data from any source in a Geographic-based Service Map, but all data collected needs to have a geocoded location attributed to it.

Tools

- ✓ National Map
- ✓ Digital Atlas of Australia
- ✓ Community Insights Australia
- ✓ Many GIS tools are available with varying features

Skills

- ✓ Data Scientist or Analyst
- ✓ Data Visualisation Specialist
- ✓ System knowledge/ Experience

Use the standardised process to build your Geographic-based Service Map.

Geographic-based Service Maps are visualisation tools that can support your analysis of different services, needs and factors in an area, understanding each in the context of its physical location.

Understand

Define your Key Question around the actions or decisions you want to influence, including the market or area you want to map, and the different functions of that system.

Establish the size and shape of the community you want to map services in.

- What is the best geographic boundary to get the best insights?
- How will you manage contentious boundaries?

Determine the detail and layers you need for your analysis beyond location.

- Roads, waterways, public transport networks
- Topography of the area
- Population density or makeup
- Geolocation of services and surrounding businesses, communities and facilities
- Zoning and boundaries

Gather

Gather relevant and available internal and cross-jurisdictional datasets to build your map.

- Define data limitations (complete, accurate & trusted)
- Identify the skills and tools required to access data
- Identify the legal and ethical requirements, and checks on collecting, accessing and using the data in analysis (single use data, privacy, etc.)

Collect minimum required data for Geographic-based Service Maps:

- Zone boundaries (Jurisdictional, region, SA 1–4)
- Location information for services within zone boundaries
- Geocoding to translate location data (longitude and latitude)

Consider how to reflect location with bespoke data sets (e.g. community consultation could be represented as sentiment areas, layered with demographics).

Remember that data access can take time – so factor it into your planning and timelines.

Analyse

Geographic-based Service Maps enable you to see your data in its location context. **Analyse for trends** around availability, accessibility, duplication and gaps in services.

- **Cluster and gap analysis:** Look for groups of users or providers with similar data. Analyse the relationships within and between clusters
- **Demand misalignment:** Identify misalignments between the supply of services with the demand (need) for that service
- **Performance comparison:** Compare results, KPIs and metrics with other zones
- **Trend identification:** Identify trends around use and provision of services. Explore the impact of megatrends (e.g. climate change) and drivers

Build your key insights and recommendations from your analysis, including summarising the impacts of policies, services and actions (actual or expected).

Always remember to acknowledge data limitations.

Communicate

A Geographic-based Service Map presents data in a visually stimulating way that feels familiar to an audience.

To clearly communicate using a Geographic-based Service Map, include vital components like:

- Consistent definitions and use of keys to describe attributes
- Align your key messages with the information overlays included (easy to spot insights)
- Interactive maps to filter and move views

Share access to your Geographic-based Service Map so that others can use it to find new insights on connections, gaps and risks in the market.

Summarise your key insights, recommendations, mitigations and actions. This draws your audience's attention to key points of interest, and can frame an outline of your recommended next steps.

The ABS created a public-access interactive geospatial tool, overlaying chronic health conditions of the population using heat maps and SA2 areas across Australia.

Project Objective

The Australian Bureau of Statistics (ABS) created an interactive, free and publicly accessible geographic information system (GIS) map to share insights on prevalence of chronic health conditions across Australia.

This map was used to understand the breakdown of populations considered to be 'at high risk' from COVID-19 at a community level (Statistical Area 2 or SA2 zoning) and by population demographics (total population, aged 60+ and aged 70+).

Gathering Sources

The data for this map was sourced from aggregated results from the 2017–18 National Health Survey. The survey captured responses from roughly 21,000 Australians in over 16,000 private dwellings.[1]

Seven National Health Surveys had been carried out when this map was created. In 2022, a subsequent National Health Survey was completed.

This map used two systems:

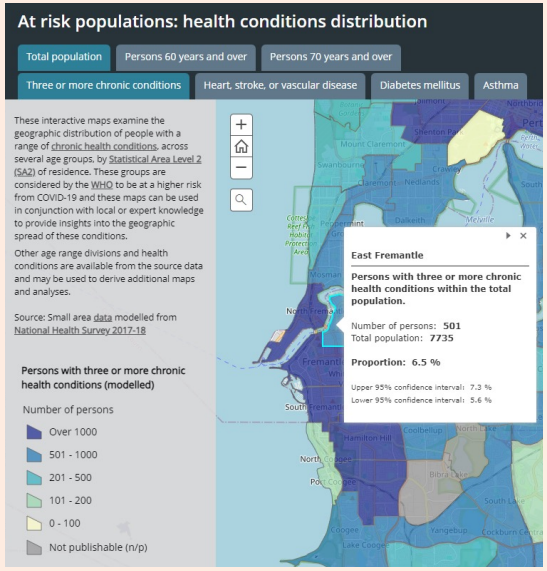
- OpenStreetMaps for base-level street data, and
- ESRI ArcGIS for visualisation and analysis

Project Findings

The National Health Survey data was analysed by ABS specialists to develop key statistics and insights. This included analysing geo-located and time-series data to identify trends.

The Australian Institute of Health and Welfare (AIHW) estimated that 11.6 million or 47% of people in Australia had one or more of the 10 selected chronic conditions.[2] The four chronic conditions and age ranges considered 'at high risk' from COVID-19 by the World Health Organization (WHO) were used as filters.

SA2 zoning by residence was chosen to break down information and present it on the map. The ESRI ArcGIS system draws in base-level data from openstreetmaps and SA2 jurisdictional lines from ABS boundary files.



Communicate

The map is free to access and published on the ABS website. The map can be exported into reports to inform decisions, or linked to the interactive version for ongoing updates.

The map dynamically updates the data and heat maps depending on the filters selected, with different scales and colour schemes.

1. National Health Survey: First results, 2017-18 financial year | Australian Bureau of Statistics (abs.gov.au)
2. Chronic conditions and multimorbidity - Australian Institute of Health and Welfare (aihw.gov.au)

The ACT Mental Health Policy Unit used an Integrated Atlas Service Map to identifying strengths and gaps in service provision.

Project Objective

Provide insight into the evolution of the mental health system during a time of significant change, in particular its ability to respond and adapt to change.

Assess whether the strengths and gaps identified in the 2016 Atlas remain the same.

The Integrated Atlases are considered key tools for evidence-informed policy and planning.

Gathering Sources

Detailed information on social and demographic characteristics and health-related needs in the ACT was used.

Data on service availability and care capacity in the ACT was collected from primary health networks.

The Atlas quantifies and codes mental health services using a standardised classification known as the 'Description and Evaluation of Services and Directories in Europe for long-term care' model (DESDE-LTC).

The use of the DESDE model has allowed comparison of 'like for like' services, so longitudinal change can be assessed.

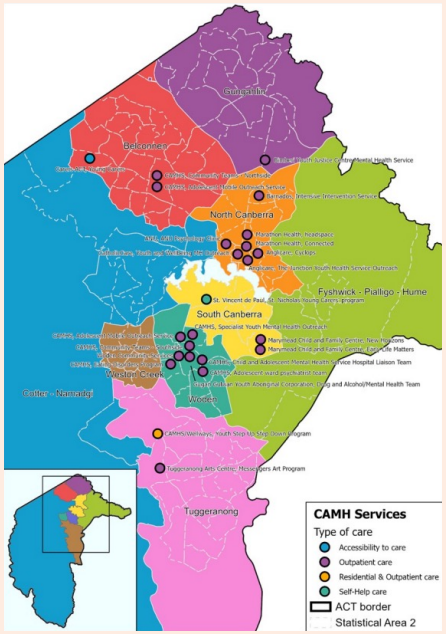
Project Findings

There has been significant change in some areas of service provision:

- Increase in services for children and adolescents, particularly 12–25 year olds
- Decrease in services for adults, particularly day and accessibility services
- Decrease in care coordination, despite added complexity of NDIS
- Service size has increased, but diversity of care types has not changed

The system lacks robustness, with 33% of services lacking organisational stability.[1]

There is an inefficient use of scarce resources – investment is made in new services, while the core services are not appropriately resourced. This leads to a reactive system, rather than a proactive one.



Communicate

The Atlas was published as a report, with a series of maps of the ACT with colour coded segments representing key findings.

The report identifies further analysis that would increase the insights available, including rates of utilisation of services, financing flows and mechanisms, or a network analysis.

1. 2020 Integrated Atlas of Mental Health Care of the Australian Capital Territory (1).pdf (canberra.edu.au)

4.3 | Networks options

Overview → Process → Method Case Study 1 → Method Case Study 2

- System Map
- Network Analysis

Networks-based Service Maps help you to understand interactions and flows within and between services, to analyse linkages and explore markets.

Networks-based Service Maps help you find areas of inadequate service availability and risk to inform targeted market stewardship actions.

Purpose

- System Map: Understanding, visualising and communicating pathways, interactions and flows within and between service systems. Examples include mapping referrals, funding flows, or feedback loops.
- Functional Network Analysis: Understand the linkages between categories of service providers and service need. This can include exploring the choice patterns of consumers or performance of quasi-market services.
- Identify where there is inadequate service availability resulting in participants' needs not being met – 'thin markets'.
- Effective for meso and macro level maps.

Benefits

- ❑ Allows for system level analysis to identify markets gaps and failure risks early to enable intervention.
- ❑ Verify issues to fund culturally suitable remedies.

Limitations

- ❑ The availability and quality of data will limit the quality of insights as it can only really be effective with complete data.
- ❑ This is not a thorough market diagnosis.

Ideal Key Questions for Networks Service Maps

- ❑ Who is providing services and what are their relationships with others operating in this area?
- ❑ Are service needs being met by the existing service availability and accessibility?
- ❑ What does service usage say about the service market?
- ❑ Who are the significant actors, influential figures and interaction patterns for the market in this area?
- ❑ What factors are influencing a thin market? (e.g. geographically rural or remote, type of support, complexity of needs, backgrounds and experiences of users)

Sources

- ✓ Service specific databases (sector indicators and metrics)
- ✓ Locations of services
- ✓ User satisfaction, needs and behaviours
- ✓ Network surveys

Tools

Many available tools – access will depend on your security needs. Examples:

- ✓ Kumu
- ✓ Gephi
- ✓ Highcharts
- ✓ PowerBI
- ✓ QLIK

Skills

- ✓ Data Scientist or Analyst
- ✓ Data Visualisation Specialist
- ✓ System knowledge/ Experience

Use the standardised process to build your Networks-based Service Map.

Networks-based Service Maps are an analysis tool that visualises the connections between different nodes (functions), that can be filtered to find connections, gaps in markets or key risks in the market.

Understand

Define your Key Question around the actions or decisions you want to influence, including the market or area you want to map, and the different functions of that system.

Choose the type of Networks-based Service Map:

- use a System Map if you want to create a visual depiction of a system, its actors, relationships, feedback loops and trends.
- use a Functional Network Analysis if you want to understand linkages between categories of service providers and categories of service need, and evaluate the structure of service markets.

The NSW Trend Atlas has a driver map interface that can help you define your question based on local and global trends.

Agree definitions of categories with your key audiences that you can use consistently across your map.

Gather

Identify relevant and available databases that can be used to identify and describe relationships, for example between service types and user types.

Categorise the 'entities' involved in your system, and determine how they will be identified in the data.

Determine your data or information needs:

- Data on service users?
- Data on service type and usage?
- Network survey data?
- Geographic location of services or nodes?
- Service and sector indicators and metrics (spend/usage)?

