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Queensland Health

Exploring the health of culturally and linguistically diverse (CALD) populations in Queensland: 2016–17 to 2019–20

Queensland Government

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Queensland Health respectfully acknowledges Aboriginal and Torres Strait Islander peoples as the Traditional and Cultural Custodians of the lands on which we live and work to deliver health care to all Queenslanders and recognises the continuation of First Nations peoples' cultures and connection to the lands, waters and communities across Queensland.

Foreword

Queensland Health is committed to ensuring our public health system supports an inclusive and equitable society. Identifying populations that have poorer health outcomes is necessary to providing an equitable health service for all Queenslanders. As such, it is essential that we understand the needs of our culturally and linguistically diverse (CALD) populations.

Exploring the health of CALD populations in Queensland: 2016–17 to 2019–20 provides a robust, detailed analysis of existing Queensland CALD health data, highlighting disparities in health outcomes for Queenslanders born overseas compared to their Australian-born counterparts. The report is a significant step towards improving the visibility of CALD populations in health data and improving our understanding of the health of CALD communities.

The findings highlight the diversity of CALD populations in Queensland, which is reflected in differences in health outcomes. Queensland Health welcomes the report's insights and its contribution to enabling more evidence-based healthcare. We look forward to further engagement with CALD communities and health stakeholders on the findings of this report and working together to improve the health of Queensland's CALD populations.

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1. Introduction

Internationally, it is recognised that the experience of migration is a determinant of health and wellbeing, and refugees and migrants remain among the most vulnerable and neglected members of many societies[1]. The health outcomes of Australian migrant populations are highly diverse and are influenced by their migration pathways[2]. Their health and wellbeing are further influenced by determinants such as education, income, housing, access to services and linguistic, cultural, legal and other barriers as well as the interaction of these factors during their life course[2].

Australia's population includes many people who were born overseas, have a parent born overseas or speak a variety of languages. Together, these groups of people are known as culturally and linguistically diverse (CALD) populations. There is no universally accepted or official operational definition of CALD, and there are diverse approaches to identifying and reporting on CALD populations. The Australian Bureau of Statistics (ABS) defines the CALD population mainly by country of birth, language spoken at home, English proficiency and other characteristics including year of arrival in Australia, parents' country of birth and religious affiliation. As the First Nations peoples of Australia, Aboriginal and Torres Strait Islander populations are not included in descriptions of CALD populations.

Queensland is a culturally and linguistically diverse state. The recent 2021 Census showed that more than one in five Queensland residents were born overseas (22.7 per cent of the Queensland population). The proportion of people in Queensland who were born overseas has increased significantly over time. In 1971, 12.3 per cent of people were born overseas, increasing to 21.6 per cent in 2016 and 22.7 per cent in 2021[3]. The 2021 Census also indicated that Queenslanders speak more than 300 different languages. People from CALD backgrounds do not represent a homogenous group, and there is a vast diversity within the CALD population.

[1] World Health Organisation. World report on the health of refugees and migrants, Geneva; 2022. 344p. Available from: www.who.int/publications/i/item/9789240054462

[2] Australian Institute of Health and Welfare. Reporting on the health of culturally and linguistically diverse populations in Australia: An exploratory paper. Canberra: Australian Institute of Health and Welfare; 2022. 116p. Available from: www.aihw.gov.au/reports/cald-australians/reporting-health-cald-populations/summary

[3] Australian Bureau of Statistics. Snapshot of Queensland. Canberra: ABS; 2022. Available from: www.abs.gov.au/articles/snapshot-qld-2021

Over the last 20 years, due to the growth in diversity in Australia, there has been a significant increase in research to understand the challenges and barriers that CALD populations have faced in the context of health care. Multiple studies have reported that people from CALD backgrounds experience health disparities. This results from challenges including language and cultural barriers, low health literacy, difficulties in navigating the health system, socio-economic barriers and discrimination[4 5 6]. These significant barriers inhibit them from seeking and accessing appropriate health services, leading to poorer health outcomes.

The COVID-19 pandemic highlighted barriers to accessing health care services and information, as well as the disproportionate impact this had on refugee and migrant communities. The recent COVID-19 mortality data in Australia, released by ABS in November 2022, showed that over the course of the pandemic, those born overseas had a higher death rate when compared to those born in Australia[7]. The report further pointed out that during the Delta wave, over 70 per cent of people who died from COVID-19 were born overseas.

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[4] Henderson, Saras & Kendall, Elizabeth. Culturally and linguistically diverse peoples' knowledge of accessibility and utilisation of health services: Exploring the need for improvement in health service delivery. Australian journal of primary health. 2011; 17 (2): 195-201. Available from: www.researchgate.net/publication/51195660_Culturally_and_linguistically_diverse_peoples%27_knowledge_of_accessibility_and_utilisation_of_health_services_Exploring_the_need_for_improvement_in_health_service_delivery

[5] Javanparast S, Naqvi SKA, Mwanri L. Health service access and utilisation amongst culturally and linguistically diverse populations in regional South Australia: a qualitative study. Rural Remote Health. 2020; 20 (4); Available from: pubmed.ncbi.nlm.nih.gov/33207914/

[6] Khatri, R.B., Assefa, Y. Access to health services among culturally and linguistically diverse populations in the Australian universal health care system: issues and challenges. BMC Public Health. 2022; 22, 880. Available from: bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13256-z

[7] Australian Bureau of Statistics. COVID-19 Mortality by wave. Canberra; ABS, 2022. Available from: www.abs.gov.au/articles/covid-19-mortality-wave.

‘Healthy migrant effect’

The ‘healthy migrant effect’ is a widely cited phenomenon across various literature, including epidemiology and the social sciences, with many competing explanations[8]. There is some evidence suggesting that some migrant populations appear to have a better health status compared to non-migrants during their early years of migration, which diminishes over time with length of residence in the host country[9] [10]. Some studies have suggested that the ‘healthy migrant effect’ at the time of arrival points to positive health selection. This is due to a combination of factors including strict eligibility requirements, migration health screening checks and migrant self-selection, especially for those under the skilled migration pathway[11] [12] [13]. Several factors may cause health to deteriorate over time, such as limited culturally appropriate services, language barriers, negative effects of acculturation, social isolation and poor socioeconomic status[14] [15] [16].

With Australia having diverse pathways to migrate, the ‘healthy migrant effect’ might not be applicable to all migrant groups.
A longitudinal design study followed native-born individuals and migrants of different lengths of residence in Australia over time. Findings showed that the existence of a ‘healthy migrant effect’ was observed for migrants from English speaking countries but not for those migrating from non-English speaking countries[17].
The study also showed that the length of residence in Australia does not appear to be universal across all health measures and migrant groups. Instead, it varies according to the measure of health and specific migrant group under consideration.

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[8] Kennedy, Steven & Kidd, Michael & Mcdonald, Ted & Biddle, Nicholas. The Healthy Immigrant Effect: Patterns and Evidence from Four Countries. Journal of International Migration and Integration. 2014; 16 (2). Available from: www.researchgate.net/publication/271406601_The_Healthy_Immigrant_Effect_Patterns_and_Evidence_from_Four_Countries

[9] Helgesson M, Johansson B, Nordquist T, et al. Healthy migrant effect in the Swedish context: a register-based, longitudinal cohort study. BMJ Open. 2019; 9 (3). Available from: bmjopen.bmj.com/content/9/3/e026972

[10] Khatri, R.B., Assefa, Y. Access to health services among culturally and linguistically diverse populations in the Australian universal health care system: issues and challenges. BMC Public Health. 2022; 22, 880. Available from: bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13256-z

[11] Crimmins EM, Kim JK, Alley DE, Karlamangla A, Seeman T. Hispanic paradox in biological risk profiles. Am J Public Health. 2007; 97 (7); 1305-10. Available from: pubmed.ncbi.nlm.nih.gov/17538054/

[12] Treas J, Gubernskaya Z. , Chapter 7 - Immigration, Aging, and the Life Course. In: Editor(s) George LK, Ferraro KF, Handbook of Aging and the Social Sciences. 8 Edition, Academic Press; 2016. Pages 143-161. Available from: www.sciencedirect.com/science/article/pii/B978012417235700007X?via%3Dihub

[13] Australian Institute of Health and Welfare. Chronic health conditions among culturally and linguistically diverse Australians. AIHW; 2021 (updated 08 February 2023). Available from: www.aihw.gov.au/reports/cald-australians/chronic-conditions-cald-2021/contents/background

[14] Gee EM, Kobayashi KM, Prus SG. Examining the healthy immigrant effect in mid- to later life: findings from the Canadian Community Health Survey. Can J Aging. 2004; 23 (1): 61-9. Available from: pubmed.ncbi.nlm.nih.gov/15660311/

[15] Antecol H, Bedard K. Unhealthy assimilation: why do immigrants converge to American health status levels? Demography. 2006; 43 (2); 337-60. Available from: pubmed.ncbi.nlm.nih.gov/16889132/

[16] Neuman, S. Are immigrants healthier than native residents?. IZA World of Labor. 2014: 108. Available from: https://wol.iza.org/articles/are-immigrants-healthier-than-native-residents

[17] Jatrana S, Richardson K, Pasupuleti SSR. Investigating the Dynamics of Migration and Health in Australia: A Longitudinal Study. Eur J Popul. 2018; 34 (4); 519-565. Available from: www.ncbi.nlm.nih.gov/pmc/articles/PMC6241155/

This finding is supported by another study conducted in Australia, highlighting that the 'healthy migrant effect' may have limited applicability for a broad range of health outcomes and populations[18].

The blanket term 'migrant' captures forcibly displaced migrants and people from a refugee background. People from a refugee background have unique and complex migration experiences and frequently face additional barriers that impact their capacity to access health information and services, including low health literacy and language difficulties[19]. These challenges increase their socioeconomic vulnerabilities with flow-on effects for health, leading to poorer health outcomes in this cohort[20].

Queensland Health – previous study of CALD populations

Over 10 years ago, Queensland Health analysed the differences in health status for death and hospitalisation rates among Queensland residents during the period 2003–04 and 2007–08 based on country of birth (by region) classification[21]. With the diversity of Queensland communities growing and changing over time, it is crucial to update our understanding of the health outcomes of our current population to address evolving and emerging health needs.

[18] Lee R. Does the healthy immigrant effect apply to mental health? Examining the effects of immigrant generation and racial and ethnic background among Australian adults. SSM Popul Health. 2019: 7 (11). Available from: www.ncbi.nlm.nih.gov/pmc/articles/PMC6595271/

[19] Abbas M, Aloudat T, Bartolomei J. et al. Migrant and refugee populations: a public health and policy perspective on a continuing global crisis. Antimicrob Resist Infect Control 7. 2018; 113. Available from: aricjournal.biomedcentral.com/articles/10.1186/s13756-018-0403-4

[20] World Health Organisation. World report on the health of refugees and migrants, Geneva; 2022. 344p. Available from: www.who.int/publications/i/item/9789240054462

[21] Endo T, Watson M, Jardine A, Bright M, & Macleod S. Death and hospitalisation rates by country of birth in Queensland #2: All-causes. Country of Birth Data Analysis Report. Australia, Queensland Health; 2011. Available from https://www.health.qld.gov.au/__data/assets/pdf_file/0028/354583/report2.pdf

Current study by Queensland Health

In 2021, Queensland Health received Australian Government funding through the Health Innovation Fund to undertake a detailed analysis of existing CALD-related data collected by Queensland Health and publish a report, and potentially other materials, that could be used to inform future healthcare decisions.

This study seeks to update and broaden the previous analysis to help identify potential disparities in health outcomes for CALD populations born overseas living in Queensland, compared with people born in Australia. The study takes a robust approach in analysing existing data collected by Queensland Health, with a view to informing policy responses and promoting more equitable service delivery.

The study separates findings for CALD populations born overseas into those born in countries that are mainly English speaking and those born in countries that are not mainly English speaking. It refers to them as 'mainly English speaking backgrounds (MESB)' and 'non-English speaking backgrounds (NESB)', and compares them with Australian-born Queensland residents. It should be noted that this grouping does not reflect proficiency in English, length of stay in Australia or preferred language. The diversity within the Australian-born population is unable to be considered, due to a lack of data available that can inform this analysis.

Where possible, the study disaggregated the MESB and NESB groups into geographic regions of birth and countries of birth.

This study analysed and reported on the following variables:

1. Potentially preventable hospitalisations and related subcategories (vaccine-preventable, acute and chronic conditions)
2. Hospitalisation rates: all-causes
3. Death rates: all-causes
4. Potentially avoidable deaths.

Across the data analysed, the results of the broader (MESB and NESB) aggregate groupings disguised the diversity of findings at the level of region and country of birth, particularly within NESB populations.

The potentially preventable hospitalisations variable provided the richest source of observations for analysis at a disaggregated region or country of birth level and against subcategories.

Due to small numbers of observations for the range of specific causes for hospitalisation rates, death rates and potentially avoidable deaths, there is no categorisation or analysis by cause. Further information and findings on the above variables will be discussed in the following chapters.

Finally, this study should be referred to as a factual exploration of available data. The report does not explain why certain trends are observed. This study seeks to enable evidence-based health service planning and should not be interpreted (or attributed) as performance indicators for the communities presented in this report.

2. Project scope and limitations

2.1 Scope of the project

The scope of the project was to undertake an in-depth exploration and analysis of existing CALD-related health data collected by Queensland Health within the Queensland Hospital Admitted Patient Data Collection (QHAPDC), Consumer Integrated Mental Health and Addiction (CIMHA) data along with the population data from the Australian Bureau of Statistics (ABS) and mortality data from the Australian Coordinating Registry. The ABS 2016 Census was used as the 2021 Census data had not been released at the time of data analysis for this report.

From the QHAPDC, the study analyses data from 2016–17 to 2019–20 for the following health indicators and related subcategories:

1. Potentially preventable hospitalisations, as follows:
    - All categories
    - Vaccine-preventable conditions
        - All vaccine-preventable conditions
        - Vaccine-preventable influenza and pneumonia
        - Other vaccine-preventable conditions
    - Chronic conditions
        - All chronic conditions
        - Asthma
        - Angina
        - Chronic obstructive pulmonary disease (COPD)
        - Congestive heart failure
        - Diabetes complications
        - Hypertension
        - Iron deficiency anaemia
        - Rheumatic heart disease
        - Bronchiectasis
    - Acute conditions
        - All acute conditions
        - Urinary tract infections
        - Gangrene
        - Pelvic inflammatory disease
        - Perforated/bleeding ulcer
        - Convulsions and epilepsy
        - Dental conditions
        - ENT (ear, nose and throat) infections
        - Cellulitis
2. Hospitalisation rates: all-causes
3. Death rates: all-causes
4. Potentially avoidable deaths: all-causes.

Indicators are presented as age-standardised rates (ASR) per 100,000 population for the years 2016–17 to 2019–20 by broad region of birth, sex and country of birth. The age-standardisation technique is used to remove the effect of age structure when different populations are compared. The shorthand term 'rate' is sometimes used throughout the report but refers to an 'age-standardised rate'. See Appendix C for more information on methodology and Appendix D for more information on data sources used to calculate these rates.

This report focuses on presenting findings for Queensland residents born overseas, particularly in countries with NESB population, where outcomes were shown to be worse when compared to the Australian-born population.

Tables in this report present information for regions and countries where rates are higher than the Australian-born population.

Mental health data

As part of this study, mental health data was also explored and analysed. However, due to small observations for certain groups and issues of data quality, the existing data did not reveal any significant findings to include in the report. Mental Health in Multicultural Australia (MHiMA) highlights that although it is evident that mental health services are underutilised by migrant and refugee communities, there is very little research on the factors that influence this[22]. A recent study exploring trends and impact factors of mental health service utilisation among resettled humanitarian migrants in Australia also showed that mental health services are underused, especially in the first five years of resettlement. This is despite this cohort having a high prevalence of mental health conditions[23]. However, further exploration of this topic is beyond the scope of this report.

'Ethnicity' has recently been added in the Queensland Health mental health dataset CIMHA. Ethnicity values in CIMHA use the Australian Standard Classification of Cultural and Ethnic Groups (ASCCEG). The ASCCEG is the statistical standard endorsed by the Australian Bureau of Statistics for collecting data relating to the cultural and ethnic diversity of the Australian population. This will hopefully allow for better collection of CALD mental health data indicators.

[22] Minas H, Ritsuko K, San Too L, Vayani H, Orapeleng S., Prasad-Ildes R, et al. Mental health research and evaluation in multicultural Australia: Developing a culture of inclusion. Australia: Mental Health in Multicultural Australia; 2013. Available from: www.mentalhealthcommission.gov.au/getmedia/3d19d8f5-a93c-4826-89c2-f6919473764e/MHiMA-CALD-REPORT_06

[23] Zheng M, Chen F, Pan Y, Kong D, Renzaho AMN, Sahle BW, Mahumud RA, Ling L, Chen W. Trends and Impact Factors of Mental Health Service Utilization among Resettled Humanitarian Migrants in Australia: Findings from the BNLA Cohort Study. Int J Environ Res Public Health; 2022 ; 19 (6). Available from: www.ncbi.nlm.nih.gov/pmc/articles/PMC9408151/

2.2 Limitations

Data limitations

- It is important to note that this report is not representative of all CALD populations in Queensland. It only analyses the overseas-born population.
- All data is based on Queensland residents admitted to Queensland hospitals only. For example, indicators presented for 'Cook Islands' refer to Queensland residents who were born in the Cook Islands.
- The most reliable relevant data collected across all the data sources in scope was country of birth. People's ethnicity does not necessarily match the country of birth. It is worth noting that the current data does not capture the year of arrival of those born overseas.
- This data does not explore accessibility of health services by people from CALD backgrounds. This is due to limited access to primary health or mental health datasets.

3. Potentially preventable hospitalisations

3.1 Summary

Potentially preventable hospitalisations (PPH) are specific hospital admissions that potentially could have been prevented by timely and adequate health care, through the provision of appropriate preventative health interventions and early disease management in primary care and community-based care settings (including by general practitioners, medical specialists, dentists, nurses and allied health professionals)[24]. There are various health conditions for which hospitalisation is considered potentially preventable across three broad categories (vaccine-preventable, chronic and acute conditions).

In most cases, primary and community health care is usually a person's initial encounter with the health system. It involves a range of activities and services such as health promotion and prevention, as well as management and treatment of acute and chronic conditions. The rate of PPH in a particular area may reflect access to primary health care, as well as sociodemographic factors and health behaviours of the population[25].

PPH rates are often used as indicators of primary care accessibility and effectiveness as higher rates may suggest a lack of timely, accessible and adequate health care in the community. In Australia, the National Healthcare Agreement uses PPH as a performance indicator of primary and community health services to ensure the overall sustainability of the health system[26]. PPH are a valuable tool for identifying and investigating variation of health outcomes between different populations to better understand health inequalities. Evaluating PPH by conditions and population subgroups can help identify priorities for targeted policy interventions[27]. Trends over time can be used to monitor for improvements or identify emerging problem areas. PPH can also assist in guiding further research about how different groups access health services, including possible barriers they may face and areas of unmet demand.

[24] Australian Institute of Health and Welfare. Disparities in potentially preventable hospitalisations across Australia, 2012-13 to 2017-18. AIHW; 2020 100p. Available from: www.aihw.gov.au/reports/primary-health-care/disparities-in-potentially-preventable-hospitalisations-australia/summary

[25] Falster MO, Jorm LR, Douglas KA, Blyth FM, Elliott RF, Leyland AH. Sociodemographic and health characteristics, rather than primary care supply, are major drivers of geographic variation in preventable hospitalizations in Australia. Med Care. 2015; 53 (5): 436-45. Available from: pubmed.ncbi.nlm.nih.gov/25793270/

[26] Australian Institute of Health and Welfare. National Healthcare Agreement: PI 18–Selected potentially preventable hospitalisations, 2018. AIHW: 2018. Available from: meteor.aihw.gov.au/content/658499

[27] Falster M, Jorm L. A guide to the potentially preventable hospitalisations indicator in Australia. Centre for Big Data Research in Health, University of New South Wales in consultation with Australian Commission on Safety and Quality in Health Care and Australian Institute of Health and Welfare. Sydney: Australian Commission on Safety and Quality in Health Care; 2017. Available from: www.safetyandquality.gov.au/sites/default/files/migrated/A-guide-to-the-potentially-preventable-hospitalisations-indicator-in-Australia.pdf

PPH are common and increase the burden on already stretched healthcare services. Between 2017 and 2018, nearly 10 per cent of all hospital bed days in Australia were for PPH[28]. A recent report by the Australian Institute of Health and Welfare (AIHW) on disparities in PPH across Australia, highlighted that several geographical areas in Queensland had higher PPH rates in comparison to other states in Australia[29]. An increasing body of evidence suggests that migrants who identify as culturally and linguistically diverse (CALD) in host countries are at a greater risk of poorer health outcomes due to PPH, when compared to the native population[30 31]. Therefore, there is a pressing need to further explore PPH to guide the development of evidence-based policies and interventions that improve access to and the quality of healthcare for all Queenslanders, including people from CALD backgrounds.

The current Queensland Health study explored PPH and compared the rates between the overseas-born (CALD background) and Australian-born (non-CALD background) populations in Queensland. The PPH were analysed based on three broad sub-categories: vaccine-preventable conditions, acute conditions and chronic conditions. Further analysis of these conditions was undertaken using the broader categories of country of birth (MESB and NESB), region of birth, sex and the specific country of birth.

[28] Australian Institute of Health and Welfare. Admitted patient care 2017–18: Australian hospital statistics. Canberra: AIHW; 2019. Available from: www.aihw.gov.au/getmedia/df0abd15-5dd8-4a56-94fa-c9ab68690e18/aihw-hse-225.pdf

[29] Australian Institute of Health and Welfare. Disparities in potentially preventable hospitalisations across Australia, 2012-13 to 2017-18. Canberra: AIHW; 2020. Available from: www.aihw.gov.au/getmedia/df0abd15-5dd8-4a56-94fa-c9ab68690e18/aihw-hse-225.pdf

[30] World Health Organisation. World report on the health of refugees and migrants. Geneva; 2022. 344p. Available from: www.who.int/publications/i/item/9789240054462

[31] Cacciani L, Canova C, Barbieri G, Dalla Zuanna T, Marino C, Pacelli B, et al. Potentially avoidable hospitalization for asthma in children and adolescents by migrant status: results from the Italian Network for Longitudinal Metropolitan Studies. BMC Public Health. 2020; 20. Available from: bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-020-09930-9

Key findings

At an aggregate population level, both MESB and NESB populations showed lower rates of PPH than the Australian-born population. However, further analysis at the region and country of birth level highlighted disparities in health outcomes for NESB populations across all categories. This indicates that analysing data at aggregated levels in broad categories potentially masks the differences of health outcomes for individual NESB population groups observed when data is analysed at the most detailed level.

At the level of country of birth, people born in Syria (Middle East) were observed to have the highest rates in six categories (total PPH rates, all chronic conditions, congestive cardiac failure, diabetes, urinary tract infections and dental conditions) when compared to the Australian-born population. People born in Sudan (North African) had the highest rates in four categories (all acute conditions, pelvic inflammatory disease, convulsions/ epilepsy and ear, nose and throat) while people born in Somalia (Sub-Saharan Africa) had the highest rates in three categories (all vaccine-preventable conditions, vaccine-preventable influenza and pneumonia and other vaccine-preventable conditions) when compared to the Australian-born population. Similarly, people born in Serbia (Southern and Eastern Europe) had the highest rates in chronic obstructive pulmonary disease (COPD), hypertension and gangrene, when compared to the Australian-born population.

PPH (All categories)

- Rates of total PPH were significantly higher for people born in three regions (NESB population), compared with the Australian-born population: Other Oceania and Antarctica, North African and Middle East.
- Highest rates were seen in Queensland residents born in Syria (Middle East), Somalia (Sub-Saharan Africa), Sudan (North African), Samoa and Cook Islands (Other Oceania and Antarctica).

PPH (Vaccine-preventable conditions)

- Overall NESB population had significantly higher rates of PPH due to vaccine-preventable conditions than the Australian-born population.
- Most regions with NESB populations had higher rates than the Australian-born population.
- Highest rates were seen in Queensland residents born in Somalia (Sub-Saharan Africa), Sudan (North African), Tonga, Samoa, Cook Islands (Other Oceania and Antarctica) and Eritrea (Sub-Saharan Africa).

PPH (Chronic conditions)

- Overall MESB and NESB populations had lower rates of PPH due to chronic conditions than the Australian-born population.
- Three regions had significantly higher rates of total chronic conditions than the Australian-born population: Other Oceania and Antarctica, North African and Middle East regions.
- Highest rates were seen in Queensland residents born in Syria (Middle East), Somalia (Sub-Saharan Africa), Serbia (Southern and Eastern Europe), Samoa, Tonga and Cook Islands (Other Oceania and Antarctica).

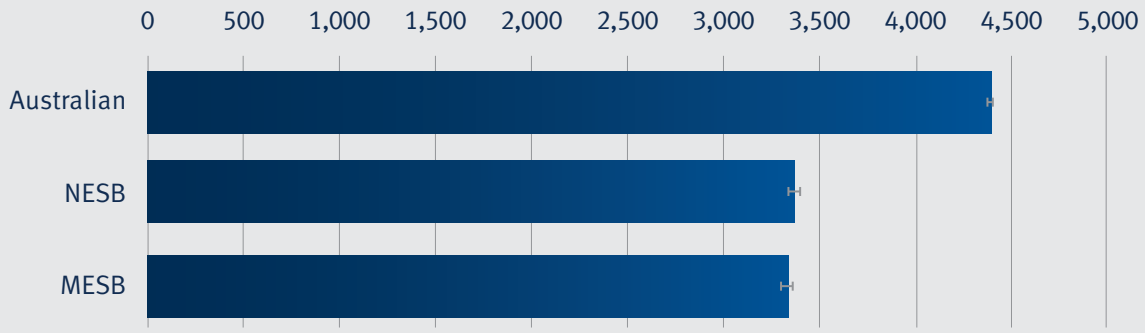
PPH (Acute conditions)

- Overall NESB and MESB populations had lower rates of PPH due to acute conditions than the Australian-born population.
- No region had significantly higher rates of acute conditions than the Australian-born population.
- Highest rates were seen in Queensland residents born in Sudan (North African), Syria (Middle East), Somalia (Sub-Saharan Africa), Samoa and Cook Islands (Other Oceania and Antarctica) and Afghanistan (Southern and Central Asia).

