



Australian Government

phn
NORTH WESTERN
MELBOURNE

An Australian Government Initiative



REGIONAL HEALTH NEEDS ASSESSMENT NORTH WESTERN MELBOURNE PHN

AUGUST 2016



North Western Melbourne Primary Health Network (NWMPHN)

Website: www.nwmpnh.org.au

Telephone: (03) 9347 1188

Email enquiries: nwmpnh@nwmpnh.org.au

Fax: (03) 9347 7433

Street address:

Level 1, 369 Royal Parade, Parkville, Victoria 3052

Postal address:

PO Box 139, Parkville, Victoria 3052

ABN 93 153 323 436

Acknowledgements

North Western Melbourne PHN acknowledges the people of the Kulin Nation as the Traditional Owners of the land on which our work in the community takes place. We pay our respects to the owners past and present.

North Western Melbourne PHN would like to acknowledge the input of all the individuals and organisations which have contributed information and insights to support the development of this document.

Disclaimer

While the Australian Government Department of Health has contributed to the funding of this material, the information contained in it does not necessarily reflect the views of the Australian Government and is not advice that is provided, or information that is endorsed, by the Australian Government. The Australian Government is not responsible in negligence or otherwise for any injury, loss or damage however arising from the use of or reliance on the information provided herein.

©NWMPHN 2016



TABLE OF CONTENTS

Introduction	1	Health and wellbeing for priority populations	29
Introduction to North Western Melbourne PHN	1	Aboriginal and Torres Strait Islander peoples	29
Introduction to our regional health needs document	1	Culturally and linguistically diverse groups, including refugees	29
Methodology	2	People experiencing homelessness	29
Region overview	3	People with a disability	29
Sub-regional profiles	5	LGBTIQ	29
Determinants of health	8	Service needs	30
Social and economic determinants	9	Health services profile	30
Environmental determinants	11	Workforce profile	33
Behavioural determinants	13	Access to services	34
Health and wellbeing across ages and stages	16	Coordination and integration	35
Perinatal and infancy	16	Conclusions and implications	36
Children	18	Appendices	38
Young people	21	Appendix A: Data tables	38
Adults	24	Appendix B: Bibliography	44
Older adults	27	Appendix C: References	47



ACRONYMS AND KEY TERMS

ABS	Australian Bureau of Statistics
ADIS	Alcohol and Drug Information Service
AIHW	Australian Institute of Health and Welfare
APRA	Australian Prudential Regulation Authority
ATAPS	Access to Allied Psychological Services
ATO	Australian Tax Office
CAGR	Compound annual growth rate (the mean annual growth rate of the population over time)
CALD	Culturally and linguistically diverse
CBD	Central business district
DELWP	Victorian Department of Environment, Land, Water and Planning
DHHS	Victorian Department of Health and Human Services
DTPLI	Victorian Department of Transport, Planning and Local Infrastructure
ED	Emergency department
EGM	Electronic gaming machines
IRSAD	Index of Relative Socio-economic Advantage and Disadvantage
LGA	Local Government Area
LGBTIQ	Lesbian, gay, bisexual, transgender, intersex and queer
MBS	Medicare Benefits Schedule
NHMRC	National Health and Medical Research Council
NWMPHN	North Western Melbourne PHN
PHI	Private health insurance
PPH	Potentially preventable hospitalisations
SA1, SA2, SA3, SA4	Statistical Area Level 1, etc. are geographic areas defined in the Australian Statistical Geography Standard (ASGS). SA1 is the smallest.
SEIFA	Socio-Economic Indexes for Areas
Vic	Victoria
VIF	Victoria in Future 2015 (VIF 2015), the official state government projection of population and households for 2011 to 2051
YLD	Years lived with disability (total number of years spent in less than full health by a specified population over a specified time period)
YLL	Years of life lost

FIGURES

Figure 1: North Western Melbourne PHN's commissioning cycle	1	Figure 23: Total number of Hepatitis B and C notifications (2014)	15
Figure 2: Health planning domains	2	Figure 24: Infant (aged 0-4) 2016 population and % projected growth to 2031 by residential area	16
Figure 3: Map of the North Western Melbourne PHN region, indicating LGA boundaries	3	Figure 25: Child (aged 5-14) 2016 population and % projected growth to 2031 by residential area	18
Figure 4: Population growth by Australian LGA 2005-14	4	Figure 26: Young people (aged 15-24) 2016 population and % projected growth to 2031 by residential area	21
Figure 5: Age population pyramid for the North Western Melbourne PHN and Victoria (2014) – proportion of population by 5 year age group	4	Figure 27: Adults (aged 25-64) 2016 population and % projected growth to 2031 by residential area	24
Figure 6: Number of people in the region, by age group, in 2014 and 2031 (projected)	4	Figure 28: Number and relative proportion of non-fatal burden (Years of Life with a Disability (YLD)), by disease group and age, 2011	25
Figure 7: The determinants of health	8	Figure 29: Older adults (aged 64+) 2016 population and % projected growth to 2031 by residential area	27
Figure 8: Map of Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) by ABS collection district, 2011 (Census)	9	Figure 30: Number of chronic disorders by age-group	28
Figure 9: Proportion of the population that speaks a language other than English at home by LGA, 2011 (Census)	10	Figure 31: Mental health, alcohol and other drug providers in the NWMPHN region, mapped against the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD)	30
Figure 10: Proportion of the population that has low English proficiency by LGA, 2011 (Census)	10	Figure 32: Profile of hospital services	31
Figure 11: Rates of rental and mortgage stress, 2011 (Census)	11	Figure 33: Districts of GP workforce shortage	31
Figure 12: Average wage and labour force unemployment (ABS)	11	Figure 34: After hours emergency department attendances (by SA3), 2013-14	32
Figure 13: EGM losses per adult by IRSAD and Victorian LGA, 2014-15	11	Figure 35: Age standardised utilisation of public and private hospitals	32
Figure 14: Proportion of the population reporting participation in citizen engagement in last year, 2011-2012	12	Figure 36: Taxpayers with private health insurance (by SA4), 2013-14	32
Figure 15: Proportion of the population with work journeys which are by car, 2013	12	Figure 37: Number of general practitioners per 1,000 people by LGA, 2014	33
Figure 16: Proportion of the population reporting that they feel safe walking alone during the night, 2011-2012	12	Figure 38: Number of pharmacies per 1,000 people by LGA, 2015	33
Figure 17: Proportion of the population aged 18+ who are current smokers, 2011	13	Figure 39: Number of allied health sites per 1,000 people by LGA, 2015	33
Figure 18: Proportion of the population aged 18+ that consumed alcohol at least weekly, at levels likely to cause short-term harm –persons, 2011	13	Figure 40: Number of dental services per 1,000 people by LGA, 2015	34
Figure 19: Proportion of the population who do not meet the physical activity guidelines, 2011	13	Figure 41: Attendance at and MBS expenditure on specialist and GP services in the region	34
Figure 20: Proportion of the population who do not meet the dietary guidelines for fruit and vegetables consumption, 2011	14		
Figure 21: Drug usage and possession offences per 1,000 population, 2013-14	14		
Figure 22: Vaccination status by ABS collection district (SA3) by age group (age calculated as at 31 Dec 2015)	15		



TABLES

Table 1: Alcohol and other drug use percentile rates for 15-24 year olds (above 75th percentile in Victoria)	23
Table 2: Screening rates for breast, bowel and cervical cancer in the region by LGA	26
Table 3: Potentially preventable hospitalisations (PPH), 2013-14	31
Table 4: North Western Melbourne PHN priority areas	37
Table 5: Population projections by LGA 2011 to 2031	38
Table 6: North Western Melbourne PHN population by catchment and age group 2014 to 2031	39
Table 7: North Western Melbourne PHN population by age group and catchment 2014 to 2031	40
Table 8: Index of Socio-economic Advantage and Disadvantage (IRSAD), 2011 (Census)	41
Table 9: LGA profile statistics on cultural diversity in the North Western Melbourne PHN region	41
Table 10: LGA profile statistics on employment and economic stress	42
Table 11: LGA profile statistics on lifestyle indicators	42
Table 12: LGA profile statistics on crime, child protection and family violence indicators	43
Table 13: LGA profile statistics on health behaviours	43



INTRODUCTION

Introduction to North Western Melbourne PHN

North Western Melbourne Primary Health Network (NWMPHN) is one of 31 Primary Health Networks (PHNs) established by the Australian Commonwealth Government on 1 July 2015 to:

- increase the efficiency and effectiveness of medical services for patients, particularly those at risk of poor health outcomes and
- improve coordination of care to ensure patients receive the right care, in the right place, at the right time.

NWMPHN commissions services to meet the health needs of people who live, work and seek medical services in its catchment. Population health analysis is a key activity that supports the PHN in developing insights as part of the commissioning cycle, and will occur in an ongoing way as different programs of work move into and through the commissioning cycle.

Introduction to our regional health needs document

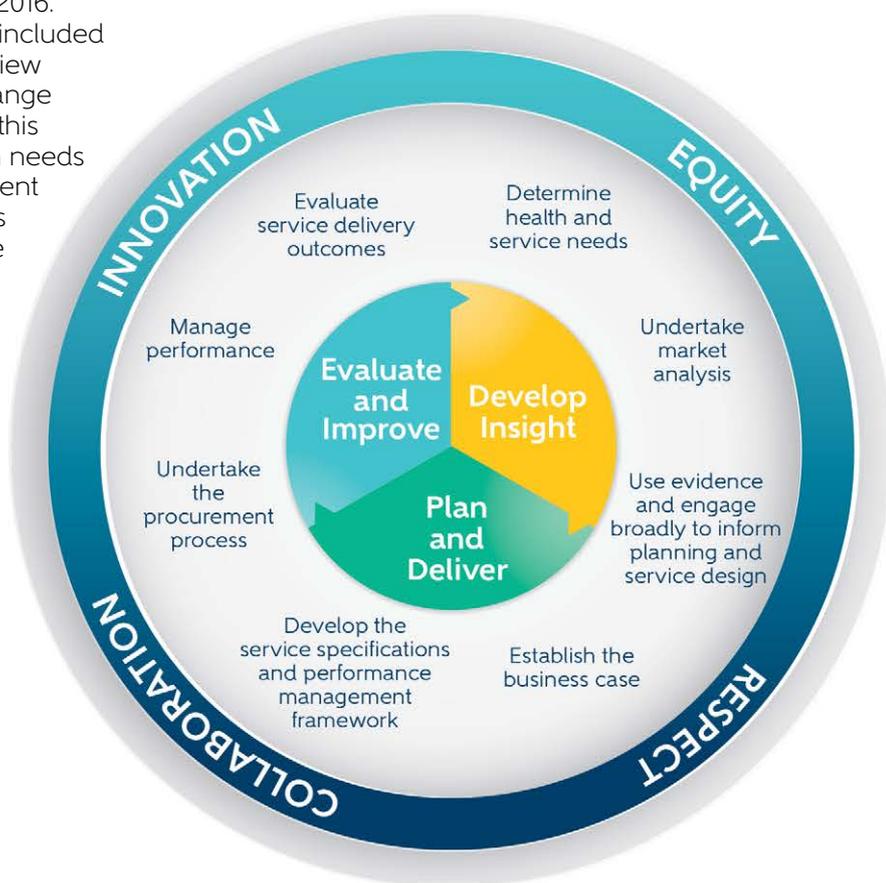
This document aims to develop a shared platform of knowledge and evidence across the region that will inform the work of NWMPHN, and support joint planning and action to meet the health needs of our communities.

NWMPHN submitted an Initial Needs Assessment (INA) to the Commonwealth Government in March 2016. This document contains much of the analysis included in the INA, but also seeks to provide a broad view of health needs which will be of interest to a range of stakeholders across the region. Specifically, this document highlights some of the major health needs in the region, recognising the diversity of different populations and the complexity of the services they use. It is not intended to be an exhaustive catalogue of every health need in the region, but rather a narrative on key trends observed. The following chapters also touch on the significant challenges associated with:

- strong and ongoing population growth in the western and northern corridors, and the associated challenges of developing adequate infrastructure to meet the needs of residents in these areas
- an ageing population
- the increase in rates of major chronic diseases such as diabetes
- the significant diversity across the region
- major variation in socio-economic advantage, even within relatively small geographical areas
- the existence of a complex system of private, public, state, and commonwealth funded organisations, services and programs.

Given the diversity of health needs in the region, an 'ages and stages' approach has been taken to illustrate the health journey throughout the lifecycle. Any analysis of health needs must be rooted in an understanding of some of the broader social, economic, environmental and behavioural determinants that affect the health and wellbeing of our communities. By examining some of the links between social determinants and health outcomes, this report highlights the issues for vulnerable communities in the region, acknowledging that those with the greatest need often face the most difficulty accessing care.

Figure 1: North Western Melbourne PHN's commissioning cycle is one of the tools we use to pursue our strategic objectives



NWMPHN hopes to contribute to positive outcomes for people in our region by working collaboratively with service providers and those planning or involved in delivering care across the region, including local councils, hospitals, general practitioners (GPs) and other providers.

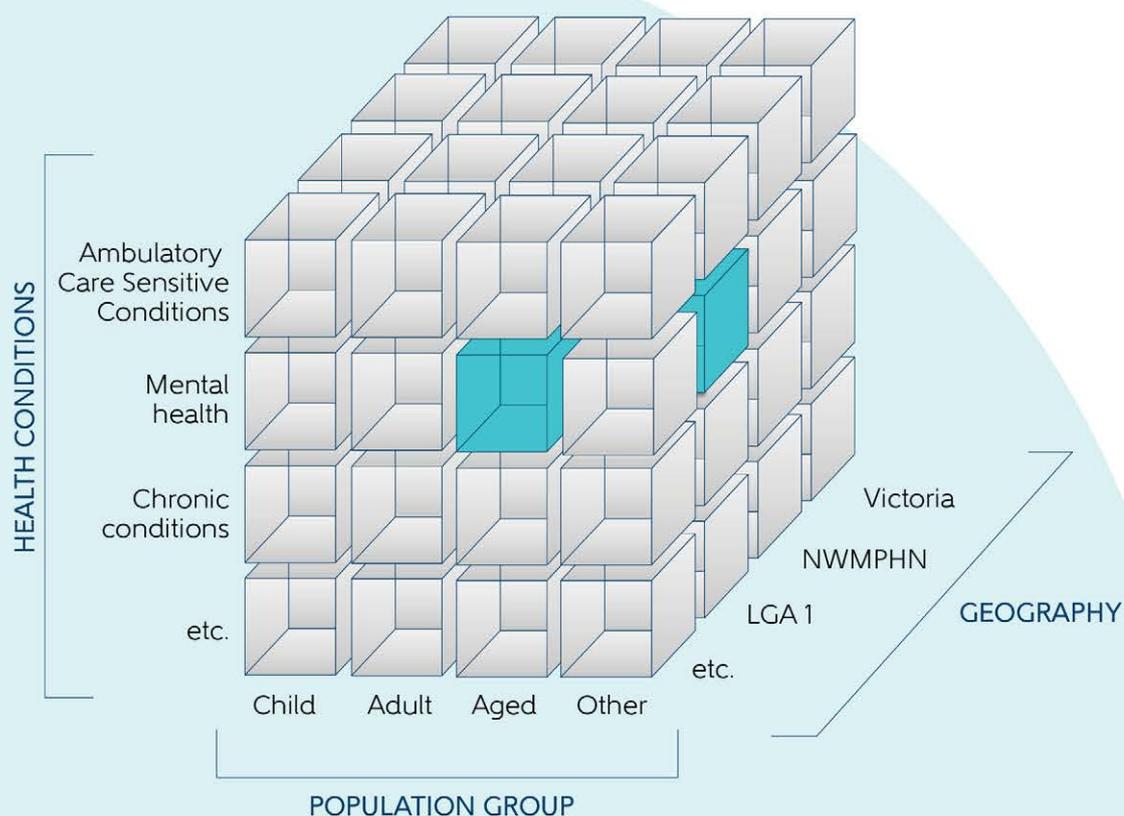
Methodology

This report brings together information from a wide range of sources, including:

- Comprehensive Needs Analyses developed by the former Medicare Locals
- the regional Snapshot published by NWMPHN in 2015
- an Online survey of local providers and stakeholders (April 2016)
- the outcomes from the North Western Melbourne PHN Regional Population Health Planning Co-design Event (April 2016)
- a review of updated data sets and information, including:
 - population projections provided by the Victorian Department of Environment, Land, Water and Planning (DELWP)
 - burden of disease data from the Australian Institute of Health and Welfare (AIHW)
 - disease prevalence and notifications from the Victorian Department of Health and Human Services (DHHS).

Understanding population health needs involves consideration of the complex interaction between population groups, geographical locations, and health conditions (Figure 2). This report considers need from each of these perspectives.

Figure 2: Health planning domains



REGION OVERVIEW

The North Western Melbourne PHN region covers 3,212 km² and stretches from Richmond in the inner eastern suburbs past Bacchus Marsh in the west; from coastal Cocoroc in the south-west to Lancefield and beyond in the peri-urban north (Figure 3). With an estimated population of 1,572,503 in 2014, it is a region of significant geographical, cultural and socio-economic diversity.

The catchment crosses 13 Local Government Areas (LGAs), and includes residential, commercial, industrial and peri-urban geographies. These areas can be grouped into four categories.

Inner city areas, including the LGAs of Melbourne, Yarra and Maribyrnong. This area is characterised by a higher proportion of adults aged 20 to 45 years. There are high proportions of people from culturally and linguistically diverse (CALD) communities, and a relatively large homeless population. Key areas of need reflect this demographic profile, and include services targeting mental health, alcohol and drugs, sexual health, and immunisation rates.

Inner suburban areas, including the LGAs of Darebin, Hobsons Bay, Moonee Valley and Moreland. These areas have high levels of lifestyle related diseases, including type 2 diabetes and heart disease. Key areas of need also include mental health, alcohol and drug, sexual health, and cancer screening.

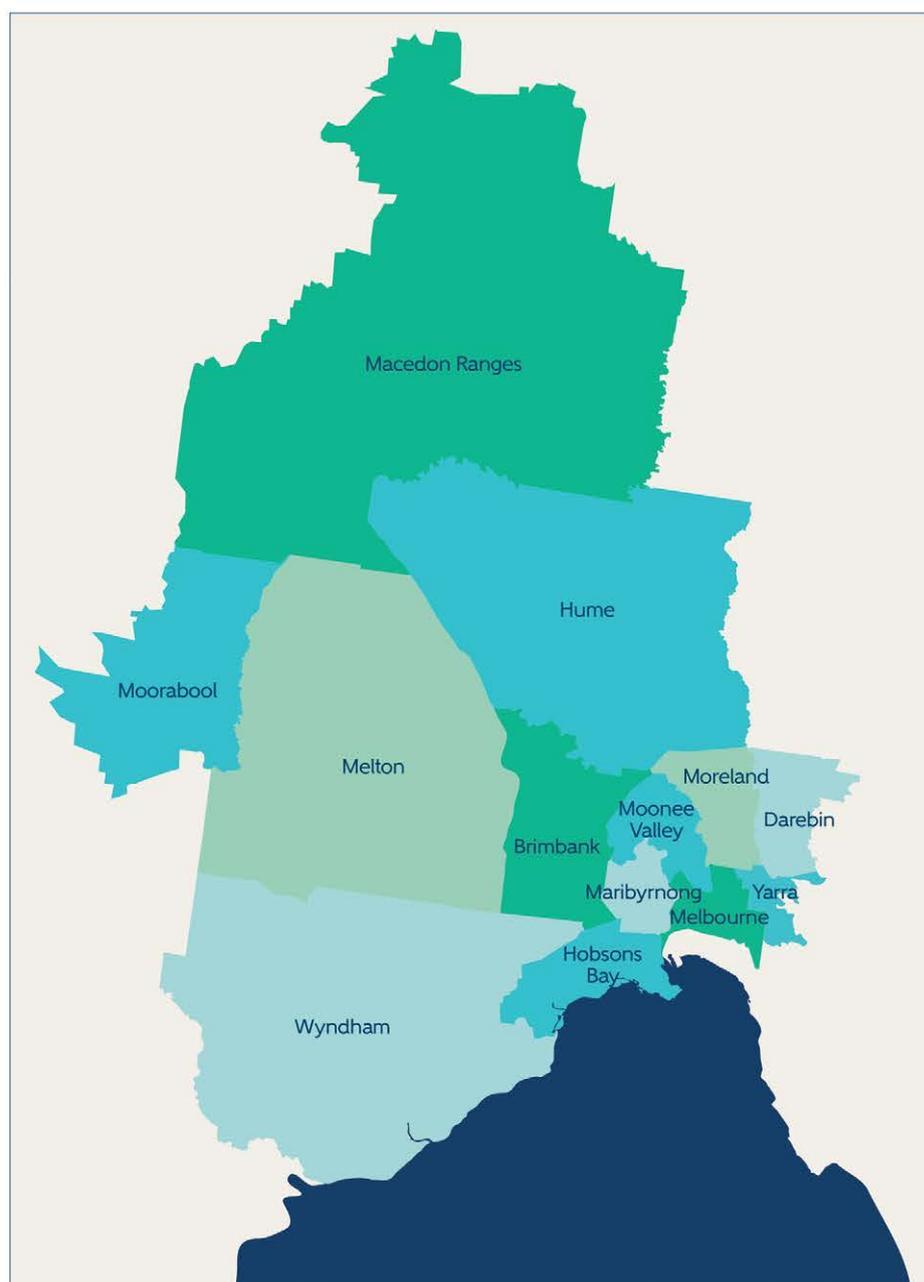
Outer suburban growth corridors, including the LGAs of Hume, Brimbank, Melton and Wyndham. These areas are home to a high number of young families. Figure 4 illustrates that Melton and Wyndham are among the few Australian LGAs that have experienced both high growth in the absolute number of people and high proportional change in overall population, with their population increasing between 80 and 100 per cent in the decade to 2015. In addition to this growth, within these areas are some of the most

socio-economically disadvantaged places in Victoria, scores and correspondingly poor outcomes seen across many determinants of health.

