Health needs assessment

2025-2028

A report for the Eastern Melbourne Primary Health Network region

phn
EASTERN MELBOURNE
An Australian Government Initiative

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Acknowledgement of Country

Eastern Melbourne Primary Health Network (EMPHN) acknowledges the Wurundjeri people and other people of the Kulin Nations on whose unceded lands our work in the community takes place. We pay our respect to Aboriginal and Torres Strait Islander cultures; and to Elders past and present. EMPHN is committed to the healing of Country, working towards equity in health outcomes, and the ongoing journey of reconciliation.

Recognition of lived experience

We recognise and value the knowledge and wisdom of people with lived experience, their supporters and the practitioners who work with them and celebrate their strength and resilience in facing the challenges associated with recovery.

We acknowledge the important contribution that they make to the development and delivery of health and community services in our catchment.

Contributors

EMPHN gratefully acknowledges the contributions of all the individuals who participated in this project, and we particularly extend our thanks to the numerous health providers, community members, associations and the Project Advisory Group who have played a vital role in making this work possible. Their support is instrumental in enhancing our understanding of the health needs within the EMPHN region.

We also acknowledge North Western Melbourne Primary Health Network (NWMPHN) for their support with quantitative data analysis and the production of this technical report. Finally, we wish to acknowledge the Victorian Department of Health as the source of Victorian Admitted Episodes Dataset (VAED) and Victorian Emergency Minimum Dataset (VEMD) data used for this report.

Image credits: Adobe Stock has been used for photos throughout.

This report was completed in November 2024.

About this report

This report presents the key findings of the Eastern Melbourne Primary Health Network (EMPHN) Health Needs Assessment (HNA). The HNA provides a comprehensive analysis of the health needs of the population within the EMPHN region. These findings will inform evidence-based decision-making regarding strategic investments, advocacy efforts, and stakeholder engagement.

The EMPHN region encompasses 12 Local Government Areas (LGAs) and is divided into three distinct geographical areas: urban, green-wedge and peri-urban areas as illustrated in Figure 1.

- Urban areas include the Melbourne CBD and its surrounding suburbs, falling within the urban growth boundary (SRO 2024). These areas are characterised by high population density and a well-developed built environment (SA EPA 2024).
- Green-wedge areas encircle Melbourne's growth boundary. They feature a mix of agricultural and lower-density activities such as major infrastructure (airports, water facilities), quarries, cultural heritage sites, biodiversity areas and water catchments (DPT 2024).
- Peri-urban areas represent the interface between urban development and rural or bush environments (McKenzie 2006).

Nine LGAs are entirely within the EMPHN region, while three are partially within the region. Given that the portion of Yarra Ranges that falls outside the EMPHN region is largely uninhabited national park, it is not considered a partial LGA throughout this report. Only Mitchell and Murrindindi, the peri-urban LGAs, are so defined. Throughout the report the † symbol will be used to denote them.

The EMPHN region covers almost 4,000 square kilometers and contains almost a quarter (23%) of the Victorian population. It stretches from Melbourne's inner eastern suburb of Hawthorn to the Yarra Ranges. The southern aspect includes the multicultural communities of Box Hill and Glen Waverly, while the northern boundary extends to the rapidly growing Whittlesea region.

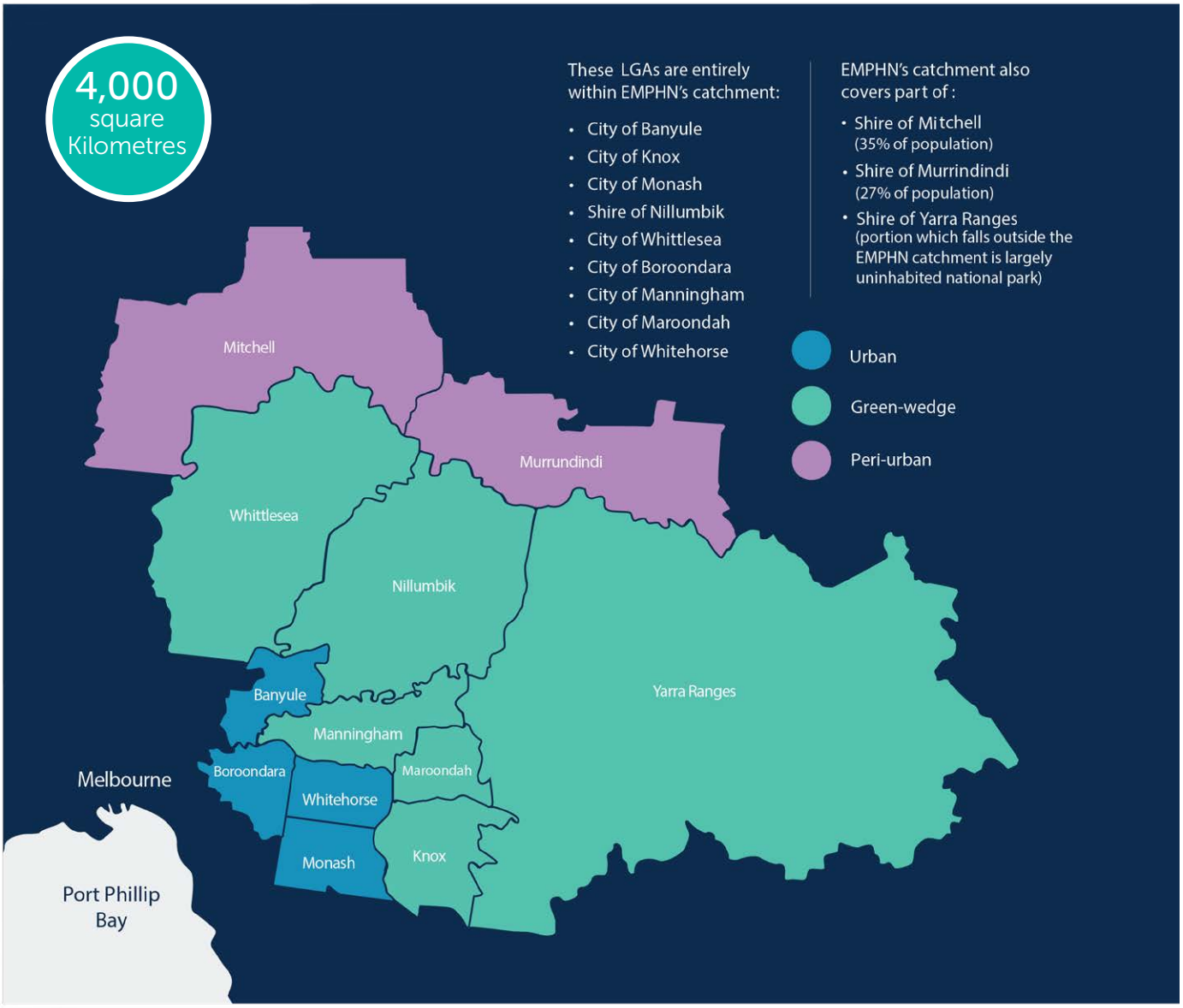
The data sources used in this report are sometimes only available at Statistical Area 3 (SA3) granularity, and not at an LGA level. Table 1 maps the SA3 to LGAs.

Table 1. Mapping of SA3 to LGAs.

SA3 name	LGA
Banyule	Banyule
Boroondara	Boroondara
Knox	Knox
Manningham – East	Manningham
Manningham – West	Manningham
Maroondah	Maroondah
Monash	Monash
Nillumbik – Kinglake	Murrindindi†, Nillumbik
Whitehorse – East	Whitehorse
Whitehorse - West	Whitehorse
Whittlesea – Wallan	Mitchell†, Whittlesea
Yarra Ranges	Yarra Ranges

This report was developed by NWMPHN and EMPHN, in line with the Australian Department of Health and Aged Care (DHAC) guidelines. An accompanying supplementary file provides the detailed data analyses used. For any queries, please contact comms@EMPHN.org.au.

Figure 1. Local Government Areas included in the EMPHN catchment.



This report was developed by NWMPHN and EMPHN, in line with the Australian Department of Health and Aged Care (DHAC) guidelines. An accompanying supplementary file provides the detailed data analyses used. For any queries, please contact comms@EMPHN.org.au.

A mapping of the sections of this document to the DHAC reporting requirements is outlined below.

Requirement	Section reference	Page #
Provide a brief description of the PHN's Needs Assessment development process and the key issues discovered.	1.2 Approach 2. Methodology	22 23
Outline the process for utilising techniques for service mapping, triangulation and prioritisation.	2. Methodology 5. Prioritisation	23 133
Provide specific details on stakeholder consultation processes.	2. Methodology 4. Community and health provider engagement	23 124
Provide an outline of the mechanisms used for evaluating the Needs Assessment process.	1.2 Approach 2. Methodology 4. Community and health provider engagement 5. Prioritisation	22 23 124 133
Provide a summary of the PHN region's health needs.	Appendix E	161
Provide a summary of the PHN region's service needs.	Appendix E	161
Summarise the priorities arising from Needs Assessment analysis and opportunities for how they will be addressed.	5. Prioritisation	133
Appropriately cite all statistics and claims using the Australian Government Style Manual author-date system.	✓	N/A
Include a comprehensive reference list using the Australian Government Style Manual.	6. References	141
Use terminology that is clearly defined and consistent with broader use.	✓	N/A
Ensure that development of the Needs Assessment aligns with information included in the PHN Needs Assessment Policy Guide.	✓	N/A

Contents

List of Figures

List of Tables

Acronyms

ABS	Australian Bureau of Statistics
ACCO	Aboriginal Community Controlled Organisations
ACCHO	Aboriginal Community Controlled Health Organisation
ADF	Australian Defence Force
AED	Avoidable Emergency Department presentations
AEDC	Australian Early Development Census
AIHW	Australian Institute of Health and Welfare
AOD	Alcohol and Other Drugs
ASR	Age standardised rate
ATAGI	Australian Technical Advisory Group on Immunisation
AUO	Australian Urban Observatory
CALD	Culturally and linguistically diverse
CBD	Central Business District
CHD	Coronary Heart Disease
CKD	Chronic Kidney Disease
COPD	Chronic Obstructive Pulmonary Disease
CVD	Cardiovascular Disease
DH	Victorian Department of Health
DHAC	Australian Government Department of Health and Aged Care
DWS	Districts of Workforce Shortage
ED	Emergency Department
EM	Eastern Melbourne
EMPHN	Eastern Melbourne Primary Health Network
ENT	Ear, nose and throat
ERP	Estimated Resident Population
FTE	Full-Time Equivalent
FY	Financial Year
GP	General Practitioner / General Practice
GPACI	General Practise in Aged Care Incentive

GP demo	GP demonstration program
HeaDS Upp	Health Demand and Supply Utilisation Patterns Planning Tool
HNA	Health Needs Assessment
HPV	Human Papillomavirus
IAR-DST	Australian Government's Initial Assessment and Referral Decision Support Tool
ICD-10	International Classification of Diseases, 10th Revision
ICD-10-AM	International Classification of Diseases, 10th Revision, Australian Modification
IRSD	Index of Relative Socio-economic Disadvantage
ITC	Integrated Care Team
KM	Kilometres
KM2	Square Kilometres
LGA	Local Government Area
LGBTIQ+	Lesbian, gay, bisexual, transgender, gender diverse, intersex, queer, asexual, queer and/or questioning; the "+" symbol acknowledges the diversity of gender identities and sexual orientations that may not be explicitly named in the acronym.
LOTE	Language other than English
MBS	Medicare Benefits Schedule
MCH	Maternal Child Health
METEOR	Metadata Online Registry
MPCN	Melbourne Primary Care Network
N/A	Not Applicable
NES	Non-English-speaking
NHMRC	National Health and Medical Research Council
NHS	National Health Survey
NIP	National Immunisation Program
NWMPHN	North Western Melbourne Primary Health Network
PBS	Pharmaceutical Benefits Scheme
PDSA	Plan, Do, Study, Act

Acronyms continued

PHIDU	Public Health Information Development Unit
PHN	Primary Health Network
PMHC-MDS	Primary Mental Health Care Minimum Data Set
POLAR	Population Level Analysis and Reporting
PPH	Potentially Preventable Hospitalisations
PTSD	Post Traumatic Stress Disorder
QI	Quality Improvement
RACF	Residential Aged Care Facility
RACH	Residential Aged Care Home
RACGP	The Royal Australian College of General Practitioners
RCBH	Right Care = Better Health
RSE	Relative Standard Error
SA1 (2 or 3)	Statistical Area 1 (2 or 3)
SDH	Social Determinants of Health
SEIFA	Socio-Economic Indexes for Areas
SEMPHN	South Eastern Melbourne Primary Health Network
SIDS	Sudden Infant Death Syndrome
SMEs	Subject Matter Experts
SNAP	Smoking, Nutrition, Alcohol and Physical activity
STI	Sexually Transmissible Infection
UCC	Urgent Care Clinic
UTI	Urinary Tract Infection
VAED	Victorian Admitted Episodes Dataset
VEMD	Victorian Emergency Minimum Dataset
VPHS	Victorian Population Health Survey
VTPHNA	Victorian-Tasmanian Primary Health Network Alliance
WHO	World Health Organization
WM HSP	West Metro Health Service Partnership
WM HSP	West Metro Health Service Partnership

Executive summary

This Heath Needs Assessment (HNA) presents a systematic analysis of the health and service needs of the community in the Eastern Melbourne Primary Health Network (EMPHN) region. Its purpose is to facilitate discussions, identify opportunities for strategic partnerships, guide evidence-based planning and aid in the prioritisation of commissioning activity investment and advocacy work to improve the community's health and wellbeing.

Context

This 2025-28 region-wide HNA, conducted by EMPHN in 2024, is an evidence-based activity that defines, identifies, and measures population health need in the region. Guided by the North Western Melbourne Primary Health Network (NWMPHN) HNA Framework, it provides key insights informed through quantitative analyses based on population growth and social determinants, that influence health and wellbeing.

Integral to this project is the involvement of people with lived experience and subject matter expertise. This is particularly evident in the fourth section of this report, titled Community and Health Service Provider Engagement, which imparts insights that contribute to a nuanced understanding of the complex social, cultural and economic factors and experiences related to health need in the EMPHN region.

This report adopts a holistic definition of health that extends beyond physical health and medical care. It acknowledges the significant influence of social, cultural, spiritual and economic factors on population health and wellbeing. Community-based social services are therefore considered integral to health care, as they address the broader determinants of health and contribute to overall wellbeing. The term 'service needs,' refers to current health system challenges including supply and demand pressures that hinder the ability to meet health needs.

Method

A mixed-methods approach, combining quantitative and qualitative data analysis, has been used. NWMPHN led the analysis of quantitative population health data and the preliminary findings were discussed and analysed with the EMPHN project advisory group. Normative need (defined by health service and subject matter experts) and felt and expressed need (defined through the views of people living or accessing services in the region) was led by EMPHN. Data was collected primarily through a survey comprising closed-ended questions providing quantitative and limited qualitative insights.

Comparative need analyses examined epidemiological data across five metrics: projected population; socio-demographics; risk factors; geographical environment and health service access; and health conditions and consequences. A range of quantitative data sources and indicators were used to generate insights about health needs and health system challenges across primary care and hospital settings. However, only those that met set selection criteria were included in the quantitative model, which is used to calculate the overall health need for each Local Government Area (LGA) across all five metrics. Indicators not meeting the model criteria requirements are still analysed, offering important contextual insights in this report.

Online surveys were used to consult with over 1,200 people, including 1,226 community members and 11 service providers.

Key Findings

Results from the quantitative population health needs analyses identified Whittlesea, Yarra Ranges and Monash as having the highest health need after adjusting for the social determinants of health (SDH). The results across each of the five metrics are summarised below.

Metric 1. Projected population

The population in the EMPHN region is growing rapidly. By 2030, the number of people living in the region is projected to increase by 22%, reaching a total of approximately 1.9 million.

Whittlesea has the highest need based on the current and projected population. Projections indicate that Whittlesea's growth will account for nearly 20% of the total projected population increase across EMPHN by 2030.

The population across the EMPHN region is expected to grow across all age groups, with the highest projected growth among those aged 85+.

Metric 2. Socio-demographic factors

While there is localised social disadvantage throughout the LGAs in the EMPHN region, Whittlesea shows the highest level of need based on socioeconomic status. When socio-demographics were adjusted for population, Whittlesea and Monash displayed the greatest need relative to other LGAs in the region.

Overall, the population of the EMPHN region is younger and more culturally and linguistically diverse than Victoria as a whole. It is home to a higher-than-average proportion of residents born in non-English speaking countries.

Metric 3. Risk factors associated with ill health

The highest levels of need related to risk factors were seen in the peri-urban areas of Mitchell† and Murrindindi† and the populous LGA of Whittlesea.

Overall, the population living in the eastern Melbourne region generally experiences a comparable or lower level of risk compared with Victoria. However, Mitchell and other LGAs with lower socioeconomic advantage consistently rated higher.

Mitchell is the most disadvantaged LGA in terms of early childhood and family risk factors, particularly smoking during pregnancy and rates of family violence incidents.

A similar pattern of association between social disadvantage and biomedical risk factors emerged. One example of this is reflected by a substantial proportion of the population being either overweight or living with obesity and engaging in behaviours that increase the risk of poor health and wellbeing. These include daily smoking and low fruit intake. The analysis also revealed low rates of cancer screening in Whittlesea, Mitchell and Murrindindi.

Metric 4. Geographical environment and access

Improved 'liveability' was generally linked with proximity to the Melbourne CBD. LGAs outside urban areas and with greater socio-economic disadvantage – Mitchell, Murrindindi and Whittlesea – had the highest level of need related to access and geographical environment. Key barriers to access included limited health infrastructure and health workforce shortages across nearly all professions. Shortage of non-GP specialists, including psychiatrists, was a widespread issue.

There is service cost variation across the region which, on average, was higher than the national average. Boroondara, Nillumbik, Yarra Ranges and Murrindindi had the highest out-of-pocket costs in the EMPHN region.

Over half of all potentially preventable hospitalisations (PPHs) were linked to chronic diseases, which were largely driven by iron deficiency, anaemia and diabetes.

Over half of all potentially preventable hospitalisations (PPHs) were linked to chronic diseases, which were largely driven by iron deficiency, anaemia and diabetes. While the rates of PPHs overall remain similar to pre-pandemic levels, the burden of disease disproportionately impacts communities in Whittlesea, Mitchell and Knox.

Metric 5. Health conditions and consequences

Health needs associated with burden of disease is highest in Mitchell†, Whittlesea, Yarra Ranges and Knox.

General practitioner (GP) diagnoses and self-reported census insights indicate that mental health disorders, chronic pain, diabetes, and heart disease are the most prevalent conditions being managed in primary care and impacting health and wellbeing in the region.

In 2023, nearly half of the population was diagnosed by a GP with at least one condition. Approximately 75% of these diagnoses were for cardiovascular, mental health, musculoskeletal and respiratory conditions.

Between 2020 and 2023, emergency department (ED) presentations and hospitalisation rates rose. Cardiovascular disease was the main condition underlying acute care management.

Adolescents and young adults (ages 15-34), especially females, were most impacted by suicidal thoughts and self-harm, necessitating acute care. Males were more likely to die by suicide and experience higher rates of premature and avoidable deaths across the region.

Community and health provider consultations

Findings from consultations with community members and health service providers included:

Consumers experience **challenges navigating the health system**

Active listening from health providers was the main way consumers felt understood and supported by them.

Unmanaged mental health disorders are a major concern and given that consumers report the greatest difficulty in accessing mental health services, and health providers believe there are insufficient mental health services, action needs to be taken.

Cost and long wait times are the most common barriers to receiving timely care. **Distance to services and not knowing where to go are also common challenges.**

The health system is overstretched and needs bolstering through funding and enhanced workforce capacity to meet increasing demand and reduce delays in care.

Prioritisation

Key challenges

Analysis of quantitative data and in-depth consultation findings identified seven challenges that hinder optimal health and wellbeing of people living in the EMPHN region. These challenges are illustrated on teh next page.

Prioritising needs

Following the identification of health and service needs, the final stage of the HNA involved prioritising them. This process was essential for synthesising evidence and informing planning, in consideration of the limited availability of funding, resources, workforce and infrastructure.

The process involved triangulating the quantitative and qualitative evidence and seeking subject matter expert (SME) input to systematically prioritise the need using a set of criteria.

The prioritised needs were grouped into these EMPHN commissioning streams: aged care, alcohol and other drugs, health conditions, mental health and suicide prevention, and primary health care. The identified needs and up to three potential opportunities to address them have been described in this report.

While the HNA leveraged multiple data sources to mitigate data limitations, service providers and community members highlighted the need to proactively strengthen health data and systems. This is essential for identifying and addressing health inequities and needs to develop targeted, evidence-based responses to address health inequities.

1. **Access to services**
Affordability & availability

4. **Prevention & early intervention**
Preventative programs, education and awareness

2. **Culturally safe care**
Cultural training and culturally safe environments

3. **Integration & coordination of care**
Holistic approaches & collaborative models of care

5. **Workforce development**
Capacity building and lived experience

6. **Targeted support for vulnerable populations**
Focused on specific groups, mental health & AOD support

7. **Data driven responses**
Strengthening data collection and quality improvement

Future actions and directions

This HNA serves as a primary reference tool for EMPHN, its commissioned partners, and key stakeholders, including all levels of government. It aims to provide a comprehensive overview of the region's current health status, informing local priority settings, and targeted, strategic and collaborative approaches to address health inequities and complex system challenges.

The findings and prioritised needs set out in the HNA will guide EMPHN in planning and making data-driven decisions across its core roles and functions. These are:

A communicator, raising awareness of health issues, and promoting evidence-based practices.

A champion, advocating for equitable health outcomes. This fosters a sense of commitment among our local and wider community.

A commissioner, aligning commissioning frameworks with priority needs and community outcomes, ensuring fair resource allocation for effective services, programs and initiatives.

A coordinator, increasing impact though collaborative approaches, facilitating coordinated efforts.

A capability builder, working with services to enhance skills and knowledge, improving the effectiveness and responsiveness of health services in the EMPHN catchment.

The data and findings from this report will also inform opportunities for targeted quantitative and qualitive analyses to build the evidence-base. Finally, the HNA provides a foundation for considering other factors important for decision-making, including existing services, current commissioned activities and funding schedules.

1.

Introduction

1.1 Purpose and objectives

In 2024, EMPHN conducted a health needs assessment for the region.

The EMPHN Health Needs Assessment (HNA) was designed to identify and prioritise current and emerging health needs, service gaps, and opportunities within the EMPHN catchment.

The findings will inform evidence-based planning and decision-making about investments in health initiatives, services and collaborative opportunities. Ultimately, these efforts improve health outcomes for individuals and communities residing within our region.

The HNA also presents a valuable opportunity to engage with our diverse community, including those who access and provide health care services within the EMPHN catchment.

1.2 Approach

The HNA was delivered across three stages.

Table 2. Approach to developing the EMPHN HNA.

Stage 1: Project initiation and planning	Stage 2: Project Execution	Stage 3: Prioritisation of needs and report finalisation
Determined project scope, objectives and governance. Established Project Advisory Group (PAG).	Analysed population health data against the five metrics. Conducted community survey and health provider survey. Consulted with EMPHN's Clinical and Practice Council, and Community and Consumer Council.	Consolidated findings and finalised list of identified needs Engagement with EMPHN staff to explore findings and identify priorities for the EMPHN catchment. Finalised technical report.
Jan – April 2024	March – Sept 2024	Sept – Nov 2024

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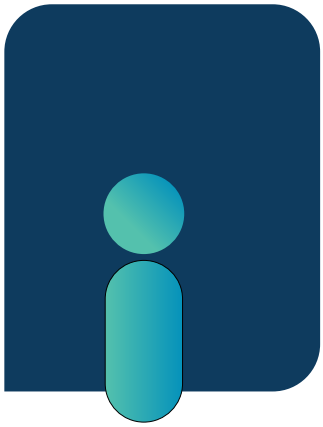


2.

Methodology

The NWMPHN HNA Framework is used to produce a comprehensive and evidence-based assessment of the health and wellbeing needs of people within the EMPHN region. Epidemiological, qualitative, and comparative methods are used to describe the health issues of the region, identify inequalities in health and access to services, and determine priorities for action.

This section outlines the HNA methodology based on the NWMPHN HNA Framework (Figure 2), including key terms and definitions (Table 3) and these components:

- defining need
- analysis of population health data
- community and health service provider engagement
- prioritising need
- strengths and limitations.

Table 3: EMPHN Health Needs Assessment – key terms and definitions.

Key terms and definitions

The **NWMPHN HNA Framework** uses mixed methods, including a method to quantify need using the social determinants of health (SDH), to define and understand population health needs and service provider needs.

Metrics refer to the five domains or categories into which quantitative data is organised in the NWMPHN Framework (Figure 2). For example, *Metric 3 – Risk factors.*

Indicators measure a concept of interest within each metric. (For instance, '*the percentage of babies born with low birthweight*' is a perinatal risk factor in Metric 3).

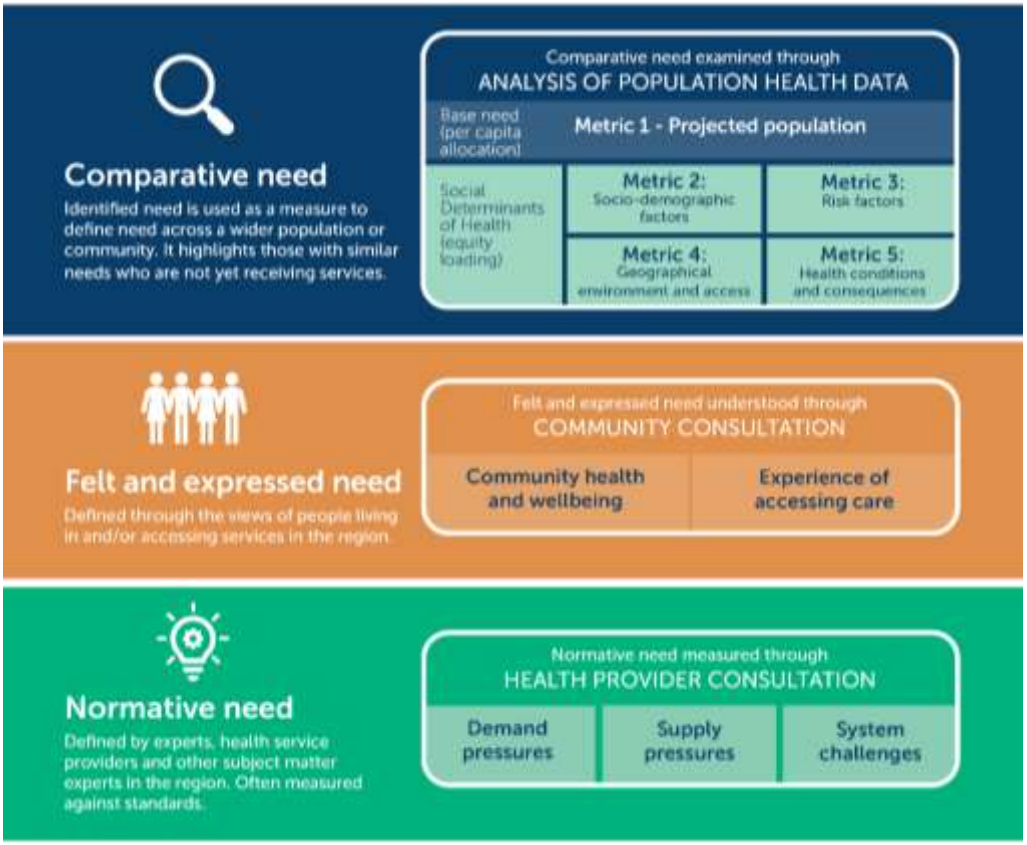
The **NWMPHN HNA Model** comprises five metrics (or domains), each containing several robust indicators to contribute to quantify the level of need. *Note that not all indicators in the report contribute to the Model.*

2.1 Defining need

A health needs assessment is a systematic approach to ensuring EMPHN uses its resources to improve the health of the population in the most efficient way. It determines whether a gap or discrepancy exists between the current - 'what is' - and the ideal - 'what should be'. This gap - the difference between the current condition and the ideal condition - is the 'need' (Smart 2019).

Needs are relative and what is necessary depends on point of view, so our evidence-based approach considers four different types of need (Bradshaw 1972) and draws on three types of evidence (Figure 2).

Figure 2: NWMPHN Health Needs Assessment Framework.



2.2 Analysis of population health data (comparative need)

The SDH are the conditions in which people are born, grow, work, live and age. They provide a systematic way of analysing differences in health status across the region.

Table 4 outlines the five metrics used to categorise population health data and outlines the method to quantify need based on the SDH. The base need is determined for each LGA, relative to the overall population size of the EMPHN region. Next, equity loadings are applied based on disparities arising from the differences in the SDH.

Table 4: Method of quantifying need based on the social determinants of health (the HNA model).

Loading	Description	Rationale	Calculation
Base need = 40%	**Metric 1: Projected population**		
	Current and projected population size and density across the EMPHN region.	Demand and economies of scale are important attributes of resource allocation (Radinmanesh et al. 2021)	2030 projected population of each LGA as a proportion of the region's 2030 projected population.
Equity loading = 60% Distributed evenly across metrics 2-5	**Metric 2: Socio-demographic factors**		
	Demographic factors including age, sex, and country of birth, and social disadvantage factors including low English proficiency, unemployment rate and income.	Sociodemographic factors are crucial in understanding health statistics and needs. Individuals from less advantaged social or economic backgrounds are at higher risk of poor health outcomes, experiencing elevated rates of illness, disability, and mortality compared to more advantaged individuals (van Lenthe and Machenbach 2021).	The Index of Relative Socio-economic Disadvantage (IRSD)[1] indicator, a Socio-Economic Indexes for Areas (SEIFA) product developed by the Australian Bureau of Statistics (ABS), is calculated as the value for each LGA divided by the baseline (PHN region average). An average index is then calculated as a proportion of all LGAs. Adjusted population need is calculated by applying the loading on the average index on the base need.
	Metric 3: Risk factors		
	Early childhood and family risk factors including perinatal risk factors and family violence; behavioural and biomedical risk factors including unhealthy behaviours and living with overweight and obesity; and protective and early detection health actions including vaccinations and cancer screening.	Risk factors capture attributes, characteristics, actions, and exposures that increase the likelihood of poor health and are distributed unevenly across the population.	An index for each indicator is calculated as the value for each LGA divided by the baseline (Victorian average) or vice versa depending on the direction of disadvantage. An average index is calculated as a proportion of all LGAs.

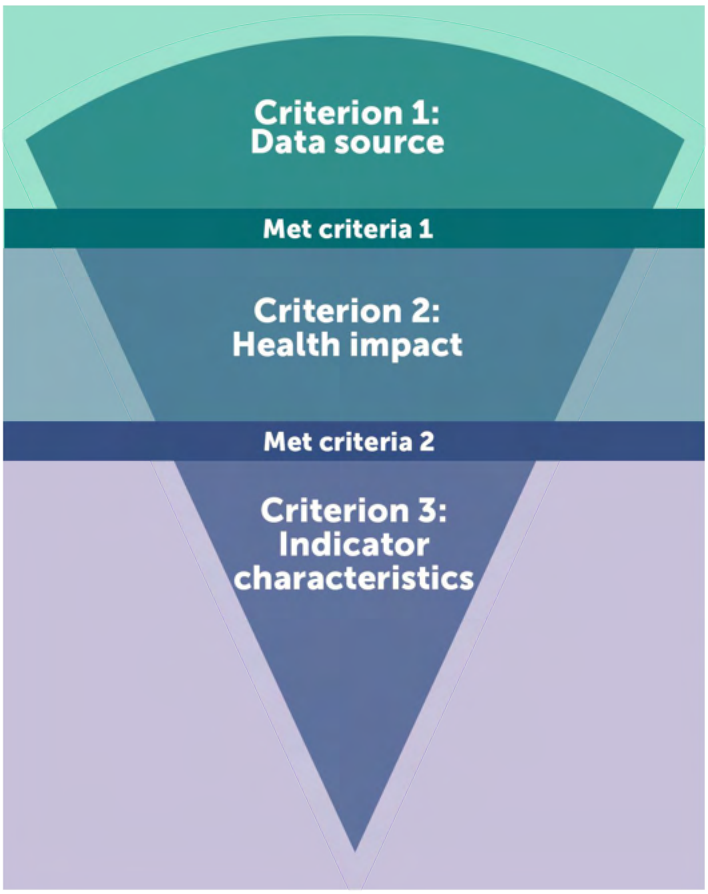
[1] The Index of Relative Socio-economic Disadvantage (IRSD) summarises 20 variables that directly or indirectly contribute to disadvantage in a particular geographic location. The Australian average IRSD score is 1000. IRSD is calculated for each Statistical Area 1 (SA1) in Australia, each of which generally has a population of between 200 and 800 people. A lower score indicates a higher level of disadvantage.

	Metric 4: Geographical environment and access		Adjusted population need is calculated by applying the loading on the average index on the base need.
	Factors that affect access to health care, including availability of health workers and services, cost, and distance needed to travel. Potentially preventable hospitalisations and avoidable ED presentations are also included here as indicators of gaps in primary care.	The health system itself is a social determinant and plays an important role in mediating the differential consequences of illness in people's lives. Geographical maldistribution of health professionals and attributes that affect the liveability of an area also contribute to poorer outcomes.	
	Metric 5: Health conditions and consequences		
	Types of health conditions and consequences, with a focus on chronic health conditions, including diagnoses, hospitalisations, ED presentations and mortality.	Understanding prevalent health conditions and their consequences aids in prioritising interventions and allocating resources effectively to areas of greatest need.	An index for each indicator is calculated as the value for each LGA divided by the baseline (Victorian average). Then an average index is calculated as a proportion of all LGAs. Adjusted population need is calculated by applying the loading on the average index on the base need.

All indicators used in the HNA undergo a rigorous evaluation process to test whether they meet predetermined criteria (see Figure 3). Indicators selected for the model must meet these criteria, ensuring that only the most robust, reliable and impactful data points are used. The model indicators are used to calculate the overall health need for each LGA across all five metrics.

Indicators that do not meet all criteria are excluded from the model. However, they are analysed to provide contextual information. Refer to Appendix B for further details about how need is quantified.

Figure 3: Criteria for determining quantitative model indicators.



Criterion 1: Data source

- **Data granularity:** LGA granularity is the minimum adequate level.
- **Face validity:** Does the indicator appear to measure the intended concept?
- **Construct validity:** Does the indicator effectively measure the underlying concept?
- **Data source quality:** Quality assessed based on recency, feasibility, reliability, validity and completeness.

Criterion 2: Health Impact

- **Severity of health impact:** Ranked as high, medium or low based on literature
- **Proportion of population affected:** High, medium, low
- **Duration of issue:** High, medium, low

Criterion 3: Indicator characteristics

- An indicator must provide unique information and not duplicate what is already captured by another indicator to be included in the model.

2.3 Community and health service provider engagement (felt, expressed and normative need)

Consultation with community members aimed to understand their perceived health and wellbeing, as well as their experience of accessing health care services. Consultation with health providers aimed to understand their view of demand and supply pressures, and system challenges, as well as identify barriers to access to health care and gaps in services.

The activities undertaken included:

- Online community health needs survey disseminated via social media, community members, community organisations, local councils, health service providers and a paid market research panel.
- Online survey, disseminated to select service providers operating in the region.

2.4 Prioritising need

Following the identification of health and service needs, the final stage of the HNA involved prioritising them. This process was essential for synthesising evidence and informing planning, consideration of the limited availability of funding, resources, workforce and infrastructure.

The prioritisation process included:

1. Triangulation of quantitative and qualitative HNA evidence and data sources to create a comprehensive list of health and service needs. These were organised into five streams (DHAC priority areas) and then sub-streams (priority sub-categories) (Table 5), with supporting evidence and rationale.

   Digital health and population health issues transcend across the existing streams and hence were not selected. Primary health care was selected as the fifth priority area in recognition of primary care's central role in improving population health, reducing health disparities, and provision of accessible and affordable health care.

2. In a workshop, 18 SMEs were grouped into specific streams based on area of expertise. This was done to systematically prioritise up to five statements of need from a comprehensive list derived from the HNA.

3. After prioritisation, each group identified up to two potential change ideas or opportunities to address the need statements within each stream. These were co-developed using a set of criteria designed to evaluate their effectiveness and feasibility, as well as to consider the involvement of EMPHN and other key stakeholders from different organisations across the region. Additionally, similar existing initiatives were identified to showcase examples of collaborative, successful models (see Section 5, Appendix D, Appendix E).

Table 5: EMPHN streams and sub-streams by which needs are prioritised.

EMPHN Stream (DHAC Priority area)	EMPHN Sub-stream (DHAC Priority sub-category)
Aged care	• Workforce • System • Programs / services
Alcohol and other drugs	• Prevention and treatment management • Harm reduction and minimisation • Care and recovery
Health conditions (non-mental health)	• Prevention and early detection • Chronic disease management • Acute conditions
Mental health and suicide prevention	• Primary prevention and early intervention of ill-mental health • Secondary prevention and management of low intensity mental health conditions • Management and treatment of high intensity and complex mental health conditions • Suicide prevention
Primary care	• Access and prevention • Assessment and provision of quality care • Integrated, holistic and continuous care

The prioritised needs are available in section 5. See Appendix E for the full list of needs.

Further community consultation is scheduled for 2025.

2.5 Strengths and limitations

The key strengths and limitations of this HNA are outlined here.

Strengths

HNA Framework

- Data triangulation of a range of quantitative and qualitative data sources provides a comprehensive and nuanced understanding of health needs, enhancing reliability and validity. This supports a more robust analysis for informing health initiatives and services.
- Diverse stakeholder representation in the EMPHN HNA, encompassing data analysis across different socio-demographics at the LGA level and the analysis of community findings from previous surveys, interviews, forums, workshops, and focused case studies.

- Methodology for prioritising needs in the EMPHN region improves the interpretation of the findings and therefore the utility of the HNA as a strategic tool for the PHN and other organisations to understand and address health inequity.

Limitations

This report uses large datasets including data gathered from the Victorian Department of Health (DH), the Public Health Information Development Unit (PHIDU), and the ABS, combined with de-identified data from hundreds of general practices.

Data quality thus varies. A brief description of the main sources and a statement about quality are in Appendix C.

Data quality

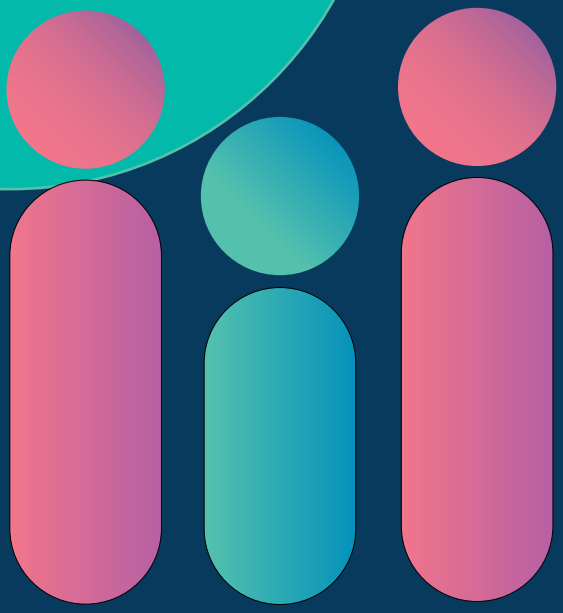
- **Gender diversity**: Many datasets use a strict male-female binary, which fails to capture nonbinary, trans or intersex individuals, resulting in an incomplete representation of gender diversity within the EMPHN region.
- **Mental health and alcohol and other drugs (AOD)**: The data sources used to improve our understanding of mental health and AOD are primarily existing information from the EMPHN region. Whilst further data collection was conducted with the PMHC-MDS dataset and the development of the mental health and wellbeing service register, there are still gaps in the representativeness of the data. For example, the PMHC-MDS only represents patients within EMPHN commissioned services and does not represent all the mental health services in the EMPHN region.
- **Aboriginal and Torres Strait Islander identification**: Incomplete and inaccurate identification of Aboriginal and Torres Strait Islander people is commonplace in administrative and clinical information systems in health service organisations across Australia (SAHMRI 2017).
- **Data gaps**: Limited data is available on LGBTIQ+ individuals, people with a disability, asylum-seekers and refugees, people experiencing homelessness, and people living in prisons. There is also a notable absence of data related to intersectionality.