Remember that data access can take time – so factor it into your planning and timelines.

Analyse

Networks-based Service Maps require you to **categorise a node of information**, and **link nodes** to visually represent the relationships across a system.

The categories enable you to **filter the information** in your Networks-based Service Map to analyse connections, gaps and risks. The more connections to a node, the larger that node will appear in your map – making 'thin markets' easier to spot.

For human services it can be useful to categorise different nodes by **available services** and **needed services** to quickly understand how the market is operating. You could also consider other indicators to categorise your nodes (e.g. excellent, good, poor).

Use the model created on the current system to introduce theoretical nodes representing actions or policy impacts to **test interconnections**.

Communicate

Remember that a Networks-based Service Map can appear complex to audiences unfamiliar with navigating them. Cater your message/s to the audience/s.

Clear and simple communication on how to read or use the map is essential. This includes explaining how to use categories to filter the information into smaller and more understandable areas, topics or concepts.

Summarise the key insights you have identified from your Networks-based Service Map for your reader. This way you draw attention to critical points of interest, and can demonstrate how these insights are found by adjusting the filters and views on the map.

Share access to your Networks-based Service Map so that others can use it to find new insights about connections, gaps and risks in the market.

The Victorian Government developed current and future system maps to understand information flows and service referrals among children and family services.

Project Objective

The Victorian Government wanted to improve information-sharing among organisations working with children and families to deliver better outcomes.

Its solution was Child Link[1], a web-based register to enable quick and effective collaboration among practitioners and act as a starting point for sharing information. Design research was undertaken with end users to understand the current information-sharing system and co-design a future state.

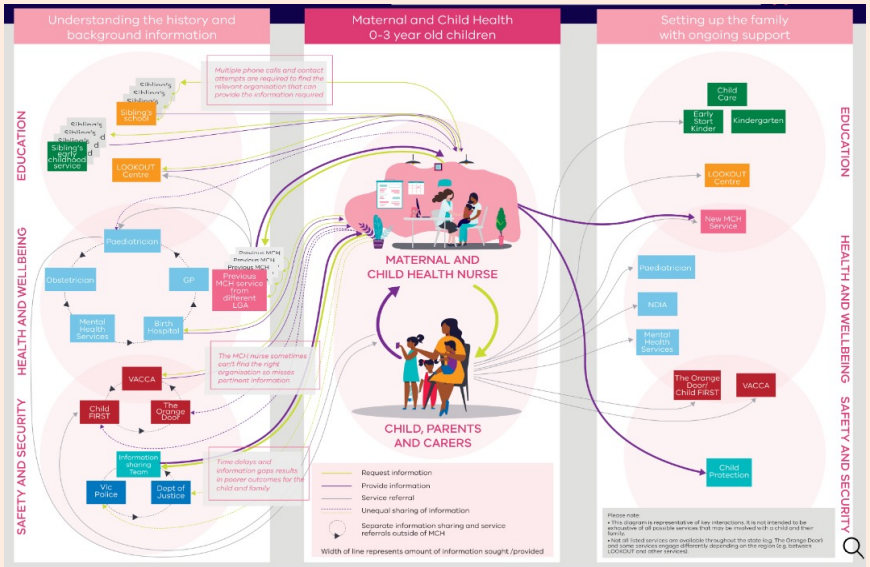
Gathering Sources

The project used human-centred design to create visual representations of the current information-sharing system and co-design a preferred future state.

The objective was to understand the context, environment, relationships and behaviours that drive information-sharing. This entailed developing an understanding of the wider system, including organisations that support people who have experienced family violence.

The project spoke with 72 practitioners, conducted 19 co-design workshops and 8 validation sessions to understand current experiences and opportunities.

Project Findings



Communicate

Multiple design artefacts were developed from the research, including current state system maps representing information flows between practitioners and agencies, future state system maps representing information flows and service referrals between parties in the future, and a comprehensive insights report detailing challenges and opportunities for improvement. These insights supported implementation planning, communications and training.

Maps were shared with stakeholders across the system, including Ministerial and departmental decision-makers. Practitioners and agencies also found them useful for training and on-boarding staff to orient themselves within the broader system.

1. Child Link | vic.gov.au (www.vic.gov.au)

A functional network analysis has been used in NSW to identify where 'thin markets' in the National Disability Insurance Scheme may be emerging.

Project Objective

UNSW developed a Functional Network Analysis Dashboard (FNAD) to understand the links between service provision and service users in the National Disability Insurance Scheme (NDIS), and the strength of these links, to determine 'thin markets' and areas for improvement. The dashboard has been used by NSW Department of Communities and Justice.

The NDIS significantly reformed the way disability services were funded and delivered to what has been described as a market-led model. This was useful as the NDIS transitioned to a model where individuals received payments, from which we could understand how and where funding went.

Gathering Sources[2]

Data availability was a critical issue for this project, which resulted in:

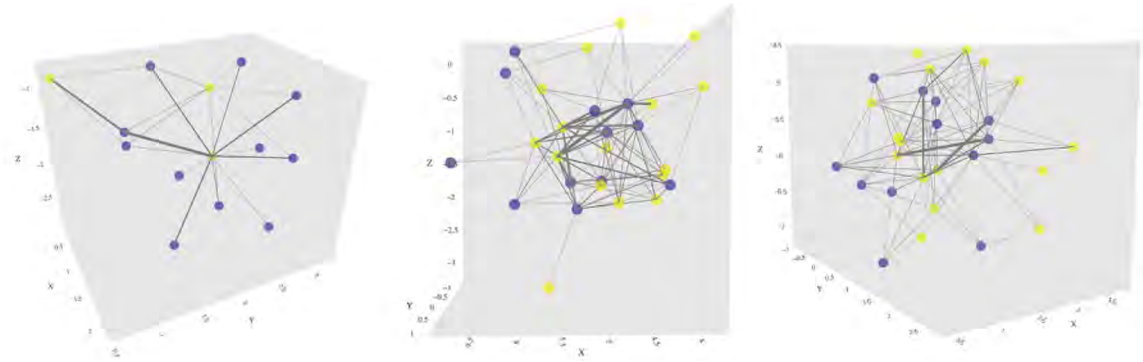
- the FNAD including number of claims, total cost of claims, average cost of claims, and average utilisation of claims.
- the functional network analysis created as an academic demonstration based on limited provider survey data collected by UNSW.

The datasets were incomplete. More might be possible with the National Disability Data Asset project underway to bring in more complete information to inform analysis.

Project Findings[1]

The functional network analysis focused on connections between service users and service providers. This information was visualised to shows relationships between users and service providers including service uptake, service wait lists and NDIS plan utilisation rates.

This functional network analysis focused on 'functions' of a service sector rather than individuals or organisations. It consequently categorised types of disability and types of disability services rather than organisations or individuals. This enabled more insightful reflections of gaps, risks and connections in the markets.



Lessons Learned

The strength of the functional network analysis was its ability to visualise and communicate existing data.

The ability for a user to examine specific regions, disability or service types increases the applications that the map can be used for.

This analysis highlights 'thin' or failing markets, creating opportunities for further investigation. This helps to prioritise targeted analysis to support investment decisions around strengthening and improving services.

1. Service Mapping State of Play Paper
2. A proof-of-concept study on the National Disability Insurance Scheme

4.4 | Figures options

Figures-based Service Maps help you to quickly visualise the key insights from the information gathered to assess performance and make decisions.

Figures-based Service Maps use replicable methods to analyse multiple datasets so you can track and compare key information over time.

Purpose

- Visualise and communicate key aggregated information and statistics quickly and easily.
- Track performance and time-lapsed data.
- Draw out key information quickly and easily.
- Identify inefficiencies and opportunities.
- Pull together multiple insights in a consistent and replicable way for multiple audiences.
- Micro or meso scale.

Benefits

- ❑ Quick access for multiple stakeholders.
- ❑ Communicate up-to-date key information and statistics.
- ❑ Report performance and progress on outcomes.

Limitations

- ❑ Aggregated figures may not pick up outliers.
- ❑ Difficult to create at a macro scale (performs better focusing on a single, or handful, of metrics/services).

Ideal Key Questions for Interactions Service Maps

- ❑ Who accesses the services, and how often are they used?
- ❑ How many and what types of services are being delivered in the community?
- ❑ What are the demographic and sociodemographic profiles?
- ❑ How is funding allocated and used?
- ❑ How are services performing?
- ❑ How is the service performance relative to others, and benchmarks?
- ❑ What are the key outcomes and how are service(s) progressing?

Sources

More suitable for quantitative datasets exploring:

- ✓ Service and sector KPIs
- ✓ Time series data on users, funding profiles, costs, outcomes, satisfaction, etc.

Tools

There are many tools available, and use will depend on security and functionality needs.

- ✓ Excel
- ✓ PowerBI
- ✓ QLIK
- ✓ Highcharts

Skills

- ✓ Data Scientist or Analyst
- ✓ Data Visualisation Specialist
- ✓ System knowledge/ experience

Use the standardised process to build your Figures-based Service Map.

Figures-based Service Maps are a communication tool, summarising and highlighting key areas of information in a consistent way so that decision makers can quickly assess the insights they need.

Understand

Define your Key Question around the actions or decisions you want to influence.

Determine your key audience(s) for your Figures-based Service Map to influence your detail, design and enduring requirements.

Choose the type of Figures-based Service Map to best illustrate information to help inform action. For example:

- dashboards bring together multiple sets of information and can include most other types of Service Maps. Dashboards are typically dynamic, and enable the audience to adjust factors to identify insights
- heat maps quickly show hot and cold spots in a dataset
- comparison matrices quickly identify and compare key attributes.

Gather

Identify existing mapping for this activity.

Determine your data or information needs:

- what are the key metrics/indicators that need to be assessed and communicated?

Consider data availability:

- data-sharing or cross-jurisdictional data?
- zone boundaries (jurisdictional, region, SA 1–4)?
- performance data (cost, users, outcomes etc.)?
- benchmarking data?
- socio-economic data?
- outcomes data?
- is the available data complete, accurate and trusted?

Remember that data access can take time – so factor it into your planning and timelines.

Analyse

Set your scene.

- has this activity been mapped previously?
- are there lessons learnt that can be drawn upon?
- what current policies/practices are in place?

Analyse performance or progress from your collected data. **Comparative analysis** can be helpful as either a target, benchmark or commitment.

- set KPI benchmarks
- compare KPI results and metrics with other areas
- identify misalignment with demand (over or under supply)
- analyse time series data for trends to potentially identify drivers of use, provision or changes over time
- identify your key insights and recommendations
- examine statistics and key figures.

Communicate

Revisit your key audience for your Figures-based Service Map. **Tailor your interface** and design based on their level of data literacy.

Use infographics and icons to **theme your information** in a visually impactful way.

- aggregate analysed data into articulate summaries.
- draw comparisons.
- highlight outliers.
- use a key to explain colours or other metric indicators, including ranges of indicators (i.e. excellent, good, poor).
- outline data limitations and where comparisons cannot be drawn.

Publish your Figures-based Service Map as they are most helpful when accessible by a range of stakeholders.

The Productivity Commission developed a dynamic dashboard to summarise joint government performance, and let users filter by topic and location.

Project Objective

The Productivity Commission performance dashboard[1] reflects the joint performance of all Australian governments (Federal, state and territory levels) through a high-level overview of performance in achieving key commitments.

It includes performance benchmarks and indicators from National Agreements covering health, school education, housing and homelessness, skills and workforce development, disability, and Indigenous reform.