Peri-urban areas, including the (partial) LGAs of Macedon Ranges and Moorabool. The population profile shows a greater proportion of adults aged between 45 and 65 years than in the rest of the region, as well as the rest of Victoria.

Overall, the region has more young people than the Victorian average, with a greater proportion of infants (0 to 4 years) and adults (aged between 20 to 45 years), and a lower proportion of older adults (aged 65 years and over). This is largely associated with the high number of young families in the growth corridors, as well as students and young professionals closer to the Melbourne central business district (CBD). Figure 5 shows these variations in age distribution.

Figure 3: Map of the North Western Melbourne PHN region, indicating LGA boundaries



Sources: Google, 2016; Australian Bureau of Statistics, 2011

The population in the region is expected to grow considerably. By 2031, the population is forecast to increase by 47 per cent to a total of 2,312,644 people. In addition, the population will age. Figure 6 shows this increase in the proportion of older adults throughout the region.

The North Western Melbourne PHN region is home to diverse populations. Diversity presents challenges and opportunities for health service providers to develop and target services to meet the unique needs of individuals and communities.

Aboriginal and Torres Strait Islander peoples

The Wathaurung, Woi wurrung (Wurundjeri), Taungurung, Dja Dja Wurrung and Boonwurrung are the traditional owners of the various parts of the region.

The 2011 Australian census found that 7,608 people identified as being of Aboriginal or Torres Strait Islander descent in the region. Darebin, Wyndham and Hume had the highest populations, and Yarra, Macedon Ranges and Moorabool the lowest.

In terms of age distribution, Aboriginal residents tend to be younger than non-Aboriginal residents across all LGAs.

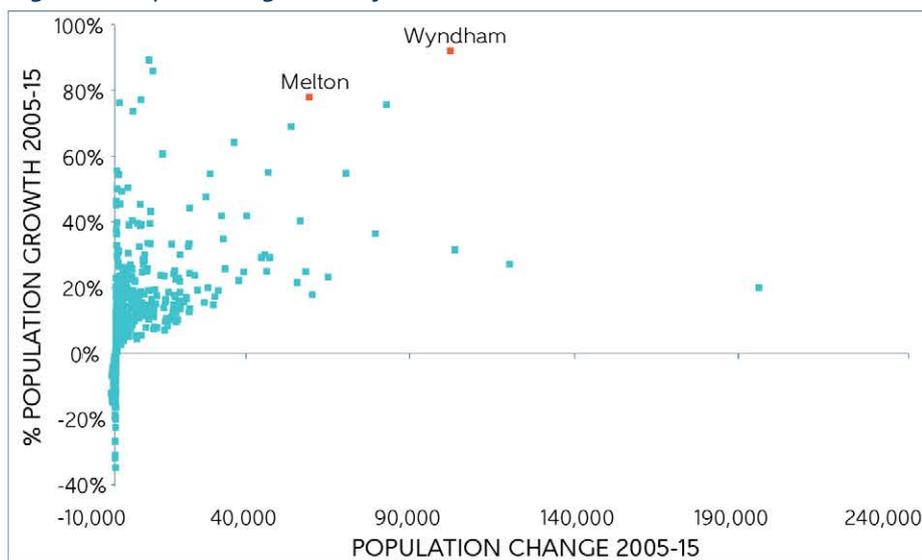
People born overseas

Approximately one third of the population living in the region was born overseas, comprising close to 475,000 people. Of those born overseas, 26 per cent had arrived in Australia within the five years prior to 2011.

Prominent cultural groups include people from India, Vietnam, New Zealand, Greece, Malaysia, Lebanon, United Kingdom, Italy, Philippines, Malta, Turkey and Sri Lanka.

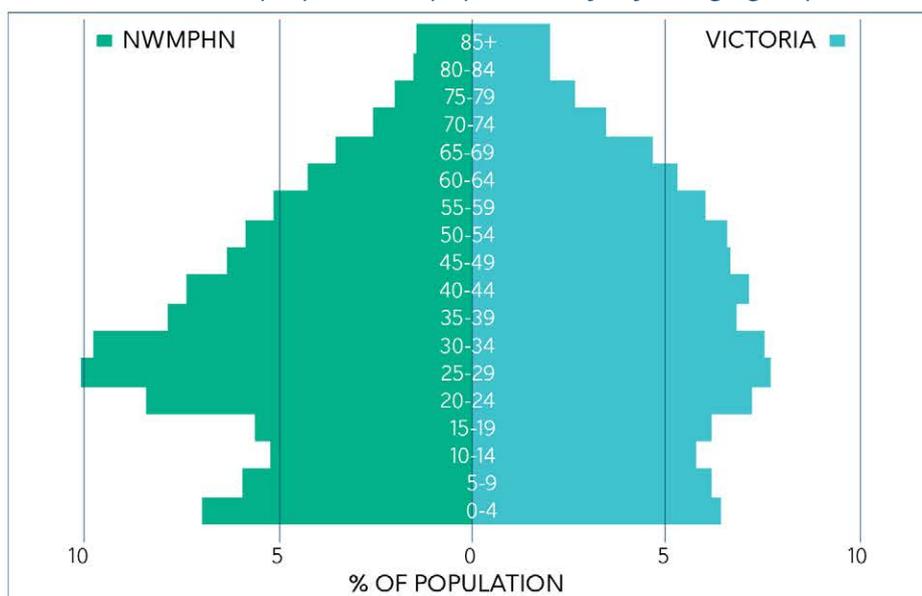
A large range of languages other than English are spoken across the region, with Vietnamese, Arabic, Turkish and Maltese speakers being twice the Victorian average. Some 94,237 people, representing 6.8 per

Figure 4: Population growth by Australian LGA 2005-14



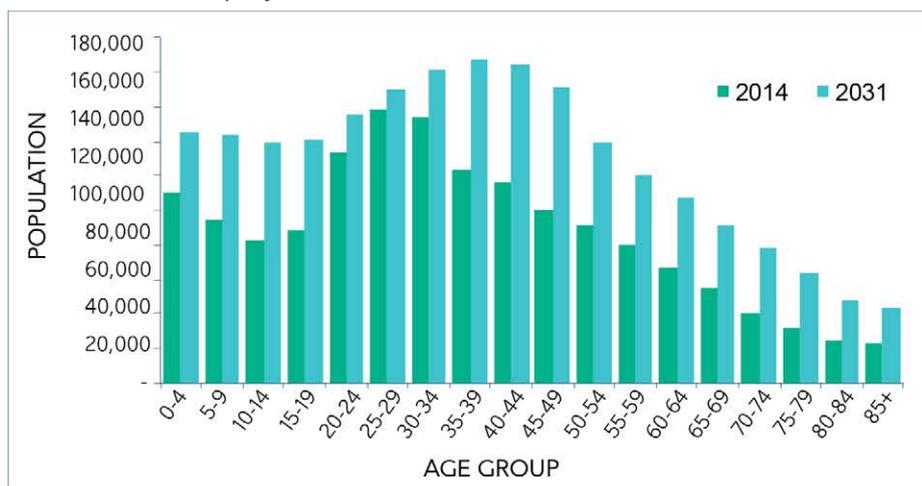
Source: Australian Bureau of Statistics, 2016

Figure 5: Age population pyramid for the North Western Melbourne PHN and Victoria (2014) - proportion of population by 5-year age group



Source: Australian Bureau of Statistics, 2016

Figure 6: Number of people in the region, by age group, in 2014 and 2031 (projected)



Sources: Department of Environment, Land, Water and Planning, 2015; Australian Bureau of Statistics, 2016

cent of the region's total population in 2011, reported having low English proficiency. Accessing services can be particularly complex and challenging for people who have difficulty speaking and understanding English.

Humanitarian arrivals

The region has a high number of humanitarian arrivals, and the pattern of arrivals has changed over time in response to the changing global environment. In particular, the LGAs of Hume, Brimbank, Maribyrnong, Moreland and Wyndham have high numbers of arrivals as a proportion of total population. Recently, people from the countries of Iraq, Afghanistan, Iran, and Burma have comprised more than half of all humanitarian arrivals. Future arrivals may include a larger proportion of people from Syria.¹

Homelessness

The 2011 Census reported that an estimated 7,761 were homeless in the region. This corresponds to a rate of homelessness of 52.9 people per 10,000 population, higher than the Victorian average of 42.6 people per 10,000. The real current figure is likely to be much higher. The LGAs with the highest rates of homelessness are Melbourne, Brimbank and Maribyrnong.²

Melbourne has a relatively large concentration of community services that draw people to the city in search of support, including health, education and housing. Data from the 2011 census indicated that an estimated 1,233 people were homeless in Melbourne. The current number is likely to be much higher.

The justice sector

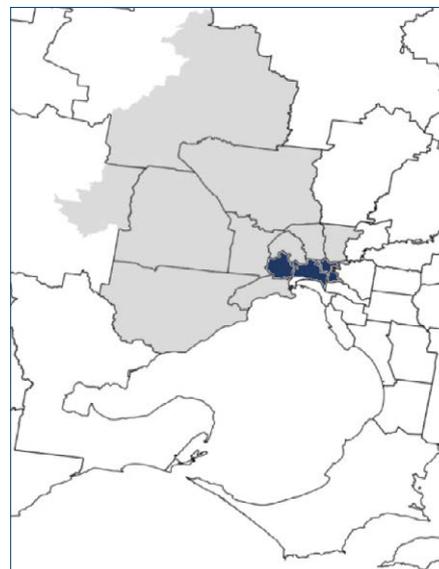
Many of Victoria's justice facilities are located in the west of Melbourne, and the new Ravenhall facility is being established adjacent to the existing Metropolitan Remand Centre and the Dame Phyllis Frost Centre.

The health profiles of prison populations can be very different to the general community. The National Prisoner Health Data Collection reports that people often enter a prison with high rates of mental health problems, certain chronic conditions, and communicable diseases. They also exhibit high rates of alcohol misuse, tobacco use and illicit drug use prior to prison entry. Most prisoners, however, report improvements in their physical and/or mental health during their time in prison.³

Sub-regional profiles

Covering 3,212 km² and an estimated 1,572,503 people in 2014, the North Western Melbourne PHN region is diverse, with variations in demographics and health determinants that affect the health and health service needs of local communities. This section examines some of this variation.

Inner city



The LGAs of Melbourne, Yarra and Maribyrnong make up the inner city part of the North Western Melbourne PHN region.

In 2014, an estimated 290,560 people resided in this area, representing 18.2 per cent of the region's total population. This area has a high proportion of adults aged 20 to 44, who make up

58.6 per cent of the population compared to the Victorian average of 35.5 per cent. This reflects the strong presence of students and young professionals around the CBD. The area has lower numbers of infants, children and older adults in this area compared with the rest of the state.

The area is also home to a high number of people from CALD communities, people who were born overseas, and LGBTIQ communities. It has a large homeless population.

Health needs largely reflect this demographic profile, with the main needs being around mental health, alcohol and drugs, sexual health, and immunisation coverage. Compared to Victorian averages, the inner city has:

- high estimated levels of psychological distress in Melbourne and Maribyrnong
- high levels of people with mental and behavioural problems in Melbourne
- a higher burden of disease from mental disorders in Melbourne and Yarra than the state or region average
- high levels of gaming machine losses per person 18 years and over in Maribyrnong and Melbourne
- high numbers of drug usage and possession offences
- low levels of breast, cervical, and bowel cancer screening participation rates, particularly in Maribyrnong and Melbourne
- low levels of immunisation and vaccination rates, with Melbourne having one of the lowest rates in the state in both childhood and HPV vaccine coverage
- a low percentage of people with adequate work-life balance in Maribyrnong
- high levels of total notifications for Hepatitis B and C, HIV, and other sexually transmitted infections.

In general, the inner city has relatively good access to health services, with high numbers of GPs, after-hours GPs, and specialists. However, while the health workforce in Maribyrnong is generally strong, this area has a shortage of some types of specialists.

Inner suburbs



The LGAs of Darebin, Hobsons Bay, Moonee Valley and Moreland are well established suburbs within the North Western Melbourne PHN region.

In 2014, an estimated 520,701 people resided in this area, representing 33.5 per cent of the region's total population. The area has a higher proportion of people aged 20 to 44 years, representing 41.8 per cent of the inner suburbs population compared with the Victorian average of 35.5 per cent. There are also fewer children and teenagers aged 10 to 19 years in the inner suburbs.

The inner suburbs are home to large CALD communities and many people who were born overseas, as well as large LGBTIQ communities. Rates of homelessness are generally low, with the exception of Darebin. While the inner suburbs have a similar proportion of older people to the rest of Victoria, a high proportion of residents receive the aged care pension in Darebin and Moreland.

Like the inner city, the health needs of the inner suburbs include mental health, alcohol and drug, sexual health, and cancer screening. Additionally, the inner suburbs have high levels of lifestyle-related diseases, including type 2 diabetes and heart disease. Compared to Victorian averages, the inner suburbs have:

- a high proportion of people reporting fair or poor health status, and poor dental health
- high levels of gaming machine losses per person in Darebin, Hobsons Bay and Moonee Valley
- a high proportion of people evaluated as experiencing psychological distress in Darebin, Hobsons Bay, and Moreland
- a high proportion of alcohol and drug related hospitalisations and ambulance attendances
- a high proportion of people reporting heart disease, and a high proportion of heart failure hospital admissions for people over 40 years in Darebin, Hobsons Bay and Moonee Valley
- a high proportion of people reporting type 2 diabetes
- a high proportion of total Hepatitis B and C, HIV and other sexually transmitted infection notifications
- low participation rates for bowel and breast cancer screening in Darebin, Hobsons Bay and Moreland.

The inner suburbs generally have good access to health services. With the exception of South Darebin, the region has high numbers of GPs, after hours GPs, and specialist services. While the inner suburbs have a strong GP workforce, there are workforce shortages for other healthcare professionals across the area (except in Essendon).

Growth corridors



Growth in the Melbourne region was concentrated in the north-east during the 1980s and the south-east during the 1990s. However, since the new millennium the growth corridors have shifted to the north and the west. The North Western Melbourne PHN region includes the high growth LGAs of Hume to the north, and Brimbank, Melton and Wyndham to the west. The combined Melton and Wyndham area is the fastest growing area of Melbourne, and is expected to remain the fastest growing over the next 15 years.

In 2014, an estimated 713,925 people resided in the area, representing 44.6 per cent of the region's total population. As with the inner city and inner suburbs, this area has a younger average population than the state average. However, the growth corridors also have a higher proportion of infants and children aged 0 to 14 years, making up 22.0 per cent of the area's population compared with the Victorian average of 18.8 per cent. This reflects the presence of young families in this part of the region. The area is also home to a high number of people from CALD communities or who were born overseas.

The growth corridors include some of Victoria's most socioeconomically disadvantaged areas, particularly in Brimbank and Hume. While

these LGAs contain some areas experiencing high population growth, they also contain more established suburbs, including some of the most disadvantaged places in Melbourne. For example, high numbers of people are experiencing food insecurity, rental or mortgage stress, and high levels of psychological stress in Brimbank and Hume. The area overall has a high proportion of developmentally vulnerable children, low levels of students participating in secondary school education at age 16, and low numbers earning or learning at ages 15 to 19. The area also has a high proportion of age pension recipients.

The growth corridors have:

- high proportions of people reporting fair or poor health status, and poor dental health
- a higher burden of disease from mental disorders than the Victorian average
- a high estimated proportion of asthma and related respiratory hospital admissions for people aged 3 to 19 years in Keilor, Brimbank, Tullamarine-Broadmeadows and Melton-Bacchus Marsh
- a high estimated proportion of people with diabetes and hypertensive disease, and a high proportion of heart failure hospital admission for those aged 40 years and over
- low participation rates of bowel, breast and cervical cancer screening
- a high proportion of Hepatitis B and C, HIV, and other sexually transmitted infection notifications.

The growth corridors have high usage of health services, with Sunbury, Tullamarine-Broadmeadows, Brimbank, Melton-Bacchus Marsh, and Wyndham areas having some of Victoria's highest rates of GP and after-hours GP attendances. In addition, there are large workforce shortages across much of the growth corridors area, including GPs and other medical specialists.

Peri-urban areas



While much of the North Western Melbourne PHN region consists of metropolitan and suburban areas, it also includes parts of the regional LGAs of Macedon Ranges and Moorabool.

In 2014, this peri-urban area was home to 47,317 people, representing 3.0 per cent of the region's total population. The age profile of this area differs from other parts of the region, and is generally older than the state average.

The peri-urban area has a higher proportion of young children aged 5 to 9 years than the state average, a lower proportion of adults aged 25 to 44, and a higher proportion of adults aged 45 to 64.

The number of older adults (aged 65 years and over) is comparable to the rest of the state.

The main health and wellbeing indicators in this peri-urban area include:

- a high proportion of people who are overweight
- a high estimated rate of asthma
- a high proportion of heart disease in Moorabool
- a high rate of deaths from suicide and self-inflicted injuries in Macedon Ranges.

Parts of this area also have high usage of health services, with Melton-Bacchus Marsh having some of Victoria's highest rates of GP and after-hours GP attendances.

The peri-urban area of the North Western Melbourne PHN catchment includes rural communities with a mix of agricultural and other industries. Although these communities are relatively close to metropolitan Melbourne, they may have similar health outcomes to other rural communities.

Previous reports have documented that there are clear differences in health service usage between rural and non-rural areas. For example, regional and remote areas have lower rates of some hospital surgical procedures, lower rates of GP consultation, and generally higher rates of hospital admissions than in major cities. Differences in risk factors include people from regional and remote areas being more likely than their major city counterparts to smoke and drink alcohol in harmful quantities.

It is also likely that environmental issues such as more physically dangerous occupations, and factors associated with driving (long distances, higher speeds, isolation, animals on roads, and so on) play a part in elevating accident rates and related injury and death rates in country areas.⁴



DETERMINANTS OF HEALTH

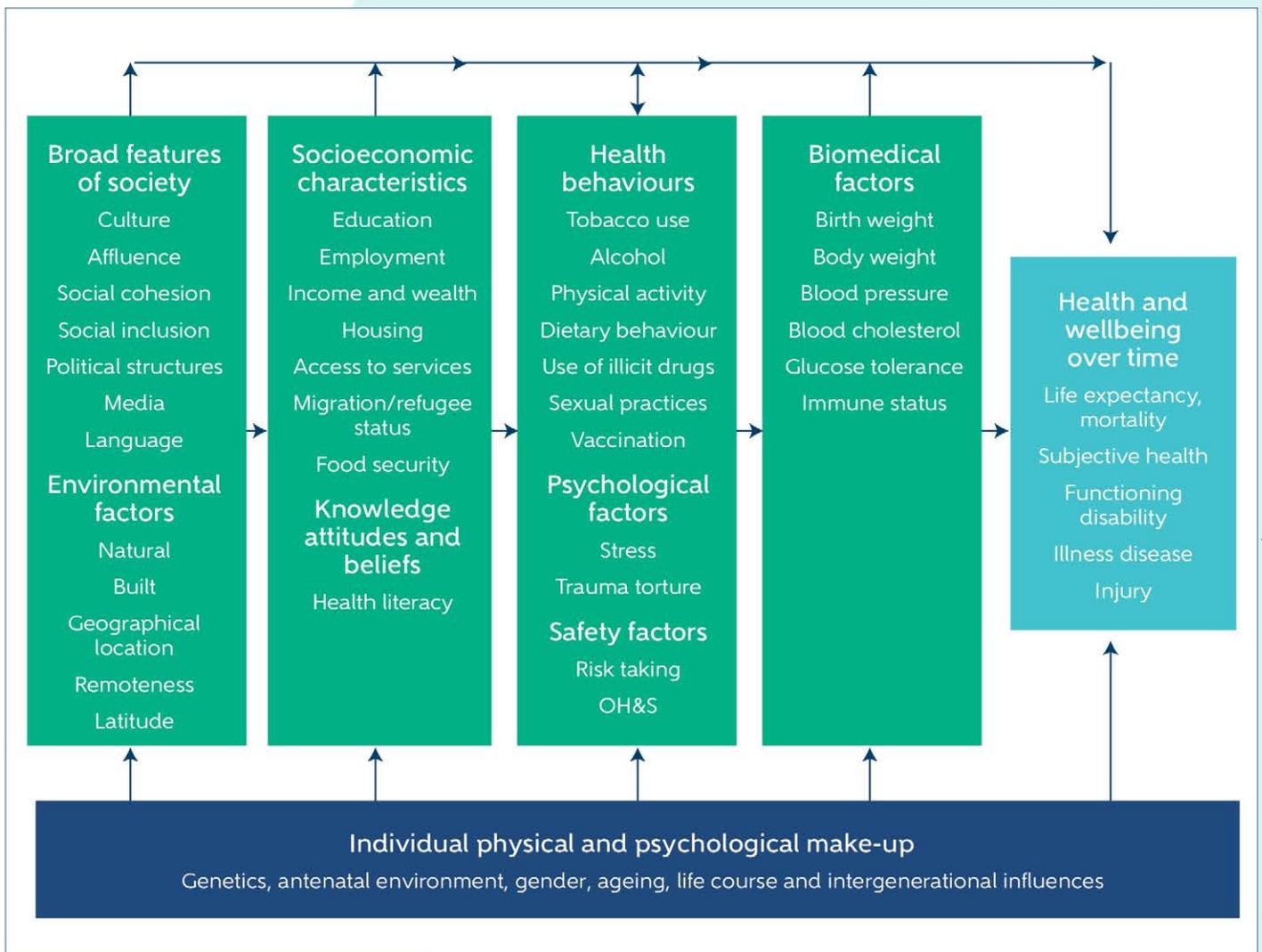
In order to improve population health status and reduce health inequalities, it is important to identify and understand the main factors that protect and promote good health. Known as 'determinants of health', these factors include:

- features of society
- environmental factors
- socioeconomic characteristics
- health behaviours
- biomedical factors.

