

Using Healthdirect data to enhance population health surveillance, target services, and measure impact

Prepared for the National PHN Data and Digital Showcase
5 August 2025

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Chief Insights Officer



Acknowledgement of Country

Healthdirect Australia acknowledges the traditional owners of Country throughout Australia and their continuing connection to land, sea and community

We pay our respects to the traditional owners on the lands we are meeting on today and to elders both past, present and emerging and to First Nations people who are joining us today

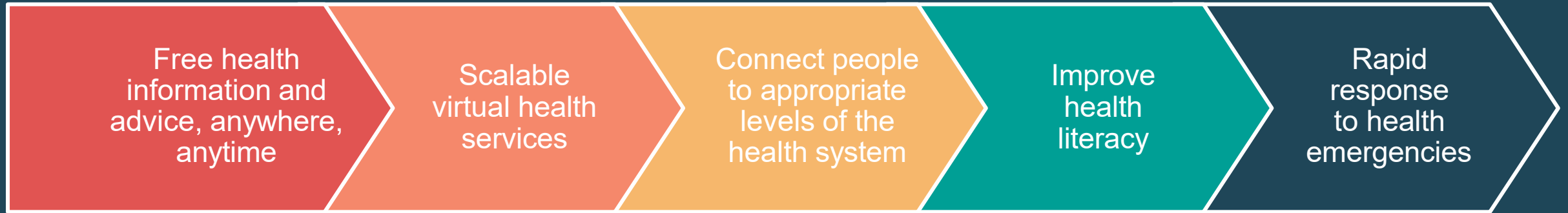
Outline

- About Healthdirect
- Enhancing population health surveillance
- Monitoring utilisation and targeting services
- Evaluating impact
- Other examples of how Healthdirect data is being used
- Next steps

About Healthdirect

Healthdirect Australia

Established by Australian governments to improve access to healthcare



Healthdirect Australia is owned by all Australian governments who are equal shareholders of the company



Healthdirect Australia's role in care

Trustworthy advice and connection to the right care 24/7.

We support consumers by:

Helping them to care
for themselves and their
families.

Helping them find and connect
with a service that meets
their needs.

Providing virtual care
when other options aren't
accessible or available.

THE BENEFIT



The right care to meet consumers' needs.



An effective and sustainable health system.

Overview of Healthdirect services and infrastructure

We operate a broad portfolio of services and digital infrastructure on behalf of governments

healthdirect

Services include
nurse helpline, website,
symptom checker, service
finder, mobile app and
medicines search



Virtual GP

GP helpline and video call support for people living in areas where local GP availability is limited providing e-scripts and a safety net service



Video Call

Purpose built software for primary care consultations. Used by Healthdirect services, hospitals, community health and other agencies



National Health Services Directory

Virtual directory of health services and practitioners for consumers, providers and policy planners



Pregnancy birth and baby

helpline & digital staffed by maternal and child health nurses, dedicated website and social media outreach



My Aged Care

Inbound call service for consumers and providers and bespoke outbound call services where required.



Ambulance secondary triage

Callers referred from NSW and WA Ambulance are and triaged by healthdirect nurses, reliving pressure on ambulance call outs



Medicare Mental Health

Connecting consumers to care appropriate to their mental health needs



Mental Health
1800 595 212

Healthdirect Australia provides virtual health services so Australians can care for themselves and their families, find and connect with a service that meets their needs and access virtual care when other options aren't accessible or available. These services provide the right care for consumers' needs and support an effective and sustainable health system. In CY 2024, these services helped millions of Australian consumers.



73 million

interactions with the
community across
all services



93%

consumer
satisfaction
with Healthdirect
Australia services



**12.8
million**

searches per year
of the healthdirect
Service Finder



51 million
website visits



14:1

digital interactions
:calls



67% of symptom triages are digital



3.6 million

calls to all
helplines



3.9%

callers across all
helplines identify
as First Nations
people



**2.1
million**

users
accessed the
healthdirect
Symptom Checker



The healthdirect helpline
helps consumers where
and when healthcare is
harder to access.



29%

rural and
remote calls



66%

after hours
calls

DATA INVENTORY	DESCRIPTION	ATTRIBUTES	KEY DIMENSIONS	EXAMPLE USE CASES
Calls	Calls to Healthdirect services, including call recordings	5.4m calls p.a.; ~26.4m max records held	Sociodemographics, location, time of day, call channel/type, pre-call intention*	Customer segmentation, e.g. cluster analysis of channel preference, frequency of use, by condition and demographics, generation of coded clinical data from voice recordings
Consumers	Uniquely identifiable people who've utilised Healthdirect services	Est. ~8.3m unique individuals	Sociodemographics, locations, repeat interactions	Longitudinal analysis of social determinants, geospatial health 'needs index' across the life-course, digital / virtual service design and optimisation; synthetic data generation
Risk factors & symptoms	Risk factors and symptoms consumers self-report	Real-time; 2m sympt. checker interviews p.a.; 1.3m HIAS calls p.a.	Type (e.g. travel hx, obesity, cough), sociodemographics, location, time-period, condition, clinical disposition, pathway	Population health monitoring (prevalence); demand prediction & commissioning (e.g. utilisation attributable to unmanaged chronic conditions); enhance pharmacovigilance; syndromic surveillance; real-world evidence research
Conditions^	AI prediction of possible condition, based on symptoms and risks	Real-time; 2m sympt. checker interviews p.a.	Condition type, sociodemographics, location, risk factors, symptoms, clinical disposition, pathway, intention*	Analysis of health service utilisation drivers; supplement diagnosis codes from GP CIS data extraction and admitted patient datasets; business case develop for new pathways
Triages & referral pathways	Disposition, outcome, and referral pathway (incl. logic)	Real-time; 2m sympt. checker interviews p.a.; 1.3m HIAS calls p.a.	Acuity, pathway, time of day, location, patient intention, channel (symptom checker, call), sociodemographics	Scenario modelling to optimise diversion to cost-effective (value-based) services that meet consumer needs and preferences; behavioural insights; linkage; AI & automation
Occasions of service	Interactions across <i>all</i> Healthdirect services	~84m interactions p.a.	Service (HIAS, PBB, MAC, SC etc.), channel (call, digital, web, video), service levels / performance indicators, time of day	Performance monitoring and evaluation; customer segmentation; channel diversion optimisation; service volume prediction
Health services	Health services listed in the NHSD	~150k health services; ~28m API calls p.a.	Health service type (e.g. GP, specialist, pharm, allied health), location, available services, data quality, billing options,	Geospatial mapping and analysis of health service availability and accessibility; business case develop for new pathways
Appointments*	Health service appointments available and booked	1.2m uses per month of service finder	Appointment type (e.g. bulk billing), health service type, location, time of day, booking provider	Geospatial analysis of health service availability and accessibility, including gaps (e.g. geospatial heatmap of average time and distance to next available appointment)
Searches	Website and app searches of curated knowledge bases	50m website visits p.a.	Type (medicines, service finder, health info), search terms, use of translation, engagement, conversion, time-period, channel, demographics	Analysis of health and information needs; syndromic surveillance; graph-RAG LLM provision of personalised, curated self-care advice (utilising HDA data fabric); marketing and SEO;
Sentiment	Consumer experience and sentiment data, incl NPS, satisfaction	Sampling 2% of interactions, e.g. ~1,000 per mth HIAS; 2,000 per mth MAC	Sociodemographics (incl. CALD, ATSI status); channel; self-reported adherence;	Consumer segmentation; service design; performance monitoring and evaluation;
Incidents	Incidents reported and managed in CIMS (Clinical Incident Management Sys.)	[Incidence TBC]	Type, cause(s), severity, status, response actions	Safety case analysis; clinical governance; quality management and improvement; performance monitoring and evaluation; research (e.g. into safe and responsible adoption of AI)

