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Analysis of Chronic Diseases in NSW

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Executive Summary

This report examines pressing questions related to the variability of preventable chronic diseases across different demographics and regions in Australia, focusing on the spread of heavy alcohol consumption, the persistent rise of obesity-related cardiovascular diseases, and the increase in potentially preventable hospitalizations (PPH). These questions guide an in-depth analysis to understand trends, risk factors, and strategic solutions to reduce healthcare disparities.

Key findings indicate:

1. **Primary Risk Factors**: Obesity, smoking, poor diet, and alcohol consumption significantly contribute to preventable hospitalisations, especially in lower socioeconomic and regional areas.
2. **Disparities Across Local Health Districts (LHDs)**: Regional areas, particularly Far West and Murrumbidgee, show higher rates of PPH and chronic conditions like COPD, diabetes, and congestive cardiac failure, likely due to limited healthcare access and economic challenges.
3. **Impact of Socioeconomic Status (SES)**: Lower SES quintiles experience higher rates of chronic disease and PPH, especially for conditions such as COPD and diabetes, indicating barriers to preventive and primary care.
4. **Gender and Age Variations in Cardiovascular Disease (CVD)**: Men, particularly those aged 65-74, show higher rates of CVD hospitalisation and mortality. These disparities are influenced by lifestyle factors, including physical inactivity and alcohol consumption.
5. **Shift in Alcohol Consumption Patterns**: Increased weekly alcohol consumption and decreased abstinence rates raise long-term health risks, especially in districts with high binge drinking rates like Northern Sydney and Hunter New England.

Recommendations:

The report suggests region-specific public health initiatives, expanded healthcare access through telehealth and mobile clinics, and targeted campaigns to promote healthy lifestyle habits. Addressing these risk factors with tailored strategies can help NSW Health reduce preventable chronic disease prevalence, enhance health equity, and improve overall health outcomes.

Introduction

Background

Chronic diseases are a growing public health challenge in New South Wales (NSW), contributing significantly to preventable hospitalizations and healthcare costs. Conditions such as cardiovascular disease, obesity, and diabetes not only shorten life spans but also affect the quality of life, increasing the burden on healthcare systems (Australian Institute of Health and Welfare [AIHW], 2022). These diseases are driven by risk factors like poor diet, smoking, and physical inactivity, which continue to be prevalent despite public health efforts (NSW Ministry of Health, n.d.). Addressing chronic diseases is crucial, as nearly 90% of deaths in Australia involve a chronic condition as a primary or contributing factor, underscoring the need for preventative measures and effective disease management strategies (AIHW, 2023).

Objective

This report investigates three critical questions that shed light on the complex health challenges posed by chronic diseases in NSW and across Australia. By focusing on both regional and demographic patterns, the report seeks to answer these three nontrivial questions:

1. Understand how preventable chronic diseases and associated risk factors, including lifestyle, healthcare access, and prevention strategies, vary across states, age groups, and genders over time in Australia, and what targeted actions can reduce disparities in these diseases, specifically cardiovascular ones, across local communities.

2. Explore patterns of heavy alcohol consumption and other lifestyle behaviours across NSW Local Health Districts that contribute to the rising rates of obesity-related cardiovascular diseases, despite trends in reduced food consumption, smoking, and increased physical activity, and what targeted strategies could address this trend?

3. Identify the factors contributing to chronic conditions that also increase PPH rates in high-risk groups, and what targeted strategies could NSW implement to address these disparities in healthcare access?

Scope

The analysis focuses on key chronic diseases using data sourced from the Australian Health Performance Framework (AHPF) and other relevant health databases, including HealthStats NSW and the Australian Institute of Health and Welfare. It highlights disparities across NSW Local Health Districts, examining variations in risk factors, health outcomes, and rates of potentially preventable hospitalizations.

Structure

The report is organised into sections detailing the data sources, methodology, key findings, discussion, recommendations, and conclusions. Each section provides insights into different aspects of chronic disease trends, offering a comprehensive understanding of the challenges and opportunities for addressing chronic health issues in NSW.

Data and Methodology

Data Sources

Data for this analysis was collected from the Australian Health Performance Framework (AHPF), NSW Health Data, HealthStats NSW, and reports from the Australian Institute of Health and Welfare (AIHW). The dataset covers indicators on chronic diseases, health outcomes, and associated risk factors across NSW, in which data was segmented by location, age group, and time period to understand chronic disease trends across demographics and regions.

Data Processing

To ensure accuracy, consistency, and reliability in our dataset, we employed a thorough data processing approach that involved multiple tools and methods.

- For initial data interpretation and exploration, **Excel** was employed to identify basic patterns and trends.

- We then used **Python, RStudio**, and **Snowflake** for complex data manipulation, including merging datasets, handling missing values, and performing statistical imputation as

needed. **Confluence** was utilised for collaborative documentation and tracking data processing steps, ensuring transparency and alignment throughout the analysis. This multi-step approach prepared a comprehensive dataset suitable for in-depth analysis..

Analytical Approach

The analytical phase focused on visualising trends and disparities in chronic diseases across various dimensions. Using Tableau, we developed an interactive dashboard to display complex data relationships clearly and effectively. The dashboard allows users to explore chronic disease data across geographic locations, demographic categories (such as age and gender), and socioeconomic status. This approach provided visual insights into patterns of chronic disease prevalence, enabling a deeper understanding of how different factors contribute to these trends. By visualising the data in this way, we could answer the project's non-trivial questions, such as identifying which causes are the most concerning problems caused by certain chronic diseases and understanding the role of socio-economic disparities in health outcomes.

Findings and Analysis

1. Overview of Australia and NSW Health on Preventable Chronic Disease

Chronic diseases, especially those that are preventable, are steadily increasing across Australia, with NSW showing similar patterns. This rise has outpaced population growth, indicating that lifestyle and hidden factors, rather than demographic changes alone, are driving this trend. Notably, some chronic diseases have shown stable prevalence rates over the years, highlighting the potential for targeted strategies to effectively prevent these conditions (Figure 1). Contributing factors such as an ageing population, poor diet, insufficient physical activity, smoking, and alcohol consumption have intensified the impact of chronic diseases over time,

even as public health efforts seek to address these risks (NSW Ministry of Health, n.d.).

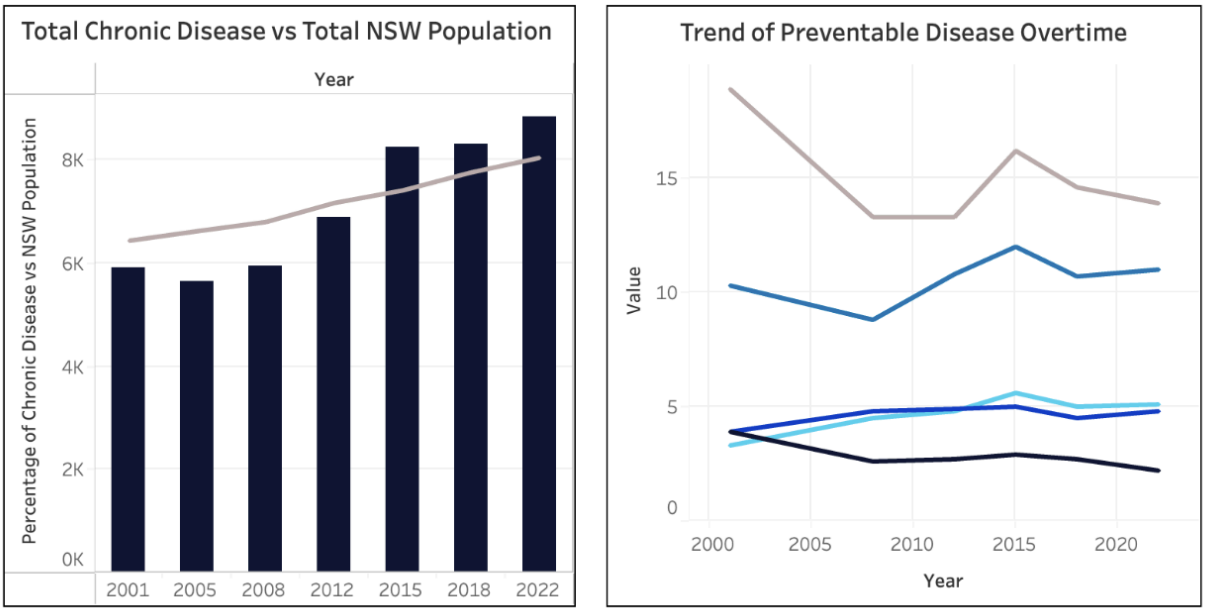


Figure 1: Chronic Diseases overtime in NSW and stable ones

Specifically, the increasing prevalence of chronic diseases across NSW and Australia is strongly associated with lifestyle factors, suggesting that changes in demographics alone do not account for this trend. Diet, physical inactivity, and other modifiable behaviors are key contributors to these rising rates. For instance, states like WA, QLD, and SA, which exhibit higher levels of obesity and alcohol consumption than other states (Figure 1), also show a greater prevalence of chronic diseases, as shown in figure 2.

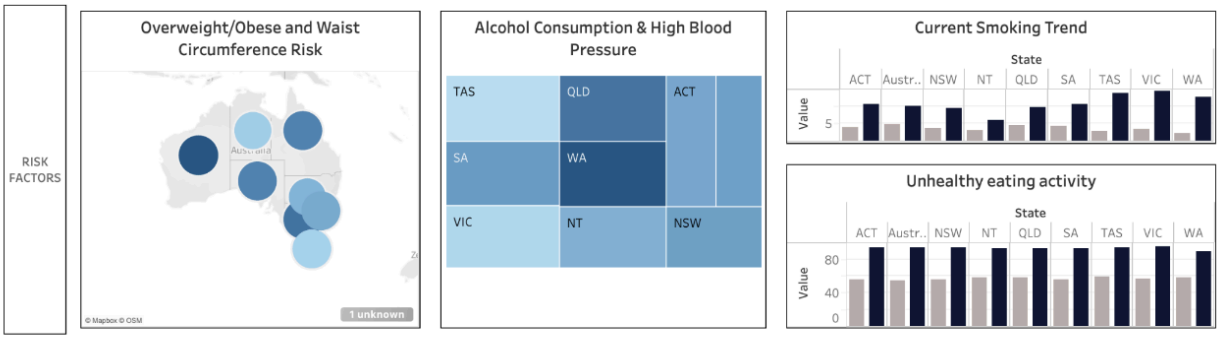


Figure 2: Risk factors across different states

The AIHW Burden of Disease Study identifies obesity and poor diet as critical health issues, especially among older Australians (AIHW, 2022). It also finds a strong link between frequent alcohol consumption, especially daily drinking, and cardiovascular hospitalizations. High daily drinking rates in LHDs like Far West, Northern NSW, and Hunter New England (figure 3) align with increased cardiovascular hospitalizations, suggesting a significant cardiovascular risk from regular alcohol intake. Although less directly linked to diabetes, high-drinking regions also show elevated diabetes-related hospitalizations, indicating alcohol's potential to worsen complications for diabetic patients.

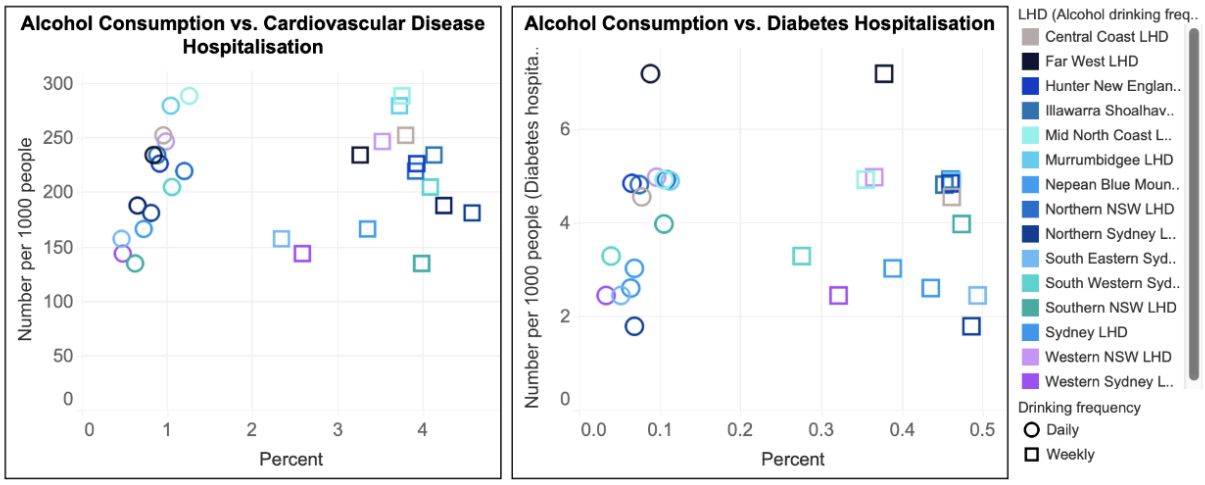


Figure 3: Scatter plot of Alcohol Consumption Frequency and Cardiovascular/Diabetes-Related Hospitalisation in NSW LHDs.

Chronic disease rates show significant regional and demographic variability across Australia. For example, while NSW's hypertension rate is close to the national average at 11%, Tasmania has a notably higher rate at 16.2%. This disparity is likely tied to socio-economic challenges and limited healthcare access, as noted in the Chronic Conditions Report from AIHW (2023). Such differences highlight how socio-economic factors and access to healthcare impact chronic disease prevalence across regions, with higher rates often seen in areas facing greater resource limitations.