3.2 Potentially preventable hospitalisations by region of birth, sex and country of birth

In the current study, when total PPH rates were analysed at an aggregate population level, both NESB and MESB populations showed lower rates of PPH than the Australian-born population (Figure 1).

Figure 1: Age-standardised rates for total potentially preventable hospitalisations (PPH) by broad country of birth category, Queensland, 2016–17 to 2019–20



However, further analysis by region of birth and sex revealed that rates of total PPH were significantly higher for three regions (NESB populations), compared with the Australian-born population: Other Oceania and Antarctica, North African and the Middle East (Figure 2). This is consistent for both males and females across these regions.

Figure 2: Age-standardised rates for total potentially preventable hospitalisations (PPH) by region of birth and sex, Queensland, 2016–17 to 2019–20

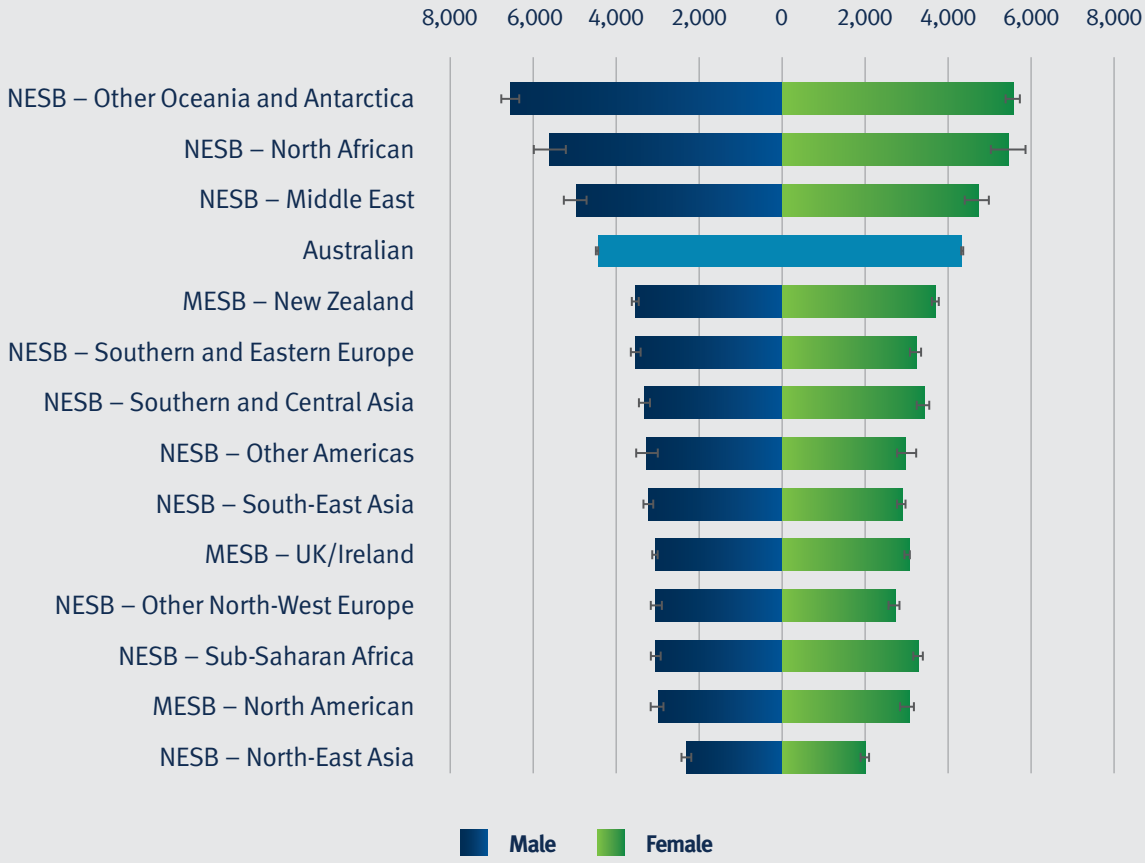


Table 1 shows countries with higher rates of PPH than the Australian-born population. The top five countries with the highest rates of PPH include Syria, Somalia, Sudan, Samoa and the Cook Islands.

Table 1: Age-standardised rates for total potentially preventable hospitalisations (PPH) by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	639,999	4,386.5	4,375.6	4,397.3	1.00
NESB – Middle East					
Syria*	243	10,845.6	9,511.3	12,313.2	2.47
Iraq*	503	6,788.1	6,054.1	7,572.3	1.55
Lebanon*	514	5,523.3	4,945.0	6,140.7	1.26
Turkey	301	5,063.8	4,374.5	5,814.6	1.15
Jordan	69	4,989.3	3,819.2	6,389.2	1.14
Israel	133	4,530.5	3,745.0	5,424.2	1.03
NESB – North African					
Sudan*	675	9,873.1	8,625.8	11,193.5	2.25
Libya	34	4,584.4	3,021.4	6,604.0	1.05
Egypt	855	4,575.5	4,213.4	4,956.5	1.04
NESB – Other Americas					
Mexico	80	4,826.7	3,611.8	6,261.7	1.10
NESB – Other North-West Europe					
Austria	997	5,132.0	3,646.3	6,688.9	1.17
NESB – Other Oceania and Antarctica					
Samoa*	3,428	9,109.6	8,759.2	9,469.0	2.08
Cook Islands*	746	8,739.0	8,057.7	9,458.3	1.99
Tonga*	688	8,345.3	7,462.9	9,279.0	1.90
Fiji*	2,887	4,994.9	4,788.8	5,206.9	1.14
Vanuatu	75	4,689.3	3,310.5	6,326.9	1.07
Papua New Guinea*	3,017	4,609.6	4,418.1	4,806.3	1.05
NESB – South-East Asia					
Myanmar*	668	5,430.6	4,911.3	5,980.6	1.24
NESB – Southern and Central Asia					
Afghanistan*	453	6,139.5	5,366.6	6,968.1	1.40
Pakistan*	536	6,045.1	5,375.5	6,759.0	1.38
Bangladesh	241	4,923.4	3,959.7	5,983.8	1.12
NESB – Southern and Eastern Europe					
Serbia*	1,232	8,055.2	7,337.9	8,803.3	1.84
Ukraine	347	4,928.0	4,048.4	5,880.6	1.12
Romania	536	4,616.4	3,957.6	5,318.8	1.05
NESB – Sub-Saharan Africa					
Somalia*	326	10,433.0	8,770.6	12,237.6	2.38
Eritrea*	178	7,679.0	6,413.0	9,094.0	1.75
Uganda	108	5,367.3	4,302.4	6,596.0	1.22

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

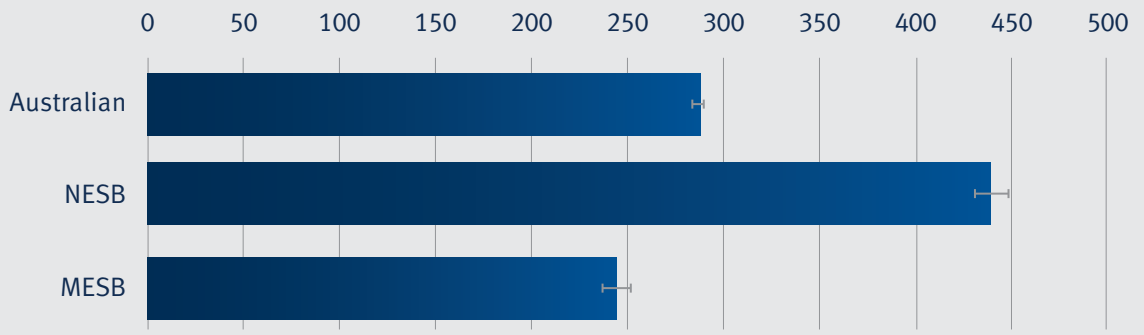
Rates of PPH were then analysed for each of the three broad sub-categories: 1) vaccine-preventable conditions, 2) chronic conditions and 3) acute conditions.

3.2.1 PPH (Vaccine-preventable conditions)

A vaccine-preventable condition is defined as an infectious condition for which an effective vaccine exists. A study that reviewed literature published between 2006 and 2016 to explore differences in the burden of vaccine-preventable conditions and immunisation coverage between migrants and non-migrants found that migrant populations generally experienced a higher burden of vaccine-preventable conditions than non-migrant populations[32].

In the current study, the NESB population was found to have a significantly higher rate of vaccine-preventable conditions than the Australian-born population (Figure 3).

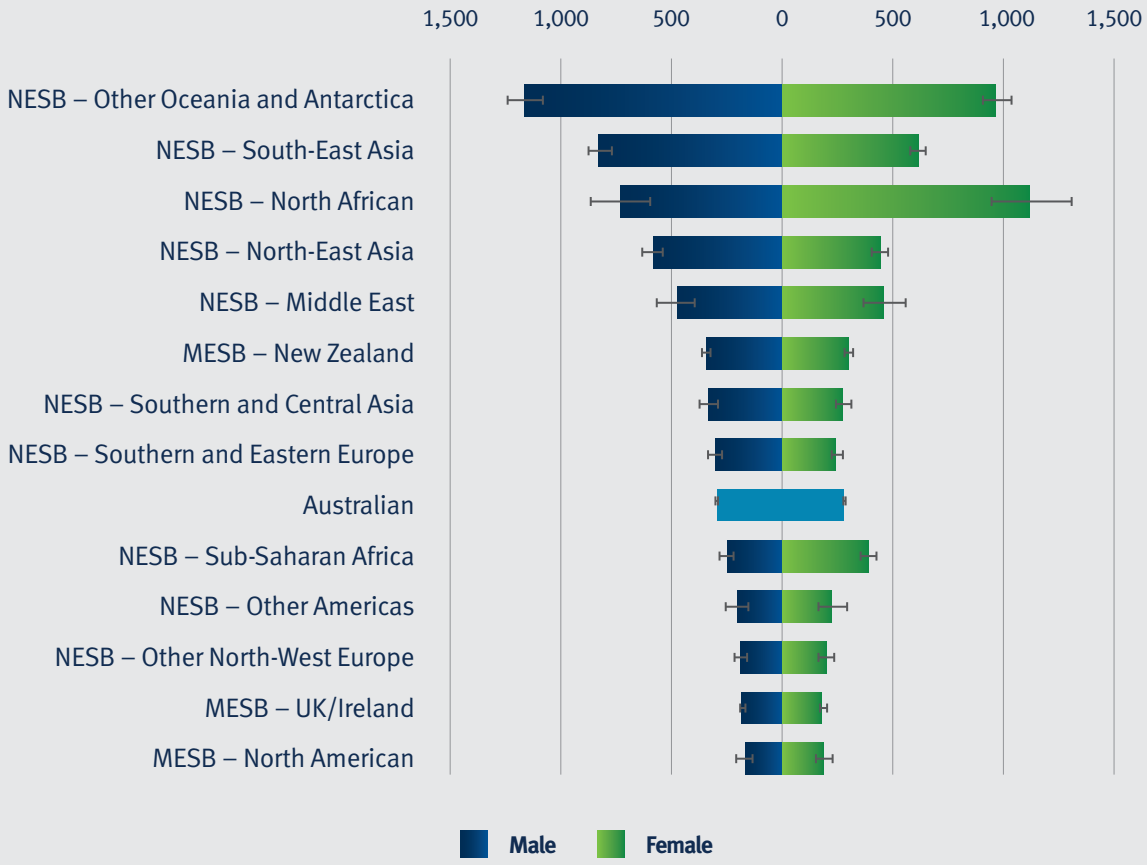
Figure 3: Age-standardised rates for PPH sub-category of total vaccine-preventable conditions by broad country of birth category, Queensland, 2016–17 to 2019–20



A detailed analysis of vaccine-preventable conditions by region of birth and sex showed that most regions with NESB populations had significantly higher rates than the Australian-born population. The top five regions with the highest rates of PPH for vaccine-preventable conditions include: Other Oceania and Antarctica, North African, South-East Asia, North-East Asia and the Middle East (Figure 4). Males from Other Oceania and Antarctica, South-East Asia and North-East Asia had significantly higher rates than females from these regions, while North African females had significantly higher rates than North African males. New Zealand (MESB population) also reported higher rates of vaccine-preventable conditions in comparison to the Australian-born population.

[32] Charania NA, Gaze N, Kung JY, Brooks S. Vaccine-preventable diseases and immunisation coverage among migrants and non-migrants worldwide: A scoping review of published literature, 2006 to 2016. Vaccine. 2019; 37 (2). Available from: pubmed.ncbi.nlm.nih.gov/30967311/

Figure 4: Age-standardised rates for PPH sub-category of total vaccine-preventable conditions by region of birth and sex, Queensland, 2016–17 to 2019–20



When PPH rates due to vaccine-preventable conditions were further analysed at the level of country of birth, people from many countries with NESB populations reported significantly higher rates when compared to the Australian-born population. The top six countries were Somalia, Sudan, Tonga, Samoa, Cook Islands and Eritrea (Table 2).

Table 2: Age-standardised rates for PPH sub-category of total vaccine-preventable conditions by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	41,837	287.2	284.4	290.0	1.00
MESB – New Zealand					
New Zealand*	2,996	321.9	309.6	334.4	1.12
NESB – Middle East					
Syria*	24	941.8	598.2	1,408.3	3.28
Lebanon*	52	539.4	381.9	733.0	1.88
Turkey*	33	526.4	306.9	811.2	1.83
Iran*	80	397.0	300.9	510.5	1.38
Iraq	35	383.8	245.2	562.1	1.34
Israel	133	4,530.5	3,745.0	5,424.2	1.03
NESB – North African					
Sudan*	228	2,541.5	2,042.1	3,092.4	8.85
NESB – North-East Asia					
Taiwan*	330	757.0	659.3	863.0	2.64
China (excludes SARs and Taiwan)*	985	597.3	557.4	639.2	2.08
Hong Kong (SAR of China)*	219	512.8	438.2	595.3	1.79
Korea, Republic of (South)	129	290.9	220.6	371.0	1.01
NESB – Other North-West Europe					
Sweden	34	288.1	199.4	402.7	1.00
NESB – Other Oceania and Antarctica					
Tonga*	178	1,998.4	1,683.7	2,350.2	6.96
Samoa*	804	1,987.5	1,837.9	2,145.2	6.92
Cook Islands*	158	1,826.8	1,534.2	2,156.1	6.36
Papua New Guinea*	676	1,004.2	921.8	1,091.3	3.50
Solomon Islands*	26	565.1	344.4	861.0	1.97
Fiji*	221	376.9	326.3	432.8	1.31

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

Country of birth	Count	ASR	(95% CI)		Rate ratio
NESB – South-East Asia					
Myanmar*	251	1,642.7	1,436.4	1,869.2	5.72
Cambodia*	142	1,599.2	1,309.5	1,927.4	5.57
Vietnam*	1,220	1,303.5	1,222.6	1,388.0	4.54
Thailand*	189	710.8	557.1	882.1	2.48
Philippines*	765	550.0	504.0	598.6	1.92
Indonesia	123	327.0	267.2	395.3	1.14
Malaysia	205	292.3	251.0	338.0	1.02
NESB – Southern and Central Asia					
Pakistan*	95	886.9	671.0	1,138.3	3.09
Afghanistan*	70	712.8	493.1	975.2	2.48
Bangladesh*	43	687.6	377.1	1,077.6	2.39
NESB – Southern and Eastern Europe					
Serbia*	123	775.7	640.0	930.8	2.70
Romania*	90	621.3	496.9	766.9	2.16
Cyprus	39	332.9	134.9	584.3	1.16
Ukraine	30	330.8	210.8	488.5	1.15
Greece	127	298.0	217.9	389.4	1.04
NESB – Sub-Saharan Africa					
Somalia*	88	3,245.8	2,288.5	4,367.8	11.30
Eritrea*	45	1,846.5	1,289.0	2,543.0	6.43
Uganda*	33	1,385.5	912.7	1,998.9	4.82
Kenya	36	342.2	236.9	477.2	1.19

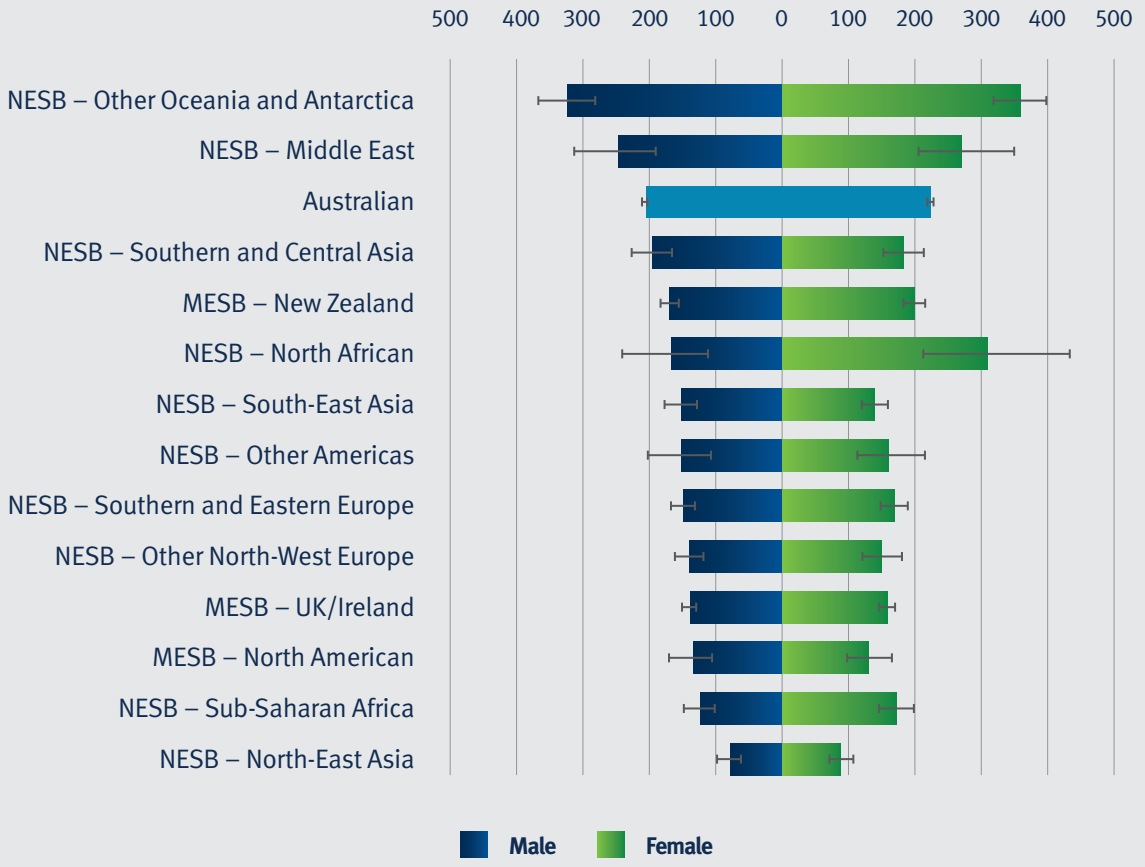
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.1.1 PPH (Vaccine-preventable influenza and pneumonia)

PPH due to vaccine-preventable conditions are further classified into two groups: those related to vaccine-preventable influenza and pneumonia; and those related to other vaccine-preventable conditions such as whooping cough, acute poliomyelitis, varicella (chicken pox), measles, tetanus, mumps and rubella.

As shown in Figure 5, those from the Other Oceania and Antarctica region had a significantly higher rate of vaccine-preventable influenza and pneumonia when compared to the Australian-born population.

Figure 5: Age-standardised rates for PPH sub-category of vaccine-preventable conditions: vaccine-preventable influenza and pneumonia by region of birth and sex, Queensland, 2016–17 to 2019–20



Further analysis at the level of country of birth revealed that people born in Somalia, Samoa, Sudan, Serbia, Cook Islands and Tonga had significantly higher rates of vaccine-preventable influenza when compared to the Australian-born population (Table 3).

Table 3: Age-standardised rates for PPH sub-category of vaccine-preventable conditions: vaccine-preventable influenza and pneumonia by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	31,417	215.1	212.7	217.5	1.00
NESB – Middle East					
Syria*	24	941.8	598.2	1,408.3	3.28
Lebanon	27	317.1	186.4	491.3	1.47
Iran	48	230.0	158.9	318.2	1.07
Iraq	24	229.3	130.8	363.0	1.07
NESB – Other Oceania and Antarctica					
Samoa*	244	675.1	585.5	773.7	3.14
Cook Islands*	37	449.6	307.4	631.4	2.09
Tonga*	41	409.2	283.4	568.1	1.90
Fiji	144	257.1	214.7	305.0	1.20
Papua New Guinea	152	217.3	180.6	258.7	1.01
NESB – South-East Asia					
Cambodia	24	357.2	206.2	562.2	1.66
Myanmar	31	241.0	159.9	347.1	1.12
NESB – Southern and Central Asia					
Pakistan	33	262.5	143.1	417.4	1.22
NESB – Southern and Eastern Europe					
Serbia*	79	481.9	377.8	605.0	2.24
NESB – Sub-Saharan Africa					
Somalia*	31	1,140.1	602.3	1,843.7	5.30

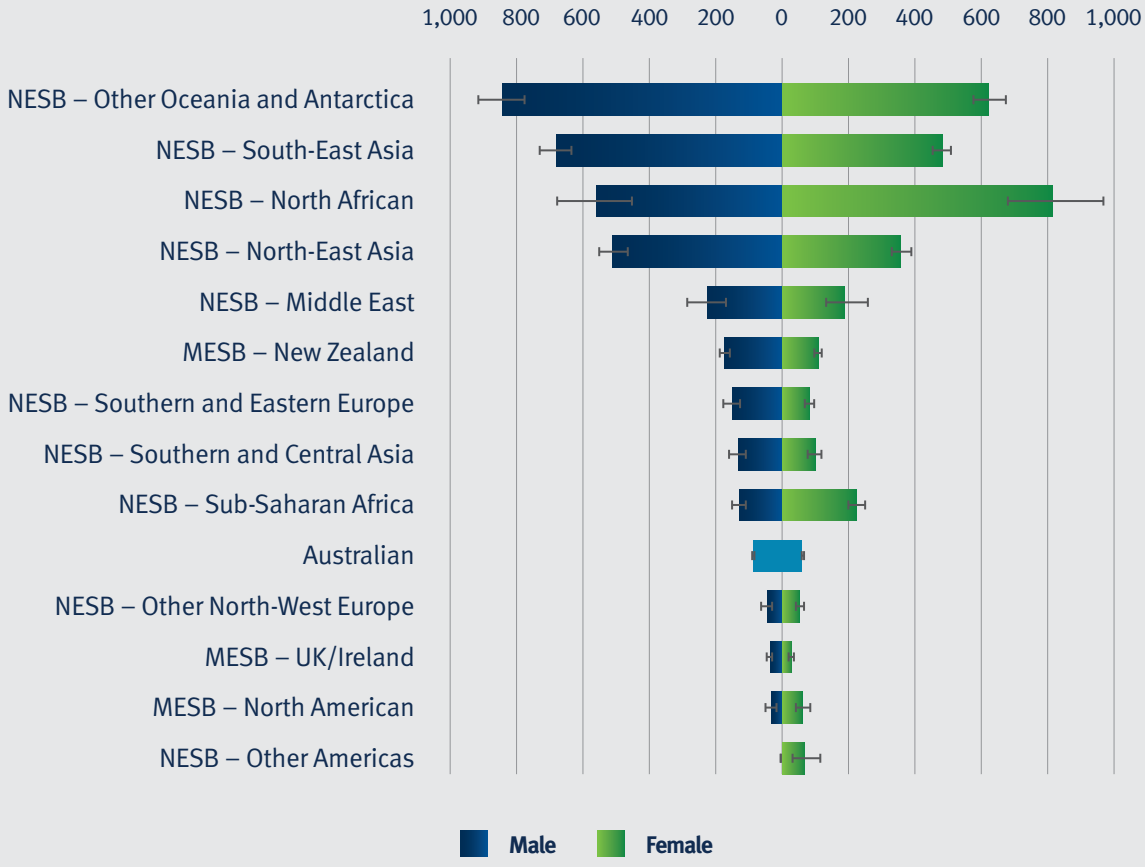
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.1.2 PPH (Other vaccine-preventable conditions)

Other vaccine-preventable conditions in the PPH category include most diseases covered by childhood immunisation such as rotaviral enteritis, tetanus, diphtheria, whooping cough, acute poliomyelitis, varicella (chickenpox), measles, rubella, hepatitis B, mumps and haemophilus meningitis.

In the current study, the rate of vaccine-preventable conditions was significantly higher for people from a majority of regions with NESB populations in comparison to the Australian-born population (Figure 6). The highest rates were seen in Other Oceania and Antarctica, South-East Asia, North Africa, North-East Asia and Middle East regions. While males from many regions had significantly higher rates than females, females from North African and Sub-Saharan Africa regions had significantly higher rates than males.

Figure 6: Age-standardised rates for PPH sub-category of vaccine-preventable conditions: other vaccine-preventable conditions by region of birth and sex, Queensland, 2016–17 to 2019–20



Age-standardised rates are omitted for male population where cell counts are insufficient. See Appendix C for details.

Further analysis of other vaccine-preventable conditions at the level of country of birth showed that the top five countries having significantly higher rates were Somalia, Sudan, Tonga, Cook Islands and Myanmar (Table 4).