Surveys

- **These were only available in English**, therefore, potentially excluding responses from non-English speakers.
- **They were distributed** through channels which may limit the reach and diversity of respondents, including, for example, those with no internet access.
- **There was no representation** from residents of Murrindindi LGA, and **low representation** from Mitchell LGA and multicultural and ethnically diverse and LGBTIQ+ individuals.
- **The response rate** to a dedicated health care provider survey was low.

3.

Examining comparative need through the analysis of population health data



3.1

Quantified population health need

This section quantifies the five metrics of comparative need to provide a view of overall need across the region. In addition to the base need quantified by projected population (Metric 1), the social determinants of health (SDH) provide a systematic way of analysing the differences in health status across the region to identify and quantify overall need. This is achieved by adjusting base need with equity loadings according to the following SDH metrics:

- Metric 2: Socio-demographic factors
- Metric 3: Risk factors
- Metric 4: Geographical environment and access
- Metric 5: Health conditions and consequences

Key definitions

Equity loading: Equity loadings constitute 60% of the comparative need in the HNA model and are evenly distributed across the four SDH metrics. These redistribute need beyond projected population size by accounting for disparities in SDH. Ultimately, these adjustments ensure that the overall assessment of comparative need reflects the diverse levels of SDH across the region.

Based on projected population size, Whittlesea, Monash and Whitehorse have the highest level of need, with Whittlesea continuing to be the highest area of need after adjusting for the SDH.

Table 6 shows that population trends in health needs are associated with disadvantage. However, equity loadings vary based on the SDH. Compared to per capita need allocation, Murrindindi's† needs increased due to social disadvantage, risk factors that impact health and geographical environment and access. Mitchell† had an increased need driven by all the SDHs. Nillumbik's need was mostly driven by risk factors and geographical environment and access.

Table 6: Quantified population health need based on the social determinants of health.

		Base need^	Equity loadings^^					
Geographical area	LGA	Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	Change	Adjusted population need
Urban	Banyule	7.8%	0.06	0.08	0.07	0.09	-4%	7.5%
	Boroondara	11%	0.01	0.07	0.05	0.06	-35%	7.2%
	Monash	12.2%	0.08	0.07	0.07	0.07	-24%	9.3%
	Whitehorse	11.2%	0.07	0.07	0.06	0.07	-22%	8.7%
Green-wedge	Knox	9.6%	0.06	0.09	0.09	0.09	-9%	8.7%
	Manningham	7.5%	0.03	0.07	0.08	0.07	-8%	6.9%
	Maroondah	7.4%	0.11	0.08	0.08	0.09	11%	8.2%
	Nillumbik	3.7%	0.00	0.08	0.08	0.07	30%	4.8%
	Whittlesea	18.6%	0.22	0.09	0.11	0.10	-18%	15.3%
	Yarra Ranges	9.5%	0.10	0.09	0.09	0.10	-1%	9.4%
Peri-urban	Mitchell†	1.2%	0.15	0.11	0.12	0.11	558%	7.9%
	Murrindindi†	0.2%	0.12	0.09	0.11	0.08	2900%	6%

Table notes: The adjusted population need is calculated by taking an LGAs score on Metric 1 and multiplying it by 40%. For Metrics 2 to 5, each index score is multiplied by 15% (representing the equity loadings). The sum of these contributions is then subtracted from the base need. To identify LGAs with the highest relative need across each metric, we tested for statistical significance using the 95% confidence interval. Purple = highest relative need on metric 1; Blue = highest relative need on metrics 2-5; Pink = highest % change in population need after adjusted for the SDH; Yellow = highest population need after adjusted for the SDH. Base need is weighted 40% and equity loadings are weighted 15% (per metric). ^ Weight = 40%. ^^ Weight = 15% (per metric).

3.2

Metric 1: Projected population

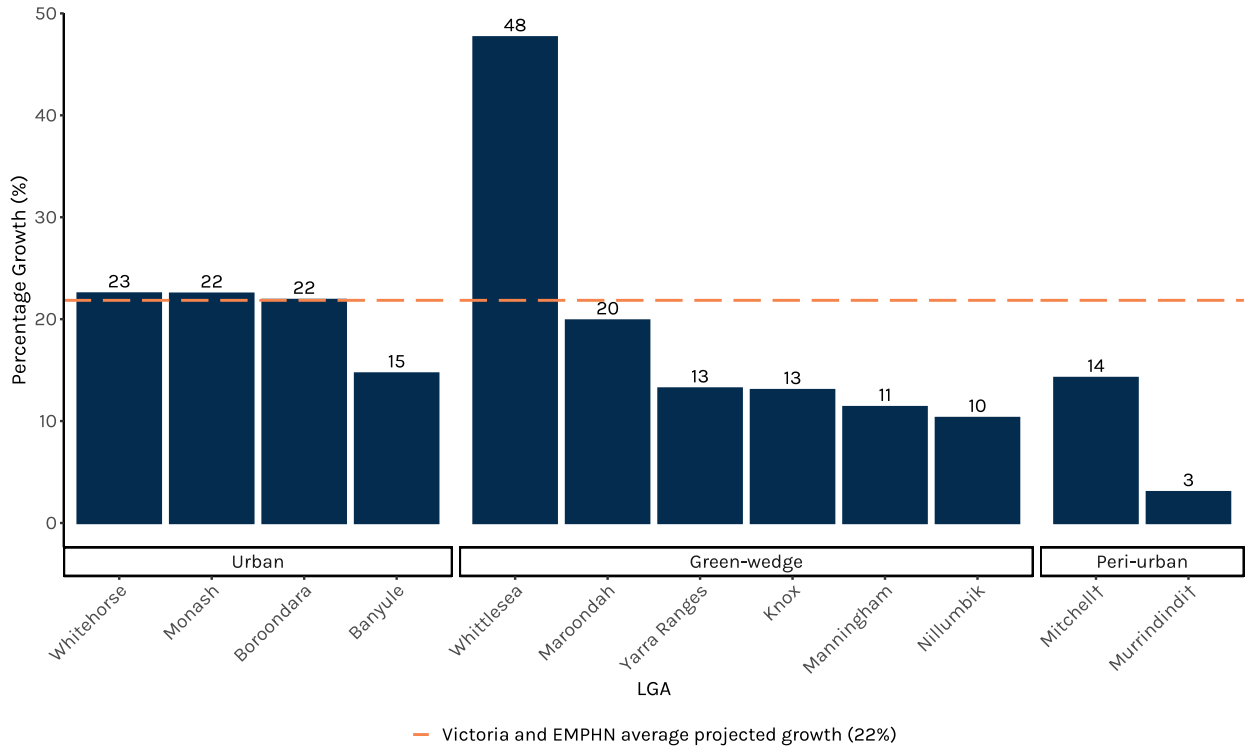
Metric 1 provides an overview of population size, growth, and distribution across the EMPHN region, which includes nine full and three partial Local Government Areas (LGAs). It is important to note that the portion of the Yarra Ranges LGA outside the EMPHN region is primarily uninhabited national park and is therefore not considered a partial LGA in this report. For more details, please refer to the 'About' section of this report.

Projected population

The EMPHN population is growing, and by 2030, nearly 20% of it will live in Whittlesea.

- By 2030, the EMPHN region's population is projected to increase by 22% compared to 2022 levels to approximately 1.9 million people (Table 8). The percentage growth for all of Victoria for the same period is 22%, resulting in 8.1 million people.
- The LGA with the highest 2030 projected growth levels is Whittlesea (Figure 4).

Figure 4: Projected LGA population growth from 2022 to 2030.



Source: PHIDU, 2023

[1] Partial LGAs are represented by a † symbol. E.g., Mitchell† and Murrindindi.†

Current population

The EMPHN population is large and population growth is unevenly distributed across the region.

- In 2022, with about 1,544,138 people, EMPHN encompassed 23% of the Victorian population (6.6 million) and 6% of the Australian population (26 million) (PHIDU, 2023).
- In 2022, the highest proportion of EMPHN's population resided in Whittlesea (15.3%). The smallest number of residents were within Murrindindi† (0.3%), Mitchell† (1.3%) and Nillumbik (4.1%).
- The two LGAs with the lowest population densities were Murrindindi† and Mitchell†. These are only partially included in the EMPHN region, at 27% and 35% of area, respectively (PHIDU 2023) (see Figure 4 and Supplementary Table 1).

The population is expected to grow across all age groups, with the highest projected growth in the 85+ age group.

- Between 2022 and 2030, the EMPHN region is projected to grow at a similar rate overall to Victoria. However, there is a higher projected growth in the 25-44 age range and lower projected growth in the 65+ and 70+ age groups (Table 7). See Supplementary Table 2 for the projected change in the number of people for each region.
- All LGAs have fertility rates below replacement level of 2.1 (GBD 2021 Fertility and Forecasting Collaborators 2024) . LGAs in peri-urban and green-wedge areas have comparatively higher fertility rates than urban areas and compared with the overall EMPHN region (1.3) and Victoria (1.5), except for Banyule in the urban area (1.5) (Supplementary Figure 1). The projected growth in the region, as shown in Table 7, will therefore largely be driven by migration (from within and outside Australia).

Table 7: Projected percentage residential population growth between 2022 and 2030 by age and region (LGA, EMPHN region and Victoria).

Geographical area	Region	Age range							Total growth
		0-14 years	15-24 years	25-44 years	45-64 years	65+ years*	70+ years*	85+ years*	
Urban	Banyule	17.7	21.0	14.9	8.7	15.5	20.5	34.8	14.7
	Boroondara	21.7	22.7	38.3	6.8	20.6	23.5	31.7	21.9
	Monash	25.2	37.9	32.7	9.3	6.5	7.1	16.7	22.5
	Whitehorse	27.2	29.3	33.8	10.7	11.1	11.7	13.2	22.5
Green-wedge	Knox	14.1	16.8	17.9	3.1	16.7	21.7	24.2	13.0
	Manningham	12.2	20.6	21.5	1.8	6.1	6.7	29.3	11.4
	Maroondah	23.6	26.0	22.9	13.0	16.9	18.0	19.0	19.9
	Whittlesea	57.6	52.3	43.9	42.8	44.4	47.9	47.2	47.7
	Nillumbik	10.9	12.6	21.2	-5.2	22.2	32.7	48.0	10.3
	Yarra Ranges	12.5	17.2	16.5	2.3	22.9	29.2	61.2	13.2
Peri-urban	Mitchell†	9.0	24.2	6.0	10.1	36.2	40.3	44.3	14.2
	Murrindindi†	4.1	2.8	5.1	-15.9	23.8	32.6	71.9	3.0
PHN	**EMPHN**	**25.5**	**28.4**	**28.2**	**11.1**	**18.3**	**21.1**	**29.2**	**21.8**
State	**Victoria**	**24.2**	**26.1**	**22.9**	**13.1**	**25.1**	**28.3**	**28.7**	**21.6**

Table notes: Yellow shading highlights the three LGAs with the top 3 projected growth for that specific age range. *65+ contains data from 70+ and 85+, 70+ contains data from 85+.

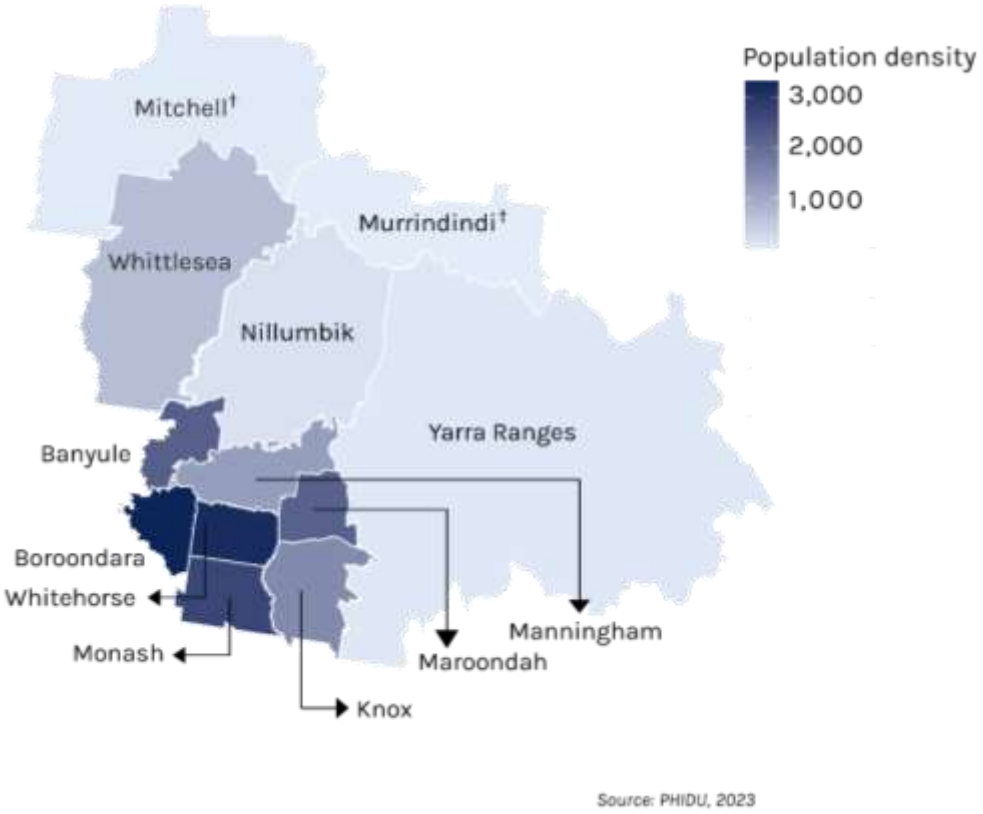
Source: PHIDU, 2023

Population density

The EMPHN population density is increasing.

- EMPHN's population density was 323 people/km^2 in 2022. It is projected to increase to 394 people/km^2 by 2030 (PHIDU, 2023). The population density of Victoria was 29 people/km^2 in 2022 and is projected to be 35 people/km^2 in 2030.
- In 2022, Boroondara, Whitehorse and Monash had the highest population densities and are projected to remain the top 3 in 2030 (Figure 5). For more information, please see Supplementary Table 1.
- This finding aligns with the fact that all three LGAs have relatively small geographic areas (ABS, 2021) (Supplementary Table 1), are close to the CBD and are projected to be among the top five LGAs in terms of population growth (Figure 4).

Figure 5: Heat map showing projected population density for 2030.



Quantified need based on the projected population

Whittlesea, Monash and Whitehorse have the highest level of need based on the projected 2030 population.

Projected population (Metric 1) is determined by data projections of the population size and constitutes the 'base need' by LGA, relative to the overall population size of the EMPHN region. Metric 1 accounts for 40% of the overall need.

Table 8: Quantified need based on the projected population.

Geographical area	Region	Estimated resident population (2022)	% EMPHN region (2022)	Projected population (2030)	Projected % EMPHN region (2030)
Urban	Banyule	127,348	8.2	146,027	7.8
	Boroondara	169,500	11.0	206,593	11.0
	Monash	186,830	12.1	228,863	12.2
	Whitehorse	172,466	11.2	211,299	11.2
Green-wedge	Knox	159,465	10.3	180,254	9.6
	Manningham	126,491	8.2	140,872	7.5
	Maroondah	115,689	7.5	138,672	7.4
	Nillumbik	63,041	4.1	69,535	3.7
	Whittlesea	236,966	15.3	349,886	18.6
	Yarra Ranges	157,388	10.2	178,157	9.5
Peri-urban	Mitchell†	20,477	1.3	23,391	1.2
	Murrindindi†	4,285	0.3	4,414	0.2

Table note: Yellow shading indicates LGAs with a statistically higher proportion of need overall based on the projected 2030 population, as a % of the EMPHN region.

Source: PHIDU, 2023

3.3

Metric 2: Socio-demographic factors

Metric 2 recognises that a person's social position can shape their experiences and susceptibility to health-compromising conditions (van Lenthe and Machenbach 2021).

Demographic factors

Overall, the population of the EMPHN region is younger than that of Victoria. The region also has a higher proportion of residents born in non-English speaking countries.

Table 9: Demographic indicators ranked by top five LGAs with highest proportions.

Rank	Younger people (%)	Older adults (%)	Aboriginal and/or Torres Strait Islander (%)	LGBTIQ+ (%)	Born in a NES country (%)
1	Whittlesea (33.3)	Murrindindi† (26)	Mitchell† (2.2)	Whittlesea (6.8)	Monash (46.3)
2	Mitchell† (32.9)	Manningham (22)	Murrindindi† (1.7)	Mitchell† (6.7)	Manningham (38.9)
3	Nillumbik (32.2)	Banyule (19)	Yarra Ranges (1.1)	Banyule (6.5)	Whitehorse (36.8)
4	Boroondara (31.1)	Boroondara (18)	Whittlesea (1.0)	Whitehorse (6.3)	Whittlesea (34.5)
5	Monash (30.7)	Whitehorse (18)	Banyule (0.7)	Knox (6.1)	Knox (26.9)
EMPHN	**30.6**	**17**	**0.6**	**5.0**	**28.3**
Victoria	**30.2**	**17**	**1.0**	**5.7**	**24.1**

Source: ABS, 2021; PHIDU, 2023

- The EMPHN region has a similar age profile to Victoria (Supplementary Table 3). Across all regions (LGAs, EMPHN region and Victoria), the proportion of males and females is approximately the same.
- In the EMPHN region, the proportion of Aboriginal and Torres Strait Islander people is lower (0.6%) compared with Victoria (1.0%) (Supplementary Table 4). The LGA with the highest proportion of Aboriginal and Torres Strait Islander people is Mitchell† (2.2%), a peri-urban area. See Supplementary Table 5 for the Aboriginal and Torres Strait Islander people demographics by age and region (LGA, EMPHN region and Victoria).
- The proportion of the EMPHN region population that identified as LGBTIQ+[2] is 5%, which is lower than for Victoria, at 5.7%. However, Whittlesea (6.8%), Mitchell† (6.7%), Banyule (6.5%), Whitehorse (6.3%) and Knox (6.1%) LGAs are above the Victorian average (Supplementary Figure 2).

[2] LGBTIQ+ data is for Victoria and for people aged 18 years and older, calculated using data from 'The health and wellbeing of the lesbian, gay, bisexual, transgender, intersex and queer population in Victoria: Findings from the Victorian Population Health Survey 2017' (VAHI 2017a).

- The percentage of people who require assistance with core activities[3] ranges from 4% in Nillumbik to 6.3% in Manningham and Whittlesea. The rate is slightly lower in the EMPHN region than reported for Victoria (5.6% versus 5.9%) (Supplementary Table 6).

The EMPHN region is culturally and linguistically diverse.

- EMPHN's region is more culturally diverse than Victoria's overall profile. 36.1% of people living in the region speak a language other than English at home (Victoria 32.8%), with more than 205 languages spoken. Some language categories were substantially more common: Chinese, particularly in Manningham, Monash and Whitehorse, and Indo-Aryan[4] in Whittlesea and Mitchell† (Figure 6, Supplementary Table 7).

- More than 28% of the EMPHN region's population were born in a predominantly non-English-speaking (NES) country (Victoria 24.1%) (Supplementary Table 8, Supplementary Table 9).

- Though at a region level there is substantial cultural diversity, there is significant variability across the region. For example, more than 35% of the population in Monash, Manningham, and Whitehorse were born in a NES country, compared to less than 10% in the peri-urban areas of Mitchell† (9.6%) and Murrindindi† (4.8%) and green-wedge areas of Nillumbik (9.0%) and Yarra Ranges (8.8%) (Supplementary Table 8). These findings are similar to languages spoken at home, with higher language diversity in urban and some green-wedge areas relative to peri-urban (Figure 6).

- Excluding British and Australian ancestry, most people in the EMPHN region have Chinese Asian (13.9%), followed by Irish (8.6%) and Southern Asian (8.4%) ancestry (Supplementary Table 10).

- Approximately 40% of the EMPHN region population do not identify as religious, with Catholicism (19.6%) being the most common religion (Supplementary Table 11).

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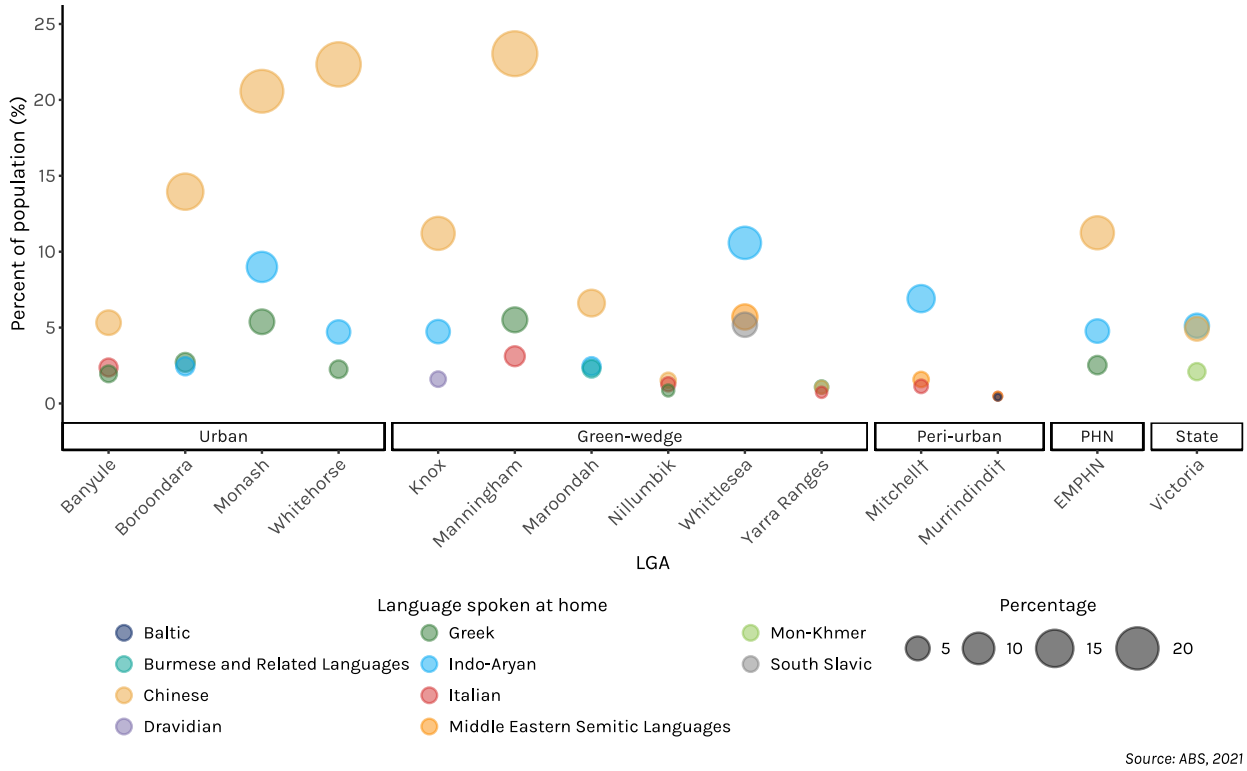
[3] The "core activity need for assistance" variable from the ABS, records the number of people with a profound or severe core activity limitation. People with a profound or severe core activity limitation are those needing assistance in their day to day lives in one or more of the three core activity areas of self-care, mobility and communication because of a long-term health condition (lasting six months or more), a disability (lasting six months or more) or old age.

[4] Indo-Aryan languages are spoken principally Southern Asia including in India, Nepal, Pakistan, Bangladesh, and Sri Lanka. Languages include Hindi, Bengali and Urdu. For a full list of languages, see: https://www.abs.gov.au/census/guide-census-data/census-dictionary/2021/variables-topic/cultural-diversity/language-used-home-lanp

For more detailed information about the most common cultural identities in the region (LGA, EMPHN region and Victoria) please see Supplementary Table 7, Supplementary Table 9, Supplementary Table 10, Supplementary Table 11).

Figure 6: Displays the percentages of the population who speak one of the three most common languages, other than English, at home for each region (LGA, EMPHN region and Victoria).



Source: ABS, 2021

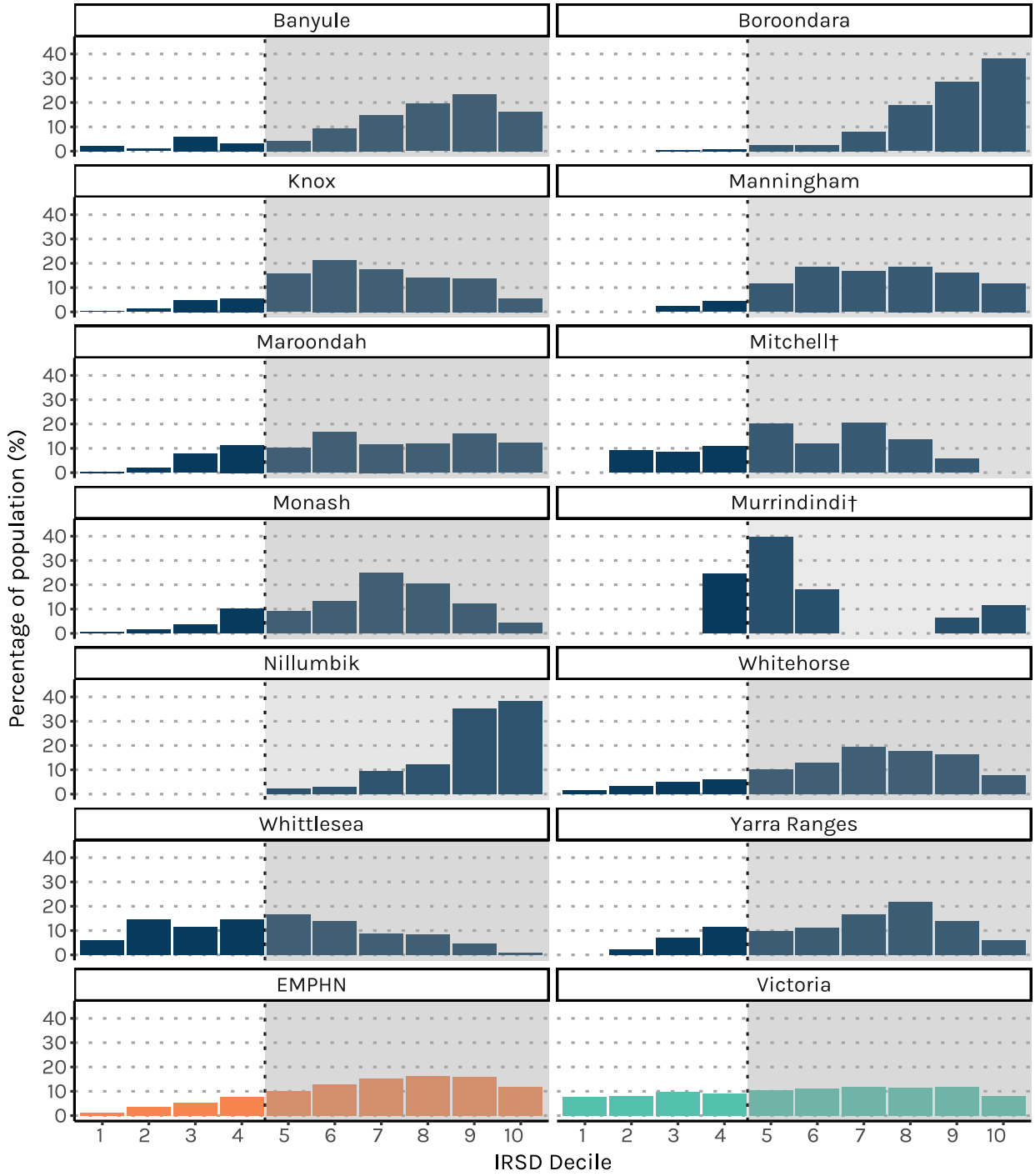
- Please see the supplementary file for information relating to preschool, primary and secondary school attendance (Supplementary Table 12), family composition (Supplementary Table 13) and social marital status (Supplementary Table 14).

Social disadvantage

While pockets of social disadvantage exist within the EMPHN region, it is less prevalent relative to the state.

- Socioeconomic disadvantage as measured by the IRSD is relatively low across the region, as is illustrated by the unshaded bars that show the percentage of the population in each LGA that is more disadvantaged than the Australian average (see Table 11 and Figure 7). The exceptions are Whittlesea and Mitchell†.

Figure 7: Proportion of population by IRSD deciles and region (LGA, EMPHN region and State).



Source: ABS, 2021

Figure note: The Australian average IRSD score is 1000 (i.e., Decile 5). The unshaded section indicates greater disadvantage (deciles 1 to 4). Grey shading indicates deciles 5 and above (areas within the LGA of lower disadvantage than the Australian average).

Whittlesea and Whitehorse rank highly across most of the socioeconomic indicators measured.

Table 10: Social disadvantage indicators ranked by top five LGAs with highest proportion or rates.

Rank	Low English proficiency (%)	Unemployment rate	Low individual income (<$41,600) (%)	Very low or low household income (<$65,000) (%)	Low income households experiencing housing stress (%)	Experiencing homelessness (%)	Food insecurity (%)
1	Whitehorse (8)	Whittlesea (5)	Whittlesea (49)	Whitehorse (34)	Boroondara (33)	Monash (0.9)	Whittlesea (10)
2	Monash (8)	Whitehorse (4)	Manningham (49)	Monash (32)	Whitehorse (31)	Whitehorse (0.7)	Yarra Ranges (8)
3	Manningham (8)	Manningham (4)	Monash (48)	Maroondah (32)	Monash (30)	Banyule (0.4)	Murrindindi (6)
4	Whittlesea (7)	Mitchell (4)	Whitehorse (48)	Whittlesea (32)	Whittlesea (30)	Maroondah (0.4)	Mitchell (6)
5	Knox (4)	Yarra Ranges (3)	Knox (47)	Manningham (32)	Maroondah (27)	Whittlesea (0.4)	Knox (6)
EMPHN	**5**	**3**	**46**	**30**	**28**	**0.4**	**6**
Victoria	**4**	**4**	**46**	**33**	**28**	**0.5**	**6**

Table note: Indicators except unemployment rate are presented as a proportion of the population. Unemployment rate estimates are calculated by the level of unemployment as a proportion of the labour force. Colours represent specific LGAs. 'Low individual income' is defined as an annual individual income <$45,000. 'Very low' or low household income is defined as a household annual income <$65,000. Housing stress is defined as a low household income that spends more than 30% of its gross income on housing costs (ABS 2022).

Source: ABS, 2021; PHIDU, 2023

- Whittlesea, Whitehorse and Monash rank highly across several socioeconomic disadvantage indicators relative to other LGAs in the EMPHN region (Table 10).
- There are several socioeconomic indicators that stand out as drivers of need in the EMPHN region. Specifically, low levels of English proficiency, low individual income and households experiencing housing stress (Table 10).
- Low English proficiency poses a significant health barrier in the EMPHN region. Associated with poorer health outcomes, low English proficiency is particularly prevalent in Whitehorse, Monash, Manningham and Whittlesea (Yeheskel and Rawal 2018; Guo et al. 2020). Coupled with higher unemployment rates and lower individual

income in these LGAs relative to the rest of the region and Victoria, this exacerbates health disparities (Table 10 and Supplementary Figure 3).

- Despite a similar rate of housing stress among low-income households experiencing in the EMPHN region and Victoria, Boroondara, Whitehorse, and Monash —which exceed the Victorian average—also demonstrate a greater dependence on rental dwellings and a heightened vulnerability to homelessness (Table 10 and Supplementary Figure 8, Supplementary Figure 41).

Please see the supplementary file for information on population with low individual income and very low or low household income by LGA, EMPHN region and Victoria (Supplementary Figure 6), Very low and low household income by region (LGA, EMPHN region and Victoria) (Supplementary Figure 7), population living in social housing (Supplementary Figure 8), population who are experiencing homelessness or marginally housed (Supplementary Figure 41), and population who completed secondary school (Supplementary Figure 11).

Quantifying need based on socio-demographic factors

Whittlesea and Mitchell† exhibit the most pronounced socio-demographic need.

Need based on sociodemographic factors (Metric 2) is determined by the Index of Relative Socio-economic Disadvantage (IRSD)[5] . It produces a numeric score based on a range of economic and social information and is used to identify the greatest need related to socio-economic status across LGA.

Table 11: Quantifying need based on socio-demographic factors.

Geographical area	Region	Metric 2 % of SA1 population with IRSD in deciles 1-4	Metric 2 Index of population with IRSD in deciles 1-4	Metric 2 Average index as % of all LGAs	Projected population % EMPHN region (2030)	Change	Adjusted population need
Urban	Banyule	12.3%	0.7	5.8%	7.8%	-3.8%	7.5%
	Boroondara	1.2%	0.1	0.5%	11%	-14.3%	9.4%
	Monash	16.6%	0.9	7.8%	12.2%	-5.4%	11.5%
	Whitehorse	15.6%	0.9	7.4%	11.2%	-5.2%	10.7%
Green-wedge	Knox	12.0%	0.7	5.7%	9.6%	-6.1%	9.0%
	Manningham	7.4%	0.4	3.5%	7.5%	-8.0%	6.9%
	Maroondah	22.3%	1.2	10.5%	7.4%	6.4%	7.8%
	Nillumbik	0.8%	0.0	0.4%	3.7%	-13.5%	3.2%
	Whittlesea	47.6%	2.6	22.4%	18.6%	3.1%	19.2%
	Yarra Ranges	20.8%	1.1	9.8%	9.5%	0.5%	9.5%
Peri-urban	Mitchell†	31.2%	1.7	14.7%	1.2%	162.1%	3.3%
	Murrindindi†	24.5%	1.3	11.5%	0.2%	723.2%	1.9%

Table notes: Blue shading indicates LGAs with the statistically highest indices for socioeconomic factors (i.e., IRSD in deciles 1-4). Purple shading indicates LGAs with statistically the highest level of need relative to other LGAs based on projected population. Yellow shading indicates LGAs with a statistically higher proportion of need overall when the population is adjusted for socio-economic factors.

Source: ABS, 2021; PHIDU, 2022

- As shown in Table 11, nearly half of the residential population of Whittlesea live in areas with high socioeconomic disadvantage (column four).
- Whittlesea and Monash have the highest need when population is adjusted for socioeconomic factors (Table 11, last column).

[5] The Index of Relative Socio-economic Disadvantage (IRSD) summarises 20 variables that directly or indirectly contribute to disadvantage in a particular geographic location. The Australian average IRSD score is 1000. IRSD is calculated for each Statistical Area 1 (SA1) in Australia, each of which generally has a population of between 200 and 800 people. A lower score indicates a higher level of disadvantage.

3.4

Metric 3: Risk factors for ill health

Metric 3 examines behavioural and biomedical risk factors affecting population health. This section also examines early childhood (0 – 9 years) and family risk factors, reflecting empirical research linking these risk factors to negative health outcomes.

Early childhood and family risk factors

The EMPHN region has comparable or lower levels of risk related to early childhood and family factors compared with Victoria.

- However, Mitchell† stands out with the highest levels of risk across nearly all measured indicators. It has substantially consistent higher rates of childhood and family risk factors compared to other LGAs across the EMPHN region and Victoria. These include high rates of family violence, smoking during pregnancy, low birthweight babies and a greater proportion of childhood developmental vulnerability (Table 12).

Table 12: Early childhood and family indicators ranked by the top LGAs with the proportions most indicative of disadvantage that are similar or greater than the state average.

Rank	Women who smoked tobacco while pregnant (%)	Babies born with low birthweight (%)	Rates of family violence incidents per 100,000	Children developmentally vulnerable on 2 or more domains (%)
1	Mitchell† (15)	Mitchell† (7)	Mitchell† (2,001)	Mitchell† (14)
2	Murrindindi† (13)	Monash (7)	-	Whittlesea (10)
3	Yarra Ranges (9)	-	-	-
EMPHN	**5**	**6**	**1,053**	**8**
Victoria	**8**	**7**	**1,378**	**10**

Table note: LGAs ranked by the highest rates or proportions for selected early childhood and family risk factors that are also above the state average. For example, only in Mitchell† are the rates of family violence incidents per 100,000 above the Victorian rate, therefore the other cells are blank.

Source: Crime Statistics Agency, 2023; PHIDU, 2023

Perinatal risk factors

- In Mitchell† and Murrindindi†, the rates of smoking during pregnancy are almost twice the state average (Figure 8 (a)). Exposure to tobacco smoking in utero is linked to an increased likelihood of preterm birth, low birthweight and an increased risk of sudden infant death syndrome (SIDS) (Delcroix et al. 2023; Hernández-Martínez et al. 2012; Moon et al. 2022; Zheng et al. 2016).

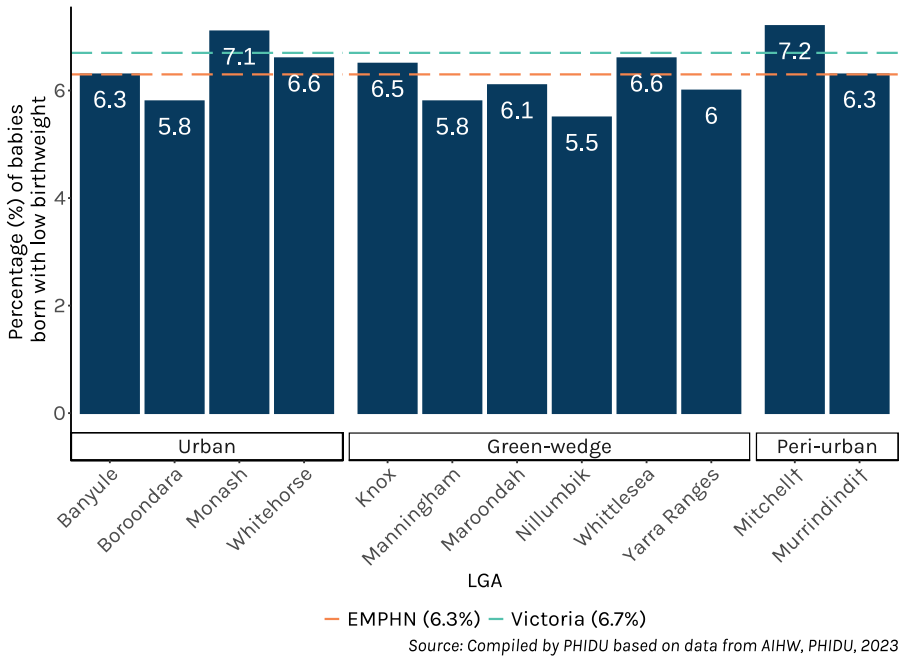
- The EMPHN region had fewer low birthweight babies compared with Victoria between 2019 and 2021, except for Mitchell† and Monash (Figure 8 (b)). Children born with low

birthweight (less than 2,500 grams) are at increased risk for neurodevelopmental disorders (Kim et al. 2024).

- Pregnant women in Banyule and Nillumbik reported the lowest rates of antenatal care attendance in the first 10 weeks relative to other LGAs in the EMPHN region (Supplementary Figure 12).
- The EMPHN region, like Victoria, falls short of the National Health and Medical Research Council's guidelines for exclusive breastfeeding in the first six months (Supplementary Figure 13) (NHMRC 2012). Breastfeeding rates declined substantially between three (67%) and six (23%) months in all LGAs, well below the World Health Organisation's 50% target (Supplementary Figure 13) (WHO 2017). Although based on the most recent available data, it is important to note these findings may not reflect current breastfeeding rates.