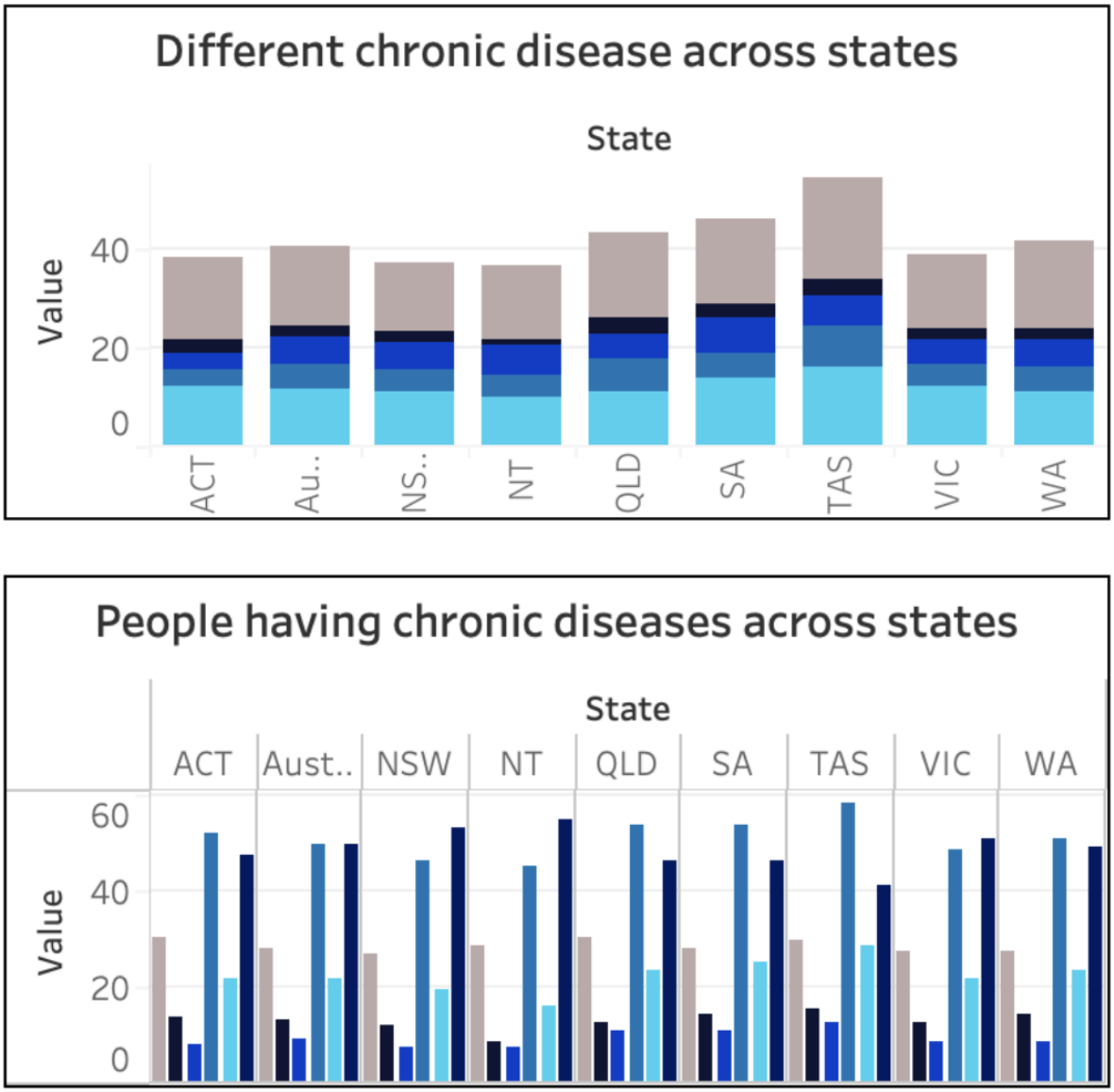


Figure 4: Chronic Diseases Distribution across Australia.

2. Real Case Example: Cardiovascular Diseases in NSW

a. Gender and Age Disparities in Cardiovascular Disease Outcomes

The data from 2013 to 2022 shows a concerning rise in cardiovascular disease (CVD) deaths, particularly after 2020, likely due to healthcare access challenges and the long-term effects of COVID-19. Male deaths in 2022 were notably higher, at 23,112, compared to 21,893 for

females. This trend highlights the need for gender-specific interventions and further research into post-2020 CVD mortality factors.

During COVID-19, CVD deaths increased, especially post-lockdown, as many delayed or avoided routine checkups, leading to undiagnosed conditions that later contributed to higher mortality rates (Wu et al., 2020).

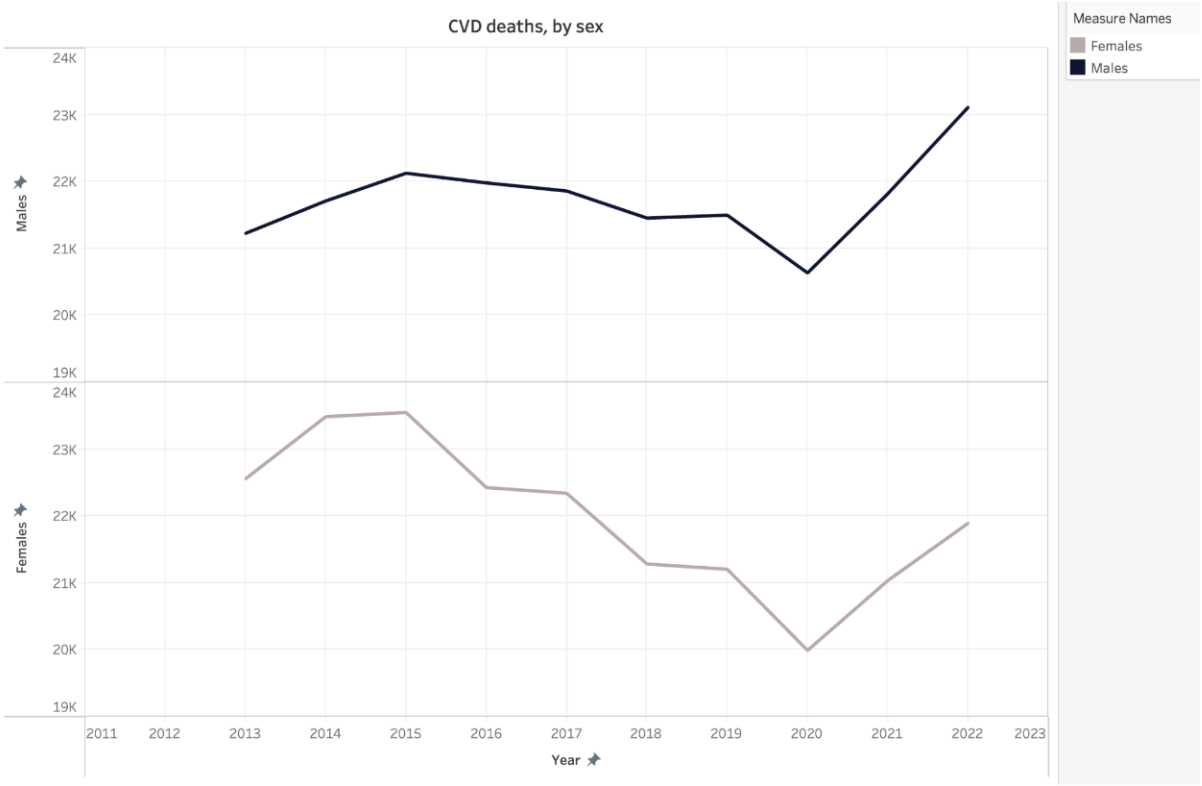


Figure 5: CVD death over years by Gender

b. Examining Age Effects, Gender Differences, and Preventative Measures for Better Heart Health

Men experience higher cardiovascular disease (CVD) hospitalisations, with 103,037 cases compared to 45,201 for women, largely due to lifestyle factors such as smoking, alcohol use, and inadequate diet and physical activity. Approximately 95% of men report insufficient physical activity, and over 98% lack adequate fruit and vegetable intake. Obesity is also more prevalent in men, contributing to higher CVD risks.

Hospitalisations increase significantly with age, especially between 65 and 74, where male cases are more than twice those of females (33,674 vs. 13,128) (figure 6). This trend reflects the cumulative impact of lifestyle choices over time.

Promoting healthier lifestyles through balanced diets, regular exercise, and reduced alcohol intake is essential (figure 7). Public health campaigns, smoking cessation support, and regular health check-ups after age 50 can aid early detection of heart issues (Healthdirect Australia, n.d.). Establishing specialised healthcare services for older adults, including routine screenings and lifestyle guidance, would further support heart health (NSW Department of Customer Service, 2024).

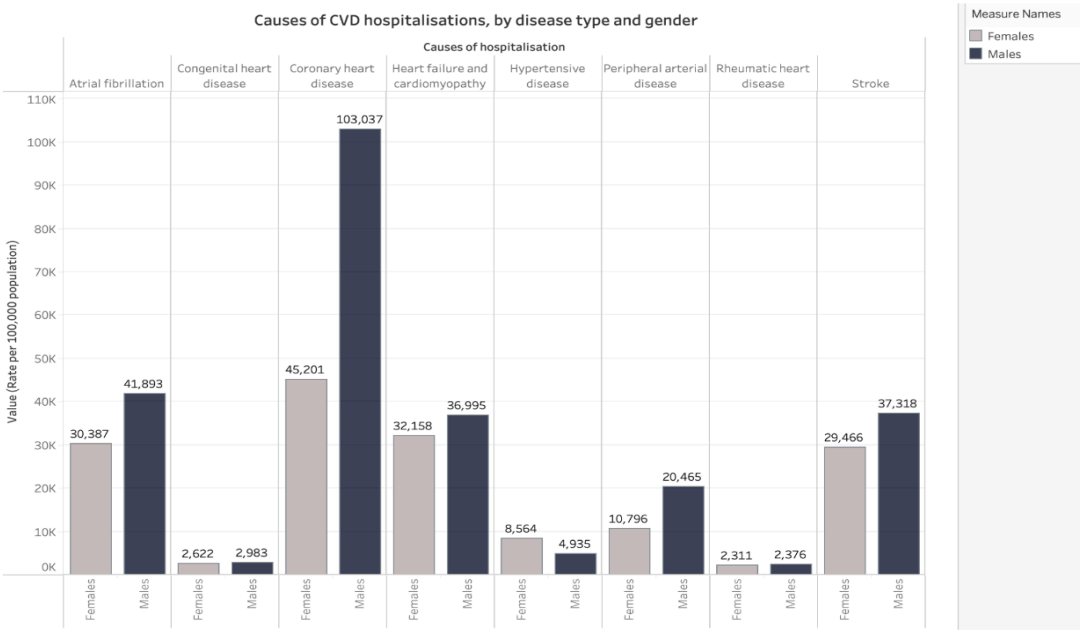


Figure 6: Causes of CVD hospitalisation

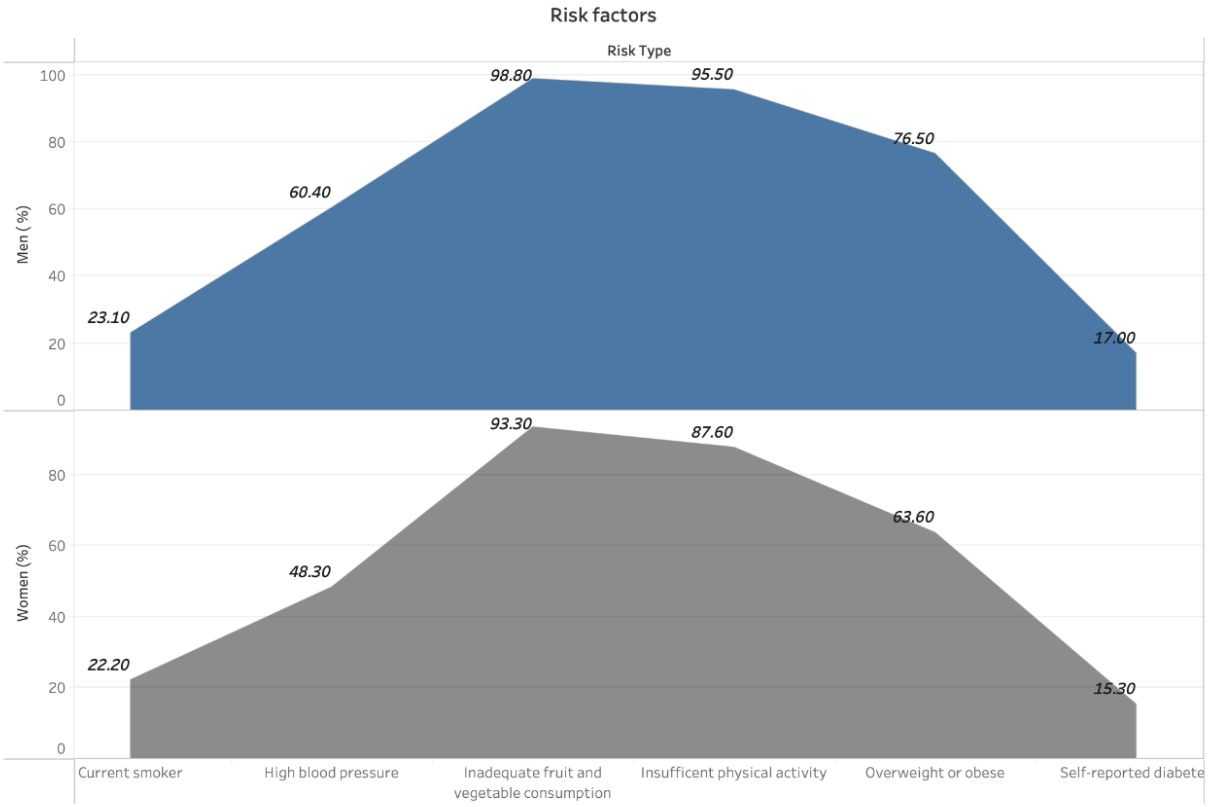


Figure 7: Related Risk Factors

c. Impact of Regional Disparities on Cardiovascular Health

From 2011 to 2021, CVD death rates decreased in both metropolitan and regional areas, though regional locations consistently reported higher rates. Male CVD deaths in regional areas fell from 220.3 to 163.6 per 100,000, while metropolitan male deaths declined from 183.7 to 132.1. Similarly, regional female CVD deaths dropped from 155.8 to 113.1, compared to a decline from 133.5 to 92.7 in metropolitan areas.

Regions like Western NSW and Hunter New England report particularly high CVD death rates, likely due to limited healthcare access, more physically demanding lifestyles, and economic challenges. Geographic isolation further restricts timely medical care, exacerbating heart-related issues (Smith et al., 2008).