These factors are complex and highly interconnected, as illustrated by Figure 7.



Figure 7: The determinants of health



Source: Adapted from Australian Institute of Health and Welfare, 2014

Social and economic determinants

There is good evidence that social, cultural and economic factors are important determinants of good health. These factors include income and poverty, employment and occupation, education, housing, and culture and ethnicity.

Social cohesion and social connectedness are of increasing interest.

Socio Economic disadvantage

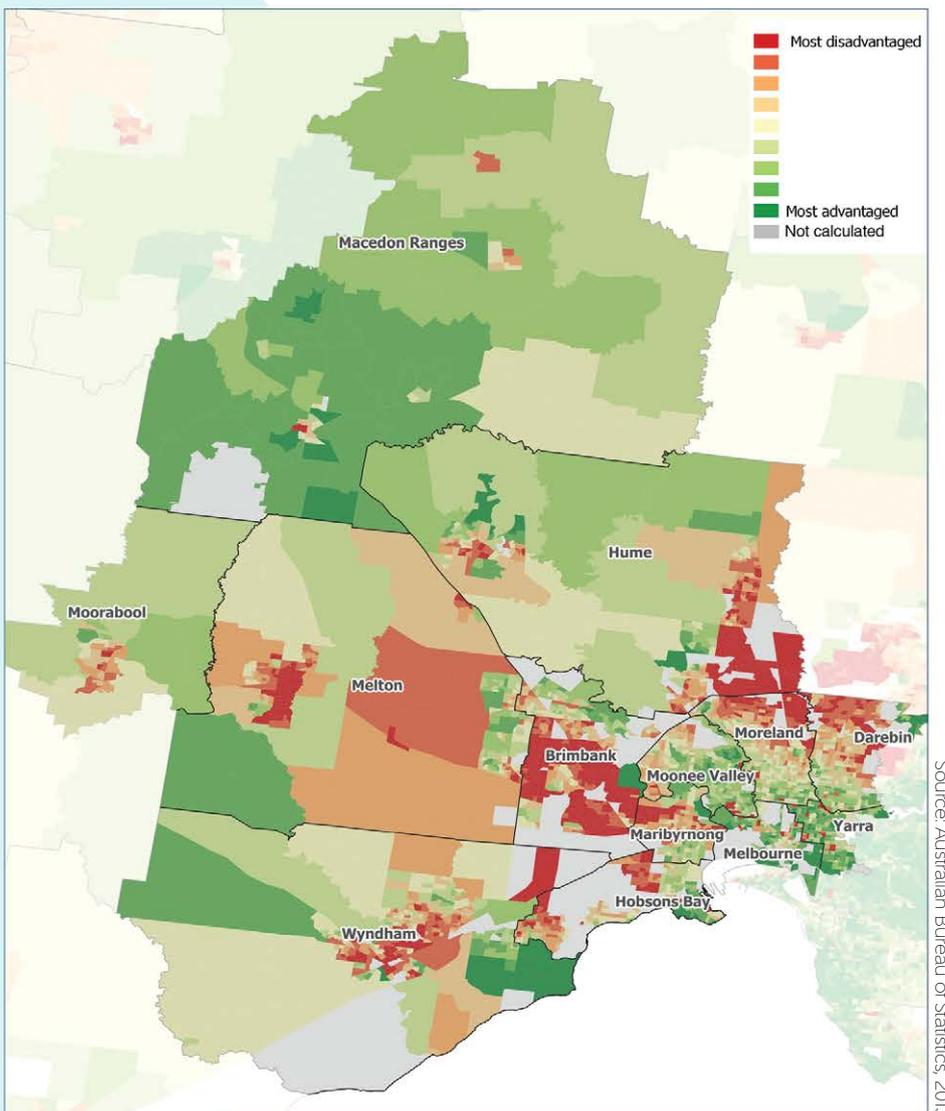
The Socio-Economic Indices for Areas (SEIFA) rank areas across Australia according to a number of different Census variables, including income, education levels and employment status. The Index of Relative Socio economic Advantage and Disadvantage (IRSAD) summarises information about the economic and social conditions of people and households within an area. Low scores indicate relative disadvantage and high scores indicate relative advantage.

Figure 8 illustrates the variation in IRSAD across the North Western Melbourne PHN region. There is significant variation across the region, with some highly advantaged areas and some very disadvantaged areas.

Outer suburban areas tend to experience greater levels of disadvantage, with four of the five most disadvantaged areas in Victoria located in Hume and Brimbank LGAs. The communities of St Albans, Sunshine and Broadmeadows have the highest levels of disadvantage.

The LGAs of Hobsons Bay and Moreland represent the Australian median (with a score of 1000), while inner suburban and city areas generally experience relative advantage.

Figure 8: Map of Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) by ABS collection district, 2011 (Census)



It should be noted that LGA-level data does not account for wide variations in the levels of advantage and disadvantage within some LGAs. For example, the Moonee Valley LGA has an IRSAD score of 1031, suggesting that the LGA is relatively advantaged, but it hosts an SA1 area in the suburb of Flemington with a score of 492, indicating a pocket of extreme disadvantage. Similarly, the relatively advantaged LGA of Melbourne includes an SA1 area with a score of 537. Table 8 in Appendix A outlines the range of SA1 IRSAD scores within each LGA.

Source: Australian Bureau of Statistics, 2013

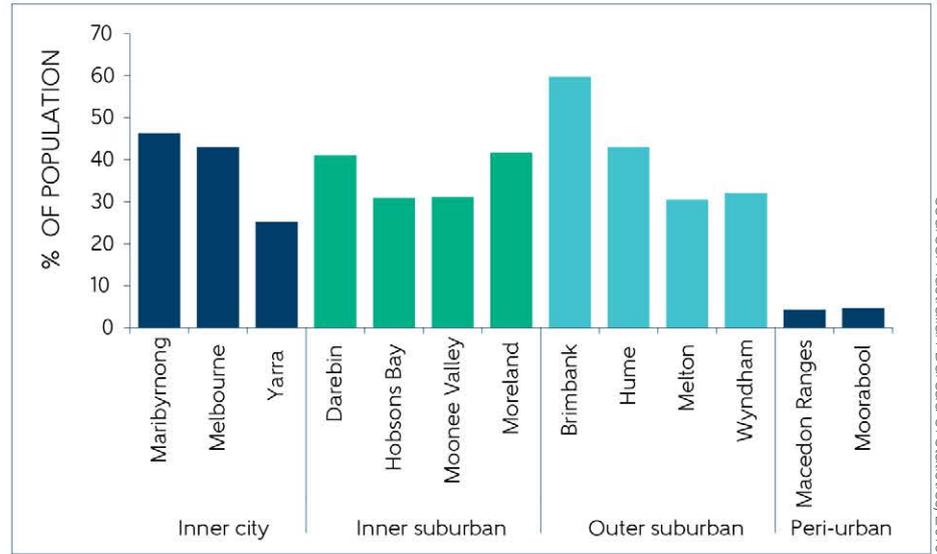
Cultural diversity

The region is home to residents from a wide range of cultural and linguistic backgrounds. Cultural diversity contributes depth and vibrancy to communities, and also presents challenges in terms of ensuring that all residents can access health services equitably.

Individuals with lower English proficiency can experience linguistic and cultural barriers in accessing health services. Figures 9 and 10 illustrate how the proportions of people who speak languages other than English, and of people who have low English proficiency, vary across the region.

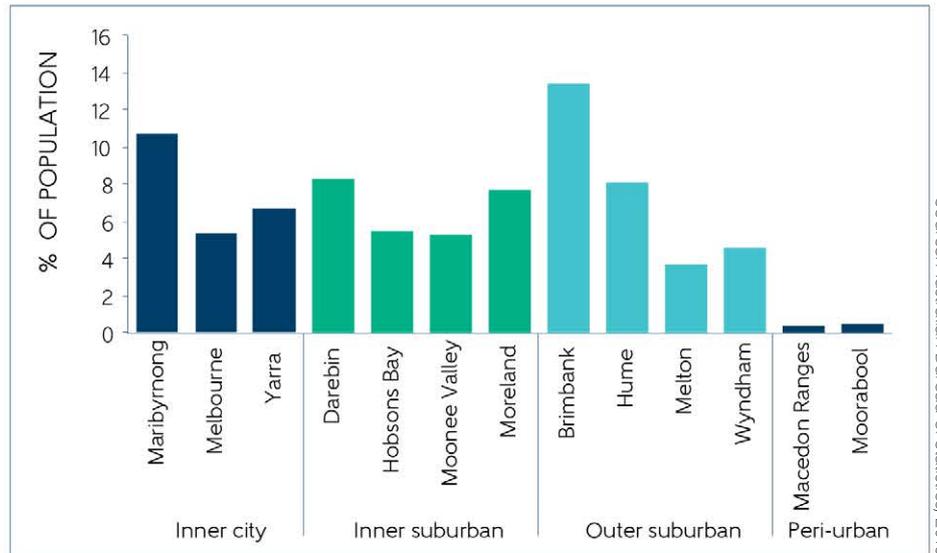
Table 9 in Appendix A illustrates that Hume, Brimbank and Maribyrong LGAs are home to many humanitarian arrivals, and these individuals are likely to have specific physical and mental health needs associated with their experience. Hume LGA has a high CALD population (41 per cent of residents speak a language other than English at home), but the lowest rate of community acceptance of diverse cultures in the region (38 per cent).⁵

Figure 9: Proportion of the population that speaks a language other than English at home by LGA, 2011 (Census)



Source: Australian Bureau of Statistics, 2016

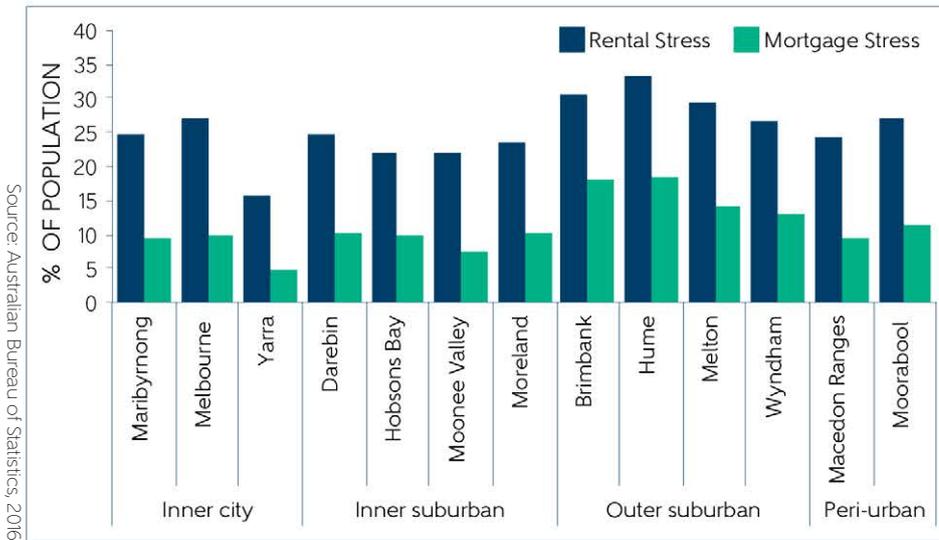
Figure 10: Proportion of the population that has low English proficiency by LGA, 2011 (Census)



Source: Australian Bureau of Statistics, 2016



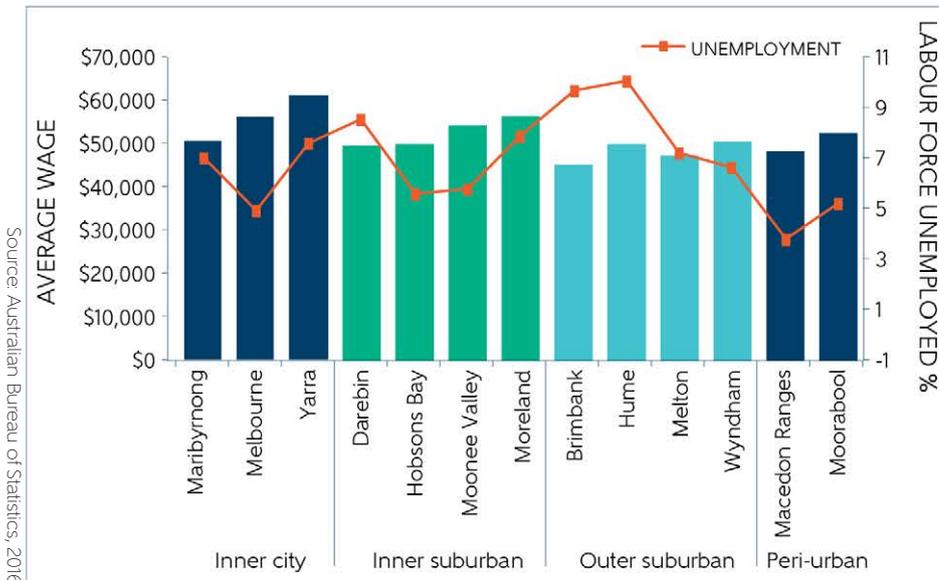
Figure 11: Rates of rental and mortgage stress, 2011 (Census)



Financial disadvantage

Financial and economic stress can have a big impact on the mental and physical health of an individual and may affect how well people manage their diets, comply with medication regimes and access services. Unemployment, low average incomes, and rental and mortgage stress are all indicators of financial disadvantage that tend to be concentrated in some parts of the region. Brimbank, Hume and Melton report the highest levels of rental and mortgage stress for the region (Figure 11). Wages are low in Brimbank, Melton and Macedon Ranges, and unemployment is highest in Hume, Brimbank and Darebin.

Figure 12: Average wage and labour force unemployment (ABS)



Correlating these financial indicators with broader socioeconomic indices shows some of the broad challenges facing these communities. Some locations with low IRSAD scores also report high per capita electronic gaming machine (EGM) losses (Figure 13). Losses from EGM in the City of Brimbank were the highest in Victoria in 2014-15, with more than \$145 million lost over this period.⁶ Problem gambling can be closely associated with other social issues such as family violence.⁷

Environmental determinants

The environmental determinants of health include the built and natural environment, air and water quality, food safety and other factors. Many of these factors are complex and difficult to shift, however some are amenable to intervention and impact by agencies and partners outside of primary and community care organisations.

The built and natural environment can affect the health of residents and communities in many ways. For example, having access to public transport, schools, parks and recreation facilities can influence both levels of physical activity as well as perceptions of community safety and cohesiveness.⁸

Figure 13: EGM losses per adult by IRSAD and Victorian LGA, 2014-15



Figure 14, Figure 15 and Figure 16 illustrate some of the variation in community experiences relating to engagement, access to transport, and perceived safety. Citizen engagement (Figure 14) refers to participation in community groups, activities and events, and may be reflect community identity, available recreation time and disposable income.

The availability of work opportunities near to home is a factor which can support healthy communities. There appears to be a correlation between location of residence and proportion of people who travel to work by car. Figure 15 shows that around 70 per cent of work journeys from the growth suburbs and peri-urban areas are by car, compared to 50-60 per cent for the inner suburbs, and even lower levels for the inner city where people are more likely to walk, ride or catch public transport to work.

Growth areas have the lowest levels of perceived community safety (Figure 16). Of all the LGAs Brimbank has the lowest proportion of people who report feeling safe walking alone at night within the region.

Figure 14: Proportion of the population reporting participation in citizen engagement in last year, 2011-2012



Source: Department of Health and Human Services, 2014

Figure 15: Proportion of the population with work journeys which are by car, 2013



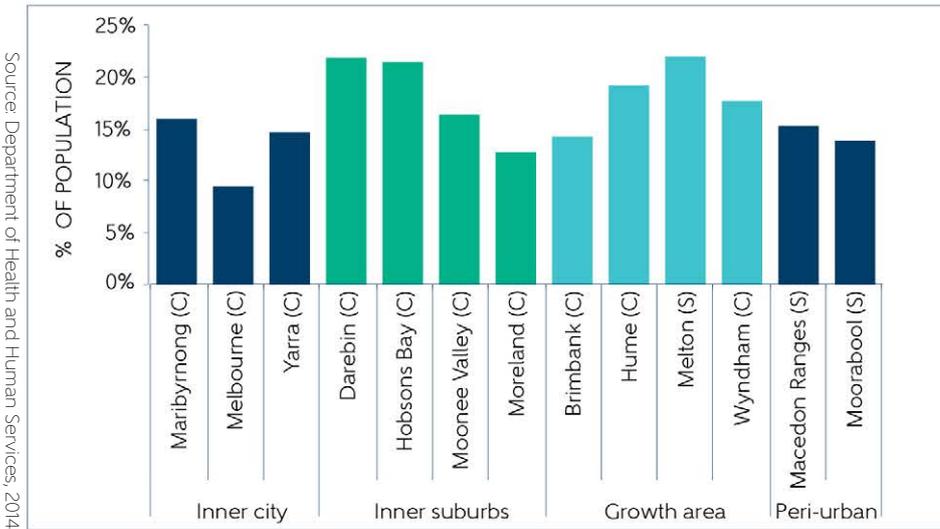
Source: Department of Health and Human Services, 2014

Figure 16: Proportion of the population reporting that they feel safe walking alone during the night, 2011-2012



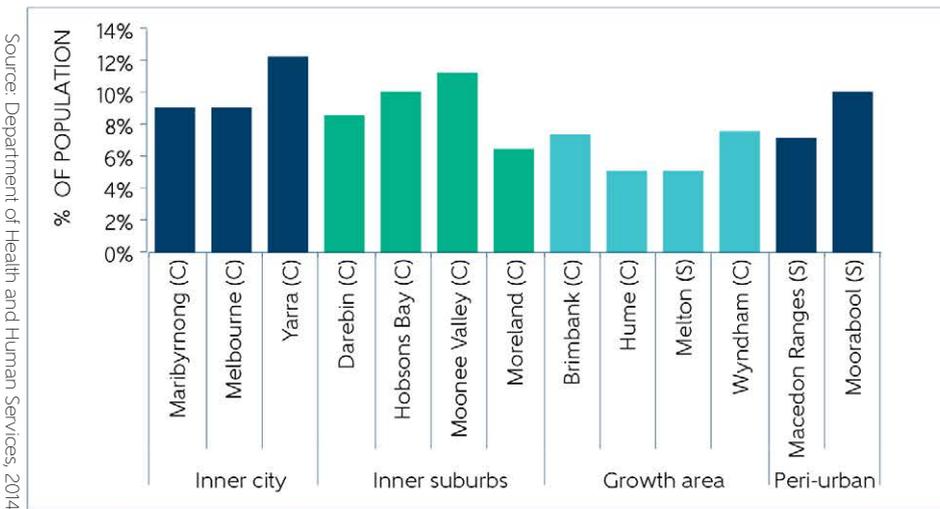
Source: Department of Health and Human Services, 2014

Figure 17: Proportion of the population aged 18+ who are current smokers, 2011



Source: Department of Health and Human Services, 2014

Figure 18: Proportion of the population aged 18+ that consumed alcohol at least weekly, at levels likely to cause short-term harm – persons, 2011



Source: Department of Health and Human Services, 2014

Figure 19: Proportion of the population who do not meet the physical activity guidelines, 2011



Source: Department of Health and Human Services, 2014

Behavioural determinants

This document examines a number of behaviours that may have a detrimental effect on health including tobacco smoking, excessive alcohol consumption and poor patterns of eating and physical activity.

Tobacco use

The overall decline in tobacco use has been one of Australia’s public health successes over the past decades, but there are still gains to be made in reducing the harm from tobacco products. Figure 17 illustrates the variation in rates across LGAs, with Melbourne having the lowest proportion of current smokers at around 10 per cent of the population, compared to 22 per cent in Darebin, Hobsons Bay and Melton. There are higher rates of smoking in Aboriginal and Torres Strait Islander communities and marginalised groups such as people with mental illness and those released from correctional facilities.⁹

Alcohol consumption

Evidence suggests that people in their late teens and 20s are most likely to drink at risky levels (for harm over their lifetime and from a single drinking occasion) compared with other age groups.¹⁰ The proportions of people consuming alcohol at levels likely to cause harm vary across geographic areas, with Yarra, Moonee Valley and Moorabool having the highest rates (Figure 18).

Physical activity

Insufficient exercise is a risk factor for chronic health conditions such as heart disease, stroke and high blood pressure. The recommendation for physical activity in 2011 was a minimum of 150 minutes per week of walking or other moderate or vigorous activity over at least five sessions. The current standard for adults is to accumulate 150-300 minutes of moderate intensity physical activity or 75-150 minutes of vigorous intensity physical activity each week in addition to doing muscle

strengthening exercising twice per week and reducing sedentary (sitting) behaviour.¹¹

The 2011 survey of physical activity showed people in many areas of the region have low levels of physical activity, with 35-40 per cent of people in the growth areas not achieving the recommended minimum activity levels. Melbourne and Yarra have the highest proportions of people who meet the physical activity guidelines (Figure 19).

Dietary behaviour

Fruits and vegetables are important sources of nutrition and dietary fibre. Inadequate consumption of fruit and vegetables is a risk factor for stomach cancer, colorectal cancer and cardiovascular disease. The NHMRC recommends that adults consume two serves of fruit and five serves of vegetables each day.¹²

Much like the physical activity levels noted above, communities in growth area LGAs have the lowest consumption of fruit and vegetables, with 50-60 per cent of people not consuming the guideline amounts. Melbourne, Yarra and Moreland have the highest proportions of people who meet the guidelines (Figure 20).