Figure 8: Risk factors relating to pregnancy by region (LGAs, EMPHN region and Victoria), 2019-2021: (a) The percentage of babies born with a low birthweight, and (b) the percentage of women who smoked while pregnant (2023).

a)



Source: Compiled by PHIDU based on data from AIHW, PHIDU, 2023

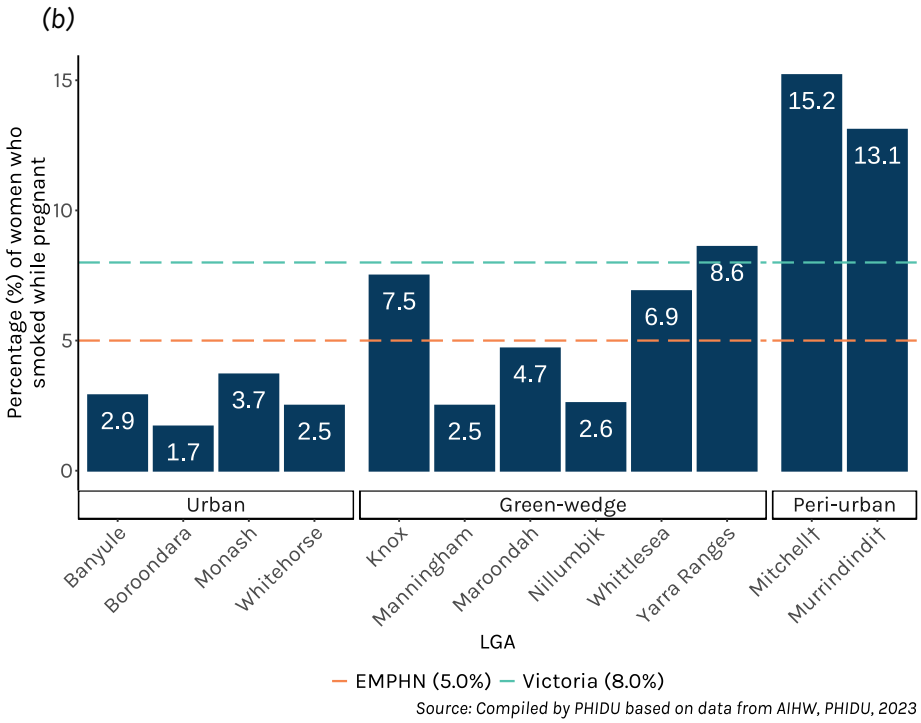


Figure note: All data are averaged over a three-year period. Data for smoking tobacco during pregnancy is self-reported.

Childhood developmental vulnerability

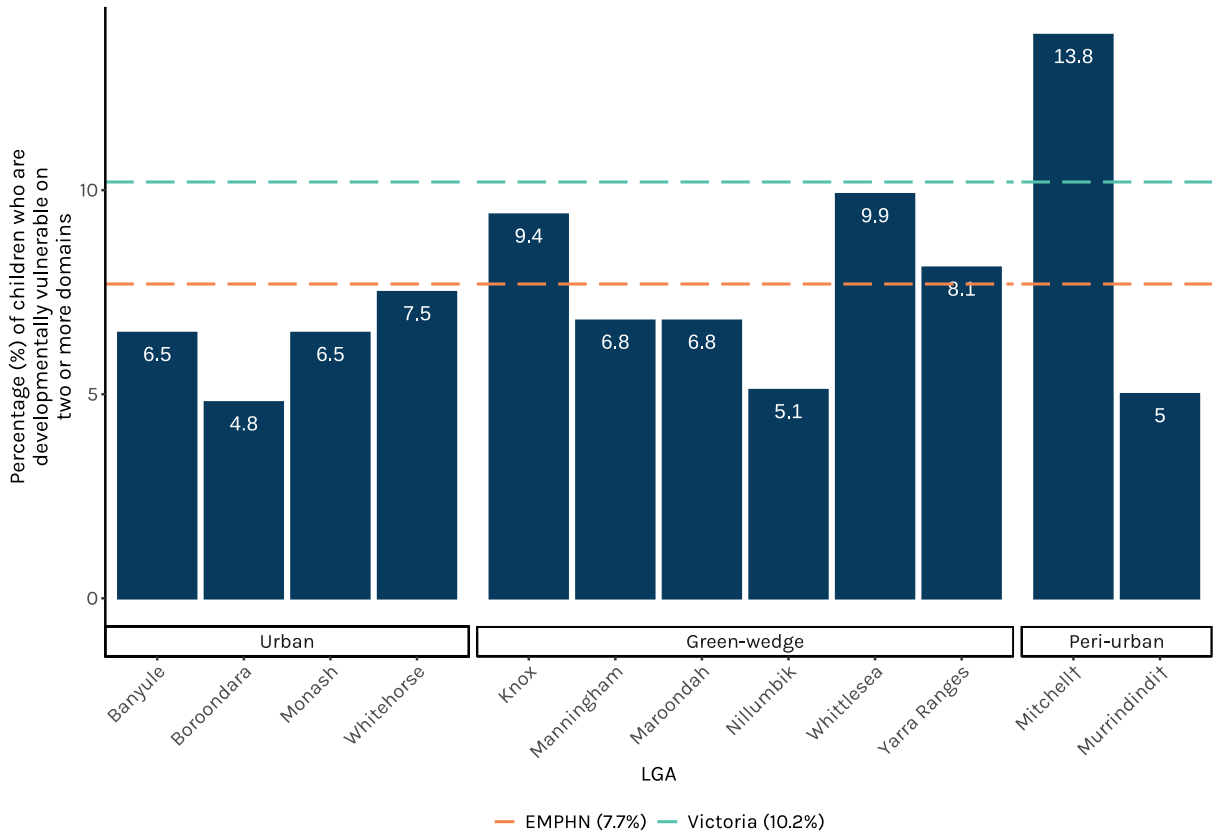
KEY DEFINITION

Conducted during a child's first year of full-time school, the **Australian Early Development Census (AEDC)** is a national assessment completed by teachers to assess development across five domains: *physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, and communication skills and general knowledge.*

Developmental vulnerability in a child refers to an increased risk of experiencing developmental delays or difficulties in one or more areas of these domains, indicating where additional support and resources may be required to address developmental need (AIHW 2020).

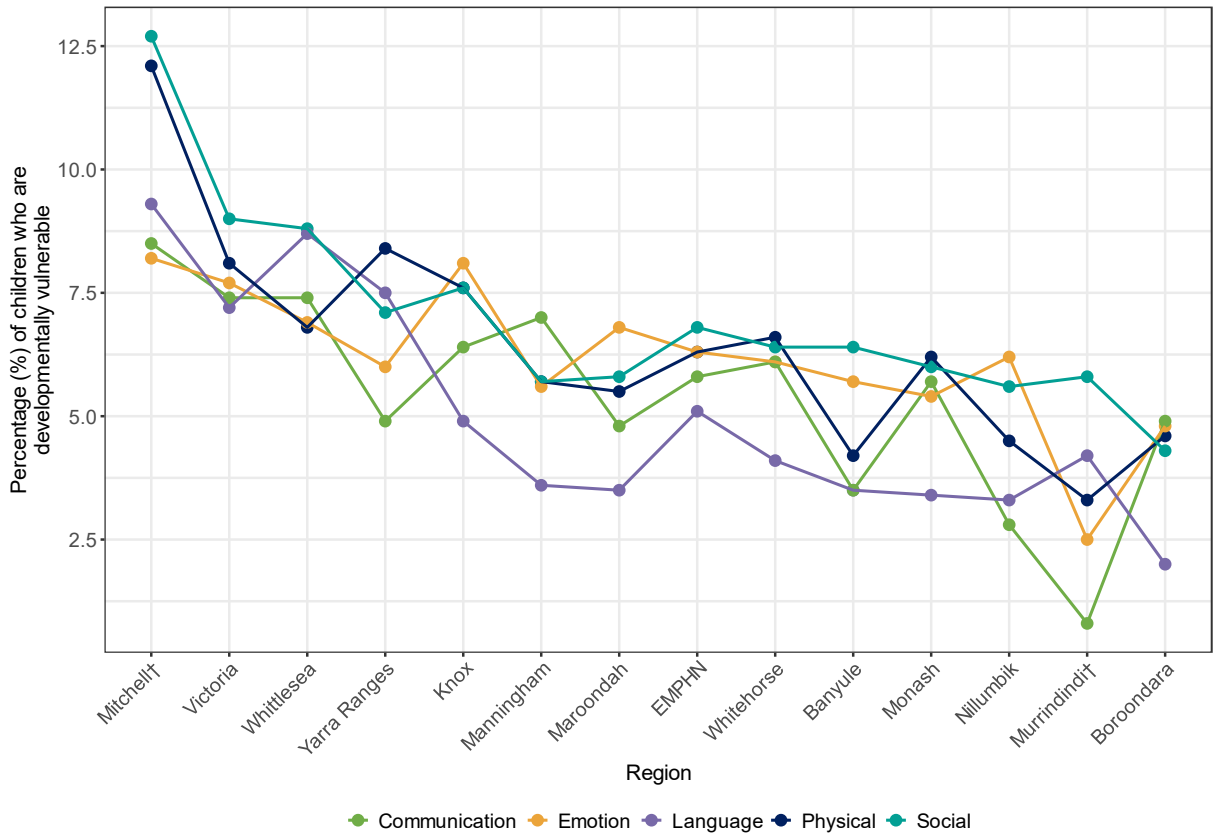
- Fewer children in the EMPHN region are developmentally vulnerable compared with Victoria.
- Children who live in Mitchell† have the highest rates of developmental vulnerability (one or more, two or more, and across all five domains) and is the only LGA with rates higher than Victorian averages (Figure 9 and Figure 10).
- Other LGAs above the EMPHN average for children vulnerable on two or more developmental domains are Whittlesea, Yarra Ranges and Knox (Figure 9).
- Challenges to social skill development is the most common domain (Figure 10). For others, there is geographical variation. For example, in Whittlesea, language and social competence primarily drive need, whereas for Yarra Ranges children face more challenges in their physical and language development. In Knox it was emotional competence.

Figure 9: Proportion of children who are developmentally vulnerable on two or more domains by region (LGA, EMPHN region and Victoria), 2021.



Source: Compiled by PHIDU based on data from the Australian Institute of Health and Welfare
PHIDU, 2023

Figure 10: Proportion of children by LGA who are developmentally vulnerable by the five Australian Development Census (AEDC) domains, 2021.



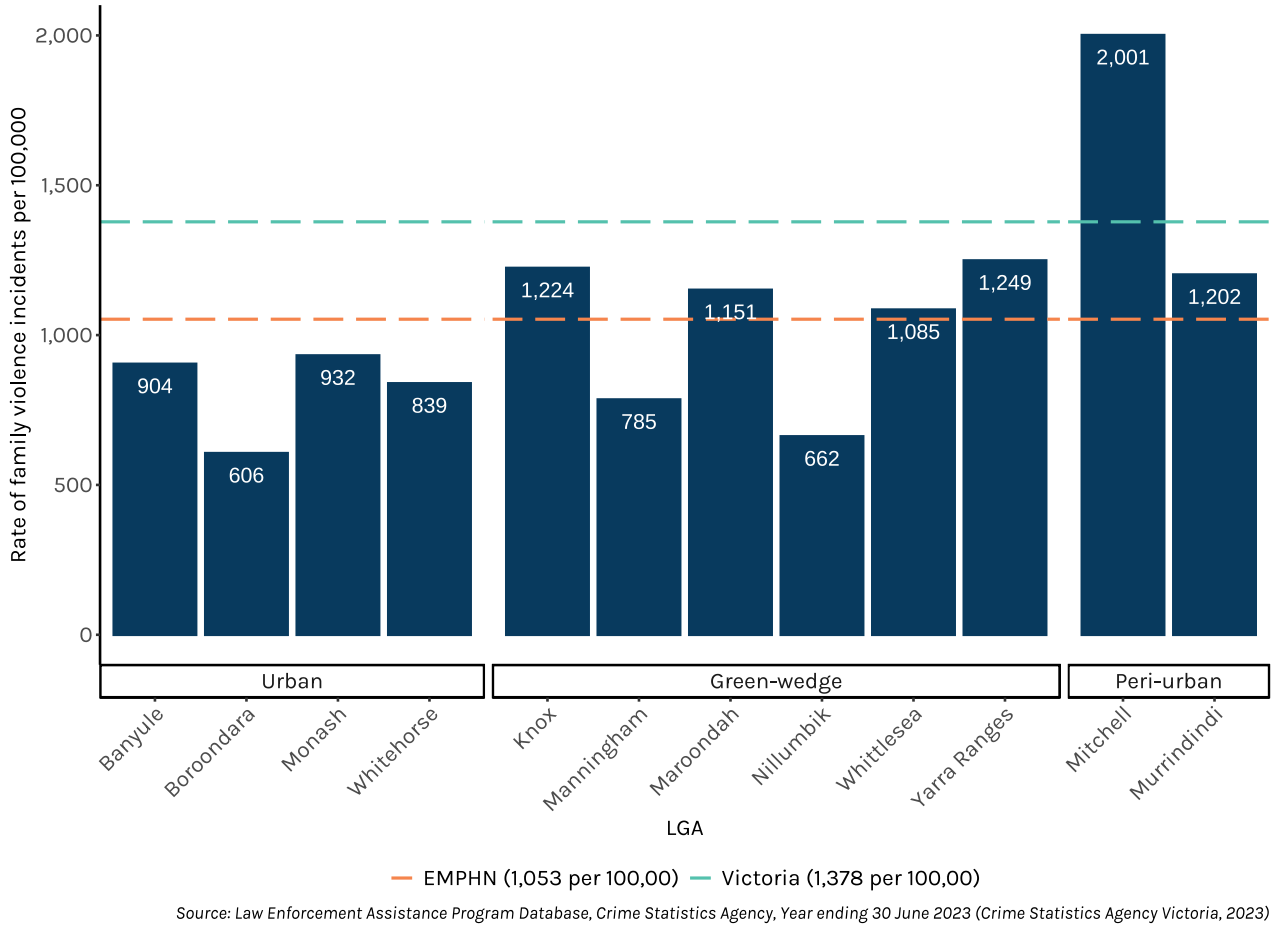
Source: Compiled by PHIDU based on data from the Australian Institute of Health and Welfare
PHIDU, 2023

Family violence

- Family violence incident rates are concerningly high in Victoria and across the EMPHN region (Figure 11). In 2022-23, a total of 93,115 family violence incidents involving Victorian Police attendance were reported across Victoria, including 1,346 across the EMPHN region. In three out of four incidents, the affected family member was female and over 80% were aged between 20 and 64 (Crime Statistics Agency 2023). These findings likely underestimate actual incidence rates of family violence in the EMPHN region and Victoria due to underreporting associated with misunderstanding, stigma and fear of repercussion (Satyen et al. 2020).

- Family violence rates in Mitchell far exceed all other EMPHN LGAs and are 45% higher than the state. Though rates in the region were higher in 2022-23 than in 2018-19, there was a small decline in 2020-21 and 2021-22 (Supplementary Figure 16). Yarra Ranges, Knox, Murrindindi, Maroondah, and Whittlesea also have relatively high rates when compared with the rest of the LGAs in the region (Figure 11).

Figure 11: Rates of family violence incidents per 100,000 by region (LGA, EMPHN region and Victoria), 2022 -23.



Source: Law Enforcement Assistance Program Database, Crime Statistics Agency, Year ending 30 June 2023 (Crime Statistics Agency Victoria, 2023)

Figure note: A family violence incident is an incident attended by Victoria Police where a Family Violence Report (known as an L17 report) is completed (Crime Statistics Agency 2023). The complete areas of the Mitchell and Murrindindi LGAs are included, as data at the postcode or SA2 level are not available for calculating rates in the partial LGA areas within the EMPHN region.

Behavioural and biomedical risk factors

A substantial proportion of the EMPHN region population is living with overweight or obesity and engage in behaviours that increase the risk of poor health.

Rates of behavioural and biomedical risk factors contributing to ill health are generally similar or lower in the EMPHN region compared to Victoria as a whole. However, peri-urban areas (Mitchell† and Murrindindi†) and other LGAs with higher socioeconomic disadvantage (Whittlesea, Maroondah and Yarra Ranges), all have notably higher rates of multiple behavioural risk factors and obesity compared to state averages (see Table 13).

Table 13: Behavioural and biomedical risk factors indicators ranked by the top five LGAs with the proportions or rates most indicative of disadvantage, similar or greater than the state average.

Rank	Daily tobacco smokers (%)[1]	Rate of alcohol consumption (2+ standard drinks)[2]	Rate of low or very low or no exercise	Rate of adequate fruit intake[3]	Adult living with obesity (%)[1]	Children living with obesity (%)
1	Whittlesea (16.6)	Nillumbik (19.8)	Whittlesea (72)	Murrindindi† (45)	Mitchell (37.1)	Murrindindi† (11.7)
2	Knox (16.2)	Yarra Ranges (19.2)	Mitchell† (69)	Mitchell† (48)	Murrindindi (28.8)	Mitchell† (9.9)
3	Murrindindi (15.3)	Murrindindi† (19.1)	Knox (68)	Yarra Ranges (49)	Whittlesea (24.6)	Yarra Ranges (9)
4	Mitchell (15)	Mitchell† (17.2)	Murrindindi† (66)	Maroondah (50)	Maroondah (21.5)	Whittlesea (8.7)
5	Yarra Ranges (11.2)	Maroondah (16.4)	Monash (65)	Knox (50)	Yarra Ranges (19.2)	Knox (6.9)
EMPHN	**10**	**13.9**	**63**	**52**	**17**	**6.3**
Victoria	**12**	**14.4**	**66**	**51**	**20.9**	**8**

Table note: LGAs ranked by the highest rates or proportions for selected behavioural and biomedical risk factors that are also above or equal to the state average. For example, in the EMPHN region four out of 12 LGAs have a proportion of children living with obesity at rates higher than the state average. [1]All of Mitchell and Murrindindi LGAs are included as data is not available at postcode or SA2 granularity. [2]Please note, since this data was gathered, the NHMRC has adjusted its alcohol guidelines downwards to 4 standard drinks a day and no more than 10 standard drinks a week https://www.nhmrc.gov.au/health-advice/alcohol. [3]Lower values are indicative of lower levels of advantage.

Source: VPHS, DH, 2020; PHIDU, 2023

- Behavioural risk factors
  10% of adults living in the EMPHN region report smoking tobacco daily, slightly lower than the state average (12%). However, Whittlesea, Knox, Murrindindi and Mitchell have especially high rates of daily smoking (Table 13, Figure 12).Alcohol consumption above NHMRC maximum recommended levels was more than double for males compared with females across the EMPHN region and Victoria. Within the EMPHN region, 7 out of 12 LGAs have alcohol consumption rates for males and females that are 10-40% above the state average (Figure 13).

- In addition to alcohol consumption, most Victorians, including people living in the EMPHN region, do not meet physical activity guidelines. In particular, Mitchell†, Whittlesea and Knox have notably elevated rates of physical inactivity relative to other EMPHN LGAs and Victoria (Supplementary Figure 18).

- Peri-urban LGAs (Mitchell† and Murrindindi†) report the lowest healthy eating rates relative to other EMPHN LGAs and Victoria (Supplementary Figure 17).

Figure 12: Proportion (%) of population that smoke tobacco daily by region (LGA, EMPHN region and Victoria), 2020.

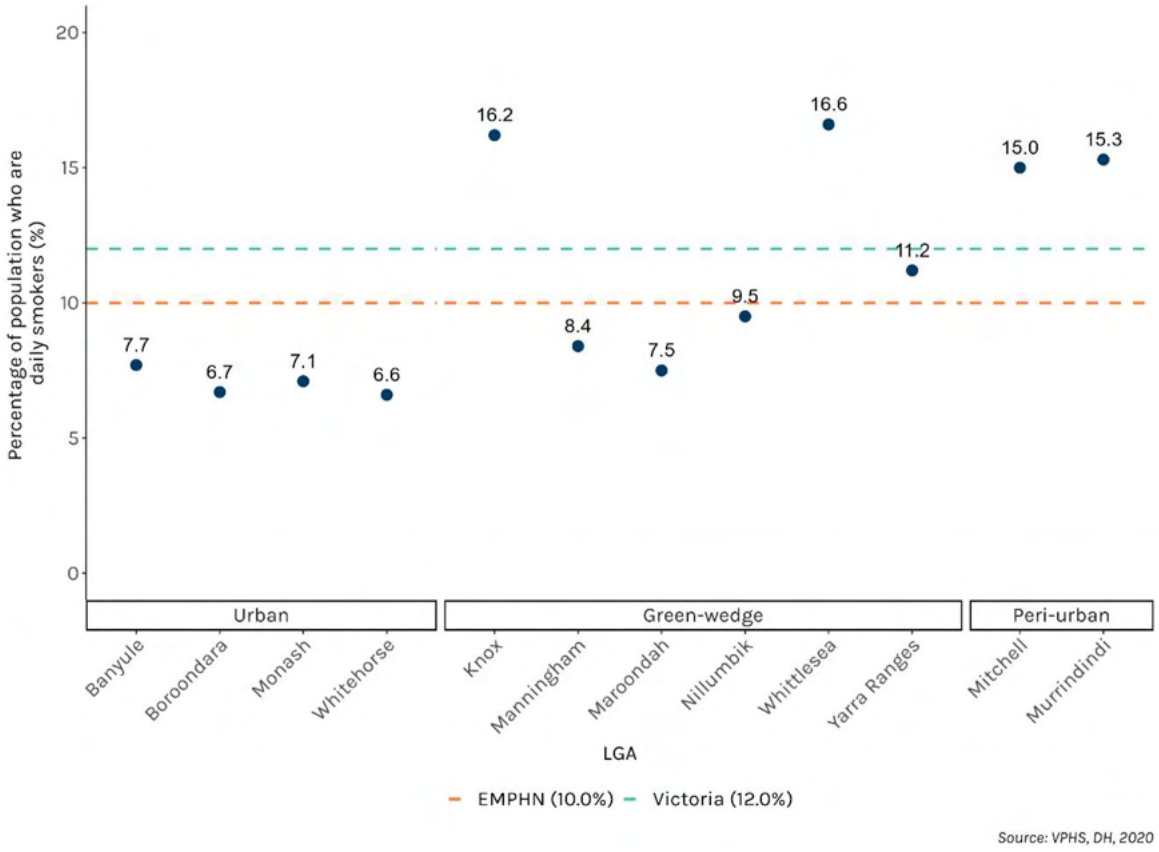
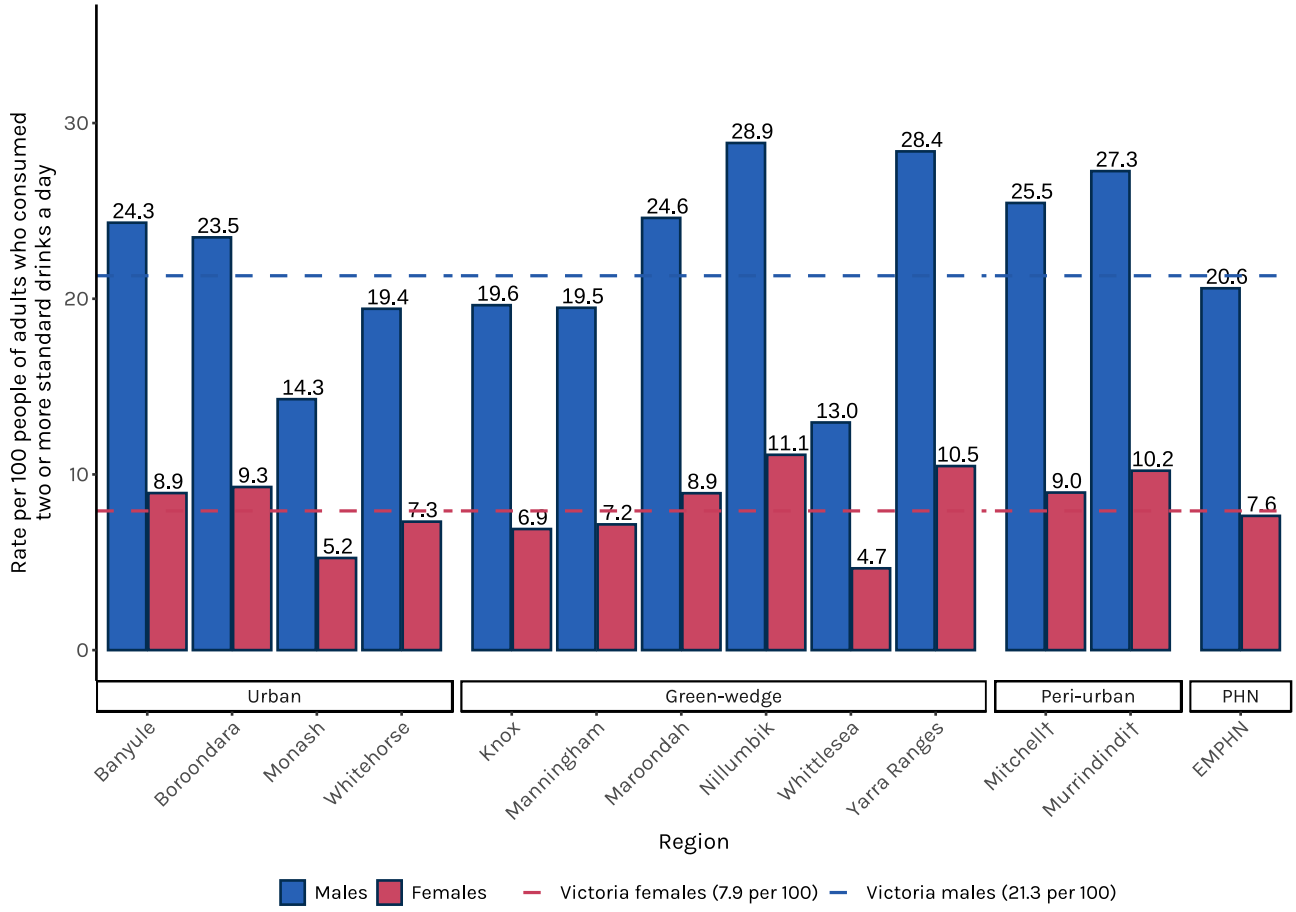


Figure 13: Rate per 100 population aged 18 years and over of alcohol consumption (more than 2 standard drinks per day) by sex and region (LGA, EMPHN region and Victoria), 2017-2018.



Source: Compiled by PHIDU based on direct estimates from the 2017-18 National Health Survey, PHIDU, 2023

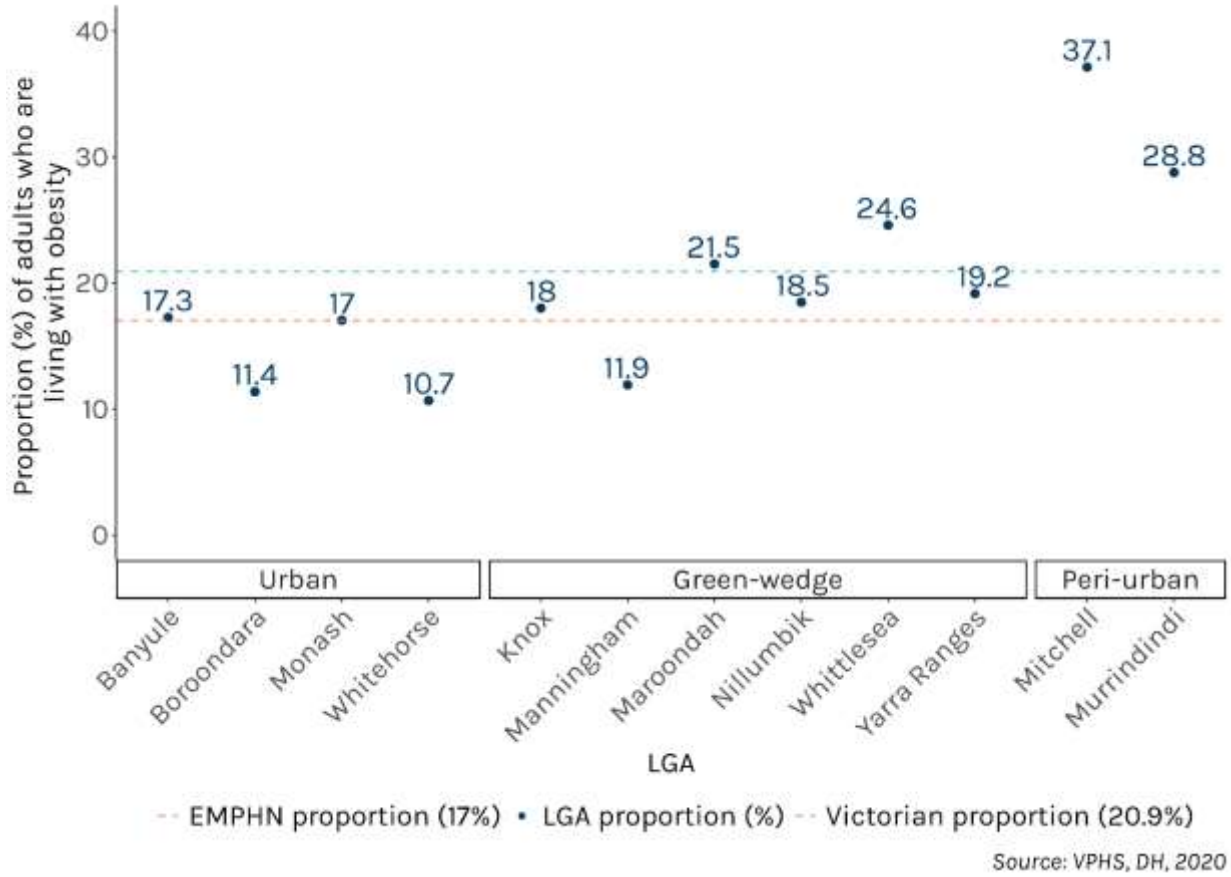
Figure note: Please note, since this data was gathered, the NHMRC has adjusted its alcohol guidelines downwards to 4 standard drinks a day and no more than 10 standard drinks a week https://www.nhmrc.gov.au/health-advice/alcohol.

Biomedical risk factors

- In the EMPHN region, approximately half of adults are living with overweight or obesity. Peri-urban areas and socio-economically disadvantaged LGAs, such as Mitchell†, Murrindindi†, Nillumbik, Whittlesea and Maroondah, have rates that exceed the state average (Figure 14). There is a correlation between higher obesity rates and inactivity, particularly in Mitchell†, Murrindindi and Whittlesea. See Supplementary Figure 19 for a further breakdown by overweight and obese categories.
- In terms of sex differences, there is a greater proportion of adult males than females who are overweight or living with obesity across the EMPHN region (Supplementary Figure 20).

- While fewer children living in the EMPHN region than Victoria are living with overweight or obesity, Mitchell†, Murrindindi†, Whittlesea, and Yarra Ranges all have rates higher than the state average (Supplementary Figure 21). Peri-urban LGAs have the highest rates of children living with obesity followed, generally by green-wedge LGAs.
- The EMPHN region has a proportion of males and females with high blood pressure that is similar to the state average. In addition, there are more males than females affected by hypertension (Supplementary Figure 22).

Figure 14: Proportion (%) of adult population who are overweight or living with obesity by region (LGA, EMPHN region and Victoria), 2020.



Source: VPHS, DH, 2020

Protective and early detection health actions

There is a need to improve cervical, breast and bowel cancer screening participation rates in Whittlesea, which are lower than those recorded in Victoria and most other LGAs in the region.

- Vaccination rates in the EMPHN region are broadly comparable to those in the Victorian population.

Table 14: Vaccination and cancer screening rates ranked by top five LGAs with the proportions most indicative of disadvantage that are similar or greater than the state average.

Rank	Children fully vaccinated at 5 years (%)[1]	Females 15 years - 3 doses for HPV[1, 2]	Males 15 years - 3 doses for HPV[1, 2]	Cervical screening participation (%)[1]	Breast screening participation (%)[1]	Bowel screening participation (%)[1]
1	Murrindindi† (94)	Mitchell† (73)	Knox (70)	Mitchell† (42)	Whittlesea (40)	Whittlesea (42)
2	Manningham (95)	Knox (76)	Whittlesea (74)	Murrindindi† (43)	Yarra Ranges (47)	Mitchell† (45)
3	Monash (95)	Yarra Ranges (77)	Manningham (74)	Whittlesea (45)	-	Monash (46)
4	Boroondara (95)	Whittlesea (77)	Maroondah (76)	-	-	-
5	Maroondah (96)	Maroondah (78)	-	-	-	-
PHN	**96**	**80**	**77**	**51**	**47**	**47**
State	**96**	**80**	**76**	**47**	**46**	**46**

Table note: Shows up to the top five LGAs with the lowest rates or proportions for selected risk factors that are below or equal to the state average. Blank cells indicate that there were less than 5 LGAs with rates lower than the state average. [1]Lower values are indicative of lower levels of advantage. [2]As of 2023, the National Immunisation Program (NIP) revised its Human Papillomavirus (HPV) vaccination guidelines based on the Australian Technical Advisory Group on Immunisation (ATAGI) recommendations. Individuals <25 years now receive a single dose, while those over 25 and immunocompromised individuals require three dosages. At the time of reporting, single dose data was only available at the state level.

Source: PHIDU, 2023

- To achieve herd immunity against all vaccine-preventable diseases, Australia's childhood vaccination coverage target has been set at 95% (DHAC 2024). Childhood vaccination rates are generally achieved across LGAs, though in the Murrindindi† LGA children are under-vaccinated compared to this benchmark and levels in the other EMPHN LGAs and Victoria (Table 14).
- For a breakdown of vaccination rates at one, two, and five years see Supplementary Figure 23; see Supplementary Figure 24 for further details on HPV vaccination rates for teenagers.
- Whittlesea, Mitchell† and Murrindindi† have the lowest cancer screening uptake relative to the rest of EMPHN LGAs and Victoria. Detailed information on cervical, breast and bowel screen is provided in Supplementary Figure 25, Supplementary Figure 26 and Supplementary Figure 27.

Occupational risk factors

Occupational risk factors are specific physical, biological or psychosocial factors or conditions present in a work place that can potentially lead to adverse health outcomes.

Risk of burnout in frontline health care workers with link to behavioural and biomedical risk factors

Health care workers face rising pressures from increasing patient demands, complex health conditions, workforce shortages and emotional stress. Frontline workers under chronic stress are at increased risk of developing biomedical conditions such as hypertension, obesity, and diabetes. These conditions can exacerbate feelings of physical exhaustion and burnout (Kivimäki et al. 2015).

The demanding nature of health care work can disrupt work-life balance, leading to behavioural patterns such as neglect of self-care, reduced physical activity, and unhealthy eating

Case study 2. Mental health in the Australian Defence Force (ADF)

Current and ex-serving men and women are at risk for a range of adverse health outcomes, including mental health conditions such as post-traumatic stress disorder (PTSD). A higher proportion of ex-serving ADF members than the general Australian population were admitted to public hospitals for mental health, alcohol and drug use and intentional self-harm (AIHW 2024a).

Banyule and Mitchell have approximately three to five times more current serving ADF members compared to other EMPHN regions and Victoria (Supplementary Figure 28).

Quantified need based on risk factors that impact health

The highest levels of need related to risk factors were seen in the peri-urban areas (Mitchell† and Murrindindi†) and the populous LGA of Whittlesea.

Whittlesea and Monash have the highest need when their projected population growth for 2030 is taken into account.

Table 15: Quantified need based on different types of risk factors that influence population health and wellbeing.

Geographical area	Region	Metric 3													
		Early childhood and family risk factors			Behavioural and biomedical risk factors			Protective and early detection health actions			Average index	Average index as % of all LGAs	Projected population % EMPHN region (2030)	Change	Adjusted population need
		Babies born with low birthweight (%)	Rates of family violence[†]	Children vulnerable 2+ domains (%)	Adult tobacco smokers (%)[†]	Rates of 2+ standard drinks	Adults living with obesity (%)[†]	Cervical screening participation (%)	Breast screening participation (%)	Bowel screening participation (%)					
Urban	Banyule	0.9	0.7	0.6	0.6	1.1	0.8	0.9	1.0	0.9	0.8	7.8%	7.8%	0%	7.8%
	Boroondara	0.9	0.4	0.5	0.6	1.1	0.5	0.9	1.0	1.0	0.8	6.9%	11%	-10.2%	9.9%
	Monash	1.1	0.7	0.6	0.6	0.7	0.8	1.0	0.8	1.0	0.8	7.4%	12.2%	-10.8%	10.9%
	Whitehorse	1.0	0.6	0.7	0.6	0.9	0.5	0.9	1.0	0.9	0.8	7.3%	11.2%	-9.6%	10.2%
Green-wedge	Knox	1.0	0.9	0.9	1.3	0.9	0.9	0.9	1.0	1.0	1.0	8.9%	9.6%	-1.9%	9.4%
	Manningham	0.9	0.6	0.7	0.7	0.9	0.6	0.9	1.0	1.0	0.8	7.3%	7.5%	-0.8%	7.4%
	Maroondah	0.9	0.8	0.7	0.6	1.1	1.0	0.9	0.9	0.9	0.9	8.1%	7.4%	2.7%	7.6%
	Nillumbik	0.8	0.5	0.5	0.8	1.4	0.9	0.8	0.9	0.9	0.8	7.6%	3.7%	28.6%	4.8%
	Whittlesea	1.0	0.8	1.0	1.4	0.6	1.2	1.1	1.2	1.1	1.0	9.4%	18.6%	-13.5%	16.1%
	Yarra Ranges	0.9	0.9	0.8	0.9	1.3	0.9	0.9	1.0	1.0	1.0	8.8%	9.5%	-1.9%	9.3%
Peri-urban	Mitchell†	1.1	1.5	1.3	1.2	1.2	1.8	1.1	0.9	1.0	1.2	11.3%	1.2%	221.2%	4%
	Murrindindi†	0.9	0.9	0.5	1.3	1.3	1.4	1.1	0.8	0.9	1.0	9.3%	0.2%	1059.4%	2.7%

Table note: All indicators are an index of the Victorian rate or % (LGA rate or % divided by Victorian rate or %). Purple shading indicates LGAs with the highest level of need relative to other LGAs based on projected population. Blue shading indicates LGAs with statistically higher indices for individual risk factors relative to the Victorian average. The individual index scores represent the level of need an LGA demonstrates for that specific indicator, where the higher the number the greater the need. Yellow shading indicates LGAs with a statistically higher overall need after adjusting for risk factors in the population. [†] All of Mitchell and Murrindindi LGAs are included as data are not available at postcode or SA2 granularity.

Source: Compiled by PHIDU based on direct estimates from the 2017-18 National Health Survey, PHIDU, 2023; VPHS, DH, 2020; PHIDU, 2022; ABS, 2021; Crime Statistics Agency Victoria, 2023

3.5

Metric 4: Access and geographical environment

Metric 4 examines the physical environment in which individuals live, as well as factors affecting accessibility to primary health care services.

Geographical environment

The physical environment in which people live and work influences their decisions and behaviours, which can impact health and wellbeing as well as access to health care.

KEY DEFINITIONS

Liveability: Liveability is the sum of the factors that add up to a community's quality of life. There are 72 indicators measured within nine domains. The domains are: social infrastructure, walkability, public transport, public open space, food environment, alcohol environment, housing affordability, local employment and population characteristics. Together these create an overall **Liveability Index**. We have reported on these indicators:

- **Alcohol environment**: Average distance (km) to the closest alcohol retailer.
- **Access to GP clinics**: Average distance (km) to the nearest GP clinic offering a Medicare bulk-billing payment system where a patient has no out-of-pocket expenses.
- **Food environment**: Average distance (km) to closest healthy food outlet including supermarket or greengrocer.
- **Public transport**: Percentage of dwellings within 400m of public transport with a regular 30-minute weekday service.
- **Health infrastructure**: The Health Infrastructure Index (0- 6) is derived from the Social Infrastructure Index and is based upon the availability of residential aged care, GPs, dentists, pharmacies, community health and maternal child health (MCH) centres in a geographical area. A score of 0 indicates no services available within 1km and 6 indicates all six health services available within 1km.

See Davern et al. (2023) and Gunn et al. (2020) for more details.

- Lower levels of 'liveability' correlate with greater distance from Melbourne's city centre. Relative disadvantage related to health infrastructure access was a common factor contributing to reduced liveability for people living outside urban areas. Disadvantage associated with limited access to healthy food options, public transport and bulk-billed GP clinics were also common (see Table 16 for specific indicators).
- Mitchell† and Maroondah, areas with higher social disadvantage, have rates of alleged offender incidents[6] that are higher relative to the rest of the region and the state. Overall, offender incidents have remained relatively stable since 2020 (Supplementary Figure 29 and Supplementary Figure 30).