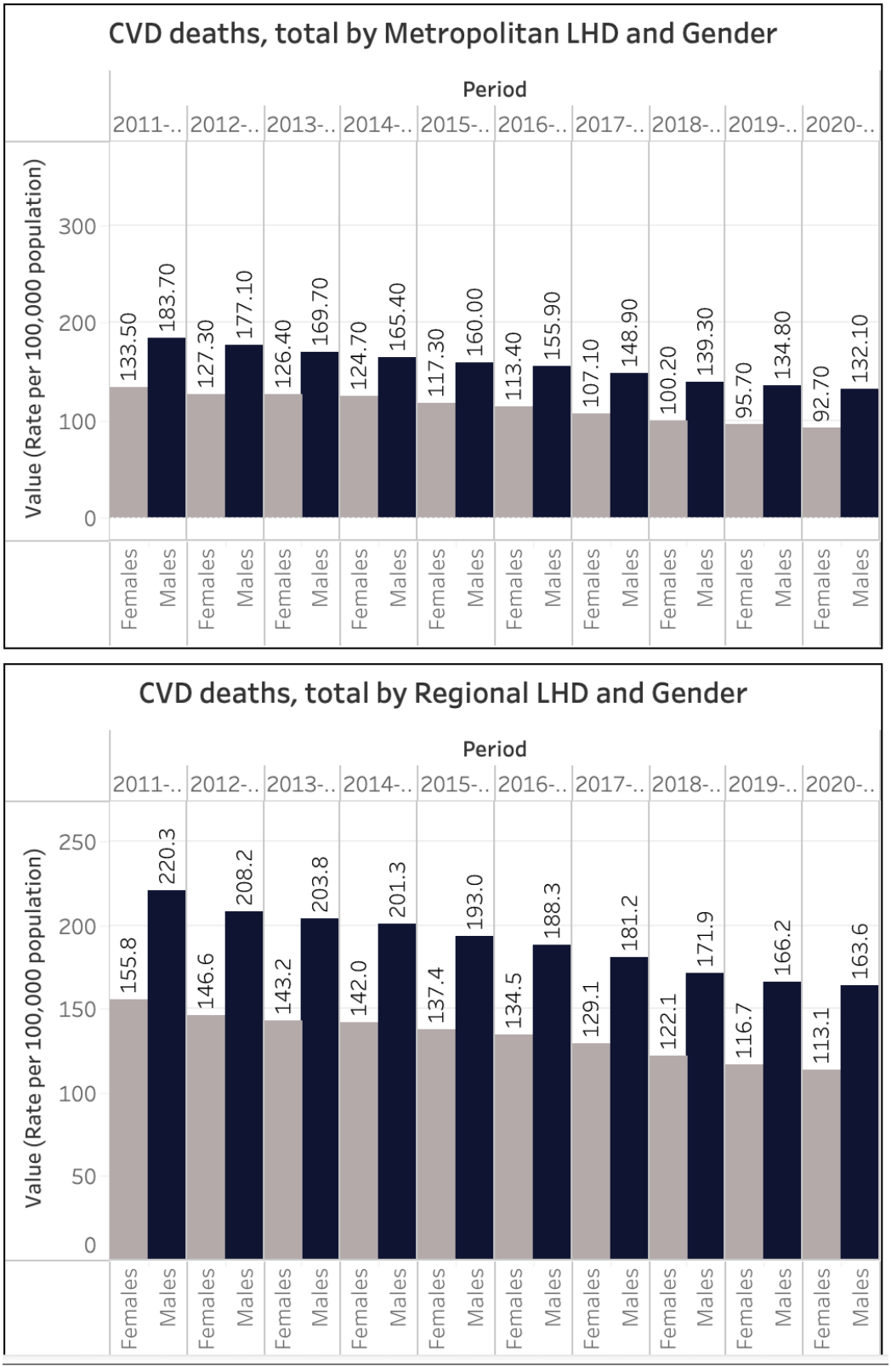


Figure 8: CVD deaths by LHD regions and Gender

Higher CVD mortality in areas like Western NSW and Hunter New England is likely due to limited healthcare access, economic challenges, and physically demanding lifestyles. Geographic isolation further complicates timely medical care access, exacerbating CVD risks (Smith et al., 2008).

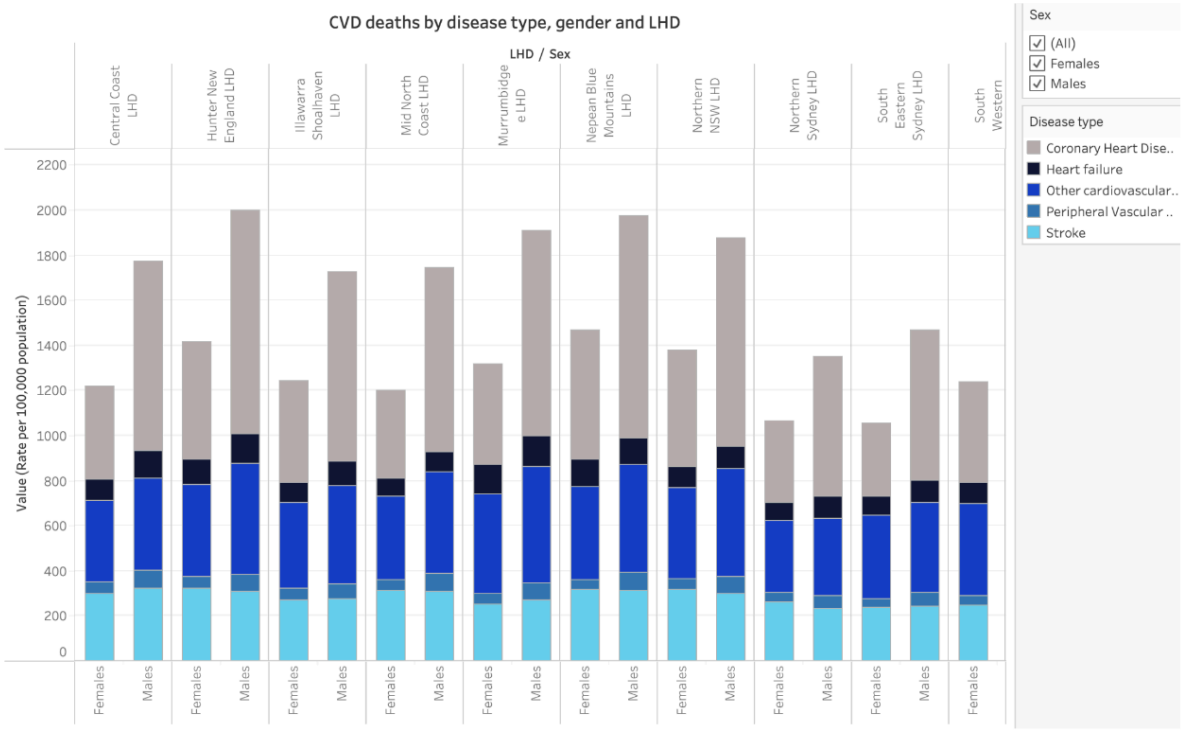


Figure 9: CVD by disease type, gender, and LHD.

3. Causes of Disease: Behavioural Risk Factors

Preventable chronic diseases, such as cardiovascular disease and diabetes, are increasingly influenced by modifiable lifestyle factors (Hacker, 2024). In New South Wales (NSW), significant efforts have been made to promote healthier lifestyles; however, gaps in fruit and vegetable consumption, shifts in smoking behaviour to vaping, and insufficient physical activity

levels persist. This section examines three key lifestyle factors—diet, smoking/vaping, and physical activity—that contribute to the prevalence of chronic diseases in NSW. Through analysis of these causes, this report identifies underlying trends and offers recommendations for targeted preventive measures.

a. Low Fruit & Vegetable Consumption

One of the major contributors to chronic disease in NSW is the low adherence to recommended fruit and vegetable intake, especially for vegetables. Consumption patterns reveal that only 40-50% of NSW residents meet daily fruit intake guidelines, while a strikingly low 5-8% meet vegetable intake targets. This discrepancy is driven by two main factors: regional variability and guideline standards.

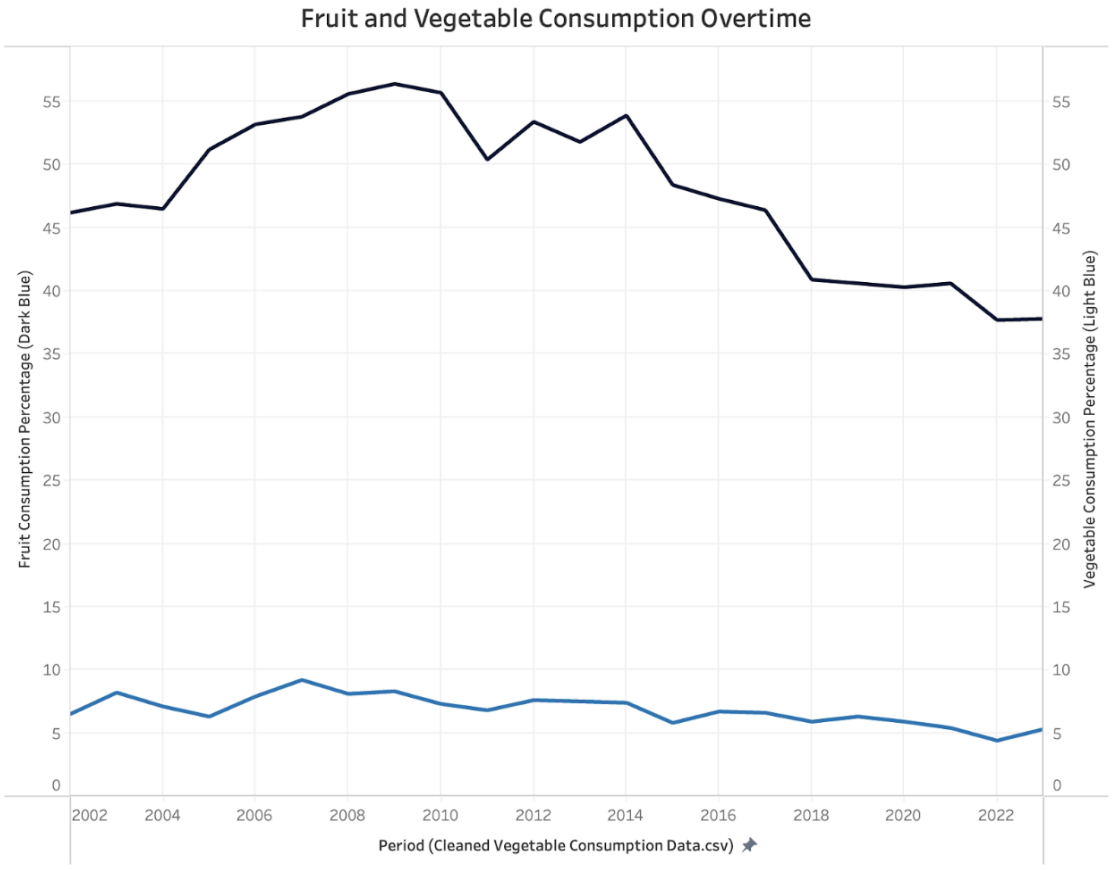


Figure 10: Fruit and Vegetable consumption overtime

Key Findings:

- **Regional Disparities**: Fruit intake varies significantly across regions, with lower consumption observed in regional areas like Far West, Murrumbidgee, and Western NSW. In contrast, vegetable consumption remains relatively consistent across Local Health Districts (LHDs), though adherence is low overall.

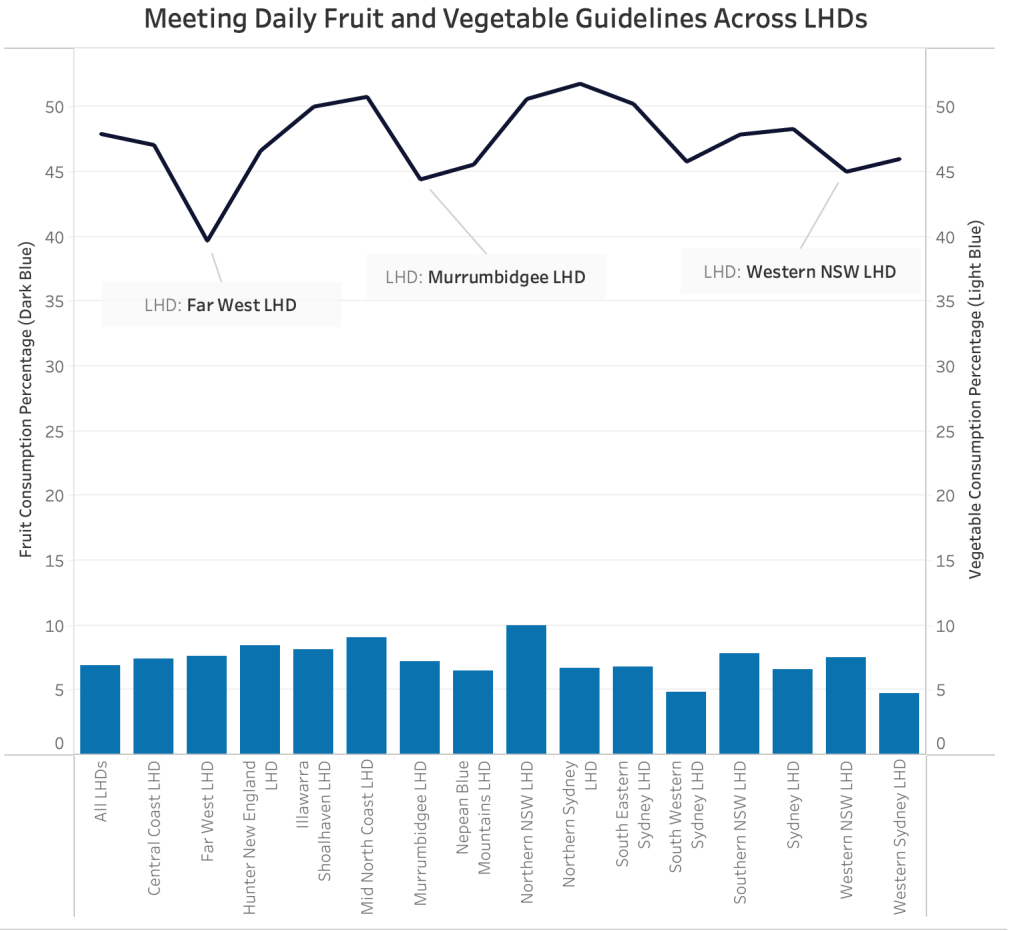


Figure 11: Fruit and Vegetable Guidelines Met (%)

- **Guideline Standards**: The difference in adherence to fruit versus vegetable guidelines is partially due to the higher recommended daily servings for vegetables (5 servings) compared to fruit (2 servings) (National Health and Medical Research Council, 2021). This discrepancy suggests that the challenge lies not only in the amount of intake but also in meeting more demanding standards.