Gathering Sources

The baseline year of 2008 was set, and the last update year is noted for each widget (individual section within the dashboard). Sources of information included:

- a variety of surveys,
- administrative collections, and
- censuses.

Much of the data used is also published in the Report on Government Services.

Where multiple data sources were available as appropriate measures for a benchmark or indicator, analysis and figures concentrated on the main measure (as agreed by jurisdictions).

Analysis

Assessment of performance in achieving key commitments varied based on Australian governments' agreement on benchmarks, timeframes or performance monitoring.

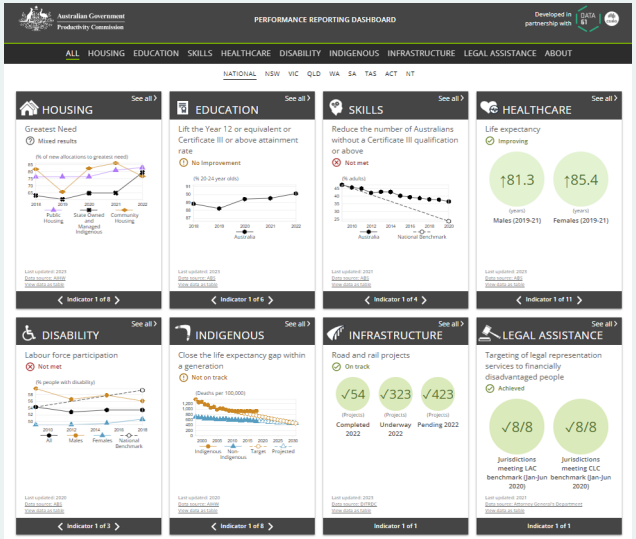
The analysis used a consistent model for assessing progress across each key commitment and widget. Agreed definitions were used as quick reference, and consistently applied across the dashboard regardless of filters used.

Communicate

Dashboards can present a wide variety of complex information side by side in a way that is easy to understand and compare. Dashboards should be tailored to the intended use, and can include information about needs, gaps and experiences, as well as performance and delivery metrics.

This dashboard demonstrates how seemingly unconnected information about a community can have links.

As there were multiple audiences for this dashboard, filter options were includedthat dynamically update the information for an area. This enables real-time analysis of information gathered, suiting the area of concern for the user accessing the dashboard.



1. Australian Government Productivity Commission - Performance Reporting Dashboard (d61.io)

The Immunisation Coalition used a heat map to help healthcare practitioners and the public to quickly assess the risks associated with COVID-19.

Project Objective

The Immunisation Coalition developed a useful tool for healthcare practitioners and the public to assess risks associated with COVID-19.

In collaboration with the University of Queensland, Queensland University of Technology and Flinders University, they developed a COVID-19 Risk Chart (heat map) to show estimated COVID-19 deaths per 10,000 cases by age, sex and vaccination status in Australia as of January 2022.

Gathering Sources

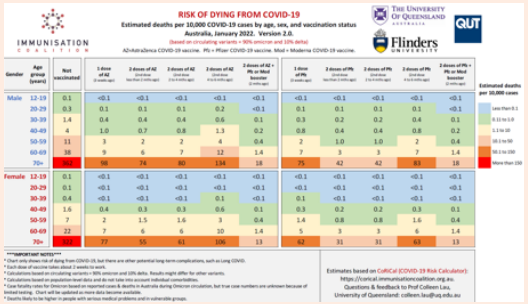
Multiple data sets were required to build the CoRiCal: COVID-19 Risk Calculator[1], which is the data source for this heat map. These included:

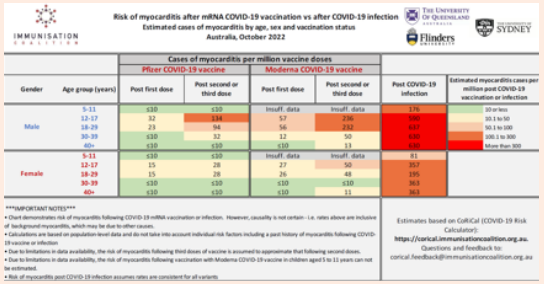
- State weekly data surveillance reports of age and sex distributions of COVID-19 cases in vaccinated and unvaccinated populations.
- Definitions of low, medium and high transmissions from the Australian Technical Advisory Group on Immunisation.
- Multinational network cohort study (Australia, France, Germany, Japan, Netherlands, Spain, UK, USA) from background incidence of myocarditis and pericarditis.
- Therapeutic Goods Administration reports on rates of myocarditis from COVID-19 vaccines in Australia.

Project Findings[1]

This heat map focuses on a few key areas across a range of indicators, to give a simplified snapshot of risk factors.

The clustering of colour from a heat map makes it easy to identify risk factors. In this case, the age of the citizen and their vaccination status were the most significant factors impacting the risk of dying from COVID-19.





The second heat map was developed to highlight the specific concern of developing myocarditis (inflammation of the heart muscle) from COVID-19 vaccines, showing increased risk for young men.

Communicate

The core principles of effective heat maps are:

1. Be consistent across you map(s) in colour, framing of factors and numbers used.
2. 'Red to Green' scales are most effective because we associate the colours with traffic lights. Make sure green = good and red = bad or you will confuse your audience.
3. Make sure that your image appropriately represents the data and insights your map should convey, and is not open to misinterpretation.

1. Covid Risk Calculator | Immunisation Coalition

Chapter 5 | Resources

To produce a service map that can answer your questions you need to consider three kinds of resources:

- Sources of information
- Tools to use
- Skills needed

The resources you will need will depend on the sources you want to use, and the tools and skills needed to collect, analyse and present insights.

The following chapter will dive into some of the considerations you need to select sources of information, tools and skills. Some examples of these have been included, with a difficulty rating to help you gauge what may be feasible within the capacity of your project and resources.

	Capability threshold	Sources of information	Methods	Tools	Skills
Scope / Definition		Sources of information will be classified as either quantitative (numerical) or qualitative (language-based insights)	Method choices will depend on what insights and outcomes you want from Service Mapping, and how you'll present them	Tool choices will be based on the kinds of data you'll analyse and the skillsets available for using more complex tools	Service Mapping can require diverse skills: • Data • Evaluation • Finance • Human systems
Beginner	*Using all resources that are readily available on hand, with no or minimal cost to implementation*	**Quantitative** Departmental data, data.gov.au, AIHW datasets, ABS Data services **Qualitative** Structured or unstructured interview, text or narrative analyses, observational data like behavioural studies	**Experiences** **Figures** ***Assumed capability to draw insights from pre-existing data sources e.g. dashboards, tables, interviews*	• National Map • ABS Maps • Community Insights Australia • NSW Trend Atlas • MS Excel	Existing Microsoft user (based on pre-existing government systems). All applications designed for mass useability, with proficient data analyst required to draw out insights and correlations
Intermediate	*Working collaboratively with agency teams who have the skills and resources, with minimal cost to implementation*	**Quantitative** Life course data asset, Vocational national Data Asset, National Health Workforce Dataset **Qualitative** HILDA survey data	**Experiences** **Figures** **Geographic** ***Assumed capability to employ pre-existing geospatial tools to visually reflect custom data sources e.g. community insights*	• PowerBi • Mapbox • Open Street Maps • QLIK • NVivo	• Data Analyst • Data Visualisation Specialist • UX Designer • Policy Lead
Advanced	*Targeted resourcing and funding to extend information sources, supported by specialist skillsets*	**Quantitative** PLIDA, BLADE, Linked Employee Database **Qualitative** Community and stakeholder engagement and collaboration; development of bespoke survey	**Experiences** **Figures** **Networks** **Geographic** ***Assumed technical expertise in geospatial or network analysis to represent multiple correlations and linkages between locations, users and providers*	• ESRI/ ArcGIS • Mapbox • Leaflet • D3 • R, Python	• Data Analyst • Data Engineer • Data Scientist • Geospatial Analyst

5.1 | Sources of information

Overview → Qualitative (context) → Quantitative (numbers) → National Data Assets

Information and data is available for your Service Map from a range of sources, some public and some which require a more detailed process to access.

There are different information needs or questions you may have depending on your Service Mapping project context. To answer these questions, it's important to use the best available evidence and knowledge to inform good decision-making. Taking an evidence-informed approach can help you integrate research evidence alongside practitioner expertise and the experience of people in need of the services.[1] When sourcing information, consider:

1. Collection

- When was thWhy was the data or information originally collected?
- e data collected and how often is the data updated?
- How is the data collected and what bias could there be from the collection method?
- Who owns the data and what confidentiality concerns are there?
- Is there a need to engage affected communities, for example, disability community?
- Do you need to consider Indigenous Data Sovereignty protocols?
- Is the data or information from a reliable source? *(Using consistent and appropriate methods to measure or track information, stable information source, consistent methods across conditions, subjects).*

2. Access

- Who owns the data source? Are they a reputable source of information?
- What access requirements are there? What time or costs are associated?
- What are the privacy and safety risks associated with this dataset or information?
- Is it appropriate for you to seek access to this dataset for your map?
- Is there alternative, public or published data you could use instead?
- Do you need a complete dataset, or can it be simplified or de-identified?

3. Use

- Are you looking for cause/effect relationships?

Then you will need to preference datasets from large, randomised and controlled studies where there is lower bias and low context.

- Are you looking to understand context to be able to generate a hypothesis of what is going on?

Then you will need to preference datasets or information from experts, cross-sectional studies and service users.

When in doubt undertake a Privacy Impact Assessment (PIA) to understand and mitigate the impacts from your data collection or use to the individuals it is about.

Remember that there are always trade-offs in datasets and information. If contextual detail is important, note that this will be associated with higher levels of bias. If causality is important, then there will be trade-offs associated with the sources obtained. Triangulating your evidence sources can help manage risks from these trade-offs.

Qualitative data is interpretation-based, descriptive, and relating to language, helping us to understand why and how certain behaviours have happened.

Qualitative data is any data collection which generates narrative or non-numerical information. Qualitative data requires the relevant skills and expertise to analyse and must be carefully considered to limit assumptions and bias in the analysis and representation of the data. Many qualitative responses are based on 'open' or 'closed' questions which guide the length and type of response. Questions must be carefully worded to limit bias and be sensitive to stakeholder backgrounds.

1. Types of collection

- Verbal collection such as structured or unstructured interviews

Structured interviews involve asking the same set of specific questions to every stakeholder, whereas unstructured interviews have no set questions

- Textual or narrative formats such as reports, letters, submissions or free-text questionnaire or survey responses
- Service user or community feedback
- Observational and behavioural studies

ABS defines qualitative data as data collected as a categorical variable, and quantitative data as data collected as numerical variables.

2. Analysis

- Content analysis systematically analyses text to identify patterns and trends
- Narrative analysis interprets stories to understand feelings and behaviours
- Thematic analysis identifies patterns and themes in data
- Grounded theory generates hypotheses from the data
- Discourse analysis to understand socio-psychological characteristics

Topic modelling

Depends on a range of factors, including the aim of collection, completeness of data and practical constraints. Choices concerning the sample need to be transparent and explicit.

3. Examples

- Household, Income and Labour Dynamics in Australia (HILDA) Survey

Longitudinal study of 17,000 Australians a year for their lifetime, and gathers information on household and family relationships, income and employment, and health and education.

- Basic Survey Design – ABS

This resources steps through how to design and conduct a custom survey, including approaches to open-ended questions, sampling and analysis.