[6] **Alleged offender incidents:** refers to events or situations where an individual is suspected of committing a crime or offence. These incidents are reported and documented by law enforcement agencies and may involve preliminary investigations to determine if there is enough evidence to formally charge the individual. The term encompasses all interactions where a person is accused or suspected of criminal behaviour, regardless of the outcome of any subsequent legal proceedings. The majority of these incidents are property and deception type offences or 'crimes against the person' (for example, assault) (Crime Statistics Agency 2023).

Table 16: Summary of Liveability Index by LGA, 2021.

Geographical area	LGA	Liveability Index	Liveability indicators with disadvantage[1,2]	Score for disadvantaged indicators
Urban	Banyule	100.5	Alcohol environment	0.9km
	Boroondara	101.9	Alcohol environment	0.6km
	Monash	99.9	Alcohol environment	0.8km
	Whitehorse	100.0	Alcohol environment	0.7km
Green-wedge	Knox	98.6	Public Transport Access; Health Infrastructure	38.2% 1.7
	Manningham	98.3	Food environment; Health Infrastructure	1.3km 2
	Maroondah	98.9	Health Infrastructure	1.8
	Nillumbik	95.7	Access to bulk-billing GP clinics; Public Transport Access; Food environment; Health Infrastructure	1.6km 27.6% 1.6km 1.2
	Whittlesea	97.0	Public Transport Access; Food environment; Health Infrastructure	30.1% 1.4km 1.5
	Yarra Ranges	96.1	Access to bulk-billing GP clinics; Public Transport Access; Food environment; Health Infrastructure	2km 16.3% 1.7km 1.1
Peri-urban	Mitchell†	91.8	Access to bulk-billing GP clinics; Public Transport Access; Food environment; Health Infrastructure	3.5km 0.7% 3.6km 0.6
	Murrindindi†	94.2	Access to bulk-billing GP clinics; Public Transport Access; Food environment; Health Infrastructure	1.6km 0% 1.4km 0.6

Table note: [1] Disadvantage when the indicator is below the Greater Melbourne average (Liveability index = 98.9, Health infrastructure = 2.2, Public transport = 46%, Alcohol environment = 0.9km) or above the Greater Melbourne average (Access to bulk-billing GP clinics = 1.3km, Food environment = 1.3km).
[2]Public transport, food environment and alcohol environment data comes from the entire LGA of Murrindindi and Mitchell, which include areas not in the EMPHNN region.

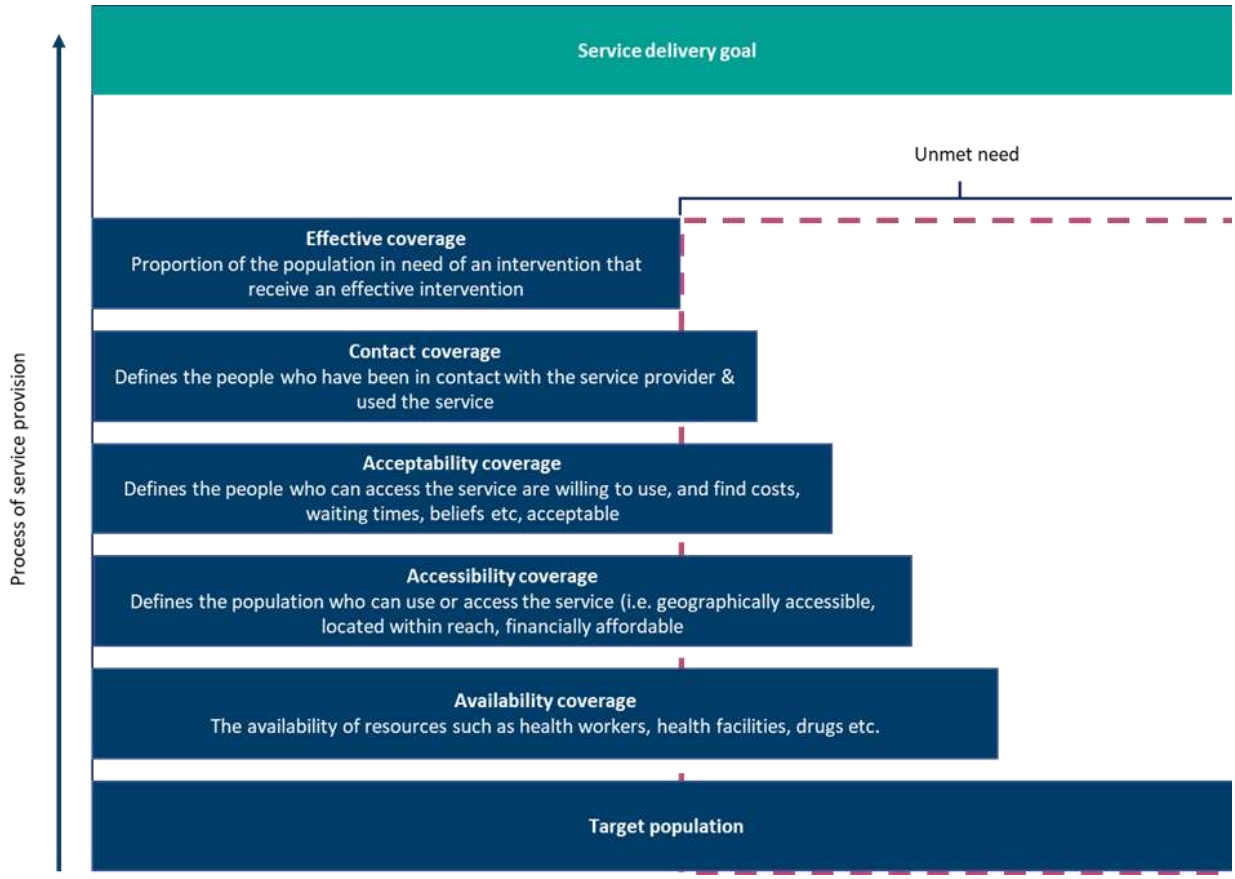
Source: Australian Urban Observatory, 2021 (Davern et al. 2023)

Framing access to primary health care

The Tanahashi model (Tanahashi 1978) is used to evaluate people's access to primary health care by evaluating the effectiveness and reach of health services in meeting the health needs of a population. It indicates how factors impact the delivery of health care, and how these affect the population's ability to achieve equitable health outcomes.

Tanahashi's model identifies five elements of effective coverage, which shape service access (Figure 15). The sections of this metric are organised according to these concepts.

Figure 15: Tanahashi's model of evaluation of health service coverage.



Summary of key findings: access to primary health care indicators

Remote and socioeconomically disadvantaged LGAs face significant access barriers, especially to health workforce and infrastructure.

Table 17 provides an overview of findings across key indicators of primary health care access by geographical area. Further detail is provided in the Supplementary file - Metric 4.

Table 17: Summary of findings across key indicators of healthcare access, 2021-22 and 2022-23.

	Health care workforce shortages and low availability of health infrastructure disproportionately affect people living outside urban areas, except for medical specialist availability where there is a regionwide shortage. Nillumbik and the most socioeconomic disadvantaged LGAs, including Yarra Ranges, Murrindindi†, Mitchell† and Whittlesea, have severely limited workforce capacity across most or all health professions.
	A greater distance from the CBD is associated with longer travel distances to access a bulk-billing clinic with no out-of-pocket costs. Mitchell†, Murrindindi† and Yarra Ranges are further disadvantaged due to out-of-pocket costs higher than the national average for most local primary care and medical specialist services.
	The EMPHN region has higher out-of-pocket costs than the national average. While there are generally good primary health care utilisation rates, out-of-pocket costs increase financial burden, particularly for LGAs with higher levels of socioeconomic disadvantage. Lower Medicare subsidies for specialist and allied health services might also contribute to low utility in Whittlesea and Mitchell‡.
	Whittlesea and Mitchell‡ demonstrated the highest need in effective health care coverage, reflected by higher rates of potentially preventable hospitalisations and avoidable ED presentations. However, overall, the EMPHN region has less disadvantage compared with Victoria. This was particularly true for urban LGAs with stronger health infrastructure, workforce availability and areas with more social advantage.

Table 18: Summary of findings across key indicators of health care access by geographical area, 2021-22 and 2022-23.

Section	Indicators	Urban				Green-wedge						Peri-urban	
		Banyule	Boroondara	Monash	Whitehorse	Knox	Manningha	Maroondah	Nillumbik	Whittlesea	Yarra	Mitchell†	Murrindindi †
Availability	General practitioner workforce shortages* in 2022-23												
	Medical radiation practitioner workforce shortages* in 2022-23												
	Nurses and midwives workforce shortages* in 2022-23												
	Nurses in aged care* 2022-23												
	Allied health professional workforce shortages* in 2023												
	Dental practitioner workforce shortages* in 2022-23												
	Health infrastructure index^												
	District of workforce shortage for medical specialists**												
Accessibility	Distance to closest bulk-billing GP clinic with no out-of-pocket costs^												
	Out-of-pocket cost per service - GP in 2022-23**												
	Out-of-pocket cost per service - Diagnostic imaging in 2022-23**												
	Out-of-pocket cost per service - Allied health in 2022-23**												
	Out-of-pocket cost per service - Specialist in 2022-23**												
	Out-of-pocket cost per service - Nursing and Aboriginal Health Workers in 2021/22**												
Contact	Utilisation rate of Medicare-subsidised service - GP in 2022-23**												
	Utilisation rate of Medicare-subsidised service - Diagnostic imaging in 2022-23**												
	Utilisation rate of Medicare-subsidised service - Allied health in 2022-23**												
	Utilisation rate of Medicare-subsidised service - Specialist in 2022-23**												
	Utilisation rate of Medicare-subsidised service - Nursing and Aboriginal Health Workers in												
	Mental health episodes of care rates per 10,000 people in 2021-22***												
Effective	PPH rates - acute conditions in 2022-23*												
	PPH rates - chronic conditions in 2022-23*												
	PPH rates - vaccine-preventable conditions in 2022-23*												
	Rates of Avoidable ED presentation 2022-23*												

Table notes: LGAs with disadvantages are highlighted in pink. *LGAs with disadvantage are defined when their rates are lower (or costs/distance are higher) than Victorian level. **LGAs with disadvantage are defined when their rates are lower (or costs/distance are higher) than National level. ***LGAs with disadvantage are defined when their rates are lower (or costs/distance are higher) than EMPHN level. ^LGAs with disadvantage are defined when their rates are lower (or costs/distance are higher) than Greater Melbourne level.

Source: Australian Urban Observatory, 2021 (Davern et al. 2023); Crime Statistics Agency Victoria, 2023; HeaDSUPP 2022-2023; ABS, 2022-2023; Victorian Admitted Episodes Dataset, Victorian DH, FY2022/23; Victorian Emergency Minimum Dataset, DH, FY2022/23

Availability coverage

Availability coverage for access to primary health care refers to the extent to which services are physically present in each area. This includes the availability of health care facilities, equipment, medications, and professionals such as doctors, nurses, and support staff.

Health workforce

- Murrindindi†, Yarra Ranges and Mitchell† in green-wedge and peri-urban areas face significant workforce and health infrastructure shortage, including GPs, medical specialists, nurses and allied health practitioners compared to LGAs in urban areas.
- Significant health workforce shortages exist across multiple professions, including GPs, in the EMPHN region. However, they are unevenly distributed geographically, disproportionately affecting people outside urban areas.
- Importantly, Nillumbik and Yarra Ranges face low availability of GPs, aged care nurses, and medical specialists, which hampers their capacity to address the needs of an increasingly older population with complex health requirements (see Supplementary Table 16, Supplementary Table 17, Supplementary Table 18, Supplementary Figure 31 and Supplementary Figure 32 for more workforce information).
- GP availability in EMPHN has shown a similar trajectory as Victoria since 2019 but with marginally better full-time equivalent (FTE) rates per 100,000 population. While GP availability in most LGAs in EMPHN has plateaued since 2021, rates have decreased each year since 2021 in Whitehorse, Yarra Ranges, Nillumbik, Whittlesea and Maroondah.
- Since 2019, the percentage of GPs over 65 has been increasing while those under 40 has been decreasing (Supplementary Figure 32 and Supplementary Table 17).
- There was a lower proportion of GPs under 40 working in Boroondara, Manningham, Monash, and Whittlesea, indicating a risk of future GP workforce shortages in these LGAs (Supplementary Table 17).
- See Supplementary Table 16 for ranking all EMPHN LGAs from lowest to highest rates of healthcare workforce availability.

Healthcare infrastructure

- As distance from Melbourne's city centre increases, the availability of health infrastructure (including GPs, dentists, pharmacies, maternal and child health services) decreases (Figure 16). This pattern is similar to that of health workforce shortages.

Figure 16: Health infrastructure index by LGA, 2021.

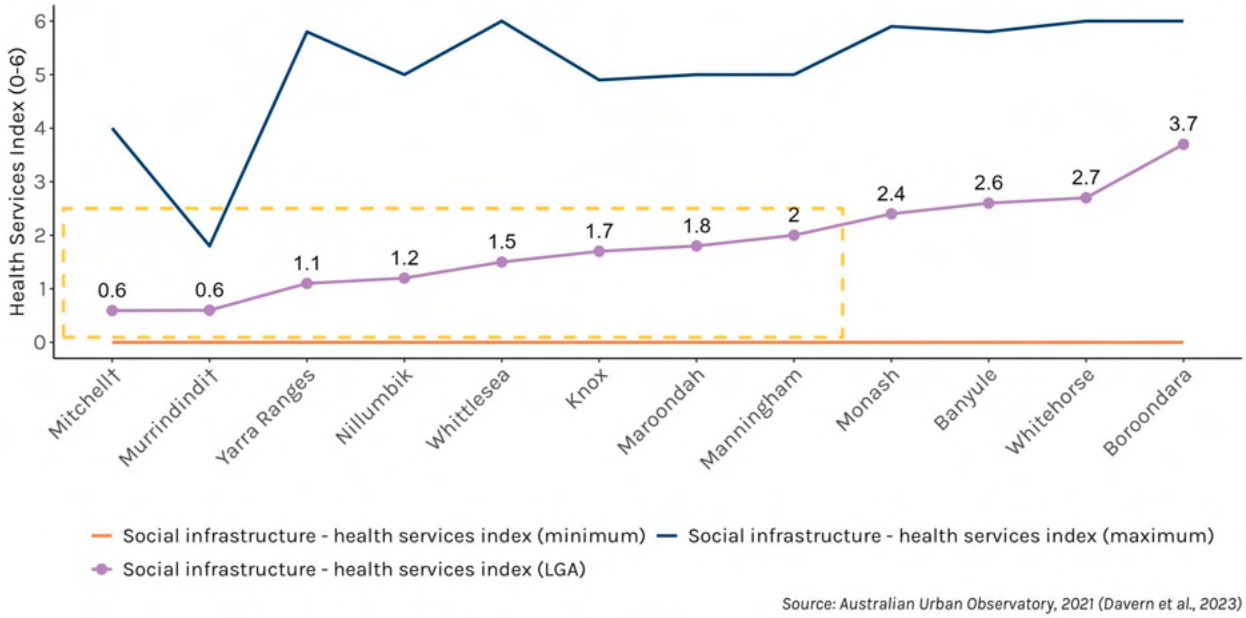


Figure note: The Health Infrastructure Index (score: 0 to 6) is derived from the Social Infrastructure Index and measures the availability of residential aged care, GPs, dentists, pharmacies, community health and maternal child health centres in a geographical area. The indexed score is calculated as an average of SA1s within each LGA. A score of 0 indicates no services available within 1km and 6 indicates all six health services are available. The yellow dashed box indicates that the enclosed LGAs have an index less than Greater Melbourne (2.2). No state average was available.

Mental health services

- Most mental health and wellbeing services in the EMPHN region offer low and moderate intensity levels of care to the general population (Supplementary Figure 33, Supplementary Figure 34 and Supplementary Figure 35). Levels of care are defined according to the Australian Government's Initial Assessment and Referral Decision Support Tool (IAR-DST).
- Relatively few mental health services specifically target priority populations such as Aboriginal and Torres Strait Islander people or LGBTIQ+ individuals, culturally and ethnically diverse cohorts, or people with alcohol and other drug challenges (Supplementary Figure 35).

Accessibility coverage

Accessibility coverage in health care determines whether individuals can access services regardless of their location, financial status, or physical limitations. This includes geographic, financial, and physical accessibility.

KEY DEFINITIONS

These definitions are taken from **AIHW's Medicare glossary** (AIHW 2024b).

Medicare subsidy: Government payments or rebates paid to patients for health care services under Medicare. Benefits are calculated based on the Medicare Benefits Schedule (MBS) fees and depend on the type of service and where it is provided. Out-of-pocket costs are the difference between the full cost and the Medicare subsidy.

Bulk-billing: The process whereby a patient assigns their entitlement to a Medicare benefit to the treating practitioner, who in turn submits the claim directly to Services Australia. The practitioner cannot charge a co-payment, so there are no out-of-pocket costs.

Medicare subsidies for health care services and travel distances to bulk-billed GPs vary across the EMPHN region.

- Within and across LGAs, there is significant variation in travel distance to bulk-billed GP clinics[7]. This is more pronounced in Yarra Ranges, Mitchell† and Whittlesea, which also have limited public transport accessibility. For example, a resident in the Yarra Ranges may travel up to 11km to a bulk-billed service, compared to up to two km in Monash. Generally, LGAs outside urban areas face longer travel distances to reach free primary health care (Supplementary Figure 36).
- There is also significant geographic variation in out-of-pocket costs across the EMPHN region. However, generally these costs are higher than the national average. Boroondara, Nillumbik, Yarra Ranges and Murrindindi have higher out-of-pocket costs compared to other LGAs (Supplementary Table 20).
- Medical specialist services, followed by allied health and diagnostic imaging services, attract the highest out-of-pocket costs and have lower Medicare coverage. Medical specialist services incur an out-of-pocket cost over eight times more than a GP appointment with consistently lower utility rates across the region (Supplementary Table 21).

[7] Please note that the data for bulk-billing GP clinics is from 2021. Numbers and locations may have changed.

- Psychiatry specialists and allied health professionals including psychologists make up approximately 40% of Medicare items utilised in the EMPHN region, reflected by high ill-mental health prevalence and suggesting that mental health services represent a significant financial burden (Supplementary Figure 37).

Acceptability coverage

Acceptability coverage measures how well health care services align with the cultural and social beliefs of the population. It includes perceived quality, efficacy, and cultural safety of healthcare, as well as financial factors, and wait times.

Due to the absence of relevant quantitative data available, findings related to acceptability are covered through consultation with community and health care providers in section 4 of this report.

Contact coverage

Contact coverage is an important measure of health care access and refers to the extent to which individuals use services when they are needed. These include routine check-ups, preventative care, and treatment for minor illnesses and injuries.

Utilisation rates

Despite workforce shortages and higher out-of-pocket costs, health care service usage remains relatively high across most of the region.

- Whittlesea and Mitchell† have lower out-of-pocket costs for all services. However, utilisation of allied health and medical specialist services remained low. This could be partially attributed to the lower government service rebates for these services.
- In contrast, Monash and Whitehorse, urban LGAs with higher workforce capacity and proximity to bulk-billing clinics, still experienced low utilisation of Medicare-subsidised GP services. Understanding factors that influence service acceptability could identify important access barriers (Supplementary Table 20).
- Nursing and Aboriginal health worker services are underutilised across all regions, even those with relatively low out-of-pocket costs. Additionally, Aboriginal and Torres Strait Islander people were less likely to receive an Indigenous-specific health check compared with the Victorian average (Supplementary Figure 38), potentially due to limited workforce capacity, including nursing shortages.

Please refer to Supplementary Figure 39, Supplementary Figure 40 and Supplementary Figure 41 for information about utilisation rates across specific health services.

Spotlight (Part A) – contact coverage

EMPHN-commissioned mental health services

EMPHN commissions a range of mental health and wellbeing services to support people with mental health needs ranging from mild to severe in the community. This includes Head to Health and Stepped Care, which were established in 2020 and 2018 respectively.

Head to Health supports service navigation to make timely mental health advice, assessment, and treatment more accessible for everyone. In addition to the website, there is a national phone service, physical centres and pop-up clinics, and kids' hubs.

Stepped Care is a program delivering free mental health support tailored to the needs of anyone who lives or works in north east, inner east and outer east Melbourne. People can self-refer or be referred by a health care professional such as their doctor.

Head to Health and Stepped Care are several mental health services available to support people with mental health concerns. Therefore, the below data insights are likely limited in their generalisability and representation of mental health service utilisation and demographics of people who access them more broadly in Eastern Melbourne.

However, understanding the contact coverage of commissioned services provides useful contextual information into the utilisation of different cohorts seeking mental health care. In turn, the data can be used to monitor the effectiveness and usefulness of the service in meeting the needs of its users and to help improve access to timely and appropriate mental health support for those seeking help.

Key insights

(a) There was a total of 254 referrals completed for Head to Health (accounting for 16 per 100,000 population) and 244 completed referrals from Stepped Care (accounting 16 per 100,000 population) in the EMPHN catchment in 2023 (Supplementary Tables 22 and Supplementary Tables 23).

(b) Assessments by Head to Health and Stepped Care reveal that most individuals using these services require moderate levels of intensity of care, indicating they likely experience mild to moderate symptoms or distress that meet diagnostic criteria.

(c) However, Maroondah shows a substantial proportion of Head to Health consumers requiring high or specialist-level care, while Yarra Ranges has a significant number for Stepped Care.

In the next section of this report, Metric 5 – health conditions and consequences, Part B provides insights into the prevalence and types of mental health diagnoses of people seeking treatment at EMPHN-commissioned health services after they have been assessed and referred.

Effective coverage

Effective coverage is the proportion of the population in need of an intervention that receives one. A key aspect of effective coverage is to reduce avoidable ED presentations and PPHs, which can be seen as indicators of gaps in primary care (Rosano et al. 2013).

Potentially preventable hospitalisations

A PPH occurs when a hospital admission for a condition could have been avoided with appropriate individualised preventative health interventions and early disease management, typically delivered through primary and community-based care (Falster and Jorm 2017).

PPHs are identified from diagnoses recorded in hospitalisation data. In Australia, PPHs are summarised into three groups (Falster and Jorm 2017). Current specifications of the PPH and list of conditions are detailed in the AIHW Metadata Online Registry (METEOR) (AIHW 2023) See Table below.

Table 19: PPHs grouping summary.

Vaccine-preventable conditions	These may be preventable through vaccination. The category includes conditions such as influenza, measles, diphtheria and hepatitis B.
Acute conditions	These may not be preventable, but theoretically would not result in hospitalisation if timely and adequate (usually non-hospital) care was received. The category includes conditions such as urinary tract infections (UTIs), cellulitis, dental conditions, ear, nose and throat (ENT) infections.
Chronic conditions	These may be preventable through lifestyle change but can also be managed effectively through timely (usually non-hospital) care to prevent deterioration and hospitalisation. includes conditions such as congestive cardiac failure, diabetes complications The category, chronic obstructive pulmonary disease (COPD) and angina.

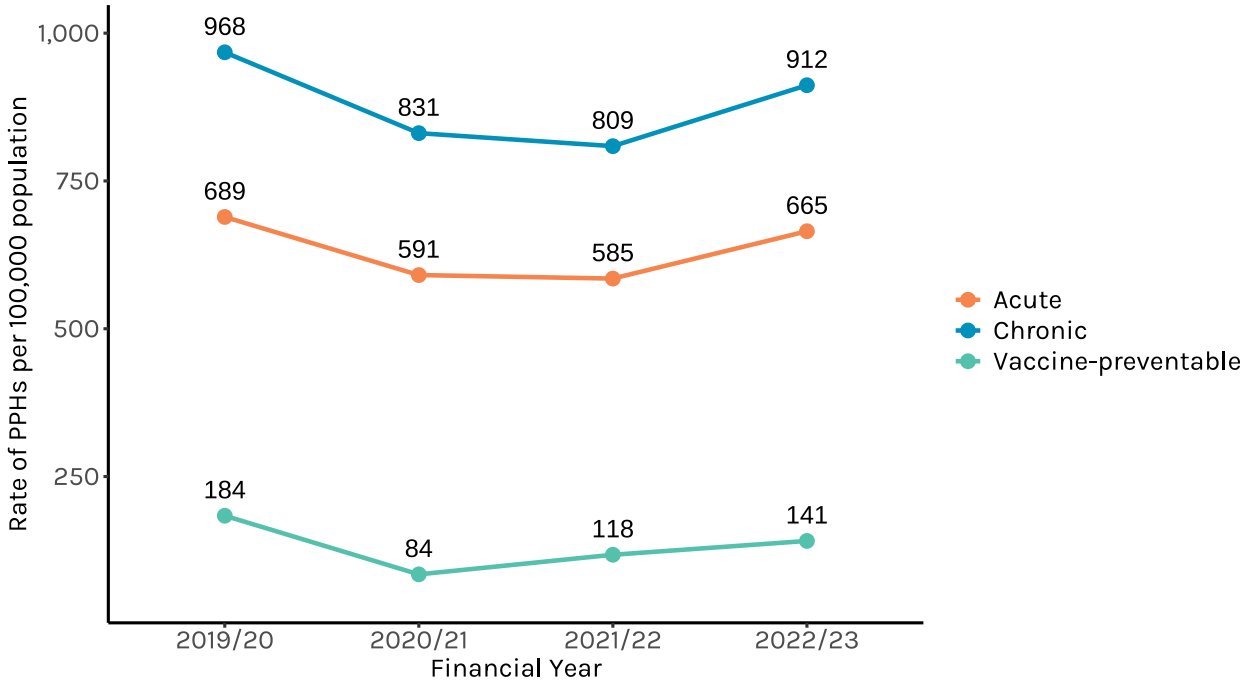
Table note: Considerations for interpretation of the analysis in this section are outlined in Appendix C.

High-level view of PPHs

Overall, PPHs have increased since 2020-21 in the EMPHN region.

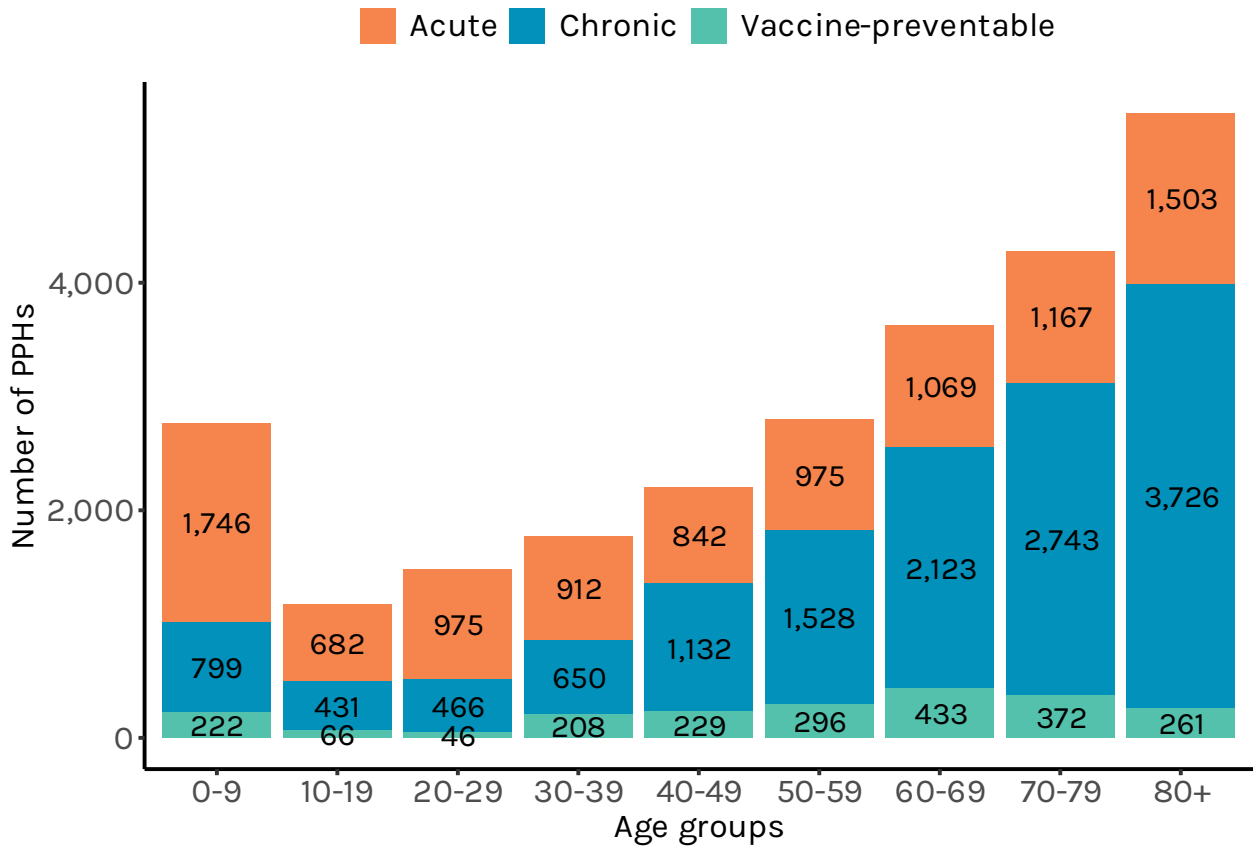
- All three categories of PPHs were lower in 2020-21 and 2021-22, but returned to 2019-20 pre-pandemic levels in 2022-23 (Figure 17 and Supplementary Figure 42).
- PPH rates increase with age, but EMPHN rates are below the Victorian average across all age groups. Interestingly, the largest gap in favour of EMPHN is found in the 80+ cohort. Consistent with the state pattern, people aged 0-9 have comparable PPH numbers to those aged 50- 59 (Figure 18 and Supplementary Figure 43).
- Acute conditions are most prevalent in children and young people under 40. In contrast, chronic conditions increase with age, peaking in adults 80+. Vaccine-preventable conditions are most common among people 60-79 (Figure 18).
- Mitchell†, followed by Whittlesea and Knox, consistently had the highest rates of PPH acute and chronic conditions. While considerable variation exists across the region, Mitchell† and Whittlesea are particularly overrepresented (Supplementary Figure 44).
- Although rates of vaccine-preventable PPHs are lower and fluctuate less over time overall, Whittlesea again emerged as an area with higher rates (Supplementary Figure 44).
- The higher rate of vaccine-preventable conditions among individuals who speak a language other than English (20%) compared to the general population (8.3%) indicates a significant health disparity (Supplementary Figure 45 and Supplementary Table 24).

Figure 17: Rate of PPH diagnoses by category from 2019-20 to 2022-23 in the EMPHN region.



Source: Victorian Admitted Episodes Dataset, DH, FY2019/20-FY2022/23; PHIDU, 2023

Figure 18: Number of PPH diagnoses by type and age categories in the EMPHN region, 2022-23.



Source: Victorian Admitted Episodes Dataset, DH, FY2022/23

Figure note: The reported PPH rates count only one PPH diagnosis for a single hospital presentation; the analysis does not include multiple PPH diagnoses during the same hospitalisation.

PPH diagnoses

Chronic conditions

- Chronic conditions account for over 53% of all PPHs, driven by diabetes complications (13.6%), iron deficiency anaemia (12.4%) and congestive cardiac failure (9.5%) (Supplementary Table 25).

- There are distinct gender differences in the prevalence of PPHs for chronic conditions. Iron deficiency anaemia is more common in females, while males account for twice as many diabetes complications PPHs than females (Supplementary Table 26). Data for other genders was not robust enough to draw conclusions.

Acute conditions

- Acute conditions account for nearly 40% of all PPHs, with UTIs (10%) and cellulitis (9%) being the most common (Supplementary Table 25).

- UTIs are significantly more common in females than males and occur across all age groups. However, certain acute conditions, such as ENT issues, dental problems, convulsions and epilepsy, have a notably higher incidence in children and young adults (Supplementary Table 26 and Supplementary Table 27) compared to adults.

Age-related patterns

- Among children and teenagers, ENT issues, asthma, and dental problems are the most common PPHs. In adulthood, iron deficiency anaemia, diabetes complications, and COPD are significant drivers of need. Congestive cardiac failure becomes more prevalent in later life (Supplementary Table 27).

Aboriginal and Torres Strait Islander people

- Most PPHs were acute conditions, with cellulitis, ENT issues, convulsions and epilepsy as leading causes. Diabetes and COPD were the most common chronic conditions (Supplementary Figure 45 and Supplementary Table 24).

Avoidable ED presentations

Despite the lack of a standardised definition for avoidable ED presentations, AIHW has proposed one, which we have used:

KEY DEFINITIONS

Avoidable ED presentations: Presentations to public hospital emergency departments where the patient was:

- allocated a triage category of 4 (semi-urgent: within 60 minutes) or 5 (non-urgent: within 120 minutes)
- did not arrive by ambulance, or police or correctional vehicle
- departure status was to "home" or "referred to GP" or "residential care facility"
- was not admitted to the hospital, not referred to another hospital, or did not die.

(AIHW 2022)

Please note that avoidable does not mean inappropriate.

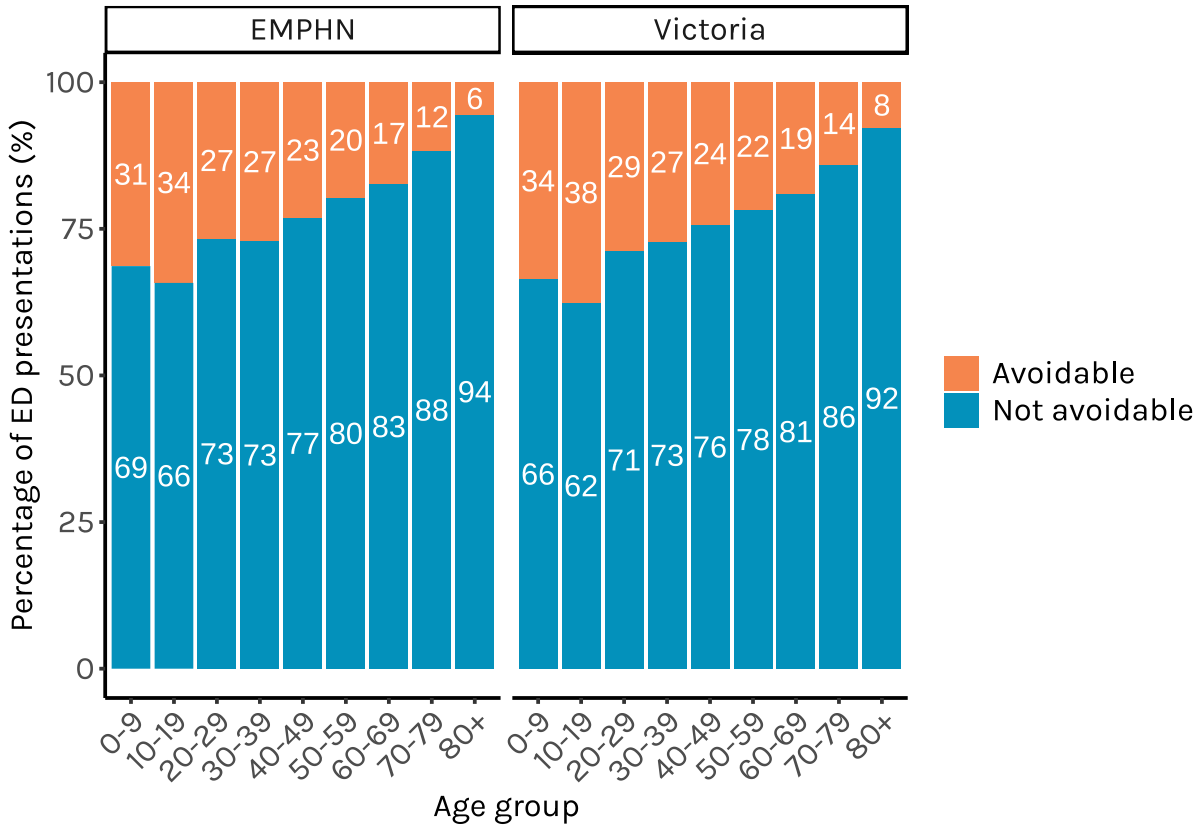
Avoidable ED presentations were based on the recorded postcode of the person's residence during their presentation to acute care.

One in four emergency department visits in the region are avoidable.

- From 2020-21, the proportion of avoidable ED presentations slightly decreased in Victoria and the EMPHN region. Variability also decreased, though Boroondara remained high at 26%. Notably, Murrindindi† saw a significant reduction of 34% in 2022-23 (Supplementary Table 28).
- Whittlesea, the most populous LGA, recorded the highest number and rate of avoidable ED presentations, exceeding the state average. Other LGAs with higher rates relative to the rest of the region included Mitchell†, Banyule, Yarra Ranges and Knox (Supplementary Figure 46).
- In the EMPHN region and Victoria, avoidable ED presentations are most common in children and teenagers, accounting for over 30% of cases. This rate declines with age, reaching approximately 10% in older adults (Figure 19).
- Injuries to the head and extremities, such as wrists, hands, ankles, and feet, are the most common causes of avoidable ED presentations across all ages, with a higher incidence in males (Supplementary Table 29 and Supplementary Table 30).

- Certain conditions are also more prevalent at different life stages. For example, head injuries and viral infections are most common in children, while abdominal conditions are more frequent in adults under 50. Pregnancy-related conditions are the leading cause of ED attendance among females aged 30-39. Eye disorders, along with other general symptoms, are more common among older adults.

Figure 19: Proportion of ED presentations that are avoidable or not avoidable in EMPHN and Victoria, FY2022-23.



Source: Victorian Emergency Minimum Dataset, DH, FY2022/23

Quantified need based on geographical environment and access

The highest levels of need related to access and geographical environment were seen in the peri-urban areas of Mitchell†, Murrindindi† and Whittlesea (Table 20).

Whittlesea and Monash have the highest need when their projected population growth for 2030 is taken into account.

Table 20: Quantified need based on different geographical environmental factors and access that influence population health and wellbeing.

Geographical area	LGA	Metric 4											Projected population % EMPHN region (2030)	Change	Adjusted population need
		Health Infrastructure Index[1]	Alleged offender incident per 100,000 people[2,3]	GP workforce (FTE) per 100,000 people[2,4]	Nurses and midwives workforce (FTE) per 100,000 people[2,4]	Allied health professionals (FTE) per 100,000 people[2,4]	PPH – acute conditions rates per 10,000 people[3]	PPH – chronic conditions rates per 10,000 people[3]	PPH – vaccine-preventable conditions rates per 10,000 people[3]	Avoidable ED presentation per 10,000 people[3]	Average index	Average index as % of all LGAs			
Urban	Banyule	0.8	0.9	1.1	0.5	0.6	0.9	0.9	0.9	0.9	0.8	6.9%	7.8%	-3.1%	7.5%
	Boroondara	0.6	0.5	1.0	1.0	0.6	0.5	0.4	0.6	0.6	0.6	5.3%	11%	-14.2%	9.4%
	Monash	0.9	0.7	1.0	0.8	1.0	0.7	0.8	0.9	0.5	0.8	6.9%	12.2%	-11.8%	10.7%
	Whitehorse	0.8	0.6	0.8	0.7	0.8	0.6	0.5	1.1	0.7	0.7	6.1%	11.2%	-12.5%	9.8%
Green-wedge	Knox	1.3	0.9	0.9	1.4	1.0	1.1	0.9	0.9	0.9	1.0	8.6%	9.6%	-2.7%	9.3%
	Manningham	1.1	0.4	0.8	2.6	0.8	0.6	0.7	1.0	0.7	1.0	8.1%	7.5%	2.1%	7.6%
	Maroondah	1.2	1.0	1.2	1.1	0.9	0.6	0.6	0.8	0.7	0.9	7.6%	7.4%	1%	7.4%
	Nillumbik	1.8	0.4	1.1	1.7	0.9	0.6	0.6	0.5	0.6	0.9	7.6%	3.7%	28.9%	4.8%
	Whittlesea	1.5	0.8	1.0	1.4	1.7	1.2	1.3	1.5	1.1	1.3	10.6%	18.6%	-11.7%	16.4%
	Yarra Ranges	2.0	0.6	1.1	1.9	1.3	0.9	0.8	0.7	0.9	1.1	9.4%	9.5%	-0.3%	9.4%
Peri-urban	Mitchell†	3.7	1.1	1.1	1.1	1.2	1.3	1.6	1.0	1.0	1.5	12.2%	1.2%	241.1%	4.2%
	Murrindindi†	3.6	0.7	1.3	2.3	1.5	0.5	0.6	0.6	0.3	1.3	10.7%	0.2%	1220%	3.1%

Table notes: All indicators are an index of the Victorian rate or % (LGA rate or % divided by Victorian rate or %), except for Health Infrastructure which is an index of the Greater Melbourne average. Blue shading indicates LGAs with statistically higher indices for individual indicators. The individual index scores represent the level of need an LGA demonstrates for that specific indicator, where the higher the number the greater the need. Purple shading indicates LGAs with the highest level of need relative to other LGAs based on projected population. Yellow shading indicates LGAs with a statistically higher overall need after adjusting for risk factors in the population. [1]Index of Greater Melbourne average (calculated by Greater Melbourne liveability index divided by LGA liveability index). [2]All of Mitchell and Murrindindi LGAs are included as data is not available at postcode or SA2 granularity. [3]Index of Victorian rate (LGA rate divided by Victorian rate). [4]Index of Victorian rate (Victorian rate divided by LGA rate).