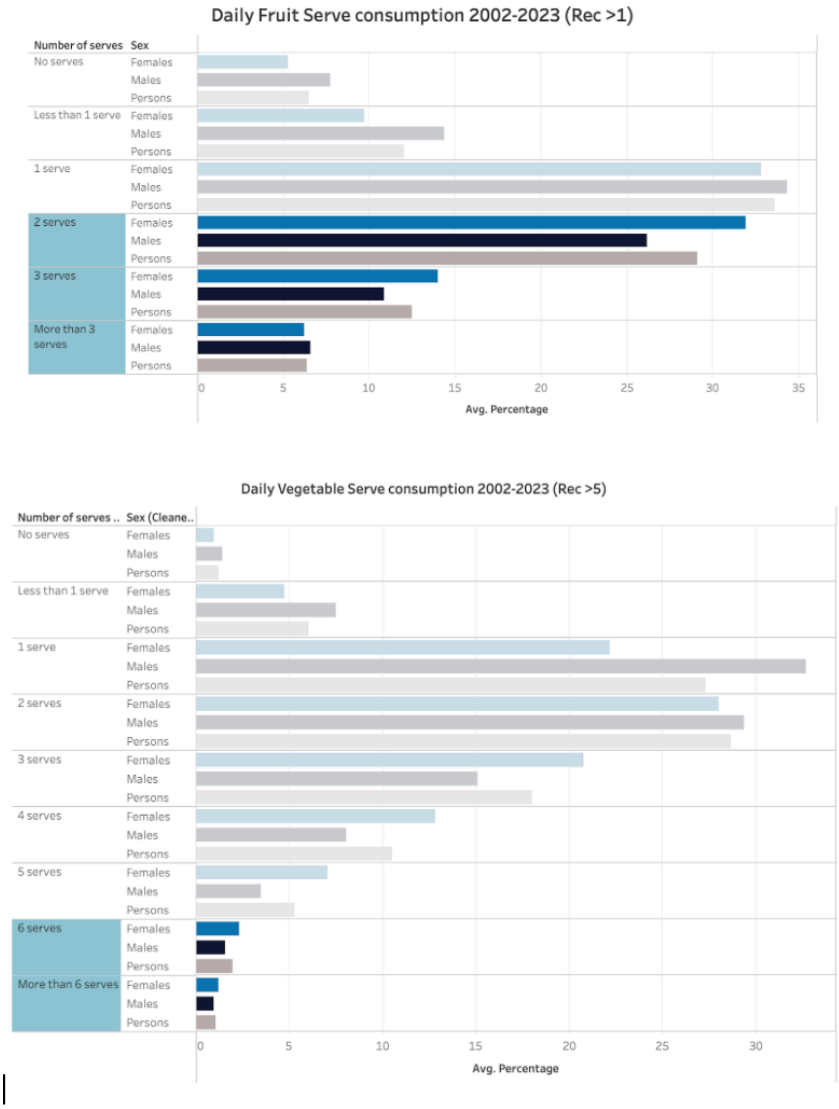


Figure 12: Fruit and Vegetable Serve Consumption (met requirements)

Implications:

- Low vegetable consumption correlates with a higher risk of chronic diseases, as vegetables provide essential nutrients and fibre that support heart health and prevent obesity-related conditions (Boeing et al., 2012).

- Regional disparities highlight the need for tailored dietary interventions in specific LHDs where fruit intake is particularly low.

Recommendations:

- **Diversify Daily Menus**: Promote a varied diet by increasing access to affordable fresh produce, particularly in underserved areas.

- **Guidelines Awareness**: Launch educational campaigns to raise awareness about the importance of meeting vegetable intake standards and provide practical tips on incorporating more vegetables into daily diets.

b. Smoking & Vaping

While traditional smoking rates have been gradually declining in NSW, particularly in urbanised areas, the sharp rise in vaping since 2018 presents new health concerns. As of 2024, approximately 20% of NSW residents have tried vaping, a trend that could undermine progress in reducing smoking-related diseases.

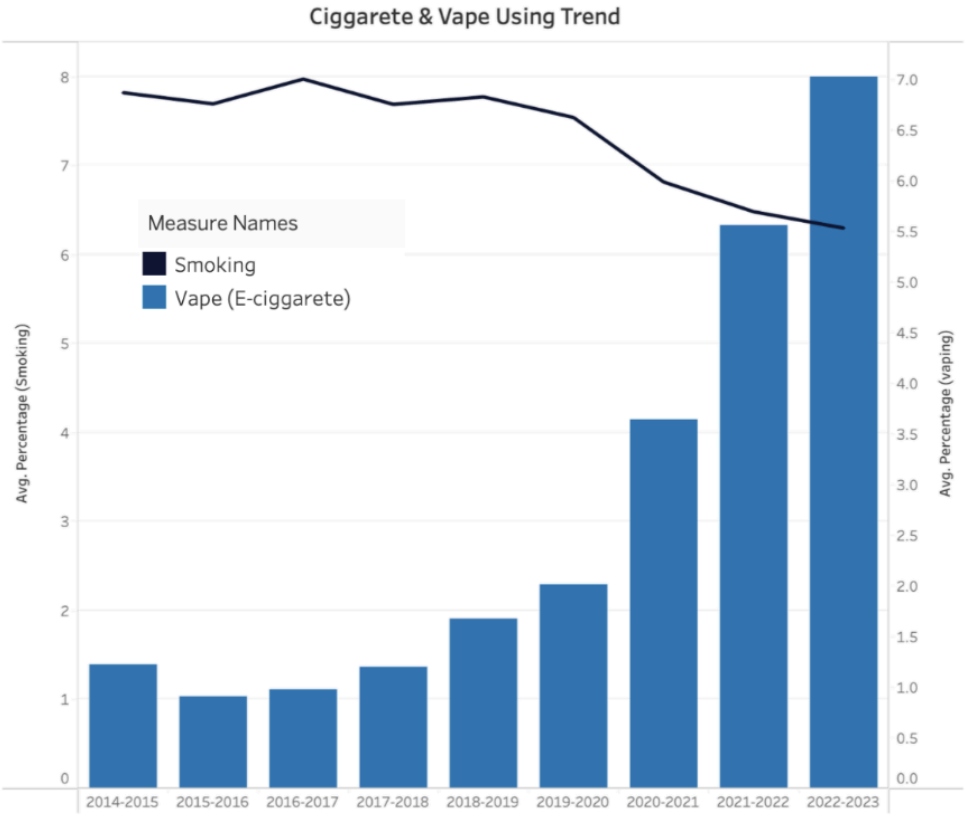


Figure 13: Cigarette and Vape using trend

Key Findings:

- **Decline in Smoking Rates**: Smoking has shown a steady decline, with urbanized areas reporting lower smoking rates than regional areas.

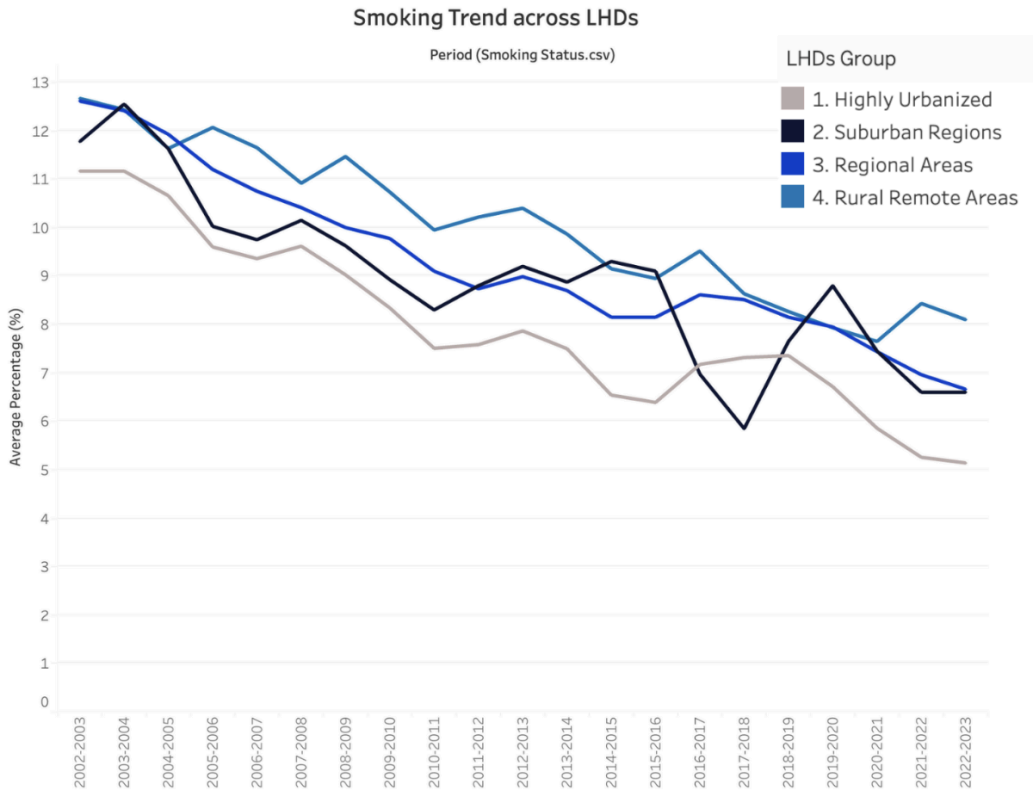


Figure 14: Smoking Trend Across LHDs Regions

- **Rise in Vaping**: Vaping usage has surged by around 10% since 2018, indicating a shift in nicotine consumption habits. Notably, this trend is uniform across LHDs, showing minimal regional variation.

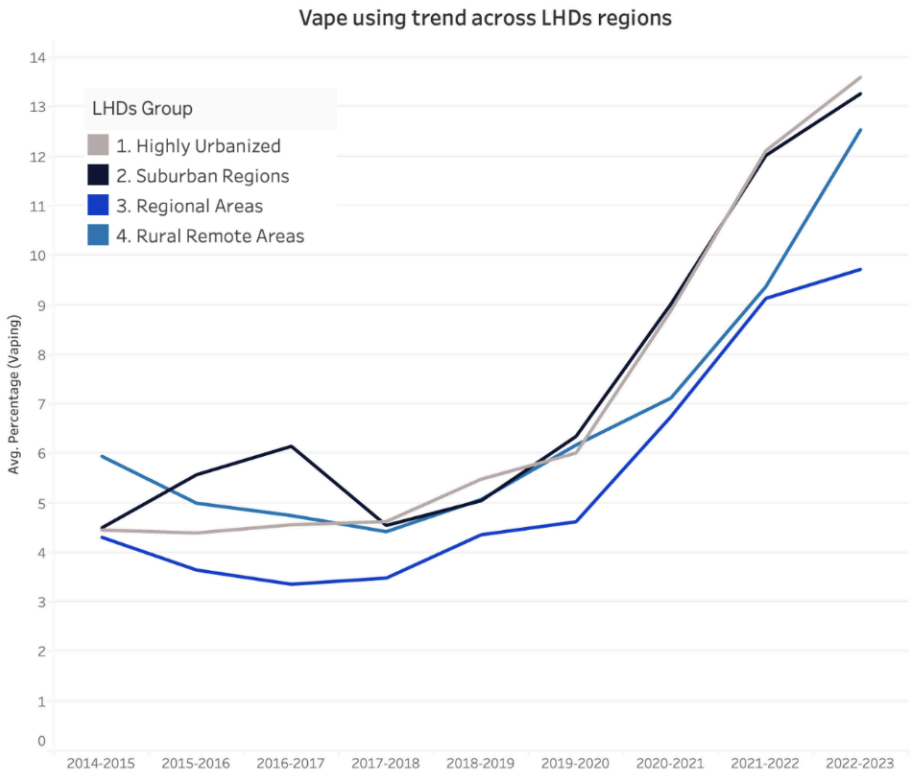


Figure 15: Vaping Trend Across LHDs Regions

Implications:

- Vaping's popularity, especially among younger demographics, could offset gains made in reducing smoking-related health risks (National Center for Chronic Disease Prevention, 2016). Public health efforts that are primarily focused on reducing traditional smoking may need to adapt to address the rise of vaping.

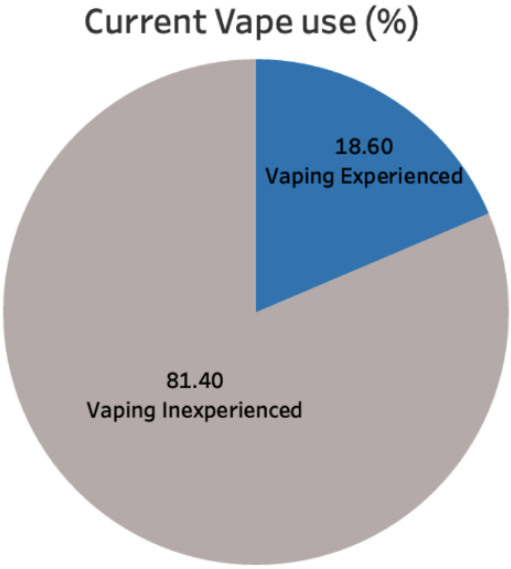


Figure 16: Vape exposure in 2024

Recommendations:

- **Public Awareness Campaigns**: Implement campaigns to educate the public on the health risks associated with vaping, emphasising that it is not a risk-free alternative to smoking.

- **Policy Interventions**: Explore regulatory actions to limit vaping's appeal and accessibility, particularly among younger age groups, to prevent vaping from becoming a gateway to nicotine addiction.

c. Insufficient Physical Activity

Physical inactivity remains a significant modifiable risk factor for chronic diseases in NSW, despite overall improvements in activity levels among adults. While more adults are meeting physical activity guidelines, certain demographics and regions still experience concerning levels of inactivity, especially males aged 35-44, individuals in remote areas, and those in disadvantaged communities.

Key Findings:

- **Improvement in Adult Activity Levels**: Many adults in NSW now meet the recommended guidelines of 150 minutes of physical activity per week across multiple sessions.

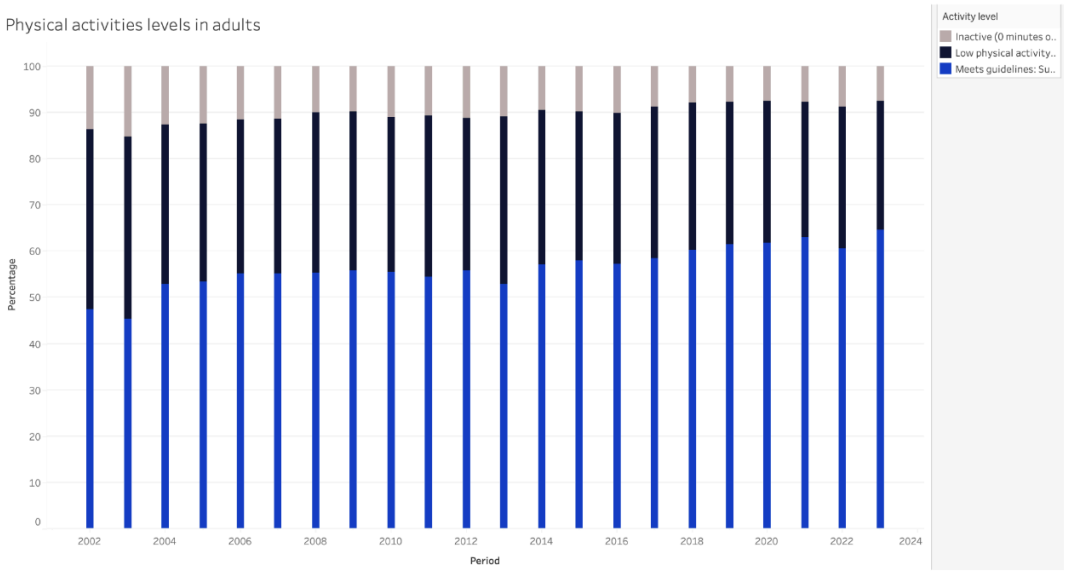


Figure 17: Physical Activity Level In Adult

- **Persistent Gaps by Demographic and Region**:

  - **Country of Birth**: Physical inactivity has decreased among individuals born in Australia and English-speaking countries, which have some of the lowest inactivity rates. However, non-English-speaking communities experience higher levels of insufficient physical activity.