Table 4: Age-standardised rates for PPH sub-category of vaccine-preventable conditions: other vaccine-preventable conditions by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	10,571	73.2	71.8	74.6	1.00
MESB – New Zealand					
New Zealand*	1,451	139.6	132.3	147.3	1.91
NESB – Middle East					
Turkey*	25	338.2	214.0	505.8	4.62
Lebanon*	25	222.3	143.3	328.9	3.04
Iran*	32	167.0	105.9	246.5	2.28
NESB – North African					
Sudan*	202	1,941.0	1,560.7	2,363.1	26.53
NESB – North-East Asia					
Taiwan*	312	712.5	618.0	815.3	9.74
China (excludes SARs and Taiwan)*	855	494.3	459.8	530.6	6.76
Hong Kong (SAR of China)*	198	453.2	383.9	530.3	6.20
Korea, Republic of (South)*	105	240.4	176.3	314.5	3.29
NESB – Other North-West Europe					
Sweden*	25	209.8	135.7	309.7	2.87
Denmark	20	92.9	55.1	145.9	1.27
NESB – Other Oceania and Antarctica					
Tonga*	139	1,616.0	1,328.8	1,941.8	22.09
Cook Islands*	127	1,438.2	1,183.0	1,729.4	19.66
Samoa*	562	1,315.9	1,197.4	1,442.1	17.99
Papua New Guinea*	528	792.5	719.2	870.8	10.83
Solomon Islands*	23	491.5	287.3	770.4	6.72
Fiji*	78	122.1	95.3	153.9	1.67
NESB – South-East Asia					
Myanmar*	223	1,424.3	1,235.5	1,632.8	19.47
Cambodia*	122	1,288.4	1,044.2	1,567.8	17.61
Vietnam*	1,124	1,158.6	1,085.7	1,234.8	15.84
Thailand*	155	510.5	390.7	645.6	6.98
Philippines*	580	398.5	360.3	439.1	5.45
Malaysia*	160	227.7	191.2	268.8	3.11
Indonesia*	78	201.4	155.9	255.1	2.75
Singapore*	37	141.4	94.6	201.2	1.93

Country of birth	Count	ASR	(95% CI)		Rate ratio
NESB – Southern and Central Asia					
Pakistan*	62	624.4	450.0	835.1	8.53
Afghanistan*	45	530.8	331.5	779.8	7.26
Bangladesh*	32	500.2	248.9	827.6	6.84
NESB – Southern and Eastern Europe					
Romania*	65	421.7	323.9	539.4	5.76
Serbia*	44	293.8	211.0	397.4	4.02
Cyprus	20	218.6	33.3	477.6	2.99
Greece*	50	126.7	84.1	179.4	1.73
Malta	22	105.3	-4.9	257.0	1.44
Italy	99	92.8	66.1	123.9	1.27
NESB – Sub-Saharan Africa					
Somalia*	57	2,105.7	1,339.5	3,039.2	28.78
Eritrea*	31	1,376.8	889.4	2,014.3	18.82
Uganda*	29	1,203.8	769.9	1,776.7	16.45
Zimbabwe*	73	143.7	112.1	181.3	1.96

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

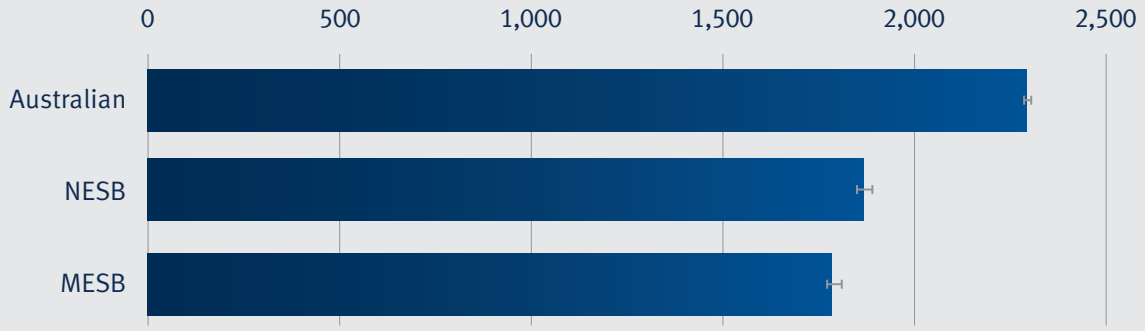
3.2.2 PPH (Chronic conditions)

A health condition is considered chronic when it is long lasting with persistent effects and their social and economic consequences can impact on peoples' quality of life[33]. These conditions may be prevented through behaviour and lifestyle modification but can also be managed effectively through timely care to prevent deterioration and hospitalisation[34].

Chronic conditions are on the rise among CALD and migrant populations due to various factors including migration journeys, challenges in navigating the heath system of their host countries and language difficulties[35] [36].

In the current study, both MESB and NESB populations were found to have lower rates of chronic conditions than the Australian-born population (Figure 7).

Figure 7: Age-standardised rates for PPH sub-category of total chronic conditions by broad country of birth category, Queensland, 2016–17 to 2019–20



Further analysis at the level of region of birth showed that people born in the following three regions had significantly higher rates of chronic conditions than the Australian-born population: Other Oceania and Antarctica, North African and Middle East (Figure 8).

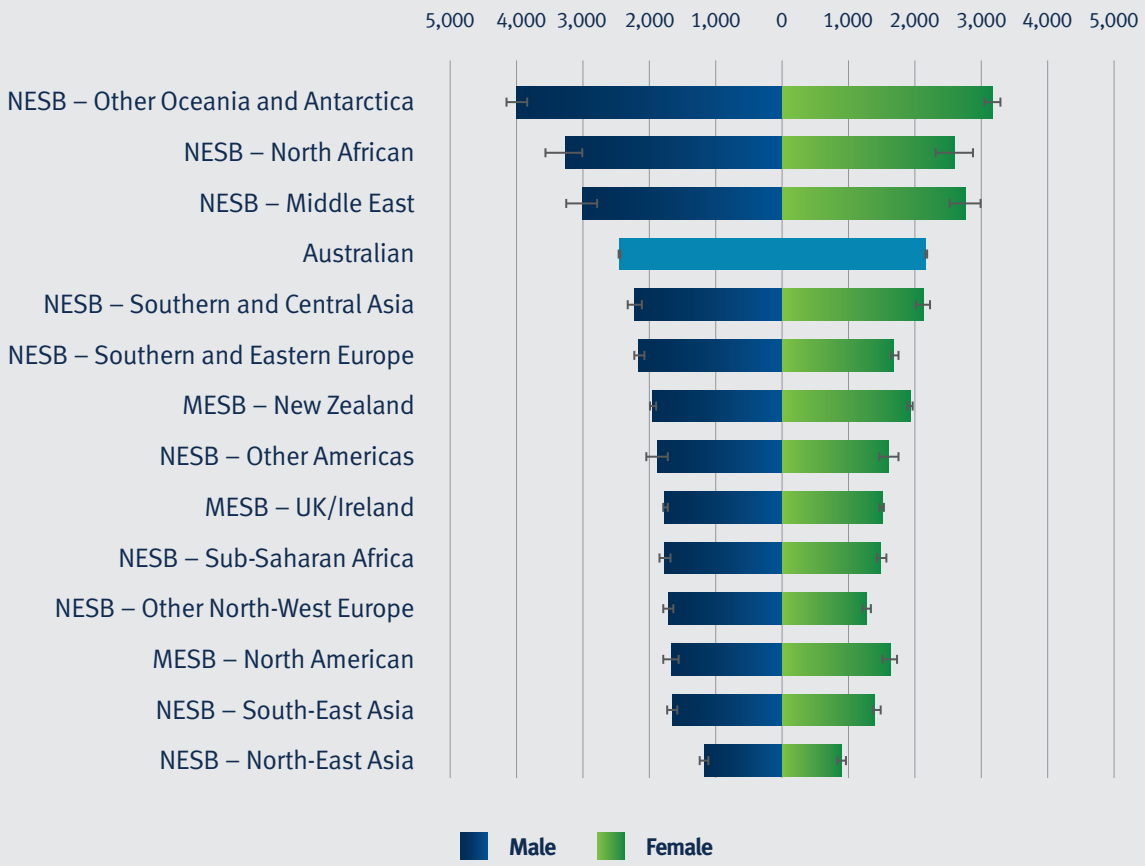
[33] Australian Institute of Health and Welfare. Chronic conditions and multimorbidity. Canberra: AIHW: 2021. Available from: www.aihw.gov.au/reports/chronic-disease/chronic-condition-multimorbidity/contents/chronic-conditions-and-multimorbidity

[34] Australian Institute of Health and Welfare. Potentially preventable hospitalisations in Australia by age groups and small geographic areas, 2017–18. Canberra: AIHW; 2019. Available from: www.aihw.gov.au/reports/primary-health-care/potentially-preventable-hospitalisations/contents/overview

[35] Lane G, Farag M, White J, Nisbet C, Vatanparast H. Chronic health disparities among refugee and immigrant children in Canada. Appl Physiol Nutr Metab. 2018; 43 (10): 1043-58. Available from: pubmed.ncbi.nlm.nih.gov/29726691/

[36] Terasaki G, Ahrenholz NC, Haider MZ. Care of Adult Refugees with Chronic Conditions. Med Clin North Am. 2015; 99 (5): 1039-58. Available from: www.ncbi.nlm.nih.gov/pmc/articles/PMC7127301/

Figure 8: Age-standardised rates for PPH sub-category of total chronic conditions by region of birth and sex, Queensland, 2016–17 to 2019–20



At the level of country of birth, people born in a number of countries with NESB populations had significantly higher rates of chronic conditions when compared to the Australian-born population. The top six countries were Syria, Somalia, Serbia, Samoa, Tonga and Cook Islands (Table 5).

Table 5: Age-standardised rates for PPH sub-category of total chronic conditions by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	336,724	2,293.7	2,285.9	2,301.5	1.00
NESB – Middle East					
Syria*	141	6,538.6	5,496.3	7,719.9	2.85
Iraq*	260	4,261.9	3,644.0	4,939.4	1.86
Jordan*	46	3,579.8	2,584.5	4,820.1	1.56
Lebanon*	342	3,434.6	3,039.3	3,862.9	1.50
Turkey*	184	2,877.7	2,461.0	3,342.6	1.25
Israel	72	2,372.3	1,835.9	3,011.6	1.03
NESB – North African					
Sudan*	174	3,997.1	3,088.8	5,013.7	1.74
Egypt*	639	3,070.7	2,801.8	3,355.9	1.34
Libya	22	2,983.7	1,755.9	4,673.5	1.30
NESB – Other North-West Europe					
Austria	684	2,393.1	1,604.5	3,227.6	1.04
NESB – Other Oceania and Antarctica					
Samoa*	1,897	4,927.0	4,686.0	5,176.3	2.15
Tonga*	392	4,831.0	4,071.3	5,649.7	2.11
Cook Islands*	425	4,815.0	4,327.7	5,338.7	2.10
Fiji*	2,120	3,675.4	3,504.4	3,852.0	1.60
Papua New Guinea	1,592	2,381.3	2,249.3	2,518.3	1.04
NESB – Southern and Central Asia					
Pakistan*	317	4,075.4	3,513.5	4,686.1	1.78
Bangladesh*	136	3,621.2	2,741.5	4,620.6	1.58
Afghanistan*	169	3,199.4	2,607.8	3,862.7	1.39
NESB – Southern and Eastern Europe					
Serbia*	842	4,934.9	4,603.7	5,283.4	2.15
Ukraine	210	2,562.6	2,102.2	3,072.8	1.12
Romania	317	2,467.1	2,196.2	2,761.6	1.08
NESB – Sub-Saharan Africa					
Somalia*	119	4,991.8	3,812.6	6,343.3	2.18
Eritrea*	81	4,198.1	3,213.2	5,360.1	1.83

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

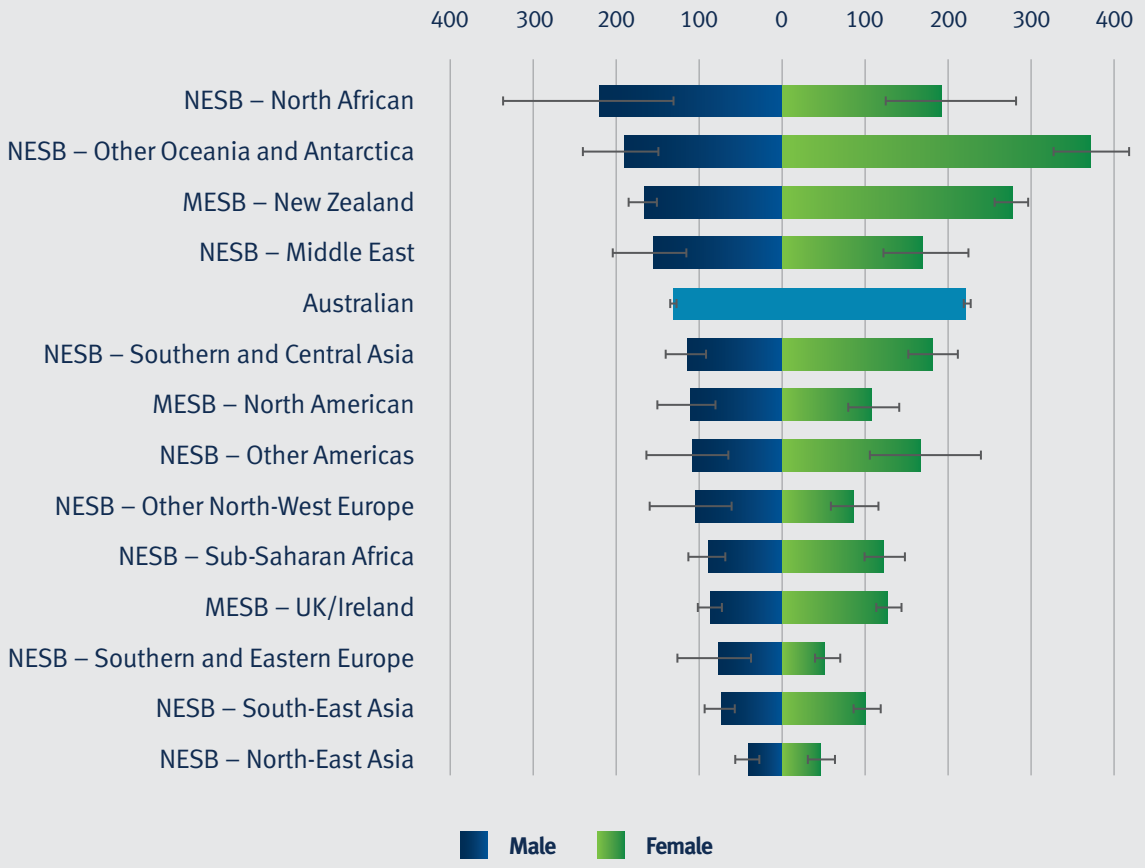
To gain a better understanding of the health issues and needs of people from various backgrounds, the report further explores the PPH rates for selected chronic conditions: asthma, angina, COPD, congestive heart failure, diabetes complications, hypertension, iron deficiency anaemia, rheumatic heart disease and bronchiectasis.

3.2.2.1 PPH rates (Chronic condition – Asthma)

Asthma is a common chronic condition that affects the airways. It has various impacts on the physical, psychological and social wellbeing of people living with the condition, depending on the severity of the disease and the level to which it is controlled. People with asthma are more likely to describe themselves as having a poor quality of life, which is more pronounced among people with severe or poorly controlled asthma[37].

In the current study, when compared to the Australian-born population, people who were born in Other Oceania and Antarctica and New Zealand regions had significantly higher rates of asthma (Figure 9). Females in both regions had significantly higher rates than males.

Figure 9: Age-standardised rates for PPH sub-category of chronic conditions: asthma by region of birth and sex, Queensland, 2016–17 to 2019–20



[37] Australian Institute of Health and Welfare. Chronic respiratory conditions. Canberra; AIHW. 2023. Available from: www.aihw.gov.au/reports/chronic-respiratory-conditions/chronic-respiratory-conditions/contents/asthma

At the level of country of birth, those born in Cook Islands, Tonga, Samoa, Fiji, Somalia and New Zealand had significantly higher rates of asthma when compared to the Australia-born population (Table 6).

Table 6: Age-standardised rates for PPH sub-category of chronic conditions: asthma by country of birth, Queensland, 2016–17 to 2019–20

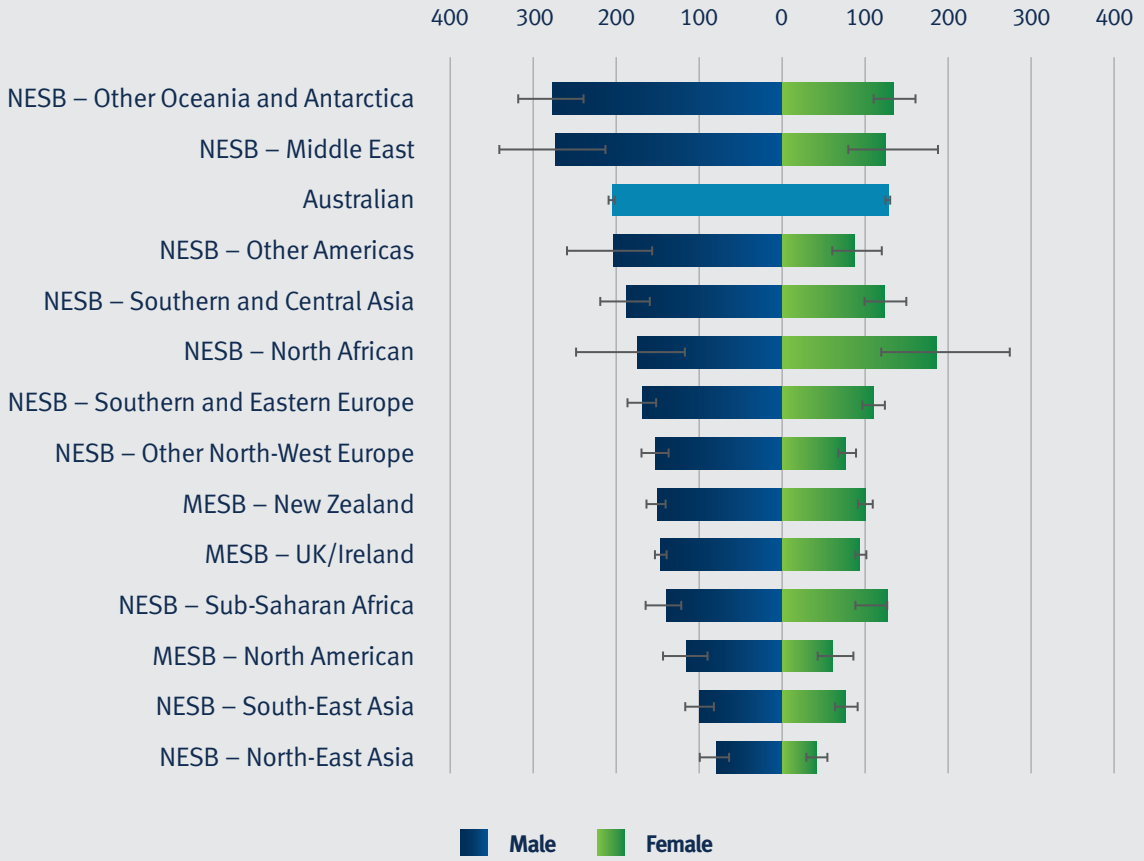
Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	25,799	178.3	176.1	180.5	1.00
MESB – New Zealand					
New Zealand*	1,642	222.8	210.3	235.7	1.25
NESB – Middle East					
Iraq	22	196.1	106.1	319.9	1.10
NESB – North African					
Sudan	27	264.2	160.5	402.4	1.48
NESB – Other Americas					
Colombia	24	267.4	89.5	509.0	1.50
Chile	20	227.2	114.8	384.3	1.27
NESB – Other Oceania and Antarctica					
Cook Islands*	46	530.4	374.1	725.2	2.97
Tonga*	43	409.9	288.7	562.1	2.30
Samoa*	137	365.4	296.6	443.5	2.05
Fiji*	149	304.6	233.8	384.7	1.71
Papua New Guinea	136	195.0	154.6	240.9	1.09
NESB – South-East Asia					
Myanmar	27	211.4	136.9	310.8	1.19
NESB – Southern and Central Asia					
Sri Lanka	75	199.4	150.2	257.7	1.12
Pakistan	33	185.7	123.6	266.2	1.04
NESB – Sub-Saharan Africa					
Somalia*	23	432.6	217.8	726.1	2.43

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.2.2 PPH rates (Chronic condition – Angina)

Angina is characterised by chest pain caused by reduced blood flow to the heart. In this current study, only males from Other Oceania and Antarctica and Middle East regions were found to have significantly higher rates of angina when compared to the Australian-born population. In most regions, males had significantly higher rates of angina than females (Figure 10).

Figure 10: Age-standardised rates for PPH sub-category of chronic conditions: angina by region of birth and sex, Queensland, 2016–17 to 2019–20



When PPH rates due to angina were further explored at the level of country of birth, people born in Pakistan, Serbia, Tonga, Cook Islands and Fiji had significantly higher rates in comparison to the Australian-born population (Table 7).

Table 7: Age-standardised rates for PPH sub-category of chronic conditions: angina by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	24,065	163.3	161.2	165.4	1.00
MESB – UK/Ireland					
Ireland	117	165.3	136.0	198.8	1.01
NESB – Middle East					
Iran	41	212.3	146.9	294.8	1.30
NESB – North African					
Egypt	43	213.2	146.3	297.2	1.31
NESB – North Americas					
Chile	23	180.5	114.1	271.3	1.11
NESB – Other North-West Europe					
Belgium	21	192.2	117.6	295.7	1.18
NESB – Other Oceania and Antarctica					
Tonga*	25	289.6	176.5	442.1	1.77
Cook Islands*	26	273.4	168.4	414.3	1.67
Fiji*	150	240.3	201.6	284.0	1.47
Samoa	67	185.0	139.6	239.5	1.13
NESB – Southern and Central Asia					
Pakistan*	34	390.1	249.6	571.8	2.39
NESB – Southern and Eastern Europe					
Serbia*	59	350.5	265.2	454.1	2.15
Slovenia	20	269.4	143.5	445.6	1.65
Poland	99	204.2	164.3	250.6	1.25
Romania	24	172.7	109.1	259.0	1.06
Russian Federation	20	172.0	103.8	267.2	1.05

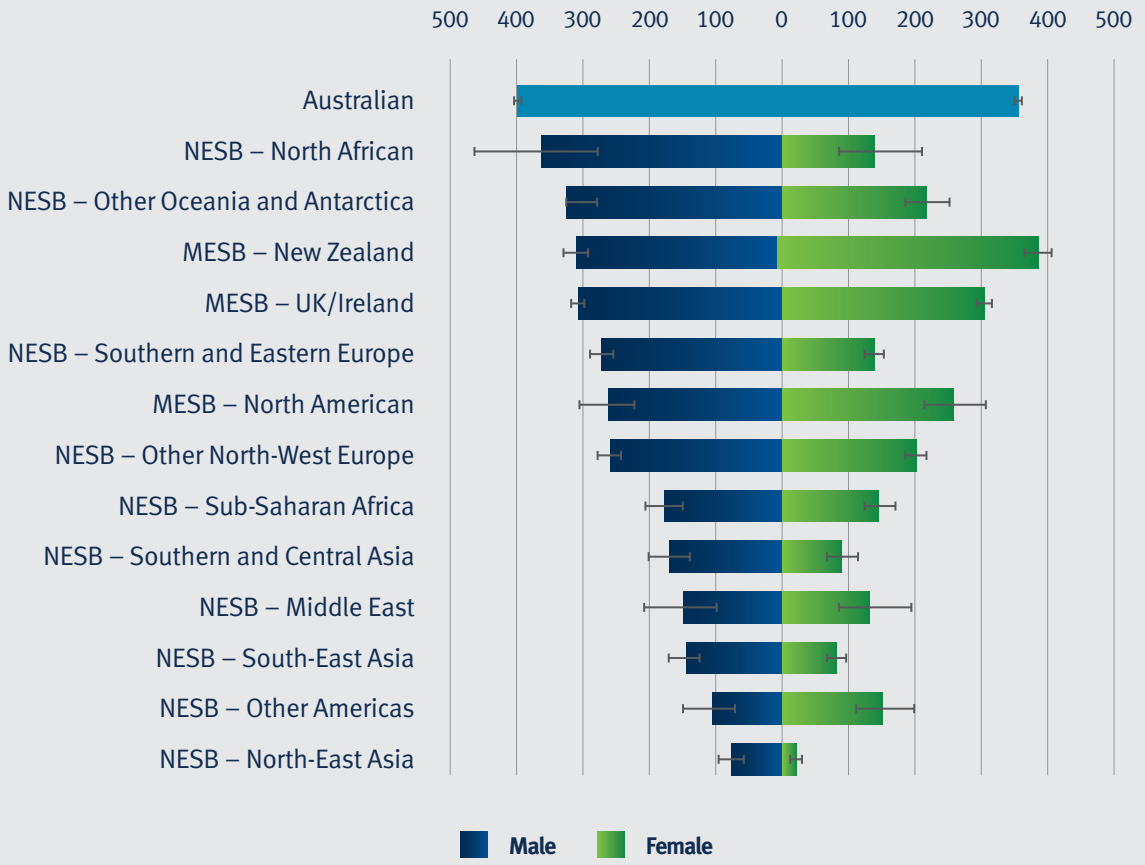
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.2.3 PPH rates (Chronic condition – Chronic obstructive pulmonary disease)

Chronic obstructive pulmonary disease (COPD) is a preventable and treatable condition that affects the lungs and leads to chronic obstruction of lung airflow that interferes with normal breathing. COPD can interrupt day-to-day activities, sleep patterns and the ability to exercise among other things, subsequently affecting the overall quality of life.

Analysis at the level of region of birth showed that females from New Zealand were the only population with significantly higher rates of COPD than the Australian-born population (Figure 11).

Figure 11: Age-standardised rates for PPH sub-category of chronic conditions: chronic obstructive pulmonary disease (COPD) by region of birth and sex, Queensland, 2016–17 to 2019–20



When further investigations were done at the level of country of birth, people born in Serbia, Samoa and Scotland had significantly higher rates of COPD when compared to the Australian-born population (Table 8).