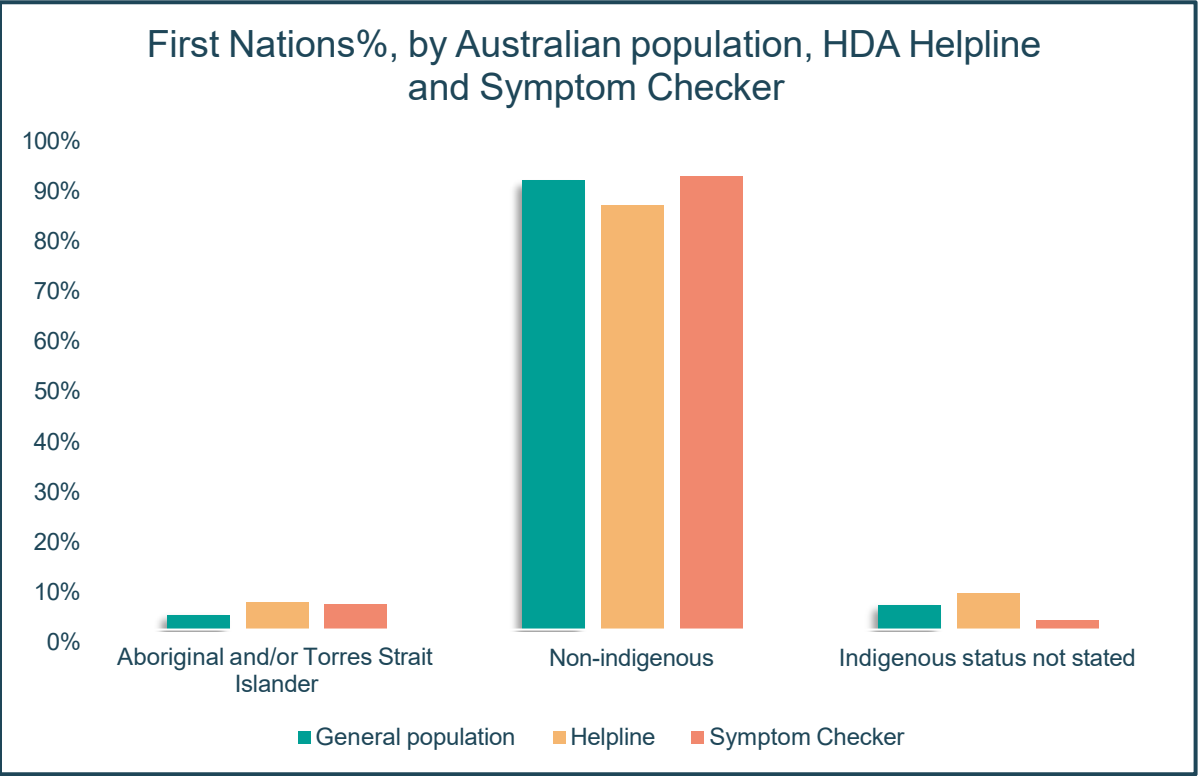
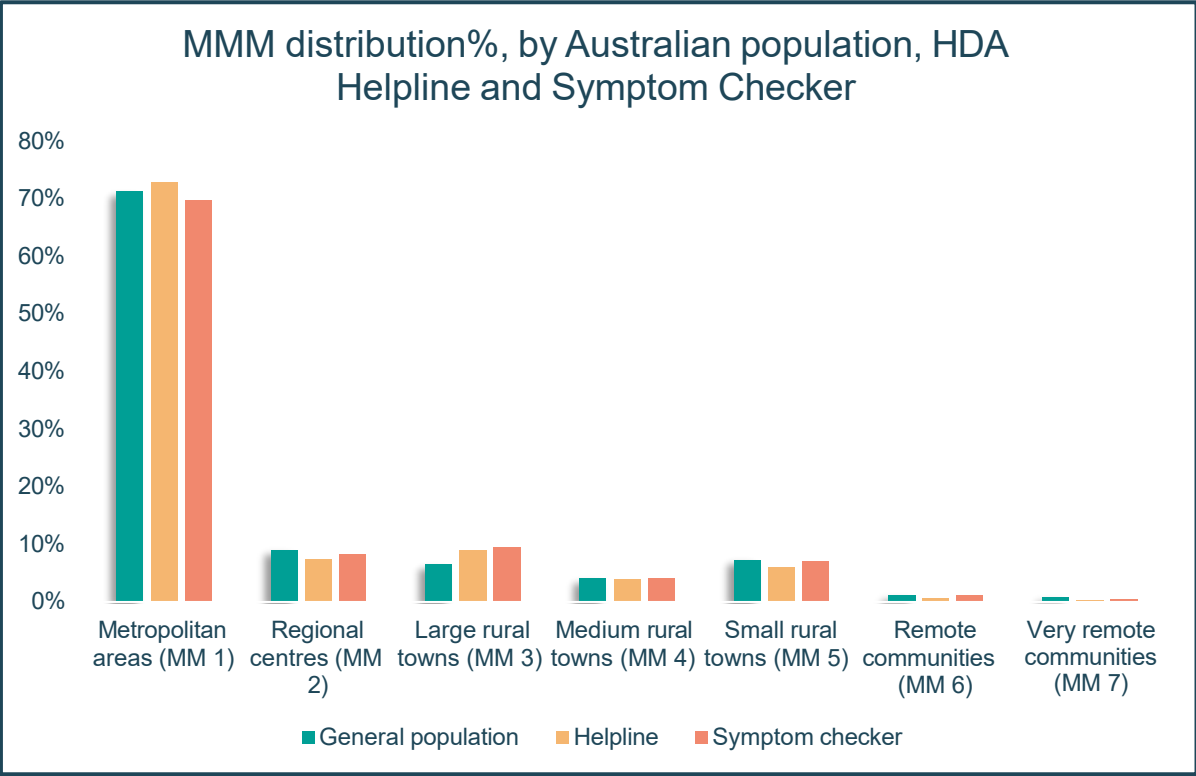
^Conditions are not currently used in triage decision making
 *Requires some NHSD infrastructure enhancement
 *Selected jurisdictions only

Enhancing population health surveillance

Augmenting other data sources so PHNs can understand more about their communities' health needs and health seeking behaviours

Healthdirect user cohorts are broadly representative of general population in terms of remoteness and First Nations status, but skews in age & gender

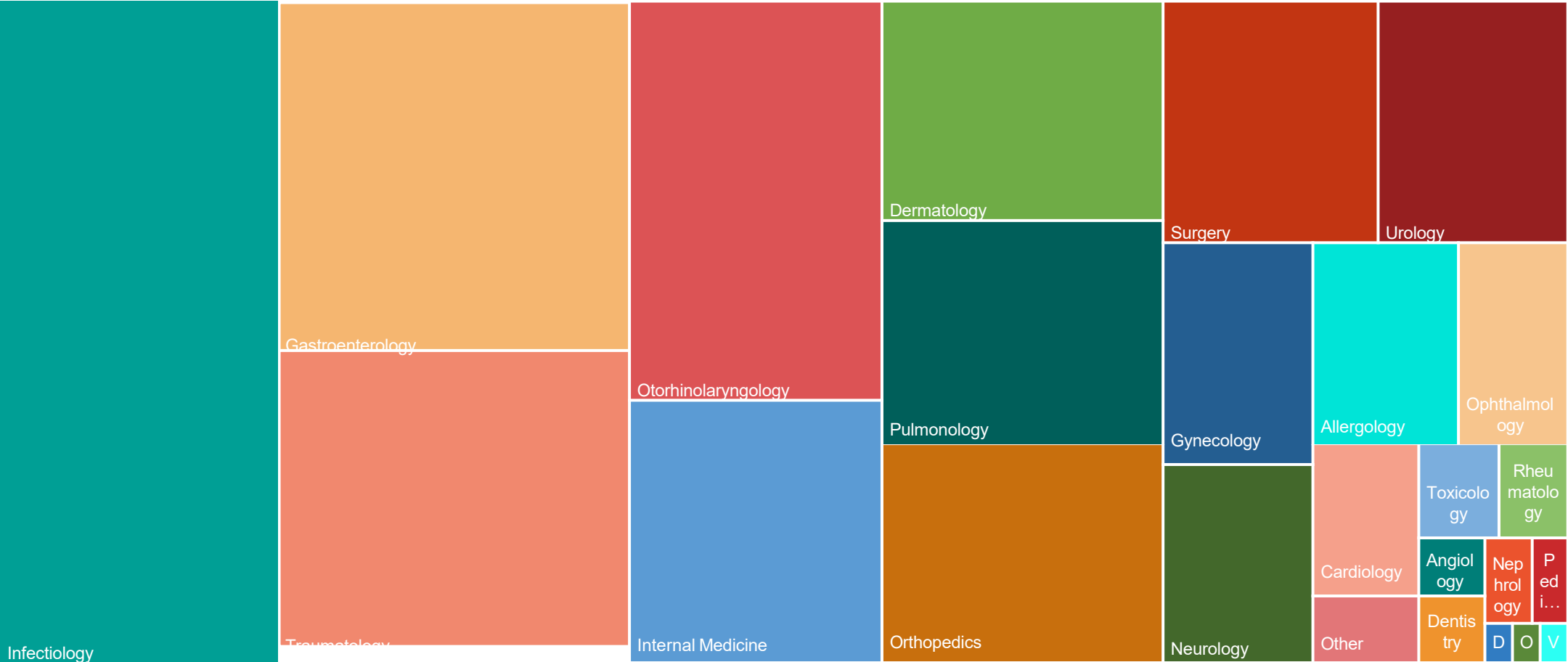
Representativeness analysis is crucial for ensuring that insights derived from a sample accurately reflect the larger population



The AI-enabled clinical decision support system captures detailed symptoms and produces predicted conditions, providing insight into burden of disease