  - **Age-Specific Trends**: While most age groups have shown improvement, males aged 35-44 are an exception, with a slight increase in inactivity. This group, particularly in regional areas, faces barriers to regular physical activity.

  - **Remoteness**: Outer regional and remote areas report the highest levels of physical inactivity compared to major cities and inner regional areas, indicating that geographic location influences access to and participation in physical activity.

  - **Socioeconomic Disparities**: Physical inactivity is more common in disadvantaged areas, with 44% of residents in the most disadvantaged quintile in NSW reporting insufficient physical activity, compared to 28% in the least disadvantaged quintile.

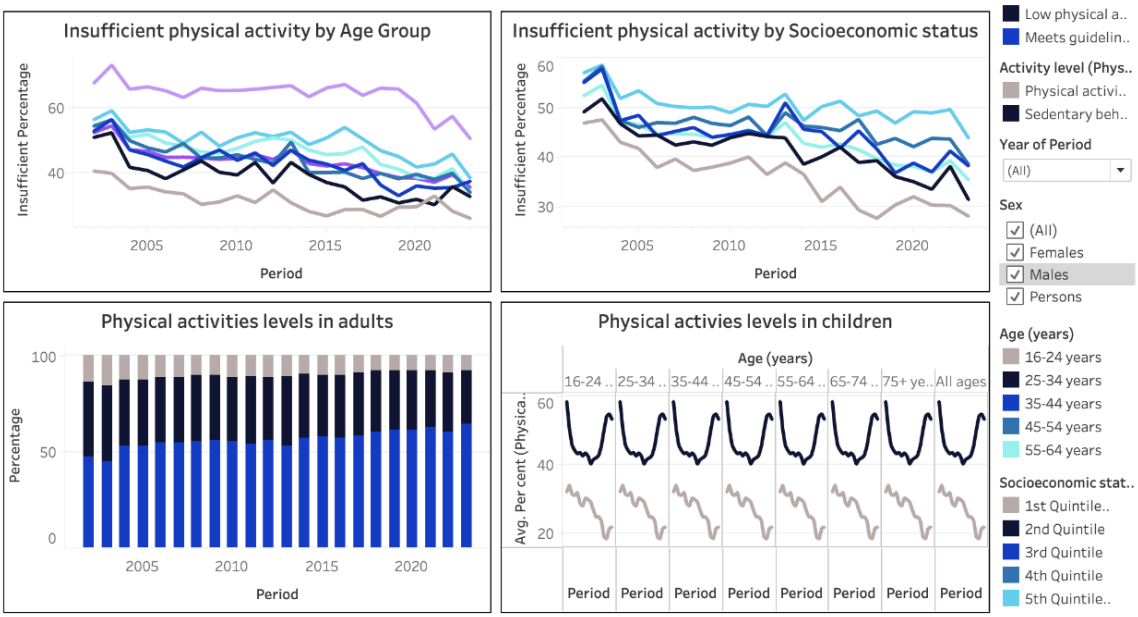


Figure 18: Physical activity between Demographics and Regions

Implications:

- Although physical activity levels are improving among adults in NSW, high inactivity rates persist among non-English-speaking communities, remote areas, and socioeconomically disadvantaged populations. These gaps underscore a need for targeted interventions that consider geographical, cultural, and economic barriers to physical activity.

Recommendations:

- **Targeted Programs for High-Risk Groups**: Develop initiatives that promote physical activity among non-English-speaking communities, residents in remote areas, and socioeconomically disadvantaged populations to reduce chronic disease risks.

- **Investment in Accessible Facilities**: Increase infrastructure for accessible fitness and recreational facilities in regional and disadvantaged areas to support active lifestyles, especially for those in high-risk demographics.

- **Awareness Campaigns**: Launch public health campaigns highlighting the importance of physical activity, specifically tailored to cultural and linguistic needs, to improve engagement and participation across diverse communities.

d. Alcohol Consumption

Causes of Diseases Associated with Alcohol Consumption

Excessive or binge drinking significantly impacts cardiovascular and metabolic health. High alcohol intake is associated with elevated blood pressure and weakened heart muscles, contributing to increased cardiovascular disease risk (Mukamal & Rimm, 2001; Ronksley et al., 2011). Additionally, heavy drinking impairs insulin sensitivity, crucial for blood glucose regulation, raising the risk of Type 2 diabetes (Koppes et al., 2005; American Diabetes Association, n.d.). Even occasional binge drinking can cause sudden spikes in blood glucose and blood pressure, compounding long-term risks for heart and metabolic health (American Diabetes Association, n.d.; Harvard Health Publishing, 2023).

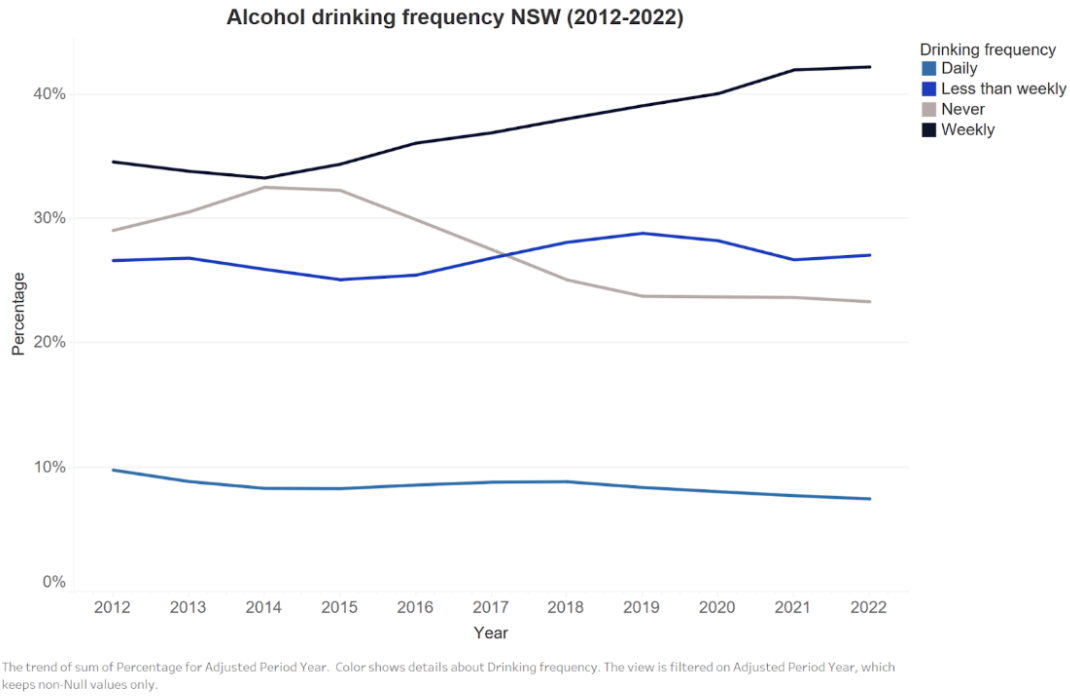


Figure 19: Alcohol Consumption Trends in New South Wales (NSW)

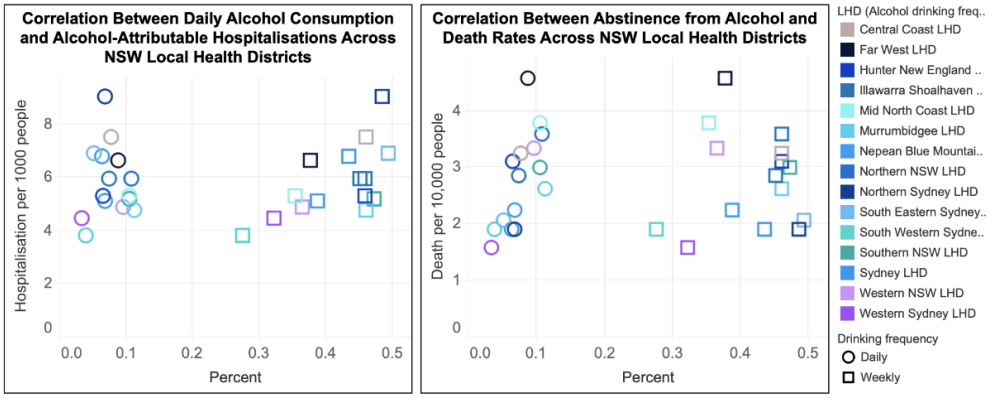


Figure 20. Relationship Between Alcohol Consumption Patterns and Health Outcomes Across NSW Local Health Districts

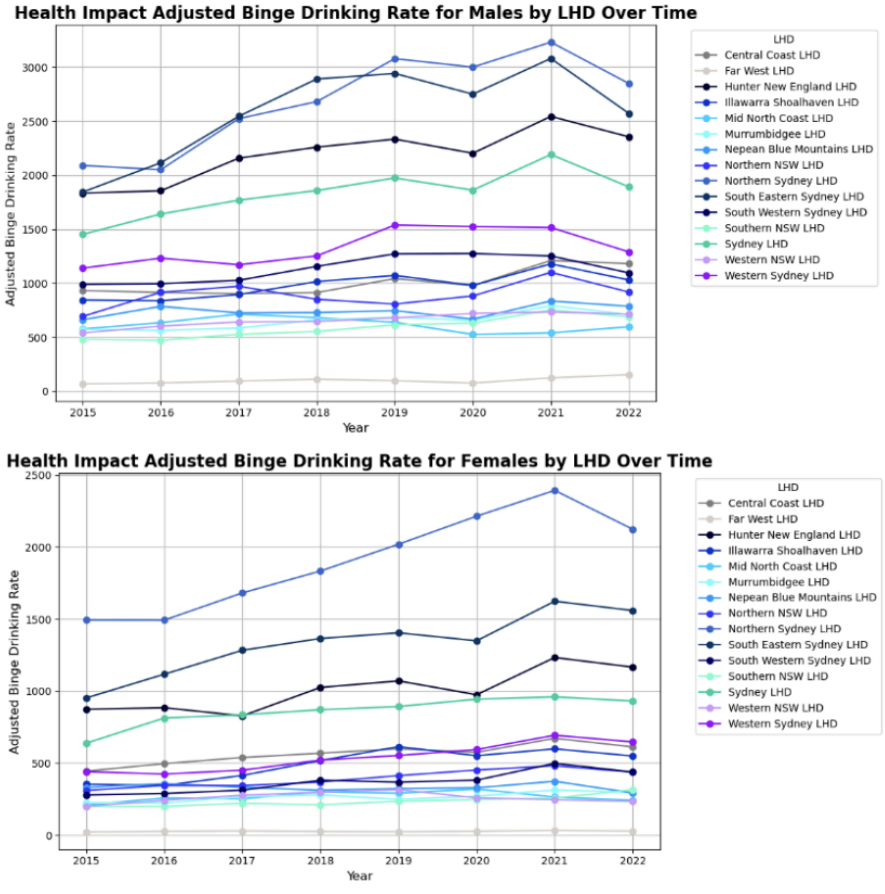


Figure 21. Trends in Health Impact Adjusted Binge Drinking Rates by both GenderS Across NSW Local Health Districts (2015–2022)

Health Impact Adjusted Binge Drinking Rate:

Health Impact Adjusted Binge Drinking Rate = *Binge Drinking Percentage*×*(Alcohol Attributable Hospitalizations*+*Alcohol Related Emergency Visits)*

This metric, along with a correlation matrix of binge drinking and chronic disease indicators, provides insight into the relationship between drinking patterns and health outcomes.

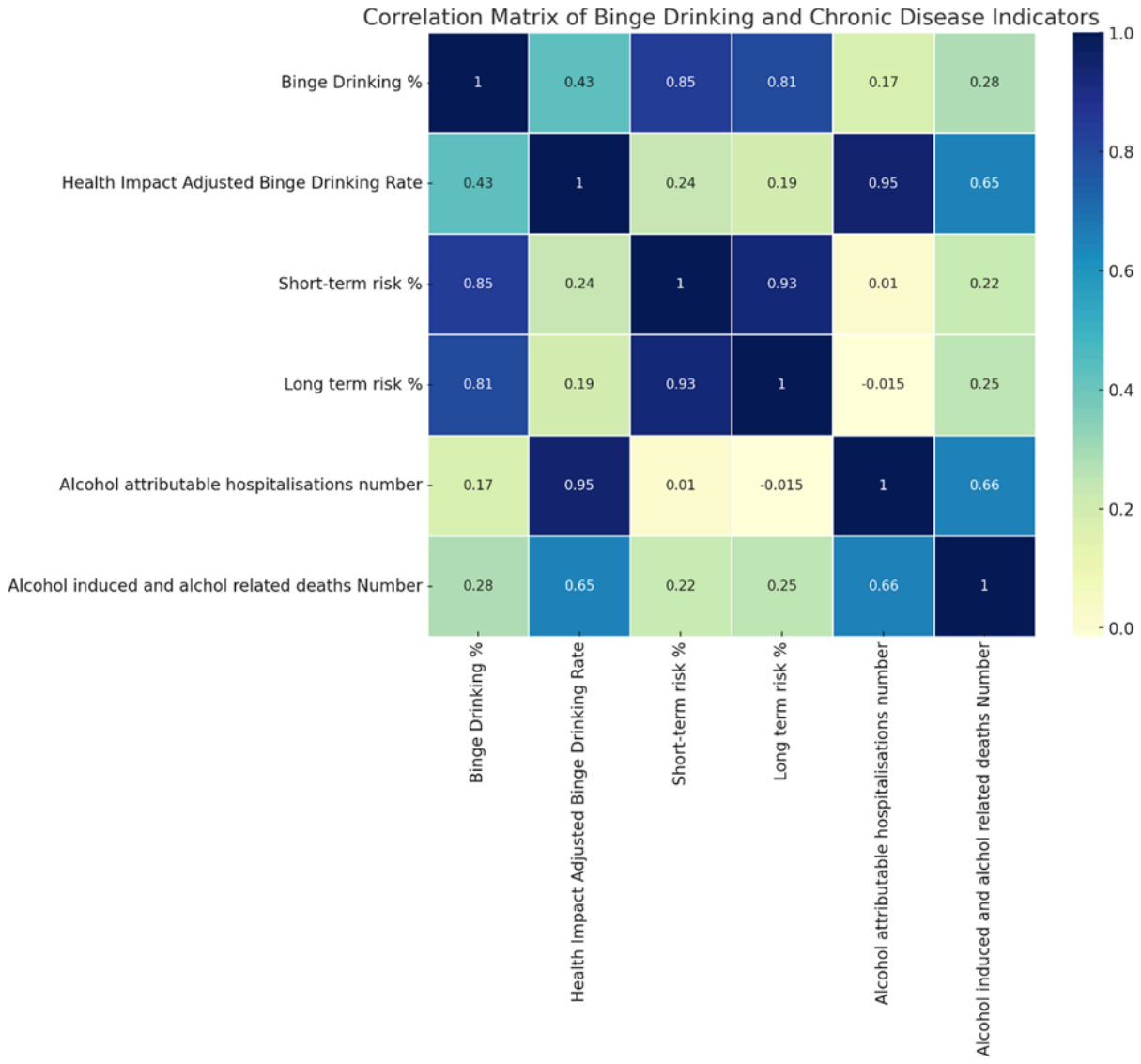


Figure 22. Correlation Matrix of Binge Drinking and Chronic Disease Indicators

Key Findings:

In NSW

- Over the last decade, NSW has seen notable shifts in drinking patterns, with a steady increase in weekly alcohol consumption and a decline in abstinence rates (NSW Health, 2023).