Table 8: Age-standardised rates for PPH sub-category of chronic conditions: chronic obstructive pulmonary disease (COPD) by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	56,058	374.4	371.3	377.6	1.00
MESB – UK/Ireland					
Ireland	306	411.0	365.2	460.8	1.10
Scotland*	1,004	403.9	378.4	430.7	1.08
NESB – Other Oceania and Antarctica					
Samoa*	178	541.8	459.1	634.3	1.45
NESB – Southern and Eastern Europe					
Serbia*	118	695.9	575.2	834.4	1.86

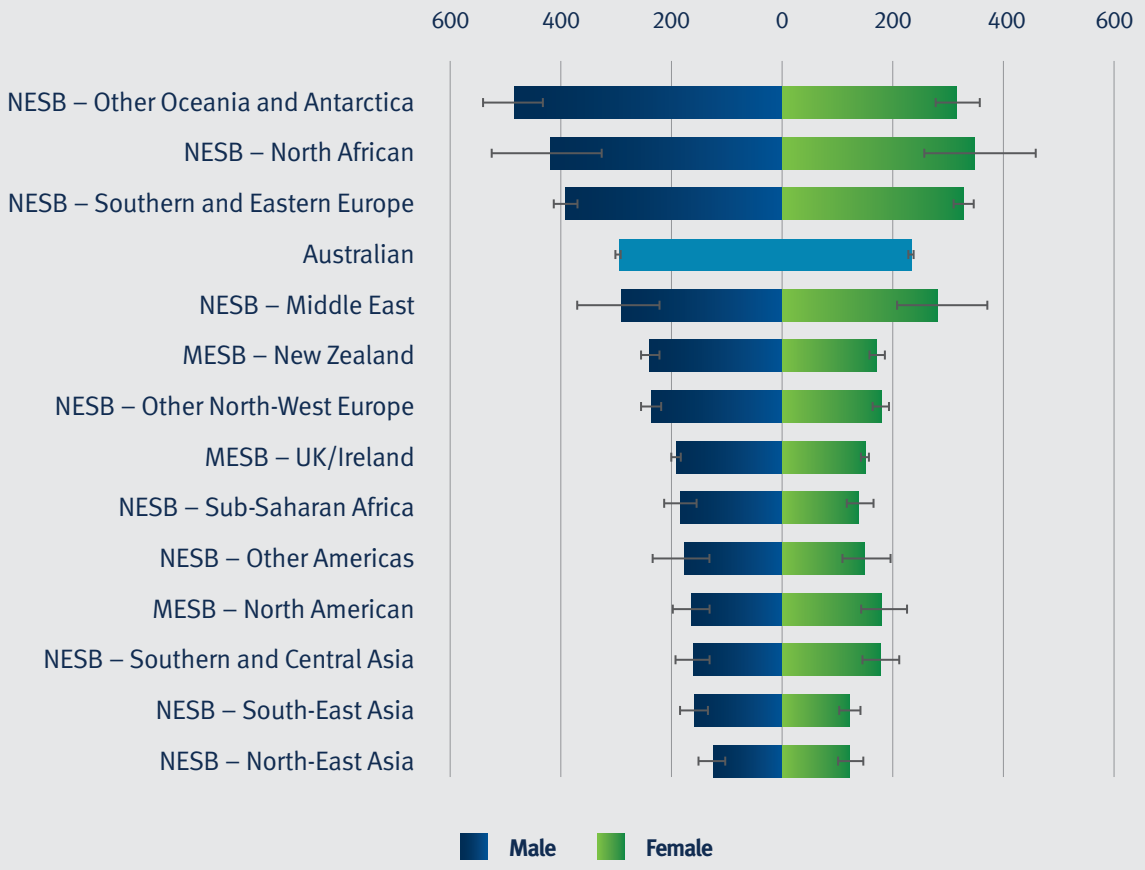
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.2.4 PPH rates (Chronic condition – Congestive cardiac failure)

Heart failure, also sometimes known as congestive cardiac failure, occurs when the heart begins to function less effectively in pumping blood around the body. It is a major cause of morbidity and mortality in Australia and causes a significant burden for patients as well as health systems[38].

Analysis by region of birth in the current study highlighted that the following three regions had significantly higher rates of congestive cardiac failure than the Australian-born population: Other Oceania and Antarctica, North African and Southern and Eastern Europe (Figure 12). Males from many regions were found to have significantly higher rates than females.

Figure 12: Age-standardised rates for PPH sub-category of chronic conditions: congestive cardiac failure by region of birth and sex, Queensland, 2016–17 to 2019–20



[38] Sahle BW, Owen AJ, Mutowo MP, Krum H, Reid CM. Prevalence of heart failure in Australia: a systematic review. BMC Cardiovasc Disord. 2016; 16 (32). Available from: bmccardiovascdisord.biomedcentral.com/articles/10.1186/s12872-016-0208-4

At the level of country of birth, a number of countries were found to have significantly higher rates of congestive cardiac failure when compared to the Australia-born population. The top five countries were Syria, Serbia, Cook Islands, Ukraine and Samoa (Table 9).

Table 9: Age-standardised rates for PPH sub-category of chronic conditions: congestive cardiac failure by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	38,627	263.0	260.4	265.7	1.00
NESB – Middle East					
Syria*	26	1,255.3	818.4	1,841.3	4.77
Lebanon*	48	462.2	340.1	613.7	1.76
NESB – North African					
Egypt*	104	400.2	326.9	485.0	1.52
NESB – Other North-West Europe					
Finland	101	279.9	228.0	340.1	1.06
NESB – Other Oceania and Antarctica					
Cook Islands*	54	758.0	555.7	1,005.8	2.88
Samoa*	203	604.5	517.8	700.8	2.30
Tonga*	36	537.3	365.7	757.5	2.04
Fiji*	168	331.9	282.1	387.8	1.26
Papua New Guinea	156	277.8	231.5	329.9	1.06
NESB – Southern and Eastern Europe					
Serbia*	148	857.8	724.7	1,008.1	3.26
Ukraine*	83	754.0	592.1	944.7	2.87
Romania*	64	565.7	433.9	724.5	2.15
Slovenia*	48	485.0	333.9	672.4	1.84
Portugal*	27	433.1	285.3	630.1	1.65
Croatia*	228	405.2	351.1	464.9	1.54
Italy*	1,003	382.8	352.8	414.3	1.46
Greece*	246	344.1	296.0	397.1	1.31
Spain*	81	337.1	266.8	420.1	1.28
Hungary*	159	332.7	281.7	390.2	1.26
Poland*	173	330.2	282.2	383.9	1.26
Cyprus	53	304.8	228.3	398.8	1.16
Malta	141	290.5	241.7	345.8	1.10
Russian Federation	32	290.5	198.3	410.7	1.10

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.2.5 PPH rates (Chronic condition – Diabetes complications)

Diabetes is a chronic condition characterised by high levels of glucose in the blood. Type 2 diabetes is the most common and is largely preventable by maintaining a healthy lifestyle. Diabetes may lead to complications affecting major body organs, pregnancy and other longer-term negative outcomes[39].

Some CALD populations have been shown to have a higher risk of developing diabetes and having poorer outcomes than the Australian-born population. This can be due to genetic, stress and lifestyle changes associated with migration as well as a poorer profile on the social determinants of health[40 41 42]. A recent report from AIHW identified that people born overseas had a higher prevalence of diabetes than the Australian-born population, particularly for people born in countries from regions such as Polynesia, South Asia and the Middle East[43].

In the current study, the regions with significantly higher rates of diabetes complications than the Australian-born population were Other Oceania and Antarctica, Middle East, North African and Southern and Central Asia regions (Figure 13). Males from all regions had significantly higher rates than females.

[39] Australian Institute of Health and Welfare. Diabetes: Australian facts. Canberra; AIHW. 2023. Available from: www.aihw.gov.au/reports/diabetes/diabetes/contents/summary

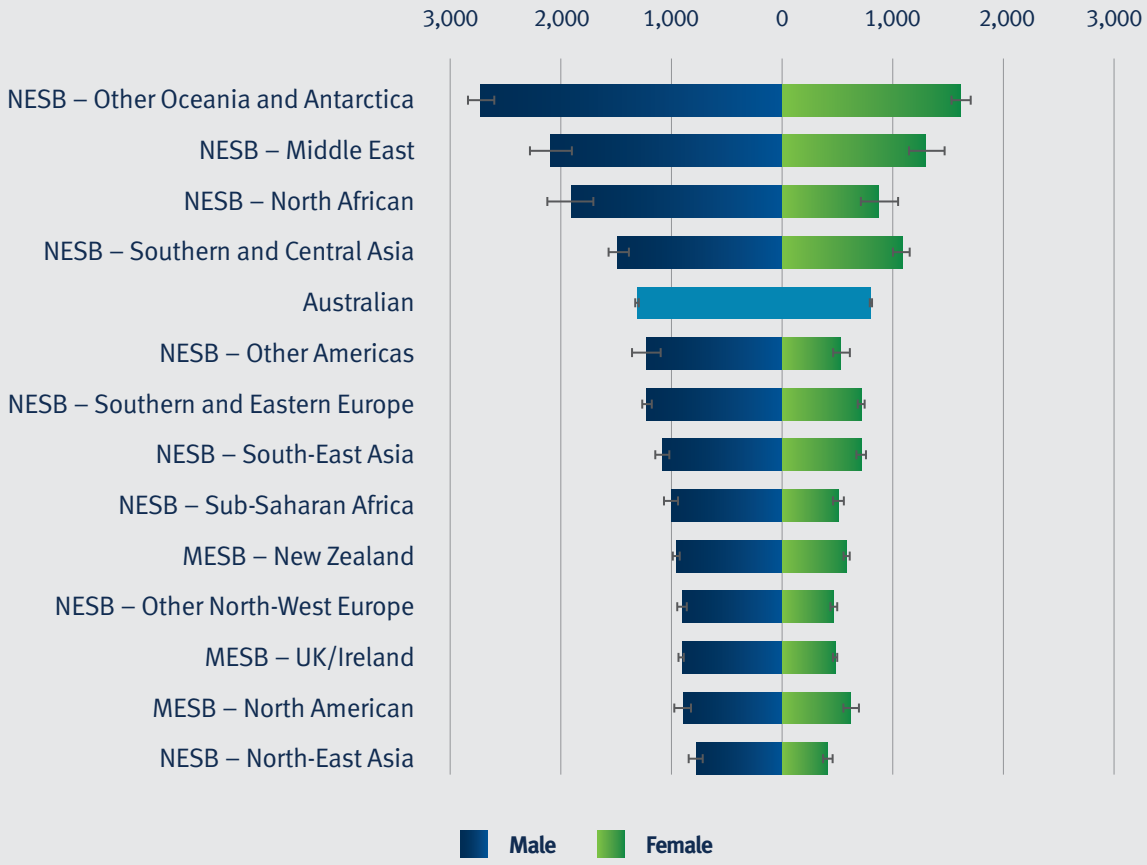
[40] Colagiuri R, Thomas M and Buckley A. Preventing Type 2 Diabetes in Culturally and Linguistically Diverse Communities in NSW. Sydney: NSW Department of Health. 2007. Available from: www.diabetesaustralia.com.au/wp-content/uploads/Preventing-Type-2-Diabetes-in-Culturally-and-Linguistically-Diverse-Communities-in-NSW.pdf

[41] Dunbar J, Reddy P, Davis-Lameloise N, Boak R, Hernan A, Thurston C. A discussion document for the development of a diabetes prevention strategy for Culturally and Linguistically Diverse populations in Australia. Victoria: Deakin University. 2008. Available from: dro.deakin.edu.au/articles/book/A_discussion_document_for_the_development_of_a_diabetes_prevention_strategy_for_Culturally_and_Linguistically_Diverse_CALD_populations_in_Australia/20902555

[42] Shailja T, Shanshan S. Managing Diabetes in CALD Communities. Endocrinology Today, 2019: 8(1). Available from: www.researchgate.net/publication/332173734_Managing_diabetes_in_CALD_community

[43] Australian Institute of Health and Welfare. Chronic health conditions among culturally and linguistically diverse Australians. AIHW; 2021 (updated 08 February 2023). Available from: www.aihw.gov.au/reports/cald-australians/chronic-conditions-cald-2021/contents/background

Figure 13: Age-standardised rates for PPH sub-category of chronic conditions: diabetes complications by region of birth and sex, Queensland, 2016–17 to 2019–20



Further analysis at the level of country of birth showed that several countries had significantly higher rates of diabetes complications compared to the Australian-born population. The top five countries were Syria, Samoa, Cook Islands, Iraq and Eritrea (Table 10).

Table 10: Age-standardised rates for PPH sub-category of chronic conditions: diabetes complications by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	153,742	1,041.2	1,036.0	1,046.4	1.00
NESB – Middle East					
Syria*	99	4,622.0	3,750.9	5,633.7	4.44
Iraq*	150	2,698.1	2,206.8	3,252.7	2.59
Jordan*	32	2,531.9	1,723.1	3,585.2	2.43
Lebanon*	204	2,037.0	1,728.1	2,379.7	1.96
Turkey*	119	1,871.2	1,537.4	2,253.8	1.80
NESB – North African					
Sudan	58	1,554.9	1,008.9	2,219.0	1.49
Egypt*	322	1,483.9	1,306.2	1,676.9	1.43
NESB – Other Americas					
Peru	36	1,165.7	775.6	1,666.0	1.12
NESB – Other North-West Europe					
Belgium	100	1,077.2	854.7	1,335.4	1.03
NESB – Other Oceania and Antarctica					
Samoa*	1,225	3,068.2	2,882.3	3,262.1	2.95
Cook Islands*	256	2,913.0	2,535.6	3,327.1	2.80
Fiji*	1,430	2,450.4	2,318.9	2,587.2	2.35
Tonga*	240	2,385.9	2,066.0	2,737.9	2.29
Papua New Guinea*	806	1,176.5	1,087.5	1,270.3	1.13
Solomon Islands	31	1,158.1	730.0	1,718.2	1.11
NESB – South-East Asia					
Myanmar	130	1,163.8	967.0	1,388.0	1.12
Cambodia	94	1,133.5	906.5	1,398.3	1.09
NESB – Southern and Central Asia					
Pakistan*	158	2,411.5	1,976.8	2,900.7	2.32
Bangladesh*	64	2,167.7	1,499.4	2,972.9	2.08
Afghanistan*	72	1,849.3	1,390.0	2,396.6	1.78
India*	1,305	1,241.1	1,172.8	1,312.3	1.19
Sri Lanka*	533	1,173.6	1,074.8	1,278.9	1.13

Country of birth	Count	ASR	(95% CI)		Rate ratio
NESB – Southern and Eastern Europe					
Serbia*	433	2,488.3	2,258.5	2,735.1	2.39
Romania*	170	1,326.8	1,130.3	1,547.0	1.27
Malta*	544	1,252.3	1,091.7	1,423.5	1.20
Portugal	94	1,248.2	1,001.5	1,535.9	1.20
Croatia*	559	1,171.0	1,059.6	1,289.6	1.12
Greece	648	1,116.3	1,013.8	1,224.9	1.07
Ukraine	95	1,079.7	845.2	1,352.9	1.04
NESB – Sub-Saharan Africa					
Eritrea*	50	2,561.8	1,840.1	3,452.9	2.46
Somalia*	52	2,418.8	1,603.3	3,421.6	2.32

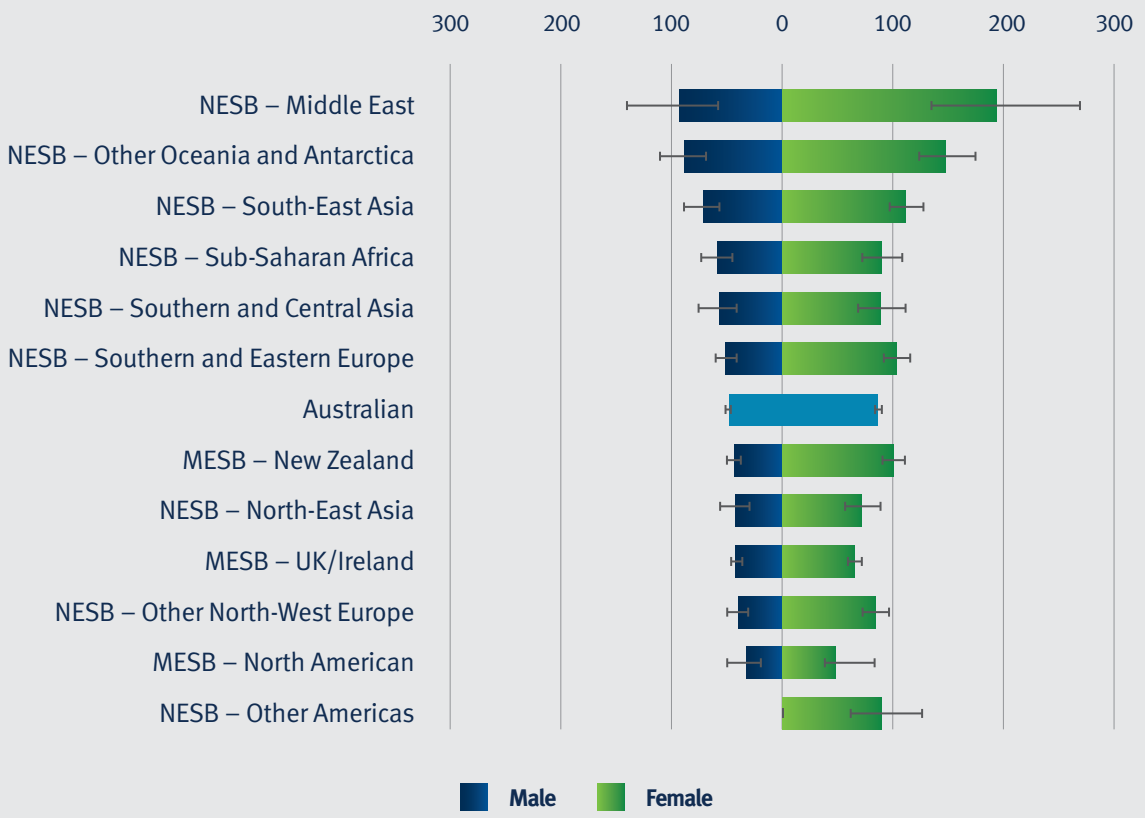
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.2.6 PPH rates (Chronic condition – Hypertension)

High blood pressure, also referred to as hypertension, is a major risk factor for various chronic conditions including stroke, coronary heart disease, heart failure and chronic kidney disease[44]. Low health literacy among some CALD populations is a potential barrier to accessing appropriate care. This is associated with a lack of understanding of health information, undesirable health behaviours or negative beliefs regarding aspects of hypertension management, such as medication adherence. This subsequently poses a huge risk for this cohort[45].

In the current study, many regions had higher rates of hypertension when compared to the Australian-born population (Figure 14). Females from all regions had higher rates than males, with many being significantly higher.

Figure 14: Age-standardised rates for PPH sub-category of chronic conditions: hypertension by region of birth and sex, Queensland, 2016–17 to 2019–20



Age-standardised rates are omitted for male population where cell counts are insufficient. See Appendix C for details.

[44] Australian Institute of Health and Welfare. High blood pressure. AIHW: 2019. Available from: www.aihw.gov.au/reports/risk-factors/high-blood-pressure/contents/high-blood-pressure

[45] Shahin W, Kennedy GA, Stupans I. A qualitative exploration of the impact of knowledge and perceptions about hypertension in medication adherence in Middle Eastern refugees and migrants. Explor Res Clin Soc Pharm. 2021. Available from: www.ncbi.nlm.nih.gov/pmc/articles/PMC9030275/

Further exploration of the data at the country of birth level showed that those born in Serbia, Poland, Hungary, Samoa, Fiji, Papua New Guinea and the Philippines had significantly higher rates of hypertension when compared to the Australian-born population (Table 11).

Table 11: Age-standardised rates for PPH sub-category of chronic conditions: hypertension by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	10,024	69.2	67.8	70.5	1.00
MESB – New Zealand					
New Zealand	666	72.3	66.8	78.2	1.05
NESB – Other North-West Europe					
Finland	34	120.5	69.0	187.0	1.74
Austria	28	82.0	44.8	131.3	1.19
NESB – Other Oceania and Antarctica					
Samoa*	77	176.9	137.4	223.7	2.56
Fiji*	69	118.2	90.7	151.1	1.71
Papua New Guinea*	70	101.1	76.2	131.0	1.46
NESB – South-East Asia					
Philippines*	205	165.6	139.3	194.9	2.39
Singapore	21	95.1	54.5	151.4	1.38
NESB – Southern and Central Asia					
India	97	80.4	63.9	99.6	1.16
NESB – Southern and Eastern Europe					
Serbia*	47	271.8	199.6	361.7	3.93
Poland*	79	164.5	128.1	207.6	2.38
Hungary*	41	107.0	72.0	151.2	1.55

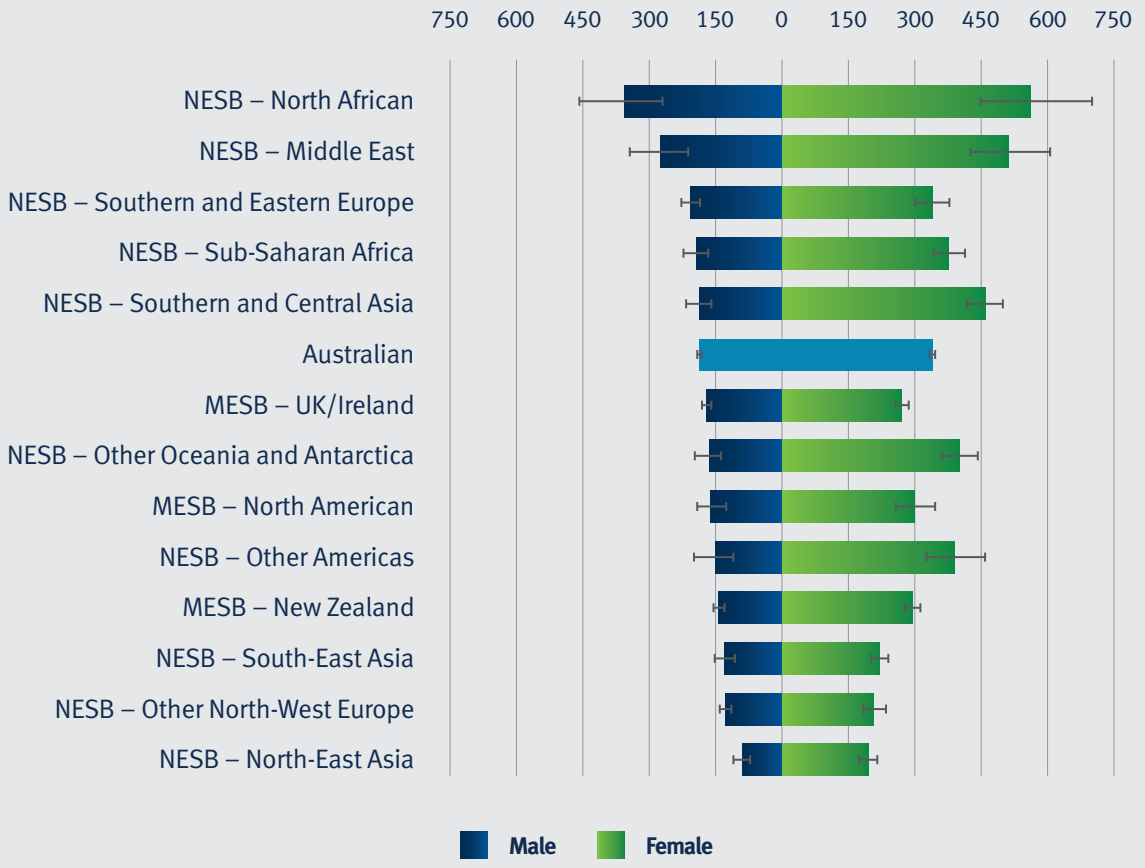
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.2.7 PPH rates (Chronic condition – Iron deficiency anaemia)

Anaemia is a major cause of morbidity and mortality worldwide. Iron deficiency anaemia occurs after iron stores become severely depleted. Some CALD sub-populations in Australia are known to be at a higher risk of having iron deficiency anaemia due to several factors including complex migration journeys[46].

In the current study, analysis at the level of region of birth showed that four regions had significantly higher rates of iron deficiency anaemia when compared to the Australian-born population (Figure 15). These were North African, Middle East, Southern and Central Asia and Other Oceania and Antarctica regions. Females had significantly higher rates than males in all regions except North African region.

Figure 15: Age-standardised rates for PPH sub-category of chronic conditions: iron deficiency anaemia by region of birth and sex, Queensland, 2016–17 to 2019–20



[46] Furnival A, McGovern C. Iron Deficiency Collaborative: The economic impact of iron deficiency in Australia. Victoria: Evaluate. 2021. Available from: static1.squarespace.com/static/57bfc0498419c24a01318ae2/t/607fc2e06ace2f22d5ca9a43/1618985699483/20210421+-+IDC+-+economic+impact+of+iron+deficiency+-+FINAL.pdf

When the level of country of birth was further explored, results highlighted that people born in a number of countries with NESB populations had significantly higher rates of iron deficiency anaemia when compared to the Australian-born population. The top five countries were Israel, Serbia, Sudan, Peru and Pakistan (Table 12).

Table 12: Age-standardised rates for PPH sub-category of chronic conditions: iron deficiency anaemia by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	37,099	262.8	260.1	265.5	1.00
NESB – Middle East					
Israel*	24	772.1	486.9	1,159.3	2.94
Iraq*	46	444.9	286.5	642.4	1.69
Turkey	26	344.3	219.4	511.9	1.31
Iran	81	341.5	256.8	441.3	1.30
Lebanon	30	309.0	205.2	445.3	1.18
NESB – North African					
Sudan*	48	611.0	322.9	968.3	2.32
Egypt*	89	500.2	380.7	640.0	1.90
NESB – Other Americas					
Peru*	24	598.2	349.0	936.5	2.28
Colombia	41	280.4	178.8	408.8	1.07
NESB – Other Oceania and Antarctica					
Fiji*	237	390.0	339.0	446.2	1.48
Cook Islands	30	287.7	188.5	418.0	1.09
NESB – Southern and Central Asia					
Pakistan*	70	542.2	360.9	758.8	2.06
Bangladesh*	47	525.3	269.2	843.8	2.00
Afghanistan	47	381.1	237.5	559.6	1.45
India*	605	302.7	274.1	333.1	1.15
NESB – Southern and Eastern Europe					
Serbia*	106	663.9	539.5	807.7	2.53
Ukraine*	28	475.0	291.6	718.4	1.81
Russian Federation*	55	423.4	313.8	557.5	1.61
Greece	100	334.6	186.6	506.4	1.27
NESB – Sub-Saharan Africa					
Mauritius	37	377.8	253.6	536.5	1.44

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

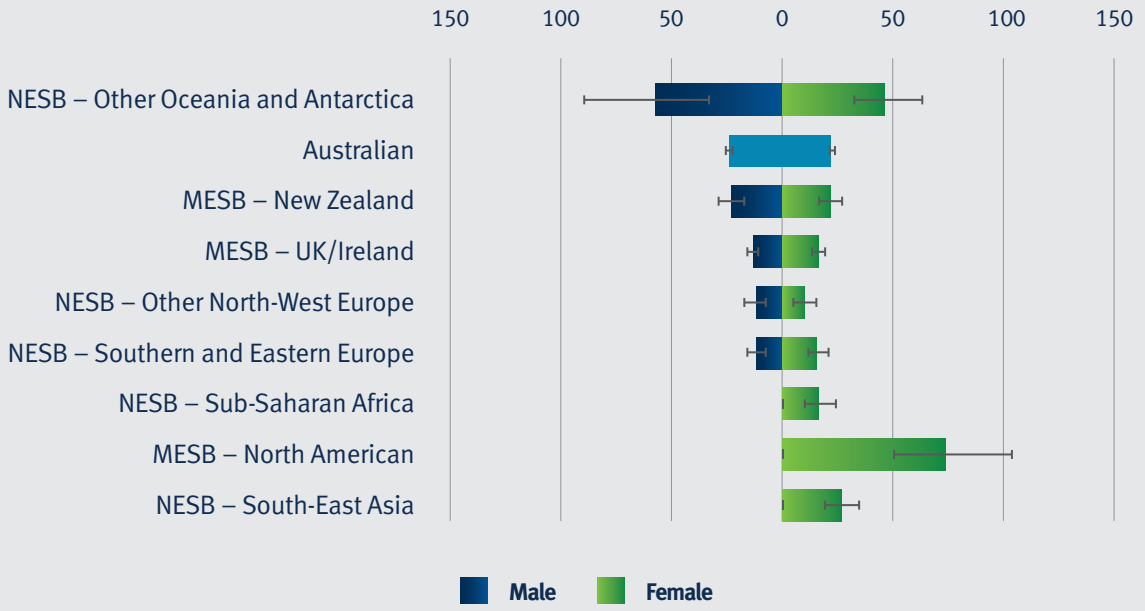
3.2.2.8 PPH rates (Chronic condition – Rheumatic heart disease)

Rheumatic heart disease (RHD) is a significant cause of cardiac morbidity and mortality. It is caused by damage to the valves of the heart from one or more episodes of acute rheumatic fever (autoimmune response to infection of the upper respiratory tract and possibly of the skin by bacteria).

