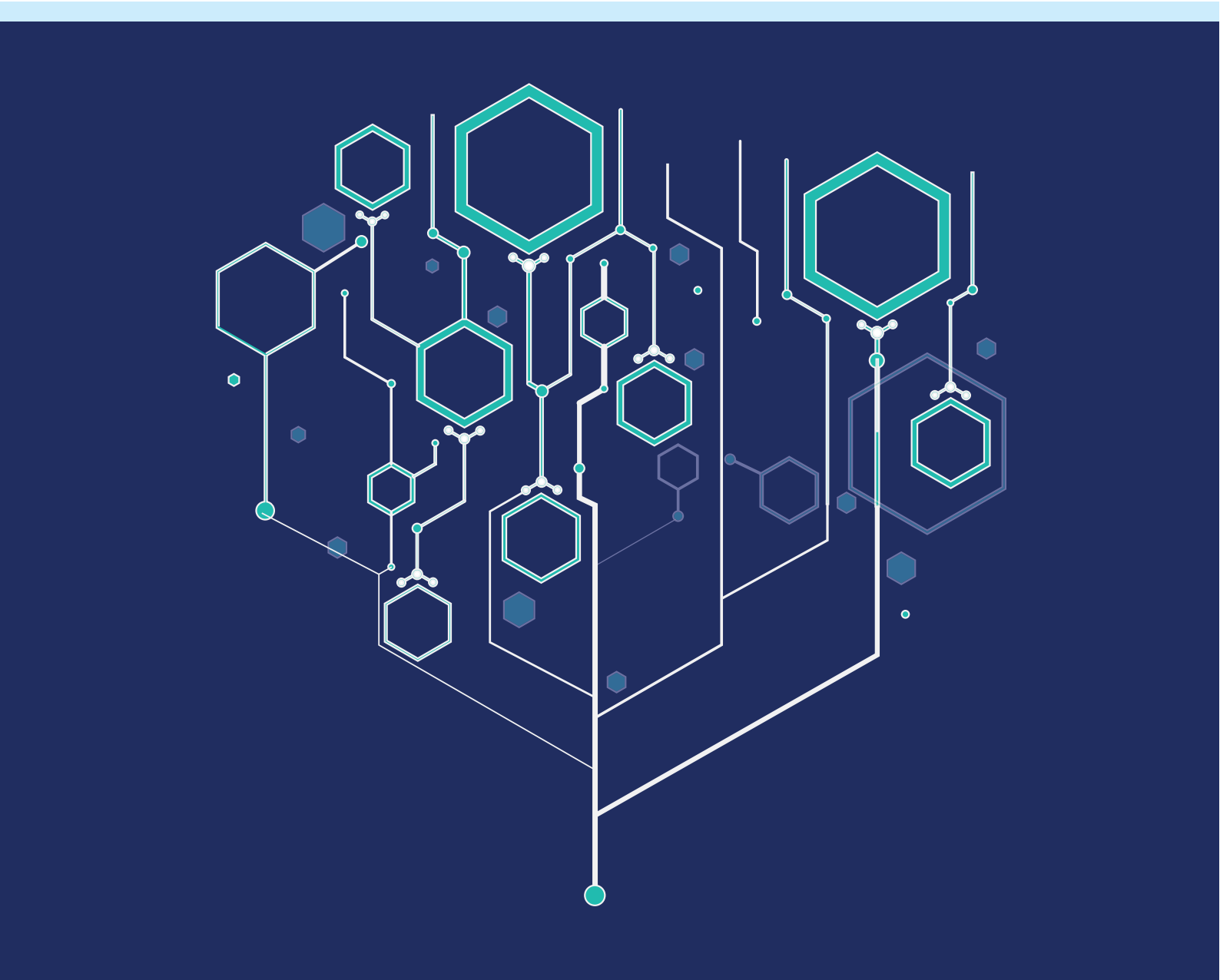
NSW Health

Enhancing insights and decision-making in the NSW Ministry of Health

Data literacy capability framework



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The NSW Ministry of Health acknowledges the traditional custodians of the lands across NSW. We acknowledge that we live and work on Aboriginal lands. We pay our respects to Elders past and present and to all Aboriginal people.

Suggested citation:
Centre for Epidemiology and Evidence. Enhancing insights and decision-making in the NSW Ministry of Health: Data literacy capability framework. Sydney: NSW Ministry of Health, 2024.

SHPN (CEE) 240346
ISBN 978-1-76023-858-2

July 2024

Contents

Data literacy is the ability to contextualise, critically appraise and communicate insights from data and information to drive decision-making.

Enhancing insights and decision-making are core to achieving NSW Health's vision:

A sustainable health system that delivers outcomes that matter to patients, is personalised, invests in wellness and is digitally enabled.

Decision-making across the NSW Ministry of Health ranges from decisions on strategic priorities to day-to-day operations. Regardless of the context, decisions should be made on the best available evidence and this means using data – obtaining, critically appraising, analysing, interpreting and communicating data. Data is a broad term. In this context, 'data' refers to facts and statistics collected together for reference or analysis. To make evidence-based decisions using data, we need to consider a number of factors:

- What data and evidence is already available, who has it, where is it, and is it the right information?
- How do I get the data I need if it's not already available?
- How do I interpret data when I get it?
- How do I communicate data and insights in a way that is appropriate for the context?

Being able to answer these questions is an expression of data literacy and is a fundamental workforce capability. This Framework recognises that improving workforce data literacy will improve decision-making across all NSW Health functions.

The Framework separates data literacy into seven domains:

- Understand the NSW Health context
- Understand data sources and systems
- Approach data analysis and interpretation collaboratively
- Undertake analysis and draw insights
- Communicate insights to drive decision-making
- Contribute to a data culture
- Practise good data governance

Each domain has five levels of capability, from foundational to highly advanced, recognising that the level of data literacy required depends on the individual's role. The Framework is intended to be used as a basis for:

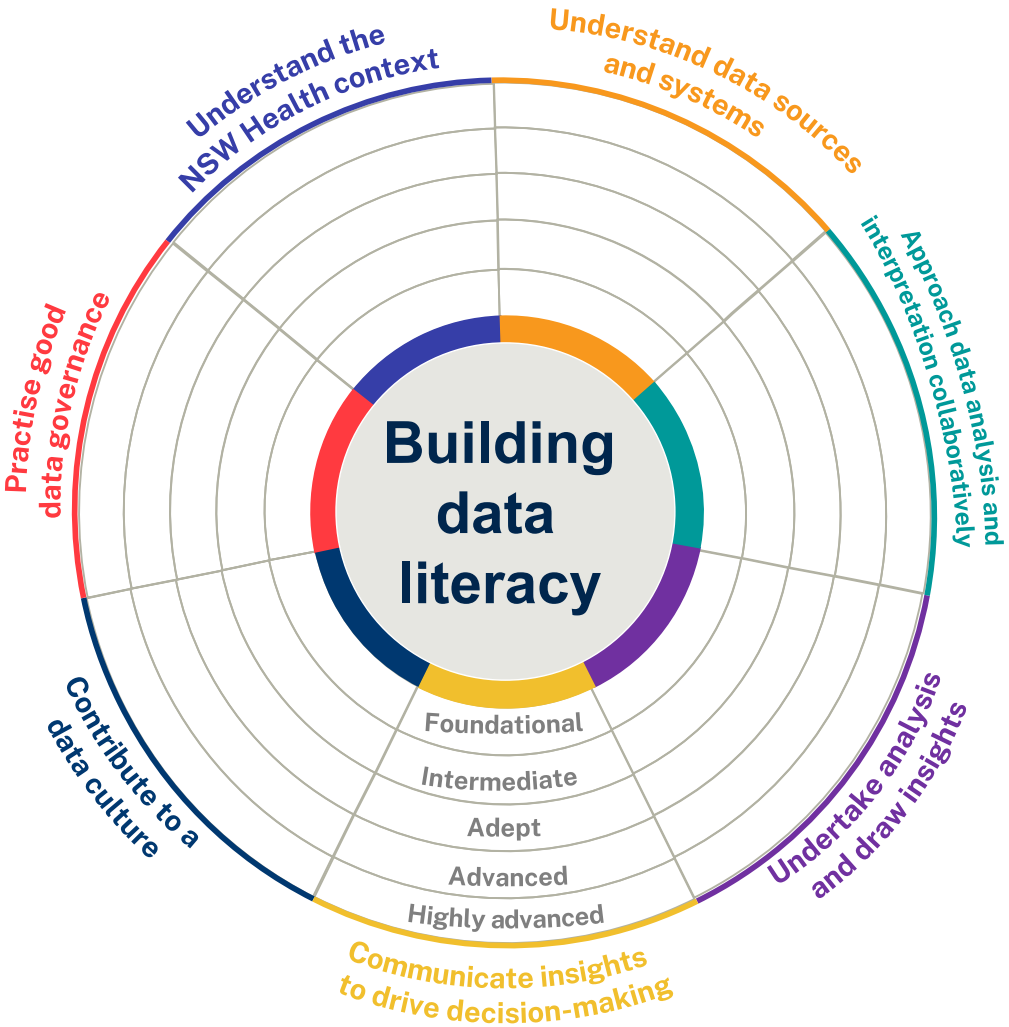
- developing role specific data literacy requirements
- assessing current data literacy capability for individuals and teams
- tailoring data literacy capability building opportunities

Framework

The data literacy capability framework complements the NSW Public Sector Capability Framework, which describes the capabilities and associated behaviours that are expected. The data literacy capability framework details an occupation-specific capability set for NSW Ministry of Health employees and consists of seven interlinked domains. Each domain has five capability levels:

- Foundational
- Intermediate
- Adept
- Advanced
- Highly advanced

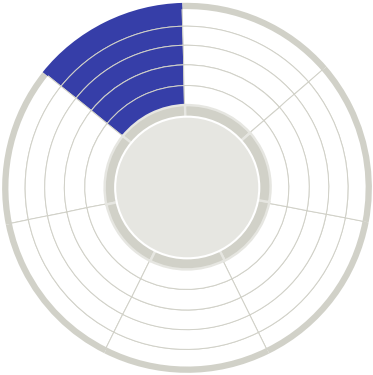
The following pages step through each domain, outlining their core components and the capability levels within them.



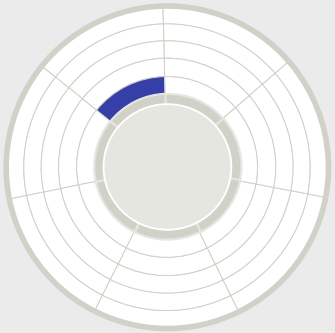
Domains

Understand the NSW Health context

Understanding the NSW Health context is critical to good decision-making. Knowledge of the broader health environment and emerging local and global trends leads to confidence around what data may be applied and interpreted in a particular situation and how it may best be used. Consideration of broader contextual factors drives richer insights.

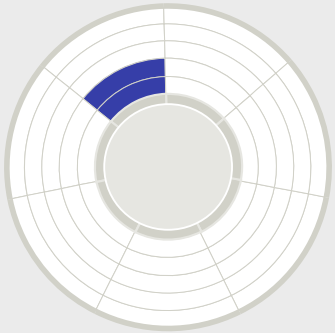


Foundational



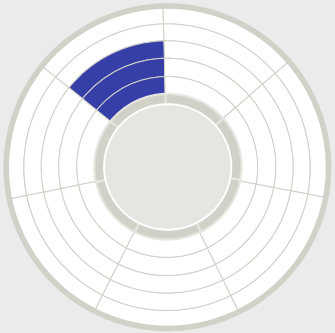
- Understand how the collection of data and information is impacted by the NSW Health system, resourcing, and the broader organisational and policy context.
- Recognise that broader contextual factors affect analysis and interpretation.

Intermediate



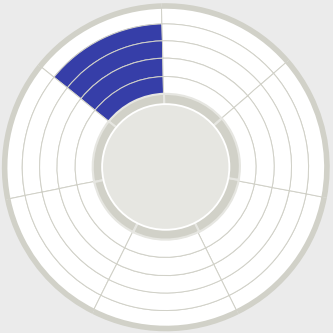
- Use knowledge of the NSW Health system to understand what data is most appropriate in the context of the program of work or policy area.

Adept



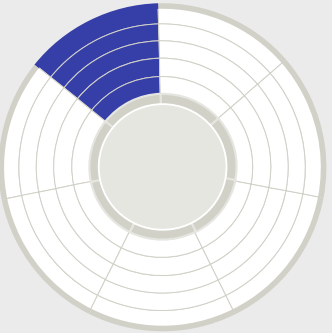
- Apply knowledge of the NSW Health system, NSW Government and relevant contextual factors to interpret data and analyses.

Advanced



- Apply knowledge of jurisdictional and national government and health systems to interpret and use data to inform systems, programs, policies and the delivery of healthcare.

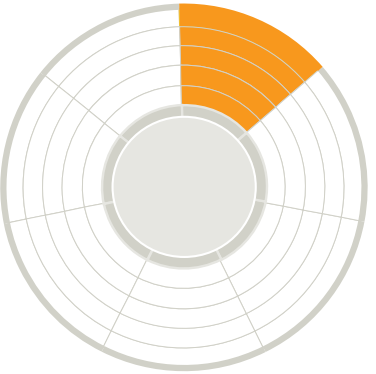
Highly Advanced



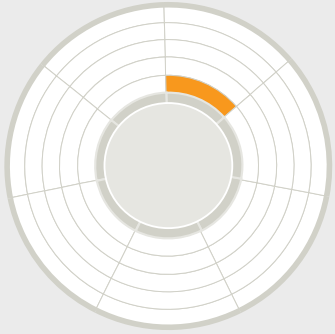
- Consider emerging trends and establish strategies to meet data and information needs for the Ministry and NSW Health.

Understand data sources and systems

Understanding what data is available and its strengths and limitations helps you to decide what data to use and what to consider in its interpretation and application.

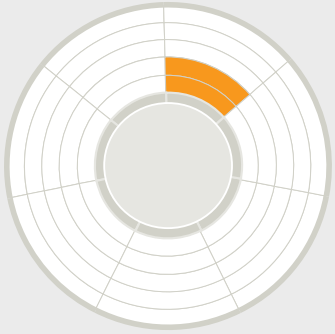


Foundational



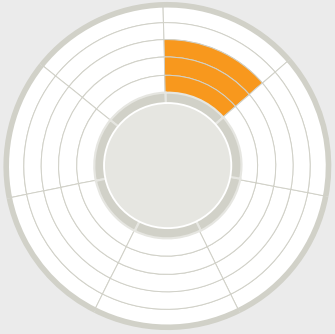
- Understand what data and information exists to support your work and know where to seek further information.
- Recognise that limitations associated with data and information impact on how data can be used.