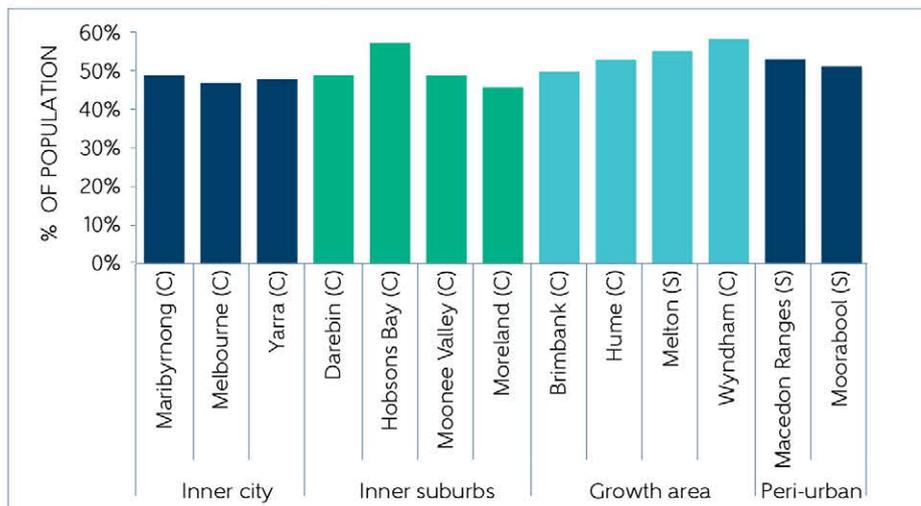
Use of illicit drugs

Illicit drug use can be associated with conditions such as HIV/AIDS, hepatitis C, low birthweight, malnutrition, infective endocarditis (leading to damage to the heart valves), poisoning, mental illness, suicide, self-inflicted injury and overdose.¹³ The relative health impact of illicit drug use varies depending on the specific type of drug used and the circumstances of its use.

Illicit drug use varies with population characteristics and is more prevalent among the following groups when compared with the proportion for the whole population:

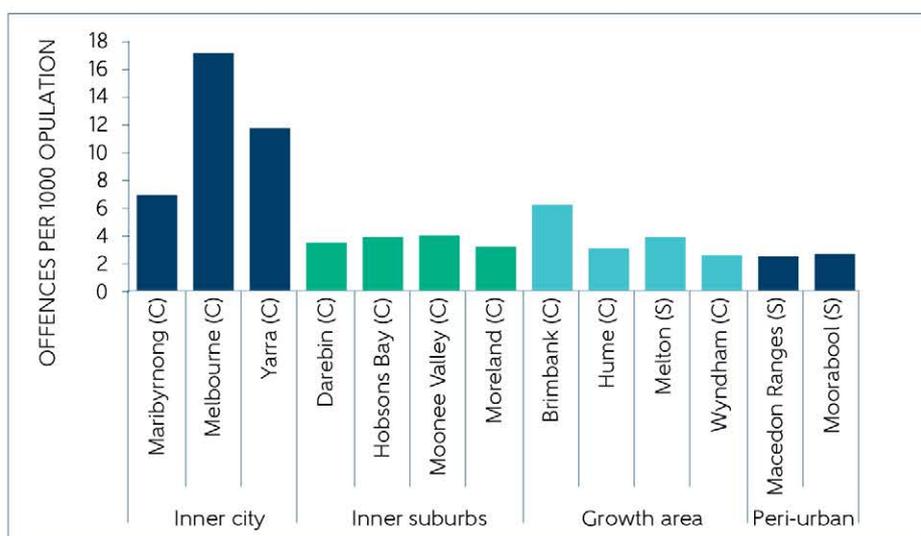
- males
- younger people
- minority groups, for example, those who identified as being homosexual/bisexual
- unemployed people.¹⁴

Figure 20: Proportion of the population who do not meet the dietary guidelines for fruit and vegetables consumption, 2011



Source: Department of Health and Human Services, 2014

Figure 21: Drug usage and possession offences per 1,000 population, 2013-14



Source: Department of Health and Human Services 2016

Across the region, the highest rates of drug usage and possession offences are found in Melbourne, Yarra and Maribyrnong LGAs, with lower rates reported in the peri-urban and growth corridor localities (Figure 21).

Misuse of prescription drugs

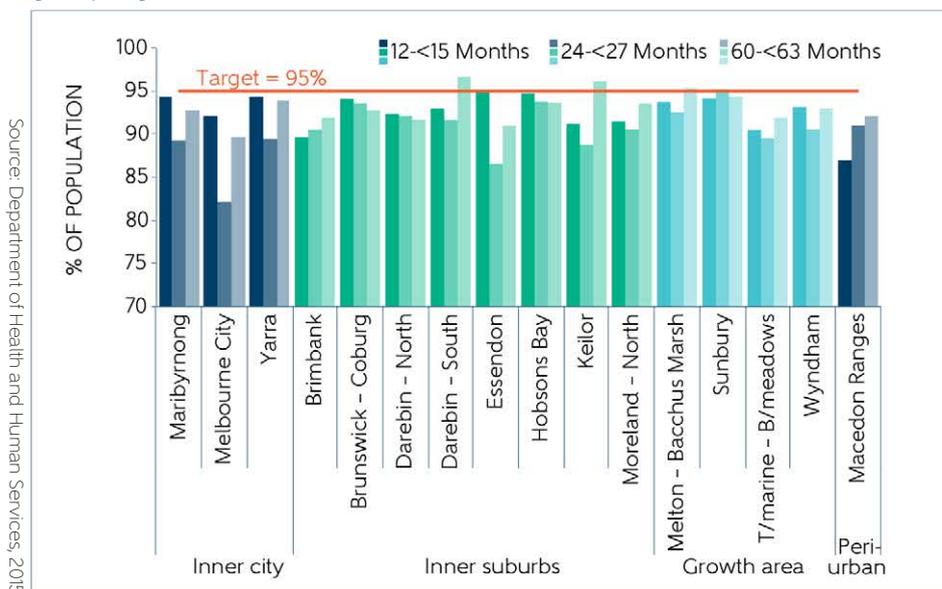
Intentional and accidental misuse of prescription drugs is a significant concern across Victoria, with the Victorian coroner reporting that prescription medications (most commonly benzodiazepines) were involved in 82 per cent of the 384 overdose deaths investigated in 2014.

Immunisation

Vaccination is the most significant public health intervention in the last 200 years, providing a safe and efficient way to prevent the spread of many diseases that would otherwise cause hospitalisation, serious ongoing health conditions and sometimes death.¹⁵

Immunisation programs use vaccination to increase the body's natural defence mechanisms – the immune response – and thereby build resistance to specific infections. Immunisation aims to protect people against harmful infections before they come into contact with these infections in the community, and immunisation programs help individuals and communities stay healthy by reducing the incidence of serious infections.

Figure 22: Vaccination status by ABS collection district (SA3) by age group (age calculated as at 31 Dec 2015)



The Australian Government's Immunise Australia Program implements the National Immunisation Program (NIP) Schedule, which currently includes vaccines against a total of 16 diseases. The disease that requires the highest level of vaccine coverage to achieve herd immunity is measles, which is highly infectious. An estimated coverage of 92-94 per cent is required for herd immunity from this virus. For this reason the national aspirational immunisation coverage target has been set at 95 per cent.¹⁶ Herd immunity rates for other diseases vary. For example, polio only requires 80-86 per cent vaccine coverage, while whooping cough requires 92-94 per cent vaccine coverage.¹⁷

Many areas across the region had not reached 95 per cent coverage at the 60 month completion of the childhood immunisation program, with particularly low rates in Melbourne, Essendon, Darebin North, Tullamarine-Broadmeadows, and Brimbank (Figure 22). Immunisation rates can be influenced by environmental, social and economic factors.

Hepatitis

Hepatitis B and Hepatitis C are generally transmitted through human-to-human contact such as the sharing of needles and sex. Young people and individuals who have recently migrated from high prevalence countries are at particular risk of hepatitis. It is critical that immunisation (for Hepatitis B) and direct-acting antivirals (to treat Hepatitis C) are readily available, particularly for high risk groups and in high prevalence locations. Numbers of hepatitis B and C notifications vary considerably across the region (Figure 23).

Figure 23: Total number of Hepatitis B and C notifications (2014)



HEALTH AND WELLBEING ACROSS AGES AND STAGES

Perinatal and infancy

At a glance

An estimated 109,772 infants aged 0-4 resided in the region in 2014.

Key health needs are:

- addressing high rates of **perinatal depression** and the impact it has on family wellbeing and early childhood development
- supporting families of children with birth complications, neonatal disorders and congenital abnormalities
- encouraging **breastfeeding**
- enhancing primary care for **asthma** and ear, nose and throat infections as an alternative to hospitalisation.

Population growth

In 2014, there were 109,772 infants aged four years and under in the region, representing 7.0 per cent of the region's population (above the Victorian average of 6.5 per cent). This number is predicted to increase to 144,620 by 2031, however the proportion of infants in the region will decline over this period to 6.3 per cent.

More than half the growth in infant numbers will come from Hume, Melton and Wyndham, while the number of infants born in Brimbank is predicted to drop slightly. Melbourne LGA is also projected to have a higher proportion of infants by 2031 (Figure 24). See Appendix A for more detail.

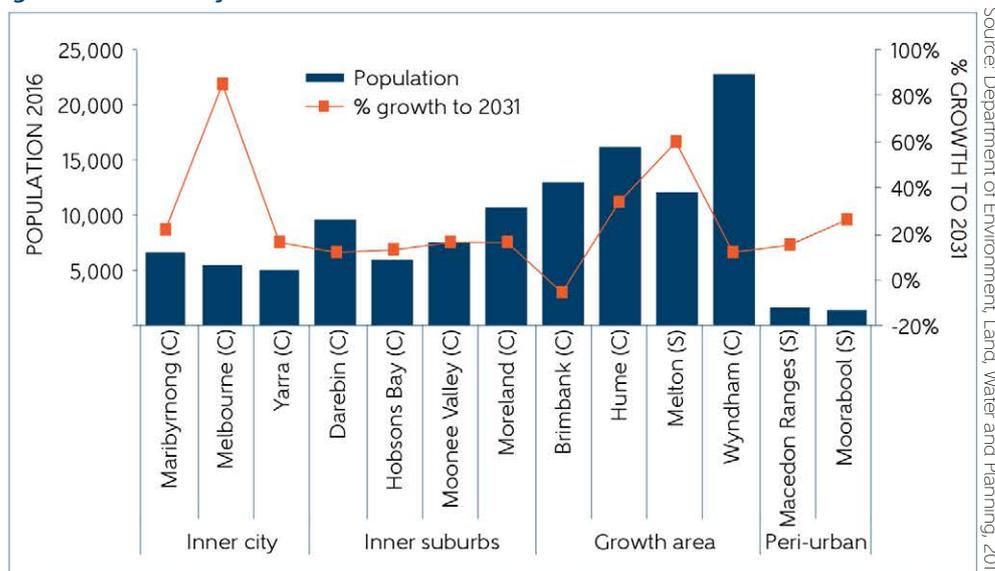
Overview

The first 1000 days of an infant's life, from conception to the age of two, provides a unique opportunity to establish protective factors that will support a healthy future.¹⁸ The infant brain is 'sculpted' by the external environment in the early years as children mature and develop. The health system can play a key role in supporting parents to provide the nurturing environment infants need to develop the brain architecture and neural pathways to respond to stresses in life. Conversely, infants raised in an environment where they are subject to major stresses are at higher risk of developing chronic diseases later in life.¹⁹

Nationally, the most recent burden of disease study reports that the highest causes of non-fatal burden in this age group relate to:

- asthma
- gastrointestinal infections
- congenital conditions
- other mental disorders.²⁰

Figure 24: Infant (aged 0-4) 2016 population and % projected growth to 2031 by residential area



Source: Department of Environment, Land, Water and Planning, 2015



Determinants of health and wellbeing: key findings

Breastfeeding rates ²¹	Growth corridor LGAs have lower rates of infants fully breastfed at 3 months than the Victorian average (2012/13) ²⁶
Low birth weight ²²	Hobsons Bay, Moonee Valley and Moorabool LGAs have high percentages of babies with low birth weight. Brimbank, Wyndham, Hume and Melton LGAs also have rates above the Victorian average. Variation may be partly related to ethnic diversity.
Smoking ²³	10.6 per cent of Victorian women who gave birth smoked during their pregnancy (2013) ²⁷
Alcohol ²⁴	42 per cent of pregnant Australian women drank alcohol (2013) ²⁸
Drug use ²⁵	1.6 per cent of pregnant Australian women used illicit drugs during their pregnancy (2013) 2.2 per cent used marijuana, and 0.9 per cent misused prescription analgesics ²⁹

Health needs

Maternal and child health service participation

- Growth corridor LGAs consistently have the lowest rates of maternal and child service participation across all child age groups.³⁰ This is particularly concerning given the projected population growth in these areas.
- Participation rates at three year old maternal and child service appointments are particularly low in Brimbank, Wyndham, Melbourne and Moreland LGAs. Darebin, Melton, Hobsons Bay and Hume LGAs also have low rates.

The Maternal and Child Health Service is a key opportunity for new mothers to check that their child is reaching developmental milestones. Failure to attend milestone appointments represents a missed opportunity to implement early intervention to address any infant or maternal health needs.

Perinatal depression

- Up to one in 10 women and one in 20 men across Australia experience antenatal depression.³¹
- More than one in 7 new mothers and up to one in 10 new fathers across Australia experience postnatal depression every year.³²
- 2.3 per cent of Access to Allied Psychological Services (ATAPS) referrals in the region are for perinatal depression.³³

Perinatal mental health issues have been shown to lead to poorer developmental outcomes for infants, contributing to bonding and attachment issues that can create lifelong challenges for personality development and building relationships.³⁴

National data suggest that many people access their GP for support with perinatal depression.³⁵ Limited service access data indicate that referral rates to psychological services may not align with actual need, and uptake of services is also low; 2.3 per cent of all ATAPS referrals are for perinatal depression, but only 1.4 per cent of all ATAPS attendances are for perinatal depression.³⁶

Asthma

- 40.8 per cent of avoidable hospitalisations for 0-4 year olds are for asthma.
- The rate of asthma hospitalisations in the region (12.5 per 1,000) is higher than the Victorian average (10.24 per 10,000).
- Areas with rates of asthma hospitalisations in the 90th percentile and above nationally include Maribyrnong, Keilor, Melbourne City, Moreland North and Brunswick-Coburg.³⁷

The region has some areas with the highest estimated hospital admissions for asthma nationally. This suggests a greater need for support for children in the primary care system, and a particular need to educate parents on ways to manage their children's asthma, including the best ways to respond to environmental conditions that may trigger asthma.

Children

At a glance

An estimated **175,792 children** between the ages of 5 and 14 resided in the region in 2014.

Key health needs are:

- ensuring **immunisation** rates are within recommended targets
- addressing needs associated with **asthma** and **oral health** in the primary care setting
- providing **access to psychological services** for children, particularly for vulnerable populations and children with greater levels of socioeconomic disadvantage.

Population growth

In 2014, there were 175,792 children aged 5 to 14 years in the region, representing 11.2 per cent of the region's population (below the Victorian average of 12.3 per cent). This number is predicted to increase to 283,664 by 2031. Over the same period, the proportion of children aged 5 to 14 years will also grow, to 12.3 per cent of the region's population.

More than half of this growth will occur in Hume, Melton and Wyndham. The lowest child population growth is expected to be in Brimbank and Macedon Ranges. (Figure 25). See Appendix A for more detail.

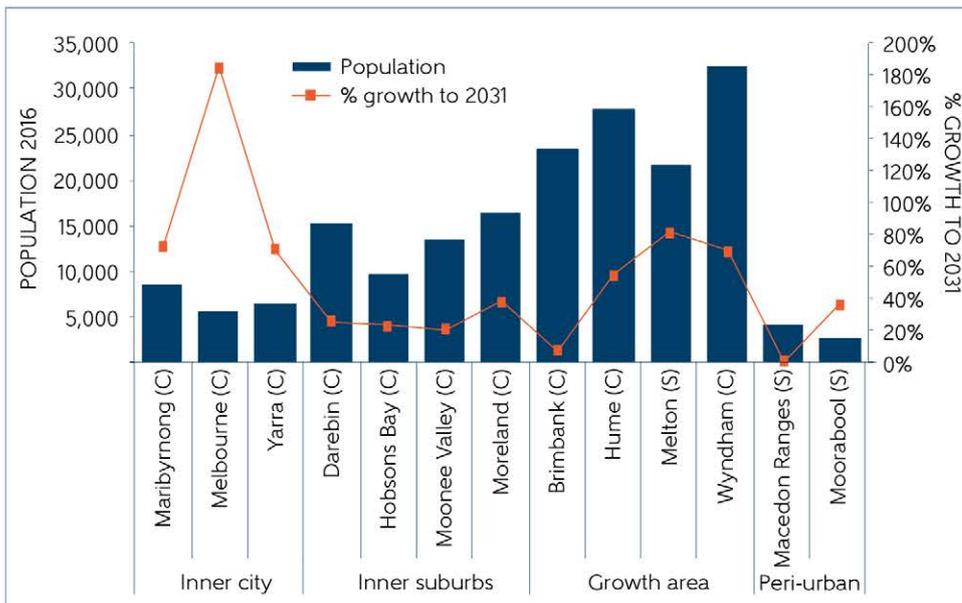
Overview

Establishing protective health behaviours at a young age is critical, as it sets children up to be healthy and productive adults. However, some children in the region face barriers to establishing these behaviours. Children in outer-west Melbourne experience higher rates of vulnerability, potentially correlated with being raised in areas of higher socioeconomic disadvantage. Determinants such as rates of obesity and physical inactivity are high in some areas for this age group, and immunisation rates are low or borderline low in several areas across the region (Figure 22). These challenges are likely to be exacerbated by high projected population growth, particularly in the outer west.

Nationally, the most recent burden of disease study reports that the highest causes of non-fatal burden in this age group relate to

- asthma
- anxiety disorders
- depressive disorders
- congenital conditions
- upper respiratory conditions.³⁸

Figure 25: Child (aged 5-14) 2016 population and % projected growth to 2031 by residential area



Source: Department of Environment, Land, Water and Planning, 2015

Determinants of health and wellbeing: key findings

Child protection involvement ³⁹	Some of the region's inner-city pockets have high rates of substantiated child abuse and child protection involvement ⁴¹
Bullying	Reported bullying rates are high in Hume, Moreland and Moorabool LGAs ⁴²
Early education ⁴⁰	Rates of kindergarten attendance vary across the region ⁴³ Growth corridor LGAs and Maribyrnong LGA consistently have lower rates of kindergarten attendance than inner-city or peri-urban LGAs ⁴⁴
Physical activity	Western Melbourne and Brimbank-Melton regions are below the Victorian average for children who do the recommended amount of physical activity every day (2013) ⁴⁵
Nutrition	Western Melbourne and Hume-Moreland regions are below the Victorian average for children aged 4-12 years who eat the recommended serve of fruit and vegetables daily (2013) ⁴⁶
Oral health	Brimbank-Melton region is significantly below the Victorian average for children who brush their teeth twice daily ⁴⁷

Behavioural determinants

- 56-60 per cent of children do the recommended amount of physical activity daily.
- 26.7 per cent of Victorian children are overweight or obese (2014), with obesity rates rising as children age.⁴⁸

Childhood is an important time for parents to teach their children healthy behaviours and establish the foundation for a healthy and active life. The high rates of childhood obesity and inactivity across the region indicate a need for greater focus on early intervention, education and increased recreational opportunities for communities.

Childhood development

Vulnerability

- Rates of child developmental vulnerability are high in pockets across the region, and these may align with areas of high socioeconomic disadvantage.⁴⁹

The Australian Early Development Census measures child developmental vulnerability across five domains: physical, social, emotional, language and communication. In general, Victoria has lower rates of developmental vulnerability than the Australian average. However, Brimbank, Hume, Wyndham, Yarra and Melbourne LGAs have higher rates of vulnerability across two or more domains, with Melton, Moreland and Moorabool LGAs also having rates of vulnerability across two or more domains above the Victorian average.

Disability

- An estimated 67,700 children aged 14 years and under in Victoria had a disability (2012). Of these, 63 per cent had a profound or severe disability.
- Another 79,900 children in Victoria were reported to have a long-term health condition.⁵⁰
- An estimated 65,400 children aged 14 years and under across Australia had autism in 2012.⁵¹

Rates of autism diagnosis have increased in recent years, largely due to better awareness of autism and changes to diagnostic criteria and tools.



Health needs

Identified needs for this age group are:

Mental health support

- Mental disorders are the second-highest burden of disease for 5-14 year olds

Mental disorders and psychological stress represent a major burden of disease for children, particularly those in outer-suburban areas with high levels of socioeconomic disadvantage. Prevention and early intervention present the greatest opportunities to limit the impact of mental illness on children and their families.

Immunisation rates

- Immunisation rates are reported in Figure 22. These data indicate that several areas in the region have low rates of immunisation. While rates generally increase by age 5, they remain under the aspirational target of 95 per cent coverage.

Immunisation rates continue to be a major focus across the region. Efforts to increase the uptake of vaccination through opportunistic programs and outreach to educational settings will continue to be explored.

Asthma rates

- The region has areas with some of the highest estimated hospital admissions for asthma nationally.
- Rates of asthma prevalence and avoidable hospitalisations are higher in the region than the Victorian average.
- Less than 60 per cent of children aged 1 to under 13 years of age with 'current' asthma have an individualised asthma action plan.⁵²

Oral health

- Dental conditions are the highest potentially avoidable hospitalisation for 5-14 year olds in the region, and the third highest potentially avoidable hospitalisation for 0-4 year olds.



Young people

At a glance

An estimated **221,814 young adults** between the ages of 15 and 24 resided in the region in 2014.

Key health needs are:

- equitable access to **psychological services** for young adults, with a particular focus on vulnerable populations
- **sexual health** services
- **alcohol and other drug** services.

Population change

In 2014, there were 221,814 young adults aged 15 to 24 years in the region, representing 14.1 per cent of the region's population (above the Victorian average of 13.3 per cent). The number of young adults in the region is predicted to increase to 296,033 by 2031, but the proportion of young adults will decline over this period to 12.8 per cent.

More than half the growth will occur in Hume, Melton and Wyndham. The lowest population growth in young people is expected to be in Melbourne LGA, which is forecast to experience a decline in cohort numbers (Figure 26). See Appendix A for more detail.