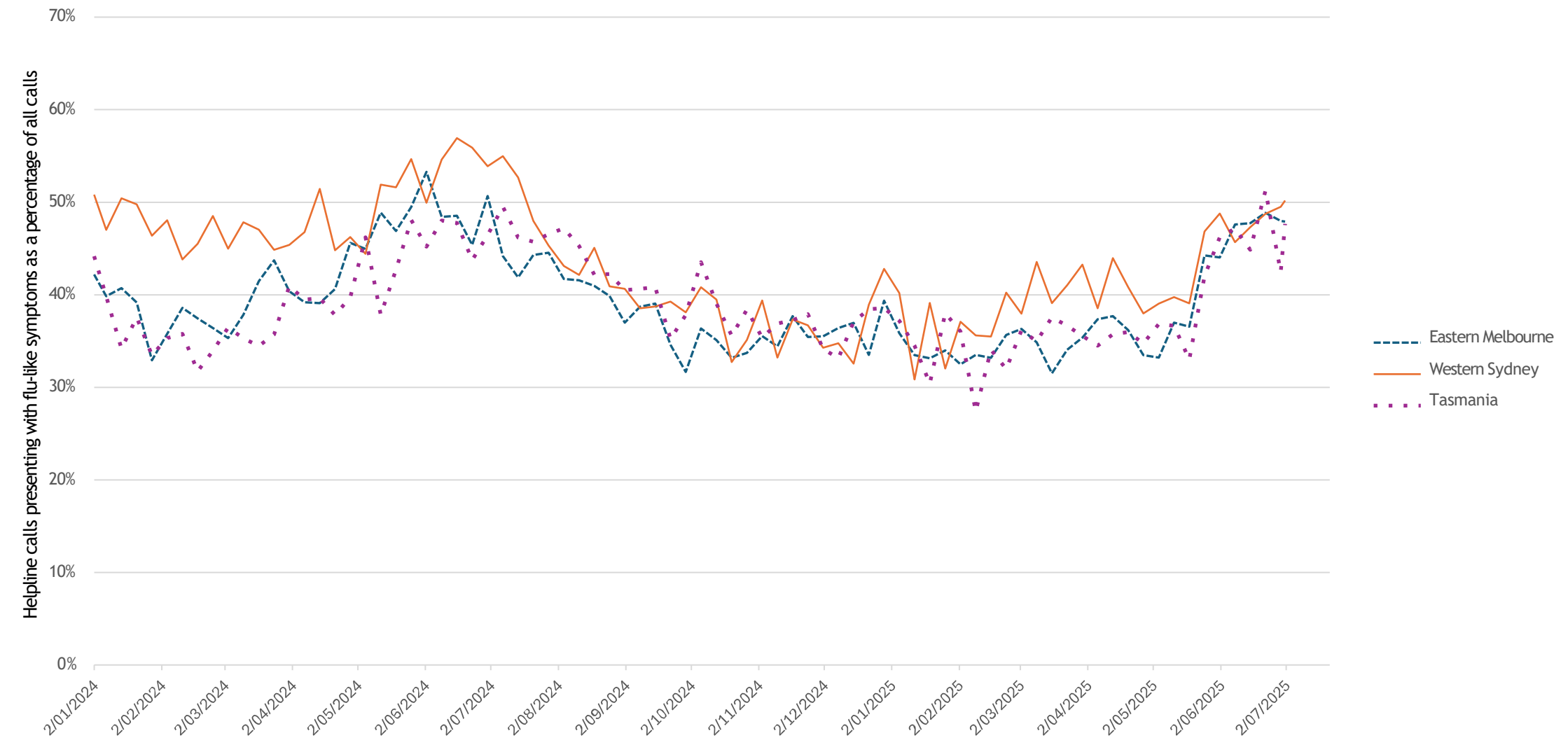
An example PHN (Nepean Blue Mountains)

Burden of disease (condition category) -- helpline users, A Sample PHN



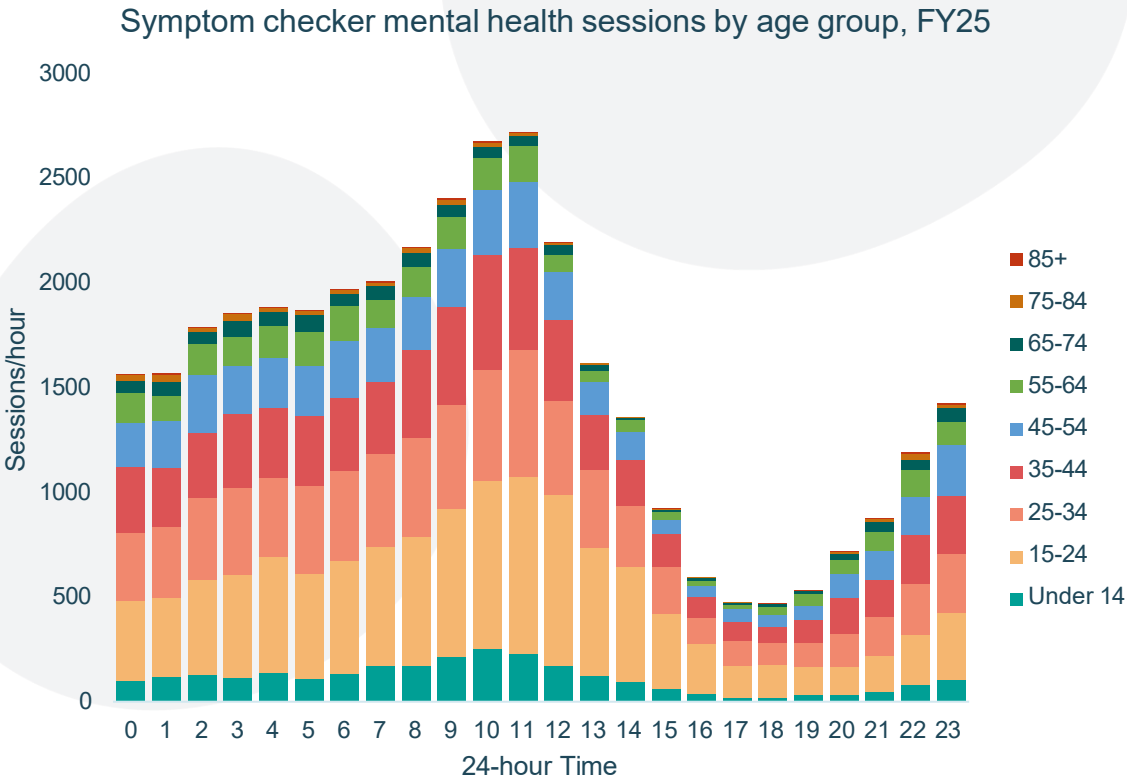
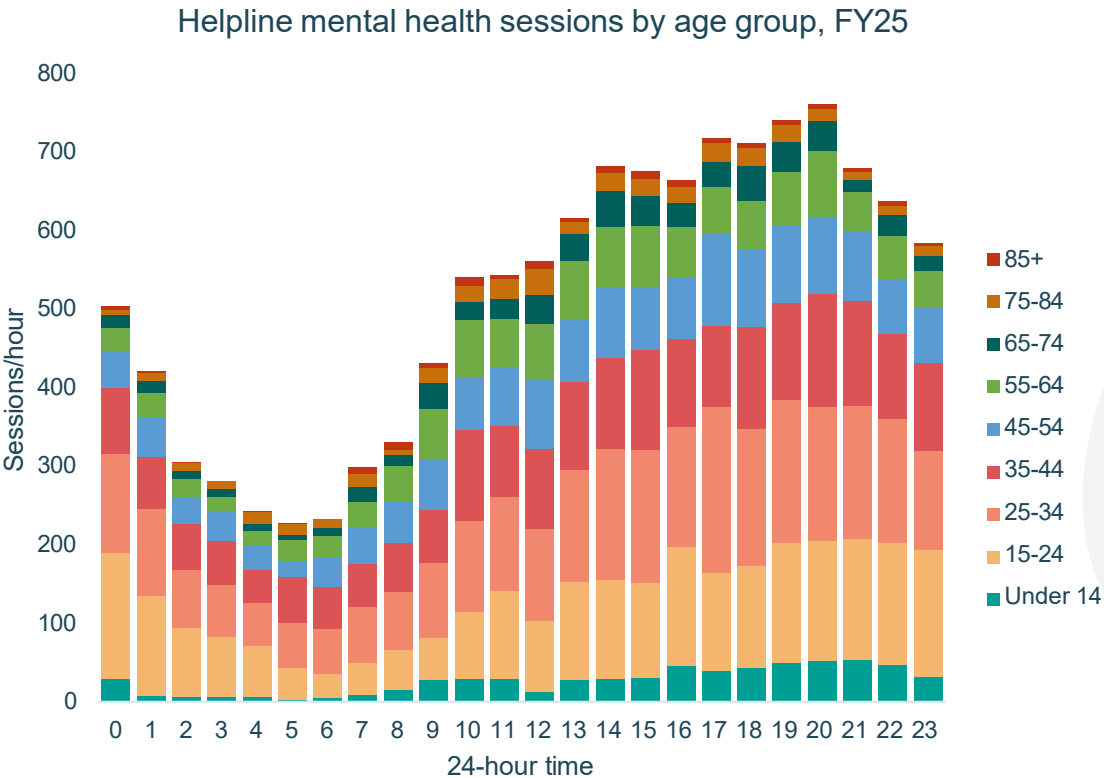
*Data source: Healthdirect data (helpline FY2025)