- Social norms around alcohol consumption are shifting, with more individuals drinking regularly and fewer abstaining.

- Daily drinking rates remain low, but weekly drinking has increased, raising potential long-term health risks, particularly for cardiovascular and metabolic health.

- These trends highlight the need for public health initiatives focused on promoting responsible drinking and mitigating risks associated with regular alcohol intake.

Correlations with Health Outcomes

- **Binge Drinking % and Short-term Risk %**: Strong positive correlation (0.85), indicating frequent binge drinking links to higher short-term health risks.

- **Binge Drinking % and Long-term Risk %**: High correlation (0.81), showing a similar association with long-term health risks.

- **Health Impact Adjusted Binge Drinking Rate and Alcohol-Attributable Hospitalizations**: Very strong correlation (0.95), confirming binge drinking's substantial impact on healthcare resources.

- **Health Impact Adjusted Binge Drinking Rate and Alcohol-Related Deaths**: Moderate correlation (0.65), suggesting that higher binge drinking rates lead to more severe health outcomes in affected districts.

Between LHDs

- The Health Impact Adjusted Binge Drinking Rates analysis shows significant regional differences across NSW, with the highest rates in Northern Sydney, South Eastern Sydney, Hunter New England, and Sydney.

- These areas face increased strain on healthcare resources due to elevated alcohol-related conditions, underscoring the need for targeted public health initiatives to curb binge drinking.

Recommendations:

Given the identified risks, we propose the following measures to mitigate alcohol-related health impacts in NSW:

1. **Implement Targeted Public Health Interventions**: Launch alcohol awareness campaigns specifically tailored for Northern Sydney, South Eastern Sydney, Hunter New England, and Sydney. These campaigns should focus on the risks of binge drinking and provide resources for individuals seeking to moderate their alcohol intake.

2. **Community Education Initiatives:** Work with local communities in these districts to promote awareness of responsible drinking habits and alternatives to alcohol use for coping with stress or social pressures.

3. **Strengthen Alcohol Policies**: Advocate for stricter alcohol regulations and policies in these high-impact areas to curb excessive drinking behaviours.

4. **Support Services for Healthier Lifestyles**: Expand mental and physical health services in these regions to offer support systems that encourage healthier lifestyles and reduce reliance on alcohol.

4. Government Healthcare System on Chronic Disease Management

Factors contributing to chronic conditions also increase Potentially Preventable Hospitalisations (PPH) across NSW Local Health Districts (LHDs). Examining the effects of

socioeconomic status and healthcare access on PPH rates reveals disparities and highlights areas for targeted interventions.

PPH rates indicate health inequalities, with conditions like asthma, diabetes, and iron deficiency often manageable through lifestyle changes or primary care. Addressing these disparities can improve health outcomes across NSW (AIHW, 2023).

a. PPH Across NSW Local Health Districts

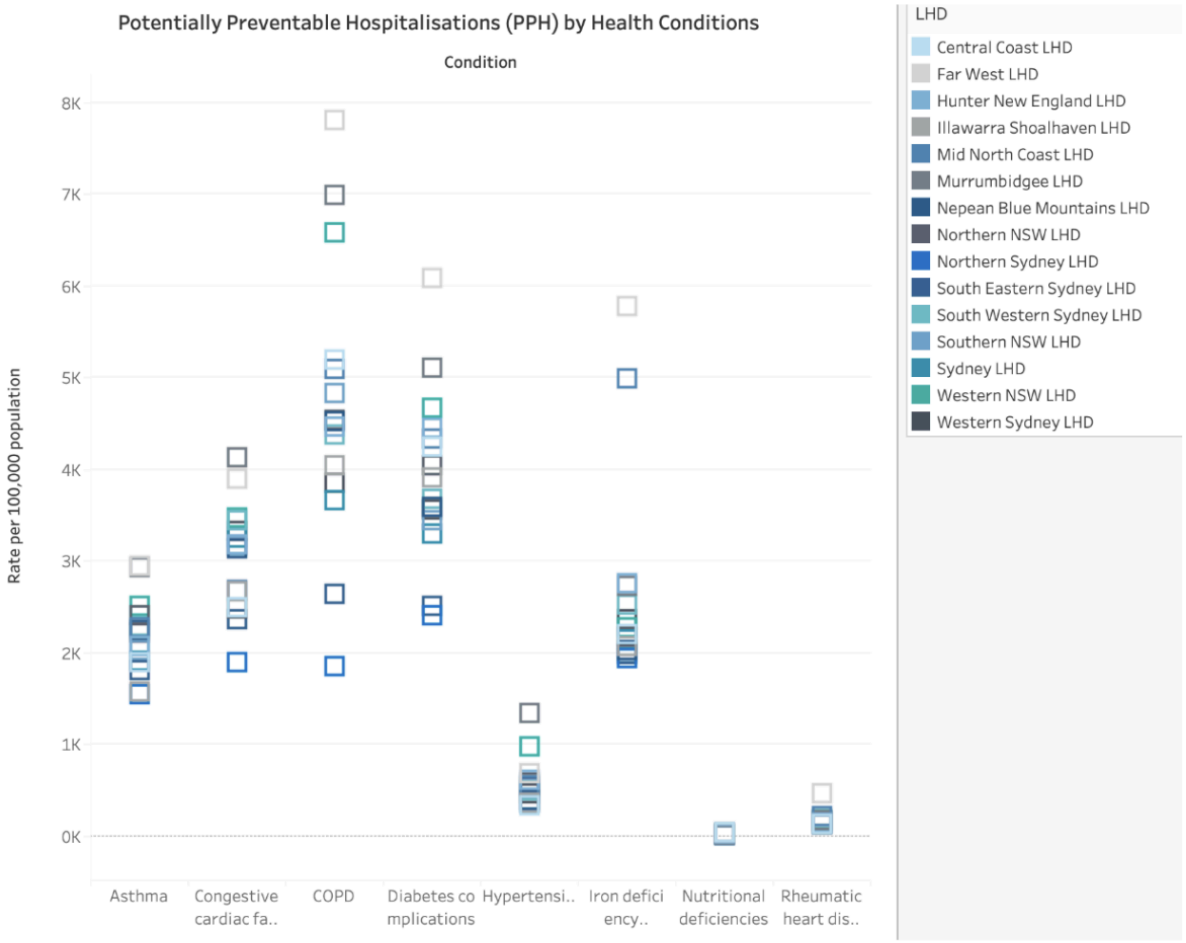


Figure 23: PPH by Health Conditions

Findings:

- Far West LHD has the highest PPH rates for conditions like COPD and diabetes complications, indicating potential gaps in timely healthcare access.

- Murrumbidgee LHD also shows high PPH rates for conditions like urinary tract infections and COPD, suggesting similar healthcare accessibility issues.

b. Rate of Health Conditions across Various Districts (2001-2021)

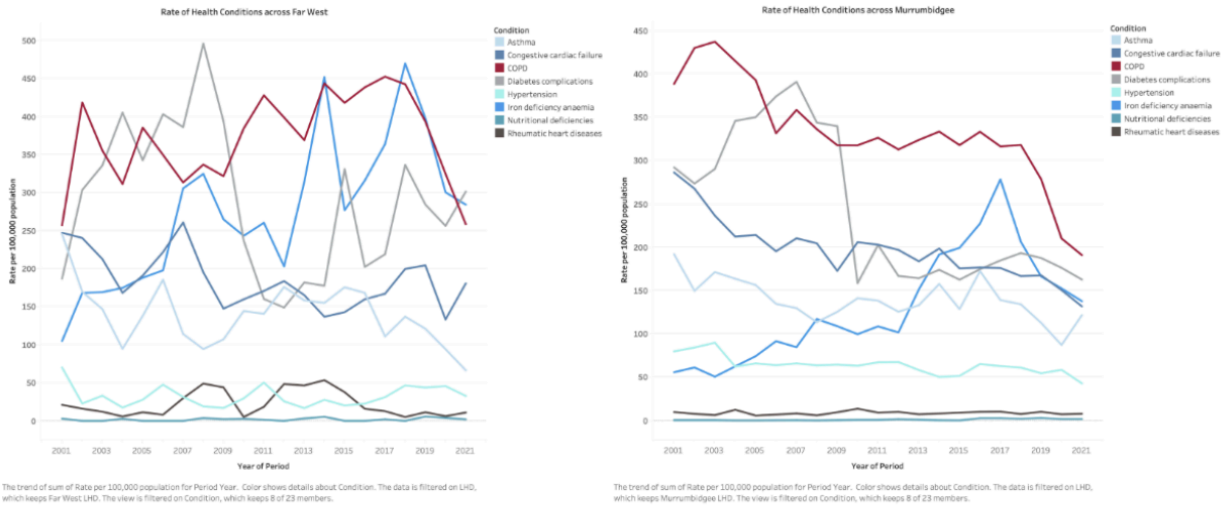


Figure 24: Health Condition Across Districts

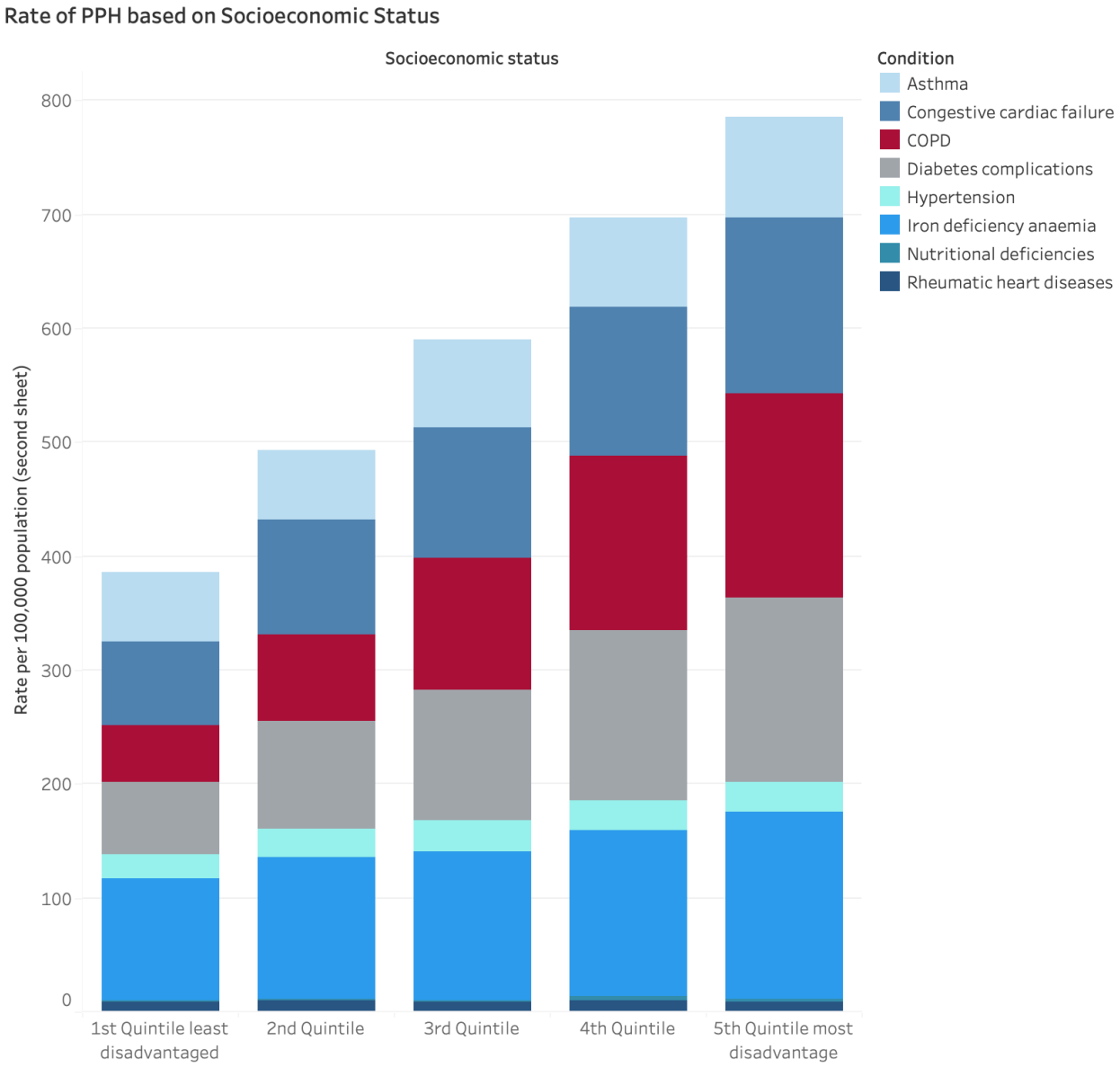
Findings:

Chronic condition rates generally declined across districts, likely due to increased government spending on chronic disease management, particularly since the 2015 Chronic Disease Management Program (Integrated Care for Patients With Chronic Conditions, n.d.-b). Some districts, such as:

- **Murrumbidgee**: Show an increase in asthma rates.
- **Far West**: Display rising rates of diabetes and congestive cardiac failure.