Example - Key Statistics[1]

- 10% of Indigenous families went without meals
- 13% of new humanitarian migrants could not afford housing payments in time
- More than 12% of all Australians have trouble paying utility bills on time because they are short of money

1. Financial Hardship in Australia, National Centre for Longitudianl Studies, 2014, data-highlight-no-1-2014-financial-hardship_0.pdf (dss.gov.au)

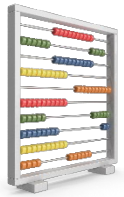
Quantitative data is numbers-based, countable, or measurable, helping us understand concepts like how many, how much, or how often something happens.

Quantitative data refers to numerical data which can be analysed using statistical methods. Quantitative data can be used to measure variable(s) and establish relationships between variables. It is usually easier and quicker to collect quantitative data than it is to gather qualitative feedback, making it an important data collection tool for quick, reliable and evidence-based insights.

1. Types of collection

Quantifiable results can be generated from yes/ no questions, ranking scales, rating matrices, and other quantitative question types, which can be gathered from:

- Surveys or questionnaires
- Interviews
- Behavioural observations, including participant choices and trends
- Document reviews and secondary sources
- Interaction or engagement metrics, such as data collected from user interactions with a digital service



2. Analysis

Analysis is highly dependent on the scope and purpose of the collection:

- Statistical analysis (percentages, mode, median and proportion)
- Causation and correlation analysis
- Time-series analysis
- Sampling methods

Sampling is an effective way of analysing large data sets, including; simplified and stratified random sampling, cluster sampling and systematic sampling.

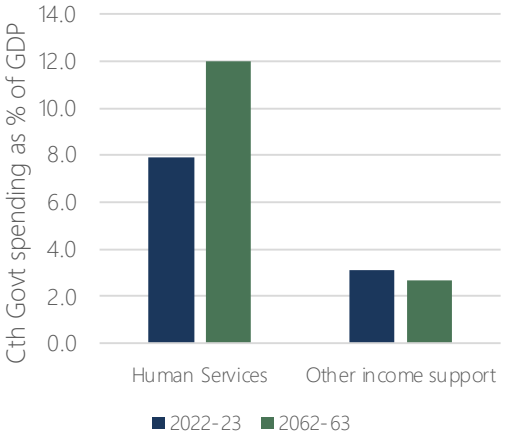
ABS sample size generator

3. Examples

- Australian Census

The census is a longitudinal survey which captures and analyses quantitative data for the entire Australian population to generate aggregated trends and insights. The ABS provides a range of tools to search the data and provide both aggregated and microdata sets.

Example[1]



Quantitative and qualitative data are often used to complement each other and strengthen hypotheses, inform policy and program design, and evaluate performance and stakeholder sentiment.

1. Australian Government, 2023, Intergenerational Report 2023: Australia's future to 2063

National Data Assets

A range of national data assets are available or in development that could be used as sources of information for Service Mapping.

	Personal Level Integrated Data Asset (PLIDA)	Business Longitudinal Analysis Data Environment (BLADE)
Purpose	PLIDA is a secure data asset combining information on health, education, government payments, income and taxation, employment, and population demographics (including the Census) over time.	BLADE is an economic data tool combining tax, trade and intellectual property data with information from ABS surveys to provide a better understanding of the Australian economy and businesses performance over time.
Owner	Australian Bureau of Statistics	Australian Bureau of Statistics
Features	PLIDA provides whole-of-life insights about various population groups in Australia, such as the interactions between their characteristics, use of services like healthcare and education, and outcomes like improved health and employment.	The current BLADE asset contains data on all active businesses from 2001–02 to 2018–19. For more information, you can see a full list of the BLADE data inclusions and legislation.
Access	Timeframes for access can be lengthy given strong privacy protections and multi-step data governance processes for the assets which include custodian by custodian approvals. Pre-requisites include completion of Safe Researcher training and detailed project descriptions including proposed research question(s), statistical methods and key variables. The first step is to contact ABS Data Services via data.services@abs.gov.au. They will discuss your project requirements and data options and provide an Integrated data project proposal template as each data package is specifically integrated, engineered and curated.	

National Data Assets

A range of national data assets are available or in development that could be used as sources of information for Service Mapping.

	Vocational National Data Asset	National Disability Data Asset (NDDA)
Purpose	The national VET dataset captures vocational education and training (VET) occurring across Australia. VET data is collected for all nationally recognised training across Australia. It includes: • Data collected from students when they enrol • Apprentice and trainee data • Student results • Survey responses • Funding data	The National Disability Data Asset (NDDA) will bring together de-identified information from different government-held data collections about Australians with disability and without disability. This will help to better understand the experiences of people with disability. The National Disability Data Asset is currently being developed and is due to be operational by mid-2024. The asset was designed collaboratively with the disability community, researchers and all nine governments
Owner	The owner of the National Disability Data Asset are the Disability Reform Ministerial Council.	The Australian Bureau of Statistics (ABS) and the Australian Institute of Health and Welfare (AIHW) are partnering to design, develop and deliver the technical aspects of the asset. The NDDA project is being led by the Australian Government Department of Social Services (DSS) and is overseen by the Disability Reform Ministers Council.
Features	A variety of data products ranging from pre-processed data in a VET statistics dashboard, a DataBuilder for users to construct their own tables, VOCSTATS a more advanced table builder and full research unit record datasets available via an application process.	The asset will provide more information about needs, services and outcomes for people with disability. This will help better support people with disability, their carers and the community.
Access	Accessing VET data (ncver.edu.au)	The asset is due to come available for use in mid-2024 with additional data added over the coming years;

National Data Assets

A range of national data assets are available or in development that could be used as sources of information for Service Mapping.

	Linked Employer-Employee Database (LEED)	Administrative Data Snapshot of Population and Housing (ADS)
Purpose	The LEED brings together employer information (from the Business Longitudinal Analysis Data Environment) and employee information (from Personal Income Tax data) into a linked dataset. The linked dataset is comprised of a person file, a job file, and an employer file. Employed persons are linked to employers via jobs. A person can have a number of jobs throughout the year with one or many employers, some of which may be held concurrently. LEED is released annually and covers consecutive financial years starting from 2011–12.	The ADS is a new, experimental release of population and housing data built from administrative data sources. Like the Census, the ADS provides a snapshot of Australian people and houses at a point in time but has a smaller and different set of person and housing characteristics meaning it is more limited than the Census. The current release is focused on a mid-2021 point in time.
Features	LEED enables detailed analysis of the Australian labour market through 3 lens' and at small geographic levels: • Jobs – 18–20 million jobs held each year in Australia • Persons – insights on topics such as how many people are working multiple jobs and the types of jobs • Employers – it provides further insights into drivers of firm-level performance such as key demographics of employees.	ADS provides a valuable complement to Census data: • holistic count of people and houses and understanding the differences highlights the strengths and weaknesses in both data sources • new data on population and housing that isn't available via the Census, e.g. movements between Census dates and some new measures of income and housing activity. • demonstrates potential to provide Census-like data more frequently than the 5-yearly Census.
Access	Access and services | Australian Bureau of Statistics (abs.gov.au)	The first release of the ADS is via a set of population data cubes and a set of housing data cubes, that are available for downloadable from the ABS website.

National Data Assets

A range of national data assets are available or in development that could be used as sources of information for Service Mapping.

	National Health Workforce Dataset	Household, Income and Labour Dynamics Asset (HILDA)
Purpose	The Australian Health Practitioner Regulation Agency (AHPRA), in conjunction with the national boards, is responsible for the national registration process for 15 health professions. The data from this annual registration process, together with data from a workforce survey that is voluntarily completed at the time of registration, forms the National Health Workforce Dataset (NHWDS). Data in the NHWDS includes demographic and employment information for registered health professionals.	The Household, Income and Labour Dynamics in Australia (HILDA) Survey is a nationally representative longitudinal study of Australian households which commenced in 2001. Funded by the Australian Government Department of Social Services (DSS), the Survey is managed by the Melbourne Institute of Applied Economic and Social Research (MI) at the University of Melbourne. HILDA provides longitudinal data on the lives of Australian residents on a wide range of aspects of life. This includes: • family dynamics • economic well-being • subjective well-being • labour market dynamics.
Owner	Department of Health and Aged Care	Department of Social Services
Features	Users can build their own customised tables for different professions, geographic regions and/or different demographic and health workforce variables, including employment, role, area and setting, years in the workforce, and hours worked.	HILDA's primary objective is to support research questions falling within three broad and inter-related areas of income, labour market and family dynamics. Participants are selected and interviewed over subsequent years to create a longitudinal picture of the lives of Australians, and how this changes over time.
Access	The Health Workforce Data Tool is available to the general public and allows access to different Health Workforce Datasets including the National Health Workforce Dataset.	Data is available to approved researchers from government, academic institutions and non-profit organisations. Data can be accessed through the dataverse.

5.2 | Tools to use

For mapping → For analysis → For communication

Use an Issues Tree to break down a problem and define your key question.

What is it?

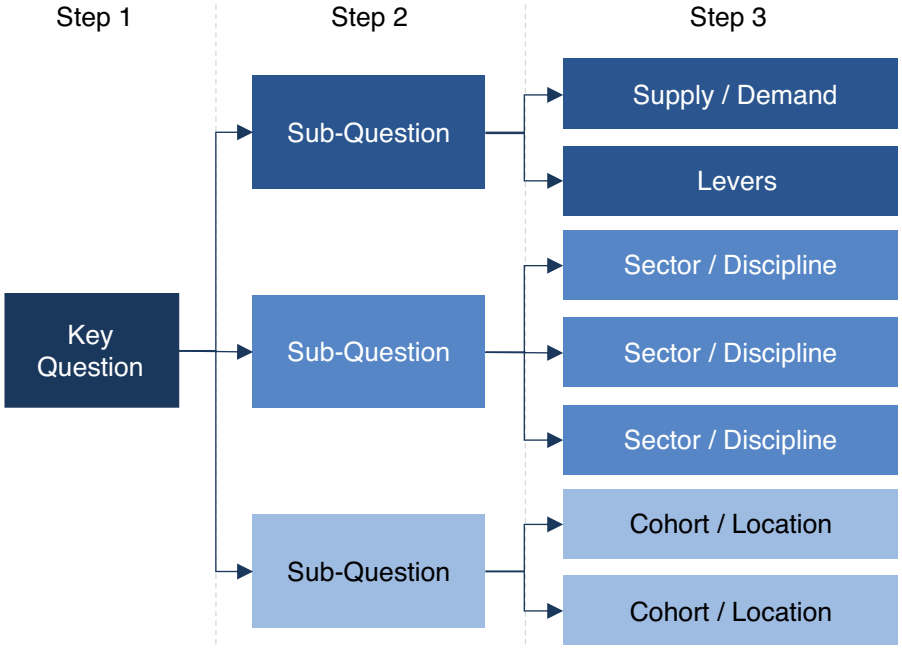
An issues tree is a structured way to break down problems.

Issues trees give you a clear and systematic way of looking at the problem you need to solve. They help you break down a complex problem into smaller, more manageable chunks.

When do we use it?

Issues trees are helpful in the early stages of project set up to break down a problem and consider all the different aspects.

Issues trees help teams to structure their projects. Questions can be broken down into workstreams for individuals to take forward.



What will you need?

Space
e.g. sticky notes & large wall, online (e.g. Miro), white board

3+ people

1-2 hours

What is the process?