In high income countries like Australia, RHD is mostly found in certain cohorts including CALD and migrant populations from countries with endemic RHD as well as people with Māori or Pacific Islander ancestry[47].

In the current study, the only region with significantly higher rates of rheumatic heart disease when compared to the Australian-born population was the Other Oceania and Antarctica region (Figure 16). Additionally, females from the North American region had significantly higher rates than Australian-born females.

Figure 16: Age-standardised rates for PPH sub-category of chronic conditions: rheumatic heart disease by region of birth and sex, Queensland, 2016–17 to 2019–20



Age-standardised rates are omitted for male population where cell counts are insufficient. See Appendix C for details.

[47] Katzenellenbogen JM, Bond-Smith D, Seth RJ, Dempsey K, Cannon J, Stacey I, et al. Contemporary Incidence and Prevalence of Rheumatic Fever and Rheumatic Heart Disease in Australia Using Linked Data: The Case for Policy Change. Journal of the American Heart Association. 2020; 9 (19). Available from: www.ahajournals.org/doi/full/10.1161/JAHA.120.016851

Further analysis at level of country of birth revealed that those born in two countries had significantly higher rates of rheumatic heart disease when compared to the Australian-born population: Egypt and the United States of America (Table 13).

Table 13: Age-standardised rates for PPH sub-category of chronic conditions: rheumatic heart disease by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	3,401	23.1	22.3	23.9	1.00
MESB – North American					
United States of America*	39	59.6	42.3	81.5	2.58
MESB – UK/Ireland					
Ireland	23	31.3	19.8	47.0	1.35
NESB – North African					
Egypt*	21	80.6	49.9	123.3	3.49
NESB – South-East Asia					
Vietnam	21	31.7	19.0	49.4	1.37
Malaysia	20	25.9	15.5	40.4	1.12

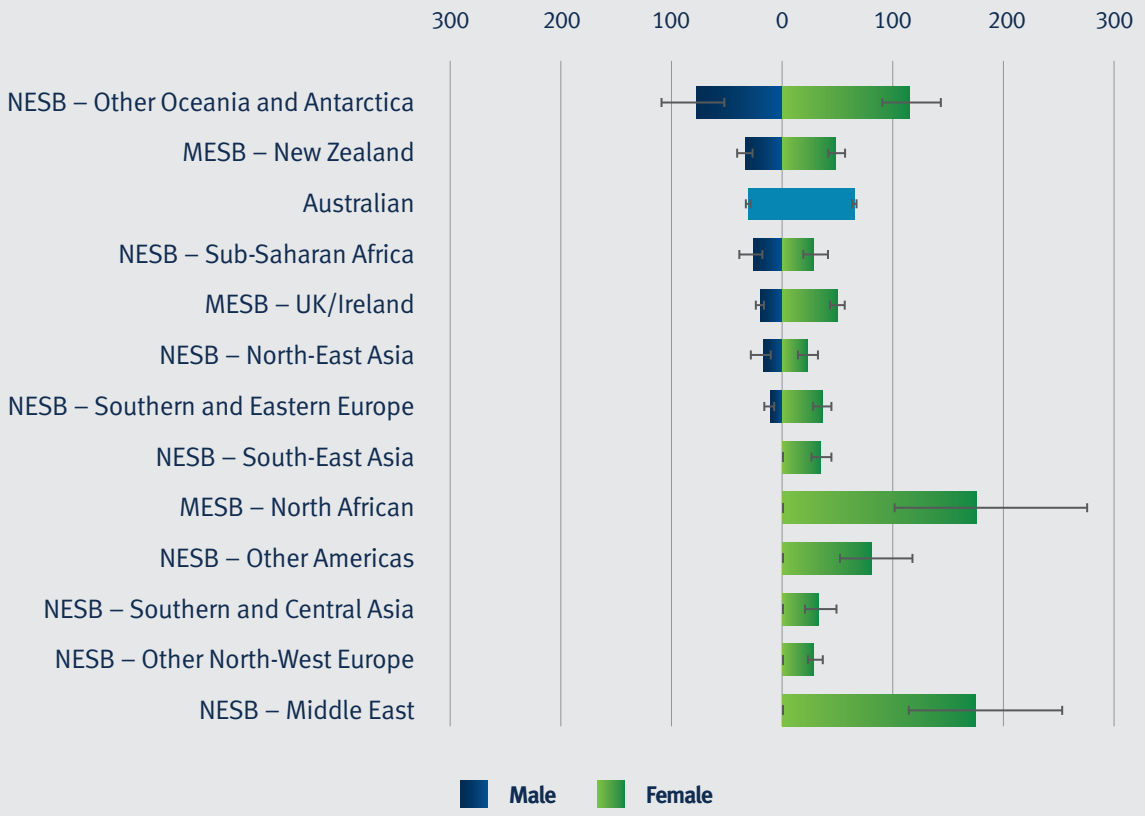
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.2.9 PPH rates (Chronic condition – Bronchiectasis)

Bronchiectasis is a lung disease that occurs when the walls of the breathing tubes or airways widen because of chronic inflammation and/or infection.

When compared to the Australian-born population, bronchiectasis was observed to be significantly higher in males and females from Other Oceania and Antarctica region. Females from the North African and Middle East regions also had significantly higher rates than Australian-born females (Figure 17).

Figure 17: Age-standardised rates for PPH sub-category of chronic conditions: bronchiectasis by region of birth and sex, Queensland 2016–17 to 2019–20



Age-standardised rates are omitted for male population where cell counts are insufficient. See Appendix C for details.

At the level of country of birth, people born in these countries with NESB populations had significantly higher rates of bronchiectasis in comparison to the Australian-born population: Colombia, Lebanon, Papua New Guinea and Samoa (Table 14).

Table 14: Age-standardised rates for PPH sub-category of chronic conditions: bronchiectasis by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	7,326	49.1	48.0	50.2	1.00
NESB – Middle East					
Lebanon*	27	278.3	183.4	405.0	5.67
NESB – Other Americas					
Colombia*	20	459.5	280.6	709.8	9.36
NESB – Other Oceania and Antarctica					
Papua New Guinea*	83	143.5	107.5	185.9	2.92
Samoa*	35	96.3	64.5	137.2	1.96

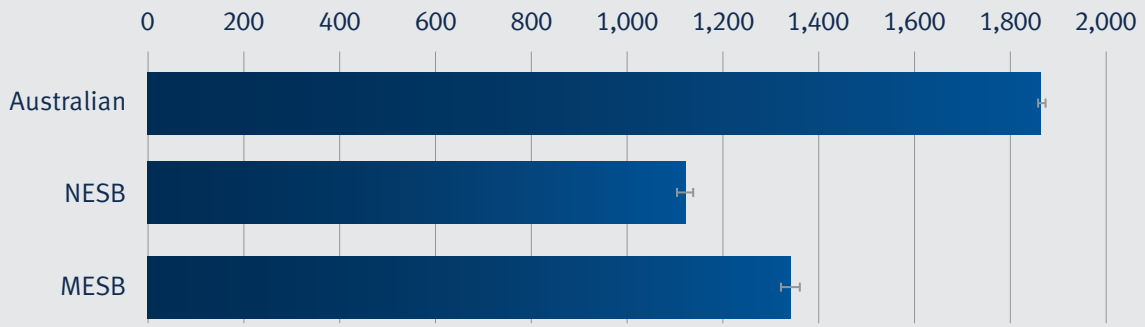
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.3 PPH (Acute conditions)

An acute condition is a health condition that develops suddenly and lasts for a limited time. Hospitalisation can be prevented with timely and adequate care (usually non-hospital).

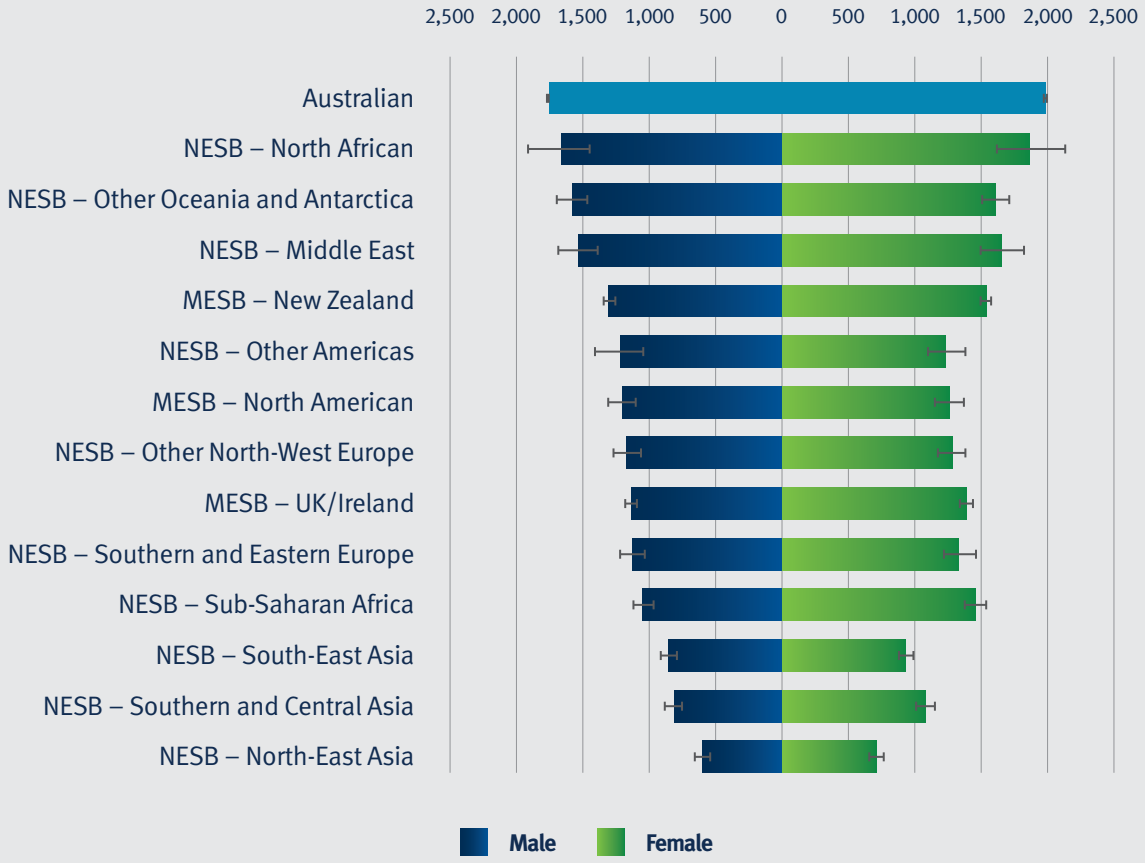
In this section, the age-standardised rates for the PPH sub-category of total acute conditions and selected conditions were analysed. Findings revealed that at an aggregate level, NESB and MESB populations had lower rates of acute conditions when compared to the Australian-born population (Figure 18).

Figure 18: Age-standardised rates for PPH sub-category of total acute conditions by broad country of birth category, Queensland, 2016–17 to 2019–20



Analysis at the level of region of birth revealed that no region had significantly higher rates of acute conditions when compared to the Australian-born population (Figure 19).

Figure 19: Age-standardised rates for PPH sub-category of total acute conditions by region of birth and sex, Queensland, 2016–17 to 2019–20



However, when further analysis was conducted at the level of country of birth, people born in several countries with NESB populations had significantly higher rates of acute conditions when compared to the Australian-born population: Sudan, Syria, Somalia, Samoa, Cook Islands and Afghanistan (Table 15).

Table 15: Age-standardised rates for PPH sub-category of total acute conditions by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	269,858	1,863.6	1,856.6	1,870.7	1.00
NESB – Middle East					
Syria*	82	3,524.8	2,795.5	4,384.5	1.89
Iraq	215	2,212.5	1,854.7	2,608.4	1.19
NESB – North African					
Sudan*	292	3,639.7	2,962.0	4,378.9	1.95
NESB – Other Americas					
Mexico	48	2,675.5	1,776.6	3,790.5	1.44
NESB – Other North-West Europe					
Austria	268	2,596.9	1,359.3	3,952.0	1.39
Sweden	150	1,989.5	1,591.5	2,438.8	1.07
NESB – Other Oceania and Antarctica					
Samoa*	869	2,540.2	2,329.0	2,762.3	1.36
Vanuatu	29	2,355.6	1,256.4	3,806.6	1.26
Cook Islands*	185	2,325.0	1,952.2	2,740.8	1.25
Tonga	162	1,972.1	1,643.4	2,341.5	1.06
NESB – Southern and Central Asia					
Afghanistan*	221	2,368.1	1,924.7	2,858.0	1.27
NESB – Southern and Eastern Europe					
Serbia	287	2,463.3	1,850.5	3,132.2	1.32
Ukraine	115	2,102.1	1,379.4	2,932.4	1.13
NESB – Sub-Saharan Africa					
Somalia*	128	2,634.3	1,934.6	3,432.2	1.41
Uganda	42	1,936.6	1,339.4	2,688.5	1.04
Eritrea	58	1,912.5	1,375.2	2,566.0	1.03

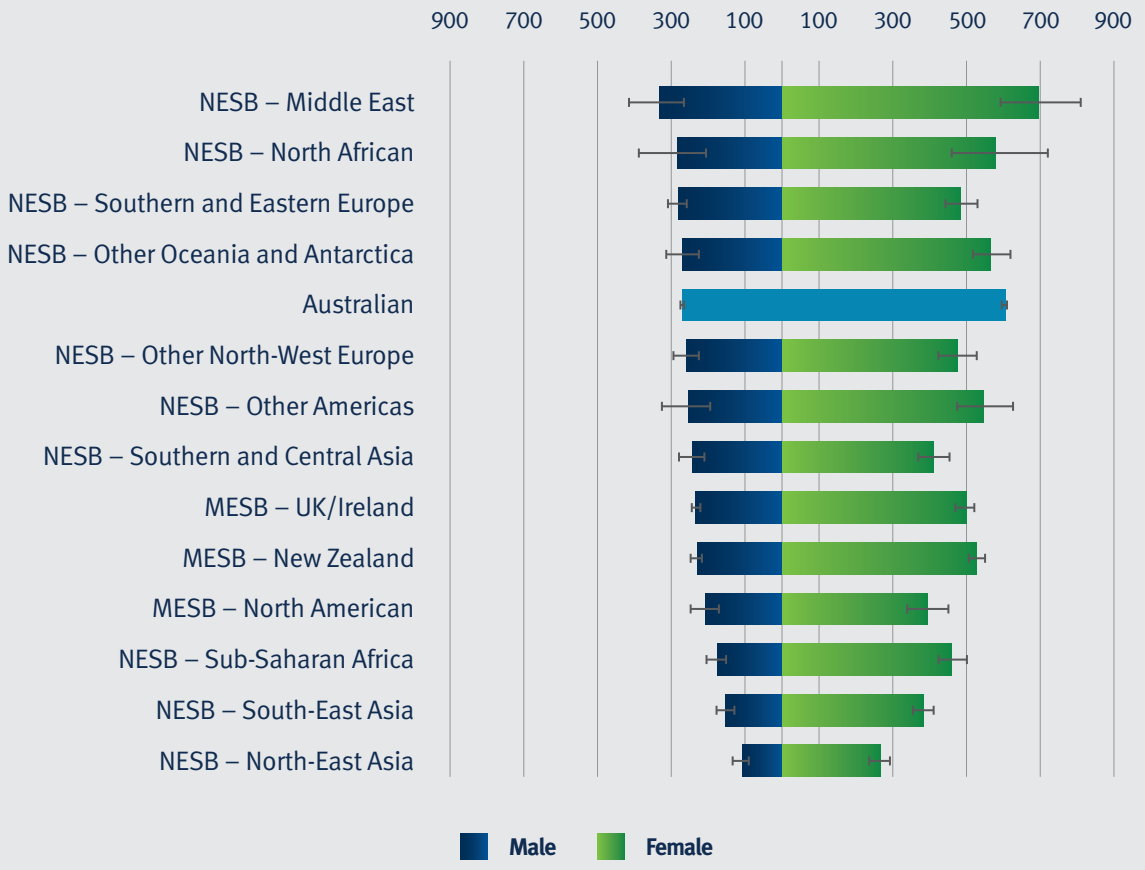
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

To further understand the health issues and outcomes of people from various regions, the current study explored the PPH rates for selected acute conditions: urinary tract infections, gangrene, pelvic inflammatory disease, perforated/bleeding ulcer, convulsions and epilepsy, dental conditions, ear nose and throat infections and cellulitis.

3.2.3.1 PPH rates (Acute condition – Urinary tract infections including pyelonephritis)

Urinary tract infections (UTIs) are a common cause of hospitalisations that are potentially preventable. In the current study, no region had significantly higher rates of UTIs (including pyelonephritis) when compared to the Australian-born population (Figure 20). Females in all regions (including Australia) had significantly higher rates than males.

Figure 20: Age-standardised rates for PPH sub-category of acute conditions: urinary tract infections (including pyelonephritis) by region of birth and sex, Queensland, 2016–17 to 2019–20



Further analysis at the level of country of birth revealed that people born in several countries with NESB populations had significantly higher rates of urinary tract infections. The top five countries were Syria, Somalia, Afghanistan, Sudan and Turkey (Table 16).

Table 16: Age-standardised rates for PPH sub-category of acute conditions: urinary tract infections (including pyelonephritis) by country of birth, Queensland, 2016–17 to 2019–20

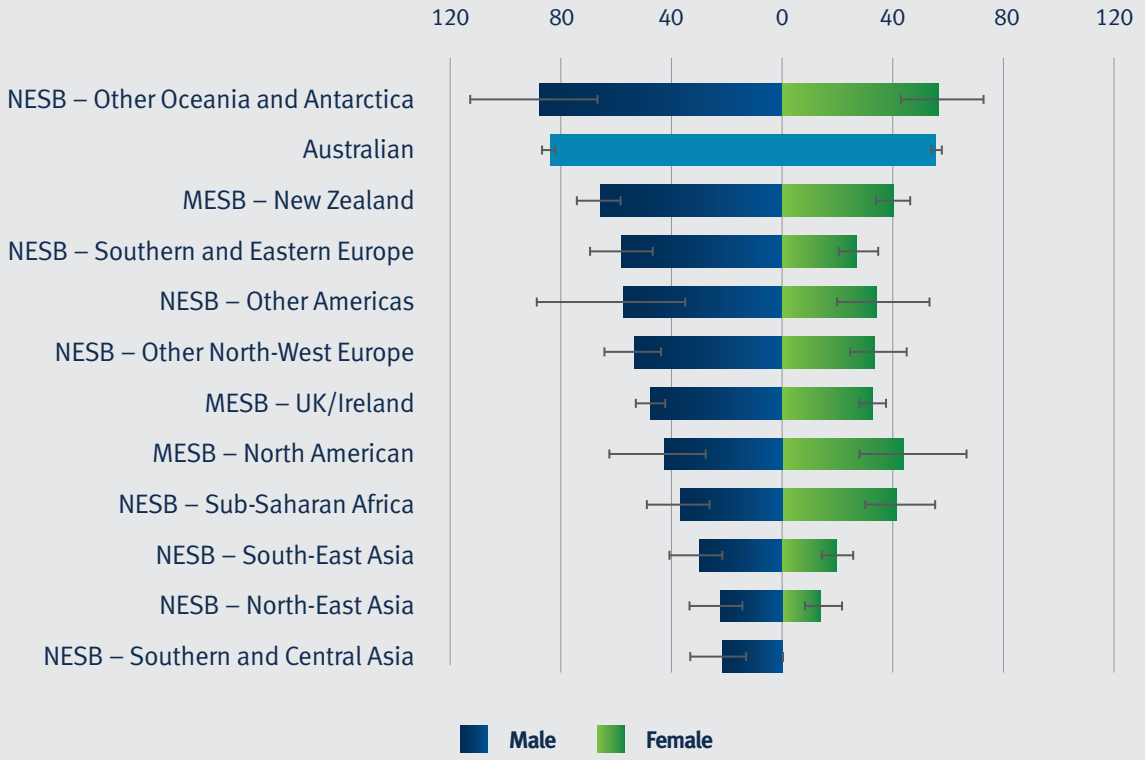
Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	63,239	438.2	434.8	441.7	1.00
NESB – Middle East					
Syria*	24	1,000.5	637.2	1,493.7	2.28
Turkey*	45	906.7	580.1	1,314.8	2.07
Lebanon*	60	710.1	516.7	944.5	1.62
Iraq	48	629.1	409.7	901.2	1.44
NESB – North African					
Sudan*	52	919.7	487.7	1,451.0	2.10
NESB – Other Americas					
Chile	58	451.9	341.9	585.6	1.03
NESB – Other North-West Europe					
Sweden*	65	765.6	541.5	1,035.3	1.75
Austria	97	753.4	184.4	1,415.3	1.72
Finland	81	510.2	284.5	776.5	1.16
NESB – Other Oceania and Antarctica					
Samoa*	232	648.4	551.1	755.7	1.48
Tonga*	46	628.3	446.6	854.6	1.43
Cook Islands	39	499.7	344.3	697.1	1.14
NESB – South-East Asia					
Myanmar*	100	681.3	548.4	835.4	1.55
NESB – Southern and Central Asia					
Afghanistan*	66	929.5	631.8	1,287.3	2.12
NESB – Southern and Eastern Europe					
Serbia*	122	763.5	615.4	933.0	1.74
Croatia	195	536.8	427.4	658.4	1.22
Ukraine	49	496.9	359.2	667.3	1.13
Romania	42	495.5	180.8	891.7	1.13
Poland	199	450.0	379.4	528.4	1.03
NESB – Sub-Saharan Africa					
Somalia*	32	951.3	469.1	1,579.5	2.17

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.3.2 PPH rates (Acute condition – Gangrene)

Gangrene is death of body tissue due to a lack of blood flow or a threatening bacterial infection. In the current study, no region had significantly higher rates of gangrene when compared to the Australian-born population (Figure 21).

Figure 21: Age-standardised rates for PPH sub-category of acute conditions: gangrene by region of birth and sex, Queensland, 2016–17 to 2019–20



Age-standardised rates are omitted for male population where cell counts are insufficient. See Appendix C for details.

At the country of birth level, only those born in Serbia had significantly higher rates of gangrene when compared to the Australian-born population (Table 17).

Table 17: Age-standardised rates for PPH sub-category of acute conditions: gangrene by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	9,855	69.2	67.9	70.6	1.00
NESB – Other Oceania and Antarctica					
Samoa	41	95.0	66.4	131.2	1.37
NESB – Southern and Eastern Europe					
Serbia*	21	154.1	92.8	239.2	2.23

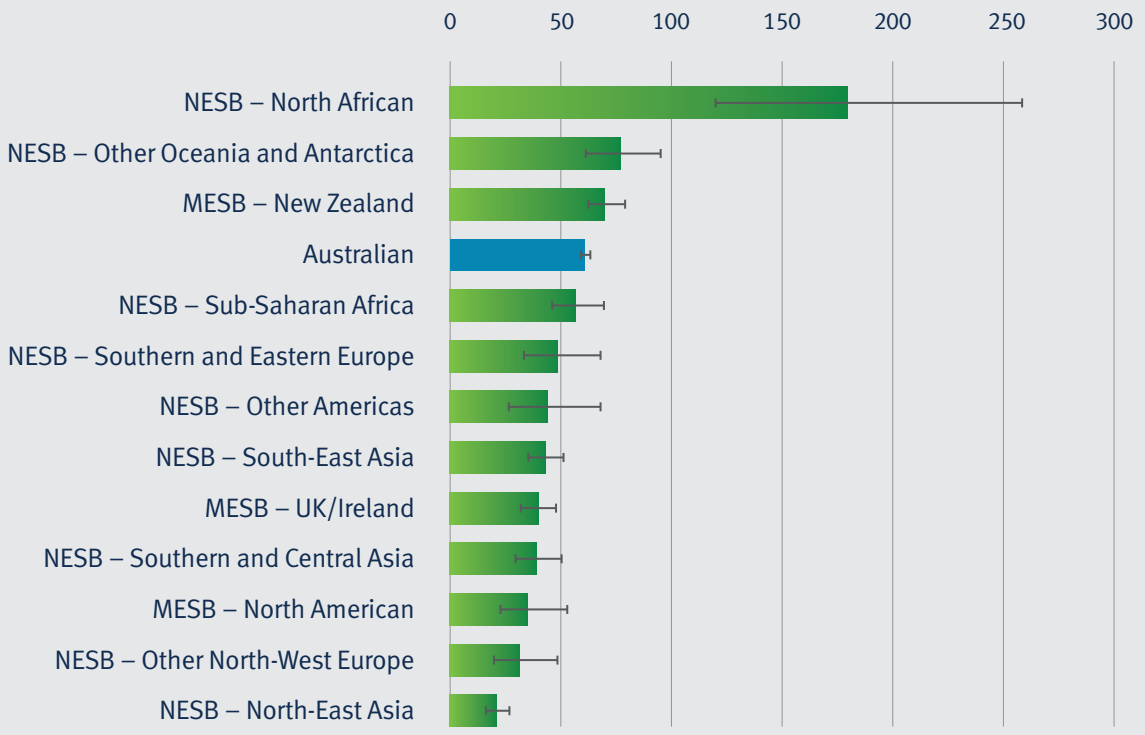
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.3.3 PPH rates (Acute condition – Pelvic inflammatory disease)

Pelvic inflammatory disease is an infection of the upper female reproductive tract, which can result in infertility, ectopic pregnancy and chronic pelvic pain. Most infections are due to sexually transmitted diseases. Some CALD populations have been shown to have limited knowledge around sexual health literacy, poor attitudes towards contraception and cultural/ religious factors such as myths regarding contraceptives and condoms that contribute to increased rates of sexual and reproductive health conditions[48].