Source: Australian Urban Observatory, 2021 (Davern et al., 2023); Crime Statistics Agency Victoria, 2024; HeaDSUPP, 2022-2023; PHIDU, 2022-23; Victorian Admitted Episodes Dataset, DH, FY2022/23; Victorian Emergency Minimum Dataset, DH, FY2022/23

3.6

Metric 5: Health conditions and consequences

Metric 5 focuses on the frequency and effects of various health conditions and diseases within the EMPHN region. This includes diagnoses, hospitalisations, ED presentations and mortality rates. Understanding prevalent health conditions and their consequences aids in prioritising interventions and allocating resources effectively to address areas of greatest need.

Overview: Ill health profile

While the overall rates of chronic conditions in EMPHN are generally lower than in Victoria as a whole, certain LGAs, mostly outside urban areas, have high rates of ill health.

Key definition

Chronic conditions are long-term, non-communicable health conditions that often worsen over time, leading to declining health, reduced independence and premature death (Hvidberg et al. 2016). They can profoundly impact a person's quality of life and increase the demand for services in the health care system.

The Australian Bureau of Statistics (ABS) identifies 10 common chronic conditions: *arthritis, asthma, cancer, dementia, diabetes, heart disease, kidney disease, lung conditions, mental health conditions and stroke* (ABS 2022). This section is based on self-reported data from the 2021 Census.

- Approximately half the LGAs in the EMPHN region have a higher prevalence of chronic conditions compared to Victoria. These tended to be located outside urban areas and had higher rates of multiple chronic conditions. (Figure 20 and Supplementary Table 31).

Figure 20: Prevalence (%) of chronic health conditions by region (LGA, EMPHN region, Victoria), 2021.

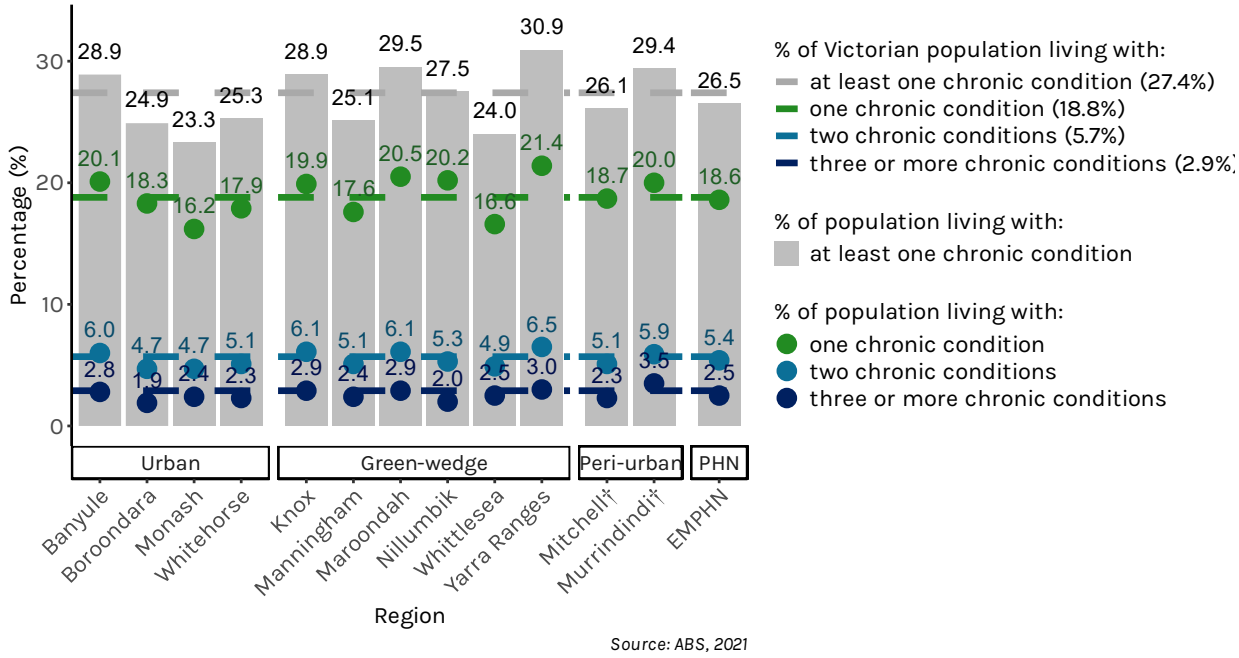


Figure note: The ABS categorise chronic diseases into 10 prevalent conditions: arthritis, asthma, cancer, dementia, diabetes, heart disease, kidney disease, lung condition, mental health condition, stroke, and any other chronic condition (ABS 2022).

- On average, the population in the EMPHN region had a lower prevalence of chronic conditions compared to Victoria, except for cancer. Cancer prevalence was evenly distributed among males and females and rates were above the state in all EM LGAs, except Whittlesea, Mitchell and Monash. These LGAs also reported the lowest average prevalence of common chronic conditions, relative to the rest of the region (Table 21).
- Across the region, the burden of disease is primarily linked to a higher prevalence of arthritis, asthma, and cancer. This issue is particularly pronounced in most green-wedge LGAs, such as Knox, Manningham, Maroondah, and Yarra Ranges. Additionally, Banyule and Murrindindi also reported a high prevalence of multiple chronic conditions. In urban areas, a greater percentage of the population reported living with heart disease, while mental health issues were more common in peri-urban LGAs (see Table 21).
- Distinct patterns were observed based on sex. For example, females reported consistently higher rates than males for arthritis, asthma, and mental health conditions across LGAs. Conversely, males were more likely to report diabetes and heart disease. There was little difference in reported cancer rates. (Table 21).
- As expected, rates of chronic conditions increased with age (Supplementary Table 32). While the rates of chronic conditions in EMPHN were typically slightly lower

or similar to those in Victoria as a whole, some LGAs including Maroondah, Knox, Yarra Ranges and Mitchell† had higher rates across most age ranges.

- Asthma and mental health conditions were by far the most prevalent among younger populations (aged 0-39), while cohorts aged 60+ had a high prevalence of arthritis, diabetes, heart disease and multiple other chronic conditions (Supplementary Figure 47).

For more information about the sex and age demographics of people living with a chronic condition please see Supplementary Table 34 and Supplementary Table 35.

Table 21: Prevalence of chronic condition type by sex and region (LGA, EMPHN region, Victoria), 2021.

		Arthritis		Asthma		Cancer[1]		Diabetes[2]		Heart disease[3]		Mental health condition[4]	
Geographical area	Region	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)
Urban	Banyule	5.3	9.4	6.8	7.5	2.5	2.8	4.2	3.1	4.2	2.5	6.3	9.3
	Boroondara	4.1	7.5	6.6	6.6	2.6	2.8	3.3	2.2	4.1	2.3	4.9	7.5
	Monash	3.9	7.5	5.4	5.7	2.1	2.3	4.7	3.7	3.9	2.7	4.3	6.5
	Whitehorse	4.1	8.0	6.3	6.5	2.3	2.6	4.1	3.3	3.8	2.6	5.2	7.6
Green-wedge	Knox	5.1	8.9	7.1	8.0	2.4	2.6	5.2	4.0	4.3	2.6	5.8	8.8
	Manningham	4.7	8.9	5.3	5.5	2.7	2.8	4.8	3.3	4.6	2.6	4.1	6.0
	Maroondah	5.2	9.1	7.2	8.2	2.5	2.8	4.2	3.3	4.0	2.5	6.5	9.9
	Nillumbik	5.5	8.7	7.0	7.6	2.7	2.7	3.4	2.2	4.1	2.0	5.8	8.8
	Whittlesea	4.2	7.7	6.0	6.7	1.6	1.8	5.1	4.2	3.4	2.0	4.9	7.8
	Yarra Ranges	6.1	9.7	7.4	8.7	2.6	2.7	4.2	3.1	4.3	2.4	6.8	10.5
Peri-urban	Mitchell†	4.5	6.8	7.7	8.9	1.7	1.9	4.3	3.4	3.2	1.6	5.4	9.6
	Murrindindi†	6.1	8.9	6.0	9.1	2.6	2.5	3.9	2.9	3.2	2.3	9.0	10.6
PHN	**EMPHN**	**4.7**	**8.4**	**6.4**	**7.0**	**2.3**	**2.5**	**4.4**	**3.3**	**4.0**	**2.4**	**5.4**	**8.2**
State	**Victoria**	**5.0**	**8.5**	**6.7**	**7.6**	**2.3**	**2.4**	**4.5**	**3.5**	**4.0**	**2.4**	**6.0**	**9.0**

Table note: Yellow shading highlights that the LGA has a prevalence rate higher than Victoria. The ABS (2022) categorise chronic diseases into 10 prevalent conditions: arthritis, asthma, cancer, dementia, diabetes, heart disease, kidney disease, lung condition, mental health condition, stroke, and any other chronic conditions. [1]Including remission. [2]Excluding gestational diabetes. [3]Including heart attack or angina. [4]Including depression or anxiety.

Source: ABS, 2021

Spotlight (Part B): EMPHN commissioned mental health services

Following on from Part A in Metric 4 which explored service utilisation of Head to Health and Stepped Care, this section focuses on EMPHN-commissioned mental health services data recorded in the Primary Mental Health Care Minimum Data Set (PMHC-MDS). The PMHC-MDS includes program data from key EMPHN commissioned services, including Stepped Care and Head to Health. This section explores the prevalence and types of mental health diagnoses of people seeking treatment at EMPHN-commissioned health services after referral.

Monitoring and collecting this data are essential for assessing service effectiveness, identifying gaps in care, and ensuring proper resource allocation to improve mental health outcomes.

While the PHMC-MDS offers insights into mental health diagnoses among those who are seeking care at these commissioned services, it is important to acknowledge that this may not represent the whole population seeking support.

Insights

- Banyule was the LGA with the highest rates of mental health episodes of care.
- Most people receiving treatment from an EMPHN-commissioned mental health service did not have a formal diagnosis but were experiencing symptoms of depression.

For more information around the commissioned services, see Supplementary Figure 48 and Supplementary Figure 49.

General practice assessment and management of chronic disease

EMPHN faces a relatively high burden of chronic disease in primary care, with some LGAs, primarily in non-urban areas, experiencing elevated rates of diagnoses.

General practice clinics in eastern Melbourne regularly share de-identified data with EMPHN using a program called Population Level Analysis and Reporting (POLAR), a clinical and population health data analytic solution. In the EMPHN region, 85% of GP clinics regularly report to POLAR[8], with all LGAs exceeding an 80% reporting rate, except for Whittlesea, which has a rate of 72% (Supplementary Figure 50).

A key consideration when interpreting GP data is potential selection bias, because the number of GP clinics providing data varies across the region (Supplementary Figure 50). Please refer to Appendix C for information on data strengths and limitations, and Appendix B for information about how rates of GP diagnosis counts are recorded.

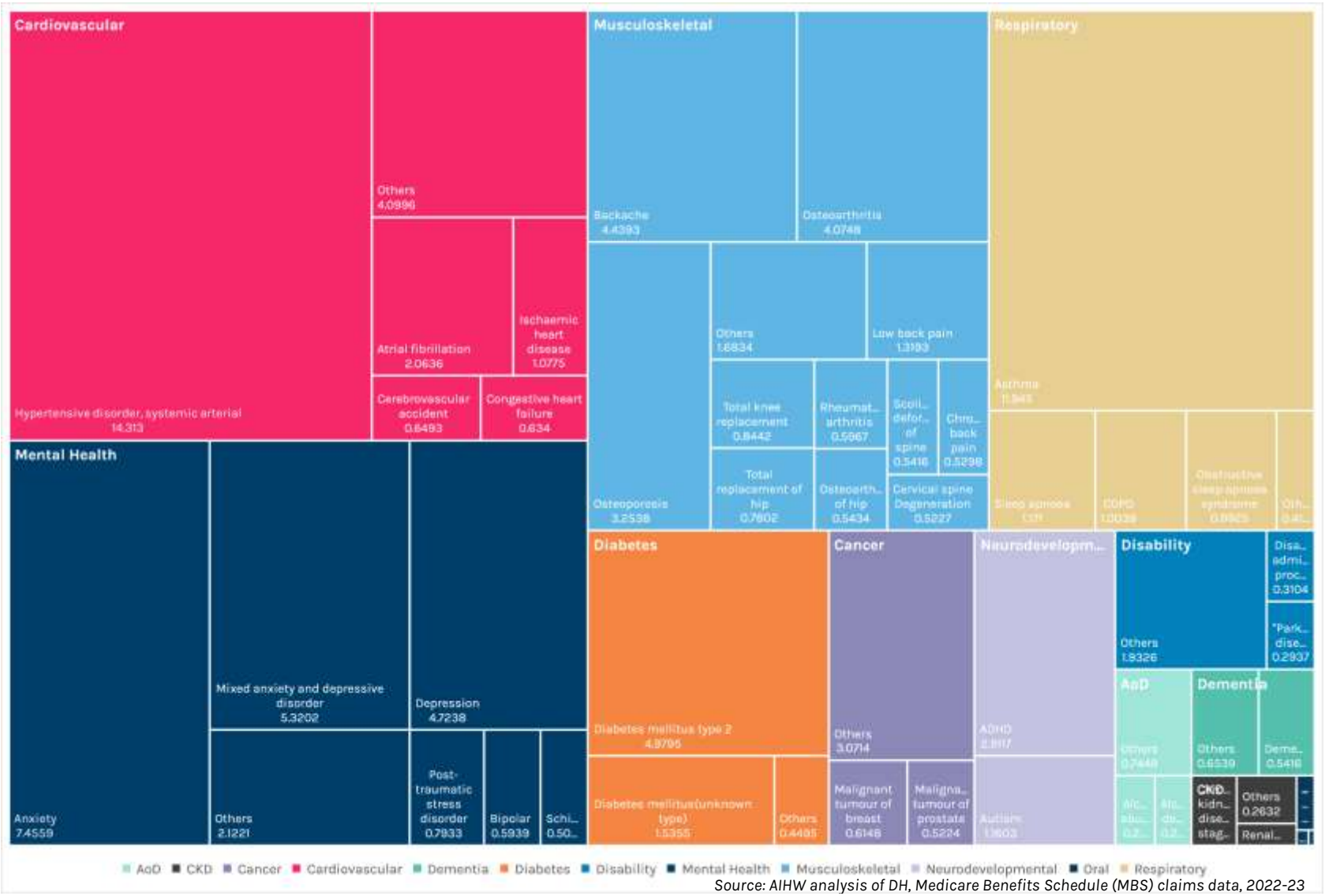
- In 2023, nearly half of the population in the EMPHN region received at least one diagnosis from a GP, with Knox having the highest rate at almost 60% (Supplementary Figure 51).
- Cardiovascular, mental health, musculoskeletal and respiratory conditions made up about 75% of the diagnoses in 2023 (Figure 21).
- Approximately 18% of patients have at least one GP diagnosis for chronic conditions. Several LGAs, particularly Maroondah, Knox, Manningham, Banyule, and Yarra Ranges, exhibit elevated rates of GP-diagnosed chronic conditions, with Maroondah and Knox having especially high rates (Supplementary Figure 51). All these, except Manningham, also showed elevated prevalence of chronic conditions in census data.
- Whittlesea had the highest number of patients diagnosed with at least one chronic condition by a GP, followed closely by Knox. Both LGAs make notable contributions to the top four chronic condition diagnoses in the region: cardiovascular, mental health, musculoskeletal, and respiratory conditions (Supplementary Figure 51; Supplementary Table 36).
- Consistent with census data, females had higher diagnosis rates across mental health conditions, while males had slightly higher rates for cardiovascular disease (Supplementary Table 37).

[8] The number of new GP diagnoses in 2023 doesn't reflect the real annual incidence for a certain condition: Patient diagnosis and diagnosis dates are recorded separately in each clinic. The new GP diagnoses in 2023 included in the analyses may cover some patients with existing conditions who were diagnosed earlier than 2023 or in a clinic located out of the EMPHN catchment. The data doesn't account for comorbidities. The aggregated disease incidence may be overestimated.

- Among younger age groups, mental health and respiratory diagnoses are prevalent. Mental health conditions dominate GP diagnoses for patients aged 10-49, while respiratory conditions account for over 50% of diagnoses in children aged 0-9, which is consistent with census data (Supplementary Figure 53).
- Cardiovascular and musculoskeletal diagnoses are more common among patients aged 50 and above. These conditions rise significantly with age (Supplementary Figure 53), and musculoskeletal conditions are a leading cause of avoidable ED visits in older patients.
- People, particularly females, tend to visit GPs more frequently for chronic conditions as they grow older, with the trend becoming evident from age 10 onwards (Supplementary Figure 54).

For more information on the top five GP diagnoses due to chronic conditions in each LGA, see Supplementary Table 38.

Figure 21: Prevalence (%) of chronic health conditions by region (LGA, EMPHN region, Victoria), 2021.



Source: AIHW analysis of DH, Medicare Benefits Schedule (MBS) claims data, 2022-23

Acute care: ED presentations and hospitalisations

Victorian acute care includes admitted and non-admitted services such as critical care, surgical services, Hospital in the Home, specialist clinics, trauma and emergency services (DH 2024).

This section presents findings on the prevalence and types of hospitalisations and ED presentations within the EMPHN region from 2020 to 2022. Results were analysed using the Victorian Admitted Episodes Dataset (VAED), the Victorian Emergency Minimum Dataset (VEMD) and the recorded postcode of each person's residence during their admission to acute care.

ED presentation and hospitalisation findings are covered in these sections:

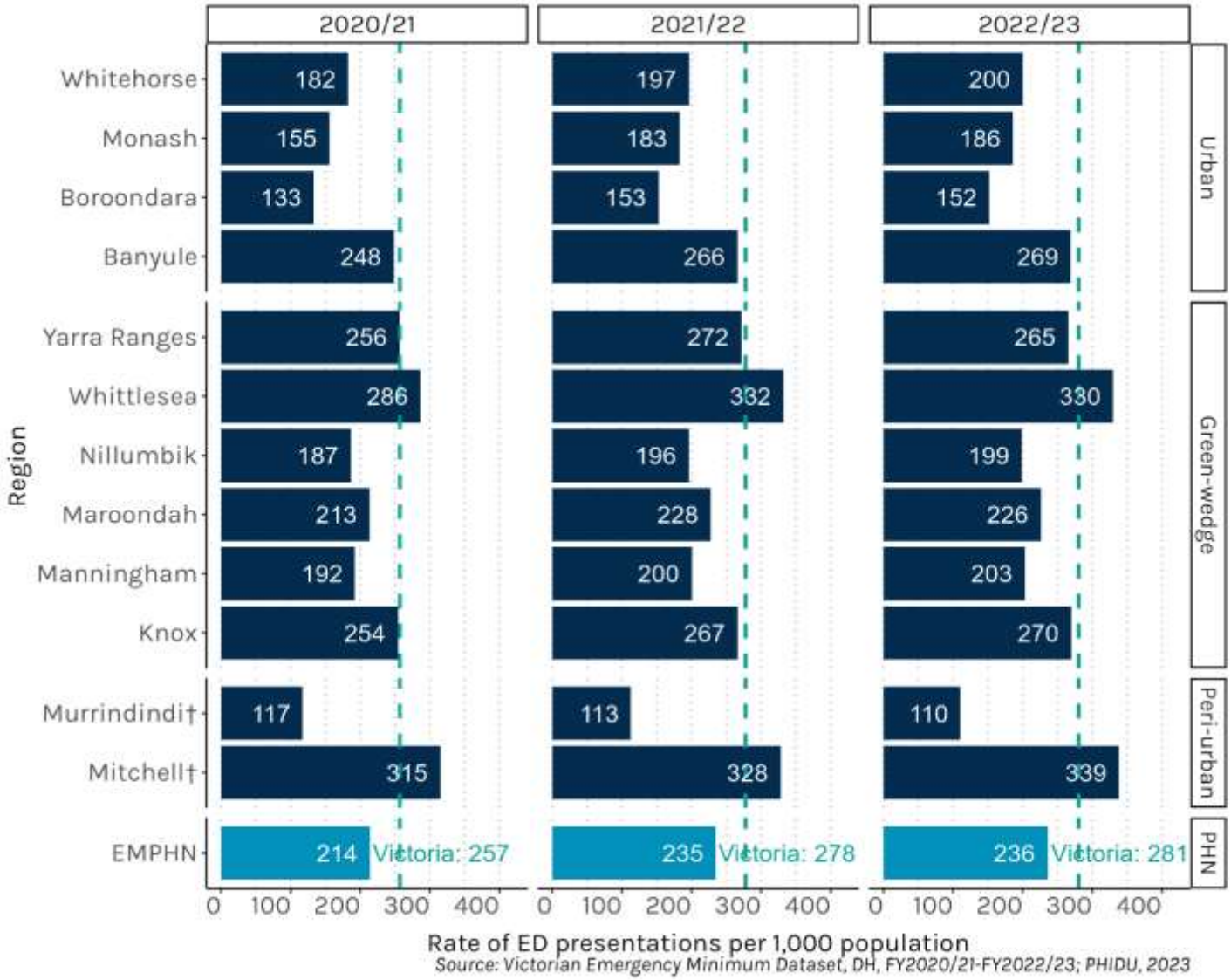
- Prevalence
- Demographics: age and sex
- Languages other than English
- Chronic conditions
- Mental health including AOD
- Suicidal ideation and self-harm

ED presentation prevalence

ED presentations in the EMPHN region have increased each year from 2020-21.

- ED presentations for patients in the EMPHN region increased by about 4% between 2020-21 and 2021-22 (Supplementary Table 39).
- There is notable variation between LGAs. Most have rates below the state average (see Figure 22). However, Mitchell† and Whittlesea have been consistently above it from 2020-21 to 2022-23.
- Though below the state average, rates of ED presentations in Banyule and Knox are rising year on year (Figure 22).
- Throat and chest pain, and abdominal and pelvic pain have been the two leading diagnoses contributing to ED presentations since 2021-22 (Supplementary Figure 55).

Figure 22: Rate of ED presentations by region (LGA, EMPHN region, Victoria) from 2020-21 to 2022-23.



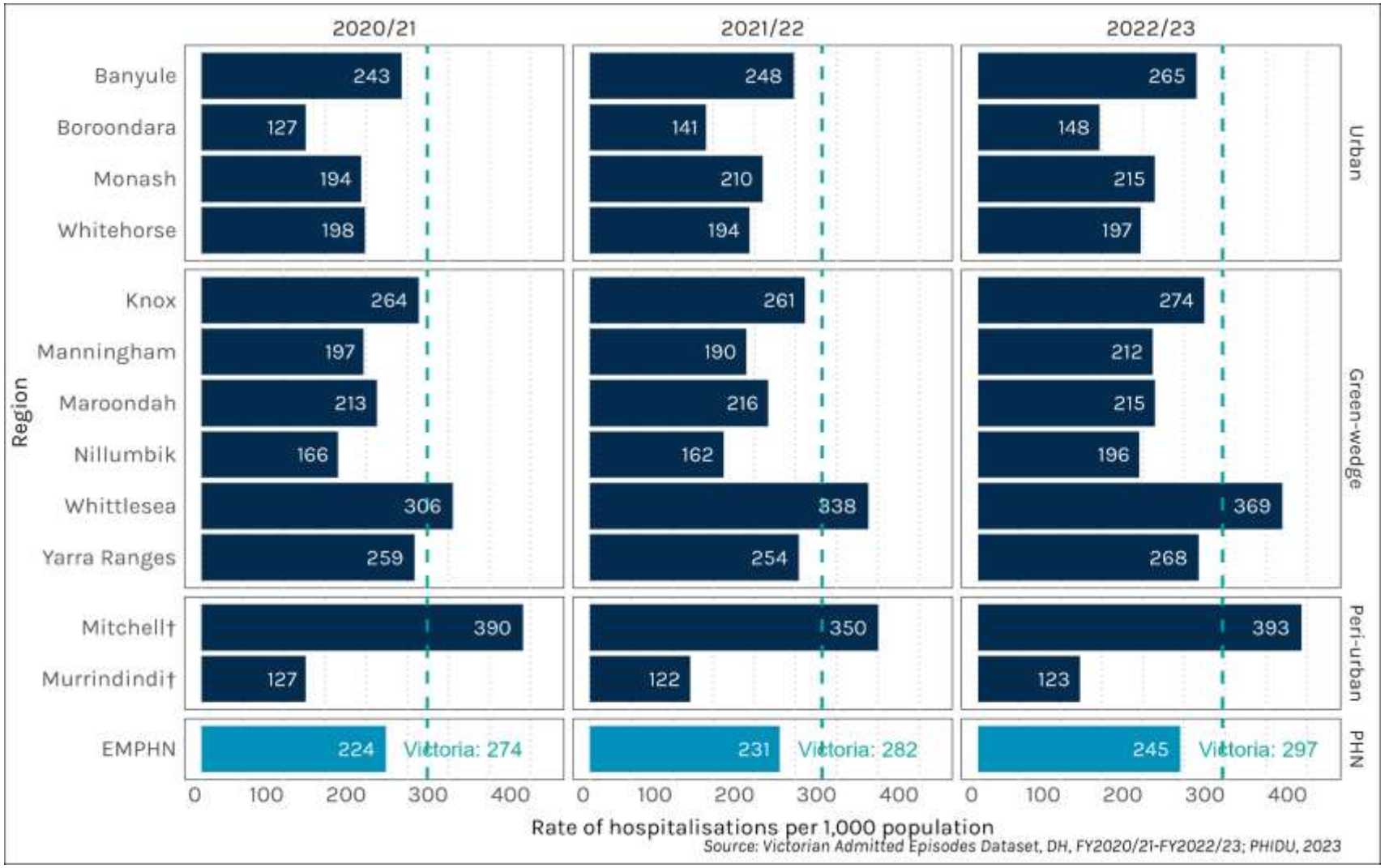
Hospitalisations prevalence

Hospitalisations for patients in the EMPHN region increased by almost 7% between 2021-22 and 2022-23.

- Hospitalisations in the region increased at a higher rate between 2021-22 and 2022-23 (6.9%) compared to Victoria (6.5%). However, in 2020-21 to 2021-22 the EMPHN region had lower rates of hospitalisations than Victoria, and a larger decrease (-2.3%) (Supplementary Table 40).
- While most of EMPHN's LGAs have hospitalisation rates below the state average, especially Boroondara and Murrindindi†, Mitchell† and Whittlesea consistently exhibited rates above the state figure (Figure 23).
- Dialysis is by far the main diagnosis for hospitalisations[9] since 2020-21 (Supplementary Figure 56). This is indicative of chronic kidney disease burden in the EMPHN region population (Supplementary Figure 56).

[9] Dialysis admissions reflect the number of dialysis episodes rather than the number of people who receive it. Most people attend three sessions per week (AIHW 2024c)

Figure 23: Rate of hospitalisations by region (LGA, EMPHN region, Victoria) from 2020-21 to 2022-23.



Acute care demographics: age and sex

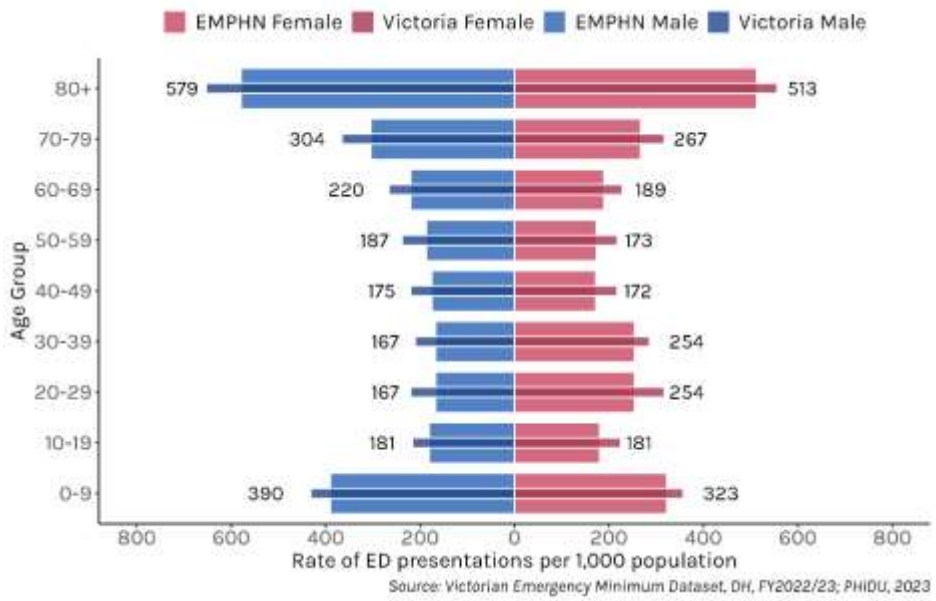
Adults aged 80+ had the highest rates of ED presentations and hospitalisations in 2022-2023. Rates were also concerningly high for children aged 0-9.

- The highest ED presentations and hospitalisation rates in the EMPHN region were seen in people aged over 80, although these were still below the Victorian averages (Figure 24 (a)). Musculoskeletal conditions were the most common ED diagnoses for this group, while kidney conditions were the primary cause of hospitalisations (Supplementary Table 41, Supplementary Table 43).
- The largest number of ED presentations occurred in children aged 0 to 9, with viral infections as the leading cause (Supplementary Figure 57, Supplementary Table 41).
- Hospitalisations were highest in males over 60, mainly due to pain (Supplementary Figure 58, Supplementary Table 43).
- The 30-39 age group had the greatest discrepancy in hospitalisations, with females experiencing more than double the rate compared to males, largely due to childbirth, including delivery by caesarean section (Supplementary Figure 58, Supplementary Table 43). ED presentations for females were also highest in this age group due to maternal conditions.
- ED presentation rates declined for people aged 40-49 but increased for those 80+. Common diagnoses for ages 40-79 included throat, chest, abdominal, and pelvic pain, while musculoskeletal conditions were most prevalent for those 80+ (Supplementary Table 41 and Figure 24 (a)).
- Hospitalisation rates increased with age, peaking in people 80+ (Figure 24 (b)). Dialysis care became a leading cause of hospitalisation for people 40 and older, impacting males more than females. This highlights the burden of chronic kidney disease in the EMPHN region population (Supplementary Table 43 and Supplementary Table 44).

See Supplementary Table 42 and Supplementary Table 44 for more information about the top 10 conditions in ED presentations and hospitalisations by sex.

Figure 24: Rate of a) ED presentations and b) hospitalisations, by age and sex in 2022-23.

(a)



(b)

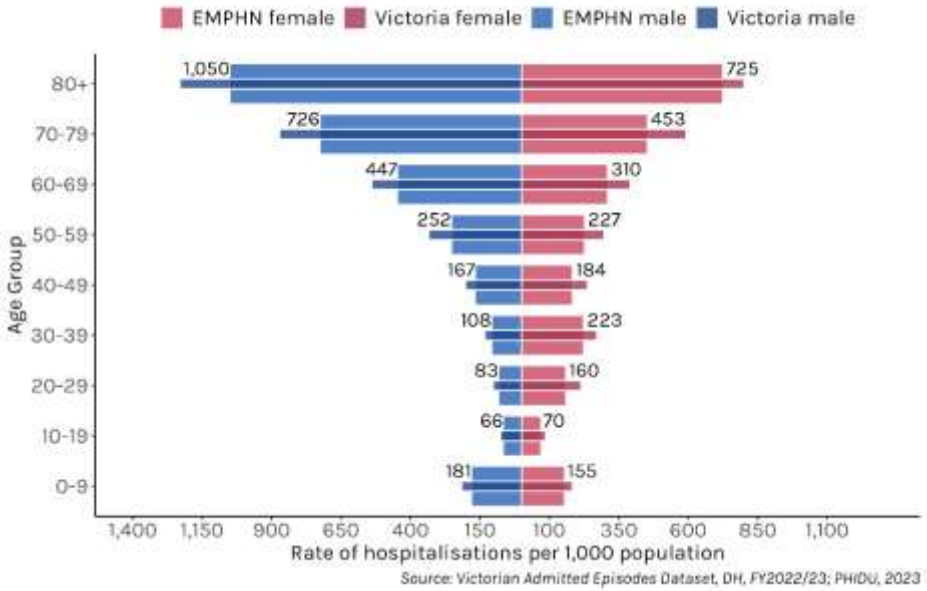


Figure note: Labels shown for the EMPHN catchment rates. The chart displays wider bars which represent the catchment, while the narrow bar represents Victoria.

People with a primary language other than English

Due to data limitations, we have reported the number of ED presentations and hospitalisations by LGA, as a percentage of the total number of ED presentations and hospitalisations for the EMPHN region population.

It was not possible to establish an applicable denominator for the population of residents who were born in a non-English speaking country (NES) and speak a language other than English (LOTE) in each LGA. Therefore, it was not possible to calculate an accurate comparative population-level rate.

- There was a higher proportion of residents in the region, compared to statewide figures, who presented at the ED and identified as born in a non-English speaking country, speaking a language other than English[10] (Supplementary Figure 59).
- NES/LOTE residents of Whittlesea, Monash, Manningham and Whitehorse had the highest proportions of ED presentations, almost twice the Victorian average (Supplementary Figure 59).
- The proportion of hospitalisations for people born in in NES countries and who speak a LOTE was higher in the EMPHN region than in Victoria.
- Monash, Whittlesea, Manningham, Whitehorse, and Boroondara all exhibited higher proportions of hospitalisations than the region overall and Victoria (Supplementary Figure 60).

ED presentations and hospitalisations due to chronic conditions

The annual rate of ED presentations due to chronic conditions shows a modest increase between 2020 and 2023 in the EMPHN region. There was minimal change in hospitalisation rates.

This section presents findings about the prevalence of ED presentations and hospitalisations within the EMPHN region due to a principal diagnosis of chronic conditions and acute mental health issues from 2020-21 to 2022-23.

Chronic conditions were analysed for their potential reduction through behavioural changes, early detection, and improved primary health care (AIHW 2024c). Mental health conditions were included due to Census and GP data indicating that they are among the most prevalent chronic conditions.

[10] People born in a NES country and who spoke a LOTE are defined in the VAED and VEMD by country of birth excluding Australia, New Zealand, United Kingdom, USA and Canada.

NOTE

The Victorian Agency for Health Information (VAHI) data records diagnoses in the VAED and VEMD datasets using ICD-10-AM classification (IHACPA 2024). Reporting only at the chapter and block levels may limit the dataset's utility in enhancing our understanding of chronic health needs. To address this limitation, we grouped raw ICD-10-AM diagnoses into broader chronic condition diagnosis-type categories using the AIHW's definition of chronic conditions for collective monitoring in Australia (AIHW 2021) This method allows for clearer insights about chronic health related needs.

For example, using ICD-10-AM, codes for Crohn's disease (K50), ulcerative colitis (K51), and chronic liver failure (K72.1) were grouped into a single chronic inflammatory bowel disease diagnosis-type category.

Prevalence and demographics

- The rates of ED presentations due to chronic conditions for the EMPHN region are below the Victorian average (Figure 25).
- There was no evidence that hospitalisations due to chronic conditions meaningfully increased or decreased from 2020-21 to 2022-23. The exception is Mitchell† which had a large increase from 2021-22 to 2022-23 (Figure 26).
- Mitchell† and Whittlesea consistently have the highest ED presentation and hospitalisation rates due to chronic conditions from 2020-21 to 2022-23, above the Victorian average (Figure 25 and Figure 26).
- Cardiovascular diseases and stroke were by far the most common reason for chronic condition ED presentations and hospitalisations each year from 2020-21 to 2022-23 (Supplementary Figure 61, Supplementary Figure 62).
- In contrast, hospitalisations were lowest among children and teenagers (0 to 19). In males and females, hospitalisation numbers increase with age, primarily due to cardiovascular and stroke-related conditions, peaking for males at 60 to 79 and females at 80+ (Supplementary Figure 64 and Supplementary Table 46).
- When accounting for population size, ED presentation and hospitalisation rates in the EMPHN region were highest in adults 80+. However, they were below the Victorian average (Supplementary Figure 65 and Supplementary Figure 66).
- In addition, males aged 0 to 9 also exhibited notably high ED presentation rates (Supplementary Figure 65).
- Asthma and back pain were the two most common chronic ED diagnoses across all LGAs in the region, followed by cardiovascular conditions and COPD (Supplementary Table 47).

For more information on chronic condition ED presentations and hospitalisations by age, see Supplementary Table 47 and Supplementary Table 48. For more details on chronic condition diagnoses for ED presentations and hospitalisations by LGA, refer to Supplementary Table 45 and Supplementary Table 46.

Figure 25: Rate of ED presentations per 1,000 population due to chronic conditions by region (LGA, EMPHN region, Victoria), 2020-21 to 2022-23.