Intermediate



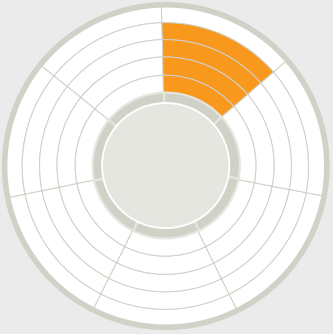
- Understand how to access data sources and systems relevant to your work.
- Understand the strengths and limitations of data and information relevant to your program of work or policy area.

Adept



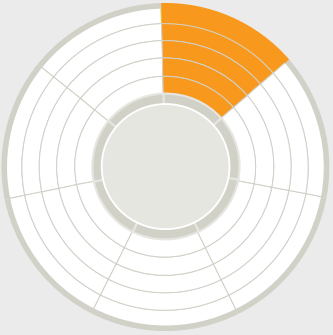
- Use knowledge of the context of state and national data to determine the best data or information for a range of purposes.

Advanced



- Establish mechanisms for ensuring that data collections and systems are fit for purpose and responsive to changes in strategic priorities.

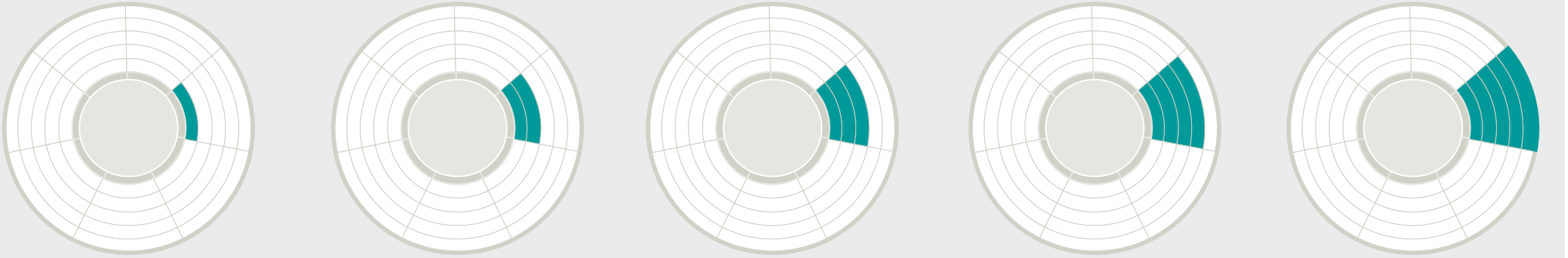
Highly Advanced



- Negotiate with jurisdictional and national agencies to establish, maintain and support strategic data assets and systems for health and human services.

Approach data analysis and interpretation collaboratively

Collaboration is a key ingredient in data analysis and interpretation. Partnerships between a range of subject matter experts including clinicians, policy makers, analysts and decision makers are critical to increase the impact of outcomes and insights.



Foundational

- Consult with content area and data experts to identify data sources and information.
- Collaborate with others to obtain consensus on interpretation of data.
- Share knowledge with colleagues.

Intermediate

- Establish a network of content area and data experts relevant to a program of work.
- Work with colleagues as required to draw conclusions from the data including the importance and implications of the findings.
- Build a supportive and cooperative environment for collaboration and support teams to resolve issues.

Adept

- Ensure regular communication between content area and data experts regarding existing data and information to support projects and programs.
- Identify opportunities to work collaboratively with other teams/units to solve analytical issues.

Advanced

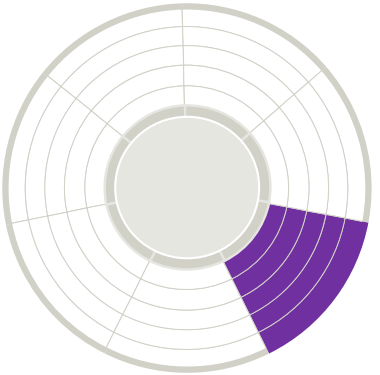
- Establish mechanisms for communication between content area and data experts to meet strategic policy objectives.
- Build sustainable partnerships and facilitate opportunities to engage and collaborate with external stakeholders.

Highly Advanced

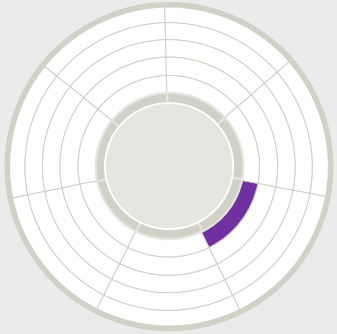
- Establish a culture and supporting systems to enable data and information sharing across NSW Health, whole-of-government and across jurisdictions.
- Lead and support negotiations to co-produce complex analytics projects with senior stakeholders across organisations.

Undertake analysis and draw insights

Understanding and conducting analyses is the core of data processing and interpretation; the quality of analysis influences the value of the resultant decision or recommendation. Analysis can be either quantitative in nature, such as generating statistics about a data set, or qualitative, such as exploring consultation outputs to identify themes and trends. NSW Ministry of Health staff also use portals and other tools to monitor performance, service use and patient outcomes. Drawing insights requires bringing it all together, including incorporating an understanding of the contextual factors.

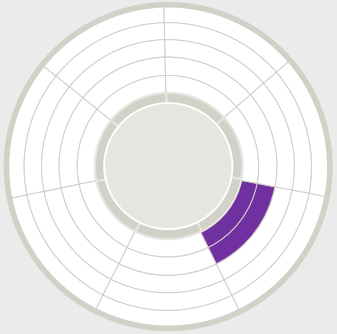


Foundational



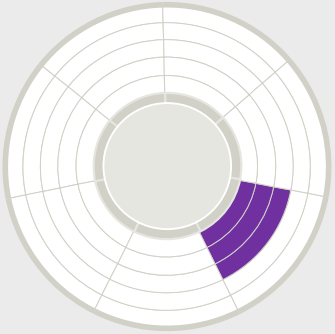
- Display familiarity and confidence in the use of relevant analytical tools, including the NSW Health data analytics-related applications, relevant to your role.
- Understand and interpret statistics in the context of your work.
- Understand the importance of critical appraisal of data and information.

Intermediate



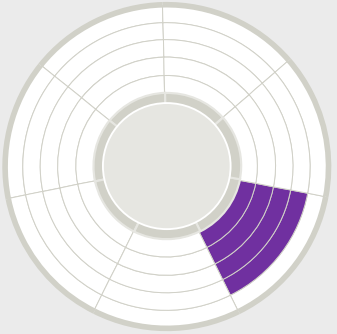
- Develop and implement analytical approaches to answer policy questions.
- Use existing resources of critically appraised data, for example the Cochrane Collaboration.
- Display information for ease of interpretation.

Adept



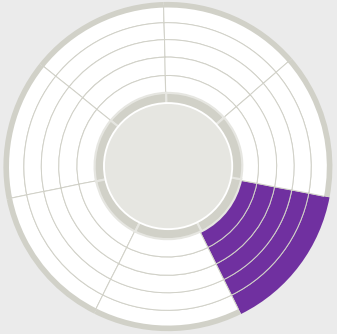
- Leverage quantitative and qualitative analysis techniques to produce information to achieve organisational objectives.
- Manage complex analytical tasks (e.g. machine learning, combining multiple complex and disparate data sets).
- Apply critical thinking to understand the results of data analysis in their context, and draw insights for NSW Health policies and programs.

Advanced



- In consultation with content area and data experts, design analyses to answer complex questions, including the development of innovative methods where necessary.
- Critically appraise findings and recommendations with consideration of broader contextual factors.
- Drive the use of advanced analytic tools.