Step 1 | Define your problem question
Try to make your problem question as clear as possible and define the terms your are using.

Step 2 | Break the problem into sub-questions
What questions do I need to answer in order to answer the overarching problem question?

Step 3 | Refine the sub-questions or sub-issues
Ensure the sub-questions are MECE (mutually exclusive, collectively exhaustive); they should not overlap and there should not be any gaps.

Step 4 | Iterate and Evaluate

Step 5 | Break down into a workplan (optional)
Use the issues tree to structure research and analysis and allocate responsibilities.

For spatial maps, choosing the right tool for your intended purpose is important to deliver a quality Service Map that tells a compelling story.

There are a range of publicly available programs which can be leveraged to create diverse Service Maps in a timely and resource efficient way with existing and readily available data, depending on the functionality required.

Comparative features	ESRI/ ArcGIS	Power BI	National Map	Comm. Insights Aust	QLIK	Open Street Map	Mapbox	ABS Maps	Leaflet
Do govts. currently use the platform?	✓	✓	✓	~	✗	✗	✗	✓	✗
Is training required to use the platform?	✓	✓	~	✗	✓	✗	✗	~	✗
Is the platform a map interface?	✓	✗	✓	✓	✗	✓	✓	✓	✓
Can the platform layer multiple data sets?	✓	✓	✓	✓	✓	✓	✓	✗	✓
Does the platform have a data insights function?	✗	✓	✗	✓	✓	✗	✗	✗	✓
Are there size/type limitations on data uploads?	✓	✓	~	✓	✓	✓	✓	✓	✗
Is the data open access?	✓	~	✓	✓	✗	✓	✓	✓	✓
Can individuals upload data?	✓	✓	✓	✓	✓	✓	✓	✗	✓
Are there costs associated with platform use?	✓	✓	✗	✓	✓	✗	✓	✗	✗
Can I add extra features, notes and pins?	✓	~	✓	✓	✓	✓	✓	✗	✓
Is it compliant with govt. licensing agreements?	✗	✗	✗	✓	✓	✓	✓	✗	✓
Are the underlying maps kept up-to-date?	✓	~	~	✗	✓	~	~	~	~
Can data be exported out of the platform?	✓	✓	✓	✓	✓	✓	✓	✗	✓
Can I share access outside of govt. ICT systems?	✗	✗	✓	✓	✓	✓	✓	✓	✓

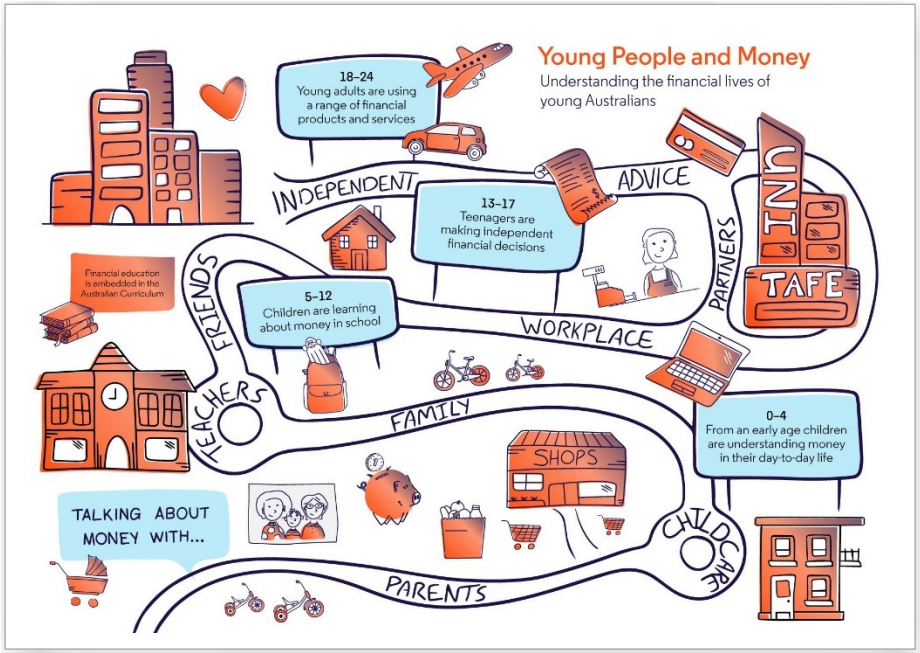
✓ yes ~ partial ✗ no

Use a journey map to demonstrate and understand the interactions of services, user needs and experiences to highlight pain points.

What is it?

Journey mapping represents the interactions and milestones towards an outcome a 'user' experiences by visualising their journey on a map. This allows us to build an understanding of user motivations, goals and needs.

Journey mapping allows us to show the experiences of users in anticipation of a project or intervention. It is most often used to identify pain points (current state) or articulate a new system design (future state). You can also use journey mapping to represent a 'day in the life' map, or articulate service blueprints and circular models.



What is the process?

Step 1 | Set clear objectives
Are you highlighting pain points, understanding perspectives and experiences, or mapping interactions with one or more services?

Step 2 | Set your perspective
What perspective is your map going to show? A single user? An organisation? A system? Is it focused on an issue or a topic?

Step 3 | Define the users
Profile your users and develop personas with goals and backstories. Try to integrate the experiences of those contributing to the journey map to build your persona.

Step 4 | Map all touchpoints and elements
Identify the relevant events, experiences and actions between the user and service(s) over the timeline of the journey.

Step 5 | Chart a sentiment line
Identify pain points and chart the emotional experiences and changes with each touchpoint/element in the journey. This step is vital if you want to create sympathy with your intended audience.

Step 6 | Reflect and refine
Don't expect your journey map to be perfect the first time through. The process of building a journey map will highlight areas you haven't considered and information you need to gather. Try picturing yourself on the journey you have mapped.

Journey maps can be anywhere from simple and abstracted, to detailed analytical breakdowns – adapt to the scale you need.

National Map

Method

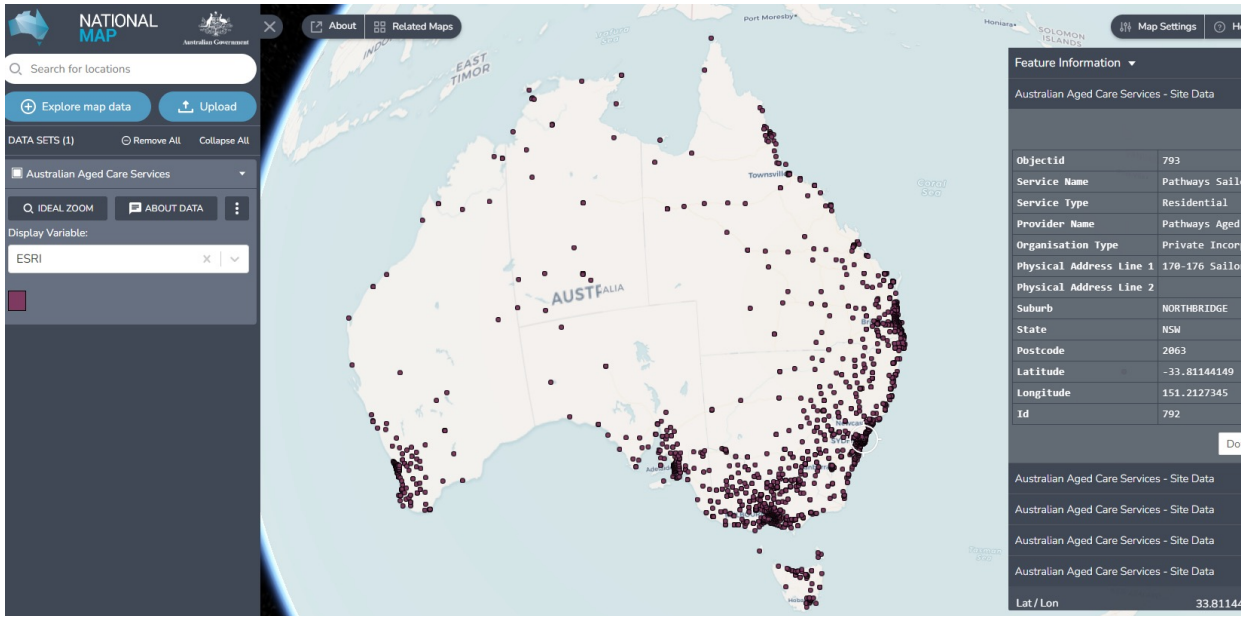
Background
NationalMap is an online map-based tool to allow easy access to spatial data from Australian government agencies.

Purpose
Leverage and combine geocoded information and market-based networks to display information visually on cartographic maps and identify market gaps.

Ideal Methods
Geospatial
Functional Network Analysis

Key Features

- Provide easy access to authoritative and other spatial data to government, business and the public
- Facilitates the opening of data by federal, state and local government bodies
- Provides an open framework of geospatial data services that supports commercial and community innovation
- Different visualisations (base maps, 2D, 3D, Terrain)



Limitations

- Provide easy access to authoritative and other spatial data to government, business and the public
- Facilitates the opening of data by federal, state and local government bodies
- Provides an open framework of geospatial data services that supports commercial and community innovation
- Different visualisations (base maps, 2D, 3D, Terrain)

Other:

Link
https://nationalmap.gov.au/about

Cost
No Cost.

Data Governance
When you access data, you are typically accessing the data directly from the government department or agency who are the custodians of that data.

ABS Maps

Method

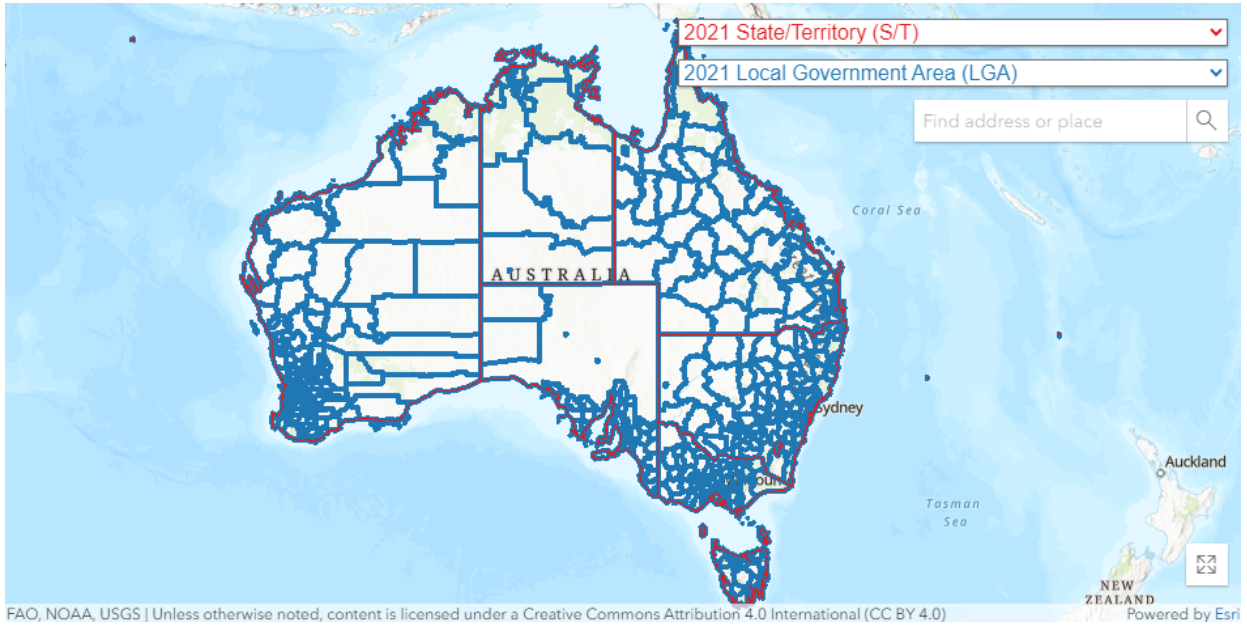
Background
ABS Maps is an interactive map that displays available ASGS boundaries from 2011–2021 to allow users to make informed comparisons and decisions regarding Australian city, suburb, regional, and local government boundaries.