These variations may result from the uneven distribution of healthcare resources and differing intervention effectiveness across districts.

c. Rate of Preventable hospitalisation based on Socioeconomic status



Sum of Rate per 100,000 population (second sheet) for each Socioeconomic status. Color shows details about Condition (second sheet). The data is filtered on Condition, which excludes Total. The view is filtered on Socioeconomic status and Condition (second sheet). The Socioeconomic status filter keeps 1st Quintile least disadvantaged, 2nd Quintile, 3rd Quintile, 4th Quintile and 5th Quintile most disadvantage. The Condition (second sheet) filter excludes Angina, Bronchiectasis, Convulsions and epilepsy, Eclampsia and Gangrene.

Figure 25: PPH based on Socioeconomic Status (SES) Levels

Findings:

- **High PPH Rates in Lower SES Quintiles:** Conditions like COPD, diabetes complications, and congestive cardiac failure show the highest PPH rates, particularly in the 4th and 5th SES quintiles. This trend suggests inequalities in access to primary and preventive care.

- **Moderate Disparities:** Conditions such as asthma vary across SES levels, with higher rates in the most disadvantaged quintiles, further indicating potential socioeconomic barriers to healthcare access.

d. Utilisation of Primary Care Services

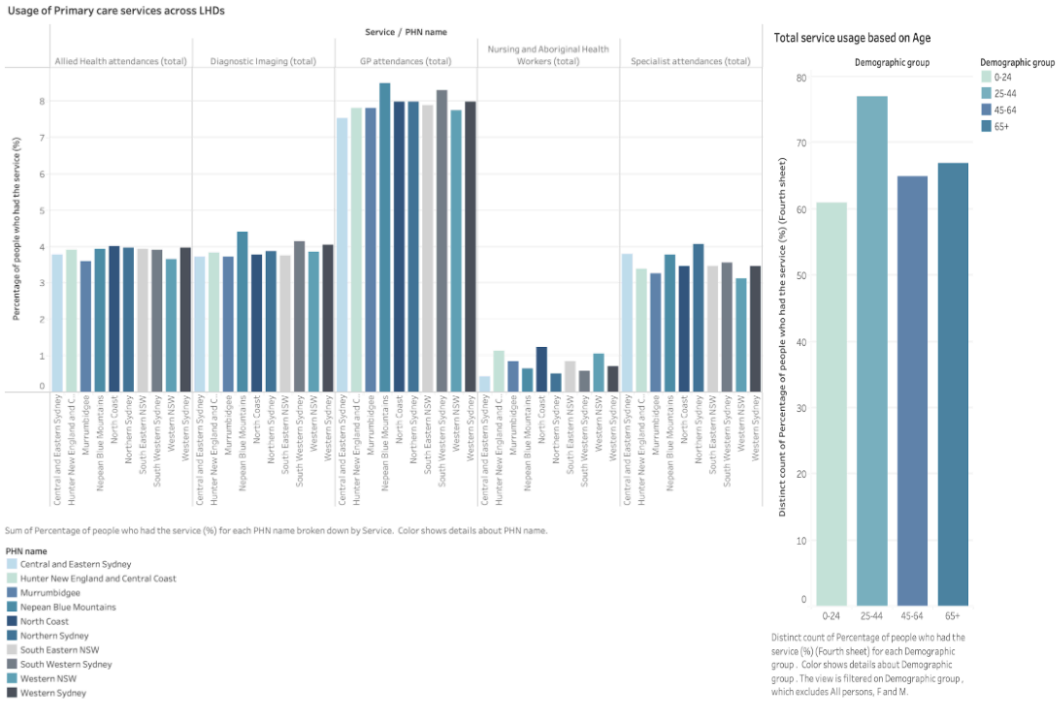


Figure 26: Primary Care service

This research focuses on primary care access as a key determinant of Potentially Preventable Hospitalisations (PPH). The graph above illustrates primary care service usage across districts, with an additional bar graph showing service utilisation by age group, providing demographic insights into primary care users.

Findings:

- **GP Services**: General Practitioners are the most frequently used primary care service, while Aboriginal Health Workers have the lowest utilization rates. This may reflect the role of GPs as the primary point of contact in the healthcare system.

- **Age-Based Utilisation**: Primary care services are most commonly used by individuals aged 65+ and 24-44, with lower usage among those aged 0-24, likely due to overall better health in younger populations and reliance on guardians for healthcare needs.

e. Disparities in Healthcare Access

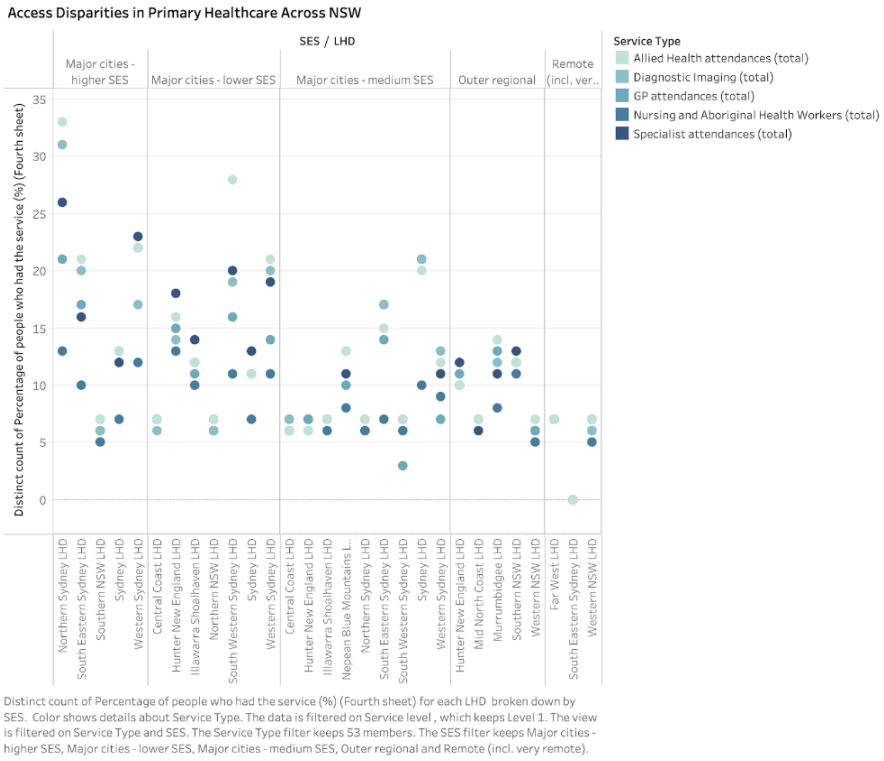


Figure 27: Healthcare Across NSW

The visualisation indicates significant disparities in healthcare service utilisation across NSW, influenced by socioeconomic status (SES) and regional differences.

Findings:

- **Higher-SES Areas**: Residents in high-SES regions have greater access to healthcare, with major cities showing elevated use of specialist and diagnostic imaging services, indicating access to advanced care.

- **Rural and Remote Regions**: These areas rely mainly on GPs and allied health services, highlighting limited access to specialist care.

- **Inner Regional Areas**: Service utilisation varies, reflecting inconsistencies in healthcare access across NSW.

- **Implications**: Regional clusters of service types expose healthcare inequalities, emphasising the need for targeted interventions to improve access to specialist and diagnostic services in underserved areas.

f. Target Interventions:

NSW should expand access to remote areas (Far West, Murrumbidgee) for timely primary care through telehealth, mobile clinics, and culturally targeted programs, alongside initiatives to boost health literacy and preventive care engagement in high-risk communities.

Along with that, specialist care should be made more accessible to reduce over-reliance on the GP, especially for conditions such as cardiovascular diseases that can benefit from getting specialist treatment.

Conclusion

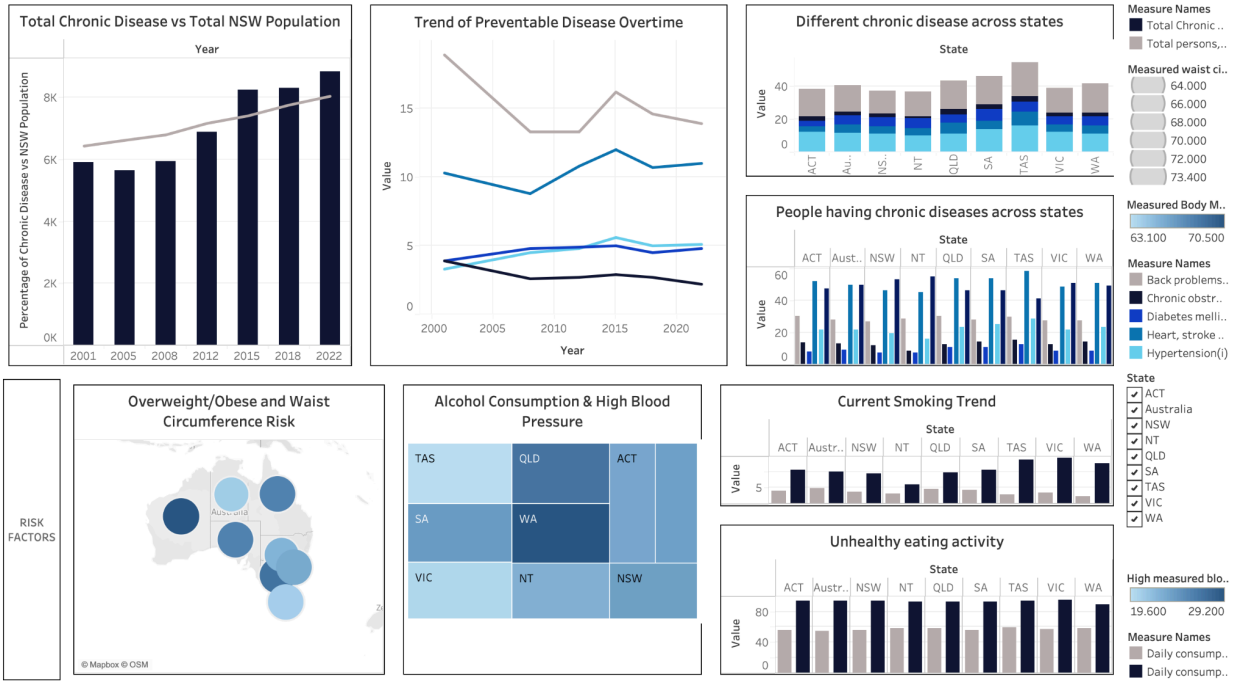
This report highlights the pressing issues of chronic disease prevalence, preventable hospitalisations, and healthcare disparities across New South Wales, emphasising the need for targeted interventions. Key findings show that lifestyle factors such as obesity, smoking, poor diet, and alcohol consumption significantly increase preventable hospitalisations, particularly in lower socioeconomic and regional areas like Far West and Murrumbidgee. Disparities in

cardiovascular health are pronounced among men and older age groups, with regional areas facing higher mortality rates, likely due to limited healthcare access and economic challenges.

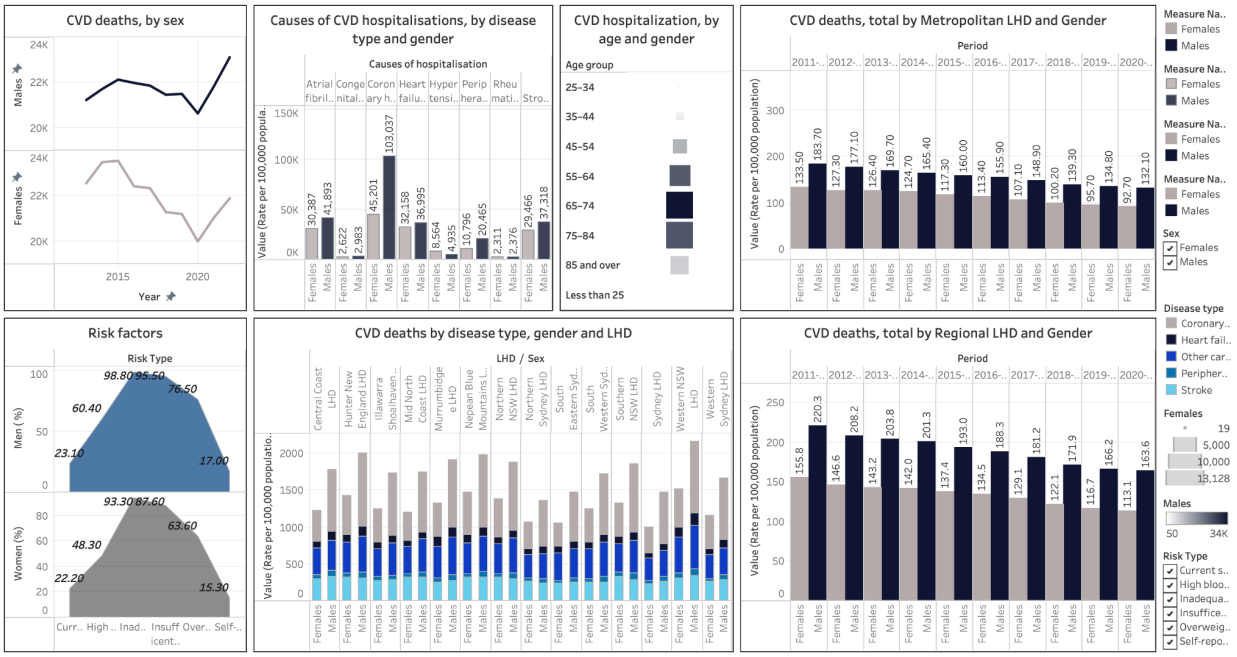
To address these challenges, region-specific public health initiatives are essential, alongside expanded healthcare access through telehealth and mobile clinics. Targeted campaigns focusing on healthy lifestyle habits, alcohol moderation, and accessible preventive care services can mitigate chronic disease risks, promote health equity, and reduce healthcare strain across NSW. By implementing these strategies, NSW Health can foster a healthier, more equitable state with improved outcomes in chronic disease management and prevention.