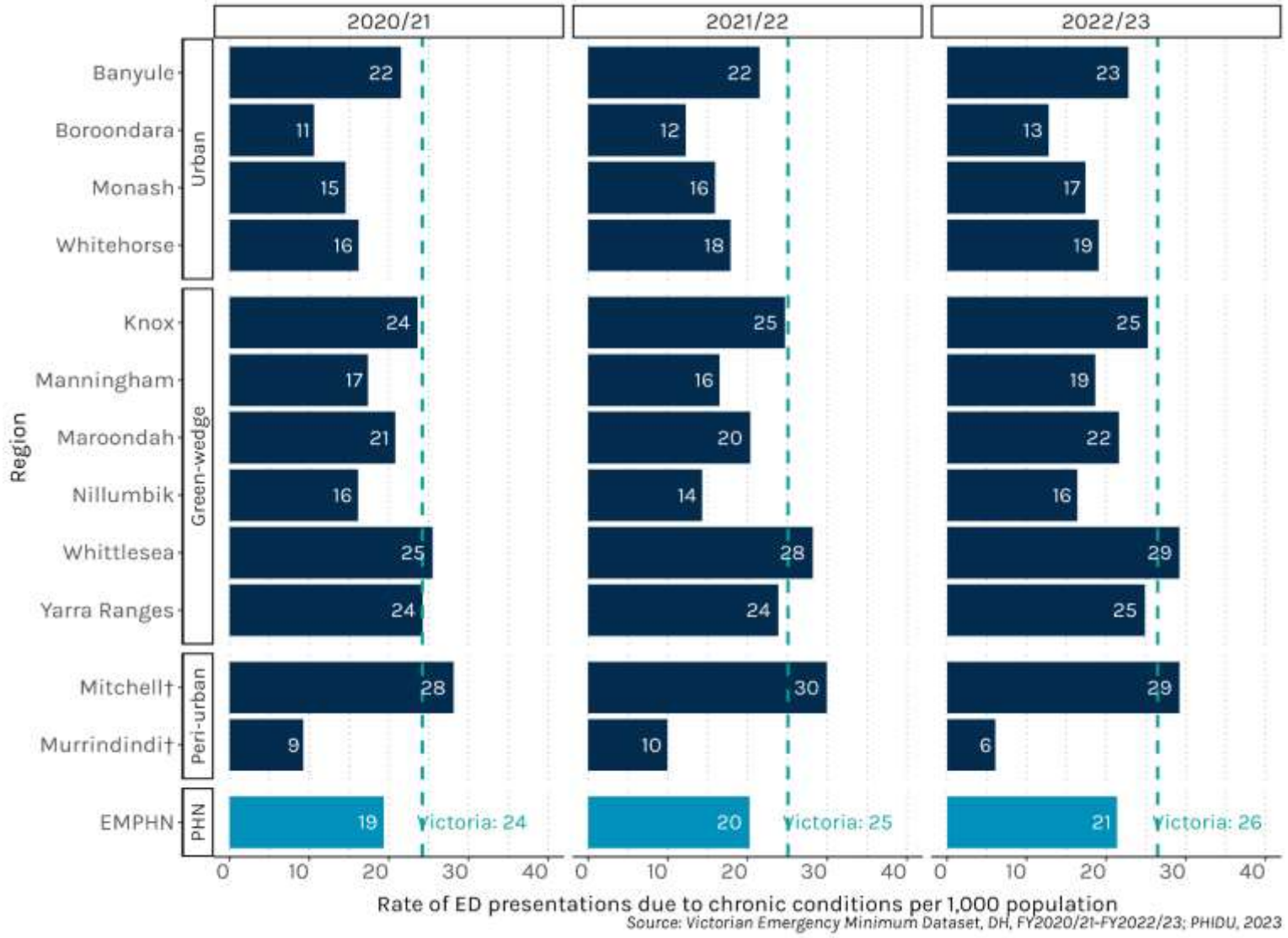
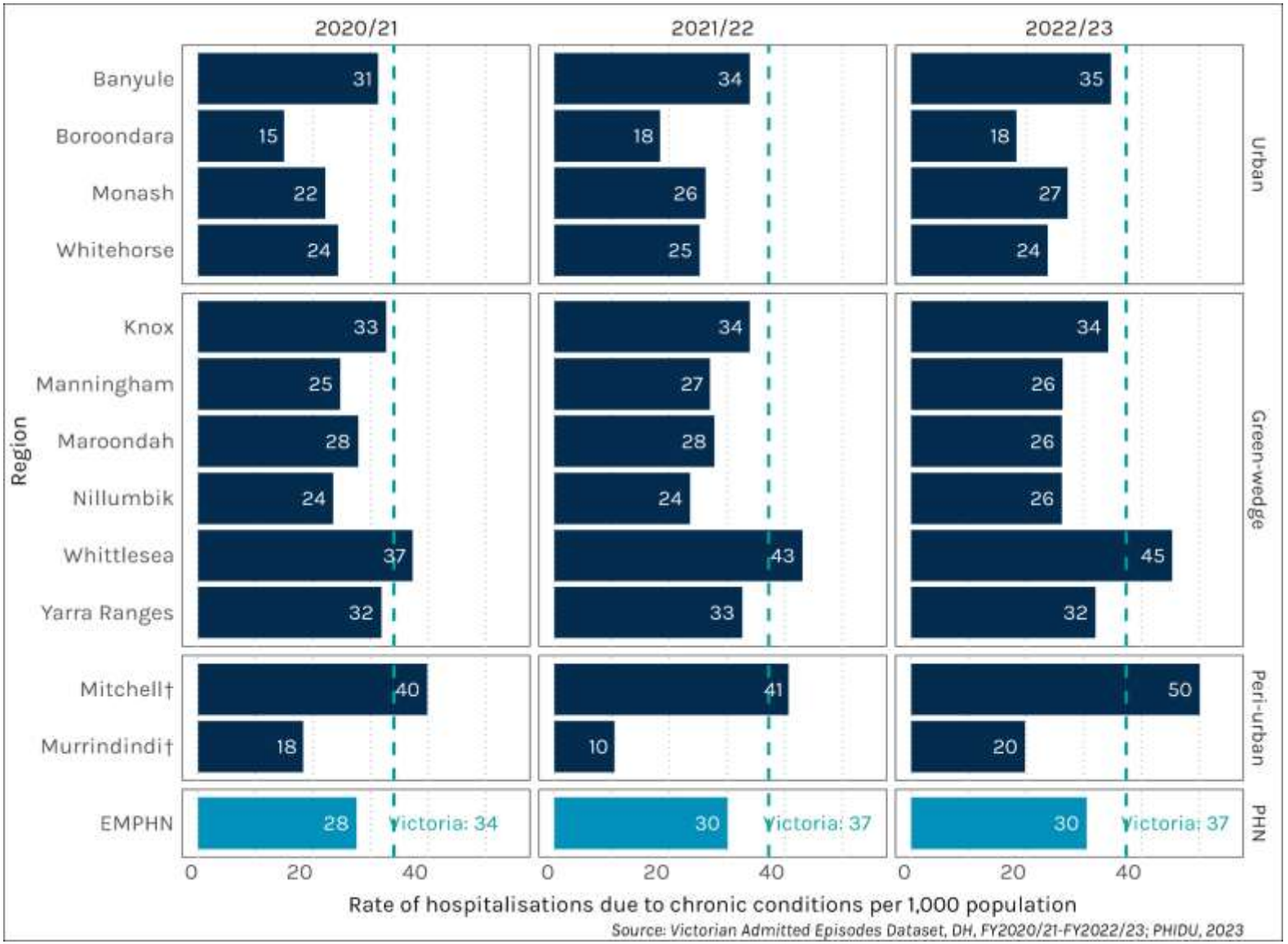


Figure 26: Rate of hospitalisation per 1,000 population due to chronic conditions by region (LGA, EMPHN region, Victoria), 2020-21 to 2022-23.



ED presentations and hospitalisations: all mental health conditions (including AOD-related diagnoses)

Mental health diagnoses are a Commonwealth priority. Census and GP data indicate that they are among the most common chronic conditions. This section provides insights into the prevalence of acute mental health conditions that resulted in ED presentations and hospitalisation within the EMPHN region between 2020 -21 to 2022-23.

NOTES - VAED AND VEMD DATASETS

This section includes AOD-related ED visits and hospitalisations because AOD diagnoses fall under the 'Mental and Behavioural Disorders' chapter of the ICD-10-AM classification. The classification is used in the VAED and VEMD datasets, which also encompass all other mental health conditions.

KEY DEFINITIONS

Mental health conditions are defined as medical conditions that significantly impact thought, mood, perception, or memory. Some examples of mental illnesses are depression, schizophrenia, anxiety disorders, and eating disorder.

Suicidal behaviour encompasses the full range of behaviours related to suicide, including ideation, planning, attempting and suicide itself. **Suicidal ideation** describes thoughts of suicide with or without suicidal intent (De Leo et al. 2021). **Self-harm** is a non-fatal act in which a person harms themself intentionally, with varying motives that may or may not include suicidal intent (De Leo et al. 2021).

NOTES - SUICIDAL BEHAVIOURS

Suicidal ideation ED presentations and hospitalisations were identified in the VEMD and VAED as records with a principal diagnosis of ICD-10-AM (Eleventh and Twelfth Editions) code R45.81.

Self-harm ED presentations were derived from the VEMD human-intent variable, which is the most likely role of human intent in the occurrence of injury or poisoning as assessed by ED clinicians. In the VEMD, there are three categories of intentional self-harm within the variable:

- Non-suicidal self-injury
- suicide attempt
- suicidal intent cannot be determined

Because these categories are all considered to be cases of intentional self-harm, they were collapsed and analysed together. This means that data used to analyse ED presentations due to self-harm includes cases where intent was determined to be a suicide attempt or non-suicidal self-injury, as well as where suicidal intent could not be determined.

Self-harm hospitalisations in the VAED were flagged as self-harm events if an external cause code in the ICD-10-AM (Eleventh and Twelfth Editions) intentional self-harm range (X60-X84) was present in the record. To extract these records, data was grouped on the ICD-10-AM 'intentional self-harm' block, which is derived from the ICD-10-AM intentional self-harm codes range.

Mental ill health, behavioural disorders and delirium are key drivers of people presenting to acute care services.

- The EMPHN region has lower rates of ED presentations and hospitalisations for mental health conditions compared to Victoria. Rates decreased across Victoria, the EMPHN region and all its LGAs, except Murrindindi†, between 2020-21 and 2022-23 (Supplementary Figure 67 and Supplementary Table 49).
- The LGAs with the highest number of GP diagnoses for mental health conditions were Whittlesea, Knox, Maroondah, Yarra Ranges, and Whitehorse. Within these, there were also higher rates of ED presentations and hospitalisations due to mental health issues (Supplementary Figure 67 and Supplementary Figure 68).
- Mental and behavioural disorders due to alcohol and anxiety were the top two conditions in the EMPHN region from 2020-21 to 2022-23 (Supplementary Figure 69).

- In 2023, mental health and behavioural disorders related to alcohol use were the leading cause of mental health-related ED presentations in the region. The LGAs with the highest rates of alcohol-related ED presentations were Maroondah, Nillumbik, Knox, Mitchell, and Yarra Ranges. These also report the highest alcohol consumption rates (Supplementary Table 49).

- Delirium was the top primary diagnosis for hospitalisations in the EMPHN region from 2020-21 to 2022-23 (Supplementary Figure 70). In 2023, it was the leading cause of hospitalisations for mental health conditions, with Manningham, Banyule, Whitehorse, and Monash showing higher rates than Victoria.

- Whitehorse and Manningham, in particular, had rates significantly above the state average (Supplementary Table 50).

ED presentations and hospitalisations: suicidal ideation and self-harm

ED presentations and hospitalisation rates for suicidal ideation and self-harm disproportionately affect adolescents aged 15-24 and females.

Suicidal ideation

- The highest rates of ED presentations due to suicidal ideation are found in peri-urban LGAs, which exhibit multiple risk factors (Figure 27 (a)). These LGAs ranked highest from 2019-20 to 2022-23 (Supplementary Table 51).

- Banyule and Boroondara had the highest hospitalisation rates due to suicidal ideation in 2022-23 (Figure 27 (b)). Boroondara and Whittlesea consistently ranked in the top five for hospitalisation rates across all years from 2019-20 to 2022-23 (Supplementary Table 51).

- Females have notably higher ED presentation and hospitalisation rates than males for suicidal ideation (Supplementary Figure 71; Supplementary Figure 72).

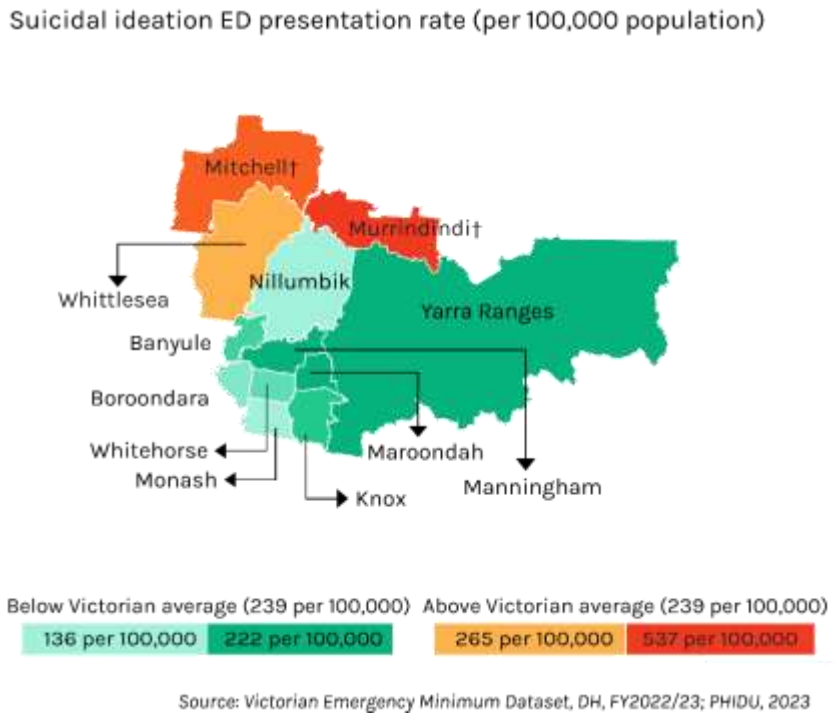
- Individuals aged 15-24 show markedly higher ED presentation and hospitalisation rates than other age groups (Supplementary Figure 71; Supplementary Figure 73).

- ED presentation rates due to suicidal ideation spiked in 2020-21 and 2021-22, but returned to pre-pandemic levels in 2022-23, similar to 2019-20.

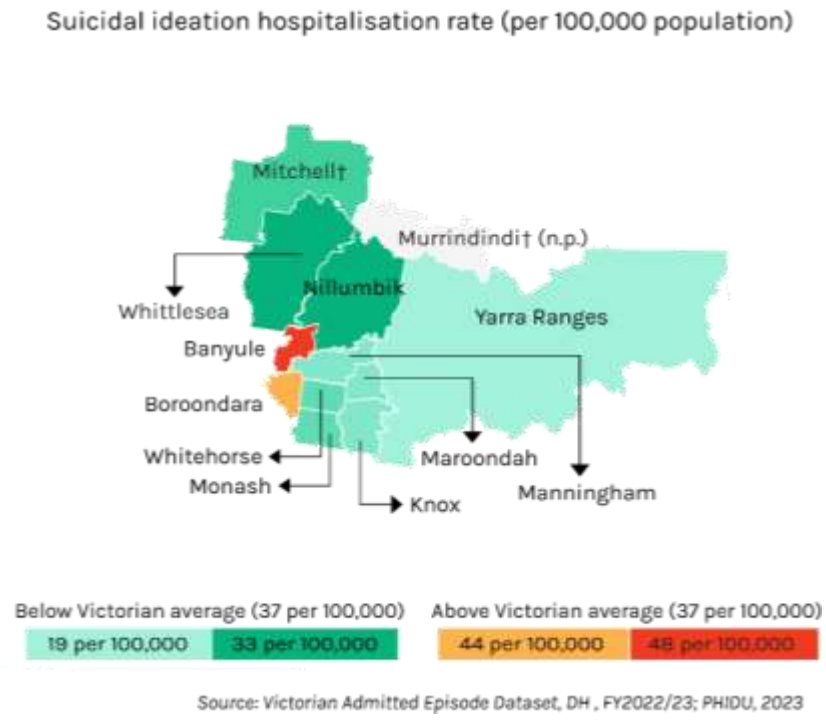
- However, hospitalisation rates increased by about 30% in 2022-23 compared to 2019-20 for both sexes, primarily driven by those aged 15-24, followed by the 25-34 age group (Supplementary Figure 71; Supplementary Figure 72; Supplementary Figure 73).

Figure 27: Rates of a) ED presentations and b) hospitalisations, due to suicidal ideation per 100,000 population by EMPHN LGAs, 2022-23.

(a)



(b)

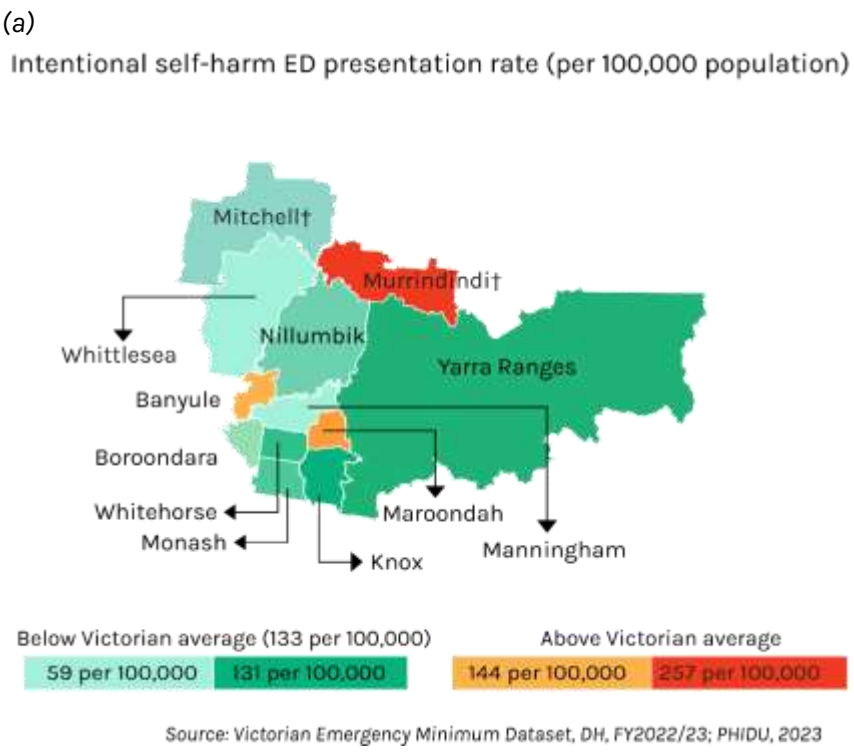


Self-harm

- Murrindindi† maintained the highest ED presentation rates for self-harm from 2019-20 to 2022-23, ranging from 1.5 to 3 times the Victorian average each year (Figure 28 (a), Supplementary Table 52). Banyule exhibited the highest hospitalisation rates for self-harm in 2022-23, slightly above the Victorian average, and consistently ranked in the top five for every year (Figure 28 (b), Supplementary Table 52).
- Consistent with suicidal ideation findings, females in the EMPHN region have markedly higher rates compared to males of ED presentations and hospitalisations due to intentional self-harm (Supplementary Figure 74 and Supplementary Figure 75).
- In addition, individuals aged 15-24 show significantly higher ED presentation and hospitalisation rates for intentional self-harm than other age groups, primarily driven by females (Supplementary Figure 74 and Supplementary Figure 76).
- While the hospitalisation rates were markedly higher in some LGAs, overall rates in the EMPHN region remained relatively stable from 2019-20 to 2022-23, with a slight increase observed in the 15-34 age group between 2020-21 and 2021-22 (Supplementary Figure 75 and Supplementary Figure 76).

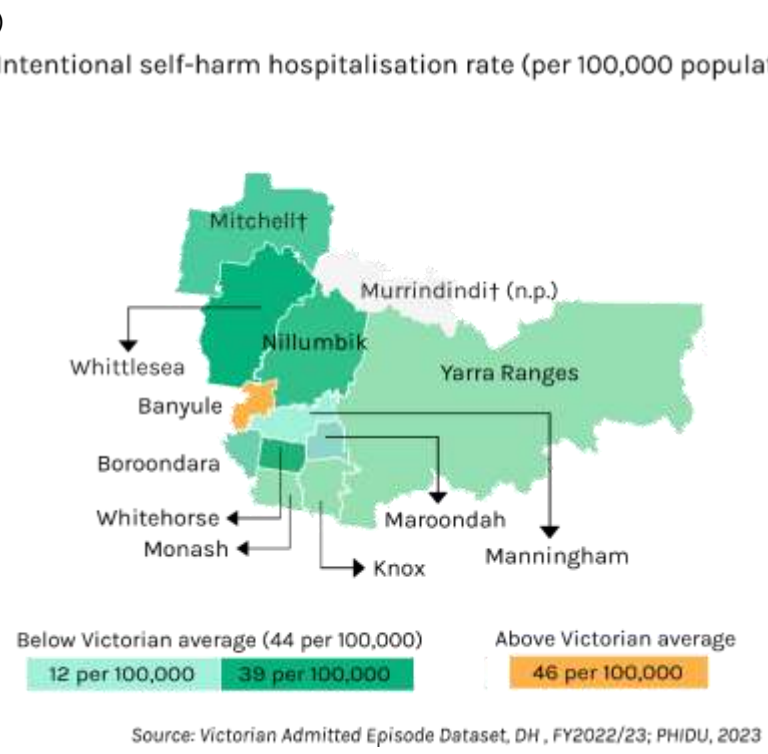
Figure 28: Rates of a) ED presentations and b) hospitalisations, due to intentional self-harm per 100,000 population by EMPHN LGAs, 2022-23.

(a)



Source: Victorian Emergency Minimum Dataset, DH, FY2022/23; PHIDU, 2023

(b)



Source: Victorian Admitted Episode Dataset, DH , FY2022/23; PHIDU, 2023

Premature and avoidable deaths and mortality

Cancer and circulatory diseases are the main causes of mortality in the EMPHN region. Males have higher premature and avoidable death rates than females across all regions.

KEY DEFINITION

All-cause mortality refers to death from any cause.

Premature death is the death of a person under the age of 75, while an **avoidable death** is one that could have been prevented with timely and effective medical care. 'Premature and avoidable mortality' combines both categories, expressed as a rate per 100,000 population(PHIDU 2023).[11]

All-cause mortality

2022 had the highest number of deaths in Victoria than the previous decade.

- The number of deaths was relatively stable from 2012 to 2018 but increased on average from 2019 to 2022 across all regions (Supplementary Table 53).
- From 2012 to 2022, there has consistently been a significant median age gender gap in all-cause mortality, with female life expectancy averaging about five years longer than that of males (Supplementary Figure 77).
- Cancer, circulatory diseases and respiratory illnesses have been the top three causes of death in Victoria since 2013. Since 2018, deaths from external causes of morbidity and mortality, such as injuries and falls, increased by 20%, diseases of the nervous system by 27%, and endocrine, nutritional, and metabolic diseases by 38% (Supplementary Table 54).

For more detail on the all-cause mortality rate by LGAs see Supplementary Table 55.

[11] COVID-19 deaths were not included in the National Healthcare Agreement: PI 16–Potentially avoidable deaths, 2020. The agreement defines potentially avoidable deaths as deaths that could have been prevented with timely and effective medical care. COVID-19 is a new and rapidly evolving disease, and there is still much that we do not know about how to prevent and treat it. As a result, it is not possible to say definitively whether any COVID-19 deaths could have been prevented with timely and effective medical care.

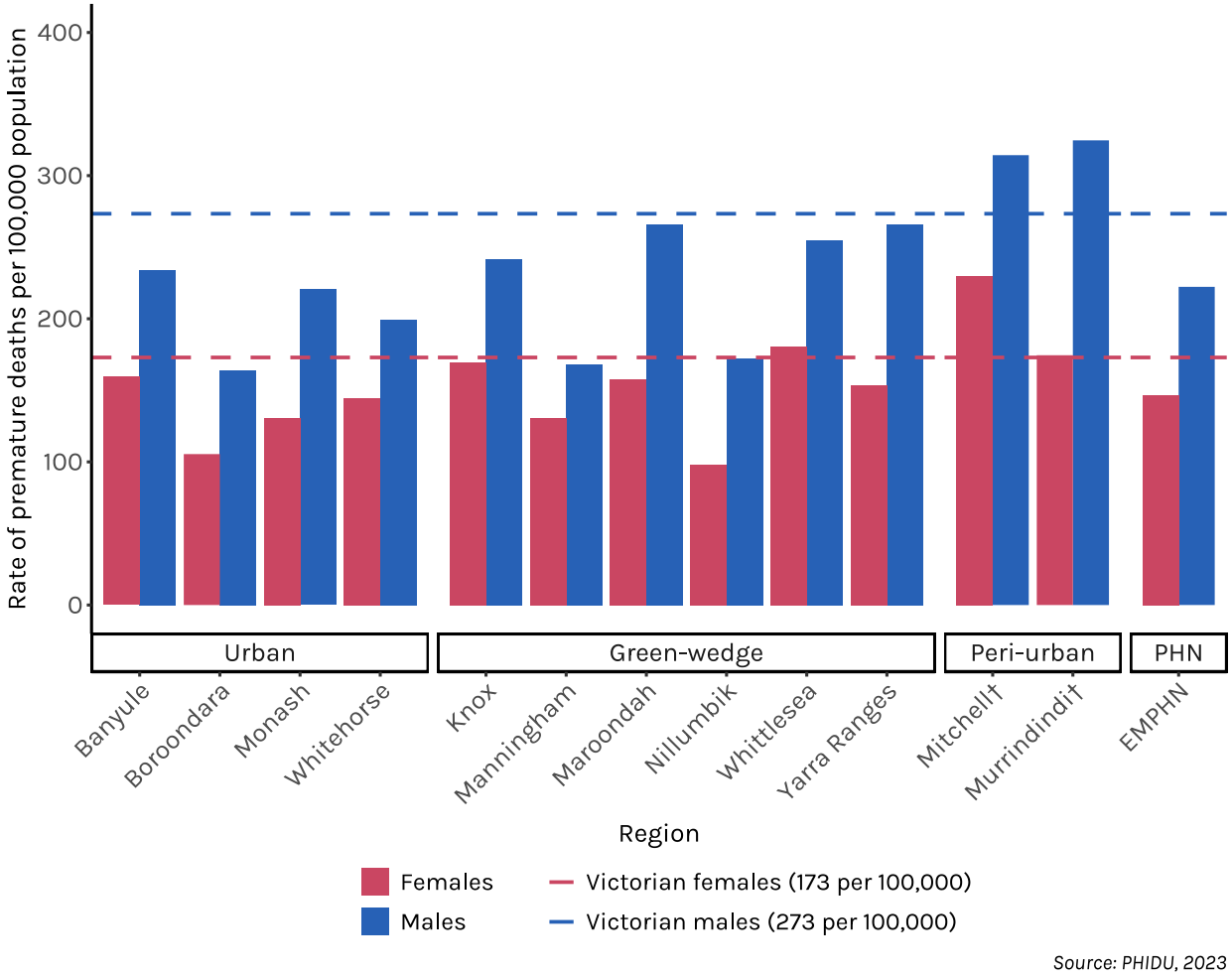
Premature and avoidable deaths

Premature and avoidable mortalities are higher in males than females.

- There were 12,981 premature and 6,129 avoidable deaths in the EMPHN region between 2017 and 2021 (Supplementary Table 56 and Supplementary Table 57).
- The average premature and avoidable death rates for the EMPHN region were lower than the Victorian equivalents. Approximately half of premature deaths across all regions were avoidable (Supplementary Table 56 and Supplementary Table 57).
- Most LGAs had lower rates of premature death than the state average (Figure 29). The pattern was similar for avoidable deaths (see Figure 30).
- However, the peri-urban LGAs had higher rates of premature and avoidable deaths compared with Victoria.
- Males had significantly higher rates than females of premature and avoidable deaths in all EMPHN LGAs (Figure 29, Figure 30, Supplementary Table 56 and Supplementary Table 57).

For information on causes of premature death see Supplementary Table 58 and causes of avoidable death Supplementary Table 59.

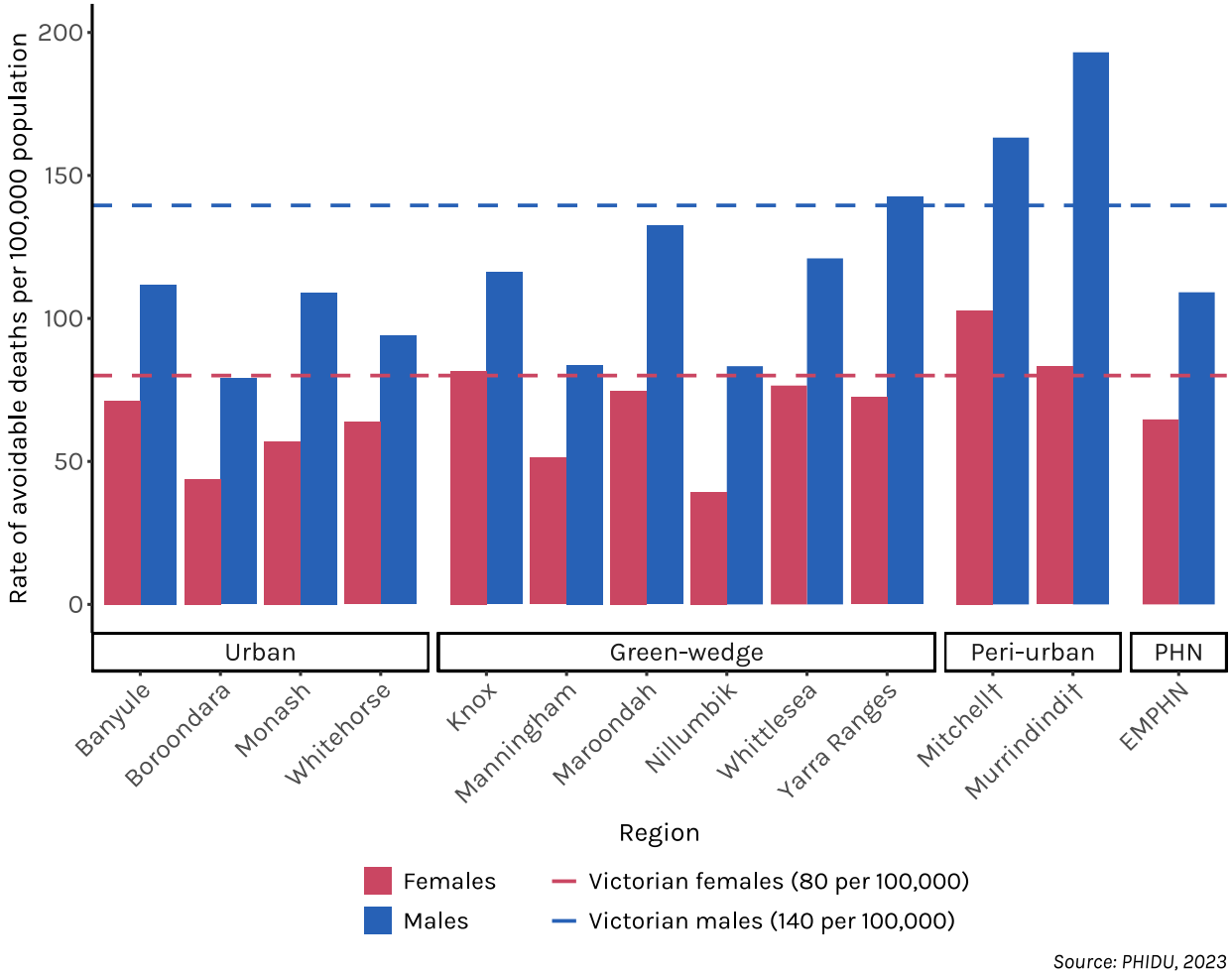
Figure 29: Depicts the premature mortality age standardised rates per 100,000 for males and females for each region between 2017 and 2021.



Source: PHIDU, 2023

Figure note: Data compiled by PHIDU from deaths data based on the 2017 to 2021 Cause of Death Unit Record Files supplied by the Australian Coordinating Registry and the Victorian Department of Justice, on behalf of the Registries of Births, Deaths and Marriages and the National Coronial Information system (Public Health Information Development Unit).

Figure 30: Depicts the avoidable mortality age standardised rates per 100,000 for males and females for each region between 2017 and 2021.



Source: PHIDU, 2023

Figure note: Data compiled by PHIDU from deaths data based on the 2017 to 2021 Cause of Death Unit Record Files supplied by the Australian Coordinating Registry and the Victorian Department of Justice, on behalf of the Registries of Births, Deaths and Marriages and the National Coronial Information system (Public Health Information Development Unit).

Mortality due to suicide

Recent estimates highlight that suicide is a significant public health concern in Australia, with over 3,000 individuals taking their own life each year (AIHW 2024a).

In terms of all causes of mortality, death by suicide is a relatively rare cause overall, with AIHW estimating it accounted for approximately 1.7 per cent of all deaths across Australia recorded in 2022 (AIHW 2024a). Nonetheless, the human costs are substantial because suicide and suicidal behaviour have profound ripple effects across the community, affecting loved ones, friends, families and colleagues in varied and enduring ways (State of Victoria 2021). It is estimated that approximately 135 people are impacted for each life lost to suicide (Cerel et al. 2019).

- In the EMPHN region, the rate of suicide ranged from 7.3 to 10.5 deaths per 100,000 between 2001 and 2022 (AIHW 2024a).
- Four LGAs from peri-urban and green-wedge areas – Maroondah, Mitchell†, Knox and Yarra Ranges – had mortality rates due to suicide and self-inflicted injury above the state average. Although other LGAs were below the state average, suicide rates remain a concern (Supplementary Figure 78).
- In addition, this data excludes individuals aged over 85, a cohort in which females had the highest suicide rate among all female age groups (10.6 per 100,000), and males had the highest age-specific suicide rate (AIHW 2024a). This suggests higher mortality rates than reported within the region.

Given the absence of specific mortality data related to suicide at the PHN level, national-level survey data and the AIHW's suicide and self-harm monitoring data (AIHW 2024a) provides these insights:

- Despite accounting for a relatively small proportion of overall mortality (that is, 1.7%), suicide is the leading cause of death for nearly one in three individuals aged 15–24 and over one in five individuals aged 25–44.
- Males are three times more likely than females to take their own life and have consistently higher rates of suicide across all age groups.
- LGBTIQ+ communities report higher levels of mental ill health, suicidality, and self-harm compared to the general population, as indicated by the Private Lives 3 (Hill et al. 2021a) and Writing Themselves In 4 surveys (Hill et al. 2021b).
- Within LGBTIQ+ communities, trans and gender-diverse individuals face a heightened risk of suicidal thoughts and behaviours.
- Research shows that lifetime prevalence of suicidal thoughts ranges from 64% among cis men to 90% among nonbinary participants (Hill et al. 2021a).

- People from culturally diverse communities may experience higher levels of psychological distress compared to other Australians due to traumatic experiences such as war, separation from family and friends, or the migration process.
- The highest suicide rates for males and females occur in those aged 85+.
- Aboriginal and Torres Strait Islander males experienced 3.3 times the rate of suicide deaths compared with females (46.3 and 14 suicide deaths per 100,000 population, respectively).

See AIHW's Suicide and Self-harm monitoring data for more information.

Notifiable diseases

- Chlamydia was the most reported notifiable communicable disease, followed by gonorrhoea. Overall, urban LGAs reported higher rates of various notifiable diseases, likely reflecting differences in testing practices across geographical areas (Supplementary Table 60).

Aboriginal and Torres Strait Islander people

This section presents findings on the health data of Aboriginal and Torres Strait Islander people in our region. It covers:

- Ill health profile
- General practice assessment and management of chronic disease
- Acute care: ED presentations and hospitalisations

Ill health profile

In the EMPHN region, Aboriginal and Torres Strait Islander females have a higher prevalence of having one chronic condition compared with the Victorian Aboriginal and Torres Strait Islander average. The prevalence of multiple chronic conditions, and mental health conditions, varies by LGA, with Maroondah showing notably higher rates for both sexes.

- The proportion of First Nations people in the EMPHN region living with two or more conditions is lower than the Victorian average (Table 22).
- Maroondah is the only LGA with a higher proportion of males and females with one, two or three chronic conditions when compared with Victoria (Table 22).
- Banyule generally has higher rates of chronic conditions relative to other EMPHN LGAs, although though Whitehorse has higher rates of two (among females) and three or more (females and males) relative to Victoria and other LGAs (Table 22).

- Mental health conditions, followed by asthma, are the most prevalent in the region and are higher in females than males (Table 23). Although mental health rates are lower overall compared to Victoria, all urban LGAs and Maroondah have rates above the Victorian average.

Table 22: Displays the percentage (%) of Aboriginal and Torres Strait Islander people who live with chronic health conditions by sex and region (LGA, EMPHN region, Victoria), 2021.

Geographical area	Region	One chronic condition		Two chronic conditions		Three or more chronic conditions	
		M (%)	F (%)	M (%)	F (%)	M (%)	F (%)
Urban	Banyule	22.9	29.8	6.9	8.5	4.9	5.6
	Boroondara	20.3	26.5	6.5	6.6	2.8	2.2
	Monash	23.7	23.3	5.6	9.7	1.9	6.6
	Whitehorse	21.2	23.8	5.1	10.8	4.7	6.2
Green-wedge	Knox	21.3	25.8	6.6	8.8	3.1	5.4
	Manningham	16.6	17.6	5.7	8.8	3.4	2.9
	Maroondah	26.6	28.0	7.9	9.9	4.5	6.5
	Nillumbik	24.3	14.9	4.2	5.9	4.8	4.3
	Whittlesea	21.1	24.8	4.8	9.5	2.8	3.5
	Yarra Ranges	23.1	23.3	6.7	9.3	3.1	4.4
Peri-urban	Mitchell†	18.3	25.6	NA	6.8	NA	4.1
	Murrindindi†	NA	NA	NA	NA	NA	NA
PHN	**EMPHN**	**22.0**	**24.7**	**5.8**	**8.9**	**3.3**	**4.6**
State	**Victoria**	**22.2**	**24.1**	**6.6**	**9.7**	**3.8**	**5.9**

Table note: Yellow highlights indicate that the value is above the state average. NA values are due to counts of five or less.

Source: ABS, 2021

Table 23: Prevalence of chronic condition type by region (LGA, EMPHN region, Victoria), in Aboriginal and Torres Strait Islander people, 2021.

		Arthritis		Asthma		Cancer[1]		Diabetes[2]		Heart disease[3]		Mental health condition[4]	
Geographical area	Region	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)
Urban	Banyule	4.8	7.5	9.8	14.4	1.7	1.5	4.1	3.3	5.0	2.5	12.8	17.6
	Boroondara	5.2	3.7	7.9	13.0	2.1	NA	2.4	NA	2.8	2.4	13.1	19.1
	Monash	3.2	6.3	10.8	13.1	NA	NA	3.5	NA	3.2	3.3	15.9	20.7
	Whitehorse	4.4	8.1	9.1	12.4	3.2	2.5	3.5	2.8	2.2	2.8	12.9	17.4
Green-wedge	Knox	4.4	6.3	9.7	13.2	NA	1.8	4.4	3.5	3.2	1.6	11.7	16.0
	Manningham	NA	NA	5.1	10.8	3.4	NA	NA	NA	NA	NA	9.6	14.2
	Maroondah	4.8	6.7	12.7	12.1	1.4	3.1	4.8	4.6	3.6	2.9	14.5	16.9
	Nillumbik	7.1	3.2	13.7	11.4	NA	NA	5.7	NA	NA	NA	9.4	10.0
	Whittlesea	3.9	4.7	12.3	15.0	1.0	1.5	2.8	3.1	3.1	2.5	11.0	15.3
	Yarra Ranges	6.0	7.1	9.8	12.7	2.6	1.4	4.8	2.9	2.7	2.8	10.2	15.4
Peri-urban	Mitchell†	NA	4.2	11.9	14.3	NA	NA	3.4	3.5	4.3	NA	5.5	15.8
	Murrindindi†	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHN	**EMPHN**	**4.4**	**5.9**	**10.6**	**13.5**	**1.6**	**1.6**	**3.8**	**2.9**	**3.1**	**2.4**	**11.6**	**16.1**
State	**Victoria**	**4.6**	**6.7**	**11.3**	**14.0**	**1.4**	**1.5**	**3.8**	**3.9**	**3.3**	**2.4**	**12.2**	**16.3**

Table note: Yellow highlights indicate that the value is above the state average. NA values are due to counts of five or less.
[1]Including remission. [2]Excluding gestational diabetes. [3]Including heart attack or angina. [4]Including depression or anxiety.

Source: ABS, 2021

General practice assessment and management of chronic disease

- For the EMPHN First Nations population, over 4,430 patients had at least one GP diagnosis for a chronic condition, resulting in a rate of 48% in 2023 (POLAR, 2023; PHIDU, 2023).
- First Nations females across most age groups had diagnosis rates during 2023 that were 10 to 30% higher than males. The only exception was for children aged 0-9, where rates were similar. Notably, older females (60+) had a high diagnosis rate of 91% (Supplementary Figure 79).
- Whittlesea, Yarra Ranges, and Knox, which have the largest First Nations populations in the region, reported the highest number of patients diagnosed with at least one chronic condition in general practice during 2023 (Supplementary Figure 80). The top five chronic conditions in the EMPHN region were mental health issues, respiratory conditions, musculoskeletal disorders, cardiovascular and neurodevelopmental conditions. These three LGAs contributed the most to the prevalence of all five conditions (Supplementary Table 61).