Incidence of flu-like symptoms (in selected PHNs) provides insight into temporal and geographic variation driving health service utilisation



Analysing cases presenting with mental health-related conditions reveals differences in health seeking behaviours, & importance of digital channel

People seeking mental health support much more likely to use the digital channel late at night and early morning



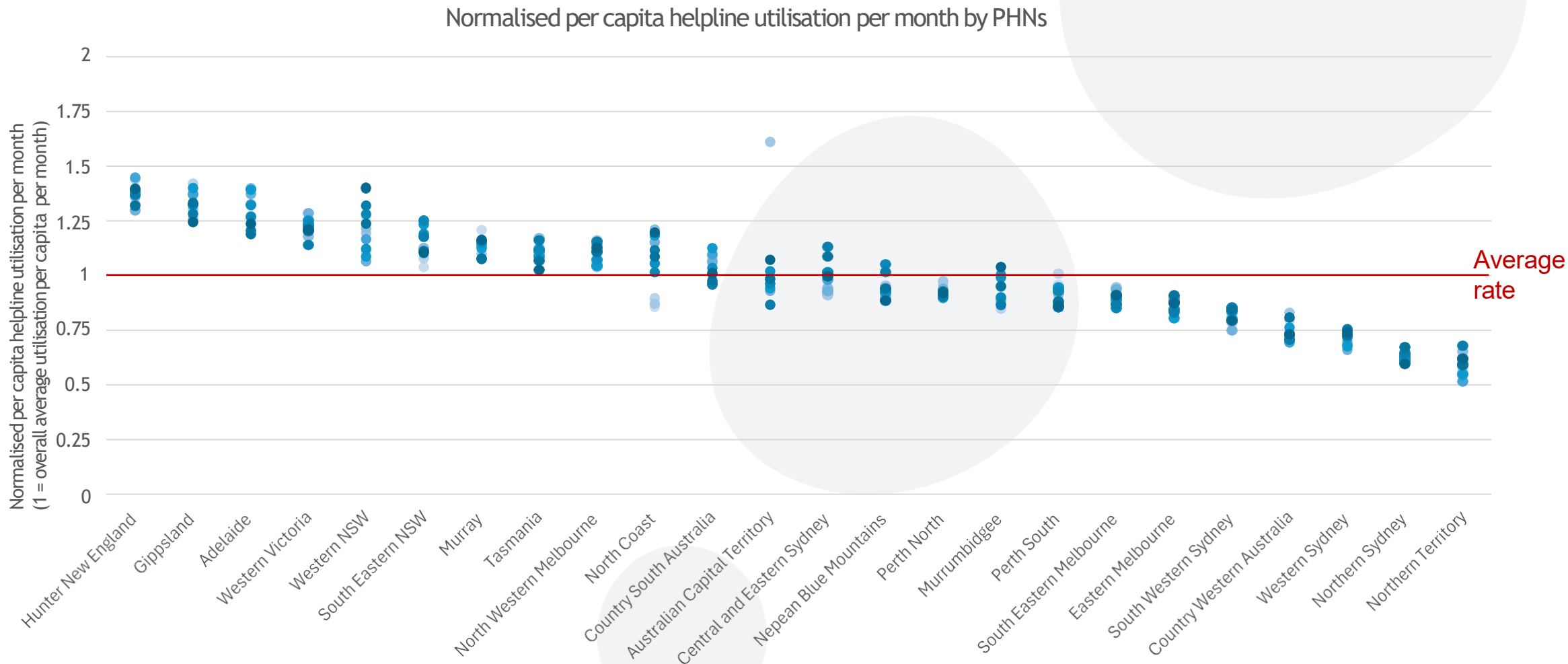
* Mental Health problem: suggestive mental health conditions with probability based on Infermedica (the clinical decision support system)
**Data source: Healthdirect data (helpline FY25, SC Aug2024-Jun2025)

Monitoring utilisation and targeting services

Monitoring utilisation provides insight into geographic and demographic variation in use, informing service targeting and system enhancements

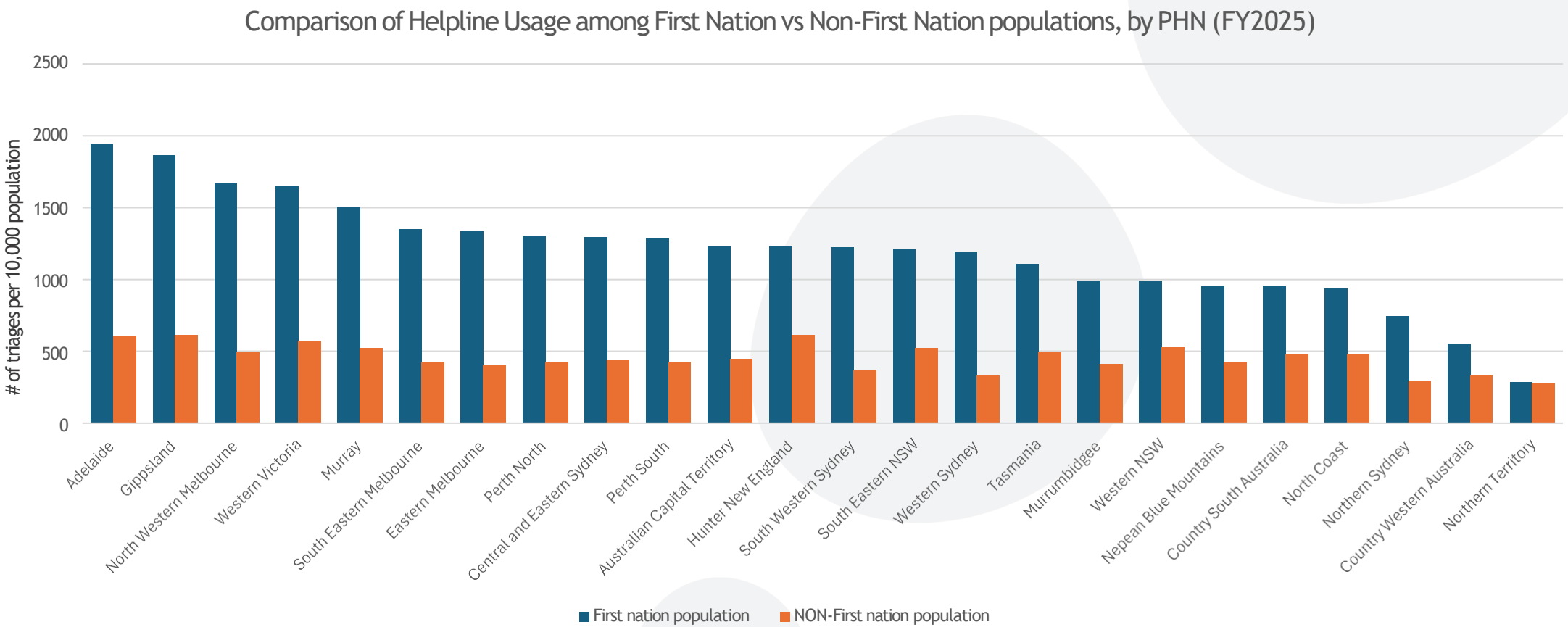
Marked geographic differences in utilisation of healthdirect services

E.g., per capita helpline usage in Hunter New England more than twice that in Western Sydney