Please note that pelvic inflammatory disease is only a female condition. Therefore, analysis is female specific. In the current study, when compared to the Australian-born females, females from North African and New Zealand regions had significantly higher rates of pelvic inflammatory disease (Figure 22).

Figure 22: Age-standardised rates for PPH sub-category of acute conditions: pelvic inflammatory disease by region of birth and sex (females only), Queensland, 2016–17 to 2019–20



[48] Mengesha ZB, Perz J, Dune T, Ussher J. Challenges in the Provision of Sexual and Reproductive Health Care to Refugee and Migrant Women: A Q Methodological Study of Health Professional Perspectives. Journal of Immigrant and Minority Health. 2018: 20 (2); 301-16. Available from: www.jstor.org/stable/48709342

When further analysis was conducted at the level of country of birth, results showed that females born in Sudan and New Zealand had significantly higher rates of pelvic inflammatory disease when compared to Australian-born females (Table 18).

Table 18: Age-standardised rates for PPH sub-category of acute conditions: pelvic inflammatory disease by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	3,960	30.3	29.4	31.3	1.00
MESB – New Zealand					
New Zealand*	326	35.3	31.5	39.4	1.16
NESB – North African					
Sudan*	21	152.2	89.1	239.7	5.02
NESB – Other Oceania and Antarctica					
Papua New Guinea	30	43.0	28.4	62.2	1.42
Fiji	25	39.4	24.8	59.0	1.30
NESB – South-East Asia					
Thailand	21	35.0	21.4	53.8	1.15

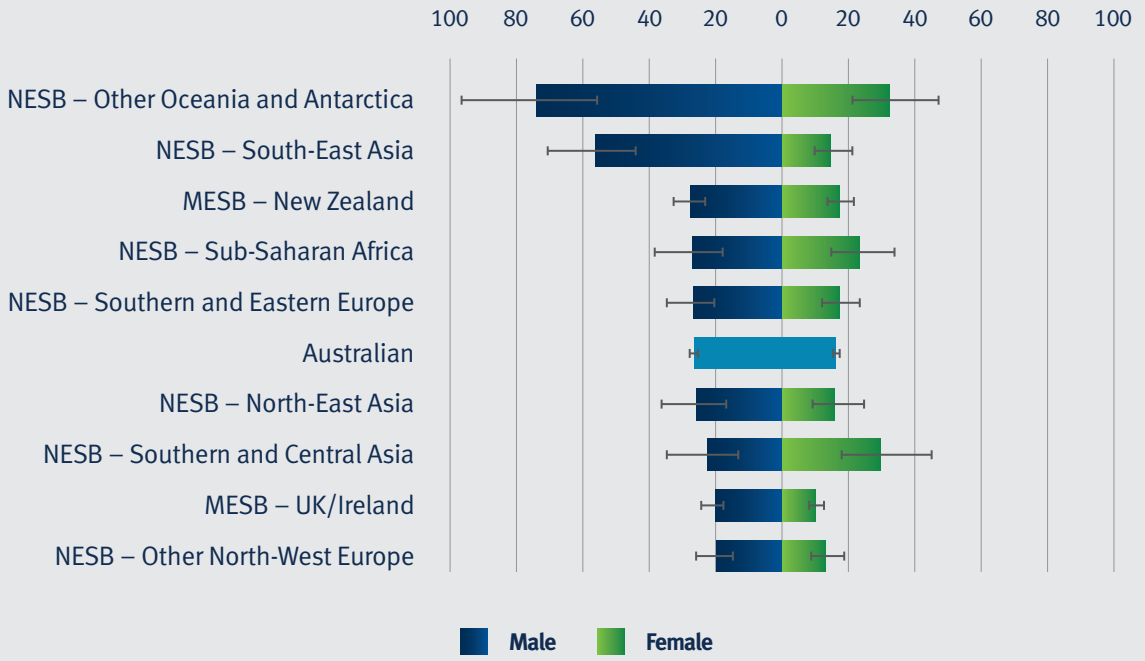
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.3.4 PPH rates (Acute condition – Perforated/bleeding ulcer)

A perforated ulcer is a serious medical condition in which a hole forms in an ulcer, allowing the contents of the digestive tract to leak into the abdominal cavity. This condition may require immediate surgery.

In the current study, males and females from Other Oceania and Antarctica, males from South-East Asia and females from Southern and Central Asia had significantly higher rates of perforated/bleeding ulcer when compared to the Australian-born population (Figure 23).

Figure 23: Age-standardised rates for PPH sub-category of acute conditions: perforated/bleeding ulcer by region of birth and sex, Queensland, 2016–17 to 2019–20



Further analysis at the level of country of birth revealed that only those born in Samoa, Vietnam and Ireland had significantly higher rates of perforated/bleeding ulcer when compared to the Australian-born population (Table 19).

Table 19: Age-standardised rates for PPH sub-category of acute conditions: perforated/bleeding ulcer by country of birth, Queensland, 2016–17 to 2019–20.

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	3,064	21.2	20.5	22.0	1.00
MESB – New Zealand					
New Zealand	206	22.3	19.3	25.7	1.05
MESB – North American					
United States of America	23	29.0	18.1	44.0	1.37
MESB – UK/Ireland					
Ireland*	26	38.9	25.0	57.5	1.83
NESB – North-East Asia					
China (excludes SARs and Taiwan)	35	22.9	15.5	32.5	1.08
NESB – Other Oceania and Antarctica					
Samoa*	37	100.0	67.9	141.1	4.71
Papua New Guinea	20	33.5	19.2	53.4	1.58
NESB – South-East Asia					
Vietnam*	42	50.7	35.2	70.2	2.39
Philippines	33	27.1	16.9	40.3	1.28
NESB – Southern and Central Asia					
India	27	23.2	14.6	34.7	1.09
NESB – Southern and Eastern Europe					
Italy	38	21.6	11.2	34.8	1.02
NESB – Sub-Saharan Africa					
South Africa	33	23.3	15.8	33.0	1.10

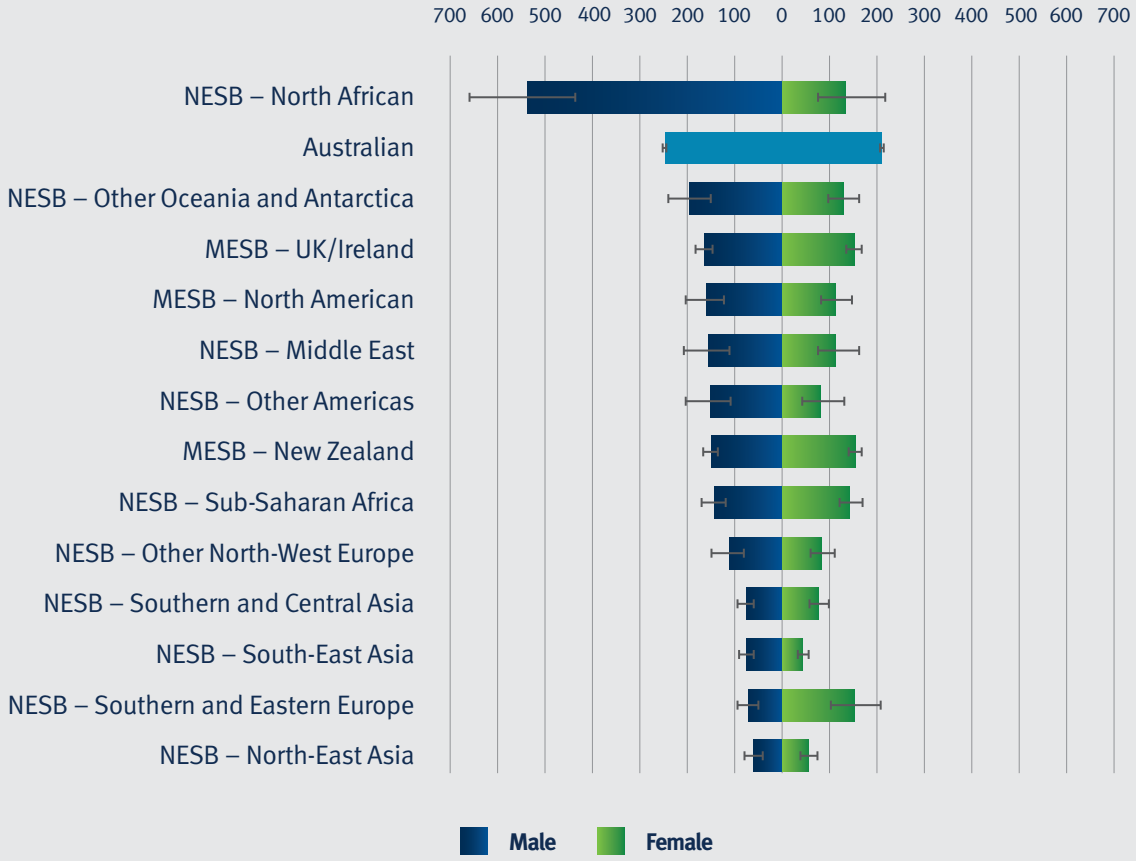
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

3.2.3.5 PPH rates (Acute condition – Convulsions and epilepsy)

A convulsion is a type of seizure that involves a change in brain function, causing loss of consciousness and involuntary jerking of the body. Epilepsy is a common long-term brain condition where a person has repeated seizures. Epilepsy is one of the most prevalent neurological conditions worldwide. Yet it remains subject to enormous cultural misinterpretation and ethnographic bias, especially for some CALD populations such as the vulnerably or forcibly displaced[49].

In the current study, analysis at the region of birth level showed that only males from the North African region had a significantly higher rate of convulsions and epilepsy when compared to the Australian-born population. In addition, males from the North African region had a higher rate than females from the same region (Figure 24).

Figure 24: Age-standardised rates for PPH sub-category of acute conditions: convulsions and epilepsy by region of birth and sex, Queensland, 2016–17 to 2019–20



[49] Hallab A, Sen A. Epilepsy and psychogenic non-epileptic seizures in forcibly displaced people: A scoping review. Seizure. 2021; 92: 128-48. Available from: www.clinicalkey.com.au/#!/content/playContent/1-s2.0-S1059131121002727?returnurl=https:%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS1059131121002727%3Fshowall%3Dtrue&referrer=https:%2F%2Fwww.researchgate.net%2F

When further analysis was done at the level of country of birth, people born in Sudan and Somalia had significantly higher rates of convulsions and epilepsy when compared to the Australian-born population (Table 20).

Table 20: Age-standardised rates for PPH sub-category of acute conditions: convulsions and epilepsy by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	32,648	228.3	225.8	230.8	1.00
NESB – North African					
Sudan*	103	728.3	503.7	988.4	3.19
NESB – Sub-Saharan Africa					
Somalia*	30	543.6	278.8	891.5	2.38

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

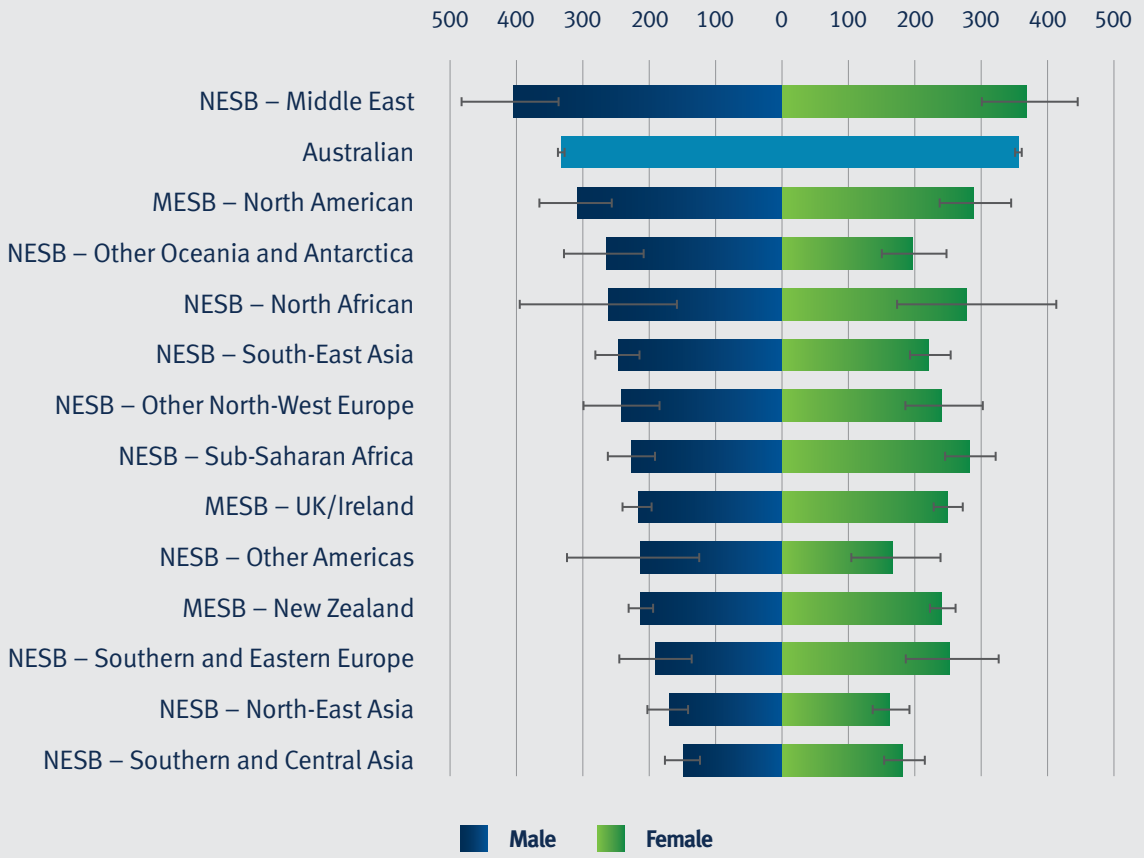
3.2.3.6 PPH rates (Acute condition – Dental conditions)

Potentially preventable dental hospitalisations are general anaesthetic procedures for dental treatment, where hospitalisation could have been avoided through primary prevention of oral disease or by providing timely and adequate non-hospital care. Poor oral health may be caused or exacerbated by factors such as poor oral hygiene, diet, smoking, alcohol, lack of fluoridation in water supplies and inadequate access to appropriate dental care.

In a study that explored cultural diversity in oral health promotion and prevention, findings showed that in most developed countries, significant oral health inequalities exist in some CALD populations[50].

In the current study, when data was analysed at the level of region of birth, only the male population from Middle East had a higher rate of dental conditions when compared to the Australian-born population, although the result was not significant (Figure 25).

Figure 25: Age-standardised rates for PPH sub-category of acute conditions: dental conditions by region of birth and sex, Queensland, 2016–17 to 2019–20



[50] Riggs E, van Gemert C, Gussy M, Waters E, Kilpatrick N. Reflections on cultural diversity in oral health promotion and prevention. Glob Health Promot. 2012; 19 (1): 60-3. Available from: pubmed.ncbi.nlm.nih.gov/24801316/

Further analysis at the level of country of birth showed that those born in Syria and Iraq were found to have significantly higher rates of dental conditions when compared to the Australia-born population (Table 21).

Table 21: Age-standardised rates for PPH sub-category of acute conditions: dental conditions by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	50,285	343.9	340.8	346.9	1.00
NESB – Middle East					
Syria*	28	1,278.6	846.6	1,851.8	3.72
Iraq*	61	572.1	426.5	748.3	1.66
Lebanon	25	429.2	158.3	794.5	1.25
NESB – North African					
Sudan	27	527.7	302.1	828.7	1.53
NESB – Other North-West Europe					
Austria	30	749.4	25.3	1,700.8	2.18
Sweden	20	401.7	209.9	669.9	1.17
NESB – South-East Asia					
Myanmar	26	463.4	204.4	810.8	1.35
NESB – Southern and Eastern Europe					
Romania	23	362.1	51.6	786.4	1.05

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

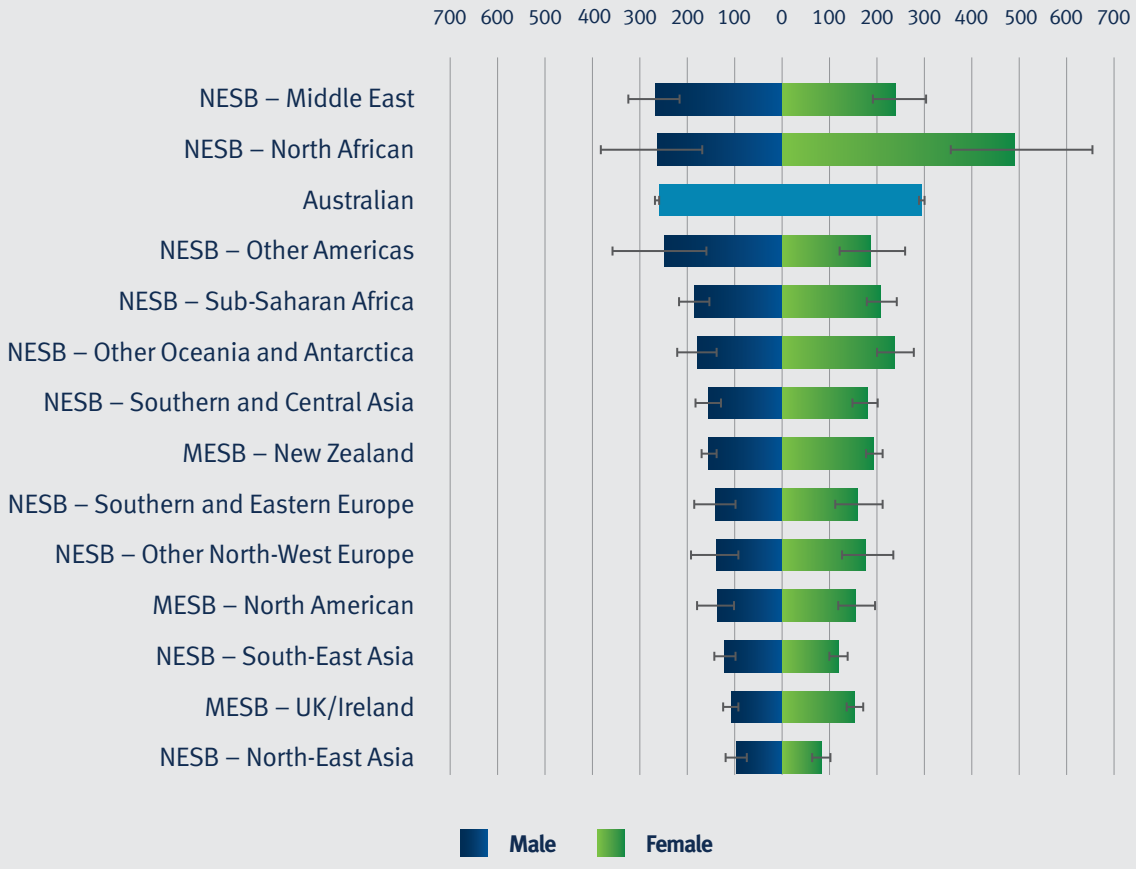
3.2.3.7 PPH rates (Acute condition – Ear, nose and throat infections)

Ear, nose and throat (ENT) infections are caused by a bacterial or viral infection of the upper respiratory tract, which results in inflammation of the ear and surrounding tissue, the sinus passages and the throat. ENT infections are usually non-severe and readily treatable in primary care settings.

A five-year descriptive analysis of potentially preventable hospitalisations for ear, nose and throat conditions was conducted from 2015 to 2020 in regional Victoria, Australia. The study revealed that people from culturally and linguistically diverse backgrounds, especially those who speak a language other than English and require an interpreter, had higher rates of ENT infections[51].

In the current study, only females from the North African region had significantly higher rates of ENT infections when compared to the Australian-born population (Figure 26).

Figure 26: Age-standardised rates for PPH sub-category of acute conditions: ear, nose and throat infections by region of birth and sex, Queensland, 2016–17 to 2019–20



[51] O'Neill S, Begg S, Spelten E. A five-year descriptive analysis of potentially preventable hospitalisations for Ear, Nose, and Throat conditions in regional Victoria, Australia, from 2015 to 2020. Research Square. 2022. Available from: europepmc.org/article/ppr/ppr559845

Analysis by country of birth showed that people born in only two countries did not have significantly higher rates of ENT infections when compared to the Australian-born population: Cook Islands and Serbia (Table 22).

Table 22: Age-standardised rates for PPH sub-category of acute conditions: ear, nose and throat infections by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	42,640	278.4	275.8	281.1	1.00
NESB – Middle East					
Iraq*	64	532.2	395.1	697.4	1.91
NESB – North African					
Sudan*	63	924.8	606.4	1,309.0	3.32
NESB – Other Oceania and Antarctica					
Samoa*	154	465.5	377.8	564.4	1.67
Cook Islands	22	342.3	182.9	561.5	1.23
NESB – Southern and Central Asia					
Afghanistan*	75	654.0	451.1	894.9	2.35
NESB – Southern and Eastern Europe					
Serbia	37	487.2	138.1	933.5	1.75
NESB – Sub-Saharan Africa					
Eritrea*	20	606.7	320.0	1,007.5	2.18
Somalia*	42	563.6	382.6	791.5	2.02

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

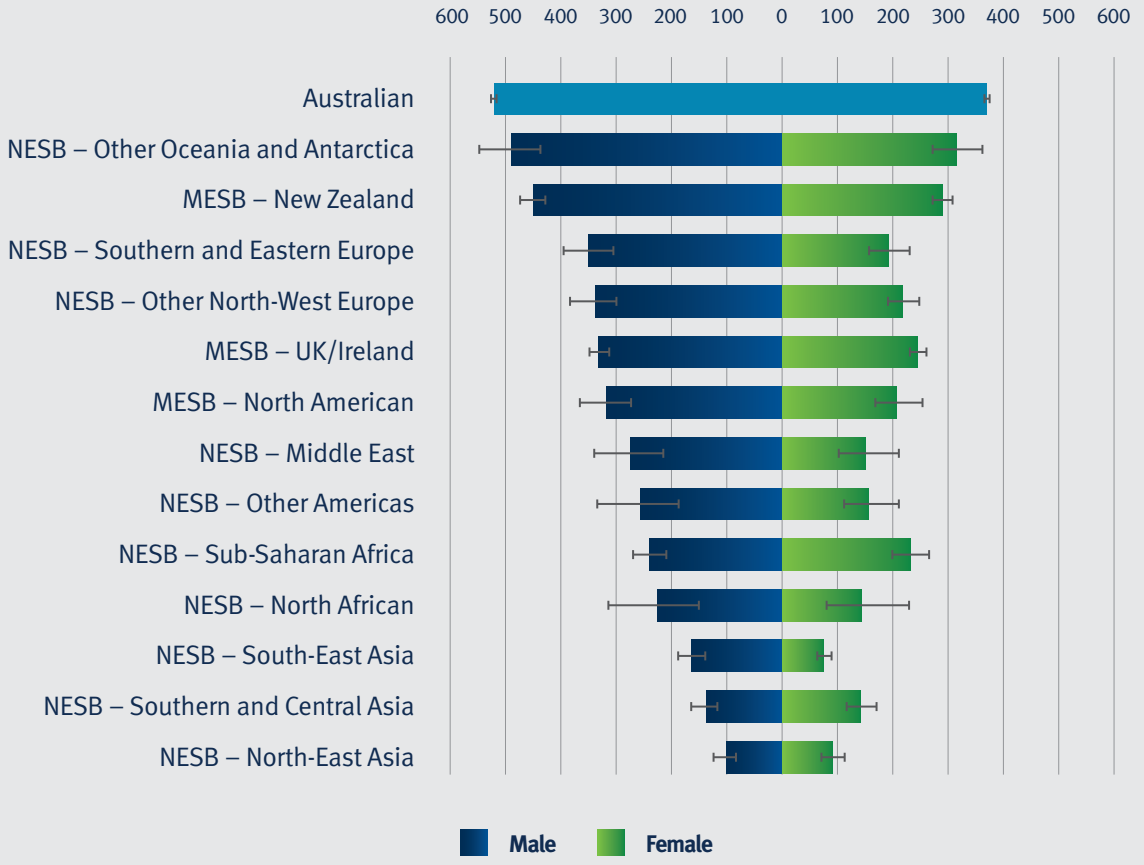
3.2.3.8 PPH rates (Acute condition – Cellulitis)

Cellulitis is a serious bacterial infection of the skin and subcutaneous tissues (tissues directly under the skin).

Some CALD populations are at a higher risk of developing dermatological conditions due to factors such as their movement within and across international borders, various environmental exposures during their migration journey, armed conflict and violence, limited access to dermatology expertise and lack of appropriate therapeutic options[52].

In the current study, the findings showed that there were no regions with higher rates of cellulitis when compared to the Australian-born population (Figure 27).

Figure 27: Age-standardised rates for PPH sub-category of acute conditions: cellulitis by region of birth and sex, Queensland, 2016–17 to 2019–20



[52] Padovese V, Knapp A. Challenges of Managing Skin Diseases in Refugees and Migrants. Dermatologic Clinics. 2021. 39 (1): 101-115. Available from: https://www.researchgate.net/publication/347488722_Challenges_of_Managing_Skin_Diseases_in_Refugees_and_Migrants

However, further analysis at the level of country of birth revealed that people born in Cook Islands, Samoa and Tonga were found to have significantly higher rates of cellulitis when compared to the Australian-born population (Table 23).