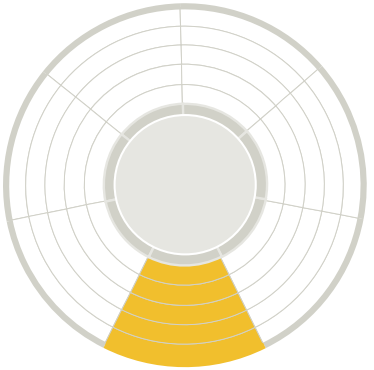
Highly Advanced



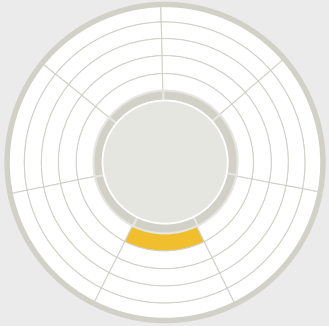
- Establish and promote a culture that values excellence in a range of analysis methods and techniques.
- Encourage research and seek expert advice on the application of emerging technologies for data analysis.
- Apply high-level, critical assessment of analyses considering the broader health and government context.

Communicate insights to drive decision-making

The value of data analysis is derived from its potential to inform decision-making. Value is achieved by using the results of data analysis to draw insights and produce a convincing, evidence-based narrative, then communicating the story effectively and appropriately to audiences of all data capabilities. Communicating insights effectively enhances decision-making through a strong foundation of evidence allowing NSW Health to drive improvements in patient care, programs and policy, monitoring outcomes and system performance.

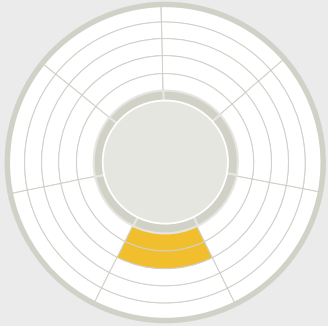


Foundational



- Access and use data and interpretations in written and verbal communications.
- Communicate the results of data analyses in a way that is logical and easy to follow.

Intermediate



- Clearly communicate information and insights from analysis.
- Prepare reports and presentations in a way that is suitable for diverse audiences.
- Contribute to the process of translating insights into policy and practice.

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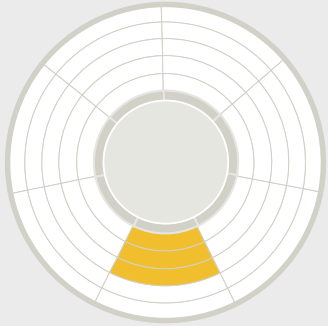
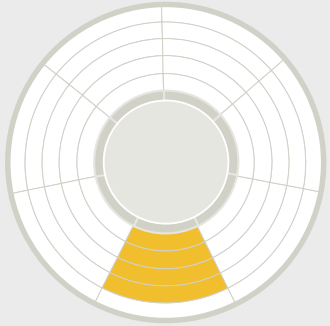


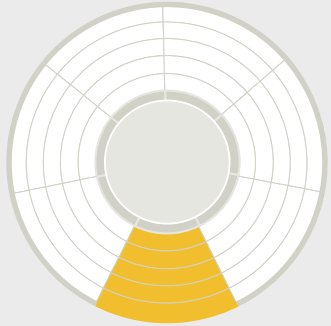
- Position insights from data analyses to enhance decision-making across NSW Health and government agencies.
- Lead activities to effectively communicate data and information to a broad range of audiences.

Advanced



- Anticipate and respond to key areas of interest resulting from the publication of data and information.
- Influence policy and practice change through effective communication of key insights.

Highly Advanced

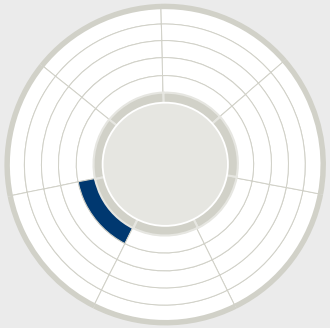


- Use insights to drive organisational and government strategic priorities.
- Ensure that new and existing policy initiatives are supported by insights from robust evidence.

Contribute to a data culture

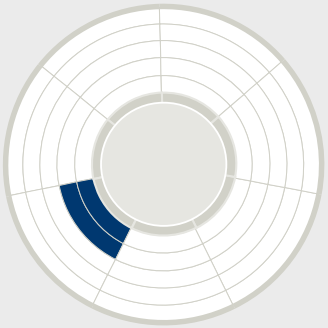
Data culture determines the attitudes and mindset surrounding data and ensures that information is used and embraced by all staff within the health system. An accessible, open approach to data literacy lowers barriers to learning and development. Data culture expands in two key directions: from providing assistance to those beginning to approach data, through to supporting experts to extend their knowledge and capability. Driving a strong data culture provides the platform for evidence-informed decision-making.

Foundational



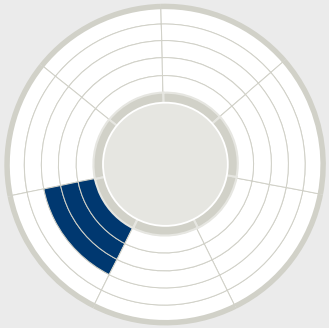
- Identify areas of strength and opportunities to develop data literacy capabilities.

Intermediate



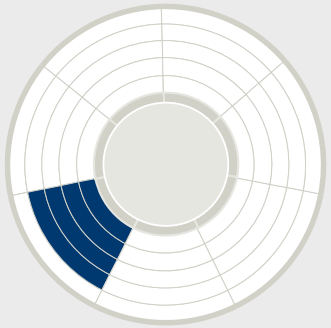
- Support a positive learning environment for data literacy.

Adept



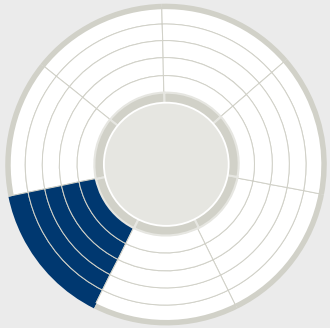
- Create professional development opportunities to increase analytics capability and use of data.

Advanced



- Promote a culture of using data to inform the organisation's systems, processes, policies and practices.

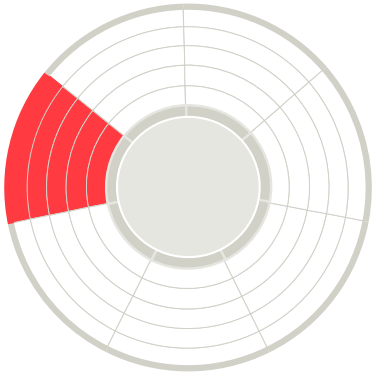
Highly Advanced



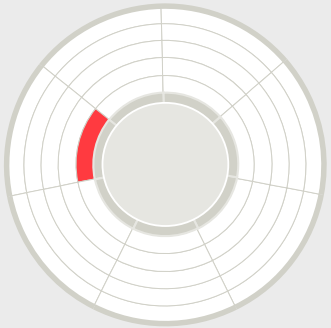
- Champion data literacy as an organisational strategic priority.
- Set performance standards for data literacy across the organisation and monitor compliance.

Practise good data governance

Data governance and management is critical to ensure that data is used and handled correctly. Data governance includes legal, ethical, policy and procedure considerations. All data must be handled to ensure appropriate security and integrity is maintained and, where applicable, privacy is preserved. A range of legislation governs the way we collect, store and use data. Managing data architecture and infrastructure ensures efficient and appropriate use of data. Knowledge of the processes across the data lifecycle – including creation, collection, collation and management – enables appropriate decisions regarding data use.