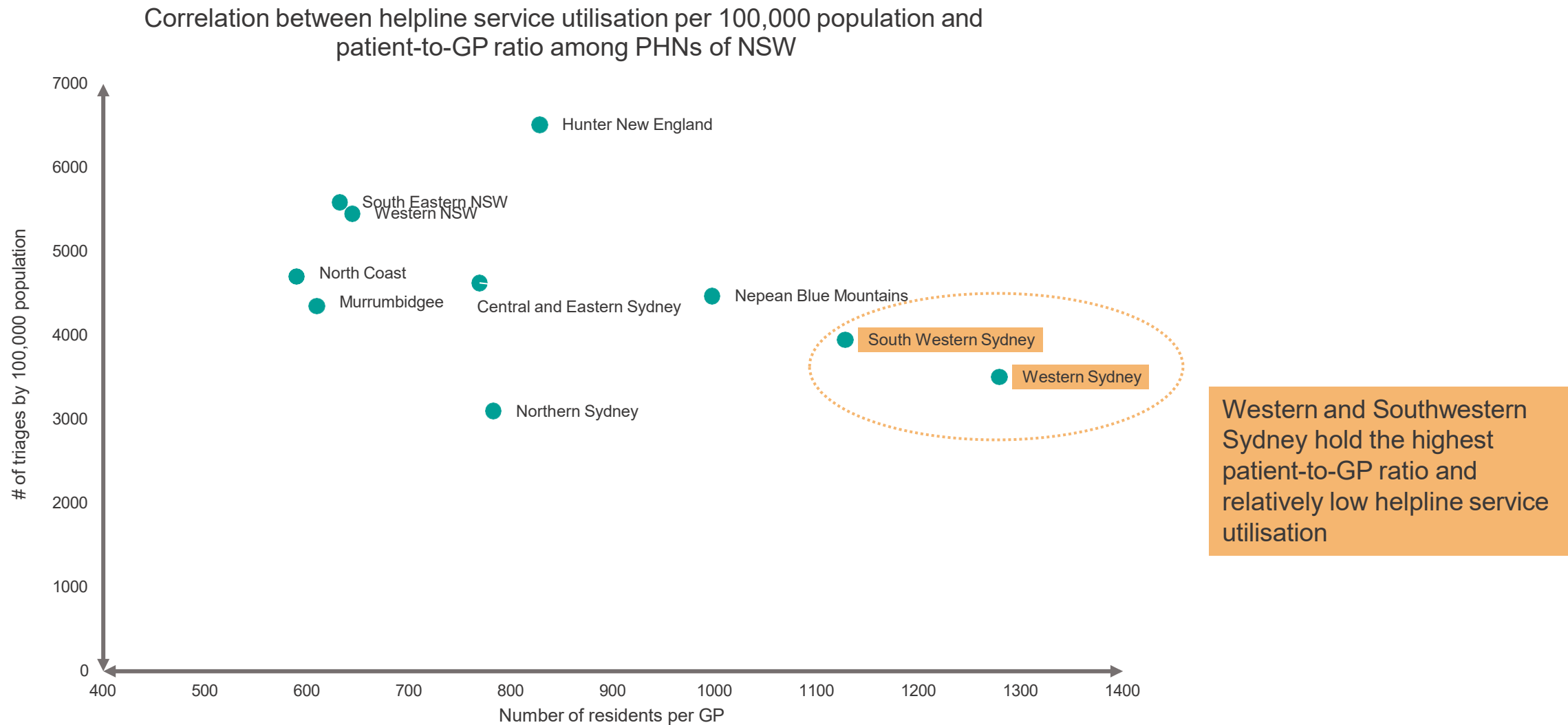
First nations populations generally have higher per capita use

Monitoring utilisation in this way assures that we are achieving equity of access



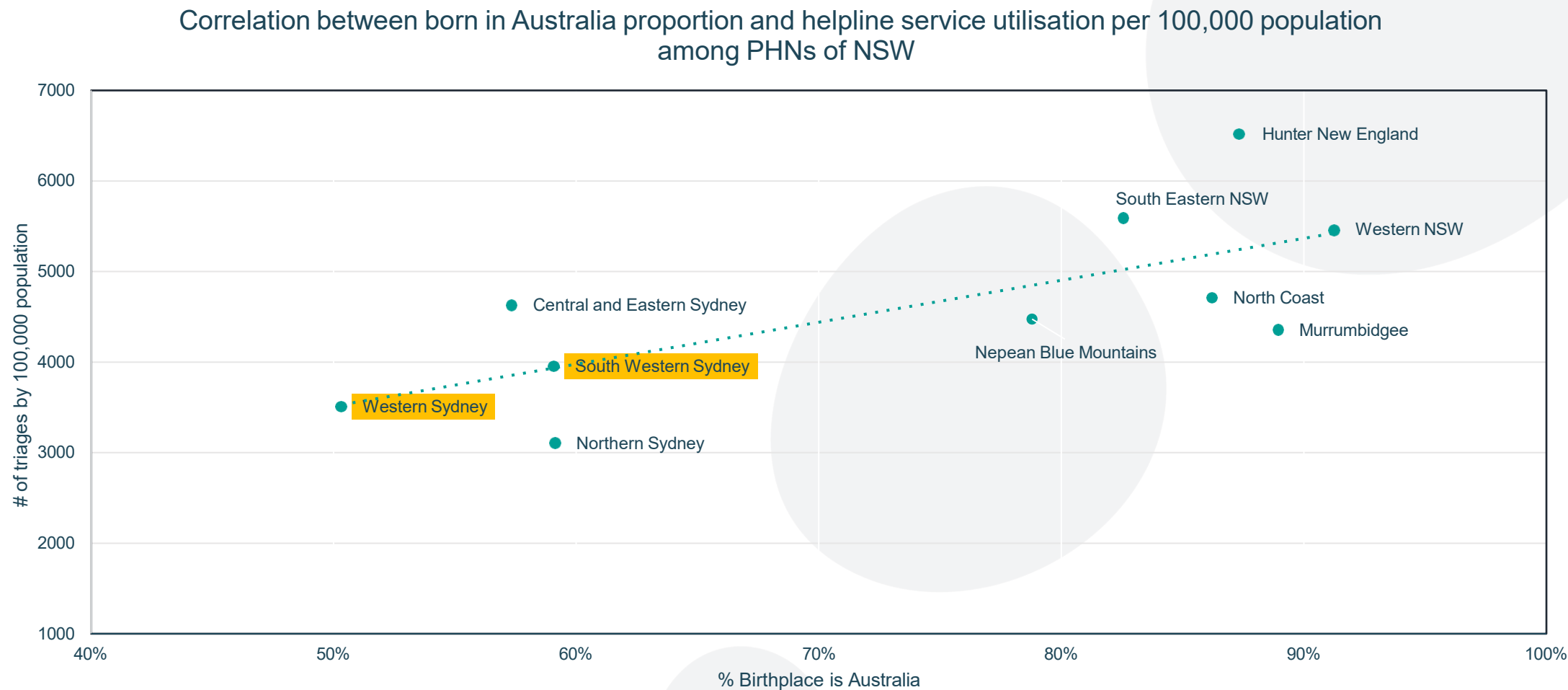
* Data source: Healthdirect helpline data (FY25), ABS Census 2021

By correlating population-normalised utilisation rates and GP availability, we can see regions where increased use of Healthdirect helpline could aid equity of access



* Data source: Healthdirect data (Jan-Dec 2024) , NHSD data

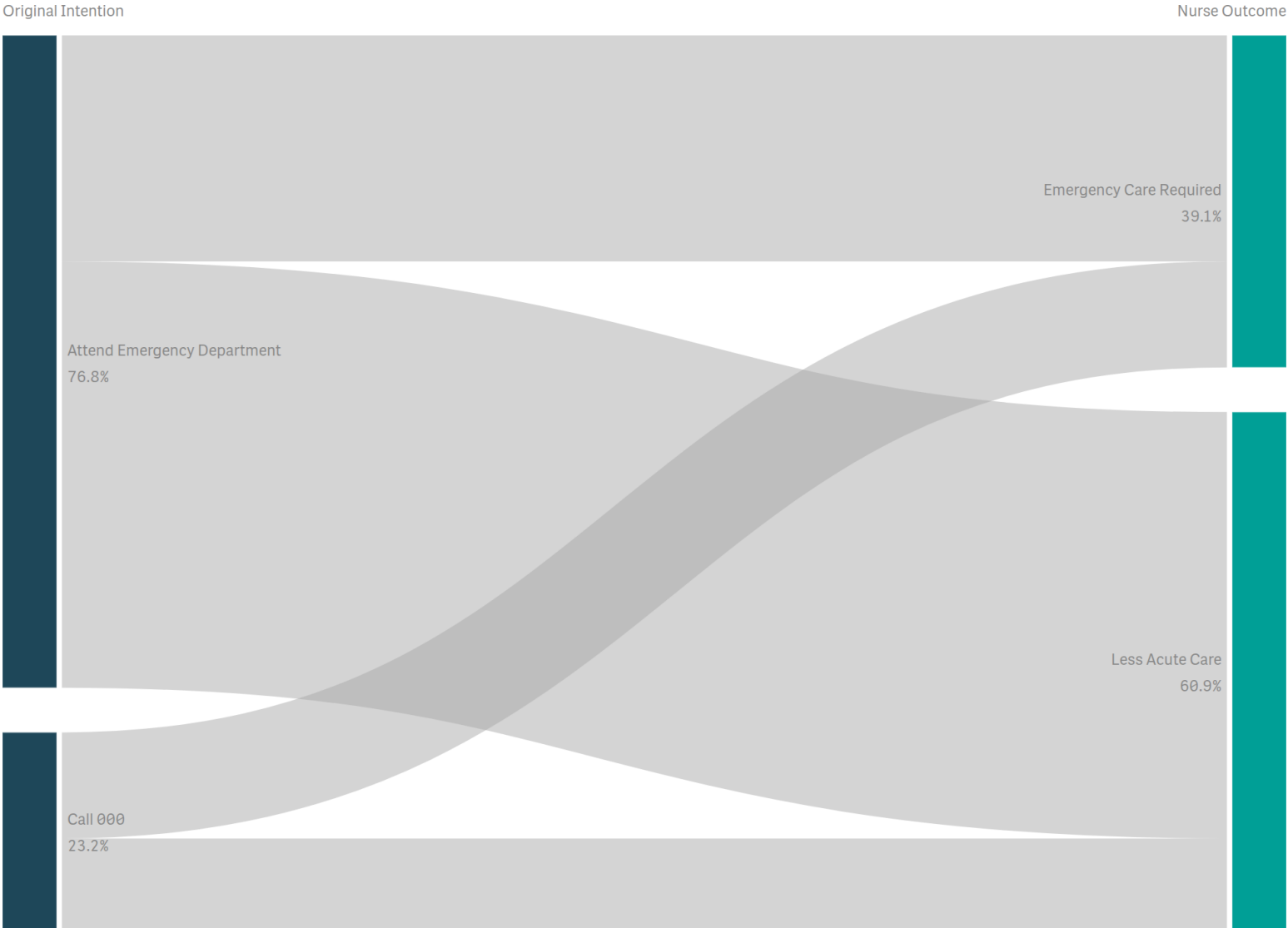
Utilisation in NSW appears inversely correlated with CALD population proportion, reinforcing need for translation to enhance access