Purpose
Combines ABS statistics to create a cartographic map of ASGS boundaries.

Ideal Methods
Geospatial

Key Features

- Map jurisdiction lines
- Can refine by two boundary layers (including state, statistical regions, indigenous regions, LGAs, remoteness areas etc.)
- Provides overview of ASGS Classifications, latitude, and longitude
- Download functionality



Limitations

- Limited to two data layers
- Most current data set limited to 2021 reducing utility for contemporary comparisons
- Cannot upload or compare own data sets

Other:

Link
https://maps.abs.gov.au/

Cost
Cost varies depending on the types of data you require for the map.

Data Governance
The ABS is a custodian, steward and user of public data, and is committed to building and maintaining public trust in an increasingly complex data environment.

Community Insights Australia

Method

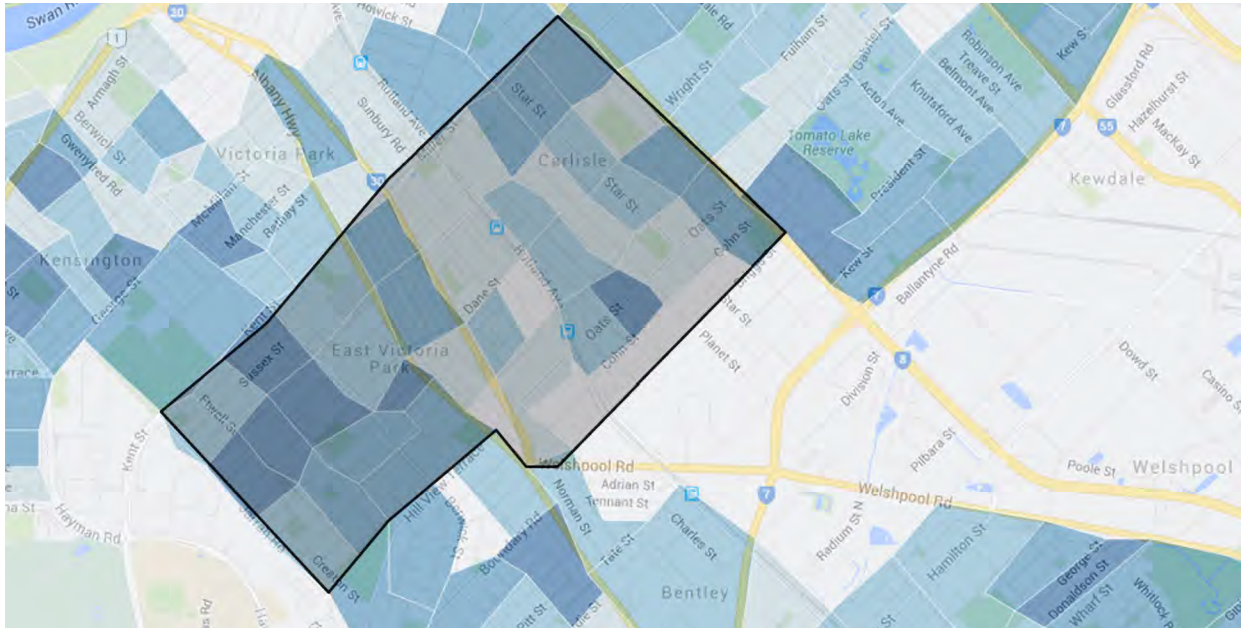
Background
Maps over 500 social indicators to provide location-based information for location-based decisions. The program maps community services, programs or properties at a neighbourhood level with the ability to overlap mapped assets - noting it is targeted at the community support services you have data on.

Purpose
Visualises geospatial information on digital maps and tracks key statistics through dashboard summary feature. Access to community data for social indicator comparisons.

Ideal Methods
Geospatial
Functional Network Analysis
Tables and Dashboards

Key Features

- Upload own data for comparison against mapped social indicators
- Generate an automated profile report including time series, graphing, charts
- Matrix function to simultaneously compare multiple geographic locations and social indicators in the same dashboard



Limitations

- No ongoing technical assistance – 1 day training workshop included in subscription (20 people)
- Functional network analysis is dependent on the availability and quality of data on the mapped social indicators
- Geospatial mapping is limited in its ability to present service usage, accessibility, or effectiveness

Other:

Link
https://communityinsightaustralia.org/

Cost
Paid subscription (AUD $20,000 p.a./organisation).

Data Governance
The platform operates as a social enterprise, with data traded on the site via organisational and individual uploading. The data is open source.

Open Street Map

Method

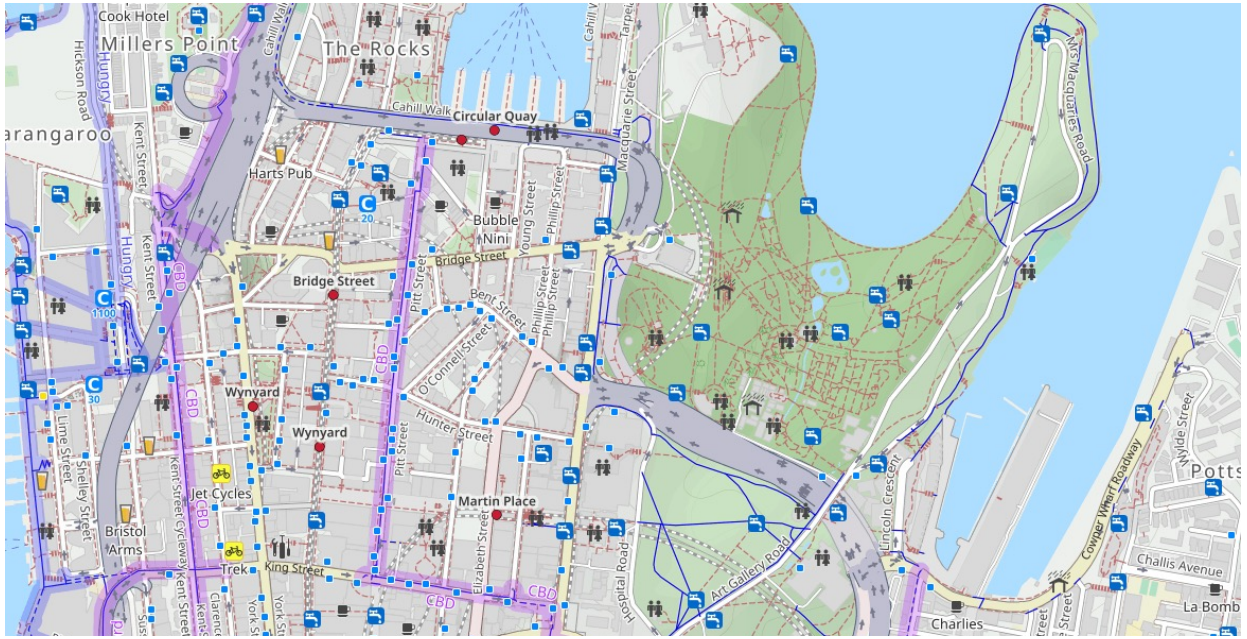
Background
Provides map data as built by a community of users that contribute and maintain local knowledge and data on roads, trails, cafes, railway stations etc. It is an open data set and its contributors are credited with any published products.

Purpose
Combines community geospatial data to map cartographic visualisations.

Ideal Methods
Geospatial

Key Features

- Be exported as a base map for other GIS systems, such as ESRI and Leaflet
- Different visualisation options with map legend (e.g. standard, transport, humanitarian etc.)
- Pin locations and add notes (notes are publicly available to other users)
- Search for area features (e.g. nearby social facilities, structures, natural/protected areas)



Limitations

- No live technical support – FAQ articles and question-and-answer forum
- Cannot easily import own data (data is merged with existing mapping and becomes publicly available)
- Updates to map data are dependent on contributions from community users

Other:

Link
https://www.openstreetmap.org/#map=5/-28.153/133.275

Cost
No Cost.

Data Governance
OSM is distributed under an Open Database Licence, meaning data may be incorporated under OSM without need for further waivers.

Mapbox

Method

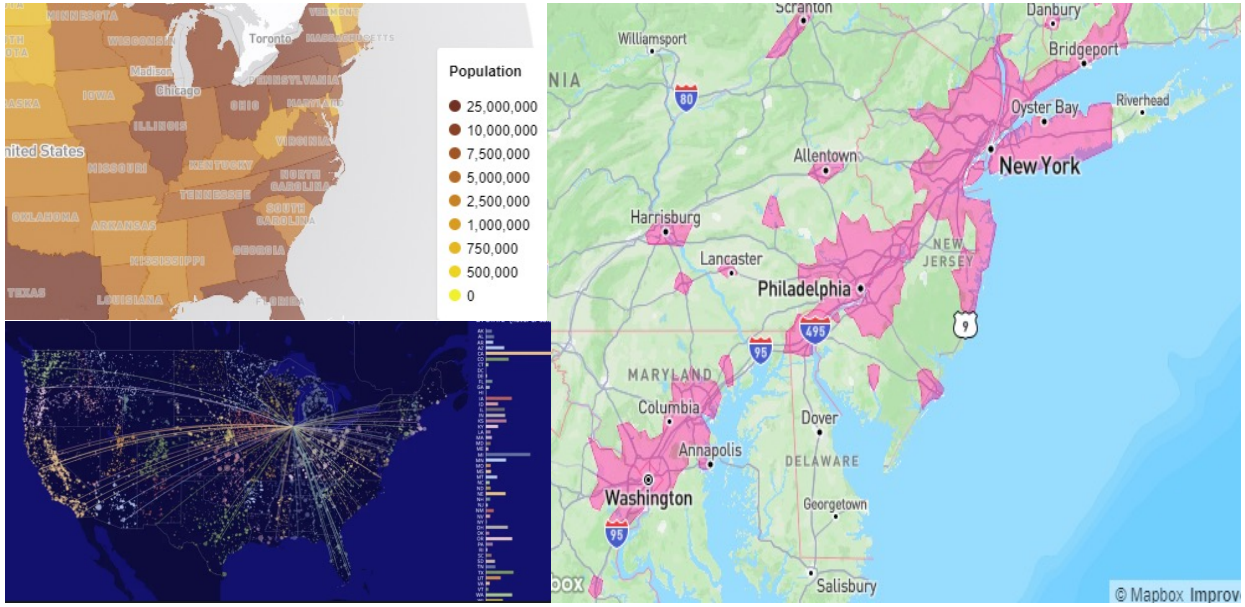
Background
Mapbox is a global location platform. Using real-time data the platform enables interactive rendering of geospatial information into cartographic visualisations.

Purpose
Combine own and public geospatial data to create cartographic, heat mapping, and interactive visualisations.