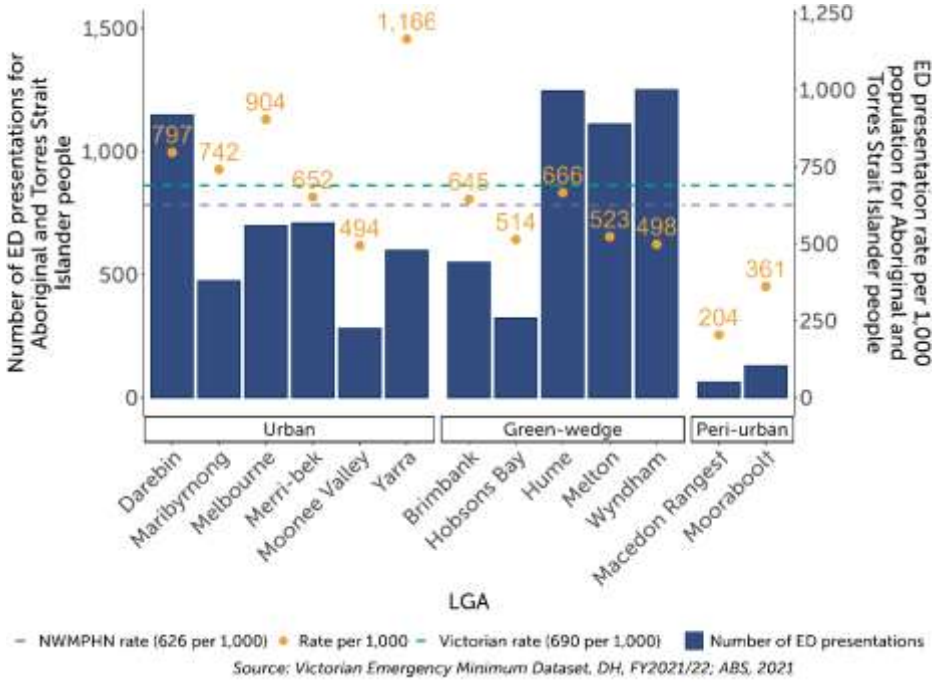
Acute care: ED presentations and hospitalisations

There is significant variation across the region in the rates of First Nations people presenting to ED.

- The ED presentation rate for First Nations people in the EMPHN region was notably below the Victorian average (516 vs. 690 per 1,000 population).
- No EMPHN LGAs had higher ED presentation rates for First Nations people compared with Victorians rates. Whittlesea's rate was just below Victoria's. However, due to its population size the absolute number of people presenting to ED was high (Figure 31 (a)).
- The hospitalisation rate for First Nations people in the region was significantly below the average (370 vs. 485 per 1,000 population).
- Similar to ED presentations, hospitalisation rates and numbers were highest in Whittlesea – indeed, significantly higher than the Victorian average. Banyule had a similar rate to Victoria (Figure 31 (b)).

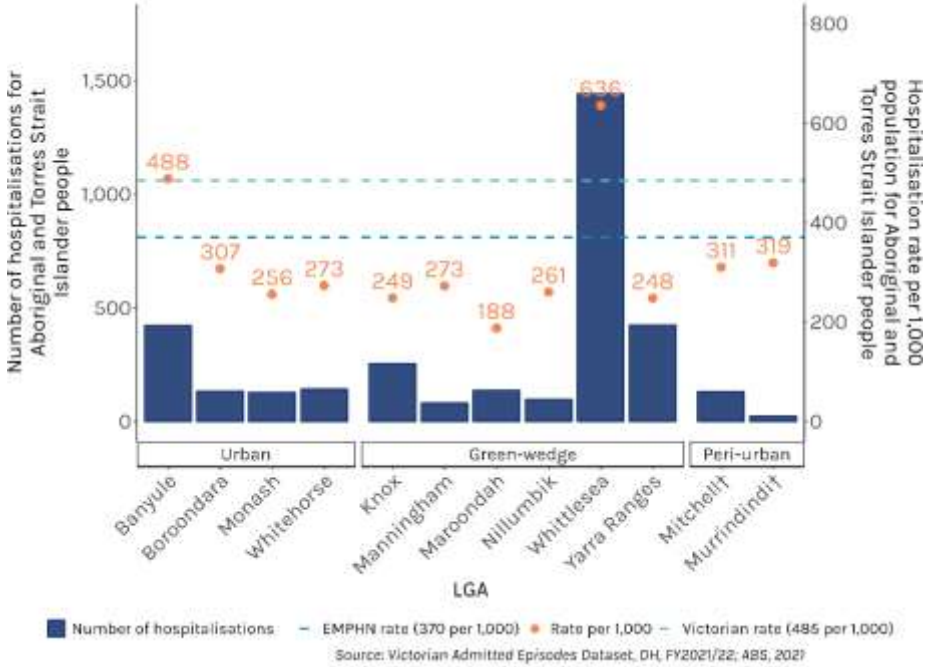
Figure 31: Prevalence of a) ED presentations and b) hospitalisations among Aboriginal and Torres Strait Islander people in 2021-22.

(a)



Source: Victorian Emergency Minimum Dataset, DH, FY2021/22; ABS, 2021

(b)



Source: Victorian Admitted Episodes Dataset, DH, FY2021/22; ABS, 2021

ED presentations and hospitalisations due to chronic conditions

- For the EMPHN region First Nations population, hospitalisation and ED presentation rates due to chronic conditions were lower than those for Victoria. However, Whitehorse and Monash exhibited higher rates of ED presentations compared to the state average. Monash and Whittlesea reported the highest rates of hospitalisations due to chronic conditions, also above the average (Supplementary Figure 81 and Supplementary Figure 82).

ED presentations and hospitalisations: all mental health conditions (including AOD-related)

- Overall, the EMPHN region First Nations population had lower rates of ED presentations and hospitalisations due to mental health conditions compared to Victoria – except Boroondara, Banyule, and Whitehorse (Figure 32).
- Boroondara also had a particularly high rate of hospitalisations compared to other regions, almost double that of Victoria (Figure 33).
- The largest number of ED presentations due to mental health conditions from 2020-21 to 2022-23 were mental and behavioural disorders due to the use of alcohol. However, the number nearly halved in 2022-23 compared to 2020-21 (Supplementary Figure 67).
- Reactions to severe stress and adjustment disorders were the top cause of hospitalisations (Supplementary Figure 68).

Figure 32: Rate of ED presentations due to any mental health conditions in Aboriginal and Torres Strait Islander population by region in 2021-22.

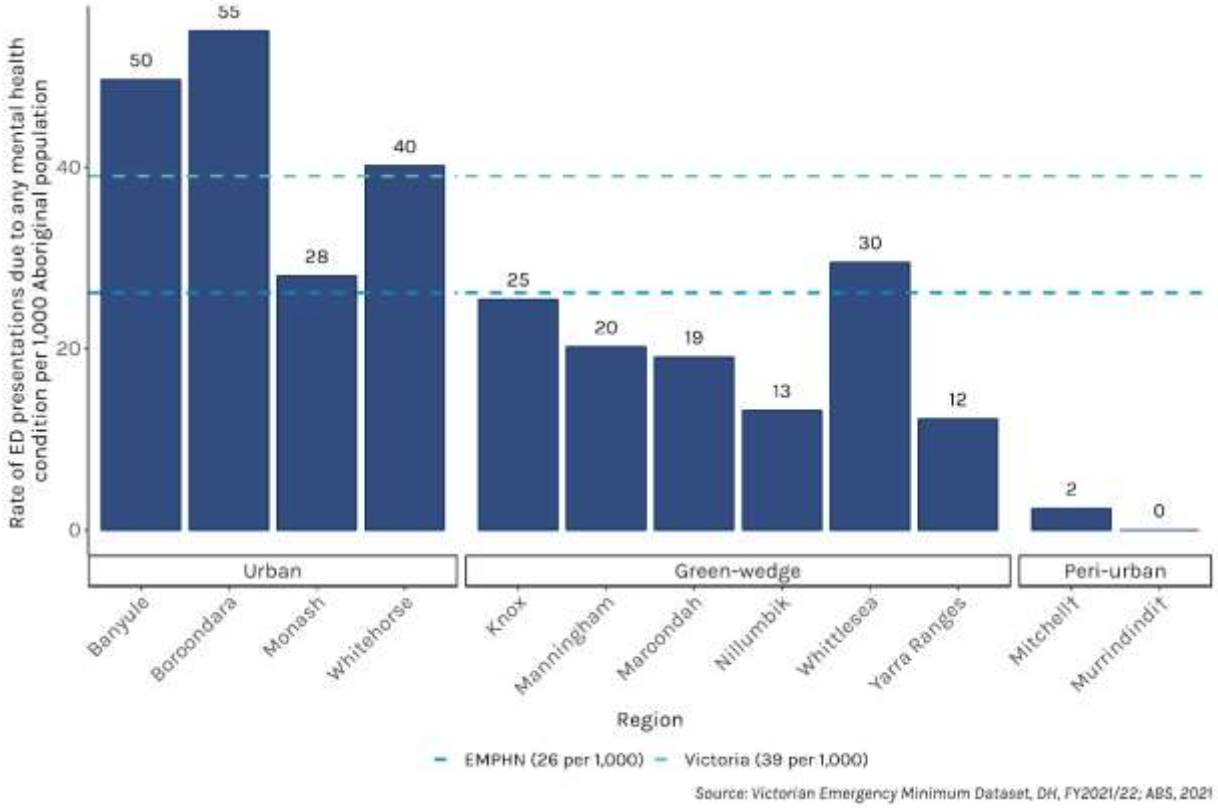
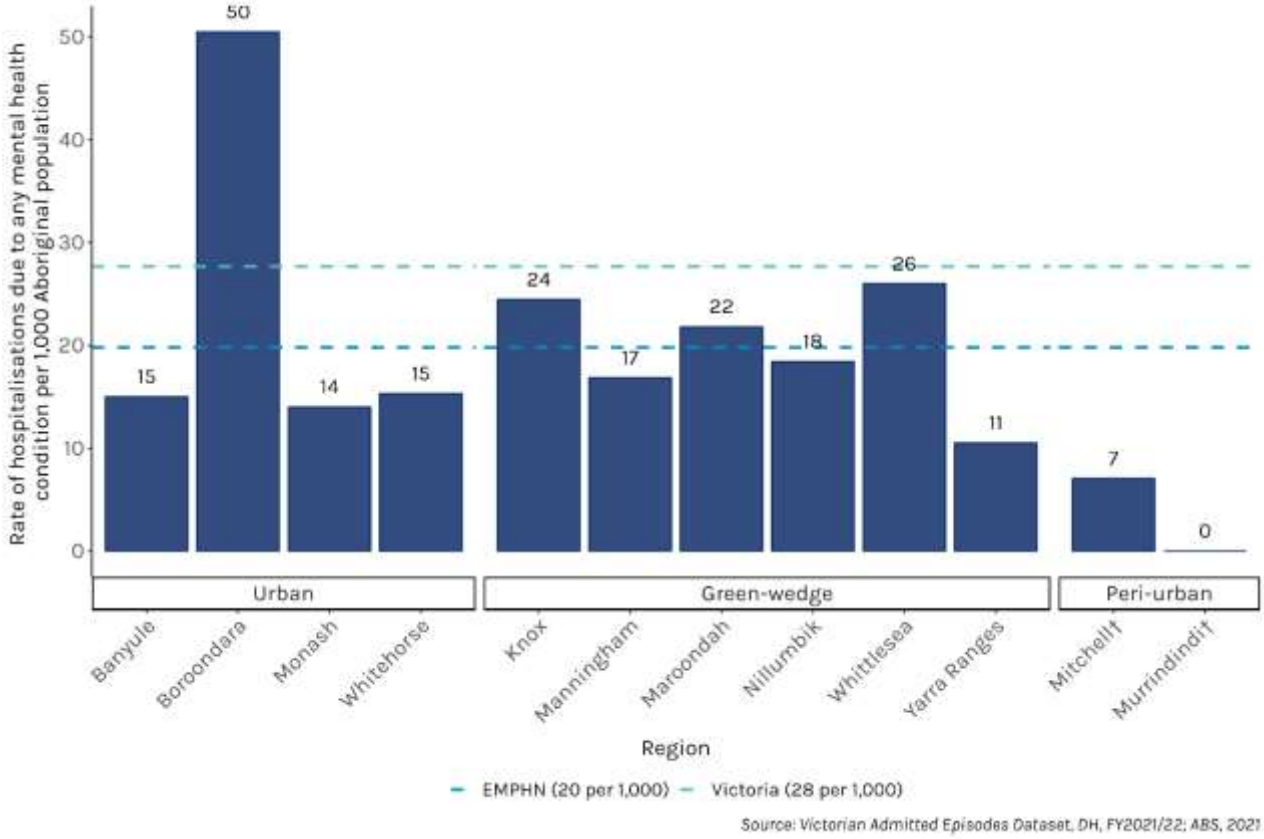


Figure 33: Rate of hospitalisations due to any mental health conditions in Aboriginal and Torres Strait Islander population by region in 2021-22.



Source: Victorian Admitted Episodes Dataset, DH, FY2021/22; ABS, 2021

Quantified need based on health conditions and consequences

Mitchell†, Whittlesea, Yarra Ranges and Knox have the highest level of need related to health conditions and consequences.

Table 24 shows that Mitchell's† high need is primarily driven by high rates of avoidable deaths and hospitalisations. Whittlesea's elevated need stems from high ED presentation and hospitalisation rates. The Yarra Ranges' significant need is due to a higher prevalence of residents living with more than two chronic conditions. Knox demonstrates considerable need due to a higher prevalence of residents with multiple chronic conditions and an increased ED presentation rate.

Whittlesea and Monash have the highest need when adjusted for the projected population growth for 2030.

Table 24: Quantified need based on health conditions and consequences.

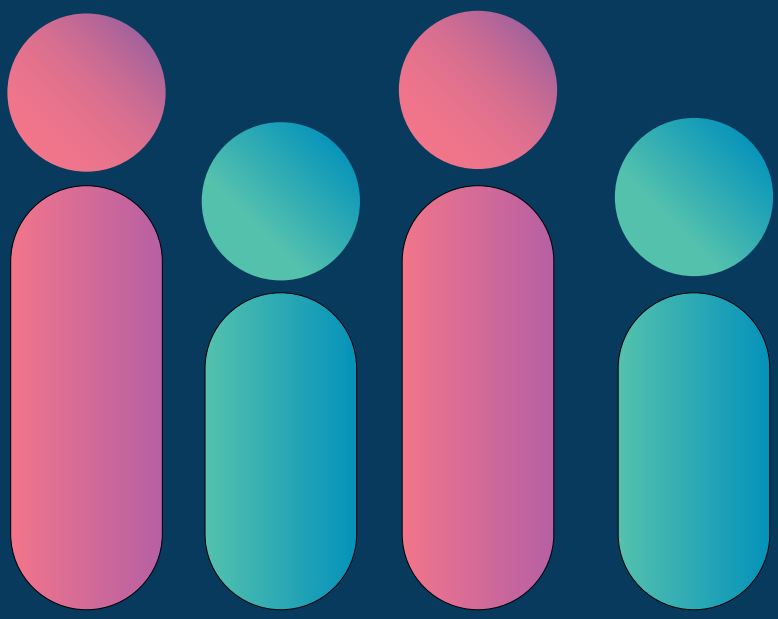
Geographical area	Region	Metric 5 - Health conditions and consequences						Projected population % EMPHN region (2030)	Change	Adjusted population need
		Index of avoidable deaths ASR per 100,000	Index of population with chronic health condition (2 or more)	Index of ED presentations rate per 1,000	Index of hositalisation rate per 1,000	Average index	Average index as % of all LGAs			
Urban	Banyule	0.8	1.0	1.0	0.9	0.9	9.1%	7.8%	4.6%	8.1%
	Boroondara	0.6	0.8	0.5	0.5	0.6	5.8%	11%	-13%	9.6%
	Monash	0.8	0.8	0.7	0.7	0.7	7.2%	12.2%	-11.1%	10.8%
	Whitehorse	0.7	0.9	0.7	0.7	0.7	7.2%	11.2%	-9.8%	10.1%
Green-wedge	Knox	0.9	1.0	1.0	0.9	1.0	9.4%	9.6%	-0.6%	9.5%
	Manningham	0.6	0.9	0.7	0.7	0.7	7.1%	7.5%	-1.3%	7.4%
	Maroondah	0.9	1.1	0.8	0.7	0.9	8.6%	7.4%	4.5%	7.7%
	Nillumbik	0.6	0.9	0.7	0.7	0.7	6.8%	3.7%	22.9%	4.5%
	Whittlesea	0.9	0.9	1.2	1.2	1.0	10.2%	18.6%	-12.3%	16.3%
	Yarra Ranges	1.0	1.1	0.9	0.9	1.0	9.6%	9.5%	0.4%	9.5%
Peri-urban	Mitchell†	1.2	0.9	1.2	1.3	1.2	11.3%	1.2%	219.8%	4%
	Murrindindi†	1.3	1.1	0.4	0.4	0.8	7.8%	0.2%	880.4%	2.3%

Table note: All indicators are an index of the Victorian rate or % (LGA rate or % divided by Victorian rate or %). Blue shading indicates LGAs with statistically higher indices relative to other LGAs for health conditions and consequences, reflecting significantly lower performance in managing these health issues or their consequences. Index scores are an indicator of advantage (scores lower than 1) and disadvantage (scores greater than 1). Purple shading indicates LGAs with statistically the highest level of need relative to other LGAs based on projected population. Yellow shading indicates LGAs with a statistically higher proportion of need overall when the population is adjusted for health conditions and their consequences.

Source: ABS, 2021; PHIDU, 2022; Victorian Admitted Episodes Dataset, DH, FY2022/23; Victorian Emergency Minimum Dataset, DH, FY2022/23

4.

Community and health service provider engagement



4.1

Overview

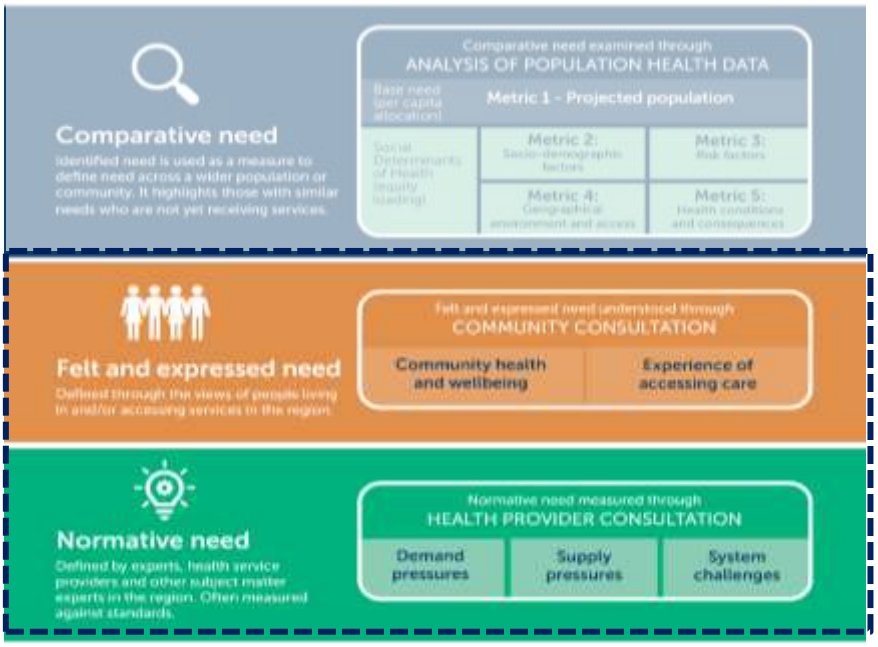
This section summarises key insights from consultations with community members, and with service providers who live, access or deliver healthcare in the EMPHN region. Understanding the determinants that influence health and wellbeing from the perspectives of the community (felt and expressed need) and health service providers (normative need), is essential to improve health outcomes.

Primary objectives

Using the HNA Framework (Figure 34), the primary objectives of community and health provider consultation are to:

- Contextualise the quantitative findings from the comparative need assessment.
- Increase our understanding of felt and expressed needs in relation to the health, wellbeing and experiences of consumers accessing health care in the region.
- Explore and understand the normative need, defined by what subject matter experts and health service providers view as demand, supply pressures, and system challenges.

Figure 34: Understanding felt, expressed and normative need through community and health provider consultation.



4.2

Methodology

Between July and August 2024, EMPHN conducted online surveys with community members and service providers in the region.

Approach to community engagement

To address the objectives, EMPHN conducted two online surveys: one open to the general population, and another for health service providers in region. Both comprised closed-ended questions, along with some open text ones. The insights gathered will also assist in identifying areas that require future community and provider consultations.

The purpose of the surveys was to understand the health needs and health care experiences of the EMPHN population. This included identifying existing barriers to accessing health care. The health service provider survey addressed similar themes, but also examined the primary health risks within the community from the providers' perspective.

Recruitment

Community

To reach the wider community, EMPHN contracted a paid market research panel to disseminate the survey via LinkedIn and Facebook, as well as existing communication channels, including EMPHN newsletters and WiseCrowd. Existing networks, including community organisations, local city councils, and health service providers were leveraged to increase distribution.

Health service providers

In order to engage with health service providers**, the provider survey was disseminated to select recipients including local hospitals, community health organisations, and Aboriginal community-controlled organisations.**

Participants

A total of 1,250 community members and 11 service providers responded to the surveys. See Table 25. See Table 26 for the demographics of the community survey respondents.

Table 25: Survey respondents.

Survey	Participants
Community	1,250 community members
Health provider	11 health providers from four community health organisations, four Aboriginal Community Controlled Organisations (ACCOs) and three hospitals
Total	**1,261**

Table 26: Demographic data of the community survey respondents.

Attribute	n (%)
Age	
16-19	43 (4%)
20-29	251 (20%)
30-39	226 (18%)
40-49	206 (17%)
50-64	269 (22%)
65-74	137 (11%)
75-84	75 (6%)
85+	16 (1%)
Prefer not to say	3 (<1%)
Gender	
Female	622 (51%)
Male	595 (49%)
Nonbinary/genderqueer/gender-fluid	3 (<1%)
Prefer not to say	6 (<1%)

Data analysis

Quantitative survey data was analysed using descriptive statistics (count and percentage of responses). Both surveys **were quality checked to ensure no duplicate responses or invalid entries were included. 24 duplicates were removed.**

Quantitative data **was aggregated and analysed using Power BI and to identify key insights across several areas:**

- Barriers to providing health care services including cost and workforce shortages.
- Factors impacting service access including cost, distance to travel, consumer! awareness of services and wait time duration.
- Health provider perspectives about current primary health risks within the community.
- Acceptability and satisfaction of services.
- Utilisation or under-utilisation of services.

Qualitative data involved inductive thematic analysis reporting patterns and recurring themes in the data. A coding framework was developed with a unique code applied to all responses, which were assigned to one or more. To enhance the quality of the coding framework and reduce bias, responses were randomly selected and verified by a second EMPHN analyst.

The survey results were analysed, and the key insights were identified and presented (see section 4.3).

Limitations

While the data from the surveys provide an important understanding of the health needs of the EMPHN region, it is important to acknowledge limitations that may impact the interpretation and application of the findings. These include:

- The survey responses are self-reported, which may introduce bias and affect the accuracy of the results.
- The survey was only available in English, and therefore likely limited the responses from multicultural and linguistically diverse individuals, affecting the perspectives of these priority groups. This is indicated by a low response rate from multicultural and ethnically diverse as well as LGBTIQ+ individuals.
- There were only two responses from residents of Mitchell LGA, and none from Murrindindi LGA.
- The survey was distributed through limited channels such as the EMPHN website, social media and email, which may have limited reach and the diversity of respondents, particularly those without internet access.
- The health provider survey had a low response rate (n= 11), which may limit its generalisability
- The surveys allowed respondents to skip free-text response questions, resulting in some missing and incomplete data entries.

4.3

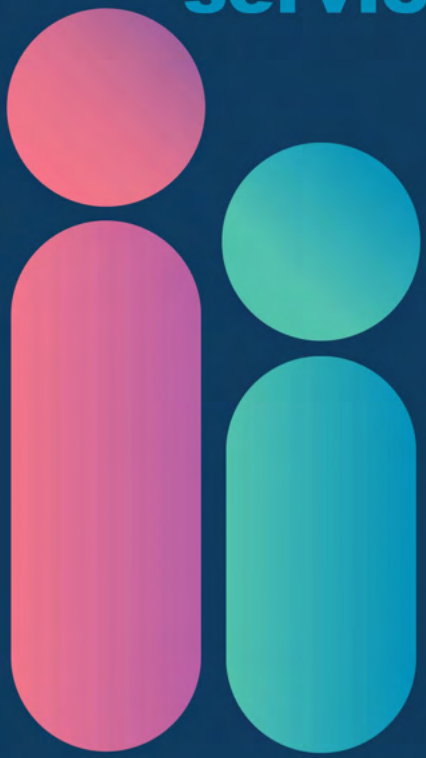
Key findings from community health and provider engagement

This section summarises the main findings from the community and health provider engagement.

Community insights

Here is a sample of findings from the online community survey **(n=1,226)** into barriers to accessing health care and health literacy in the EMPHN region.

12% of respondents delayed or did not use a health service when needed.



Access to care varied by geographical location, with the highest proportion of respondents delaying care in **Manningham, Whittlesea, and Banyule.**[12]

Consumers faced difficulties accessing all types of primary and specialist health care, especially **mental health services.** Over half of those needing a **psychiatrist (59%) or psychologist (55%) reported difficulties,** with approximately 6% delaying or skipping these services.

39% of respondents had difficulty accessing a general practitioner or practice nurse.

Aboriginal health workers and women's health professionals were also difficult to access, with 7% and 6% respectively delaying or skipping these services.

The most common reasons overall for delayed care were:

1. cost of service (38%)
2. long wait times (22%)
3. distance (11%)
4. not knowing where to go (10%)

The main reasons for delayed care for:

- GPs, psychologists, psychiatrists – long wait times and cost.
- Medical specialists, social workers – not knowing where to go.
- Women's health care, mental health counsellors, and allied health workers - distance.

[12] Please note that no residents from Mitchell nor Murrindindi LGAs are included in this data.

The EMPHN community generally felt understood and supported by health care providers.

People over 65 felt the most understood and supported by healthcare providers, while those aged 16-29 felt the least.

Individuals from multicultural and ethnically diverse backgrounds felt less understood and supported compared to people from non-diverse backgrounds.

The most common ways to make consumers feel understood by healthcare providers were:

1. active listening (29%) – particularly for older adults and multicultural communities
2. continuity of care (12%) – particularly for older adults
3. effective communication (11%) – particularly for Aboriginal and Torres Strait Islander communities
4. empathy (7%) – particularly for Aboriginal and Torres Strait Islander communities.

Overall, the EMPHN community experience challenges navigating the health system.

Individuals with mental health conditions and those from multicultural backgrounds faced greater difficulty navigating the healthcare system compared to those who were not.

Health provider insights

Here is a sample of findings from the health provider survey **(n=11)**; into what health providers saw as barriers to providing health care and the main challenges in the EMPHN region.[13]

Most health care providers who responded to the survey believe there are insufficient health services, especially for chronic disease prevention and management and mental health.

Most health care providers who responded to the survey believed there were accessibility issues especially for GP and psychological services, services availi at flexible times and services for people living in rural areas.

In agreement with consumers, health provides identified cost as the most significant barrier to care for consumers.

The top four barriers for accessing timely care were:

1. Cost of service
2. lack of awareness
3. long waiting times
4. appontment availabaility

Providers reported that unmanaged mental health disorders,followed by harmful use of alcohol, domestic and family violence, and harmful use of drugs were the main health risks faced by the EMPHN community.

[13] A low service provider response rate of 11 is acknowledged as a limitation and findings should not be generalised across the population.

5.

Priorities

Key challenges

By combining the quantitative findings from the analysis with the perspectives from the community and health provider engagement, seven key challenges for improving the health and wellbeing of people living in the EMPHN region have been identified. These are described in Figure 35.

Prioritised needs

The "statements of need" identified through the HNA have been organised according to the following five priority areas that align with the objectives and broad funding obligations of primary health networks.

- Aged care
- Alcohol and other drugs
- Health conditions
- Mental health and suicide prevention
- Primary health care

From a long list of needs (see Appendix E), subject matter experts from internal EMPHN teams collaborated to determine which needs should be prioritised within each priority area. This process considered factors such as the magnitude of the issue, equity, and the severity or urgency of each need. See Appendix D for a description of the prioritisation process and the criteria used.

Table 27 provides corresponding need statements and potential change ideas to action positive change within each priority area.

Key challenges

Figure 35: EMPHN HNA key challenges.

Access to services:

- Affordability and availability
- Targeted outreach

Increasing access to affordable and culturally appropriate primary care, allied health services, and outreach programs for various populations, including Aboriginal and Torres Strait Islander and multicultural communities, older adults, and those with alcohol and other drug (AOD) issues.

Enhancing client-centred and evidence-based outreach services for high-need groups, such as First Nations and culturally diverse communities, and for people needing chronic disease early intervention and management.

Cultural safety

- Culturally safe environments

Ensuring that services are tailored to meet the specific cultural needs of diverse populations, including First Nations communities.

Integration and coordination of care

- Holistic approaches
- Collaborative models of care

Improving integrated care pathways between mental health services and community organisations to provide comprehensive support.

Enhancing care coordination using multidisciplinary teams to address many aspects of patient health needs, such as management of chronic conditions.

Prevention and early intervention

- Preventative programs
- Education and awareness

Increasing access to early intervention health programs to address chronic diseases and preventable deaths.

Focusing on patient and caregiver education to enhance health literacy and awareness of primary care alternatives, such as after-hours services and urgent care clinics.

Workforce development

- Capacity building
- Lived experience

Improving the competency and capacity of the workforce, particularly in aged care and mental health, to address complex health needs.

Incorporating lived experience voices in service design and delivery to enhance the effectiveness of health interventions.

Targeted support for vulnerable populations

- Focus on specific groups
- Mental health and AOD support

Addressing the needs of vulnerable populations by providing tailored support and services.

Increasing access to mental health services and support for dual diagnoses among individuals with co-occurring AOD issues.

Data-driven responses

- Strengthening data collection
- Quality improvement

Enhancing data collection processes to better understand and address the needs of underrepresented demographics, such as LGBTIQ+ communities, First Nations people, former and current ADF members, and refugee and migrant communities.

Implementing data-driven quality improvement initiatives to address gaps in knowledge and improve patient experiences.

Table 27: List of priorities for each priority area and the corresponding change ideas.

Priority Area: Aged care				
Statements of need and change idea	**Partner organisations**	**Feasibility**	**Resourcing**	**Related programs or services**
1.1.1 Increase GP availability and engagement in aged care to meet demand in older adults requiring health care.				
Enhance understanding of the workforce in residential aged care homes (RACHs), making aged care an attractive and specialised area for GPs, ultimately ensuring more are available to provide services. Address the sustainability challenges posed by retiring GPs.	Universities, GP mentors, placements, peak bodies	M	M	care finder, telehealth, Commonwealth Government's General Practice in Aged Care Incentive (GPACI)
1.1.3 Improve workforce competency among nurses and case workers for complex aged care.				
Enhance awareness and build the capabilities of the current workforce by providing mentoring and training from GPs engaged in the aged care sector.	Hospitals, RACHs, allied health	M	M	care finder, telehealth, GPACI
1.2.6 Improve data quality and collection processes to address gaps in knowledge relating to demographic diversity, intersectional data, program effectiveness, and lead indicators.				
Enhance understanding of GP data by capturing information about older persons in the community and RACHs, enabling better insights into their needs and informing program development.	Peak bodies for data intelligence, RACHs, software companies, My Health Record, ambulance services	M	M	Australian Digital Health Agency contract

Priority Area: Alcohol and other drugs (AOD)				
Statements of need and change idea	**Partner organisations**	**Feasibility**	**Resourcing**	**Related programs or services**
2.1.3 Improve accessibility and awareness of AOD services and support for people with mental health conditions to minimise negative health outcomes.				
Opportunities for commissioned services to make the community aware of services and broaden their reach.	EMPHN commissioned providers, ACCHOs, multicultural organisations	M	L	Mental health nursing after-hours liaison officers, Mental health wellbeing locals, local government community engagement
2.1.5 Improve awareness and access to culturally appropriate community-based mental health and social support services to prevent mental ill health and AOD use, and manage early symptoms in multicultural and First Nations communities.				
Improve access to a cultural workforce that outreaches to multicultural and First Nations communities.	EMPHN commissioned services	M	H	Oonah Aboriginal Health and Community Services
2.2.2 Improve outreach services which offer accessible, client-centred, evidence-based harm reduction services to people who may have harmful use of AOD				
Understand current service offerings within the state, Commonwealth and private sectors to ensure they offer accessible, client-centred and evidence-based harm reduction services.	EMPHN commissioned providers of AOD services	L	L	National Health Services Directory
2.3.2 Improve integrated care at the community level to reduce the risk of co-occurring mental health and AOD issues.				
Pilot a mental health and AOD integrated model of care with providers.	Local councils	L	L	Access and Banyule pilot underway

Priority Area: Health conditions				
Statements of need and change idea	**Partner organisations**	**Feasibility**	**Resourcing**	**Related programs or services**
3.1.1 Increase and promote disease prevention initiatives targeting behavioural and environmental risk factors to reduce the prevalence of chronic conditions. This includes culturally appropriate community-based programs for people who speak a language other than English and for First Nations communities.				
Utilise the RACGP Healthy Habits app or a similar app, with EMPHN supporting implementation.	Peak bodies for GPs, practices, SEMPHN	M-H	L	GP Demonstration program (GP demo), Right care = better health (RCBH), Audit & feedback, GP Support, Practice reports, Nelly app (from Europe)
Develop POLAR reports on Red Book, running plan-do-study-act cycles on a topic that practices choose, such as smoking, nutrition, alcohol, and physical activity, or chronic disease.	Peak bodies for GPs and data intelligence, GP practices	L-M	H	Audit & feedback, practice reports, GP support, RCBH
General promotion campaigns for disease prevention	Community organisations	H	L	GP Demo
3.2.4 Increase access to early intervention health programs, such as lifestyle changes, and ongoing primary care management of chronic conditions, including improved and multidisciplinary care coordination, to reduce the burden of chronic diseases, preventable deaths and manage complex or comorbid health conditions.				
Commission GP outreach services with an early intervention and management focus.	Community health, service providers	L	H	Service directory, RCBH, GP Demo, Audit & feedback
3.2.12 Build GP capability to manage complex, comorbid health conditions				
Create a structured education stream and GP promotional campaign that aligns with outreach.	Universities, medical education companies, providers, peak bodies	L	M	GP Demo, Healthy Ageing Service, RCBH
3.2.14 Focus on patient, guardian and carer education to improve health literacy and awareness of primary care alternatives for timely management of health conditions.				
Create an after-hours awareness campaign and service directory for specific conditions.	Urgent Care Clinics (UCCs), universities, hospitals	H	L	UCCs, after hours, service directory

Priority Area: Mental health and suicide prevention				
Statements of need and change idea	**Partner organisations**	**Feasibility**	**Resourcing**	**Related programs or services**
4.2.1 Increase community-based and lived experience workforce capacity and availability to provide equitable early assessment and ongoing management of mental health conditions and suicide prevention.				
Create a robust training and supervision model to incentivise workforce into the community health sector.	All EMPHN commissioned services, universities, mental health service alliances.	M	M	Headspace student placement model
4.2.4 Build the capability and capacity of the dedicated suicide prevention lived experience workforce and deploy a suicide prevention lens in AOD and mental health care.				
Build a dedicated suicide prevention lived experience workforce and build the capacity and use of the lived experience mental health workforce.	Mental health and AOD lived experience networks, existing workforce, suicide prevention lived experience organisations	M	M	-
4.3.1 Access to community-based specialist mental health care for at-risk cohorts to provide early intervention and management and reduce need for hospital care for high-prevalence episodes, especially after-hours.				
Include mental health clinicians in **UCCs.**	UCCs, mental health organisations	H	L - H	The after-hours mental health nursing service of healthAbility
4.4.1 Increase access to community-based support for individuals in suicidal distress, including preventative care and early intervention.				
Create alternative spaces to existing mental health facilities that are specific to suicidal distress.	Suicide prevention specific services	M	M	After hours mental health nurse program
4.4.3 Strengthen data collection efforts to gather specific socio-demographic data for underrepresented groups to increase understanding of mental health needs and suicide prevention activities that meet the needs of LGBTIQ+ cohorts, First Nations communities, former and current ADF members, refugee and migrant communities.				
Establish a living data surveillance platform bringing together primary care and hospital data for under-represented groups in the EMPHN region.	National and state data custodians	L - M	L	NEPHU population profile

Priority Area: Primary health care				
Statements of need and change idea	**Partner organisations**	**Feasibility**	**Resourcing**	**Related programs or services**
5.1.1 Increase access to affordable primary care and allied health services to provide early assessment, preventative care and referral in the general population.				
Increase and advocate for Medicare Benefits Schedule items to improve affordability.	Commonwealth government, peak bodies for primary care, primary health networks	M	M	GPACI, chronic disease management, bulk-billing telehealth, PBS
5.1.3 Increase access to flexible models of care to improve reach to LGBTIQ+ cohorts, multicultural communities, Aboriginal and Torres Strait Islander people, and people experiencing homelessness.				
Increase EMPHN's engagement with cohorts who are hard to reach, to build relationships, deepen understanding of needs and gaps, and identify targeted actions to improve service reach and impact.	Funders, community organisations, other primary health networks, consumers, state partners	H	M	care finder, VTPHNA groups
5.1.7 Incentivise primary care for GPs, nursing, and allied health providers as a career, thereby increasing availability of the primary care workforce.				
Support the workforce to work at the top of its scope to enhance enjoyment, capacity, and capability, ensuring the right person is doing the right work to maximise impact and resource use.	Peak bodies for primary care, training organisations	M	M	Nurse immuniser, health coaching, QI programs
5.3.2 Improve collaborative partnerships and shared models of care between primary, community and acute care.				
Develop a consistent approach to care by GPs, following best practice guidelines for access, referrals, and continuity, to ensure individuals receive appropriate care from the right providers.	GPs, data intelligence organisations, HealthPathways Melbourne, medical software companies, SMEs, DH	M - H	M	HealthPathways Melbourne

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Appendices

Appendix A - Key definitions

Table 28: Full list of key definitions.

Acute care services	Victorian **acute care** includes admitted and non-admitted services such as critical care, surgical services, Hospital in the Home, specialist clinics, trauma and emergency services (DH 2024).
All-cause mortality	All-cause mortality refers to death of any cause.
Alleged offender incidents	This term refers to events or situations where an individual is suspected of committing a crime or offence. These incidents are reported and documented by law enforcement agencies and may involve preliminary investigations to determine if there is enough evidence to formally charge the individual. The term encompasses all interactions where a person is accused or suspected of criminal behaviour, regardless of the outcome of any subsequent legal proceedings. The majority of these incidents are property and deception type offences or 'crimes against the person' (for example, assault) (Crime Statistics Agency Victoria 2023).
Australian Early Development Census (AEDC)	Conducted during a child's first year of full-time school, the Australian Early Development Census (AEDC) is a national assessment completed by teachers to assess development across five domains: *physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, and communication skills and general knowledge.*
Avoidable deaths	Premature deaths that could have been prevented with timely and effective medical care.
Avoidable Emergency Department (AED) presentations	Presentations to public hospital emergency departments where the patient: • was allocated a triage category of 4 (semi-urgent: within 60 minutes) or 5 (non-urgent: within 120 minutes) and • did not arrive by ambulance, or police or correctional vehicle and • departure status was to "home" or "referred to GP" or "residential care facility" and • was not admitted to the hospital, not referred to another hospital, or did not die. (AIHW 2022) Please note that avoidable does not mean inappropriate. Avoidable ED presentations were based on the recorded postcode of the person's residence during their presentation to acute care.
Bulk-billing	The process whereby a patient assigns entitlement to a Medicare benefit to the treating practitioner, who in turn submits the claim directly to Services Australia. The practitioner cannot charge a co-payment, so there are no out-of-pocket costs.