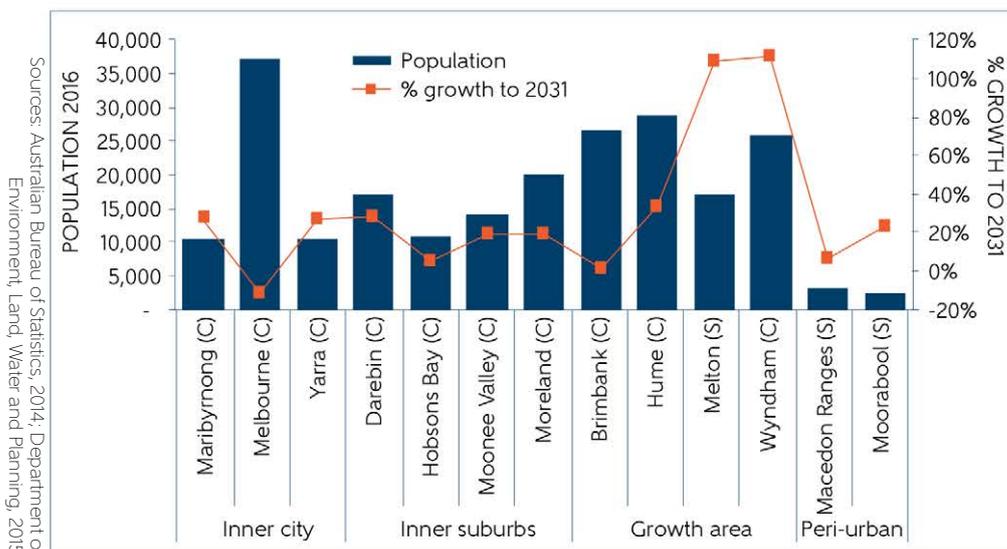
Overview

Young people face a range of exciting changes and complex challenges as they mature, such as establishing their identity, learning skills to function as independent adults, and understanding their sexuality. In addition to their ongoing social, biological and psychological development, young people often engage in risk-taking behaviours that can affect their health, such as problem drinking, taking illicit drugs and engaging in unsafe sex. Providing support to this age group is particularly important, as health-related behaviours are usually established in this period, which means successful early interventions can have a big impact on future health outcomes.

Nationally, the most recent burden of disease study reports that the highest causes of non-fatal burden in this age group relate to:

- alcohol use disorders
- anxiety disorders
- depressive disorders
- asthma
- back pain and problems.⁵³

Figure 26: Young people (aged 15-24) 2016 population and % projected growth to 2031 by residential area



Determinants of health and wellbeing: key findings

Education	The rate of 15-19 year olds 'earning or learning' is below the Victorian average in Melton, Hume and Wyndham LGAs. (Department of Health and Human Services, 2013)
Mental health	Bullying is increasingly recognised as having an important impact on the development of emotional and mental health. Data on the prevalence of bullying, as reported in the Victorian Child and Adolescent Monitoring System, indicate that across the region, 40-60 per cent of children have 'experienced bullying recently'
Sexual health	Rates of young people in Victoria using contraception have fallen from 2009 to 2014 ⁵⁴

Health needs

Mental health

- mental disorders are the highest burden of disease for 15-24 year olds, accounting for almost half of all disease
- intentional injury is the third highest burden of disease for all 15-24 year olds. It is in the top five burdens of disease for males
- rates of eating disorders are above the Victorian average in some inner-suburban and outer-suburban LGAs
- suicide is the leading cause of death for young people across Australia, and average rates for suicide have risen for 15-19 year olds in the last 10 years.

Young people who may be at particular risk of experiencing psychological distress include:

- Aboriginal and Torres Strait Islander children, particularly when they are exposed to racism
- culturally and linguistically diverse and/or refugee children and young people who have endured traumatic exposures prior to migration, and who experience difficulties associated with resettlement
- Lesbian, gay, bisexual, transgender, intersex and queer (LGBTIQ) young people, particularly when they have been exposed to homophobia.⁵⁵

Data from headspace, the national youth mental health foundation, identified that in comparison to the rest of Australia, service users from the North Western Melbourne PHN region had:

- greater progression of mental illness
- generally higher outcomes on the Kessler Psychological Distress Scale (K10)
- generally lower outcomes on the Social and Occupational Functioning Assessment Scale
- higher average visit frequency.

Providing additional mental health support to young people is critical, as the majority of mental disorders manifest before the age of 24. By intervening early, the health system can limit future negative impacts on individuals and communities.



Table 1: Alcohol and other drug use percentile rates for 15-24 year olds (above 75th percentile in Victoria)

	Alcohol			Illicit drugs				Meth/ ampheta- mine	Crystal meth
	Ambulance 2013-14	Hospital 2012-13	ADIS 2013-14	Ambulance 2013-14	ED 2012-13	Hospital 2012-13	ADIS 2013-14	ADIS 2013-14	Ambulance 2013-14
Yarra	92 th	91 st	76 th	93 th	80 th		89 th		84 th
Maribyrnong		79 th			87 th				
Melbourne	99 th			98 th					96 th
Hobsons Bay					94 th	83 th			
Moreland						92 nd			
Moonee Valley				77 th	81 st	89 th			82 nd
Melton								76 th	

Source: Turning Point, 2016

Alcohol and other drug use

- rates of alcohol and drug-related ambulance call-outs and hospitalisations for 15-24 year olds are very high in the region's inner-suburban LGAs (Table 1)
- rates of Victorian students taking up smoking have declined in recent years, but preventing young people from taking up smoking remains a focus
- methamphetamine use among 14-19 year olds across Australia has not risen, but the purity (and therefore the impact) of the drug has increased
- alcohol contributes to the three leading causes of teenage death: injury, homicide and suicide.

Sexual health

- all LGAs in the region (except Macedon Ranges and Moorabool) have crude rates of sexually transmitted infections and HIV above the Victorian average
- rates of HPV vaccination for young women have fallen.

While sexual health issues can be relevant across the lifespan, often young adults are most at risk and in need of preventative and treatment based options to manage their sexual health.



Adults

At a glance

An estimated **890,125 adults** between the age of 25 and 64 resided in the region in 2014.

Key health needs are:

- **primary prevention** activities to promote healthy lifestyles and prevent the onset of chronic disease
- general services to **manage chronic disease**
- equitable access to **psychological services** to address the high prevalence and significant impacts of mental health and wellbeing issues across the region
- general services to address **alcohol consumption** and **smoking**
- services to address the increasing use of **methamphetamines** and other drugs, particularly for vulnerable populations
- improving **health literacy**, particularly for vulnerable populations.

Population growth

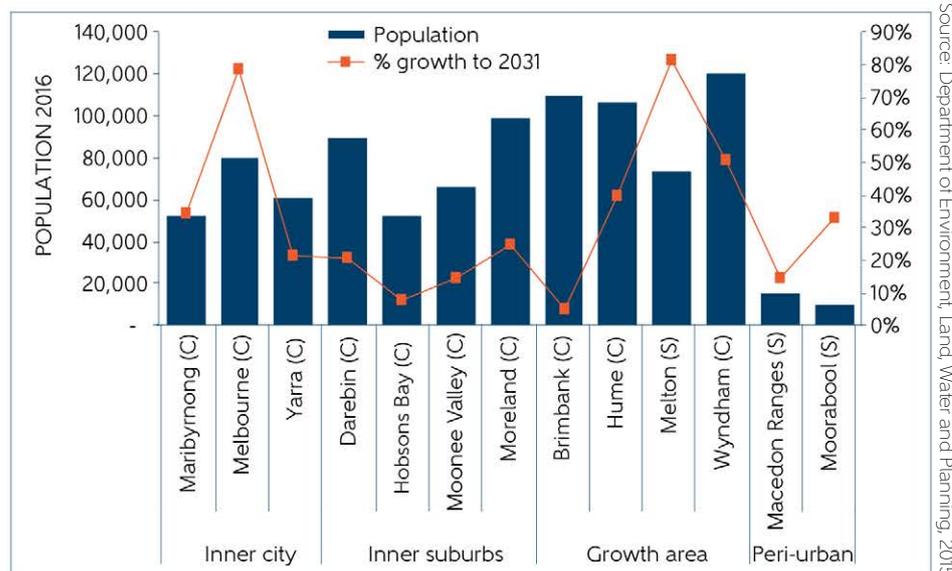
In 2014, there were 890,125 adults aged 25 to 64 years in the region, representing 56.6 per cent of the region's population (above the Victorian average of 53.1 per cent). While this number is predicted to increase to 1,263,955 by 2031, the proportion of adults in the region will decline over the same period to 54.7 per cent.

Approximately half the growth will occur in Hume, Melton and Wyndham, with Melbourne and Maribyrnong also expected to experience high growth.

Melbourne LGA is forecast to have the second fastest growth of all municipalities, with the adult population increasing by 79 per cent to 2031, an annual growth rate of 3.9 per cent. Much of this population growth is expected to be in the new residential areas in the CBD, Macaulay - North Melbourne, and Docklands.

The lowest population growth in adults is expected to be in Brimbank and Hobsons Bay (Figure 27). See Appendix A for more detail.

Figure 27: Adults (aged 25-64) 2016 population and % projected growth to 2031 by residential area



Overview

Adults of working age experience major life events and transitions such as establishing themselves in the workforce, finding secure housing, raising a family, changing careers and retirement planning.

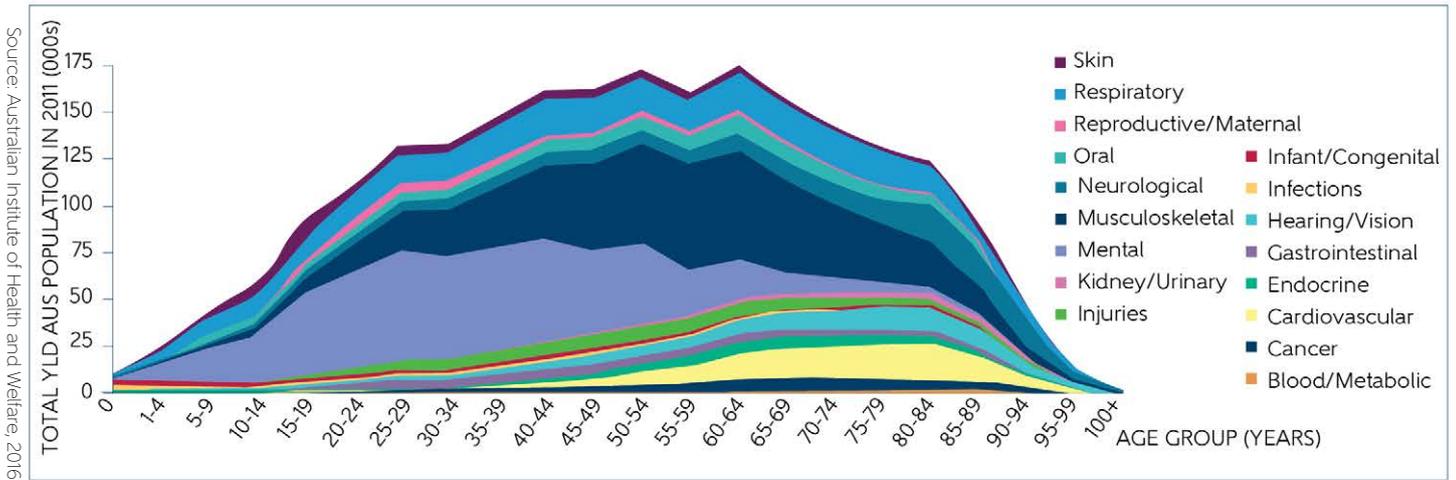
Health issues can reduce their earning capacity and affect how these life events are experienced. Many long-term health conditions emerge during this stage, and behaviours and patterns that can influence longevity or health in later years are established.

Changes to the major burdens of disease by age at a national level are shown in Figure 28. This figure illustrates the transition from high burden of mental health issues in people aged 20-40 years to increasing musculoskeletal disease burden in the 40-60 year cohort.

The changing profile of chronic disease is an important issue for planning population level services, as it challenges systems to evolve to address health changes in the community.

Section 3 of this report (Determinants of health) describes the socioeconomic determinants of health and highlights some of the relationships between social and economic disadvantage, the determinants of health, and the prevalence of chronic health conditions.

Figure 28: Number and relative proportion of non-fatal burden (Years of Life with a Disability (YLD)), by disease group and age, 2011



Health needs

Chronic disease

Diabetes

- the region has extremely high estimated rates of diabetes compared to the Victorian and national average, particularly in Brimbank, Hume, Maribyrnong, Darebin and Moreland
- diabetes complications are the highest potentially avoidable hospitalisation for all adults aged 25 years and older
- the prevalence of diabetes as a major burden of disease for adults increases from the age of 35, peaking for 35-54 year olds as the fourth highest burden of disease.

Cardiovascular disease

- the prevalence of cardiovascular disease as a major burden of disease increases from the age of 35, peaking for 75+ year olds as the highest burden of disease
- mortality rates from cardiovascular disease for 0-74 year olds are very high in Maribyrnong and high in Melton.

Cancer

- the prevalence of cancer as a major burden of disease increases from the age of 25, peaking for 45-74 year olds
- cancer screening rates are consistently low in Wyndham, and generally low in Melbourne and Hume
- cancer screening, diagnosis and mortality rates vary across the region (Table 2).

Some areas across the region have a higher incidence of cancer morbidity but a lower rate of cancer screening. For some types of cancer (e.g. lung cancer), there may be a correlation between the prevalence of cancer and areas of greater socioeconomic disadvantage.

Mental health

- rates of psychological distress are extremely high in Brimbank, Darebin, Hume and Melbourne LGAs, and very high in Maribyrnong, Hobsons Bay and Moorabool LGAs
- rates of mental and behavioural problems are high in Melbourne LGA
- depression is the highest primary care diagnosis in ATAPS referrals
- rates of MBS-funded mental health plans are extremely high in Sunbury and Darebin South SA3 areas.

Mental health problems are prevalent across the region. In particular, high levels of psychological distress are evident in a number of areas, predominantly those with high levels of socioeconomic disadvantage. In these areas, general mental health issues may be exacerbated by the social and economic determinants of health. Poor mental health can lead to lost income and productivity, and increase the risk of homelessness and disadvantage.





Alcohol and other drug use

- Yarra, Melbourne and to a lesser extent Maribyrnong LGAs consistently have the highest alcohol and illicit drug-related health service usage rates (including ambulance attendance, emergency department presentations, hospitalisations and episodes of care). Inner suburban LGAs also have high levels of illicit drug service usage
- Moorabool LGA has high rates of adults consuming alcohol at a level considered to be high risk, alcohol-related serious road injuries and alcohol-related deaths
- Melbourne and Yarra LGAs have extremely high and very high alcohol-related assault rates due to their inner-city locations and nightlife
- as with alcohol, crystal methamphetamine and other meth/amphetamines have the highest rates of related service usage in Melbourne and Yarra LGAs. However, episodes of care for meth/amphetamines are spread across inner suburban and growth corridor LGAs, indicating that usage of meth/amphetamines is spread relatively widely across the region
- smoking rates are low across the region relative to the Victorian average.

Table 2: Screening rates for breast, bowel and cervical cancer in the region by LGA

	LGA	Breast screening, 50-69 years, 2012-14 (percentile, Vic)	Cervical screening, 20-69 years, 2012-13 (percentile, Vic)	Bowel screening, 2011-12 (percentile, Aus)
Inner city	Maribyrnong	11 th		
	Melbourne	7 th	2 nd	12 th
	Yarra	25 th		
Inner suburban	Darebin	17 th		26 th
	Hobsons Bay	23 rd		20 th
	Moonee Valley			
	Moreland	20 th		11 th
Growth corridor	Brimbank	15 th	11 th	21 st
	Hume		9 th	7 th
	Melton		6 th	15 th
	Wyndham	9 th	4 th	1 st
Peri-urban	Macedon Ranges			
	Moorabool			

Source: Department of Health and Human Services, 2014

Note: shading denotes areas of low screening rate, being in the lowest quartile in Victoria

Older adults

At a glance

An estimated **174,999 older adults** aged 65 years and over resided in the region in 2014.

Identified needs in this age group are:

- **coordinating care** for older adults, particularly those with multimorbidity
- ensuring that **residential aged care** facilities are sufficiently equipped to provide and/or facilitate access to high-quality primary care services
- coordinating **end of life** care.

Population growth

In 2014, there were 174,999 older adults (aged 65 years and over) in the region, representing 11.1 per cent of the region's population (below the Victorian average of 14.7 per cent). This number is predicted to increase to 324,373 by 2031; the proportion of older adults in the region will also increase over this time to 14.0 per cent.

Approximately half this growth will occur in Hume, Melton and Wyndham, with Brimbank and Melbourne also expected to experience high growth.

Wyndham and Melton LGAs are forecast to have the fastest growth of all municipalities, with their older adult populations forecast to grow by 152-154 per cent to 2031, an annual growth rate of 6.4 per cent.

The lowest population growth in older adults is expected to be in inner suburban Darebin and Moreland (Figure 29). See Appendix A for more detail.

Overview

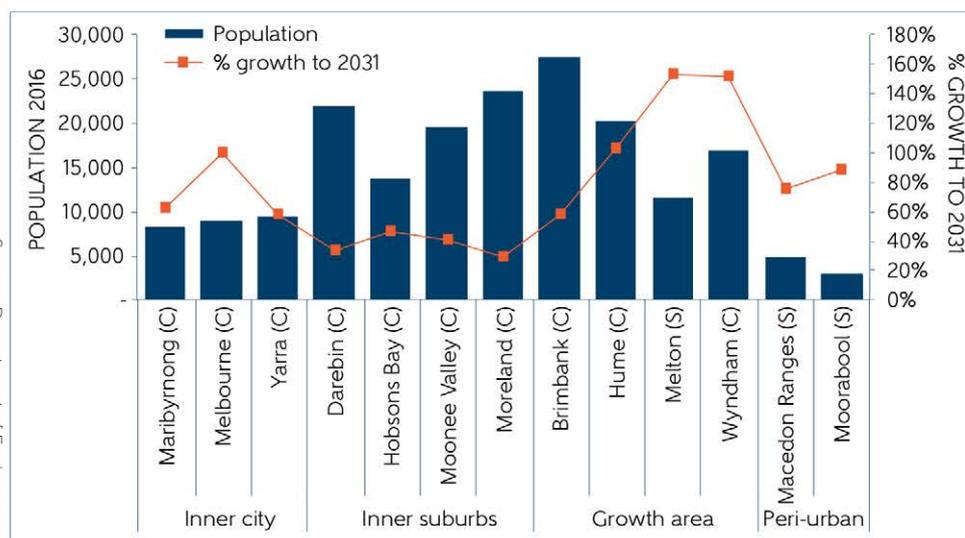
Chronic diseases become increasingly prevalent as people age. As a result, the health needs of many older adults are compounded by the need to manage multiple comorbidities (or multimorbidity). This section focuses on the multiple and complex issues that may be experienced by older adults. Figure 29 illustrates how the number of chronic diseases rises with increasing age.

People with multimorbidity have poorer functional status, quality of life, and health outcomes, and are higher users of ambulatory and inpatient care than people without multimorbidity.⁵⁶ Improving continuity and coordination of care for people with multimorbidity is a key challenge for healthcare systems worldwide, and requires coordination of care across multiple settings and disciplines.

Figure 28 (earlier in this section) showed how the burden of non-fatal disease changes with age, and indicated that the following conditions assume major importance in older adults:

- musculoskeletal disease
- cardiovascular disease
- respiratory disease
- dementia
- hearing loss.

Figure 29: Older adults (aged 64+) 2016 population and % projected growth to 2031 by residential area



Source: Department of Environment, Land, Water and Planning, 2015



Determinants of health and wellbeing: key findings

Age pension	Melton, Hume, Brimbank, Moreland, Maribyrnong, Darebin, and Wyndham LGAs have very high rates of eligible age pension recipients (per 1,000 eligible - in the highest quartile for Victoria)
Living alone	In Melbourne, 44.8 per cent of people aged 75 or older live alone All other LGAs in this region have relatively low rates of 75+ year olds living alone
Obesity	73.6 per cent of Victorians aged 65 or older are overweight or obese ⁵⁷
Residential and community care	Maribyrnong and Melbourne LGAs have very high numbers of community care places per head of population. (Note: home care package rates for Hume, Macedon Ranges, Melton and Wyndham are not available.) Compared to the Victorian averages per capita, Melbourne has more low-level care places, and a medium number of high level care places Maribyrnong and Hobsons Bay LGAs have more high level care places per capita than the Victorian average

Health needs

Older adults often experience multiple comorbidities, (Figure 30) highlighting the need to coordinate care across multiple service providers and health systems.

Chronic disease (including comorbidities)

Respiratory disease

- average annual deaths from respiratory diseases are very high in Melton and Hume
- average annual deaths from chronic pulmonary disease are very high in Wyndham, and high in Maribyrnong, Melton and Melbourne
- respiratory disease is the fourth highest burden of disease for older adults over 65.