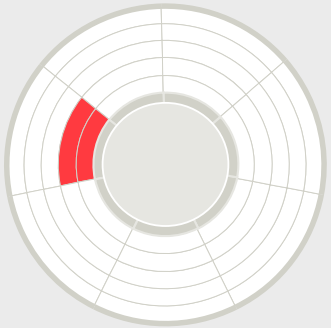


Foundational



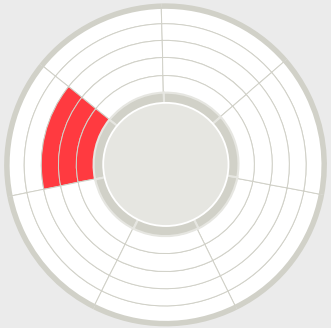
- Be familiar with the NSW Health Data Governance Framework.
- Understand and comply with specific data governance arrangements for data collection, storage and use, relevant to your role.

Intermediate



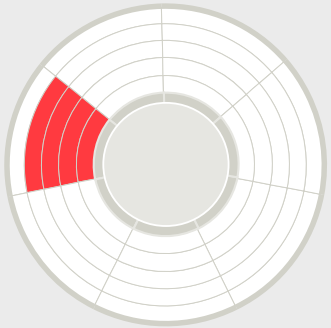
- Collect, use and disclose data and information in accordance with NSW Health policies and procedures.
- Understand the principles of data governance including legal, ethical, policy and procedural aspects.

Adept



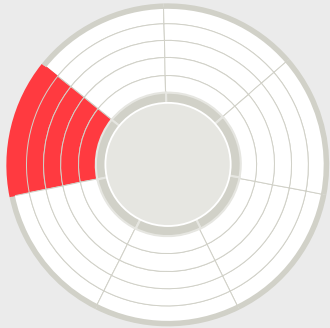
- Establish governance arrangements for data assets within your program of work.
- Carry out compliance audits.
- Guide others to practise good data governance.

Advanced



- Develop data governance arrangements for NSW Health data and information.
- Promote and support training in data governance.
- Ensure that data governance arrangements are applied consistently and effectively across the organisation.

Highly Advanced



- Direct the development of processes to establish robust data governance arrangements and monitor ongoing effectiveness.
- Promote NSW Ministry of Health's role in health-related data governance within research, business, government and the community, and plan appropriately.

Personas

Staff from all areas of the NSW Ministry of Health use data and information – from policy and data analysts to media advisors to the executive.

The personas on the following pages provide examples of how different people across the NSW Ministry of Health workforce might use data and information in their roles. The example personas also illustrate how expected and current levels of capability can be conveyed for specific roles.

Remember, these personas are fictional and not an attempt to define the data literacy requirements for a particular role. They are examples to help you think about how you can use this framework and accompanying toolkit.

Alex

Policy Analyst

Alex is new to the workforce and recently joined a policy team. Fresh from a Bachelor of Social Work, he's familiar with the policy context specific to his team, but is not confident in handling data.

6 months in role

Early in career

I USE DATA IN MY ROLE TO ...

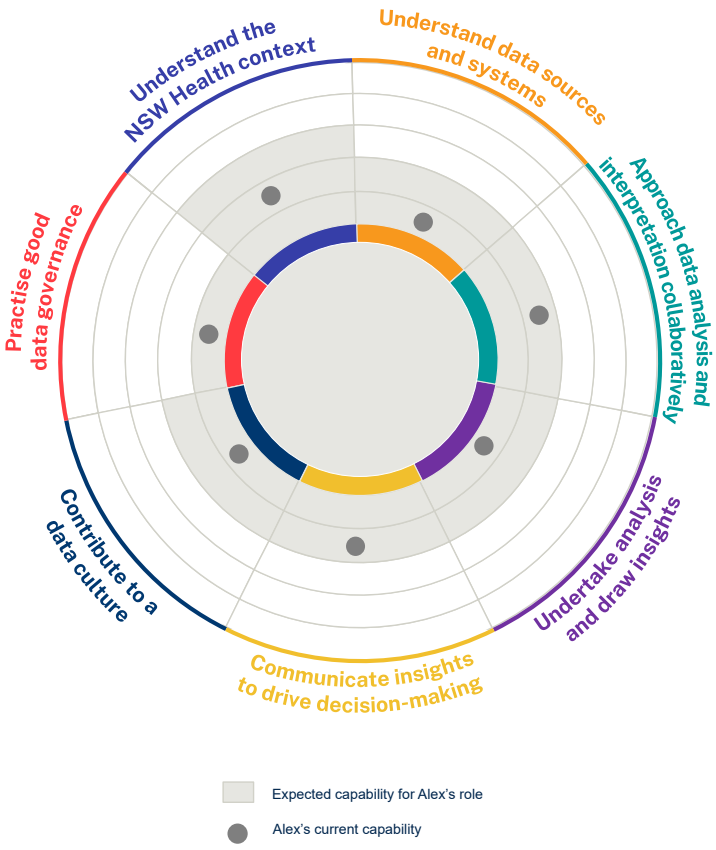
... incorporate graphs and tables from other parts of the Ministry into policy reports. I work with colleagues in my team to interpret data and statistics. We combine this with other information and develop policy recommendations.

FOR MY ROLE, I NEED TO LEARN ...

... how best to use data to inform the development of policy. I would like to understand where to find the right data for each project task, as well as develop my other policy skills.

I'M BUILDING MY DATA LITERACY CAPABILITY BY...

... having weekly catch ups with my manager about my progress and where I need more assistance. She's allocated time for me to go through NSW Health's online resources in detail as an introduction to using data in my role.



Steph

Senior Policy Analyst

Steph is a part of a policy team in an area she's familiar with. She knows what the right data sources are to access, but wants to learn how to better guide others in her team to most effectively work with data analysts.

3 years in role

Midway in career

I USE DATA IN MY ROLE TO ...

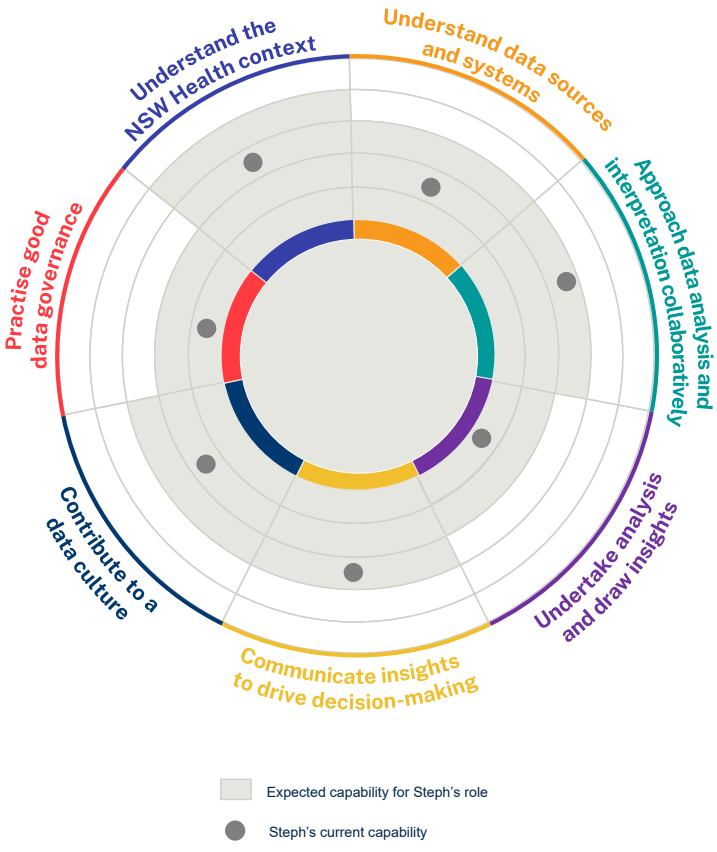
... support the development of policy recommendations. I also assist others within my team to use data effectively.