Table 23: Age-standardised rates for PPH sub-category of acute conditions: cellulitis by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	62,617	443.4	439.9	446.9	1.00
NESB – Other North-West Europe					
Austria	86	543.8	13.6	1,166.4	1.23
NESB – Other Oceania and Antarctica					
Cook Islands*	77	833.0	643.9	1,056.9	1.88
Samoa*	274	728.8	627.9	839.1	1.64
Tonga*	55	663.3	476.1	892.0	1.50

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

4. Hospitalisation, death and potentially avoidable death rates

4.1 Summary

A hospitalisation is an episode of admitted patient care. This can be a total hospital stay (from admission until discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (e.g. from acute care to rehabilitation). The broad types of admitted patient care (hospitalisation) are medical care, care involving an intervention or procedure such as surgery and other acute care, along with childbirth, mental health care and sub-acute and non-acute care such as palliative care and rehabilitation[53].

Hospitalisation rates usually indicate two main issues: serious acute illnesses and conditions requiring admitted patient hospital treatment; and the access to and use of hospital admitted patient treatment by people with such conditions[54]. To avoid or limit unnecessary hospitalisations and re-hospitalisation rates, it is critical for a health system to focus on the prevention, early detection and management of health conditions to help keep people out of hospital. This is achieved through expanded access to and coordination of comprehensive primary health care.

Across healthcare systems internationally, there is also a growing need to measure and report on potentially avoidable death and/or death/mortality rates. Some evidence suggests that migrants appear to have increased life expectancy in comparison to native-born population. This is possibly influenced by factors that afford them the ability to migrate to Australia in the first place[55]. For example, those from a higher socioeconomic status, with higher levels of education and who are younger in age may be more likely to be able to migrate.

Queensland was one of the three states that accounted for the largest contributions to preliminary net overseas migration in Australia in the year ending 30 June 2020, with migrants being predominantly from younger age groups. During this period, temporary visa holders were the majority of overseas migrant arrivals (61.3 per cent) in Australia; international students constituted 22.2 per cent of all migrant arrivals[56].

[53] Australian Institute of Health and Welfare. Hospital activity. Dec 2022 [cited 08 March 2023]. Available from: https://www.aihw.gov.au/reports-data/myhospitals/themes/hospital-activity#more-data

[54] Australian Institute of Health and Welfare. Tier 1 - Health status and outcomes, top reasons for hospitalisation. 2023 Jan [cited 08 March 2023]. Available from: https://www.indigenoushpf.gov.au/measures/1-02-top-reasons-hospitalisation#:~:text=The%20top%20reason%20for%20overnight,20%20per%201%2C000%3B%208.6%25).

[55] Page A, Begg S, Taylor R, Lopez AD. The impact of migration on life expectancy in Australia. Bulletin of the World Health Organization. June 2007. Available from: https://www.scielosp.org/pdf/bwho/v85n6/a14v85n6.pdf

[56] Australian Bureau of Statistics. Statistics on Australia's international migration, internal migration (interstate and intrastate), and the population by country of birth. Reference period 2019-20 financial year. 2021 Apr [cited 08 March 2023]. Available from: https://www.abs.gov.au/statistics/people/population/migration-australia/latest-release#key-statistics

Literature has also suggested that the lower mortality rate for migrant groups in some host countries could be contributed by the unofficial remigration of unhealthy individuals back to their country of birth to receive treatment, or in extreme cases to die. This results in an underestimation of migrant mortality data[57].

A study in Amsterdam examined the mortality patterns in several migrant groups. The findings suggested that despite the low mortality among many migrant groups, often explained as being the result of the 'healthy migrant effect', there are still many health issues associated with detrimental working and living conditions as well as social inequality that leads to severe morbidity[58].

As part of the Australian Health Performance Framework (AHPF), it is important to examine trends and patterns in life expectancy, mortality rates and major causes of death. This can help evaluate health strategies and guide policymaking[59]. Rates of death and leading causes of death differ between population groups due to variations in population characteristics, causes of death at different ages, characteristics of the places where people reside, the prevalence of illness and risk factors and access to health services[60]. The recent COVID-19 mortality data in Australia, released by ABS in November 2022, showed that over the course of the pandemic, those born overseas had a higher death rate when compared to those born in Australia[61].

The current Queensland Health study explored hospitalisation, death and potentially avoidable deaths and compared rates between the Queensland residents born overseas (CALD background) and Australian-born (non-CALD background) populations in Queensland. Further analysis of these variables was undertaken using the categories of country of birth English status (either MESB or NESB), region of birth, sex, as well as the specific country of birth.

It is worth noting that analysis of these variables revealed no meaningful data to illustrate specific causes or health conditions, as was in the case for the analysis of PPH, where data was sufficient to infer meaningful interpretations.

[57] Page A, Begg S, Taylor R, Lopez AD. The impact of migration on life expectancy in Australia. Bulletin of the World Health Organization. June 2007. Available from: https://www.scielosp.org/pdf/bwho/v85n6/a14v85n6.pdf

[58] Uitenbroek DG, Verhoeff AP. Life expectancy and mortality differences between migrant groups living in Amsterdam, the Netherlands. 2002. Social Science and Medicine, 54(9), Available from: https://www.sciencedirect.com/science/article/pii/S0277953601001204

[59] Australian Institute of Health and Welfare. Health status: Deaths. 2023 Feb [cited 08 March 2023]. Available from: https://www.aihw.gov.au/reports-data/australias-health-performance/australias-health-performance-framework/national/all-australia/deaths/deaths/3_4_3

[60] Australian Institute of Health and Welfare. Deaths in Australia. June 2022 [cited 08 March 2023]. Canberra: AIHW. Available from: Australian Institute of Health and Welfare, Deaths in Australia, June 2022

[61] Australian Bureau of Statistics. COVID-19 Mortality by wave. Canberra: ABS; 2022 Nov [cited 03 March 2023]. Available from: https://www.abs.gov.au/articles/covid-19-mortality-wave#deaths-from-covid-19-by-country-of-birth

Key findings

At an aggregate population level, both MESB and NESB populations showed lower rates of hospitalisation, death and potentially avoidable death rates than the Australian-born population. However, when further analysis is undertaken at the region and country of birth level, disparities in health outcomes are highlighted for the Queenslanders who are born overseas (CALD background). This observation is similar to the findings from the previous chapter on PPH, which indicates that analysing data at aggregated levels in broad categories potentially masks the differences of health outcomes for individual population groups that are observed when data is analysed at the most detailed level.

Hospitalisation rates (all causes)

- Overall, MESB and NESB populations had lower rates of hospitalisation than the Australian-born population.
- Queensland residents from the Other Oceania and Antarctica region had significantly higher hospitalisation rates when compared to the Australian-born population.
- The highest rates were seen in Queensland residents born in Syria, Tonga, Samoa, Bangladesh and Eritrea.

Death rates (all causes)

- Overall, MESB and NESB populations showed lower death rates than the Australian-born population.
- No region had significantly higher death rates than the Australian-born population.
- The highest death rates were seen in Queensland residents born in Tonga, Serbia, Ukraine, Cook Islands and Poland.

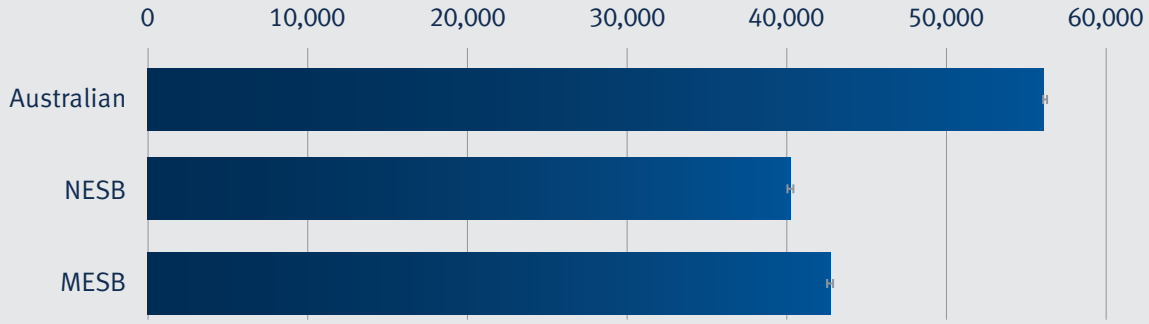
Potentially avoidable death rates (all causes)

- Overall, MESB and NESB populations showed lower rates of potentially avoidable deaths than the Australian-born population.
- Queensland residents from the Other Oceania and Antarctica region had significantly higher rates of potentially avoidable deaths than the Australian-born population.
- The highest rates were seen in Queensland residents born in Cook Islands and Tonga.

4.2 Hospitalisation rates (all causes) by region, sex and country of birth

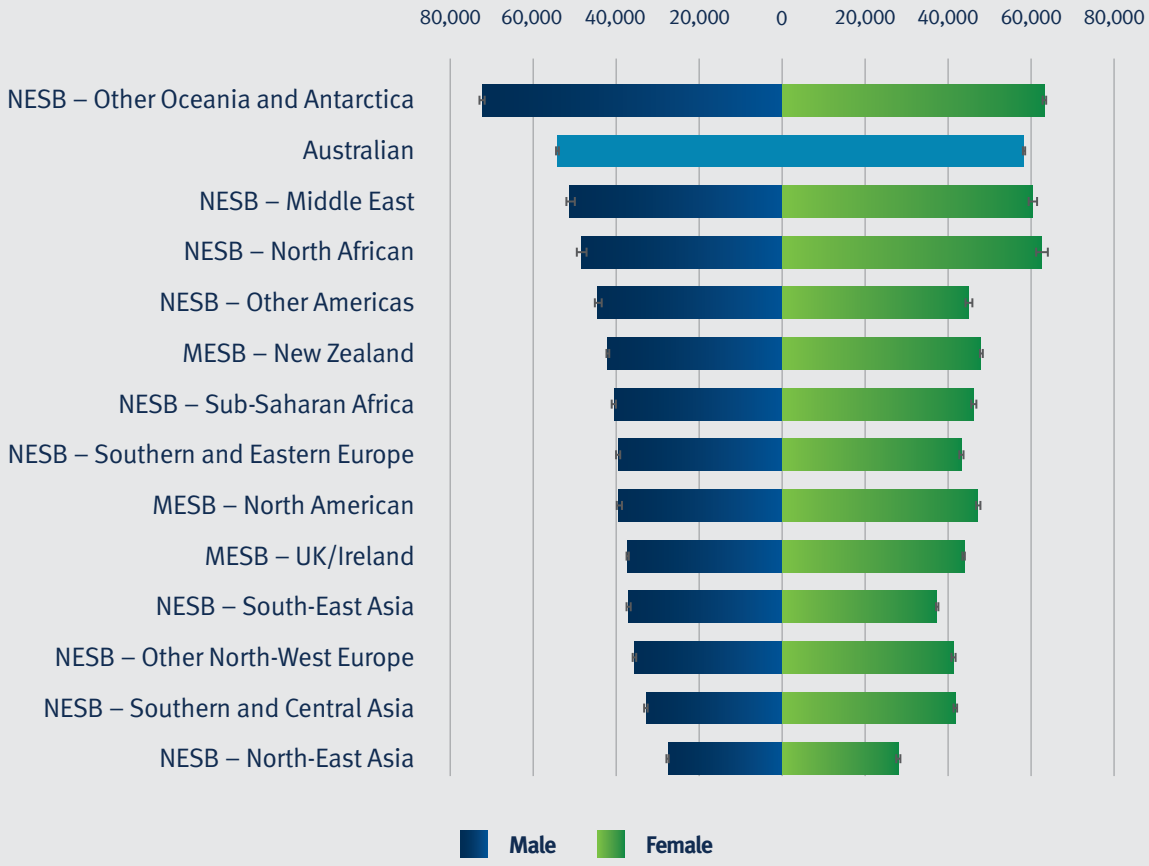
In this current study, analysis of total hospitalisation rates at an aggregate population level revealed that both MESB and NESB populations had lower rates of hospitalisation when compared to the Australian-born population (Figure 28).

Figure 28: Age-standardised rates for all hospitalisations by broad country of birth category, Queensland, 2016–17 to 2019–20



However, further analysis by region of birth revealed that people from the Other Oceania and Antarctica region had significantly higher hospitalisation rates when compared to the Australian-born population. In addition, females from Middle East and North African regions had significantly higher hospitalisation rates when compared to the Australian-born population. In the North African region, females had significantly higher rates than males (Figure 29).

Figure 29: Age-standardised rates for all hospitalisations by region of birth and sex, Queensland, 2016–17 to 2019–20



Analysis at the level of country of birth revealed that people born in several countries with NESB populations had significantly higher hospitalisation rates when compared to the Australian-born population (Table 24). The top five countries with the highest rates of hospitalisation were Syria, Tonga, Samoa, Bangladesh and Eritrea.

Table 24: Age-standardised rates for all hospitalisations by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	8,022,145	56,163.9	56,124.7	56,203.2	1.00
NESB – Middle East					
Syria*	2,822	120,746.6	116,266.0	125,353.7	2.15
Israel*	2,335	75,823.1	72,659.9	79,084.6	1.35
Iraq*	6,016	70,970.8	68,651.7	73,334.5	1.26
Jordan*	900	68,718.0	63,791.3	73,893.8	1.22
Lebanon*	4,737	59,216.2	56,798.7	61,686.2	1.05
Turkey*	3,831	58,699.9	56,619.6	60,830.5	1.05
NESB – North African					
Sudan*	6,960	80,254.9	77,067.6	83,499.3	1.43
NESB – Other North-West Europe					
Austria	10,576	60,095.3	56,001.9	64,248.0	1.07
NESB – Other Oceania and Antarctica					
Tonga*	10,600	117,916.6	115,305.7	120,565.2	2.10
Samoa*	41,120	102,985.6	101,873.9	104,105.5	1.83
Cook Islands*	7,056	77,508.4	75,560.9	79,490.5	1.38
NESB – Southern and Central Asia					
Bangladesh*	4,320	87,598.5	83,233.0	92,063.4	1.56
NESB – Southern and Eastern Europe					
Serbia*	11,852	80,895.0	79,146.3	82,667.5	1.44
NESB – Sub-Saharan Africa					
Eritrea*	1,877	84,629.2	80,469.0	88,933.9	1.51
Somalia*	3,375	78,549.1	74,574.4	82,626.2	1.40
Uganda	1,146	57,814.1	54,210.3	61,579.0	1.03

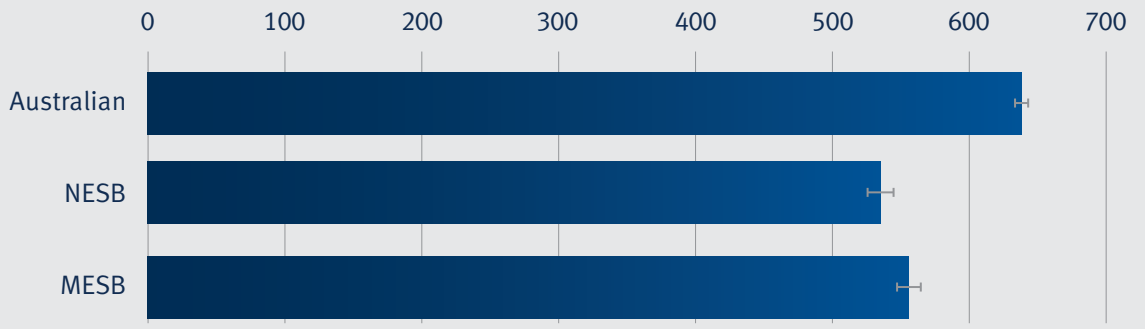
** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

4.3 Death rates (all causes) by region, sex and country of birth

Death rates report the number of persons who died over a selected period, divided by the corresponding population. Rates are age-standardised to reduce the influence of age between populations with different age structures. If a particular population has a lower age-standardised death rate compared to another, it indicates that relatively fewer deaths are occurring in the population and/or that persons are generally living longer.

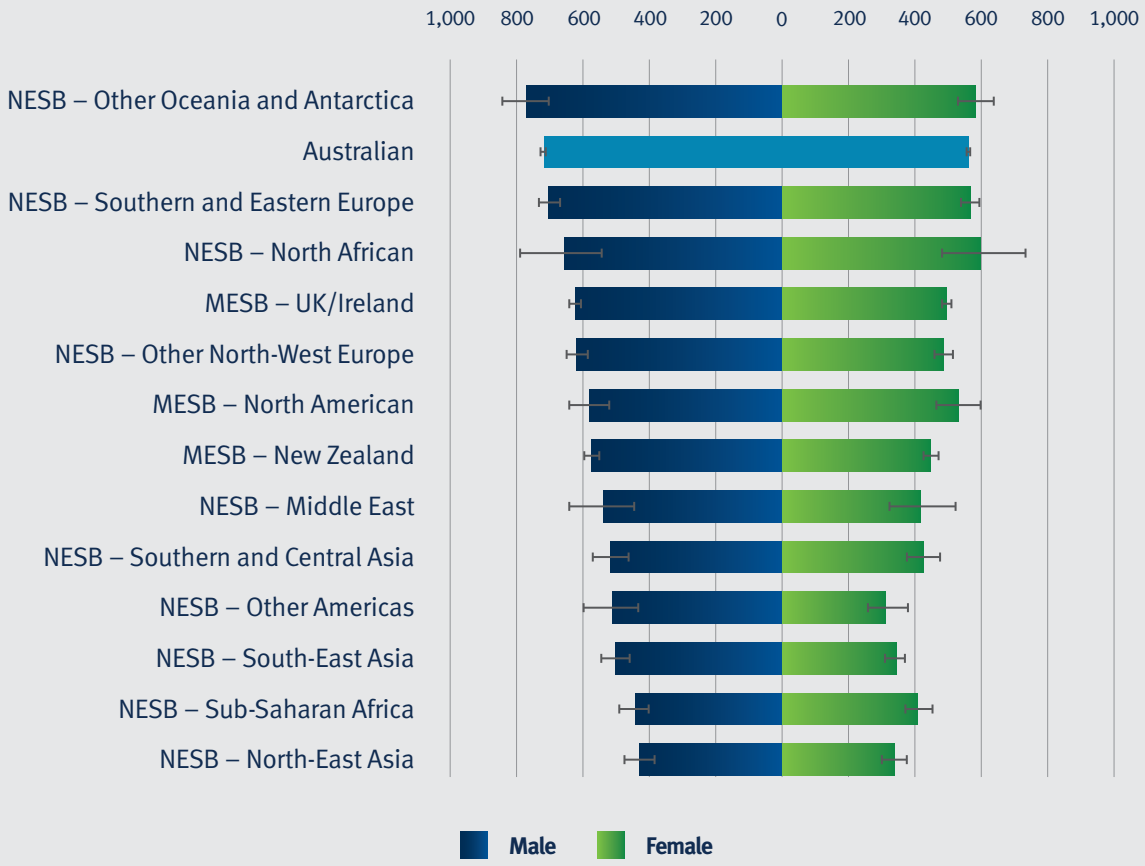
In this current study, when death rates due to all causes were analysed at an aggregate population level, both MESB and NESB populations showed lower death rates when compared to the Australian-born population (Figure 30).

Figure 30: Age-standardised rates for all causes of death by broad country of birth category, Queensland, 2016–17 to 2019–20



Further analysis by region of birth revealed that no region had significantly higher death rates when compared to the Australian-born population (Figure 31).

Figure 31: Age-standardised rates for all causes of death by region of birth and sex, Queensland, 2016–17 to 2019–20



However, when death rates were further analysed at the level of country of birth, several countries showed significantly higher death rates when compared to the Australia-born population. The top five countries were Tonga, Serbia, Ukraine, Cook Islands and Poland (Table 25). Tonga leading in the highest death rate in the current study is compounded by the recent COVID-19 mortality data in Australia. This data showed that people born in Tonga had the highest rate ratio in both the Delta and Omicron wave when compared to those born in Australia. During the Delta wave, the COVID-19 mortality rate for those born in Tonga was 80 times higher compared to people born in Australia[62].

Table 25: Age-standardised rates for all causes of death by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	93,412	637.6	633.5	641.8	1.00
MESB – UK/Ireland					
Northern Ireland*	383	819.1	733.0	912.1	1.28
Wales*	396	783.2	704.8	867.7	1.23
Scotland	1,626	655.7	622.4	690.3	1.03
NESB – Other North-West Europe					
Norway	41	765.3	538.6	1,051.6	1.20
Finland	213	660.4	559.7	771.8	1.04
NESB – Other Oceania and Antarctica					
Tonga*	79	1,114.2	864.2	1,409.8	1.75
Cook Islands*	75	1,003.8	771.3	1,279.9	1.57
Samoa*	256	819.5	715.1	934.0	1.29
NESB – Southern and Central Asia					
Pakistan	32	734.0	472.3	1,074.7	1.15
NESB – Southern and Eastern Europe					
Serbia*	190	1,112.4	958.1	1,284.3	1.74
Ukraine*	107	1,014.5	816.4	1,243.3	1.59
Poland*	415	878.4	765.9	999.5	1.38
Romania*	98	843.5	682.1	1,030.9	1.32
Russian Federation	82	724.7	575.2	900.9	1.14
Hungary	292	688.5	602.5	782.3	1.08
Cyprus	88	687.0	436.7	980.3	1.08
Italy	1,570	641.4	590.5	694.3	1.01

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

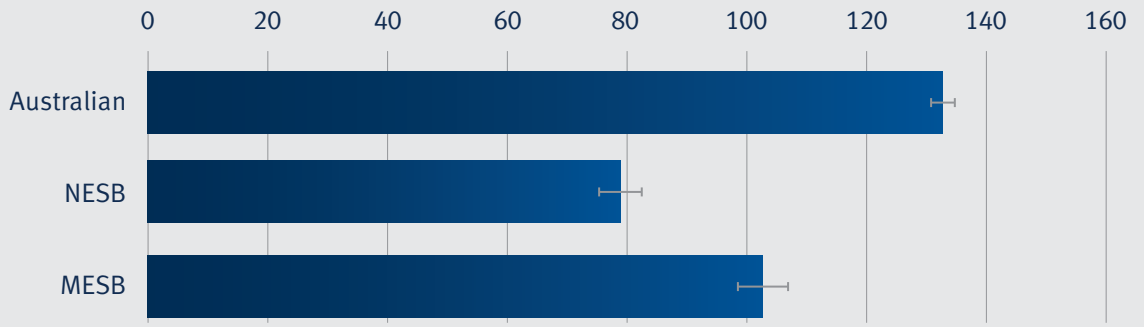
[62] Australian Bureau of Statistics. COVID-19 Mortality by wave. Canberra: ABS; 2022 Nov [cited 03 March 2023]. Available from: https://www.abs.gov.au/articles/covid-19-mortality-wave#deaths-from-covid-19-by-country-of-birth

4.4 Potentially avoidable death rates (all causes) by region, sex and country of birth

Potentially avoidable deaths are classified using nationally agreed definitions[63] based on cause of death for people aged less than 75. They include deaths that are potentially preventable through individualised care and/or treatable through existing primary or hospital care[64].

Analysis of potentially avoidable death rates at an aggregate population level revealed that both MESB and NESB populations had lower rates of potentially avoidable deaths when compared to the Australian-born population (Figure 32).

Figure 32: Age-standardised rates for potentially avoidable deaths (PAD) by broad country of birth category, Queensland, 2016–17 to 2019–20

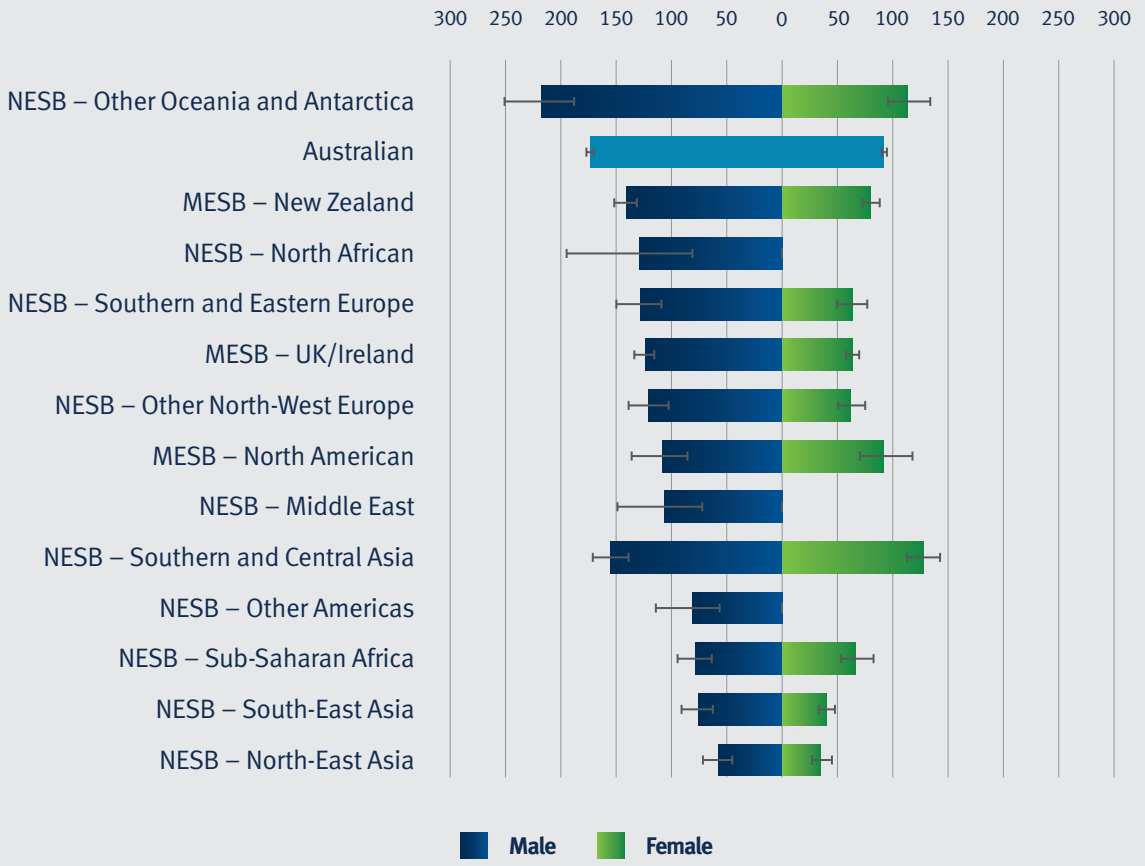


[63] Australian Institute of Health and Welfare. National Healthcare Agreement: P20-Potentially avoidable deaths. 2010. Canberra: AIHW.