* Data source: Healthdirect data (Jan-Dec 2024), ABS Census data (2021)

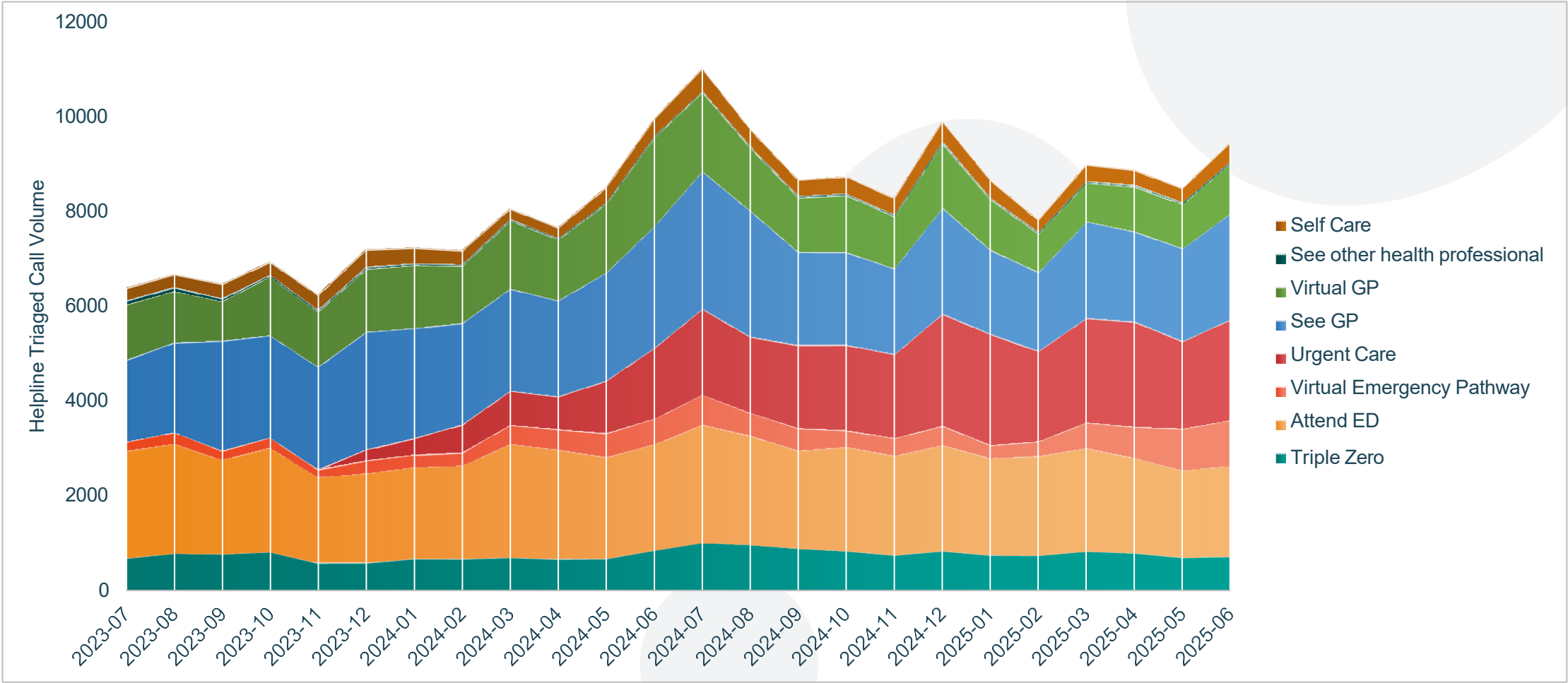
Evaluating impact

2025 YTD, more than 60% of people originally intending to go to ED or call 000 were safely diverted to lower acuity pathways



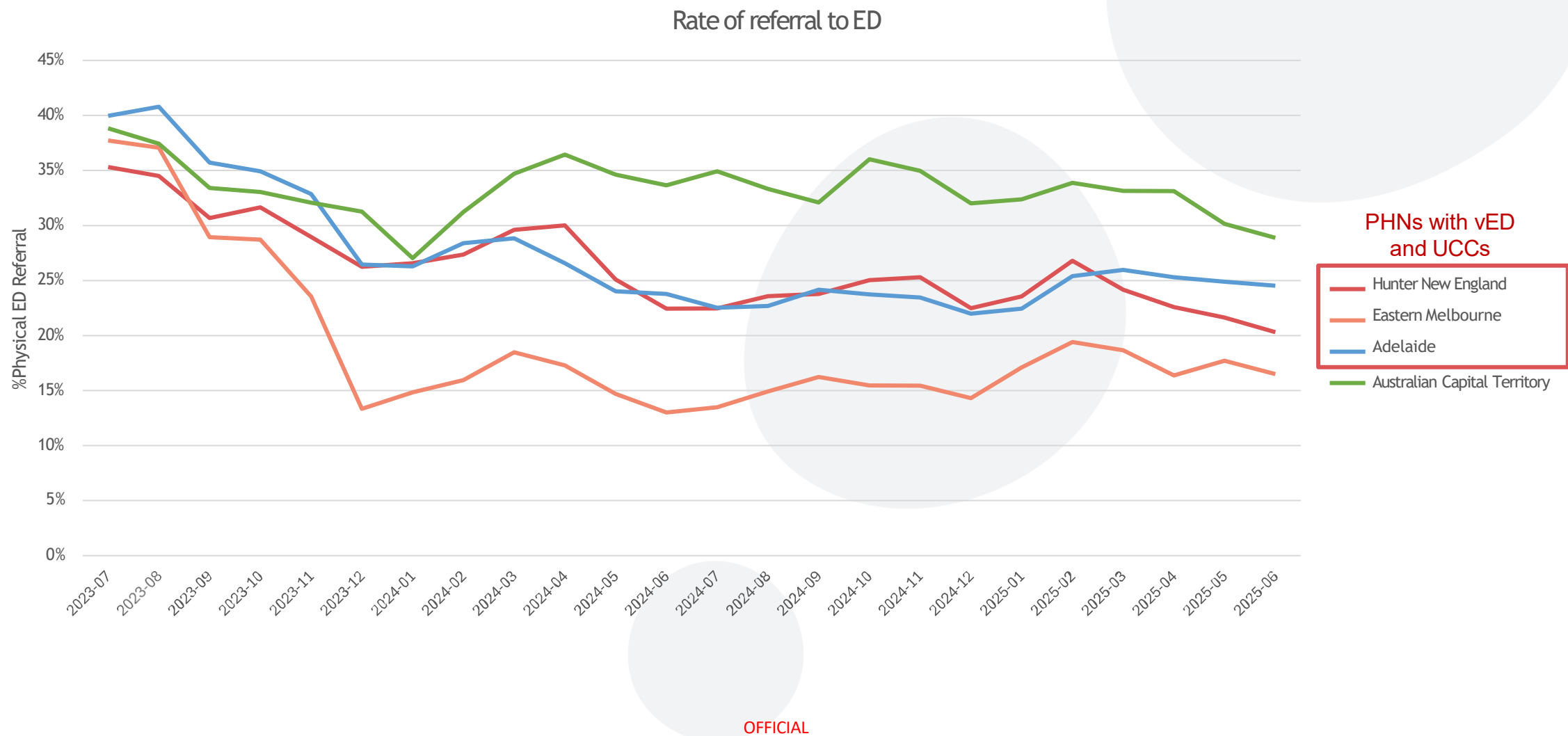
Ability to safely de-escalate directly dependent on alternative pathways being available

-- An example PHN (Hunter New England)



PHN regions with the full suite of alternative pathways have lower rates of referral to physical ED

Conspicuous reductions in rate of referral to ED coincide with introduction of vED, UCC



VFD offers opportunity for symptomatic screening and demand aggregation into condition-specific pathways and digital therapies, enhancing their viability, and offering consumer choice

metluma

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UMA40 SYMPTOM TRACKER

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Discover UMA40 – the ultimate symptom tracker for women 40+

Track your symptoms

Let us support you at any stage of life.