FOR MY ROLE, I NEED TO LEARN..

... how to tell if data is useful or not, including a greater understanding of the strengths and limitations of the data. I want to develop my skills to assess which is the best data to use and derive insights that I can use to inform policy.

I'M BUILDING MY DATA LITERACY CAPABILITY BY...

...learning from others in my team and in my organisation. There are many data experts who are willing to take the time to help me better understand the context of data.



Joel

Data Analyst

Joel is very much a numbers person. With a background in statistics, he understands quantitative analysis, but doesn't know as much about the NSW Health context.

1 year in role

Early in career

I USE DATA IN MY ROLE TO ...

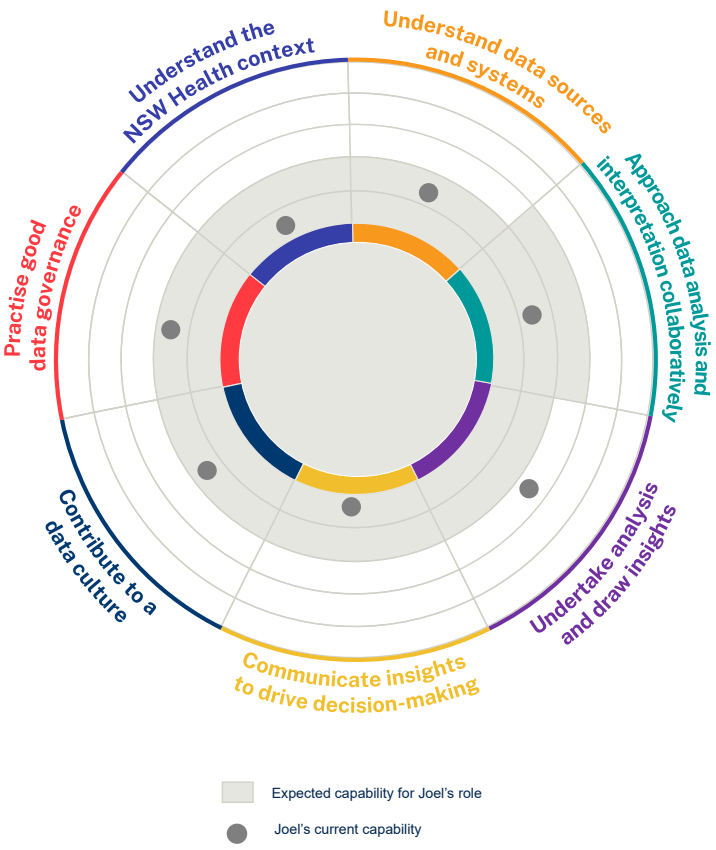
... provide graphs and statistics to a range of colleagues across NSW Health.

FOR MY ROLE, I NEED TO LEARN ...

... more about how data fits into the broader health context. I also want to improve my skills in communicating information and insights from my analyses.

I'M BUILDING MY DATA LITERACY CAPABILITY BY ...

...accessing NSW Health's online data resources. I'm also staying involved in the projects that I provide data analysis for, to see what the end result of my analyses are – this will help me get a sense of the broader policy context.



Seo-yun

Senior Epidemiologist

Seo-yun has a Masters degree in public health where she focused on epidemiological methods. She is skilled in optimising study design but the policy context is still a little unfamiliar.

18 months in role

Midway in career

I USE DATA IN MY ROLE TO ...

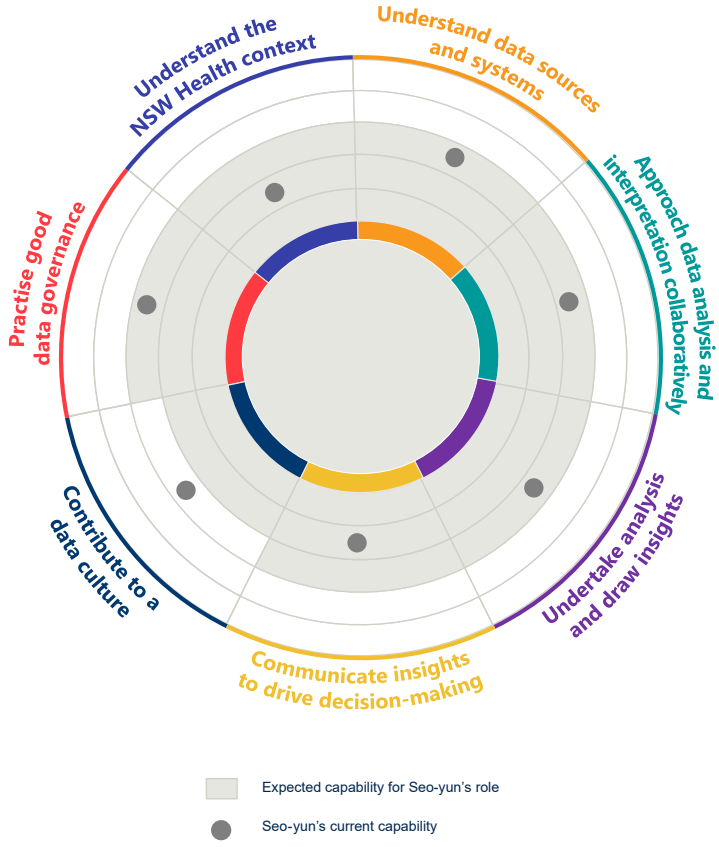
..answer research questions that come from my policy colleagues. I design and critically appraise studies. I make sense of the results we get from analyses.

FOR MY ROLE, I NEED TO LEARN ...

... how to better communicate with my policy colleagues and provide them with the evidence they need. I'd also like to learn more about NSW-specific data sources.

I'M BUILDING MY DATA LITERACY CAPABILITY BY ...

... being part of a team that is teaching basic data skills to colleagues throughout NSW Health. In the process, I'm learning about how my colleagues think about the data I provide in my day-to-day work - and how I might better communicate with them.



Sally

Project Officer

Sally is responsible for planning and delivering projects. She has been working in the same team for some time but is not entirely confident in handling data when compiling reports. She tends to rely on others to get the application and wording right.

4 years in role

Midway in career

I USE DATA IN MY ROLE TO ...