[64] Australian Institute of Health and Welfare. Deaths in Australia. June 2022 [cited 08 March 2023]. Canberra: AIHW. Available from: https://www.aihw.gov.au/reports/life-expectancy-death/deaths-in-australia/contents/variations-between-population-groups

Further analysis at the level of region of birth showed that people from the Other Oceania and Antarctica region had significantly higher rates of potentially avoidable deaths when compared to the Australian-born population (Figure 33).

Figure 33: Age-standardised rates for potentially avoidable deaths (PAD) by region of birth and sex, Queensland, 2016–17 to 2019–20



Age-standardised rates are omitted for male population where cell counts are insufficient. See Appendix C for details.

Analysis of potentially avoidable death rates at the level of country of birth showed that people born in Cook Islands and Tonga had significantly higher rates when compared to the Australian-born population (Table 26).

Table 26: Age-standardised rates for potentially avoidable deaths (PAD) by country of birth, Queensland, 2016–17 to 2019–20

Country of birth	Count	ASR	(95% CI)		Rate ratio
Australian					
Australia	18,705	132.6	130.7	134.5	1.00
NESB – Other Oceania and Antarctica					
Cook Islands*	29	318.4	210.7	460.7	2.40
Tonga*	25	231.0	149.4	341.2	1.74
Samoa	80	169.3	134.0	211.1	1.28
Papua New Guinea	127	159.2	131.9	190.4	1.20
NESB – Southern and Eastern Europe					
Romania	20	147.0	89.7	227.1	1.11
Hungary	31	137.2	88.7	200.7	1.04

** Statistically significant difference from the Australian population based on non-overlap of 95% confidence intervals*

5. Discussion and conclusion

CALD populations in Queensland and in Australia are greatly diverse, with many different cultures, languages and migration pathways. While this diversity brings cultural depth and richness to our society, it can also pose challenges for achieving equitable health access for all. This is particularly the case where disparities are not apparent in data or measured, nor their underlying causes well-understood.

Many health data collections—nationally and at a state level—have inadequate indicators for cultural or linguistic diversity and migration status to support identifying disparities. In some cases, data that is collected is not high enough in quality to analyse or might not have enough observations to draw conclusions at a meaningful population level. This limits further research and exploration that can aid understanding of any underlying causes of disparity.

This report seeks to provide a picture of potential health disparities in overseas-born CALD populations in Queensland to prompt further discussion and exploration on what this means for healthcare provision to these populations. The findings provide a platform for more targeted, evidence-based health interventions for those population groups with worse health outcomes.

Collecting CALD data is just one step in a multifaceted and complex web of factors that are required to alleviate health care inequalities[65]. However, improved visibility of CALD populations in outcomes data is an effective starting point to enable this.

Analysis at the aggregate level: NESB and MESB populations

The overseas-born population in Queensland is not a homogenous population, and from a health perspective, there appears to be limited commonalities in outcomes across the populations born in NESB countries.

Had the study limited its analysis to the aggregated NESB population, the report would have drawn the conclusion that people born in NESB countries generally have better health outcomes than Australian-born people. This is not an inaccurate conclusion. However, analysis at this level clearly masks the differences in health outcomes for individual population groups, which are apparent when data analysis is disaggregated further by geography of birth. The policy risk of relying on such an aggregated analysis is that certain populations with concerning disparities in health outcomes become invisible, and consequently do not receive the attention or response that they may need.

[65] Marcus K, Balasubramanian M, Short S, Sohn W. Culturally and linguistically diverse (CALD): terminology and standards in reducing healthcare inequalities. Australian and New Zealand Journal of Public Health. 2022 Feb. Available from: https://www.proquest.com/openview/32936207d3f227c66cd6db527bc56a3e/1?pq-origsite=gscholar&cbl=37917

Findings at a disaggregated level

Other Oceania and Antarctica region

In this report, Queensland residents born in the Other Oceania and Antarctica region (includes Pasifika communities) consistently recorded worse health outcomes than the Australian-born population in most categories analysed in this report.

Literature has identified a range of social issues affecting health outcomes for Pasifika communities in Australia, including socioeconomic status, poor access to health services, unemployment, poor housing and low education levels. These issues increase their risks for chronic diseases[66 67]. Pasifika community perception of health is heavily influenced by their cultural and religious beliefs, which should be reinforced when engaging with them to improve their general health and wellbeing[68].

A deep dive into the recent 2021 Census indicated that for Queensland residents born in Samoa, Tonga and Cook Islands (countries from the Other Oceania and Antarctica region):

- most are not Australian citizens
- most have year 12 as highest level of education compared to those born in Australia, who have bachelor's degree level and above as highest education
- most are casual laborers compared to those identified as 'professionals', mostly among those born in Australia
- most have long-term health conditions (e.g. diabetes, kidney disease, heart disease, stroke) that were higher compared to Australian-born[69].

These disparities relate to the social determinants of health that influence health-seeking behaviour and outcomes.

[66] Queensland Health. Queensland Health response to Pacific Islander and Māori health needs assessment. 2011. Brisbane: Queensland

[67] Mihrshahi S, Vaughan L, Fa'avale N, De Silva Weliange S, Manu-Sione I, Schubert, L. Evaluation of the Good Start Program: A healthy eating and physical activity intervention for Maori and Pacific Islander children living in Queensland, Australia. 2017. BMC Public Health. Available from: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-016-3977-x

[68] South Western Sydney Local Health District. Pacific communities health needs assessment. 2019 July. Available from: https://www.swslhd.health.nsw.gov.au/populationhealth/PH_promotion/pdf/Publications/Pacific%20Communities%20Health%20Needs%20Assessment%20Report_Final%2012July2019.pdf

[69] Australian Bureau of Statistics. People in Queensland who were born in Samoa. 2021 Census Country of birth QuickStats. ABS. Canberra. Available from: https://www.abs.gov.au/census/find-census-data/quickstats/2021/1505_3

North African and Middle East regions

This current Queensland Health study also identified that Queensland residents born in North African and Middle East regions also reported worse outcomes when compared to the Australian-born population, especially for potentially preventable hospitalisations.

The study does not explore the migration status of the CALD population. However, it can be assumed that a significant proportion of Queensland residents born in North African and Middle East regions are people from a refugee background. In recent years, humanitarian arrivals to Queensland have come mostly from countries such as Afghanistan, Bhutan, Ethiopia, Iran, Iraq, Myanmar, Pakistan, Sudan, Somalia and Syria[70]. Most of the listed countries are in the Middle East and North African regions. People from refugee backgrounds are more likely to face unique physical, mental, emotional, social, cultural and spiritual challenges because of their experiences. At the same time, settling in Queensland presents a whole set of new challenges, including navigating a different health system and accessing the healthcare they need.

Opportunities to analyse outcomes and develop culturally safe and targeted services

The study factually explores data and does not investigate the potential reasons or any underlying causes of these outcomes. The findings provide a starting point for further discussion, research and exploration to better understand what the outcomes mean in the context of service delivery, health promotion and policy responses for populations with poorer health outcomes.

They present an opportunity to engage with these populations on health issues to better understand underlying factors and whether these communities might need more targeted responses to improve outcomes. According to Brach & Fraser, culturally safe and competent services translate into better health for CALD populations through the impact they have on factors including improved communication channels, increased trust in the health system, greater knowledge about health and services in CALD communities and expanded cultural understanding within the health system[71]. They also reduce 'wastage' with regards to investment in approaches that might not have the same impact.

[70] Queensland Health. Refugee Health and Wellbeing Policy and Action Plan 2022-2027. 2022 Dec. Brisbane. Available from: https://www.health.qld.gov.au/__data/assets/pdf_file/0033/1197447/Refugee-Health-and-Wellbeing-Policy-and-Action-Plan-2022-2027.pdf

[71] Brach C, Fraser I. Can cultural competency reduce racial and ethnic health disparities? A review and conceptual model. 2000. Medical Care Research and Review. Available from: https://pubmed.ncbi.nlm.nih.gov/11092163/

Data collection and reporting frequency

Data underpins the appropriate targeting of prevention strategies. More regular reporting on CALD health outcomes is needed to provide a comprehensive and informative evidence base. CALD populations change over time, so regular analysis is needed to have a more current understanding of outcomes. Queensland has consistently recorded strong population growth for many years and recorded a net overseas migration of 28,625 persons for the year 2019–20[72], a figure partially impacted by the COVID-19 pandemic with international border closures.

The ABS (2022b) recommends the 'Standards for Statistics on Cultural and Language Diversity' (the Standards) to standardise the collection and reporting of information on CALD populations. The Standards include a Minimum Core set of indicators *including country of birth of person, main language other than English spoken at home, proficiency in spoken English and Indigenous status*. The Standards also recommend a set of non-core indicators, which includes *year of arrival in Australia*[73].

While these standards exist, their use in national health data collections could be improved to better understand diverse CALD populations and identify their specific needs[74].

The Queensland Multicultural Policy requires Queensland Government agencies to collect information on the following three minimum indicators relating to persons from CALD backgrounds: country of birth, preferred language and whether an interpreter service is required[75]. Another desirable indicator recommended is Ethnicity (or cultural identity).

Queensland Health's service usage datasets do not collect the core set of four variables as specified by ABS. However, they do collect the required indicators under the Queensland Multicultural Policy. Country of birth is the most widely collected data that captures CALD status of the clients. While other data is collected, such as interpreter service required and preferred language, these indicators are not as widely populated in health data as country of birth. This can inhibit analysis.

[72] Queensland Government Statistician's Office. Overseas migration, Queensland, 2019–20. 2021. Available from https://www.qgso.qld.gov.au/issues/2971/overseas-migration-qld-2019-20.pdf:

[73] Australian Bureau of Statistics. Standards for Statistics on Cultural and Language Diversity. 2022 Feb [cited 08 March 2023]. ABS: Canberra. Available from: https://www.abs.gov.au/statistics/standards/standards-statistics-cultural-and-language-diversity/latest-release#:~:text=The%20Minimum%20Core%20Set%20of,Spoken%20English%20%E2%80%93%20see%20Language%20Standards

[74] Australian Institute of Health and Welfare. Culturally and linguistically diverse populations. 2018. AIHW Canberra. Available from: https://www.aihw.gov.au/getmedia/f3ba8e92-afb3-46d6-b64c-ebfc9c1f945d/aihw-aus-221-chapter-5-3.pdf.aspx

[75] Queensland Government. Our Story, Our Future, Queensland Multicultural Policy. 2018. Department of Children, Youth Justice and Multicultural Affairs. Available from: www.cyjma.qld.gov.au/resources/dcsyw/multicultural-affairs/policy-governance/multicultural-policy.pdf

CALD health is a complex concept, and understanding the full picture requires a range of information. Considerations for potential future CALD data projects in Queensland may include a deeper exploration of data on relevant issues, including mental health, maternity and childbirth, and analysis of data outcomes at the Hospital and Health Service (HHS) level. This will ensure even more targeted interventions. Analysis of other data elements that Queensland Health collects—whether an interpreter service is required and preferred language—could be undertaken as a proxy for understanding how language barriers might influence health outcomes. To have sufficient data to analyse, more work is needed to improve data collection on CALD indicators.

Data linkage opportunities

Queensland Health uses data linkage across its own datasets. However, there are emerging opportunities to support more nuanced analysis of health outcomes for CALD populations, using a broader range of datasets and indicators.

The ABS Multi-Agency Data Integration Project (MADIP) (2021c) is a potential option to enable this. MADIP is a secure data asset combining information from various Australian Government datasets. The project aims to provide whole-of-life insights about various population groups in Australia, such as the interactions between their characteristics, use of services like healthcare and education and outcomes like improved health and employment[76]. It would potentially allow further investigation of the relationships between PPH and disease prevalence, use of primary health care, use of medicines and overall health outcomes[77]. Further, the Australian Government recently announced that it will begin collecting ethnicity data through the next Census to measure diversity more meaningfully in Australia.

This approach to data linkage has potential to enable a more nuanced analysis of health outcomes for CALD populations in Queensland, potentially on indicators such as ethnicity, migration, year of arrival and language spoken at home. Collecting such data will create greater visibility of CALD populations that we cannot currently measure and help health service providers and practitioners measure health outcomes effectively[78].

A national approach

A nationally consistent approach to measuring and analysing health outcomes for CALD populations would be beneficial to enable comparability across jurisdictions and support further research. This is consistent with the *National Health Reform Agreement (NHRA) Long-term Health Reforms Roadmap reform priority 'Enhance Health Data'*. The aim for this priority is to ensure the data generated by Australia's health system drives better health outcomes and delivers effective, safe and efficient health care for all Australians[79].

[76] Australian Bureau of Statistics. Multi-Agency Data Integration Project (MADIP). ABS Canberra. Available from: https://www.abs.gov.au/about/data-services/data-integration/integrated-data/multi-agency-data-integration-project-madip

[77] Australian Institute of Health and Welfare. Disparities in potentially preventable hospitalisations across Australia, 2012-13 to 2017-18. Feb 2020 [cited 08 March 2023]. Available from: https://www.aihw.gov.au/reports/primary-health-care/disparities-in-potentially-preventable-hospitalisations-australia/summary

[78] Federation of Ethnic Communities' Councils of Australia. Annual report 2021/22. 2022. Available from: https://fecca.org.au/wp-content/uploads/2022/12/FECCA-Annual-Report-2021-2022.pdf

[79] National Health Reform Agreement (NHRA) Long-term Health Reforms Roadmap, 2021, Australian Health Ministers. Available from: https://www.health.gov.au/sites/default/files/documents/2021/10/national-health-reform-agreement-nhra-long-term-health-reforms-roadmap.pdf

6. Appendices

6.1 Appendix A: Abbreviations

ABS	Australian Bureau of Statistics
AHPF	Australian Health Performance Framework
AIHW	Australian Institute of Health and Welfare
ASCEEG	Australian Standard Classification of Cultural and Ethnic Groups
ASR	Age-standardised rates
CALD	Culturally and linguistically diverse
Census	Census of Population and Housing
CI	Confidence interval
CIMHA	Consumer Integrated Mental Health and Addiction
COB	Country of Birth
COD URF	Cause of death unit record file
COPD	Chronic obstructive pulmonary disease
DJAG	Department of Justice and Attorney-General
ERP	Estimated resident population
HHS	Hospital and Health Service
ICD	International Classification of Disease
MADIP	Multi-Agency Data Integration Project
MESB	mainly English-speaking background
MHiMA	Mental Health in Multicultural Australia
nec	not elsewhere classified
NCIS	National Coronial Information System
NESB	non-English speaking background
PAD	Potentially avoidable deaths
PHRN	Population Health Research Network
PI	Performance indicator
PPH	Potentially preventable hospitalisations
QHAPDC	Queensland Hospital Admitted Patient Data Collection
QLD	Queensland
RBDM	Registries of Births, Death and Marriages
SACC	Standard Australian Classification of Countries
SAR	Special administrative region
UK	United Kingdom

6.2 Appendix B: Country of birth categories and regions

The Australian Bureau of Statistics (ABS) categorises the countries of the world into nine major groups. However, for the purpose of this report, these groups were further classified into three broad categories based on country of birth:

1. Australian born
2. Born outside Australia and from a country with a mainly English speaking background (MESB)
3. Born outside Australia and from a country with a non-English speaking background (NESB).

The assignment of MESB and NESB population groups were based on a person's self-reported country of birth, regardless of whether English was their first or preferred language, or their length of residence in Australia. The three broad categories mentioned above were further disaggregated into 14 regions and countries as shown below.

Broad country of birth	Region of birth	Countries	
Australian	Australian	Australia	Norfolk Island
		Australian external territories, nec	
Mainly English Speaking Background (MESB)	New Zealand	New Zealand	
	North American	Bermuda	St Pierre and Miquelon
		Canada	United States of America
	UK/Ireland	England	Jersey
		Guernsey	Northern Ireland
		Ireland	Scotland
		Isle of Man	Wales
Non-English Speaking Background (NESB)	Middle East	Bahrain	Oman
		Gaza Strip and West Bank	Qatar
		Iran	Saudi Arabia
		Iraq	Syria
		Israel	Turkey
		Jordan	United Arab Emirates
		Kuwait	Yemen
		Lebanon	
	North African	Algeria	Spanish North Africa
		Egypt	Sudan
		Libya	Tunisia
		Morocco	Western Sahara
		South Sudan	

Broad country of birth	Region of birth	Countries	
Non-English Speaking Background (NESB)	North-East Asia	China (excludes SARs and Taiwan)	Korea, Republic of (South)
		Hong Kong (SAR of China)	Macau (SAR of China)
		Japan	Mongolia
		Korea, Democratic People's Republic of (North)	Taiwan
	Other Americas	Anguilla	Haiti
		Antigua and Barbuda	Honduras
		Argentina	Jamaica
		Aruba	Martinique
		Bahamas	Mexico
		Barbados	Montserrat
		Belize	Netherlands Antilles
		Bolivia	Nicaragua
		Bonaire, Sint Eustatius and Saba	Panama
		Brazil	Paraguay
		Cayman Islands	Peru
		Chile	Puerto Rico
		Colombia	Sint Maarten (Dutch Part)
		Costa Rica	South America, nec
		Cuba	St Barthelemy
		Curacao	St Kitts and Nevis
		Dominica	St Lucia
		Dominican Republic	St Martin (French Part)
		Ecuador	St Vincent and the Grenadines
		El Salvador	Suriname
		Falkland Islands	Trinidad and Tobago
		French Guiana	Turks and Caicos Islands
		Grenada	Uruguay
		Guadeloupe	Venezuela
		Guatemala	Virgin Islands, British
		Guyana	Virgin Islands, United States

Broad country of birth	Region of birth	Countries	
Non-English Speaking Background (NESB)	Other North-West Europe	Aland Islands	Iceland
		Austria	Liechtenstein
		Belgium	Luxembourg
		Denmark	Monaco
		Faroe Islands	Netherlands
		Finland	Norway
		France	Sweden
		Germany	Switzerland
		Greenland	
	Other Oceania and Antarctica	Adelie Land (France)	Northern Mariana Islands
		Argentinian Antarctic Territory	Palau
		Australian Antarctic Territory	Papua New Guinea
		British Antarctic Territory	Pitcairn Islands
		Chilean Antarctic Territory	Polynesia (Excludes Hawaii), nec
		Cook Islands	Queen Maud Land (Norway)
		Fiji	Ross Dependency (New Zealand)
		French Polynesia	Samoa
		Guam	Samoa, American
		Kiribati	Solomon Islands
		Marshall Islands	Tokelau
		Micronesia, Federated States of	Tonga
		Nauru	Tuvalu
		New Caledonia	Vanuatu
		Niue	Wallis and Futuna
	South-East Asia	Brunei Darussalam	Philippines
		Cambodia	Singapore
		Indonesia	Thailand
		Laos	Timor-Leste
		Malaysia	Vietnam
		Myanmar	

Broad country of birth	Region of birth	Countries	
Non-English Speaking Background (NESB)	Southern and Central Asia	Afghanistan	Kyrgyzstan
		Armenia	Maldives
		Azerbaijan	Nepal
		Bangladesh	Pakistan
		Bhutan	Sri Lanka
		Georgia	Tajikistan
		India	Turkmenistan
		Kazakhstan	Uzbekistan
	Southern and Eastern Europe	Albania	Lithuania
		Andorra	Malta
		Belarus	Moldova
		Bosnia and Herzegovina	Montenegro
		Bulgaria	Poland
		Croatia	Portugal
		Cyprus	Romania
		Czech Republic	Russian Federation
		Estonia	San Marino
		Gibraltar	Serbia
		Greece	Slovakia
		Holy See	Slovenia
		Hungary	Spain
		Italy	The Former Yugoslav Republic of Macedonia
		Kosovo	Ukraine
		Latvia	

Broad country of birth	Region of birth	Countries	
Non-English Speaking Background (NESB)	Sub-Saharan Africa	Angola	Malawi
		Benin	Mali
		Botswana	Mauritania
		Burkina Faso	Mauritius
		Burundi	Mayotte
		Cameroon	Mozambique
		Cape Verde	Namibia
		Central African Republic	Niger
		Chad	Nigeria
		Comoros	Reunion
		Congo, Democratic Republic of	Rwanda
		Congo, Republic of	Sao Tome and Principe
		Cote D'Ivoire	Senegal
		Djibouti	Seychelles
		Equatorial Guinea	Sierra Leone
		Eritrea	Somalia
		Ethiopia	South Africa
		Gabon	Southern and East Africa, nec
		Gambia	St Helena
		Ghana	Swaziland
		Guinea	Tanzania
		Guinea-Bissau	Togo
		Kenya	Uganda
		Lesotho	Zambia
		Liberia	Zimbabwe
		Madagascar	

Source: ABS: Standard Australian Classification of Countries (SACC)[80].

[80] Australian Bureau of Statistics. Standard Australian Classification of Countries (SACC). 2016. ABS Canberra. Available from: https://www.abs.gov.au/statistics/classifications/standard-australian-classification-countries-sacc/latest-release

6.3 Appendix C: Methodology

Age-standardised rates

Age-standardisation is a method of adjusting a crude rate to reduce the influence of age when comparing rates between populations with different age structures. This report used the direct age-standardisation approach.
The age composition of the total estimated resident population of Australia as at 30 June, 2001 has been used as the standard population. The age-standardised rates were expressed per 100,000 population.

Age-standardised rates are calculated using the following formula:

Age-standardised rate = $\sum(r_i P_i)/\sum P_i$

where r_i is the age specific rate in age group *i*- of the study population and P_i is the standard population for i^{th} age group.

Results based on small populations, or a small number of events, are unreliable and exhibit a large amount of random variation. Age-standardised rates were not presented if the total number of events was less than 20 over all age groups, or the population was less than 30 in any age group.

10-year age groupings starting with the age group 0–9, 10–19…60–69, 70+ were generally used to calculate the age-standardised rates in this report, except for potentially avoidable death rate calculations where age groupings of 0–9, 10–19…50–59, 60–74 were used.

Confidence intervals and statistical significance

In general, a confidence interval is a range of values that is likely to include the cohort's actual rate with a certain degree of confidence (95 times out of 100). If the confidence intervals do not overlap between two populations being compared, we can be confident that the difference is statistically significant.
The 95% confidence intervals were calculated based on *APHO. (2008). Technical Briefing 3: Commonly used public health statistics and their confidence intervals. York, UK: Association of Public Health Observatories.*

Potentially avoidable deaths (PAD)

Potentially avoidable deaths (PAD) are defined as death before the age of 75 years, from specific conditions that are deemed potentially avoidable, given the present health and social conditions. PAD is defined as per the *National Healthcare Agreement: PI 16–Potentially avoidable deaths, 2022.*

Potentially preventable hospitalisations (PPH)

Potentially preventable hospitalisations (PPH) are specific hospital admissions that potentially could have been prevented by timely and adequate health care in the community.

PPH categories are based on the *National Healthcare Agreement: PI 18–Selected potentially preventable hospitalisations, 2022.*

The definition used in this report has one exception for diabetes complications, summarised in the following table.

Chronic - Diabetes complications
E10–E14.9 as principal diagnoses and E10–E14.9 as additional diagnoses where the principal diagnosis was*: • hyperosmolarity (E87.0) • acidosis (E87.2) • transient ischaemic attack (G45) • nerve disorders and neuropathies (G50–G64) • cataracts and lens disorders (H25–H28) • retinal disorders (H30–H36) • glaucoma (H40–H42) • myocardial infarction (I21–I22) • other coronary heart diseases (I20, I23–I25) • heart failure (I50) • stroke and sequelae (I60–I64, I69.0–I69.4) • peripheral vascular disease (I70–I74) • gingivitis and periodontal disease (K05) • kidney diseases (N00–N29) [including end-stage renal disease (N17–N19)].

Agreement definition.

Rate ratios

The rate ratio is the age-standardised rate for a country/region divided by the age-standardised rate for the Australian-born (referent) group. While not included in this report a value of 1.0 would indicate that a country/region rate was equivalent to the Australian-born rate. A rate ratio value of, for example, 2.3 indicates that the country/region rate was 2.3 times higher than the Australian-born rate.

6.4 Appendix D: Data sources

Broad country of birth, regions of birth and countries

The Standard Australian Classification of Countries (SACC)[81] are published by the Australian Bureau of Statistics and has a three-level hierarchical structure (major and minor groups and countries) and was used to guide the categories used in this report.

Hospitalisations

The Queensland Hospital Admitted Patient Data Collection (QHAPDC) collects demographic data and clinical information on all admitted patients separated from both public and licensed private hospitals and private day surgeries in Queensland. In this report the hospital data was restricted to Queensland residents admitted to Queensland health facilities. Unqualified neonates, boarders, organ procurements and psychiatric hospital episodes were excluded in this report's analyses.

Mortality

The cause of death unit record file (COD URF) sourced from the Australian Coordinating Registry is a dataset containing information related to all deaths registered in Australia for a given reference year. The national dataset is a compilation of death records from each of the State and Territory Registries of Births, Deaths and Marriages (RBDMs) and from State and Chief Coroners through the National Coronial Information System (NCIS) (DJAG, 2022). Deaths were restricted to Queensland residents whose death was registered in Queensland and analyses in this report is based on year of death.

Queensland total estimated resident populations (ERPs)

Total estimated resident populations (ERPs)[82] for Queensland are published by the Australian Bureau of Statistics yearly. ERPs improve on the Census counts by place of usual residence by adjusting for the estimated net Census undercount and including Australian residents who were temporarily overseas at the time of the Census.

Population counts by country of birth of person were drawn from the Australian Bureau of Statistics (ABS) Census of Population and Housing, 2016[83].

The Queensland ERP data was apportioned according to population proportions derived from the 2016 Census data—by five-year age group (0–4, 5–9…80–84, 85+) and sex.

Reference population

The 2001 Australian estimated resident population[84] was used as the standard population in calculating age-standardised rates, as described in Appendix C.

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[81] Australian Bureau of Statistics. Standard Australian Classification of Countries (SACC). 2016. ABS Canberra. Available from: https://www.abs.gov.au/statistics/classifications/standard-australian-classification-countries-sacc/latest-release

[82] Australian Bureau of Statistics. Regional Population by Age and Sex, Australia 2018. Catalogue No. 3235.0. 2020. ABS Canberra.

[83] Australian Bureau of Statistics. Country of Birth of Person (BPLP – 4 Digit Level) by State (UR), Age in Five Year Groups (AGE5P) and Sex (SEXP). 2016. Census TableBuilder. ABS Canberra. Accessed 12 October 2021. Available from: https://guest.censusdata.abs.gov.au/webapi/jsf/tableView/tableView.xhtml

[84] Australian Bureau of Statistics. Population by age and sex – 2001 census edition. Catalogue No. 3201.0. 2003. ABS Canberra.

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