Navigating perimenopause into the menopause transition can feel overwhelming, yet it needn't be something to fear. From insomnia to anxiety, hot flushes to weight gain and brain fog, there are over 40 symptoms associated with menopause – many of which can be easily treated and alleviated.

No longer is menopause something you need to endure; it can be made easier with the right treatment personalised to your needs.



INSIDEOUT
eTherapies
About the eClinic
Health Professionals
Research
Urgent Help
Log In
Get Started


Evidence-based online programs and tools for people with eating disorder symptoms

Digital self-help therapies developed by an expert team of Australian clinicians and researchers

GET STARTED


FEATURES

The InsideOut eClinic




Flexible and self-paced

Complete sessions in your own time




Free to use

With support from the Australian Government Department of Health & Aged Care



Evidence-based

Backed by research





Co-designed

Developed by clinicians, researchers and people with lived experience of an eating disorder.

GETTING STARTED

Are you interested in using one of our funded eTherapy places to develop skills to help you with food and

**Very briefly, some other examples of how
Healthdirect data is being used**

Collaboration between Healthdirect and PHNs to keep the NHSD/Service Finder up-to-date in near-real-time, providing accurate information regarding local health services

We worked with PHNs to update opening hours information and real-time booking availability for health services in impacted areas.

Ex-tropical cyclone Alfred March 2025 response:

- Daily spreadsheet updates for service availability
- 994 updates over 10 days
- Banner updates on website and Service Finder to alert consumers on potential altered service times and practice closures

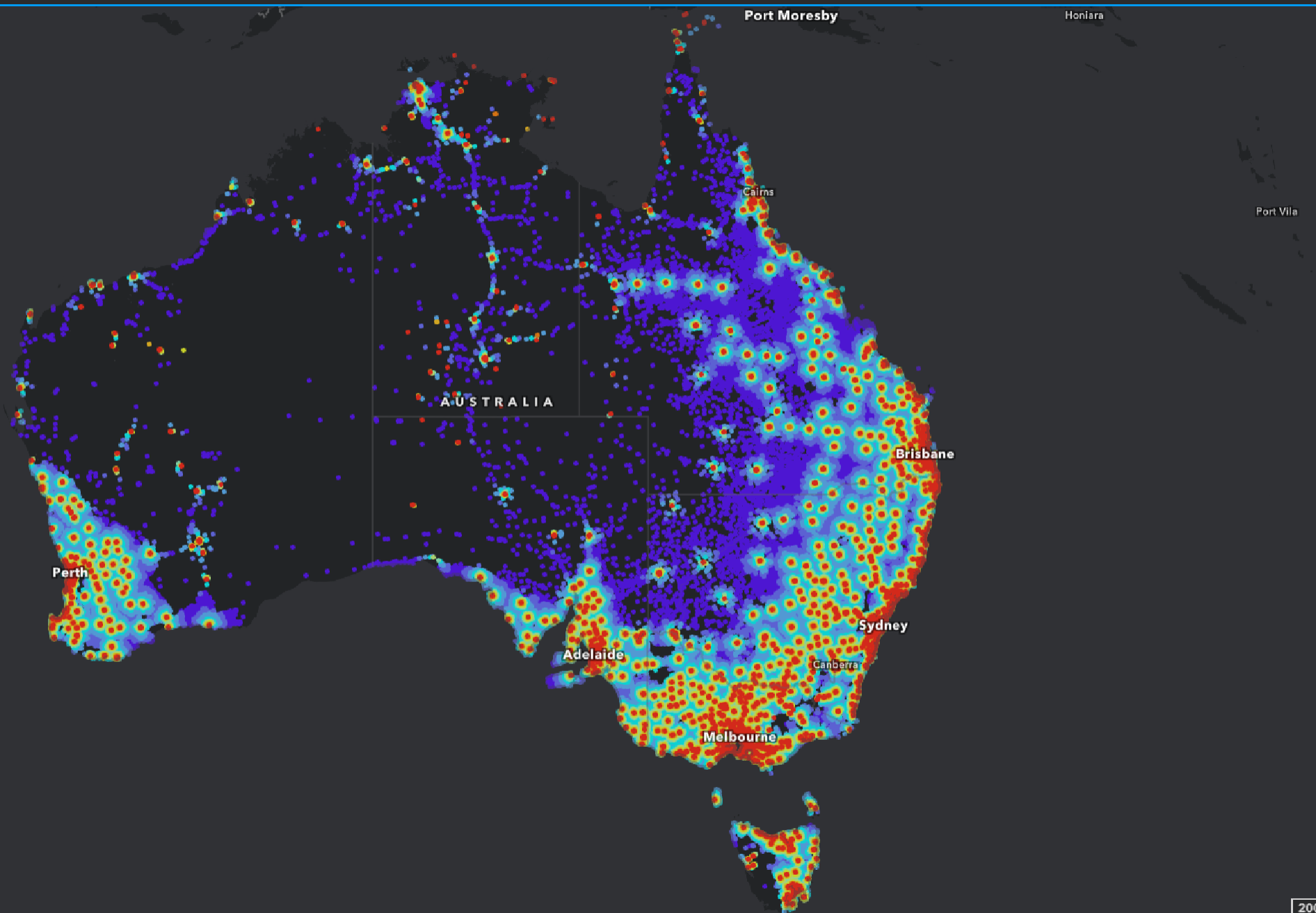
NSW Floods May 2025 response:

- Service Finder update form and direct online form links
- 28 updates over 2 days
- Banner updates on Service Finder to alert consumers on potential altered service times and practice closures



PHNs we worked with

- Darling Downs
- Brisbane South
- Gold Coast, Healthy North Coast,
- Country to Coast
- Hunter New England and Central Coast
- Healthy North Coast



Healthdirect data is used by the [Centre for Australian Research into Access \(CARA\)](#) at Deakin University to draw insights into equity of access to health services

We're working with the Interim CDC to enhance syndromic surveillance reporting to provide earlier warning of flu peaks

SBS


SBS News

Menu

Health

Australia has had over 60,000 flu cases already this year. Here's why experts are worried

Australia's vaccination rates for the flu have been trending downwards in recent years, and experts are concerned about what could be a record flu season.



More than 63,000 flu cases have been reported this year in Australia. Source: Getty / Tom Merton

Tens of thousands of influenza cases have already been reported in Australia so far this year, and with flu season around the corner, experts are concerned that many people aren't taking the consequences seriously enough.

More than 63,000 flu cases have been reported this year, tracking above the average number of cases for the past five years.

The number of cases seen so far, combined with a persistently low vaccination rate for flu, have set off alarm bells in the medical community.

Earlier this year, the Royal Australian College of General Practitioners (RACGP) called for action after over 48,000 cases were reported in the first quarter of the year.