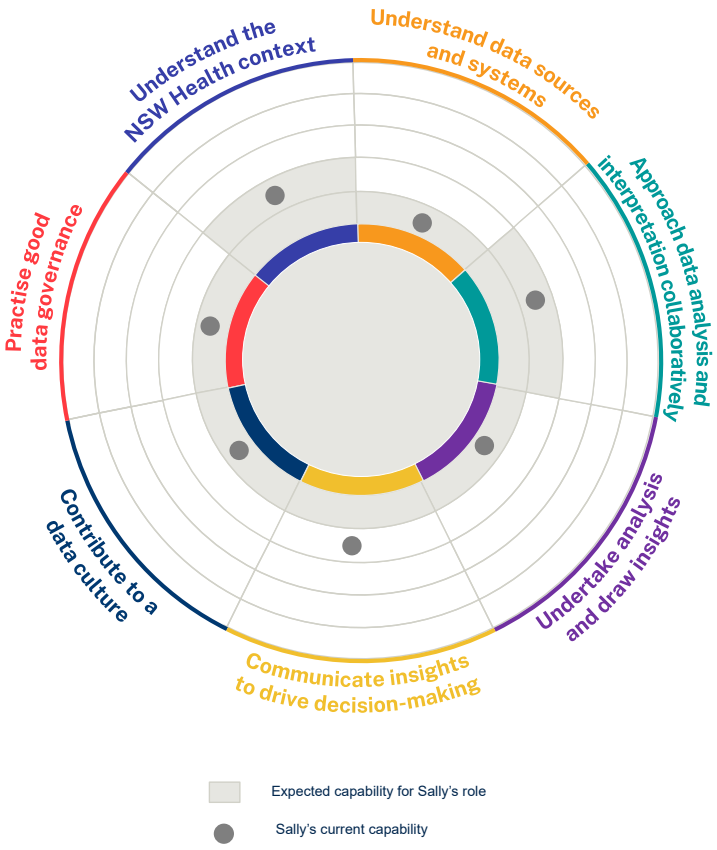
...monitor the implementation of health programs. I also use data to inform the development of new programs.

FOR MY ROLE, I NEED TO LEARN ...

... how to better understand the graphs and figures that the analysts give me. I'd like to know the strengths and limitations of the data and to understand how to better use findings from qualitative research as well.

I'M BUILDING MY DATA LITERACY CAPABILITY BY ...

... going through NSW Health's online resources whenever I have a moment. I've also lined up some time with a colleague to talk me through her process for gathering the data for a particular review we're working on together.



Michael

Media & Communications Advisor

Michael is an experienced comms advisor who has worked on the frontline as a journalist and also spent some time working in a Minister's office.

4 years in role

Midway in career

I USE DATA IN MY ROLE TO ...

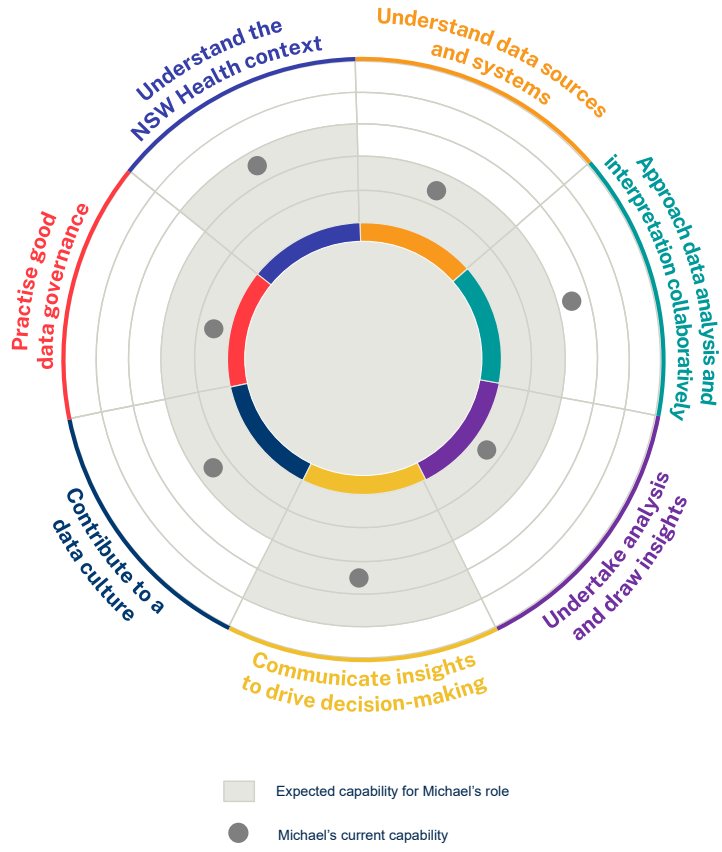
... inform the development of the content in media releases on a range of topics from healthy weight to the building of new hospitals. I get data from a range of internal stakeholders and online sources.

FOR MY ROLE, I NEED TO LEARN ...

... more about data visualisation so I can work with the data teams and designers to better communicate complex concepts in an easy to understand way.

I'M BUILDING MY DATA LITERACY CAPABILITY BY ...

... working my way through a data visualisation course. I'm also heavily reliant on the data experts across NSW Health who are helping me learn more about the data we use and how to use it.



Harish

Data Analytics Team Manager

Harish transferred from a government portfolio outside of health. He needs to support his team in their highly technical work, but also to translate it to senior management and to his less technical peers.

1 year in role

Late in career

I USE DATA IN MY ROLE TO ...

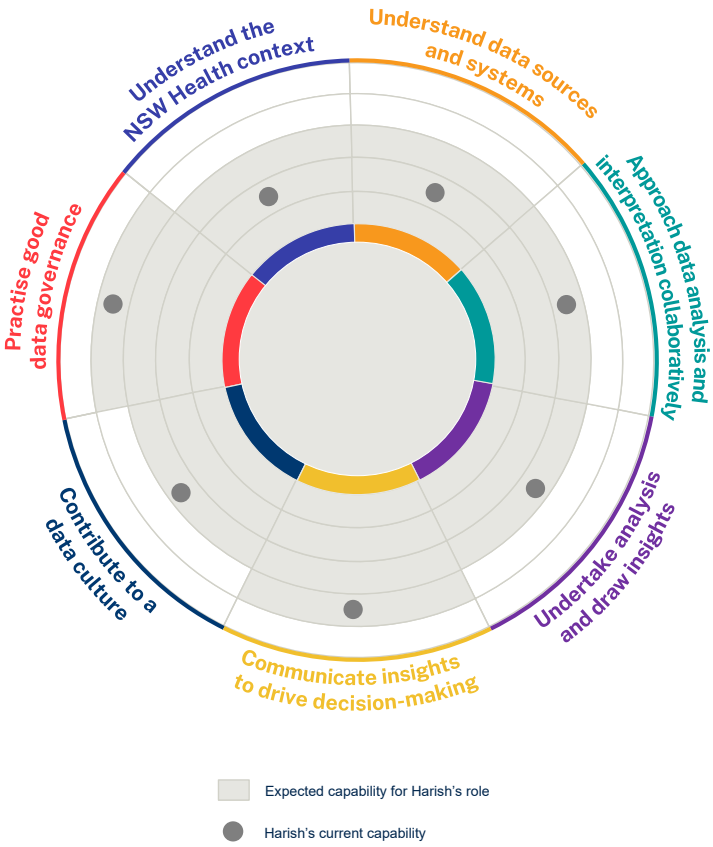
... communicate insights to the Executive. I hardly analyse data these days, but I do spend a lot of my time playing the role of a translator between my technical and non-technical colleagues.

FOR MY ROLE, I NEED TO LEARN ...

... more about the NSW Health context and the data we use. I also want to develop my team's capability to better communicate with their non-technical peers.

I'M BUILDING MY DATA LITERACY CAPABILITY BY ...

... participating in data analytics networks where I learn from my colleagues in similar roles. I also attend courses on how to communicate data stories effectively.



Inez

Executive, Policy

Inez transferred to the NSW Ministry of Health from another government portfolio. She has extensive policy experience but little experience with data in the health context. Inez needs to translate insights from data to key decision makers including government Ministers.

1 year in role

Late in career

I USE DATA IN MY ROLE TO ...