Cardiovascular disease

- 10 per cent of all potentially avoidable hospitalisations for 65+ year olds are for congestive heart failure
- 9 per cent of all potentially avoidable hospitalisations for 65+ year olds are for chronic obstructive pulmonary disease. (National Health Performance Authority, 2016)

Diabetes

- 71 per cent of all potentially avoidable hospitalisations for 65+ year olds are for diabetes

Cancer

- cancer is the second highest burden of disease for 75+ year olds
- common cancers in older adults include colorectal, lung, prostate, breast, and skin (melanoma).⁵⁸

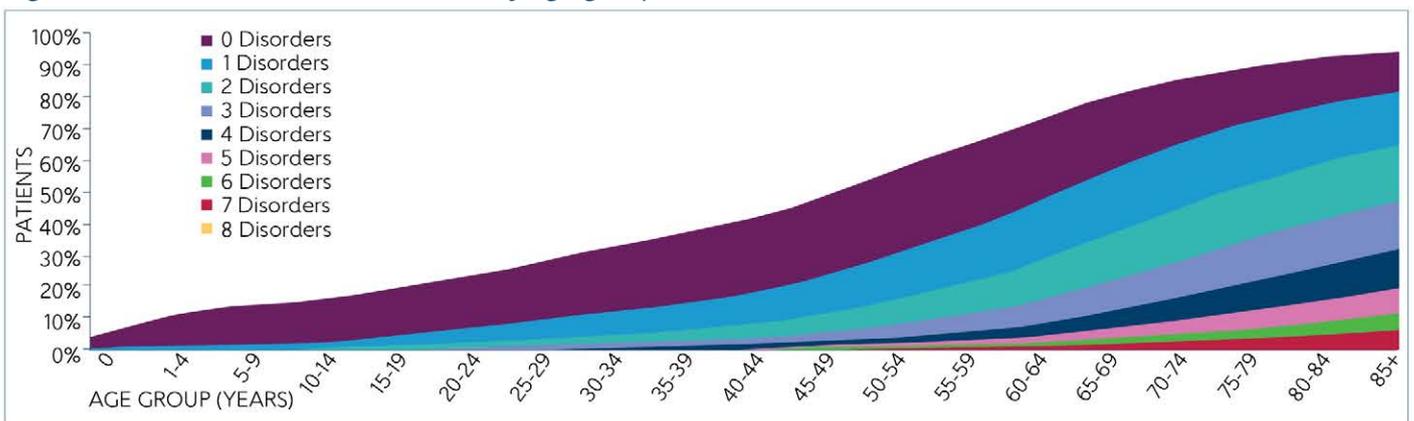
Mental health and dementia

Dementia

- numbers of dementia cases per capita were relatively low compared to the Victorian average in 2011, with Moonee Valley and Moreland having higher rates
- of the top 10 suburbs projected to have the highest Victorian rates of dementia in 2050, five are in the North Western Melbourne PHN region.⁵⁹

Dementia rates are rising nationally and will continue to do so as the population ages. It is important that appropriate services are available for people across the region, including better assessment, identification and treatment.

Figure 30: Number of chronic disorders by age group



Source: Barnett, et al., 2012

HEALTH AND WELLBEING FOR PRIORITY POPULATIONS

When considering the health and service needs of the population, it is important to consider groups that have priority needs or may be more vulnerable. This may be due to a higher burden of disease, or increased barriers for these groups in accessing the healthcare system, or both.

Aboriginal and Torres Strait Islander people

Aboriginal and Torres Strait Islander people experience significantly poorer health and life outcomes across all ages and stages than other population groups. These issues are noted throughout this report.

A detailed analysis of the health and wellbeing needs of Aboriginal communities is given in the Information Paper: Closing the Gap in North Western Melbourne PHN report, available at nwmphn.org.au/aboriginalhealth.

Culturally and linguistically diverse groups, including refugees

The NWMPHN region has a diverse population with people from a wide range of cultural backgrounds. People from culturally and linguistically diverse (CALD) backgrounds may experience specific health needs relating to trauma, cultural factors or social isolation.

In addition, there can be significant barriers to navigating and accessing the health system. Examples include language, cultural differences, taboos around health issues such as mental health or sexuality, and different approaches and expectations around aging and palliative care. These and other factors can contribute to individuals not seeking care when they need it.

The region is also home to a large number of refugees and humanitarian settlers. Many refugees and humanitarian settlers have multiple and complex physical and psychological health issues, resulting from trauma and torture, deprivation and prolonged poverty, periods in immigration detention, and poor access to healthcare.

In order to meet these needs, the health system in the region must be able to engage CALD communities and humanitarian arrivals through culturally appropriate responses and in partnership with local social structures.

People experiencing homelessness

The North Western Melbourne PHN region has some areas with high numbers of people experiencing homelessness, particularly in the inner city LGAs of Melbourne City, Yarra, and Maribyrnong. Homelessness has a profoundly negative impact on physical and mental health, and there is a strong correlation between homelessness and poor physical and mental health.

The underlying reasons for homelessness often include domestic violence, accommodation issues, and financial difficulties. Although mental health and substance abuse issues are relatively common among people experiencing homelessness, these collectively account for less than 3 per cent of the main reasons for homelessness identified by people seeking assistance for homelessness.⁶⁰

People from other vulnerable groups are more likely to experience homelessness. For example, people who identify as Aboriginal or Torres Strait Islander make up 9 per cent of people supported by specialist homelessness services but only 0.9 per cent of the total population.^{61, 62}

People with a disability

Although almost one in five Australians has a disability, Australian evidence regarding the health of people with a disability is limited. Existing Australian and international evidence shows that people with a disability are worse off than non-disabled people across a range of health outcomes, including obesity, diabetes, oral health and mental health. People with a disability are also more likely to live in poverty, have poor-quality housing, low levels of workforce participation and education, and be socially excluded or marginalised.⁶³

Many of these differences in health and wellbeing are socially determined rather than due to the particular characteristics of the disability itself.

LGBTIQ

The region is home to many people who identify as lesbian, gay, bisexual, transgender, intersex or queer (LGBTIQ). While LGBTIQ encompasses diverse communities, individuals, experiences and viewpoints, LGBTIQ people overall are more likely to face stigmatisation, bullying and minority stress that adversely affect their health and wellbeing and mental health outcomes.

Various groups within the LGBTIQ community are also at higher risk of specific health issues. This can include sexual health issues, and risks associated with cross-sex hormone treatments. They may also face barriers to accessing health services, due to the real or perceived attitudes and behaviours of some providers.

SERVICE NEEDS

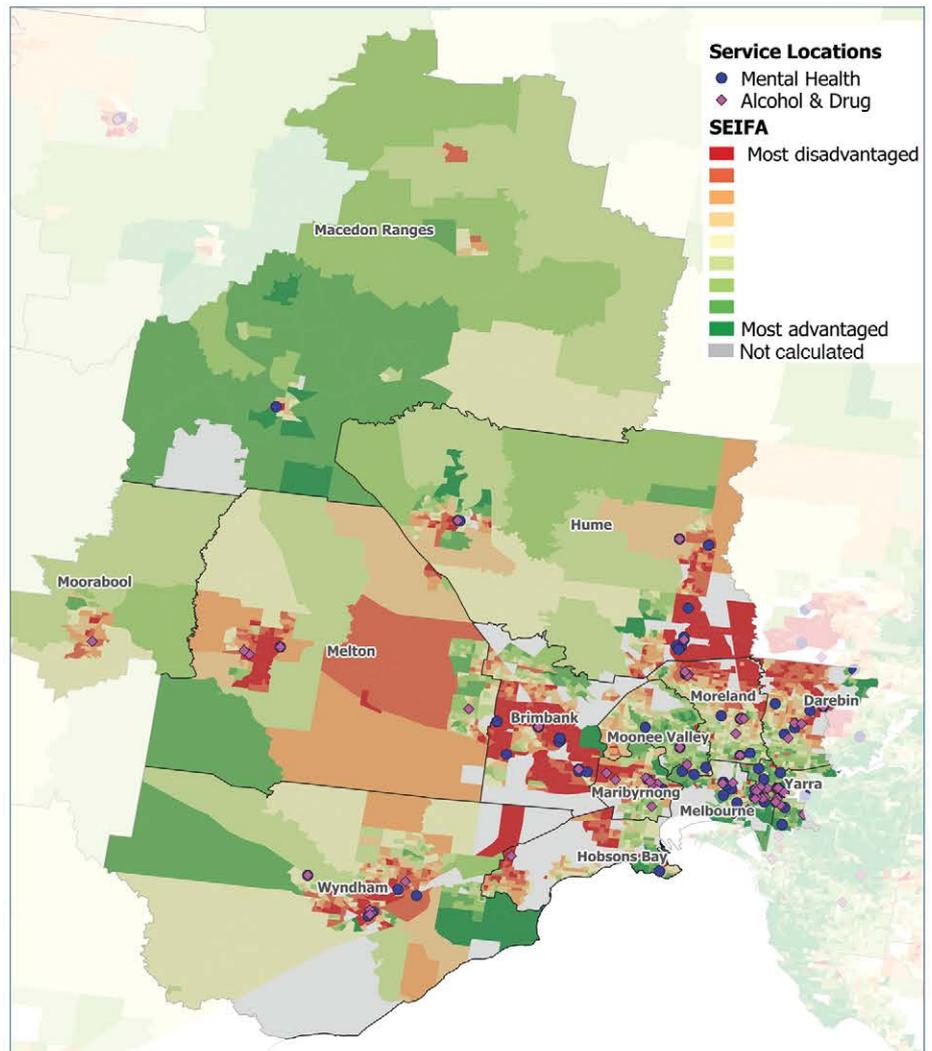
The North Western Melbourne PHN region is diverse in terms of both geographic profile and the health needs of local communities. Many factors influence local needs for health services, including the demographic profile of residents, the behavioural determinants of health for individuals, the availability and ease of access to services, and the existence of any other barriers to access. As a result, service needs across the region vary considerably.

Health services profile

The region has one of Australia's most dynamic and complex health service systems, with:

- 1700 GPs across more than 520 practices
- 12 community health services
- 12 public hospitals and 15 private overnight hospitals (Figure 32)
- Three SuperClinics in Ballan, Broadmeadows and Wyndham Vale (Ballan is outside the NWMPHN region but is in the Shire of Moorabool)
- 375 pharmacies, and three Supercare Pharmacies
- over 120 mental health and alcohol and drug service providers (Figure 31)
- over 130 aged care facilities.

Figure 31: Mental health, alcohol and other drug providers in the NWMPHN region, mapped against the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD)



Community health services

Victoria has a strong community health sector that provides a wide range of health, social and support services. Community health targets vulnerable and disadvantaged community groups and operates with a strong focus on improving health equity and building community capacity. The NWMPHN region has a number of community health services, many of which operate over multiple sites:

- cohealth
- North Richmond CHS
- Darebin CHS
- ISIS PC
- Merri CHS
- Sunbury CH
- Dianella CH
- Djerriwarrh HS
- Cobaw CHS
- Macedon Ranges CHS
- Plenty Valley CH
- Inner East CH (Access Health and Community).



Many areas within the region are classified as districts of workforce shortage for general practice (Figure 32) and some medical specialties. These shortages affect the ability of consumers to access care when needed. This is exacerbated by the fact that some of the major areas of workforce shortage also have the highest rates of population growth, suggesting that unless service needs in the growth corridors are addressed, inequities in access to health services in the region may increase.

Potentially preventable hospitalisations and after-hours emergency department presentations both give an indication of the level of access to general practice services. While the region's average is below the Australian average in both these areas, there is variation across the region (Table 3 and Figure 34).

Figure 32: Profile of hospital services

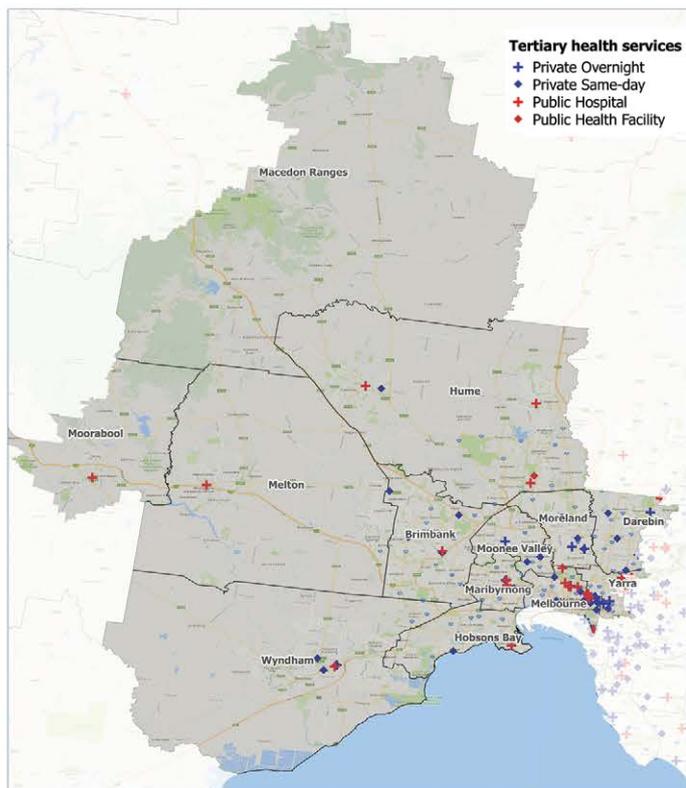


Figure 33: Districts of GP workforce shortage

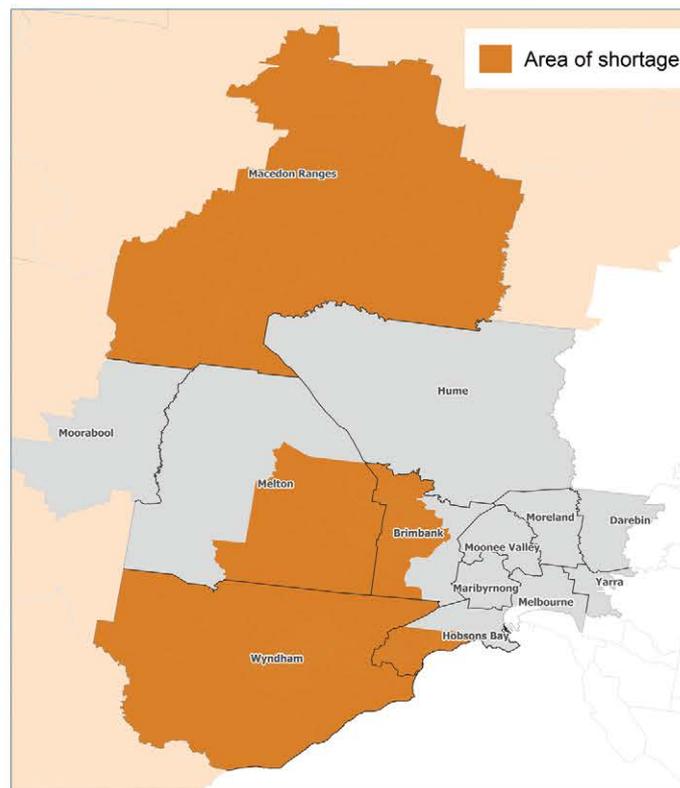


Table 3: Potentially preventable hospitalisations (PPH), 2013-14

	North Western Melbourne PHN region			Australia		
Condition	PPH per 100,000 people (age-standardised)	Total PPH bed days	Average Length of Stay (ALOS)	PPH per 100,000 people (age-standardised)	Total PPH bed days	Average Length of Stay (ALOS)
Total	2,291	130,578	4.0	2,436	2,363,854	3.9
Chronic conditions	1,150	67,957	4.2	1,122	1,245,368	4.4
Acute conditions	971	48,766	3.4	1,201	942,862	3.3
Vaccine preventable conditions	195	16,895	5.9	128	207,871	6.7
Acute and vaccine preventable conditions	1,161	65,080	3.8	1,325	1,144,241	3.6

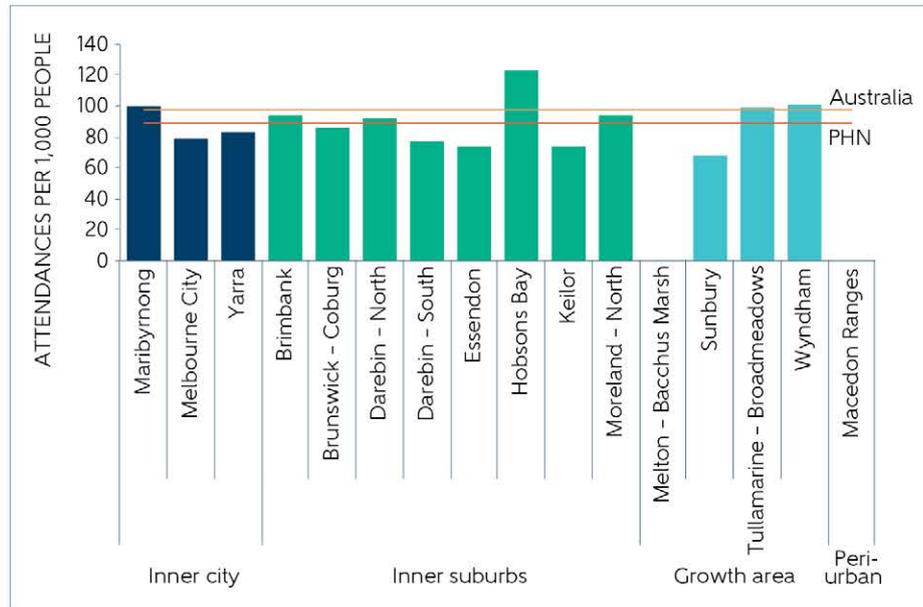
Source: National Health Performance Authority, 2016

Factors such as affordability of health insurance, availability of private hospitals, and perceived options for care affect local uptake of private health insurance, and subsequent usage of private hospital care. Figure 35 illustrates the age standardised variation in rate in the utilisation of public and private hospital services, with 1 representing the total private and public rate.

While the Australian Prudential Regulation Authority (APRA) does not publish private health insurance (PHI) data below state level, estimates can be derived from other sources, such as the annual sample file of tax returns published by the Australian Tax Office (ATO).

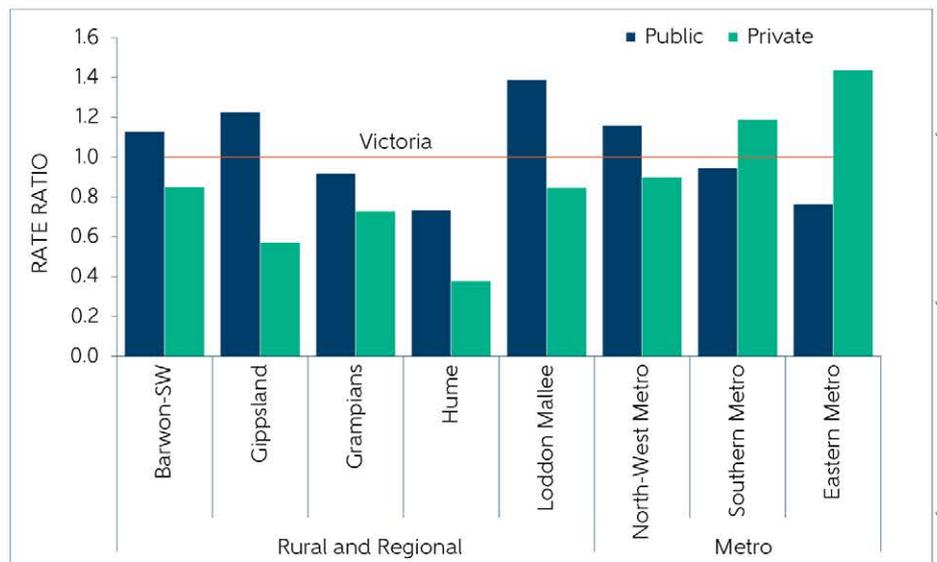
The ATO data illustrate PHI variation among taxpayers, and show lower PHI rates in the north and west of Melbourne and peri-urban Victoria (Figure 36). In regions where fewer taxpayers have PHI, service users will generally be more reliant on available public health services. However, it is also true that both public and private hospitals are less available in growth corridors and peri-urban areas.

Figure 34: After hours emergency department attendances (by SA3), 2013-14



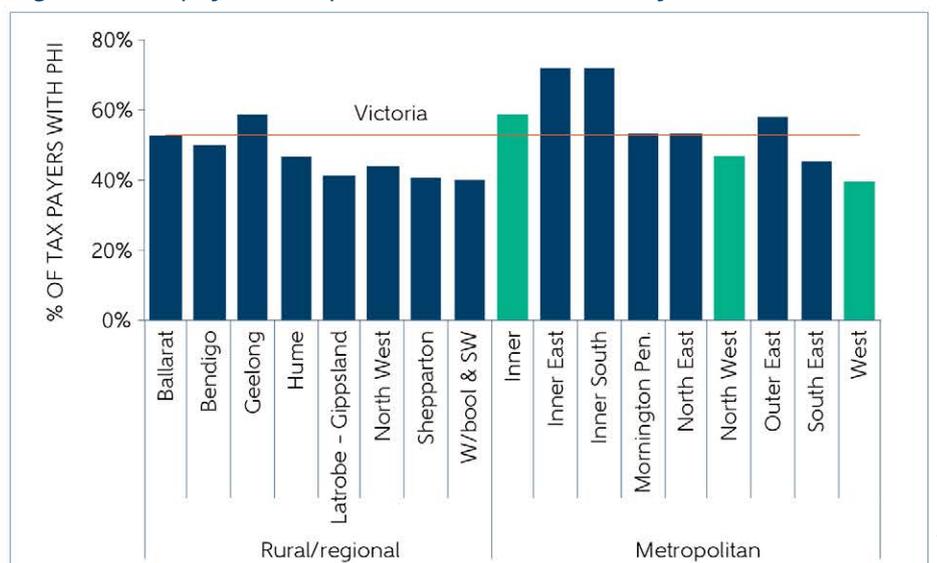
Source: National Health Performance Authority, 2016. Note: no data are published for Melton, Bacchus Marsh or Macedon Ranges due to the classification of emergency department type facilities in those locations.