Chronic conditions	Chronic conditions are long-term, non-communicable health conditions that often worsen over time, leading to declining health, reduced independence and premature death (Hvidberg et al. 2016). They can profoundly impact a person's quality of life and increase the demand for services in the health care system. The Australian Bureau of Statistics (ABS) identifies 10 common chronic conditions: arthritis, asthma, cancer, dementia, diabetes, heart disease, kidney disease, lung conditions, mental health conditions, stroke, and 'other chronic conditions' (ABS 2022). This section is based on self-reported data from the 2021 Census.
Developmental vulnerability	Developmental vulnerability refers to a child's increased risk of experiencing developmental delays or difficulties in one or more areas of the AEDC domains, indicating where additional support and resources may be required (AIHW 2020).
Equity loading	Equity loadings constitute 60% of the comparative need in the NWMPHN HNA model and are evenly distributed across the four SDH metrics. These redistribute need beyond projected population size by accounting for disparities in SDH. Ultimately, the adjustments ensure that the overall assessment of comparative need reflects the diverse levels of SDH across the region.
GP service levels	**Level A:** Professional attendance by a GP for an obvious problem characterised by the straightforward nature of the task that requires a short patient history and, if required, limited examination and management. **Level B:** Professional attendance by a GP lasting less than 20 minutes, involving (where clinically relevant) taking patient history, performing a clinical examination, arranging any necessary investigation, implementing a management plan, or providing appropriate preventive health care. **Level C:** Professional attendance by a GP lasting at least 20 minutes, involving (where clinically relevant) taking detailed patient history, performing a clinical examination, arranging any necessary investigation, implementing a management plan, or providing appropriate preventive health care. **Level D:** Professional attendance by a GP lasting at least 40 minutes, involving (where clinically relevant) taking extensive patient history, performing a clinical examination, arranging any necessary investigations, implementing a management plan, or providing appropriate preventive health care.
Index of Relative Socioeconomic Disadvantage (IRSD)	IRSD summarises 20 variables that directly or indirectly contribute to disadvantage in a particular geographic location. The Australian average IRSD score is 1000. IRSD is calculated for each Statistical Area 1 (SA1) in Australia, each of which generally has a population of between 200 and 800 people. A lower score indicates a higher level of disadvantage.
Indicators	Individual indicators are used to analyse a concept of interest within each metric. For example, 'the percentage of babies born with low birthweight' is a perinatal risk factor in Metric 3.
Liveability	Liveability is the sum of the factors that add up to a community's quality of life. There are 72 indicators measured within nine domains. The domains are social infrastructure, walkability, public transport, public open space, food environment, alcohol environment, housing affordability, local employment and population characteristics. Together these create an overall **Liveability Index**. We have reported on these indicators:

	• Alcohol environment: Average distance (km) to the closest alcohol retailer. • Access to GP clinics: Average distance (km) to the nearest GP clinic offering a Medicare bulk-billing payment system where a patient has no out-of-pocket expenses. • Food environment: Average distance (km) to closest healthy food outlet including supermarket or greengrocer. • Public transport: Percentage of dwellings within 400 m of public transport with a regular 30-minute weekday service. • Health infrastructure: The Health Infrastructure Index (0- 6) is derived from the Social Infrastructure Index and is based upon the availability of residential aged care, GPs, dentists, pharmacies, community health and maternal child health (MCH) centres in a geographical area. A score of 0 indicates no services available within 1km and 6 indicates all six health services available within 1km. See Davern et al. (2023) and Gunn et al. (2020) for more details.
Medicare subsidy	Government payments or rebates paid to patients for health care services under Medicare. Benefits are calculated based on the Medicare Benefits Schedule (MBS) fees and depend on the type of service and where it is provided. Out-of-pocket costs are the difference between the full cost and the Medicare subsidy.
Mental health conditions	Mental health conditions are defined as medical conditions that significantly impact thought, mood, perception, or memory. Some examples of mental illnesses are depression, schizophrenia, anxiety disorders, and eating disorders.
Metrics	The term metrics refer to the five domains or categories into which quantitative data is organised in the NWMPHN Framework (for example, Metric 3 – Risk factors).
NWMPHN HNA Framework	The NWMPHN HNA Framework uses mixed methods, including a method to quantify need using the social determinants of health (SDH), to define and understand population health needs and service provider needs.
NWMPHN HNA model	The NWMPHN HNA Model comprises five metrics, each containing several robust indicators to contribute to quantify the level of need. Note that not all indicators in the report contribute to the Model.
Potentially Preventable Hospitalisations (PPHs)	A PPH occurs when a hospital admission for a condition could have been avoided with appropriate individualised preventative health interventions and early disease management, typically delivered through primary and community-based care (Falster, M. & Jorm, L., 2017). PPHs are identified from diagnoses recorded in hospitalisation data. The current conditions identified as a PPH are detailed in the AIHW Metadata Online Registry (METEOR) (AIHW 2023). In Australia, PPHs are summarised into three groups (Falster, M. & Jorm, L., 2017): • Vaccine-preventable conditions: These may be preventable through vaccination. The category includes conditions such as influenza, measles, diphtheria and hepatitis B.

	• Acute conditions: These may not be preventable, but theoretically would not result in hospitalisation if timely and adequate (usually non-hospital) care was received. The category includes conditions such as urinary tract infections (UTIs), cellulitis, dental conditions, ear-nose-and-throat (ENT) infections. • Chronic conditions: These may be preventable through lifestyle change but can also be managed effectively through timely (usually non-hospital) care to prevent deterioration and hospitalisation. The category includes conditions such as congestive cardiac failure, diabetes complications, chronic obstructive pulmonary disease (COPD) and angina.
Premature and avoidable mortality	Premature and avoidable mortality is the number of premature and avoidable deaths, respectively, in a population, expressed as a rate per 100,000 population (PHIDU 2023).
Premature death	Premature death is the death of a person under the age of 75 (PHIDU 2023).
Self-harm	Self-harm is a non-fatal act in which a person harms themself intentionally, with varying motives that may or may not include suicidal intent (De Leo et al., 2021).
Social Determinants of Health	The social determinants of health (SDH) are the non-medical factors that influence health outcomes. They are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems (World Health Organisation (WHO n.d.).
Suicidal behaviour	Suicidal behaviour encompasses the full range of behaviours related to suicide, including ideation, *planning,* attempting and suicide itself.
Suicidal ideation	Suicidal ideation describes thoughts of suicide with or without suicidal intent (De Leo et al., 2021).

Appendix B – Steps to calculate adjusted population need

Here are the steps for calculating the adjusted population health need for each LGA within the EMPHN region based on five metrics. The full model adjusted population need incorporates base need (that is, population growth) and equity loadings derived from socio-demographic factors, risk factors, geographic access, and health conditions.

Base need – Population growth (Metric 1):

- **Definition:** The base need represents the proportion of the total projected population in the EMPHN region for the year 2030 that each LGA comprises, with the total base needs across all LGAs equalling 100%.
- **Formula:**

$$\boldsymbol{Base\ Need\ for\ LGA} = \frac{\boldsymbol{Projected\ Population\ of\ LGA}}{\boldsymbol{Projected\ Population\ of\ EMPHN}} \times \mathbf{100}$$

- **Equity loading contribution:**

$$\boldsymbol{Metric\ 1\ Contribution} = \boldsymbol{Base\ Need} \times \mathbf{40\%}$$

Socio-demographic factors (Metric 2):

- **Definition:** This metric reflects the proportion of the LGA population classified into socio-demographic factors (for example, IRSD deciles).
- **Equity loading contribution:**

$$\boldsymbol{Metric\ 2\ Contribution} = \boldsymbol{Socio-Demographic\ Index} \times \mathbf{15\%}$$

Risk factors (Metric 3):

- **Definition:** This metric evaluates the prevalence of risk factors (for example, smoking on a daily basis) associated with poor health outcomes in each LGA.
- **Equity loading contribution:**

$$\boldsymbol{Metric\ 3\ Contribution} = \boldsymbol{Risk\ Factor\ Index} \times \mathbf{15\%}$$

Geographical environment and access (Metric 4):

- **Definition:** This metric assesses accessibility to healthcare services and the geographic distribution of healthcare resources (for instance, primary care workforce shortages).
- **Equity loading contribution:**

$$\boldsymbol{Metric\ 4\ Contribution} = \boldsymbol{Geographic\ and\ Access\ Index} \times \mathbf{15\%}$$

Health conditions and consequences (Metric 5):

- **Definition:** This metric evaluates the prevalence of health conditions and associated consequences (e.g., hospitalisations).
- **Equity loading contribution:**

$$\boldsymbol{Metric\ 5\ Contribution} = \boldsymbol{Health\ Conditions\ Index} \times \mathbf{0.15}$$

Adjusted population need (based on metric 1 to 5):

- **Weighting:**
  - Base need is weighted at 40%.
  - Each equity loading metric is weighted at 15% (a total of 60%).
- **Formula:**

$$\boldsymbol{Adjusted\ Population\ Need}\ (\%) = (\boldsymbol{Base\ Need} \times \mathbf{40\%} + \boldsymbol{Socio-Demographic\ Index} \times \mathbf{15\%} + \boldsymbol{Risk\ Factor\ Index} \times \mathbf{15\%} + \boldsymbol{Geographic\ and\ Access\ Index} \times \mathbf{15\%} + \boldsymbol{Health\ Conditions\ Index} \times \mathbf{0.15}) \times \mathbf{100}$$

Percentage change calculation:

To calculate the percentage change from the base after adjustments:

- **Formula:**

$$\boldsymbol{Percentage\ Change} = \frac{\boldsymbol{Adjusted\ Population\ Need - Base\ Need}}{\boldsymbol{Base\ Need}} \times \mathbf{100}$$

Example application

For each LGA (say, Banyule), follow these steps to calculate the base need, metric contributions, and the adjusted population need:

- **Example (Banyule):**
    - Base need: **7.8%**
    - Metric contributions (equity loadings):
        - Metric 2 contribution = **0.06**
        - Metric 3 contribution = **0.08**
        - Metric 4 contribution = **0.07**
        - Metric 5 contribution = **0.09**
    - Adjusted population need:

$$\boldsymbol{Adjusted\ Population\ Need} = (\mathbf{7.8\%} \times \mathbf{40\%} + \mathbf{0.06} \times \mathbf{15\%} + \mathbf{0.08} \times \mathbf{15\%} + \mathbf{0.07} \times \mathbf{15\%} + \mathbf{0.09} \times \mathbf{15\%}) \times \mathbf{100} = \mathbf{7.5\%}$$

    - Percentage change:

$$\boldsymbol{Percentage\ Change} = \frac{\mathbf{7.5\% - 7.8\%}}{\mathbf{7.8\%}} \times \mathbf{100} \approx \mathbf{4\%}$$

Note: The **bolded values** are derived from the overall quantitative model. Smaller LGAs may have higher equity loadings because these adjustments are calculated based on relative index averages across metrics rather than population size. This approach can enhance the equity adjustments for smaller LGAs, potentially affecting the share available to larger LGAs. Consequently, while larger LGAs may have greater overall need, their adjusted equity loadings might appear lower if smaller LGAs receive a substantial portion of the adjustments.

Appendix C - Data limitations

Table 29. Summary of main HNA data sources and quality.

Data sources	Description	Data quality (strengths and limitations)
Comparative need		
2021 Census, 2022 ERP (ABS)	The Australian census is the most comprehensive snapshot of the country and tells the story of how we are changing. It occurs every 5 years. Estimated resident population (ERP) is the official estimate of the Australian population.	✓ Comprehensiveness and breadth; the ABS collects and publishes a wide range of data on a variety of topics and produces high quality statistics that undergo a rigorous quality assurance process. ✗ Suppression and aggregation methods are used to protect data privacy; however, data is not always disaggregated to a fine enough level. Some data may take a long time to release and may not always be up to date.
VEMD, VAED (DH)	The Victorian Emergency Minimum Dataset (VEMD) comprises de-identified demographic, administrative and clinical data detailing presentations at Victorian public hospitals with designated emergency departments. The Victorian Admitted Episodes Dataset (VAED) provides a comprehensive dataset of the causes, effects and nature of illness, and the use of health services in Victoria.	✓ Rigorous quality assurance processes to protect the integrity of health data in key dataset; monitors and improves data controls in health services. ✗ The VEMD and VAED datasets lack information on gender diversity, potentially misrepresenting the true gender make-up of the region area. Some data may be outdated or incomplete.
Social Health Atlas (PHIDU)	The Public Health Information Development Unit (PHIDU) provides detailed data on the health of Australians and the SDH outcomes at national and regional levels.	✓ Comprehensiveness and breadth of health and social indicators. Longitudinal data allows monitoring over time. ✗ Data gaps and delays, data may not cover all the topics of interest; Some data may include selection bias such as survey data.
PHMC-MDS	A system developed by the Australian Government system, managed by PHNs	✓ Comprehensive and diverse range of data on mental health including clinical data.

(EMPHN)	to collect information about the delivery of primary mental health care services in Australia, including Head to Health and Support Connect.	✗ Potential gaps and biases due to representing patients within commissioned services (that is, not representative of all the mental health services in EMPHN).
POLAR **(general practice)**	Data is representative of general practices within the region. However, it does not encompass all practices within the EMPHN region area.	✓ Provides general practice data at regional levels; easy to interpret and visualise data. ✗ The report is based on data from 84% of the general practices in the EMPHN region, which provide anonymised data monthly about their patients, tests administered, diagnoses and prescribed medications using the POLAR system. ✗ Free text information (for example, demographics such as country of birth) cannot be analysed; data does not account for patients who have seen multiple GPs in the time period.
Community and Health Service Provider Engagement (Felt, Expressed and Normative Need)		
Survey	A community and health provider survey with closed-ended questions and free text.	✓ Provides data from many people ✗ Survey responses are self-reported, which may introduce bias and affect the accuracy of the results. ✗ There was no representation from residents of Murrindindi LGA, and low representation from Mitchell LGA and from multicultural and ethnically diverse and LGBTIQ+ individuals. The health provider survey had a low response rate. ✗ The surveys allowed respondents to skip free-text response questions, resulting in some missing and incomplete data entries.

Victorian Department of Health data

VAED

• Population health quantitative data was collected and categorised within a male-female gender binary framework and did not account for nonbinary, genderqueer or intersex individuals. This may result in an incomplete representation of gender diversity within the region.

• The diagnosis condition is in the context of a single episode of care, and we are unable to measure readmissions in the same individual.

• LGAs were categorised from postcodes, however, some postcodes belong to more than one LGA. Therefore, the LGA that had a higher postcode population was included. This may have resulted in an overestimation of hospitalisation numbers for the LGA included and an underestimation of hospitalisation numbers for the LGA excluded for the postcode.

VEMD

• The AIHW definition of avoidable ED presentations has been adopted for the purposes of this analysis; however, definitions used by hospitals may differ. Avoidable does not imply inappropriate.

• Quantitative data on population health was collected and categorised within a traditional male-female gender binary framework and did not account for nonbinary, genderqueer or intersex individuals, which may result in an incomplete representation of gender diversity within our region.

• LGAs were categorised from postcodes, however, some postcodes belong to more than one LGA. Therefore, the LGA that had a higher postcode population was included as the LGA. This may have resulted in an overestimation of ED presentation numbers for the LGA included and an underestimation of ED presentation numbers for the LGA excluded for the postcode.

GP and commissioned services data

• EMPHN does not receive data from all general practices across the region, so quantitative analysis of GP data (POLAR) is likely to be underrepresented. Therefore, there is potential selection bias in the GP diagnosis data by LGAs, given there are different ratios of GP clinics that provide data across them.

• Further, the data will not account for patients who have seen multiple GPs in the period. Therefore, single patients could have a single diagnosis reported more than once.

• The diagnosis counts were calculated as the number of patients by selected health condition. Patient data is for residents of the EMPHN region, based on patient postcode. Diagnoses include only those where a patient had a valid diagnosis during a GP clinic visit between 1 January 2023 and 31 December 2023, where that data was received through the POLAR system by EMPHN.

• The GP data used doesn't account for comorbidities across conditions, the aggregated disease incidence may be overestimated.

• POLAR GP data was collected and categorised within a male-female gender binary framework and did not account for nonbinary, genderqueer or intersex individuals which may result in an incomplete representation of gender diversity within region.

• The availability and reliability of publicly accessible data can vary. Information may have potential lag times on creating up-to-date service data and may lack the detail required to obtain a comprehensive and reliable view of all variables for all services.

• Service mapping is point-in-time due to ongoing change in service provision.

• Lack of wait time information is also a factor.

• The POLAR GP data records the cultural and linguistic diversity of the patients in free text fields that lack standardisation. The absence of reliable information on the patients' cultural and linguistic backgrounds is a significant barrier to analysing this data.

ABS Census data

ABS census 2021 data was collected and categorised within a traditional male-female gender binary framework and did not account for nonbinary, genderqueer or intersex individuals, which may result in an incomplete representation of gender diversity within the region.

Urban Observatory dashboard

• When matching SA1 regions from the Observatory dashboard to SA2-level partial LGAs from the ABS for calculating population rates, a small number of SA1 codes are absent in the Observatory dashboard data. This absence affects the completeness of the analysis.

Head to Health

• The Head to Health dataset includes a small number of inaccurate assessment- and referral-derived levels of care (specifically, levels 2+, 3+, and 4+). As these levels do not accurately reflect the true level of care, they will be excluded from the analysis to ensure the integrity and reliability of the findings.

Stepped care

• The Stepped Care dataset includes a small number of inaccurate assessment-derived levels of care (specifically, levels 2+, 3+, and 4+). Consequently, these levels will be excluded from the analysis, as they do not precisely reflect the true level of care.

Qualitative data

• There is a limited amount of qualitative data available. While a quantitative survey was conducted with some open-ended free-text questions, the scarcity of qualitative insights made it challenging to triangulate data for prioritisation.

Appendix D – Prioritisation process

Stage 1. Population health needs assessment

1.1 Data source identification, indicator selection, analysis and assessment (HNA) using the NWMPHN HNA Framework.

Analysis Metric 1-5 and quantification Model

Community and service provider consultation insights

1.2 Data triangulation and synthesis of comparative, felt/ expressed and normative need to construct statements of need.

Statements of need (full list) and **supporting evidence** organised within the priority streams (Appendix E)

Aged care | *AOD* | *Health Conditions* | *Mental health and suicide prevention* | *Primary health care*

Stage 2. Prioritisation of need and opportunities for improvement

2.1 Consultation with SMEs to prioritise long list of needs within streams considering **equity, magnitude** and **urgency.**

2.2 Identification of change ideas to address each statement of need. Ideas assessed using selection criteria: **PHN remit (5Cs)**, **partner organisations, resourcing, feasibility, existing programs or initiatives**

Prioritised statements of need and **change ideas** within each priority stream (Section 5)

Aged care | *AOD* | *Health Conditions* | *Mental health and suicide prevention* | *Primary health care*

2.3 Analysis of prioritised statements of need to identify key themes and sub-themes.

Stage 3. Evidence-informed population health planning and resource allocation

3.1 Identification of opportunities for targeted quantitative and qualitative analysis to build the evidence base (QI)

3.2 HNA guides EMPHN strategic planning in addition with an assessment of existing services and capacity, current funding schedules.

3.3 Data-driven allocation of resources including commissioned activities and implementation of activities and other initiatives in a coordinated, collaborative approach to improve population health

Stage | *Process* | *Output*

2.1 Prioritising statements of need

In collaboration with SMEs, the following three guiding principles were used to prioritise a comprehensive list of statements of need within the five priority streams identified from the HNA.

Criteria	Description
1. Equity	Does need exist at a higher degree among vulnerable populations or sub-groups?
2. Magnitude (scale)	What proportion or relative size of the population is affected? What proportion of the health system are affected? How widespread is the issue (geographic reach)?
3. Urgency (severity)	The potential impact of a health condition on an individuals' health and wellbeing and the consequences of delayed intervention or care. The potential impact of an issue on a health services ability to deliver accessible, safe and appropriate care.

2.2 Assessment of change ideas

Up to three change ideas (i.e., an initiative or quality improvement process) were identified as a group to address the statement of need. The following criteria were applied to each change idea that was identified and developed in the Prioritisation workshop.

Criteria	Description
1. Acceptability	The proposed change idea must meet **all three** criteria to be deemed acceptable: • **Effectiveness:** Will this idea achieve its intended outcome? (Yes /N) • **Appropriateness:** Is the idea suitable when considering the circumstances or target population group? (Y /N) • **Ethical:** Does the idea uphold values such as honesty, integrity and respect? (Y /N)
2. Remit	An assessment of whether the change idea is within the scope of EMPHN (Y/ N) based on PHN roles and functions as a *Communicator, Champion, Coordinator, Commissioner, Capability builder.*
3. Partner organisations	At least **one partner organisation or agency** should be identified. (e.g., local government, community organisation)
4. Resourcing	Refers to the level of resourcing is required to achieve the outcome (**high, medium, low**). Consider existing or needed workforce/ staffing, health infrastructure, budgeted costs, and scale (e.g., is the idea localised or across PHN region)?
5. Existing programs or initiatives	Identification of an example of any similar existing programs or initiatives?

Appendix E - Full list of identified health and service needs

Table 30: Full list of identified health and service priority areas and statements of need.

ID #	Statement of Need	Data type
Priority Area: Aged care		
Sub-stream: 1.1 Workforce		
1.1.1	Increase GP engagement in aged care to meet demand in older adults requiring health care.	Quant (POLAR) Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers) Qual/Felt,Exp (Community) Quant (VAED) Quant (ABS) Quant/Normative (Health services providers)
1.1.2	Attract & retain nurses in aged care and allied health practitioners to reduce workforce shortages.	Quant HeaDS UPP (DHAC)
1.1.3	Improve workforce competency among nurses and case workers for complex aged care.	Quant/Normative (Health services providers) Quant (ABS) Quant HeaDS UPP (DHAC)
1.1.4	Improve cultural competency of aged care workforce.	Quant/Felt,Exp (Community)
Sub-stream: 1.2 System		
1.2.1	Improve post-discharge pathways from hospital and aged care coordination.	Quant/Felt,Exp (Community) Quant (VEMD)
1.2.2	Reduce emergency department dependence of aged care.	Quant (VAED) Quant/Felt,Exp (Community)
1.2.3	Improve care coordination driven through RACH (residential aged care facilities).	Quant HeaDS UPP (DHAC)
1.2.4	Improve integration of chronic condition management in aged care.	Quant/Normative (Health services providers) Quant (ABS) Quant (VEMD) Quant (VAED)
1.2.5	Improve affordability of healthcare in aged care.	Quant (MBS) Qual/Felt,Exp (Community)
1.2.6	Improve data quality and collection processes to address gaps in knowledge relating to demographic diversity, intersectional data, program effectiveness, and lead indicators.	Qual/Normative (WM WM HSP)
Sub-stream: 1.3 Programs / Services		
1.3.1	Increase preventative measures for common causes of hospitalisation & ED presentations (e.g. pain issues, vaccine-preventable conditions).	Quant (VAED) Quant (VEMD)
1.3.2	Increase targeted programs(/services) (e.g., fall prevention, physical activity, nutrition).	Quant (PHIDU)
1.3.3	Greater access to social supports.	Quant (VAED) Quant (VEMD)
1.3.4	Increase gender-specific /targeted aged care programs/ approaches to improve health outcomes (e.g., mental health, arthritis, asthma in females; diabetes, heart disease in males.).	Quant (ABS) Quant (POLAR) Quant (VAED)

Priority Area: Alcohol and other drugs		
Sub-stream: 2.1 Prevention and treatment management		
2.1.1	Effective preventative support for people who may be experiencing harmful AOD use.	Quant (VAED) Quant (VEMD)
2.1.2	Increase access and awareness of AOD treatment services.	Quant (Turning Point) Quant (Service Mapping) Quant (PHIDU)
2.1.3	Improve accessibility and awareness of AOD services and support for people with mental health conditions to minimise negative health outcomes.	Quant (VAED) Quant (VEMD) Quant (POLAR)
2.1.4	Enhance services and support availability for people who may be experiencing harmful AOD use to prevent worsening health outcomes.	Quant (VAED) Quant (VEMD) Quant (Service Mapping)
2.1.5	Improve awareness and access to culturally appropriate community-based mental health and social support services to prevent mental ill health and AOD use, and manage early symptoms in multicultural and First Nations communities.	Quant (ABS) Quant/Felt,Exp (Community) Prioritisation workshop SMEs
Sub-stream: 2.2 Harm reduction and minimisation		
2.2.1	Improve crisis services and intervention strategies for people who may be experiencing harmful AOD use.	Quant (VAED) Quant (VEMD) Quant (Service Mapping)
2.2.2	Improve outreach services which offer accessible, client-centred, evidence-based harm reduction services to people who may have harmful use of AOD.	Quant (VAED) Quant (VEMD)
Sub-stream: 2.3 Care and recovery		
2.3.1	Increase care and recovery coordination for people who may be experiencing harmful AOD use, to prevent/mitigate negative health outcomes	Quant (VAED) Quant (VEMD) Quant (Service Mapping) Prioritisation workshop SMEs
2.3.2	Improve integrated care at the community level to reduce the risk of co-occurring mental health and harmful use of AOD.	
2.3.3	Enhance services tailored to support alcohol use care and recovery.	Quant (VAED) Quant (VEMD) Quant (Service Mapping)
2.3.4	Improve continuity of care for people who may be experiencing harmful alcohol use.	
2.3.5	Additional inpatient services/facilities for people who may be experiencing harmful alcohol use.	
2.3.6	Capacity building in community-based treatment services / facilities to alleviate some of the inpatient treatment.	
Priority Area: Health conditions		
Sub-stream: 3.1 Prevention and early detection		
Preventative measures		
3.1.1	Increase and promote disease prevention initiatives targeting behavioural and environmental risk factors to reduce the prevalence of chronic conditions. This includes culturally appropriate community-based programs for people who speak a language other than English and for First Nations communities.	Quant (ABS) Quant (POLAR) Quant (PHIDU) Quant (AUO, 2021) Quant (VAED) Quant/Felt,Exp (Community)
3.1.2	Increase/promote disease prevention initiatives/programs targeting behavioural risk factors (e.g., smoking, physical inactivity, healthy eating) and environmental factors (e.g. lack of access to healthy eating) to reduce the prevalence of cardiovascular/heart disease and diabetes.	Quant (ABS) Quant (POLAR) Quant (PHIDU) Quant (AUO, 2021) Quant/Normative (Health services providers)
3.1.3	Increase/promote disease prevention initiatives/programs targeting behavioural risk factors and environmental factors to reduce the prevalence of arthritis.	Quant (ABS) Quant/Felt,Exp (Community)

3.1.4	Increase/promote disease prevention initiatives/programs targeting behavioural risk factors and environmental factors to reduce the prevalence of dementia.	Quant HeaDS UPP (DHAC)
Early detection		
3.1.5	Increase participation in cancer screening programs to ensure early detection and intervention, reducing mortality and improving health outcomes.	Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers) Quant (POLAR) Quant (PHMC-MDS) Quant (VEMD)
3.1.6	Increase diagnostic testing to detect chronic conditions early and provide timely interventions, reducing disease progression and complications (including CVD, pain and dementia)	Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers) Quant (PHMC-MDS)
Sub-stream: 3.2 Chronic disease management		
Early intervention		
3.2.1	Increase access to early intervention health programs to reduce the burden of cardiovascular disease and preventable deaths.	Quant (POLAR)
3.2.2	Increase access to early intervention health programs to reduce the burden of chronic kidney diseases.	Quant (VAED)
3.2.3	Increase access to early intervention health programs to manage pain-related conditions and reduce reliance on acute care services.	Quant (VEMD)
Continuous care / care coordination / education		
3.2.4	Increase access to early intervention health programs, such as lifestyle changes, and ongoing primary care management of chronic conditions, including improved and multidisciplinary care coordination, to reduce the burden of chronic diseases, preventable deaths and manage complex or comorbid health conditions.	Quant (ABS) Quant (VEMD) Quant/Normative (Health services providers)
3.2.5	Ongoing management of cardiovascular disease and diabetes including lifestyle changes and improved care coordination/multidisciplinary care to reduce deterioration of condition and morbidity.	Quant (VAED) Quant/Felt,Exp (Community) Quant (Service Mapping) Quant (POLAR)
3.2.6	Ongoing management of respiratory disease (Including COPD and asthma) including lifestyle changes and improved care coordination/multidisciplinary care to reduce deterioration of condition and morbidity.	Quant (POLAR) Quant (ABS) Quant (VAED)
3.2.7	Ongoing care management of arthritis/osteoporosis and improved care coordination/multidisciplinary care to reduce deterioration of condition and morbidity.	Quant (VEMD) Quant (VAED) Quant HeaDS UPP (DHAC)
3.2.8	Ongoing care management and improved care coordination to reduce deterioration/disease progression of dementia.	Quant HeaDS UPP (DHAC)
3.2.9	Ongoing care and symptom management of iron deficiency anaemia to alleviate the demand for acute healthcare systems.	Quant (Service Mapping) Quant (VEMD)
3.2.10	Improve care coordination, symptom management of pain-related conditions to decrease the reliance on emergency healthcare utilisation.	Quant (VAED)
3.2.11	Increase access and coordinated care with culturally aware or culturally diverse providers for people from diverse backgrounds for their chronic conditions.	Quant (VAED) Quant/Normative (Health services providers)
3.2.12	Build GP capability to manage complex, comorbid health conditions.	Quant/Normative (Health services providers)
3.2.13	Increase access to specialised care for people living with cancer.	Quant (VAED) Quant (VEMD)

3.2.14	Focus on patient, guardian and carer education to improve health literacy and awareness of primary care alternatives for timely management of health conditions.	Quant/Felt,Exp (Community) Quant (ABS) Quant (VAED) Quant (VEMD)
Existing gaps		
3.2.15	Strengthen data collection processes to capture demographics that are currently underrepresented to increase understanding and address the chronic health needs of priority populations (LGBTIQ+ population, people experiencing homelessness or who are marginally housed, refugees and migrant communities).	Qual/Normative (WM HSP)
Sub-stream: 3.3 Acute conditions		
General acute conditions		
3.3.1	Focus on patient/carer education and symptom control of acute infections to prevent further complications in the general population and priority populations (including older adults and females).	Quant (VAED) Quant (VEMD)
3.3.2	Improve access and increased awareness to after-hours/urgent care clinics for timely management of acute injuries and infections in the general population and priority populations (including children).	Quant (VEMD)
3.3.3	Increase access to dental health care specialists to manage dental conditions	Quant (VAED) Quant HeaDS UPP (DHAC)
Sexual and reproductive health		
3.3.4	Increase awareness to undertake regular STI testing and increase access to HPV vaccinations.	Quant (DH) Quant (AIHW)
3.3.5	Greater access to after-hours/urgent care relating to maternal-care, sexual health for females.	Quant (VEMD)
Priority area: Mental health and suicide prevention		
Sub-stream: 4.1 Primary prevention and early intervention of ill-mental health		
4.1.1	Improve awareness and access to community-based MH and social support services to prevent ill-mental health and manage early symptoms for the general population and at-risk populations (including females, teenagers aged 10-19 and adults).	Quant (ABS) Quant (POLAR) Quant/Felt,Exp (Community) Quant/Normative (Health services providers)
4.1.2	Improve awareness and access to culturally appropriate community-based MH and social support services to prevent ill-mental health and manage early symptoms targeted to Aboriginal and Torres Strait Islander people.	Quant (ABS) Quant (POLAR) Quant/Felt,Exp (Community)
4.1.3	Improve access and early intervention for family domestic violence support to prevent onset of ill-mental health in general population and priority populations (including females aged 20-64).	Quant (Crime Stats Agency)
Sub-stream: 4.2 Secondary prevention and management of low intensity Mental Health conditions		
4.2.1	Increase community-based and lived experience workforce capacity and availability to provide equitable early assessment and ongoing management of mental health conditions and suicide prevention.	Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers) Prioritisation workshop SMEs
4.2.2	Improve access to mental health support for management and treatment of anxiety.	Quant (POLAR) Quant (PHMC-MDS) Quant (VEMD) Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers)
4.2.3	Preventive mental health support for managing depression in individuals with chronic conditions.	Quant (PHMC-MDS)

		Quant/Normative (Health services providers) Quant (POLAR)
4.2.4	Build the capability and capacity of the dedicated suicide prevention lived experience workforce and deploy a suicide prevention lens in AOD and mental health care.	Prioritisation workshop SMEs
Sub-stream: 4.3 Management and treatment of high intensity and complex Mental Health conditions		
Access to timely MH care to reduce ED presentations		
4.3.1	Access to community-based specialist mental health care for at-risk cohorts to provide early intervention and management and reduce need for hospital care for high-prevalence episodes, especially after-hours.	Quant (VEMD) Quant (VAED) Quant/Felt,Exp (Community) Quant (Service Mapping) Prioritisation workshop SMEs
4.3.2	Increase access to community-based primary care and management of behavioural disorders in at risk cohorts (children aged 0 to 9, teenagers/adolescents 10-19).	Quant (POLAR)
4.3.3	Increase GP capability and confidence to provide care for children with complex mental health disorders.	Quant (POLAR)
4.3.4	Increase access to after-hours mental health and AOD care for timely management of mental health and AOD challenges.	Quant (VEMD) Quant (VAED)
4.3.5	Increase access to after-hours community-based specialist / crises mental health care for timely management of acute or complex mental health conditions.	Quant (VAED) Quant HeaDS UPP (DHAC) Quant (Service Mapping)
Management of acute / complex Mental Health conditions		
4.3.6	Enhance GP capability to assess and provide continuous care for eating disorders.	Quant (VEMD) Quant (VAED)
4.3.7	Expansion of primary care outreach to provide early /continuous assessment and management of delirium in adults (60+).	Quant (VEMD) Quant (VAED)
4.3.8	Build primary care workforce capability and confidence to provide care for high intensity/severe/ complex MH conditions.	Quant (VAED) Quant/Normative (Health services providers) Research / Literature
4.3.9	Strengthen research / data software capability to gather/analyse effectiveness of mental health needs and treatment effectiveness (patient experience and outcomes).	Qual/Normative (WM HSP)
4.3.10	Improve access to community-based specialist care for acute management of chronic and complex mental health disorders (including schizophrenia and acute/transient psychotic disorders).	Quant (VEMD) Quant (VAED) Quant HeaDS UPP (DHAC) Quant (Service Mapping)
4.3.11	Strengthen data collection efforts to gather specific socio-demographic data for priority populations (LGBTIQ+, Aboriginal and Torres Strait Islander people, culturally diverse communities, refugee/migrant communities, people experiencing homelessness) and increase understanding of mental health needs within these communities.	Qual/Normative (WM HSP)
Sub-stream: 4.4 Suicide prevention		
Suicidal ideation and self-harm		
4.4.1	Increase access to community-based support for individuals in suicidal distress, including preventative care and early intervention.	Quant (Service Mapping) Quant (VEMD) Quant (VAED) Prioritisation workshop SMEs
4.4.2	Increase access to community-based high intensity mental health care targeting at risk populations (including females, people aged 15-24, older adults 75+) to provide preventative care and early intervention/referral for self-harm	Quant (Service Mapping) Quant (VEMD) Quant (VAED)

4.4.3	Strengthen data collection efforts to gather specific socio-demographic data for underrepresented groups to increase understanding of mental health needs and suicide prevention activities that meet the needs of LGBTIQ+ cohorts, First Nations communities, former and current ADF members, refugee and migrant communities.	Qual/Normative (HSP)
Deaths due to suicide		
4.4.4	Increase access to crisis/ high intensity care and specialised mental health services in community-based settings targeting at risk cohorts (including males, older adults aged 85+ and Aboriginal males to reduce death by suicide.	Quant (AIHW)
Priority Area: Primary health care		
Sub-stream: 5.1 Access and prevention		
Barriers to access		
5.1.1	Increase access to affordable primary care and allied health services to provide early assessment, preventative care and referral in the general population.	Quant (AUO, 2021) Quant (MBS) Qual/Felt,Exp (Community) Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers)
5.1.2	Increase access to affordable primary care and allied health services to provide early assessment, preventive care and referral in at-risk cohorts including low socio-economic individuals.	Quant (AUO, 2021) Quant (MBS) Quant/Felt,Exp (Community) Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers)
5.1. 3	Increase access to flexible models of care to improve reach to LGBTIQ+ cohorts, multicultural communities, Aboriginal and Torres Strait Islander people, and people experiencing homelessness.	Quant/Normative (Health services providers) Quant/Felt,Exp (Community)
5.1. 4	Improve culturally safety of mainstream primary care settings to increase access for at-risk cohorts (multicultural communities and Aboriginal and Torres Strait Islander people).	Quant/Felt,Exp (Community) Quant (MBS)
5.1. 5	Increase health promotion and awareness to improve primary care utility to at-risk cohorts (multicultural communities).	Quant (MBS)
5.1. 6	Improve awareness and access to community-based MH and social support services to prevent ill-mental health and manage early symptoms (general population).	Quant/Felt,Exp (Community) Qual/Normative (GP) Quant (MBS) Quant/Normative (Health services providers)
Primary health care workforce capacity		
5.1. 7	Incentivise primary care for GPs, nursing, and allied health providers as a career, thereby increasing availability of the primary care workforce.	Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers) Quant/Felt,Exp (Community) Qual/Normative (GP)
5.1. 8	Increase access to urgent primary care to improve timeliness of care (general population).	Quant (VEMD) Qual/Felt,Exp (Community) Quant/Normative (Health services providers) Quant (ABS)
5.1. 9	Increase access to community-based specialist care to provide timely intervention, reducing disease progression and complications (general population).	Quant/Felt,Exp (Community) Quant HeaDS UPP (DHAC)
5.1.10	Increase access to community-based specialist care to meet complex needs for at-risk cohorts (children 0-9, young females 20-39).	Quant (VEMD) Quant/Felt,Exp (Community)

		Quant/Normative (Health services providers)
Sub-stream: 5.2 Assessment and provision of quality care		
5.2.1	Increase primary care workforce capability to provide effective, person-centred care for management of chronic and acute conditions (general population).	Quant (VAED) Quant (ABS)
5.2.2	Increase primary care workforce capability to provide effective, person-centred care for management of health conditions in at-risk cohorts (Older adults).	Quant (VAED) Quant/Normative (Health services providers)
5.2.3	Increase primary care workforce capability to provide effective, person-centred care for management of health conditions in at-risk cohorts (children and adolescents 0-19).	Quant (VAED)
5.2.4	Increase primary care workforce capability to provide effective, person-centred care for management of health conditions in at-risk cohorts (multicultural communities).	Quant (VAED) Quant/Felt,Exp (Community)
5.2.5	Increase primary care workforce capability to provide gender-specific, effective, person-centred care for management of health conditions in at-risk cohorts (females for sexual and reproductive health; males for diabetes, heart diseases and chronic kidney disease).	Quant (VAED) Quant/Normative (Health services providers) Quant (ABS)
5.2.6	Increase cultural competency of workforce in mainstream services.	Quant/Felt,Exp (Community) Quant/Normative (Health services providers)
Sub-stream: 5.3 Integrated, holistic and continuous care		
Communication and care coordination		
5.3.1	Improve integrated care pathways between primary care and ACCHOS services to provide inclusive, safe and holistic approach to continuous / follow-up care for mental health and SEWB (Aboriginal and Torres Strait Islander people).	Quant (ABS) Qual/Normative (GP) Quant/Felt,Exp (Community) Quant/Normative (Health services providers)
5.3.2	Improve collaborative partnerships and shared models of care between primary, community and acute care.	Qual/Felt,Exp (Community) Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers) Qual/Normative (GP)
5.3.3	Increase GP support to provide appropriate referrals to acute care.	Qual/Felt,Exp (Community) Quant HeaDS UPP (DHAC) Quant/Normative (Health services providers) Qual/Normative (GP)
5.3.4	Improve referrals between primary and acute care to increase access to timely shared-care.	Quant (MBS) Quant HeaDS UPP (DHAC) Quant (AUO, 2021) Quant (ABS)
5.3.5	Improve referrals between primary and acute care to increase access to timely shared-care (for regional and remote areas).	Quant (MBS) Quant HeaDS UPP (DHAC) Quant (AUO, 2021) Quant (ABS)
5.3.6	Improve continuity of care between primary care providers and patients to promote holistic care.	Quant/Felt,Exp (Community) Qual/Normative (GP)
5.3.7	Improve health sector capability to implement data driven quality improvement to measure patient experience and health outcomes.	Quant/Normative (Health services providers) Qual/Normative (GP)

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