6 min read

Published 7 May 2025 5:47am

By Elfy Scott

Source: SBS News

Available in other languages

Australia

Disease Control

Public health

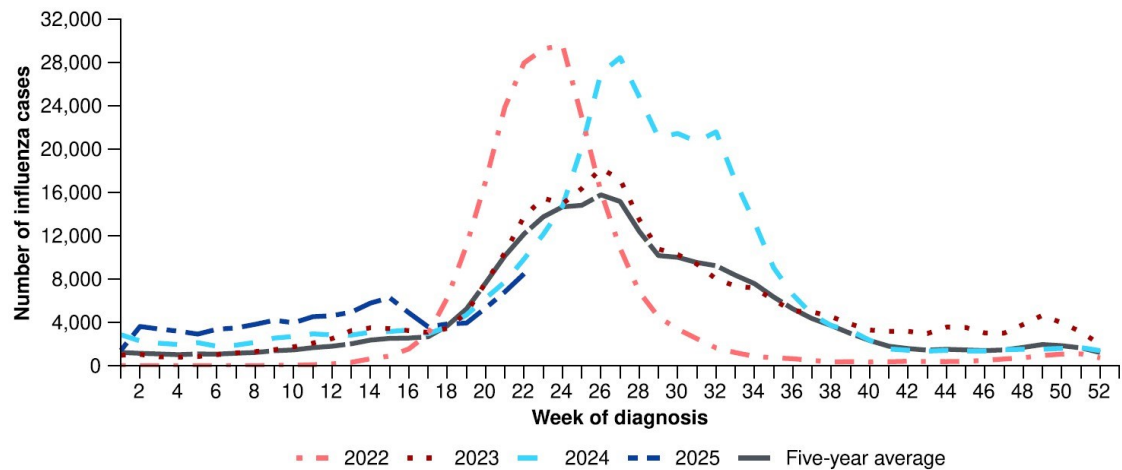
Australia

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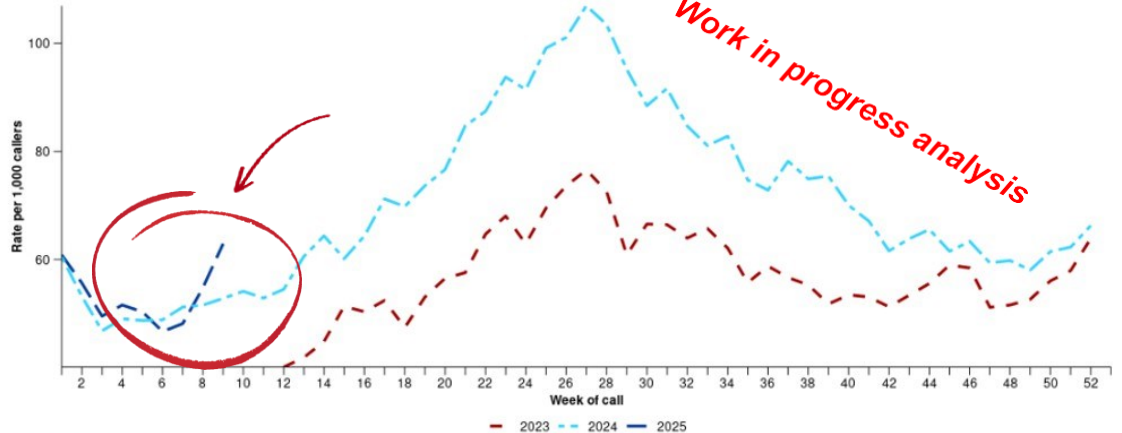
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Figure 4: Notified influenza cases and five-year average* by year and week of diagnosis, Australia, 2022 to 1 June 2025



Source: National Notifiable Diseases Surveillance System (NNDSS)

Figure A: Rate of influenza-like illness per 1,000 helpline callers by year and week of call, Australia*, 21 March 2023 to 25 February 2025



Source: Healthdirect

* The Healthdirect helpline operates in all states and territories except Qld; therefore influenza-like-illness trends will not be representative of Qld and may be underrepresented. See Technical Supplement for more information.


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*Screening definition

We have provided data to accredited linkage authorities using state-of-the-art privacy preserving record linkage

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Supporting Health, Education, Social, and Economic Research and Policy in South Australia and the Northern Territory
Delivering high quality linked data for evidence-based research and policy evaluation





SA NT DataLink is part of SA Health

We have nearly completed the transition from the University of South Australia as host. It's still business as usual. This means:

- Research applications for data linkage continue through the PHRN online application system.
- Existing data linkage projects progress as usual.
- Any inquiries related to data linkage can still be directed to SANTDataLink@unisa.edu.au.
- SANT DataLink remains in the SAHMRI building on North Terrace, Adelaide, South Australia.
- During quarter 1 of 2025 all existing data sharing agreements with data custodians will either be transferred or replaced with new agreements with SA Health, until then all agreements remain in place with the University of South Australia.

The decision to move to SA Health as host, made by the SA Government in May 2023, reflects a commitment to ensure the sustainability of SA NT DataLink.

In a collaborative approach with the NT Government and other key stakeholders, we will establish a long-term business model for SA NT DataLink.

As of 1 January 2024, all staff are employed by SA Health, while the University of South Australia will continue as the administering organisation.

A committee comprising the SA Department for Health and Wellbeing, NT Health, the SA Department for Education and the University of South Australia will oversee operations while new governance arrangements are put in place.

Updates on the transition will be communicated on this website and through broader communication channels.

SA NT DataLink provides high quality data linkage services to support research, policy development, service planning and evaluation.

SA NT DataLink is part of an Australian wide national data linkage network - the Population Health Research Network (PHRN).


The establishment of SA NT DataLink in 2009 as a collaboration between the Northern Territory and South Australia partners supported important population based data linkage research to

A free online researcher training module is available from the PHRN to help researchers better understand linked data and navigate the access and approval process.

SA NT DataLink head office is located in the SAHMRI building on North Terrace, Adelaide, South Australia.

For more information about SA NT DataLink see the [two-page information flyer](#).

Animation: What is data linkage?



[Home](#) > [Our work](#) > [Centre for Victorian Data Linkage](#)

Centre for Victorian Data Linkage

Welcome to the Centre for Victorian Data Linkage (CVDL). We are Victoria's specialist data linkage unit and provide a range of services to researchers and other Victorian Government departments.

The CVDL maintains the Victorian Linkage Map (VLM) and Integrated Data Resource (IDR), a collection of almost 40 datasets which are linked on a monthly basis. Researchers and Victorian Government employees can apply for data from one or more of these datasets using the link below.

PHRN Online Self-Service Price Calculator

This calculator provides you the opportunity to gain a cost estimate for data linkage services provided by the Centre for Victorian Data Linkage (CVDL...

[→](#)

Apply for data

CVDL's online application form is to be used for data linkage requests requiring access to Victorian datasets available from the CVDL.

[→](#)

VALT application and administration form

Use this online form to submit a new VALT application or to manage your existing VALT machine

[→](#)


About us

The Centre for Victorian Data Linkage (CVDL) is a specialist data linkage unit established in 2009 with funding from the national Population Health Re...

[→](#)

What we do?

VALT information and FAQ

A NSW Government website  **NSW Health** [Emergency information](#)

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Presentation last saved: just now

Lumos

Shining a light on the patient journey in NSW.


What is Lumos?






Lumos in action


How Lumos drives local improvements, value-based healthcare and inform policy.



Accessing Lumos data

Who can apply for access? Lumos data user responsibilities and support.





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Conducting applied research to measure the emissions of virtual health services

The Healthcare Sustainability Imperative



Climate change is largest threat to human health and wellbeing.



Changing climate creates extreme and unpredictable weather that drives demand and increases risk to core infrastructure.



The healthcare sector is a major contributor to climate change, responsible for an estimated **5-7% of Australia's total greenhouse gas emissions.**



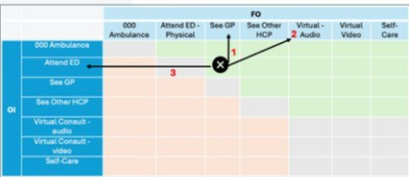
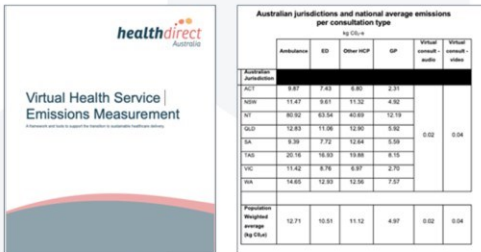
The Health sector must find new ways to meet increasing demand while reducing its own impact.

8

Introducing the Framework

A first for measuring the emission of multi-modal virtual health services.

- The Healthdirect framework:
A comprehensive and innovative solution.
- Key features:
 - Standardised methodology for multi-modal virtual health services.
 - Localised emissions factors for each Australian jurisdiction (MMM).
 - Practical toolkit and how-to guide.
 - Supports compliance and demonstrates impact.



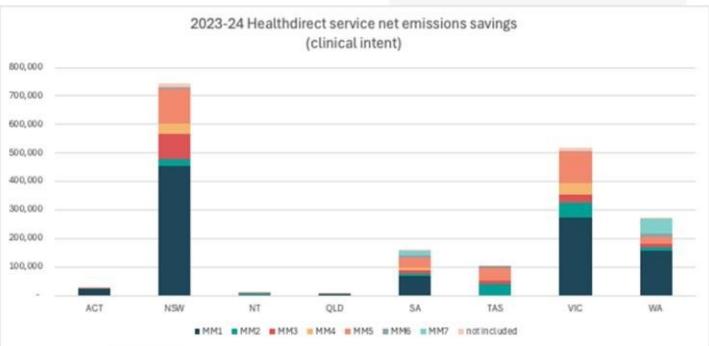
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Healthdirect Study Results

2023-24 net service emission savings

Clinical intent calls avoided
1.85 kt CO₂e

- 69% of the emission avoided were from patients in an urban or metro (MM1-3)
- 23% regional areas (MM4 and 5)
- 6% remote and very remote (MM6 & 7)
- 2% are from calls that did not meet inclusion criteria



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PhD Overview

Problem Statement:
How do health decision makers evaluate the economic, social and environmental impacts of virtual health in a standardised, reputable framework?

Solution:
The framework will visualise metrics for economic, social and environmental impacts of comparative pathways and will support health decision-makers in transitioning to more sustainable models of care.

Aim:
To apply doughnut economic theory and system design thinking tools to evaluate the triple bottom line (TBL) benefits (environmental, economic, social) of Healthdirect's virtual health services.

- Objectives:**
- To measure the avoided emissions due to virtual health services within planetary boundaries.
 - To assess the economic benefits for the government and community through a well-being economy lens.
 - To evaluate the social impacts on community health and well-being in alignment with the Sustainable Development Goals (SDGs).
 - To develop a comprehensive framework for evaluating digital health services using doughnut economics and system design thinking tools.



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Next steps for consideration

- Ways of accessing data – current and future
- PHN specific profiles for those interested

Thank you