Figure 35: Age standardised utilisation of public and private hospitals



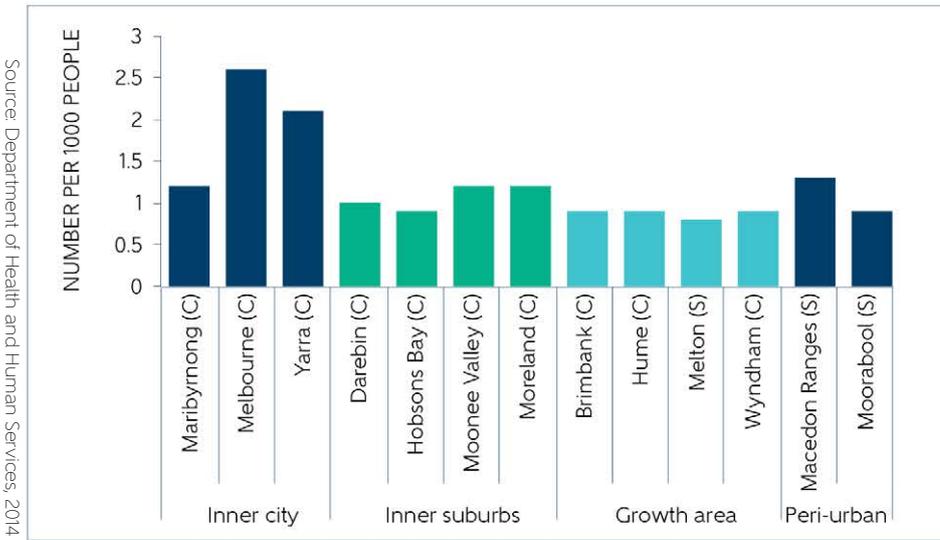
Source: DHHS, VAED. Note: The low level of Hume data is likely to be influenced by interstate flows to Albury NSW

Figure 36: Taxpayers with private health insurance (by SA4), 2013-14



Source: Australian Tax Office n.d

Figure 37: Number of general practitioners per 1,000 people by LGA, 2014



Workforce profile

In terms of overall numbers per head of population, the availability of health workers varies across the North Western Melbourne PHN region. Figures from Figure 37 to Figure 40 illustrate this variation for general practice, pharmacy, dental services and allied health staff. All disciplines have relatively high availability in Melbourne LGA, but low availability in most of the growth area and peri-urban LGAs.

Figure 38: Number of pharmacies per 1,000 people by LGA, 2015



Figure 39: Number of allied health sites per 1,000 people by LGA, 2015

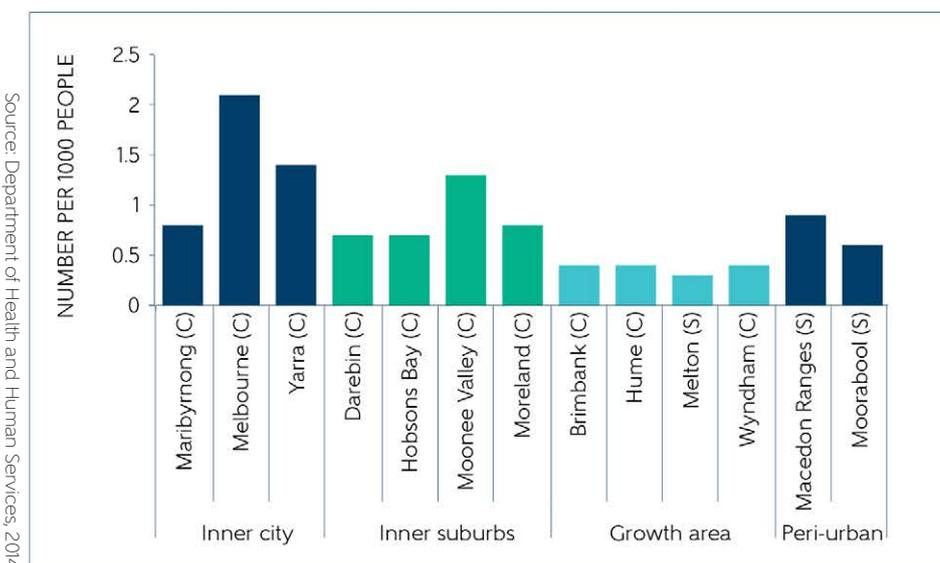
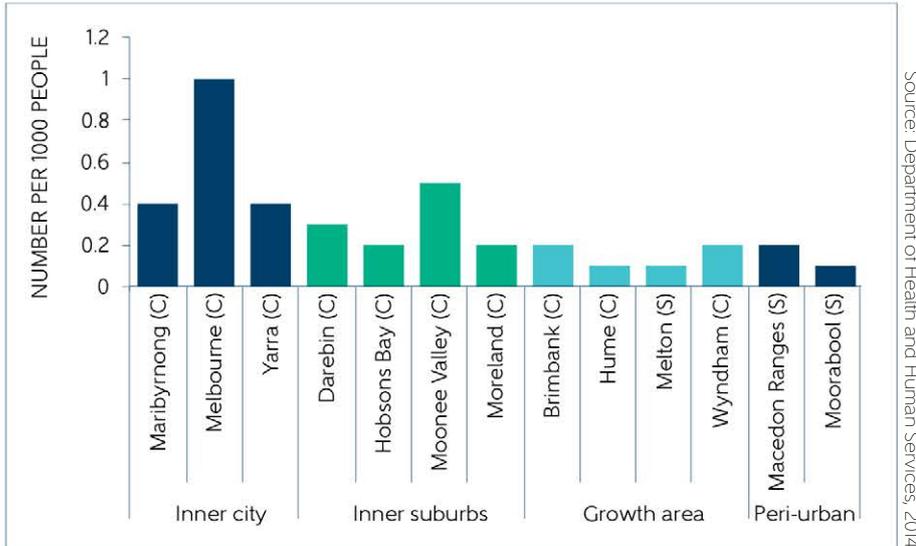


Figure 40: Number of dental services per 1,000 people by LGA, 2015



Access to services

Factors that contribute to whether individuals and communities have access to health services include:

Workforce shortage

There are areas of workforce shortage across the region, specifically in the western suburbs and growth corridors where there is high and growing demand for health services.

These areas are also likely to have higher levels of socioeconomic disadvantage, which tends to increase both demand for services and barriers to access. This suggests there may be higher levels of unmet or underserved demand in these areas. Strong current and projected population growth in these regions may further exacerbate any existing service shortfalls.

Figure 41: Visits to and MBS expenditure on specialist and GP services.

Figure 41a: MBS expenditure on specialist services, 2013-14

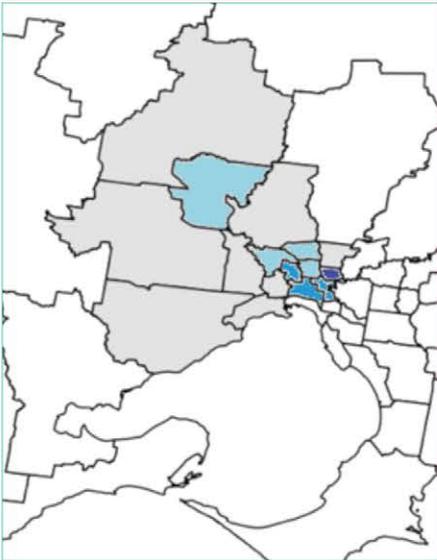


Figure 41b: MBS expenditure on GP attendances, 2013-14

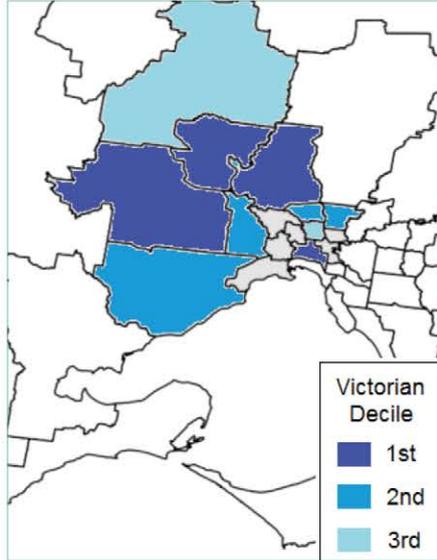
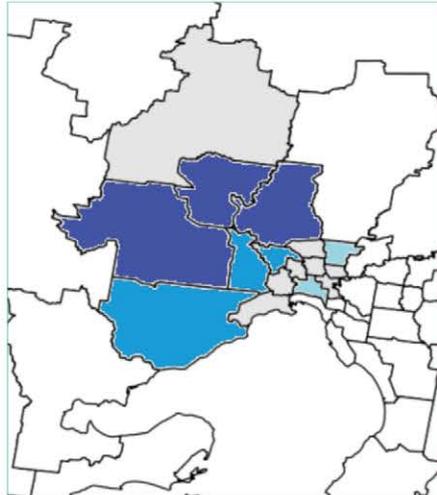


Figure 41c: Visits to specialists, 2013-14



Figure 41d: Visits to GPs, 2013-14



GP demand

There are high levels of utilisation for both regular and after-hours GP services in the outer northern and western suburbs (Figure 41b, d).

Specialist demand

Specialist attendances tend to focus around the inner city and inner west (Figure 41a, c).

Wait times

Providers in our region have significant concerns about public hospital outpatient and outreach waiting lists, mental health services and public housing. They hold particular concerns about the impact of wait times on elderly and CALD people. Providers suggest that, in addition to increasing funding to address wait times, there are opportunities to improve referral pathways and triaging.

This is consistent with client surveys conducted in recent years in the previous North Melbourne and Inner North West Melbourne Medicare Local catchments. High numbers of people reported feeling that they waited longer than acceptable to get an appointment with a GP or with a specialist.

Access barriers

Even in areas with a high number of providers, individuals can face barriers to accessing these services. These barriers can include:

- financial barriers, such as not being able to afford to visit the doctor or fill prescriptions. There is a need to ensure that bulk billing services continue to be available to meet demand in areas with higher socioeconomic disadvantage.
- cultural and linguistic barriers, such as not understanding how to navigate the health system or difficulty understanding or speaking English. This can also include cultural taboos around certain health issues.
- other diversity barriers, such as people being unsure whether a provider is accommodating of diversity, or providers not understanding the particular health needs of various vulnerable communities.

Given the diversity within the region, it is important that health services are equipped to provide appropriate services that meet the needs of their local communities.

After-hours access

Improved access to after-hours primary care would reduce the extent to which people go without care or use emergency and acute services. The current situation is that access to after-hours primary care varies considerably across the region.

General Practice

Within the region, there are 10 GP clinics open until 10pm. Two super-clinics are located less than 10 kilometres outside the region.

Pharmacies

Areas across the region report having limited access to pharmacies open until 9pm.

Community Health Services

Three services within the region provide after-hours services, up to five hours a week.

Emergency Departments

Access in outer areas is limited. Werribee Mercy hospital offers limited emergency services. Melton Health has a GP urgent care service.

Coordination and integration

The complexity of the health service system in the North Western Melbourne PHN region means that coordination and integration are key priorities. Significant issues for the region include:

- a large number of providers, including 12 large and specialist/state-wide hospitals, 12 community health services over multiple sites, more than 1,700 GPs across 520 practices, 375 pharmacies, over 130 aged care facilities, and over 120 mental health and alcohol and drug service providers
- many of Victoria's correctional facilities (prisons), and three of Australia's fastest growing LGAs, being located within the catchment
- a large and unique mix of transient populations within the Melbourne CBD in addition to permanent residents, including tourists, students, workers, and people experiencing homelessness.



CONCLUSIONS AND IMPLICATIONS

This report has provided a high-level overview of key health and health services needs across the North Western Melbourne PHN region. Major findings include:

- high rates of chronic diseases such as diabetes across the region, relative to the rest of Australia
- high rates of potentially avoidable hospitalisations for conditions such as asthma, indicating a need for better access to, and utilisation of, primary health care
- the need for more equitable access to health services, with GP shortages across the region and better access to health services in the inner city compared to the outer suburban growth corridors
- the important impact of mental illness across the lifecycle and particularly for young people, which is in some cases linked to relatively higher rates of alcohol and drug use
- the needs of priority populations, including people identifying as LGBTIQ, people experiencing homelessness, culturally and linguistically diverse groups, Aboriginal and Torres Strait Islander people, and other priority groups, all of which have additional and complex needs that are not necessarily being met by the current service system.

The region's demographic profile, including numbers and relative proportions of people who work, live and seek medical services in the region, and the needs of local populations, will change over time with population growth, particularly in the outer suburban growth corridors to the west and north of Melbourne.

Health planners and service providers across the region will approach the challenges associated with the population's changing

needs from different perspectives and respond using different levers. North Western Melbourne PHN will continue working with its partners in the region and using its own policy and commissioning levers to address the needs that are within its sphere of influence in the primary health sector.

Taking into account the findings of the Initial Needs Assessment, along with the organisation's own previously identified strategic objectives, North Western Melbourne PHN has determined six priority areas of activity for 2016-2018:

1. Prevention and management of chronic disease
2. Improve access to care, and coordination of care across settings, including improving access to care in the after-hours period
3. Enhance mental health and emotional wellbeing
4. Improve health outcomes for priority populations
5. Primary care capacity building and workforce support
6. Enablers to improve population health.

Thirty-one activities will be pursued through these six priority areas. These are outlined in Table 4. Some activities are complex and multifaceted, while others are relatively contained and focused.

The health needs of a community undergo continual change as communities evolve. As more information becomes available and existing data are updated, updated versions of this report will be developed and future priorities will be identified.

North Western Melbourne PHN acknowledges the critical importance of engaging with partner agencies, consumers and funders. The organisation will continue to work with its many partners across the region in order to ensure that the most pressing needs are identified and that services are targeted appropriately.



Table 4: North Western Melbourne PHN priority areas

Priority area	Activity
Prevention and management of chronic disease	Reduce the prevalence of chronic disease by tackling lifestyle-related risk factors
	Improve the management of chronic disease and reduce chronic disease related potentially preventable hospitalisations (PPHs)
	Improve the prevention and management of cancer across the patient journey
Improve access to care, and coordination of care across settings, including improving access to care in the after-hours period	Improve health outcomes for older people
	Improve advance care planning and end-of-life care
	Reduce undesirable variations in care
	Address inadequate and inaccessible after-hours services
	Address inadequate community understanding of after-hours services and access
Enhance mental health and emotional wellbeing	Develop a connected system of primary mental health services within a person-centred stepped care model
	Develop evidence-based regional mental health and suicide prevention plans
	Improve support for people with or at risk of mild mental illness
	Address service gaps and improve integration in the provision of psychological therapies for under-served and/or hard-to-reach populations (including Aboriginal and Torres Strait Islander people)
	Provide primary mental health care for people with severe mental illness
	Encourage and promote a systems-based approach to suicide prevention
	<ul style="list-style-type: none"> - Reduce the impacts of drug and alcohol misuse, including for Aboriginal and Torres Strait Islander people - Develop integrated access to alcohol and drug treatment services for hard to reach/vulnerable communities
Improve health outcomes for priority populations	Improve health outcomes for Aboriginal and Torres Strait Islander people
	Improve health outcomes for refugees and asylum seekers
	Support and improve the health of vulnerable people and families through place-based initiatives
	Improve access and coordination for people leaving correction facilities and on community orders
	Increase immunisation rates (children and adults)
	Improve early intervention for children in need
	Explore consumer-directed care.
	Tackle high rates of hepatitis B and hepatitis C
	Supporting carers
Primary care capacity building and workforce support	Strengthening general practice and primary health care sector
Enablers to improve population health	Exploring models for the Health Care Home
	Improve health literacy
	Create tools and pathways to support better care
	Introduce eHealth and technology solutions
	Integrate population health planning
	Support good stakeholder engagement
	Enhance the capacity and capability of our organisation

APPENDIX A: DATA TABLES

This section provides additional data tables.

Table 5: Population projections by LGA 2011 to 2031

Area	LGA	2011	2031	Growth	% growth
Inner city	Maribyrnong (C)	75,154	120,306	45,152	60%
	Melbourne (C)	100,244	219,898	119,654	119%
	Yarra (C)	78,901	119,019	40,118	51%
Inner suburbs	Darebin (C)	142,942	189,126	46,184	32%
	Hobsons Bay (C)	87,396	107,676	20,280	23%
	Moonee Valley (C)	112,194	145,689	33,495	30%
	Moreland (C)	154,246	213,628	59,382	38%
Growth area	Brimbank (C)	191,495	223,049	31,554	16%
	Hume (C)	174,291	292,299	118,008	68%
	Melton (C)	112,643	258,895	146,252	130%
	Wyndham (C)	166,698	359,538	192,840	116%
Peri-urban	Macedon Ranges (S)	42,860	56,324	13,465	31%
	Moorabool (S)	28,664	45,414	16,749	58%
Total		1,467,728	2,350,861	883,133	60%

Sources: Australian Bureau of Statistics, 2016; Department of Environment, Land, Water and Planning, 2015

Table 6: North Western Melbourne PHN population by catchment and age group 2014 to 2031

Area	Age group	2014	2016	2021	2026	2031	Growth 2014-2031	Growth % 2014-2031	CAGR ² 2014-2031	% of pop. 2014	% of pop. 2031
Inner city	Infant	14,494	17,208	21,190	23,707	24,074	9,581	66%	3.0%	0.9%	1.0%
	Child	17,005	20,532	28,245	36,080	41,637	24,632	145%	5.4%	1.1%	1.8%
	Young	52,971	58,257	58,501	59,147	59,498	6,527	12%	0.7%	3.4%	2.6%
	Adult	181,334	193,778	232,954	264,948	287,840	106,506	59%	2.8%	11.5%	12.4%
	Older adults	24,757	26,653	31,931	38,544	46,152	21,395	86%	3.7%	1.6%	2.0%
Inner city Total		290,560	316,429	372,821	422,426	459,202	168,642	58%	2.7%	18.5%	19.9%
Inner suburbs	Infant	33,630	33,806	36,958	38,325	38,617	4,987	15%	0.8%	2.1%	1.7%
	Child	53,280	55,229	60,922	65,889	70,554	17,274	32%	1.7%	3.4%	3.1%
	Young	64,279	62,301	64,274	68,414	74,158	9,879	15%	0.8%	4.1%	3.2%
	Adult	294,257	308,486	332,771	349,347	365,339	71,082	24%	1.3%	18.7%	15.8%
	Older adults	75,255	78,753	85,776	95,608	107,450	32,195	43%	2.1%	4.8%	4.6%
Inner suburbs Total		520,701	538,574	580,700	617,583	656,119	135,418	26%	1.4%	33.1%	28.4%
Growth area	Infant	58,532	63,860	71,088	75,479	78,278	19,746	34%	1.7%	3.7%	3.4%
	Child	98,842	105,585	129,271	150,761	163,814	64,972	66%	3.0%	6.3%	7.1%
	Young	98,799	98,112	107,240	127,105	155,699	56,900	58%	2.7%	6.3%	6.7%
	Adult	389,772	410,853	465,072	519,614	579,622	189,850	49%	2.4%	24.8%	25.1%
	Older adults	67,980	76,046	99,240	126,676	156,367	88,387	130%	5.0%	4.3%	6.8%
Growth area Total		713,925	754,456	871,911	999,633	1,133,781	419,856	59%	2.8%	45.4%	49.0%
Peri-urban	Infant	3,117	3,054	3,202	3,415	3,650	533	17%	0.9%	0.2%	0.2%
	Child	6,666	6,697	6,981	7,244	7,659	993	15%	0.8%	0.4%	0.3%
	Young	5,765	5,894	5,883	6,254	6,677	912	16%	0.9%	0.4%	0.3%
	Adult	24,762	25,567	27,429	29,213	31,153	6,391	26%	1.4%	1.6%	1.3%
	Older adults	7,007	8,007	10,057	12,210	14,402	7,395	106%	4.3%	0.4%	0.6%
Peri-urban Total		47,317	49,219	53,551	58,335	63,542	16,225	34%	1.7%	3.0%	2.7%
Grand Total		1,572,503	1,658,679	1,878,984	2,097,977	2,312,644	740,140	47%	2.3%	100.0%	100.0%

Sources: Australian Bureau of Statistics, 2016; Department of Environment, Land, Water and Planning, 2015

Table 7: North Western Melbourne PHN population by age group and catchment 2014 to 2031

Age group	Area	2014	2016	2021	2026	2031	Growth 2014-2031	Growth % 2014-2031	CAGR ³ 2014-2031	% of pop. 2014	% of pop. 2031
Infant	Inner city	14,494	17,208	21,190	23,707	24,074	9,581	66%	3.0%	0.9%	1.0%
	Inner suburbs	33,630	33,806	36,958	38,325	38,617	4,987	15%	0.8%	2.1%	1.7%
	Growth area	58,532	63,860	71,088	75,479	78,278	19,746	34%	1.7%	3.7%	3.4%
	Peri-urban	3,117	3,054	3,202	3,415	3,650	533,11172	17%	0.9%	0.2%	0.2%
Infant Total		109,772	117,928	132,437	140,926	144,620	34,848	32%	1.6%	7.0%	6.3%
Child	Inner city	17,005	20,532	28,245	36,080	41,637	24,632	145%	5.4%	1.1%	1.8%
	Inner suburbs	53,280	55,229	60,922	65,889	70,554	17,274	32%	1.7%	3.4%	3.1%
	Growth area	98,842	105,585	129,271	150,761	163,814	64,972	66%	3.0%	6.3%	7.1%
	Peri-urban	6,666	6,697	6,981	7,244	7,659	993	15%	0.8%	0.4%	0.3%
Child Total		175,792	188,043	225,420	259,973	283,664	107,871	61%	2.9%	11.2%	12.3%
Young	Inner city	52,971	58,257	58,501	59,147	59,498	6,527	12%	0.7%	3.4%	2.6%
	Inner suburbs	64,279	62,301	64,274	68,414	74,158	9,879	15%	0.8%	4.1%	3.2%
	Growth area	98,799	98,112	107,240	127,105	155,699	56,900	58%	2.7%	6.3%	6.7%
	Peri-urban	5,765	5,894	5,883	6,254	6,677	912	16%	0.9%	0.4%	0.3%
Young Total		221,814	224,565	235,898	260,920	296,033	74,218	33%	1.7%	14.1%	12.8%
Adult	Inner city	181,334	193,778	232,954	264,948	287,840	106,506	59%	2.8%	11.5%	12.4%
	Inner suburbs	294,257	308,486	332,771	349,347	365,339	71,082	24%	1.3%	18.7%	15.8%
	Growth area	389,772	410,853	465,072	519,614	579,622	189,850	49%	2.4%	24.8%	25.1%
	Peri-urban	24,762	25,567	27,429	29,213	31,153	6,391	26%	1.4%	1.6%	1.3%
Adult Total		890,125	938,683	1,058,225	1,163,121	1,263,955	373,830	42%	2.1%	56.6%	54.7%
Older adults	Inner city	24,757	26,653	31,931	38,544	46,152	21,395	86%	3.7%	1.6%	2.0%
	Inner suburbs	75,255	78,753	85,776	95,608	107,450	32,195	43%	2.1%	4.8%	4.6%
	Growth area	67,980	76,046	99,240	126,676	156,367	88,387	130%	5.0%	4.3%	6.8%
	Peri-urban	7,007	8,007	10,057	12,210	14,402	7,395	106%	4.3%	0.4%	0.6%
Older adults Total		174,999	189,459	227,004	273,036	324,373	149,373	85%	3.7%	11.1%	14.0%
Grand Total		1,572,503	1,658,679	1,878,984	2,097,977	2,312,644	740,140	47%	2.3%	100.0%	100.0%