Ideal Methods
Geospatial

Key Features

- Upload own data.
- Different map visualisations (e.g. standard, 3D modelling, topography, etc.).
- Map layer data sources (e.g. population heat mapping, legislative, postal, statistical boundaries, traffic, weather radar etc.).
- Add makers, icons, popups, animation, videos inbuilt to map.
- Ongoing paid technical support (email only).



Limitations

- Data uploads cannot exceed 300MB and 20 uploads per month.
- Quality/utility of map layers (e.g. population) are dependent on availability of data for specific zones.

Other:

Link
https://www.mapbox.com/

Cost
Free (light) version and Paid subscription (contact sales).

Data Governance
Mapbox relies on OSM as a main source of data, which means that legal uses of other data must meet Creative Commons Zero and public distribution requirements.

Leaflet

Method

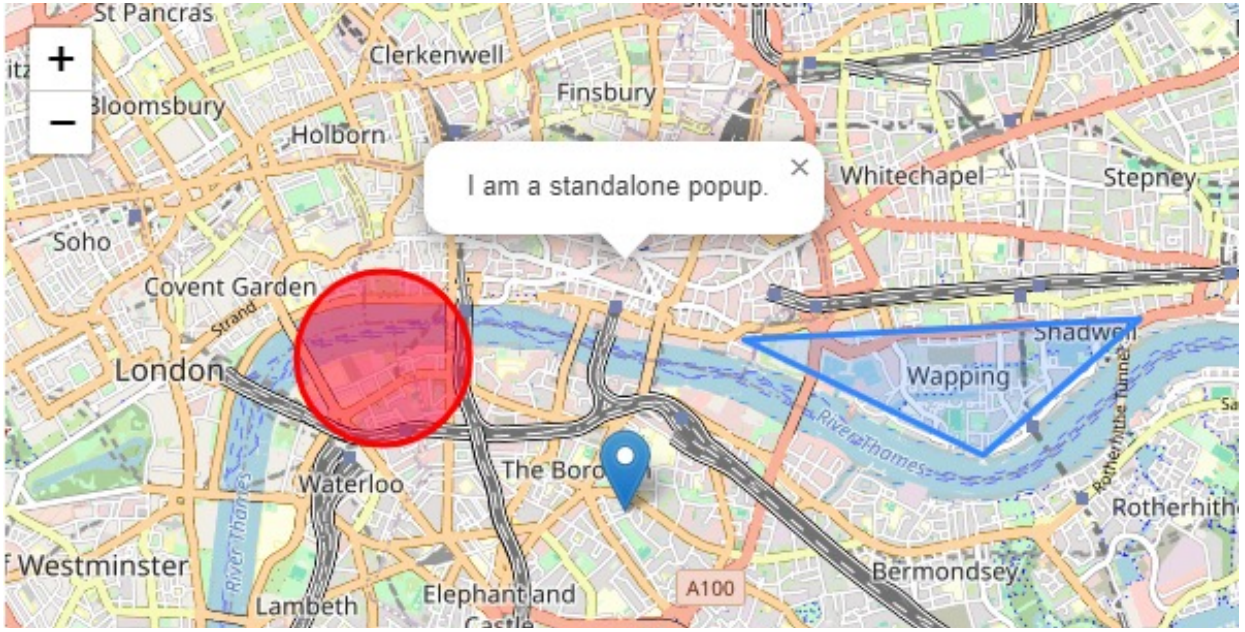
Background
Leaflet is an open-source JavaScript library used to build web mapping applications. First released in 2011, Leaflet supports most mobile and desktop platforms, supporting HTMLs, CSS3, and GeoJSON.

Purpose
Designed for developers without a GIS background to display tiled web maps, hosted on a public server.

Ideal Methods
Geospatial

Key Features

- Customisable API to tailor and style maps based on individual and organisational preferences
- Load feature data from GeoJSON files, style it, and create interactive layers
- Load vector data and images as layered tiles on an existing map
- Core support options for multiple GIS standard formats, with others supported through plugins to enable interoperability



Limitations

- Requires some level of experience with JavaScript and code
- Large file sizes, including expansive location pins affect the quality of Leaflet and capacity to export maps
- Unable to support projections and pop-up analysis functions to enable quality insights

Other:

Link
https://leafletjs.com/

Cost
No Cost.

Data Governance
Leaflet relies on the contributions of more than 600 contributes, which supports maintenance and updates every 6 months.

ESRI/ArcGIS

Method

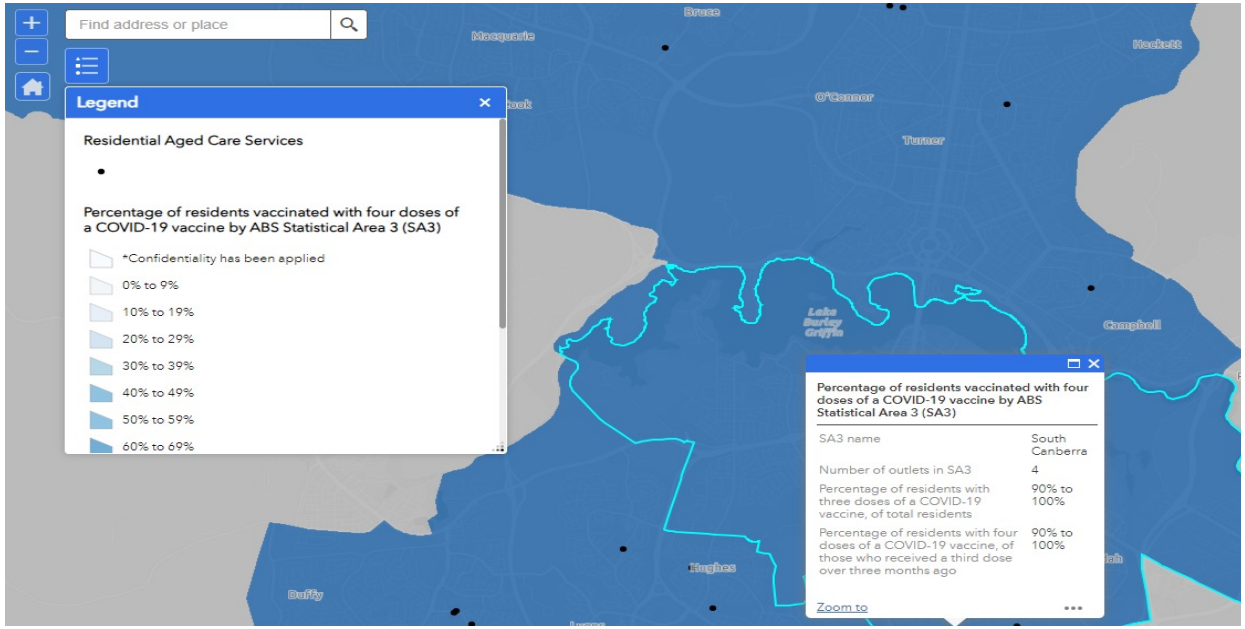
Background
ESRI is the global market leader in geographic information system (GIS) software, location intelligence, and mapping. Their software – ArcGIS (Enterprise, Pro, Online) – offers unique capabilities and flexible licensing for applying location-based analytics.

Purpose
Combines geocoded information to visualise digital maps and heat map various social indicators.

Ideal Methods
Geospatial
Heat Mapping

Key Features

- Create both interactive and static maps.
- Automatically draw in live data from various websites/data sources (including the ABS) and update as changes occur in the source data.
- Analyse data and provide insights.
- Has the functionality to zoom in/zoom out depending on the granularity of focus.



Limitations

- ArcGIS can be expensive, especially for organisations with large user bases or specific needs.
- Due to the extensive features of ArcGIS, there is a steep learning curve for new users to the system.
- Working with large datasets in ArcGIS may require significant computing resources, which are restricted or siloed within government agencies.

Other:

Link
https://livingatlas.arcgis.com/en/home/

Cost
Paid subscription (contact sales). Alternatively, QGIS is the free version of ArcGIS, however there will be limited functionality.

Data Governance
During COVID-19, a team of 3 in the federal Department of Health created more than 18,000 interactive maps to inform decision making, provide early warning systems for outbreaks and update the public.

Power BI

Method

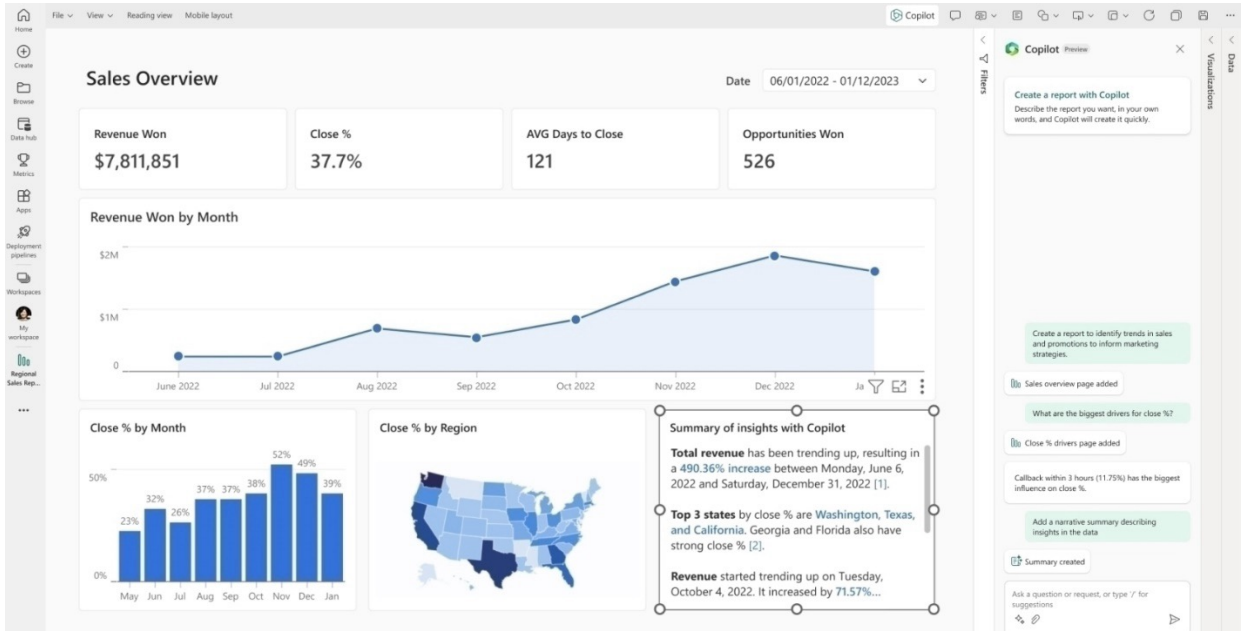
Background
ESRI is the global market leader in geographic information system (GIS) software, location intelligence, and mapping. Their software – ArcGIS (Enterprise, Pro, Online) – offers unique capabilities and flexible licensing for applying location-based analytics.

Purpose
Combines geocoded information to visualise digital maps and heat map various social indicators.

Ideal Methods
Geospatial
Heat Mapping

Key Features

- Centralise your data in a trusted and secure hub.
- Uncover actionable insights with visuals through use of AI in asking for what you need.
- Translate insights into impact across time, including real time.
- Capability to share and collaborate on dashboards and tables across teams.
- Data transformation to clean, reshape and combine data from multiple sources.



Limitations

- Limited data sharing – can only be shared with users with the same email domain or listed in your Office 365 tenant.
- Limitations in importing large data sets (greater than 20,000–30,000 rows).
- Aggregated figures may not pick up outliers.