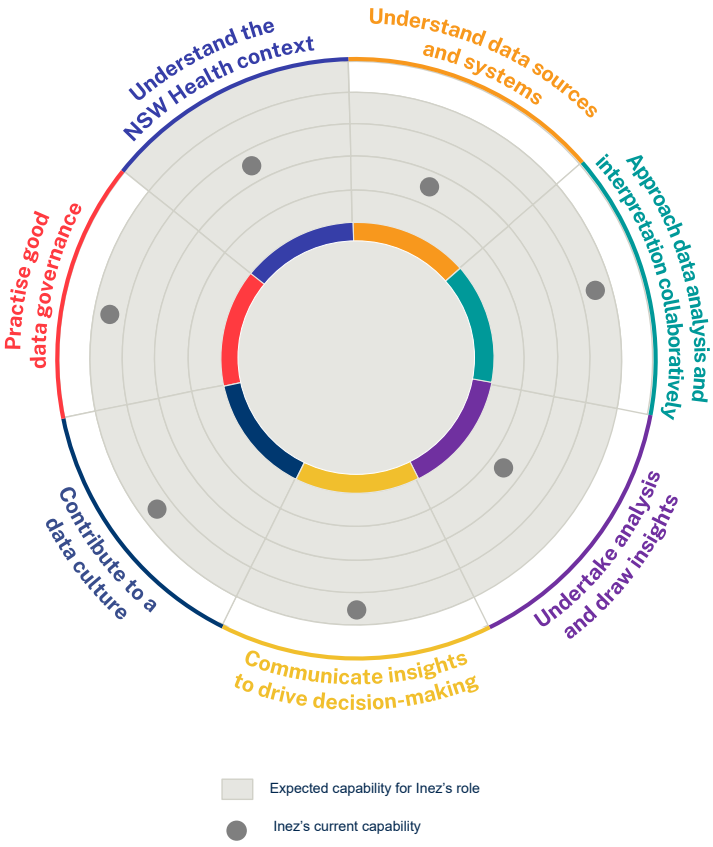
... inform the development of policy recommendations. This often involves explaining key data and statistics to government Ministers.

FOR MY ROLE, I NEED TO LEARN ...

... more about our data and how to look critically at the information that I'm given. I would also like to promote a data culture within my area and provide opportunities for my staff to continually increase their data literacy.

I'M BUILDING MY DATA LITERACY CAPABILITY BY ...

... making the time to learn from the subject matter experts in my team. For me, capability building is primarily on-the-job. I'm also exploring opportunities to attend a conference on the future of data analytics.



Summary

	Foundational	Intermediate	Adept	Advanced	Highly advanced
Understand the NSW Health context	Understand how the collection of data and information is impacted by the NSW Health system, resourcing, and the broader organisational and policy context. Recognise that broader contextual factors affect analysis and interpretation.	Use knowledge of the NSW Health system to understand what data is most appropriate in the context of the program of work or policy area.	Apply knowledge of the NSW Health system, NSW Government and relevant contextual factors to interpret data and analyses.	Apply knowledge of jurisdictional and national government and health systems to interpret and use data to inform systems, programs, policies and the delivery of healthcare.	Consider emerging trends and establish strategies to meet data and information needs for the Ministry and NSW Health.
Understand data sources and systems	Understand what data and information exists to support your work and know where to seek further information. Recognise that limitations associated with data and information impact on how data can be used.	Understand how to access data sources and systems relevant to your work. Understand the strengths and limitations of data and information relevant to your program of work or policy area.	Use knowledge of the context of state and national data to determine the best data or information for a range of purposes.	Establish mechanisms for ensuring that data collections and systems are fit for purpose and responsive to changes in strategic priorities.	Negotiate with jurisdictional and national agencies to establish, maintain and support strategic data assets and systems for health and human services.
Approach data analysis and interpretation collaboratively	Consult with content area and data experts to identify data sources and information. Collaborate with others to obtain consensus on interpretation of data. Share knowledge with colleagues.	Establish a network of content area and data experts relevant to a program of work. Work with colleagues as required to draw conclusions from the data including the importance and implications of the findings. Build a supportive and cooperative environment for collaboration and support teams to resolve issues.	Ensure regular communication between content area and data experts regarding existing data and information to support projects and programs. Identify opportunities to work collaboratively with other teams/units to solve analytical issues.	Establish mechanisms for communication between content area and data experts to meet strategic policy objectives. Build sustainable partnerships and facilitate opportunities to engage and collaborate with external stakeholders.	Establish a culture and supporting systems to enable data and information sharing across NSW Health, whole-of-government and across jurisdictions. Lead and support negotiations to co-produce complex analytics projects with senior stakeholders across organisations.
Undertake analysis and draw insights	Display familiarity and confidence in the use of relevant analytical tools, including the NSW Health data analytics-related applications, relevant to your role. Understand and interpret statistics in the context of your work. Understand the importance of critical appraisal of data and information.	Develop and implement analytical approaches to answer policy questions. Use existing resources of critically appraised data, for example the Cochrane Collaboration. Display information for ease of interpretation.	Leverage quantitative and qualitative analysis techniques to produce information to achieve organisational objectives. Manage complex analytical tasks (e.g. machine learning, combining multiple complex and disparate data sets). Apply critical thinking to understand the results of data analysis in their context, and draw insights for NSW Health policies and programs.	In consultation with content area and data experts, design analyses to answer complex questions, including the development of innovative methods where necessary. Critically appraise findings and recommendations with consideration of broader contextual factors. Drive the use of advanced analytic tools.	Establish and promote a culture that values excellence in a range of analysis methods and techniques. Encourage research and seek expert advice on the application of emerging technologies for data analysis. Apply high-level, critical assessment of analyses considering the broader health and government context.
Communicate insights to drive decision-making	Access and use data and interpretations in written and verbal communications. Communicate the results of data analyses in a way that is logical and easy to follow.	Clearly communicate information and insights from analysis. Prepare reports and presentations in a way that is suitable for diverse audiences. Contribute to the process of translating insights into policy and practice.	Position insights from data analyses to enhance decision-making across NSW Health and government agencies. Lead activities to effectively communicate data and information for a broad range of audiences.	Anticipate and respond to key areas of interest resulting from the publication of data and information. Influence policy and practice change through effective communication of key insights.	Use insights to drive organisational and government strategic priorities. Ensure that new and existing policy initiatives are supported by insights from robust evidence.
Contribute to a data culture	Identify areas of strength and opportunities to develop data literacy capabilities.	Support a positive learning environment for data literacy.	Create professional development opportunities to increase analytics capability and use of data.	Promote a culture of using data to inform the organisation's systems, processes, policies and practices.	Champion data literacy as an organisational strategic priority. Set performance standards for data literacy across the organisation and monitor compliance.
Practise good data governance	Be familiar with the NSW Health Data Governance Framework. Understand and comply with specific data governance arrangements for data collection, storage and use, relevant to your role.	Collect, use and disclose data and information in accordance with NSW Health policies and procedures. Understand the principles of data governance including legal, ethical, policy and procedural aspects.	Establish governance arrangements for data assets within your program of work. Carry out compliance audits. Guide others to practise good data governance.	Develop data governance arrangements for NSW Health data and information. Promote and support training in data governance. Ensure that data governance arrangements are applied consistently and effectively across the organisation.	Direct the development of processes to establish robust data governance arrangements and monitor ongoing effectiveness. Promote NSW Ministry of Health's role in health-related data governance within research, business, government and the community, and plan appropriately.