Sources: Australian Bureau of Statistics, 2016; Department of Environment, Land, Water and Planning, 2015

Table 8: Index of Socio-economic Advantage and Disadvantage (IRSAD), 2011 (Census)

Group	Index of Socio-economic Advantage and Disadvantage (IRSAD)				
	LGA	LGA IRSAD score	LGA IRSAD rank (Vic)	Highest SA1 IRSAD score	Lowest SA1 IRSAD score
Inner city	Maribyrnong	988	46	1137	686
	Melbourne	1050	70	1171	537
	Yarra	1042	66	1160	531
Inner suburban	Darebin	995	50	1175	699
	Hobsons Bay	1000	52	1160	561
	Moonee Valley	1031	62	1149	492
	Moreland	1000	53	1121	755
Growth corridor	Brimbank	932	9	1126	752
	Hume	950	21	1153	488
	Melton	993	48	1116	778
	Wyndham	1007	56	1171	685
Peri-urban	Macedon Ranges	1047	68	1143	771
	Moorabool	995	49	1095	797

Source: Australian Bureau of Statistics, 2011

Table 9: LGA profile statistics on cultural diversity in the North Western Melbourne PHN region

	LGA	% speak language other than English at home, 2011	% low English proficiency, 2011	Humanitarian arrivals as a % of all new arrivals, 2013-14	% community acceptance of diverse cultures, 2011	% Aboriginal and Torres Strait Islander, 2011
Inner city	Maribyrnong	46.3	10.7	4.8	67.0	0.5
	Melbourne	43.0	5.4	0.8	67.9	0.3
	Yarra	25.2	6.7	1.5	78.0	0.5
Inner suburban	Darebin	41.0	8.3	2.4	54.8	1.0
	Hobsons Bay	30.9	5.5	8.7	55.9	0.6
	Moonee Valley	31.1	5.3	2.3	49.1	0.4
	Moreland	41.7	7.7	4.1	60.6	0.6
Growth corridor	Brimbank	59.7	13.4	11.2	46.5	0.5
	Hume	43.0	8.1	32.5	38.0	0.7
	Melton	30.5	3.7	7.3	41.6	0.8
	Wyndham	32.0	4.6	7.3	47.6	0.8
Peri-urban	Macedon Ranges	4.3	0.4	0.0	50.0	0.6
	Moorabool	4.7	0.5	0.0	41.7	1.0

Source: Department of Health and Human Services, 2014

Table 10: LGA profile statistics on employment and economic stress

Group	Economic determinants					
	LGA	Average wage	Labour force unemployed (%)	Persons under rental stress (%), 2011	Persons under mortgage stress (%), 2011	Gaming machine losses per head (adult), 2014-15
Inner city	Maribyrnong	\$50,868	7.0	24.8	9.4	\$817.64
	Melbourne (part)	\$56,444	4.9	26.9	9.8	\$709.91
	Yarra	\$61,127	7.6	15.5	4.7	\$419.85
Inner suburban	Darebin	\$49,490	8.5	24.7	10.1	\$709.26
	Hobsons Bay	\$49,835	5.6	22.0	9.7	\$665.38
	Moonee Valley	\$54,233	5.8	21.8	7.3	\$819.29
	Moreland	\$56,332	7.9	23.4	10.1	\$490.34
Growth corridor	Brimbank	\$45,009	9.7	30.6	18.0	\$956.29
	Hume	\$49,835	10.1	33.4	18.6	\$788.90
	Melton	\$47,197	7.2	29.3	14.1	\$648.20
	Wyndham	\$50,434	6.6	26.5	12.8	\$666.40
Peri-urban	Macedon Ranges (part)	\$48,222	3.8	24.3	9.5	\$266.94
	Moorabool (part)	\$52,433	5.2	27.1	11.4	\$474.48

Sources: Department of Health and Human Services, 2014; Victorian Commission for Gaming and Liquor Regulation, 2015; Australian Bureau of Statistics, 2015

Table 11: LGA profile statistics on lifestyle indicators

Group	LGA	Lifestyle indicators		
		Persons who visit a green space at least once a week, 2011	Persons with at least 2 hour daily commute, 2011	Work journeys which are by car, 2013
Inner city	Maribyrnong	55.7%	11.8%	56.3%
	Melbourne (part)	66.5%	4.8%	26.8%
	Yarra	67.7%	3.4%	36.6%
Inner suburban	Darebin	47.9%	14.8%	54.2%
	Hobsons Bay	50.0%	14.0%	65.7%
	Moonee Valley	40.7%	5.0%	61.7%
	Moreland	46.0%	7.1%	52.6%
Growth corridor	Brimbank	36.5%	16.7%	71.5%
	Hume	40.7%	8.4%	74.3%
	Melton	43.4%	21.9%	74.8%
	Wyndham	52.6%	26.2%	72.1%
Peri-urban	Macedon Ranges (part)	47.2%	21.0%	68.4%
	Moorabool (part)	48.8%	18.7%	71.9%

Sources: Department of Health and Human Services, 2014; Department of Health and Human Services, 2013; VicHealth, 2012

Table 12: LGA profile statistics on crime, child protection and family violence indicators

	LGA	Child protection substantiations per 1,000 eligible population, 2013-14	Family incidents per 1,000 population, 2013-14	Total crime per 1,000 population, 2013-14
Inner city	Maribyrnong	6.5	10.8	105.5
	Melbourne	7.6	10.0	249.3
	Yarra	7.6	8.8	140.7
Inner suburban	Darebin	7.3	11.5	91.0
	Hobsons Bay	7.2	10.9	76.1
	Moonee Valley	5.0	7.9	70.5
	Moreland	5.3	9.1	77.0
Growth corridor	Brimbank	9.5	11.0	92.0
	Hume	9.9	15.9	89.3
	Melton	11.3	13.2	76.8
	Wyndham	8.5	12.0	68.6
Peri-urban	Macedon Ranges	3.4	9.6	44.1
	Moorabool	13.8	10.2	56.6

Source: Department of Health and Human Services, 2014

Table 13: LGA profile statistics on health behaviours

	LGA	Persons who do not meet physical activity guidelines, 2011	Persons who do not meet the dietary guidelines for fruit and vegetables consumption, 2011	Consumed alcohol at least weekly, at levels likely to cause short-term harm -persons aged 18+, 2011	Persons 18+ who are current smokers, 2011
Inner city	Maribyrnong	33.3%	48.9%	9.1%	16.0%
	Melbourne (part)	20.9%	46.9%	9.1%	9.5%
	Yarra	26.5%	47.9%	12.3%	14.7%
Inner suburban	Darebin	33.6%	48.9%	8.6%	21.9%
	Hobsons Bay	37.9%	57.3%	10.1%	21.5%
	Moonee Valley	28.8%	48.8%	11.3%	16.4%
	Moreland	34.7%	45.7%	6.5%	12.8%
Growth corridor	Brimbank	39.9%	49.8%	7.4%	14.3%
	Hume	36.9%	53.0%	5.1%	19.2%
	Melton	37.9%	55.2%	5.1%	22.0%
	Wyndham	35.3%	58.4%	7.6%	17.7%
Peri-urban	Macedon Ranges (part)	33.1%	53.1%	7.2%	15.3%
	Moorabool (part)	34.7%	51.2%	10.1%	13.9%

Source: Department of Health and Human Services, 2014

APPENDIX B: BIBLIOGRAPHY

- 3 Centres Collaboration. (2009). Guidelines: Provision of smoking cessation interventions during pregnancy. Retrieved from <http://3centres.com.au/guidelines/low-risk-pregnancy/provision-of-smoking-cessation-interventions-during-pregnancy>
- Alzheimer's Australia. (n.d.). Dementia statistics for Victoria. Retrieved from <https://vic.fightdementia.org.au/victoria/dementia-statistics-for-victoria.aspx>
- Arabena, K. (2015, Kerry Arabena et al, Making the World of Difference: The First 1000 Days Scientific Symposium Report. (Melbourne: Indigenous Health Equity Unit, Melbourne School of Population and Global Health, 2015), p5.).
- Australian Bureau of Statistics. (2011, July). 1259.0.30.001 – Australian Standard Geographical Classification (ASGC) Digital Boundaries, Australia, July 2011. Canberra, ACT, Australia.
- Australian Bureau of Statistics. (2011, July). 1270.0.55.001 – Australian Statistical Geography Standard (ASGS): Volume 1 – Main Structure and Greater Capital City Statistical Areas, July 2011 . Canberra, ACT, Australia.
- Australian Bureau of Statistics. (2011). 2033.0.55.001 – Local Government Area, Indexes, SEIFA 2011. Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011.
- Australian Bureau of Statistics. (2012, November 12). 2049.0 – Census of Population and Housing: Estimating homelessness, 2011. Canberra, ACT, Australia. Retrieved from www.abs.gov.au/AUSSTATS/abs@nsf/Lookup/2049.0Main+Features12011?OpenDocument
- Australian Bureau of Statistics. (2012). 4428.0 – Autism in Australia, 2012.
- Australian Institute of Health and Welfare (2012). Experience of perinatal depression: data from the 2010 Australian National Infant Feeding Survey (Canberra: Australian Institute of Health and Welfare, 2012), Information Paper. Cat. no. PHE 161.
- Australian Bureau of Statistics. (2013, November). 4430.0 – Disability, Ageing and Carers, Australia: Summary of Findings, 2012. Canberra.
- Australian Bureau of Statistics. (2013, March 28). Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011 (cat. no. 2033.0.55.001). Socio-Economic Indexes for Areas 2011. Canberra, ACT, Australia. Retrieved May 30, 2016, from www.abs.gov.au/websitedbs/censushome.nsf/home/seifa?opendocument&navpos=260
- Australian Bureau of Statistics. (2014). 3105.0.65.001 – Australian Historical Population Statistics, 2014.
- Australian Bureau of Statistics. (2015, September). 3101.0 – Australian Demographic Statistics.
- Australian Bureau of Statistics. (2016, March 30). 3218.0 – Regional Population Growth, Australia, 2014-15. Canberra, ACT, Australia. Retrieved from www.abs.gov.au/AUSSTATS/abs@nsf/Lookup/3218.0Main+Features12014-15?OpenDocument
- Australian Bureau of Statistics. (2016, Mar 31). Community profiles. Retrieved from Census 2011: www.abs.gov.au/websitedbs/censushome.nsf/home/communityprofiles?opendocument&navpos=230
- Australian Early Development Census. (2015). Data. Retrieved from www.aedc.gov.au/
- Australian Government. (n.d.). Immunise Australia Program. Retrieved from www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/Home
- Australian Health Ministers' Conference. (2009). The Australian National Breastfeeding Strategy 2010-2015. Retrieved from [www.health.gov.au/internet/main/publishing.nsf/Content/6FD59347DD67ED8FCA257BF0001CFD1E/\\$File/Breastfeeding_strat1015.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/6FD59347DD67ED8FCA257BF0001CFD1E/$File/Breastfeeding_strat1015.pdf)
- Australian Institute of Health and Welfare. (2010). Australia's health 2010. Canberra.
- Australian Institute of Health and Welfare (2012). Experience of perinatal depression: data from the 2010 Australian National Infant Feeding Survey (Canberra: Australian Institute of Health and Welfare, 2012), Information Paper. Cat. no. PHE 161.
- Australian Institute of Health and Welfare. (2013). Perinatal data: Antenatal period. Retrieved from www.aihw.gov.au/perinatal-data/

Australian Institute of Health and Welfare. (2013). The health of Australia's prisoners 2012. Canberra.

Australian Institute of Health and Welfare. (2014). Australia's Health 2014. Canberra: AIHW. Retrieved May 30, 2016, from www.aihw.gov.au/publication-detail/?id=60129547205

Australian Institute of Health and Welfare. (2014). National Drug Strategy Household Survey Detailed Report 2013. Canberra: Australian Institute of Health and Welfare.

Australian Institute of Health and Welfare. (2015a). Child protection 2014-15. Canberra: AIHW.

Australian Institute of Health and Welfare (2015b). Specialist homelessness services 2014-15 web report, Supplementary Tables.
<http://www.aihw.gov.au/homelessness/specialist-homelessness-services-2014-15/supplementary-tables/>

Australian Institute of Health and Welfare. (2016). Australian Burden of Disease study: Impact and causes of illness and death in Australia 2011. Canberra.

Australian Institute of Health and Welfare. (n.d.). Impact of rurality on health status. Retrieved June 8, 2016, from Rural health: www.aihw.gov.au/rural-health-impact-of-rurality/

Australian Institute of Health and Welfare; Australasian Association of Cancer Registries. (2014). Cancer in Australia: In brief 2014. Canberra.

Australian Tax Office. (n.d.). Taxation statistics - individual sample files.
Retrieved from <https://data.gov.au/dataset/taxation-statistics-individual-sample-files>

Barnett, K., Mercer, S., Norbury, M., Watt, G., Wyke, S., & Guthrie, B. (2012). Epidemiology of multimorbidity and implications for health care, research and medical education: A cross-sectional study. Retrieved from The Lancet.

Cancer Council Victoria. (2016). Smoking and Social Disadvantage.
Retrieved from <http://www.tobaccoinaustralia.org.au/chapter-9-disadvantage>

Department of Education and Early Childhood Development. (2011). Victorian Early Years Learning and Development Framework. Retrieved from www.education.vic.gov.au/Documents/childhood/providers/edcare/veyldframework.pdf

Department of Education and Early Childhood Development. (2013). Victorian Child Health and Wellbeing Survey.

Department of Education and Training. (2015). Maternal and Child Health Annual Report 2014/15, South Western Region and North Western Region. Retrieved from www.education.vic.gov.au/childhood/providers/support/Pages/mchannualreportarchive.aspx

Department of Education and Training. (2016). The State of Victoria's Children Report 2013-14: A report on resilience and vulnerability within Victoria's children and young people.
Retrieved from www.education.vic.gov.au/Documents/about/research/sovc201314.pdf

Department of Education and Training. (2016). Victorian Child and Adolescent Monitoring System (VCAMS) Indicators. Retrieved from www.education.vic.gov.au/about/research/Pages/vcamsindicator.aspx

Department of Environment, Land, Water and Planning. (2015, August 6). Victoria in Future 2015, Population and household projections to 2051. Melbourne, Victoria, Australia. Retrieved May 30, 2016, from www.dtpli.vic.gov.au/data-and-research/population/census-2011/victoria-in-future-2015

Department of Health, Australia (2014) Australia's Physical Activity and Sedentary Behaviour Guidelines retrieved from: www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines#apaadult

Department of Health. (2016, April). Australian Childhood Immunisation Register - Coverage Report. Retrieved from www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/vaccination-data

Department of Health and Aged Care. (1999). An active way to better health: National physical activity guidelines for adults. Canberra.

Department of Health and Human Services. (2013). 2013 Local Government Area profiles.
Retrieved from www.health.vic.gov.au/modelling/planning/lga.htm

Department of Health and Human Services. (2014). 2014 Local Government Area profiles. Retrieved from www.health.vic.gov.au/modelling/planning/lga.htm

Department of Health and Human Services. (2015). Custom data request.

Department of Health and Human Services. (2016). 2014 Local Government Area profiles.

Department of Immigration and Border Protection. (2016, May 30). Retrieved from www.immi.gov.au

Google. (2016). Google Maps. Retrieved from maps.google.com

Harvard Medical School. (2010). Vaccines and Public Health. Retrieved from http://sitn.hms.harvard.edu/wp-content/uploads/2010/09/Lecture_1.2.pdf

National Health and Medical Research Council. (2013). Australian dietary guidelines. Canberra.

National Health Performance Authority. (2013-2014). Potentially preventable hospitalisations.

National Health Performance Authority. (2016a, March 10). Expenditure on health services, 2013-14.

National Health Performance Authority. (2016b). Potentially preventable hospitalisations by condition by Primary Health Network, 2013-2014.

National Health Performance Authority. (2016c, March 10). Use of health services, 2013-14.

National Heart Foundation. (2014). Blueprint for an active Australia. Retrieved from <https://heartfoundation.org.au/images/uploads/publications/Blueprint-for-an-active-Australia-second-edition.pdf>

Oberklaid, F. (2007, December). Brain development and the life course – the importance of the early caretaking environment. Putting Children First, the newsletter of the National Childcare Accreditation Council, pp. 8-11.

Perinatal Anxiety and Depression in Australia. (n.d.). Factsheet: Anxiety and depression in pregnancy and early parenthood. Retrieved from www.panda.org.au/images/FINAL_PDF_Anxiety_and_Depression_in_Early_Parenthood.pdf

Queensland Mental Health Commission. (2014, June). Discussion paper: Perinatal and infant mental health service enhancement. Retrieved from www.qmhc.qld.gov.au/wp-content/uploads/2014/08/QMHC-Discussion-paper-Perinatal-and-Infant-Mental-Health.pdf

Suomi et al. (2013) Asian Journal of Gambling Issues and Public Health 2013, 3:13 www.ajgiph.com/content/3/1/13

Taplin, S. (2014). Identifying alcohol and other drug use during pregnancy. Melbourne: Institute of Child Protection Studies.

Turning Point. (2016, March 10). Retrieved from AODstats: www.aodstats.org.au

University of Melbourne. (2011). Community Indicators Victoria. Retrieved from www.communityindicators.net.au

VicHealth. (2012a). Disability and health inequalities in Australia. Retrieved from www.vichealth.vic.gov.au/media-and-resources/publications/disability-and-health-inequalities-in-australia

VicHealth. (2012b). Indicators Survey 2011: LGA Profiles. Retrieved from www.vichealth.vic.gov.au/media-and-resources/publications/vichealth-indicators-survey-lga-profiles

Victorian Commission for Gaming and Liquor Regulation. (2015). Electronic Gaming Machine LGA Level Expenditure 2014-15. Retrieved from Victorian Commission for Gaming and Liquor Regulation, Electronic Gaming Mach www.vcglr.vic.gov.au/home/resources/data+and+research/data/



APPENDIX C: REFERENCES

- 1 Department of Immigration and Border Protection, 2016
- 2 Australian Bureau of Statistics, 2012
- 3 Australian Institute of Health and Welfare, 2013
- 4 Australian Institute of Health and Welfare, n.d.
- 5 University of Melbourne, 2011
- 6 Victorian Commission for Gaming and Liquor Regulation, 2015
- 7 Suomi et al., 2013
- 8 National Heart Foundation, 2014
- 9 Cancer Council Victoria, 2016
- 10 Australian Institute of Health and Welfare, 2014, p 167
- 11 Department of Health and Aged Care, 1999
- 12 National Health and Medical Research Council, 2013
- 13 Australian Institute of Health and Welfare, 2010
- 14 Australian Institute of Health and Welfare, 2014
- 15-16 Australian Government, accessed 20 May 2016
- 17 Harvard Medical School, 2010
- 18 Arabena, 2015 p5
- 19 Oberklaid, 2007
- 20 Australian Institute of Health and Welfare, 2016
- 21 Australian Health Ministers' Conference, 2009, p3, accessed 21 May 2016.
- 22 Department of Health and Human Services, 2014
- 23 3 Centres Collaboration, 2009, accessed 22 March 2016
- 24 Taplin, 2014, p 5, accessed 22 May 2016
- 25 Taplin, 2014
- 26 Department of Health and Human Services, 2014
- 27 Australian Institute of Health and Welfare, 2013
- 28-29 Australian Institute of Health and Welfare, 2014
- 30 Department of Education and Training, 2015, accessed 19 March 2016
- 31-32 Perinatal Anxiety and Depression in Australia, n.d., accessed 4 March 2016
- 33 ATAPS data provided to KPMG by NWMPHN
- 34 Queensland Mental Health Commission, 2014, accessed 20 May 2016
- 35 Australian Institute of Health and Welfare, 2012
- 36 ATAPS data provided to KPMG by NWMPHN
- 37 National Health Performance Authority, 2016b

- 38 Australian Institute of Health and Welfare, 2016
- 39 Australian Institute of Health and Welfare, 2015
- 40 Department of Education and Early Childhood Development, 2011, accessed 23 May 2016
- 41 Department of Health and Human Services, 2014
- 42 Department of Education and Training, 2016, accessed 2 March 2016
- 43-48 Department of Education and Training, 2016
- 49 Australian Early Development Census, 2015, accessed 20 May 2016
- 50 Australian Bureau of Statistics, 2013
- 51 Australian Bureau of Statistics, 2012
- 52 Department of Education and Early Childhood Development, 2013
- 53 Australian Institute of Health and Welfare, 2016
- 54 Department of Education and Training, 2016, p57
- 55 Department of Education and Training, 2016
- 56 Barnett, et al., 2012
- 57 Australian Institute of Health and Welfare, 2014
- 58 Australian Institute of Health and Welfare; Australasian Association of Cancer Registries, 2014
- 59 Alzheimer's Australia, n.d., accessed 20 May 2016
- 60-61 Australian Institute of Health and Welfare, 2015b
- 62 ABS Census 2011
- 63 VicHealth, 2012a, accessed 20 May 2015