Other:

Link
https://powerbi.microsoft.com/en-au/

Cost
Paid subscription (contact sales).

Data Governance
Enables users to specify the region of data storage (including Australia). Power BI is the predominant computer software used across the NSW Government.

QLIK

Method

Background
Qlik supports data integration and analytics. It allows for uploading, exploring, and sharing data insights from a singular platform.

Purpose
Visualise key information and statistics through key figures, graphs, and tables on an interactive centralised dashboard. Use AI tools for generating insights and creating predictive models.

Ideal Methods
Tables and Dashboards

Key Features

- Interactive Tables and dashboards for multiple layers of data.
- AI analytical tool for generating insights.
- Generate predictive models which update alongside data.
- Create notes and discussion threads for selected data.

Limitations

- Limited visualisations for data due to a lack of basic charts and diagrams.
- Inflexible data extraction capabilities, which is compounded when using large datasets.

Other:

Link
https://www.qlik.com/us/

Cost
Paid subscription (contact sales).

NVivo

Method

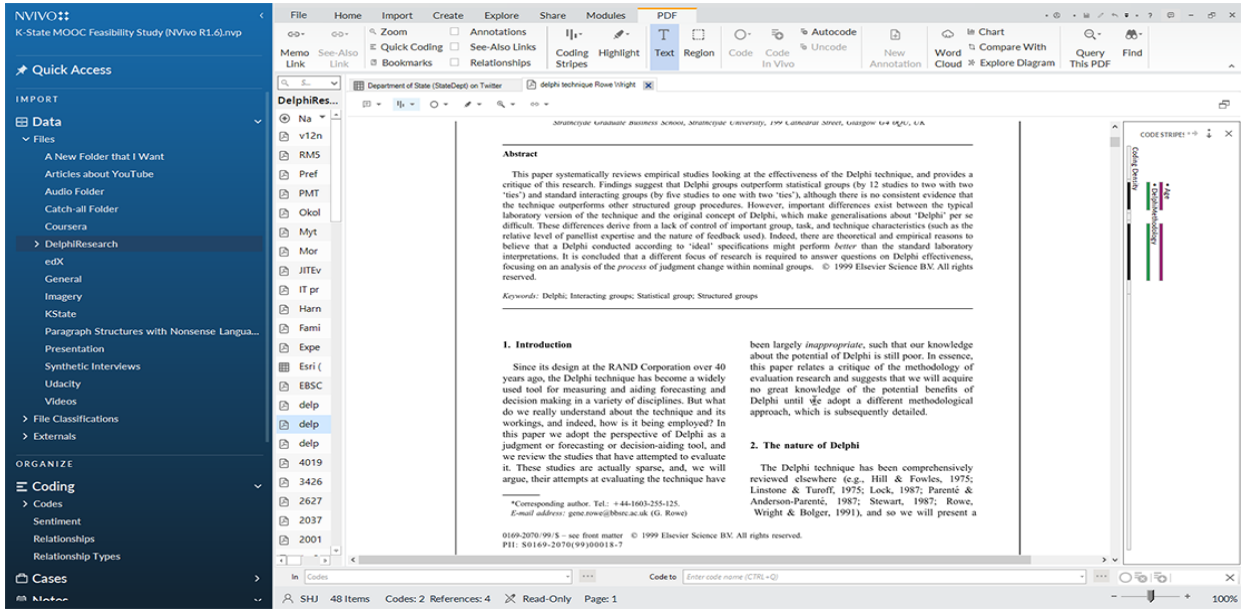
Background
NVivo is a computer-assisted qualitative data analysis software, which is intended to help users organise and analysis non-numerical or unstructured data.

Purpose
NVivo is software that supports qualitative and mixed methods analysis of textual and audio-visual data source.

Ideal Methods
Qualitative analysis, specifically coding and sorting qualitative inputs.

Key Features

- Nvivo's workspace is based on Microsoft user interface guidelines.
- Import, create and edit a wide range of data sources, including word, excel and audio files.
- Code material using a wide range of techniques, including dragging and dropping and paragraph coding.
- Link ideas, themes and information to note comparisons or lay to lay a trail of evidence.



Limitations

- The application requires a lot of time to understand and operate effectively to harbour data deemed necessary for a qualitative analysis.
- The application is expensive to use on an ongoing basis.
- Does not provide a data interpretation function.

Other:

Link
https://lumivero.com/product/nvivo-14/

Cost
Between $166.00 – $2,853.00, depending on use-case. Some research institutions and universities have organisational licences.

Data Governance
Data is managed and controlled by individual users of the platform, with access controls used to limit visibility and access to data that is created in internal folders.

NSW Trend Atlas

Method

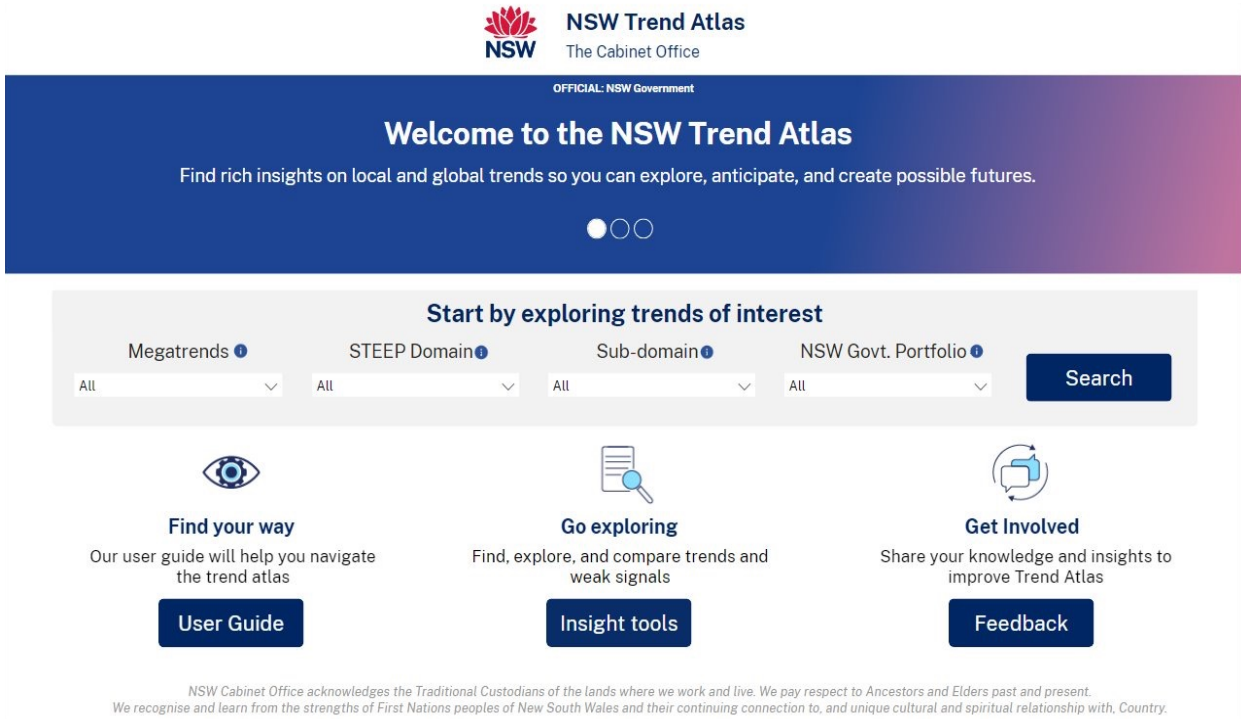
Background
Developed by the NSW Cabinet Office, the NSW Trend Atlas is an interactive, strategic intelligence platform, that helps users apply strategic foresight methods to policy, planning and service design.

Purpose
The NSW Trend Atlas comprises a range of tools to help users explore local, national and global patterns of change within their domain and anticipate factors that may drive future change within the system.

Ideal Methods
Qualitative analysis, trend analysis

Key Features

- Search for signals of change and trends that may impact services.
- Undertake horizon scanning, using a collection of more than 6000 collated articles and news repositories.
- Visualise the relationships between different trends to understand potential feedback loops within a system.
- Obtain access to more than 1400 reports and data points, from government, academia and industry.



The pillars of strategic foresight

Megatrends:
Global scale and transformative developments that are widely seen as driving structural change to society.

Trends:
An observed pattern of change over time.

Weak Signals:
An indicator of an issue that could emerge and become significant but does not have sufficient information or lacks duration to assess trajectory.

Other:

Link
https://www.digital.nsw.gov.au/article/nsw-trend-atlas-planning-for-unknown

Cost
No costs.

Data Governance
Managed through SectorLink, with agencies outside the institutional ICT architecture of the NSW government required to obtain access agreements to receive access permissions.

Consider presenting your insights in either a placemat or report, depending on the level of detail required, and the preferences of your key audiences.

Placemats

One-page documents to communicate concise messages in a visual and engaging format.

Placemats are used to cut through clutter, facilitating quick comprehension for your audience so they can understand the context, key decisions and next steps.

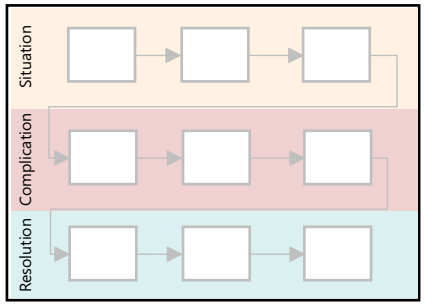
Reports

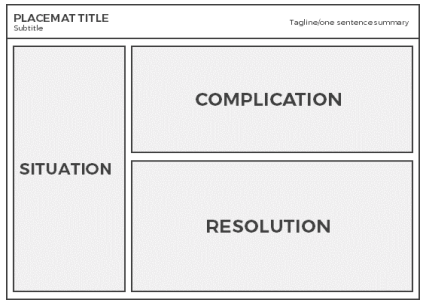
Longer documents with a compelling narrative for communicating detailed insights.

A report with a strong storyline provides a sense of structure and logic behind your insights, outlining a rationale to help your audience arrive at a decision that feels sensible, informed and transparent.

1. Plan your structure

Include the situation, complication and resolution of an issue, outlined in a compelling narrative.





2. Consider the whole

Think about the layout and order of information as a whole package or story.

3. Keep things consistent

Stick to a colour theme, keep your fonts consistent and group relevant information.

4. Keep it clear and clean

Don't forget the importance of 'white space' for improved readability and to focus attention.

5.3 | Skills needed

There are a variety of skills needed to authorise, build and analyse Service Maps.

Core Areas	Critical Skills	Job Roles and Resources
There are four key skill areas you may need to draw from.	Understand which skills you will need to develop, understand and present your service map.	Understand who has the skills you need, where to find them and how you might build your own skills in these areas.
Data	• Cleaning, making useful • Analysis • Governance navigation • Visualisation	Data job role personas | Australian Public Service Commission (apsc.gov.au)
Evaluation	• Program logic • Outcomes frameworks • Performance measurement • Monitoring frameworks	Commonwealth evaluation units | evaluation.treasury.gov.au Who evaluates | evaluation.treasury.gov.au
Finance	• Market analysis • Grants administration • Financial management analysis • Financial performance	APS Accounting and Finance Profession Resources | Department of Finance
Human systems	• User journeys • Systems mapping • Human centred design • Social research/engagement	Human Centred Design 101 | Australian Public Service Academy (apsacademy.gov.au) Human-centred design | Digital Profession