Appendices

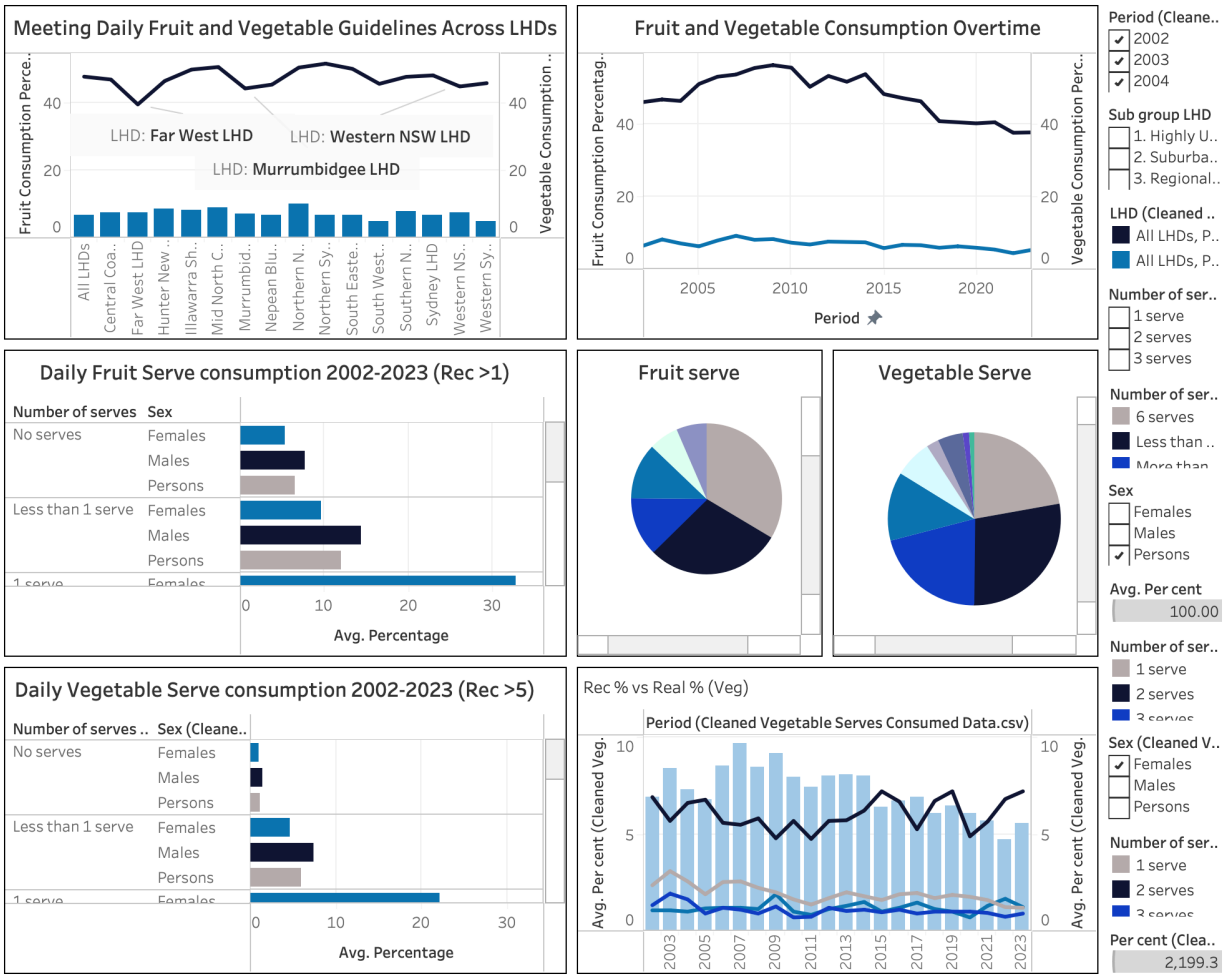
Appendix A: Dashboard Screenshots



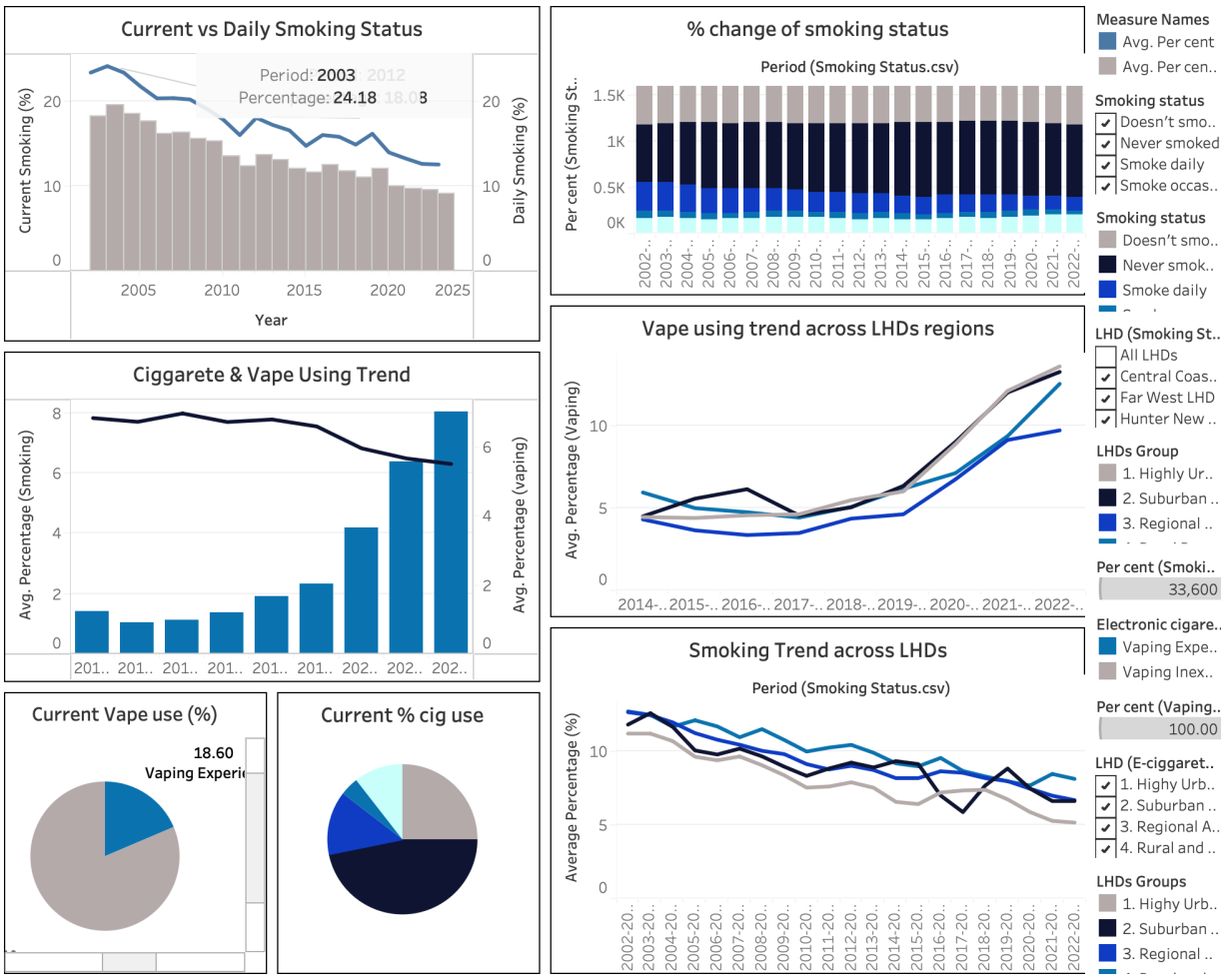
Dashboard 1: Overview of Chronic Disease across different states



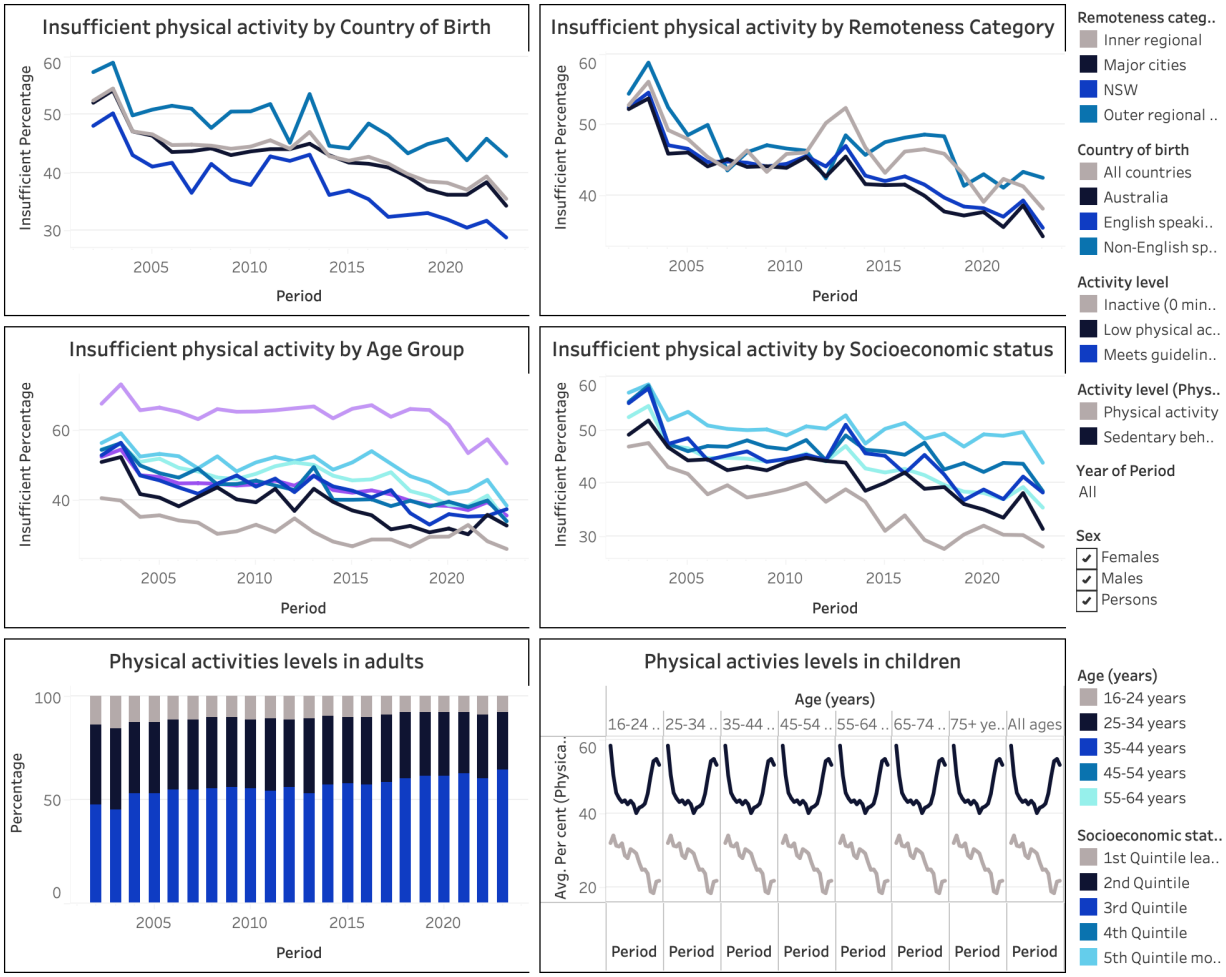
Dashboard 2: Cardiovascular Disease



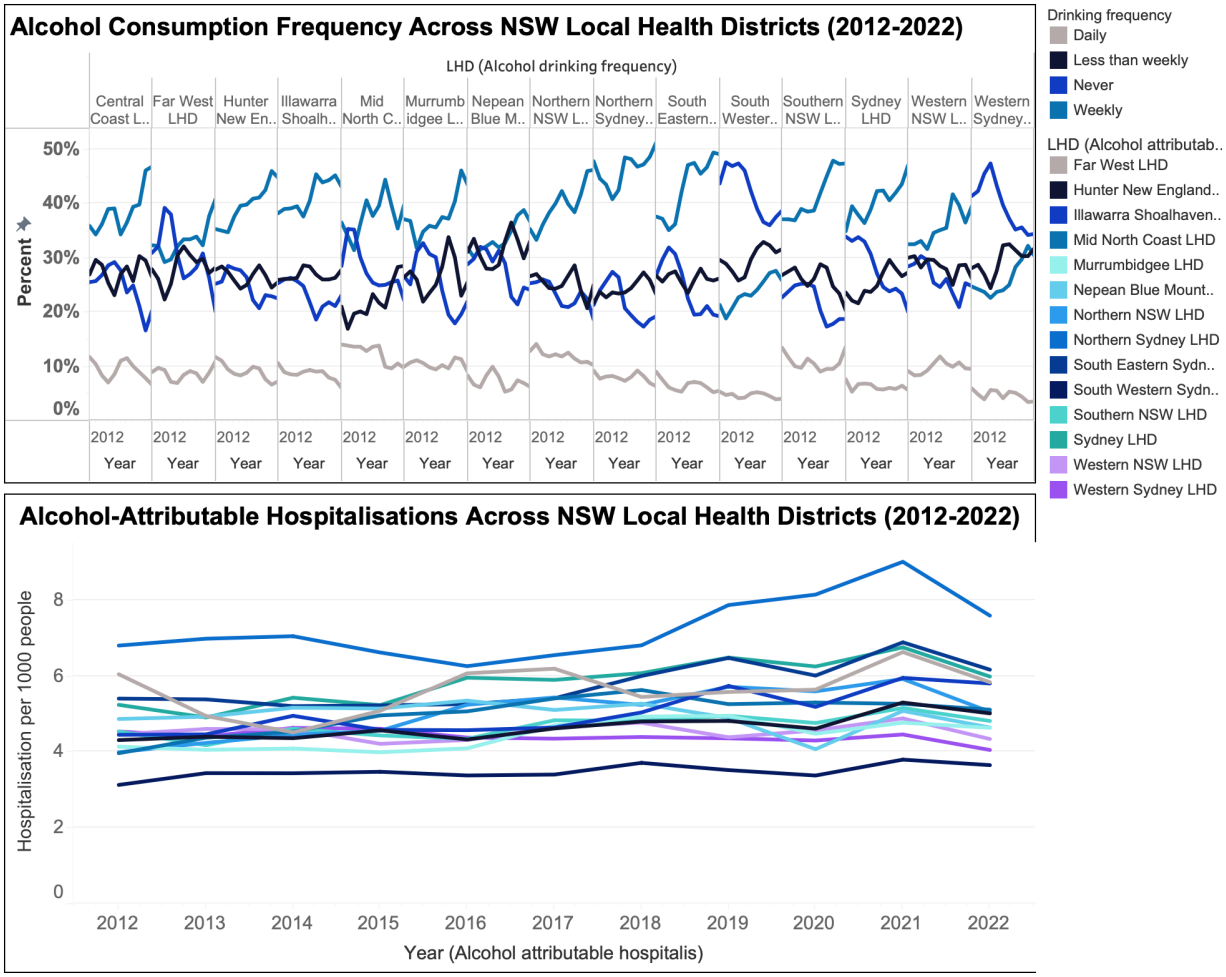
Dashboard 3: Risk factors: Fruit & Vegetable Intake



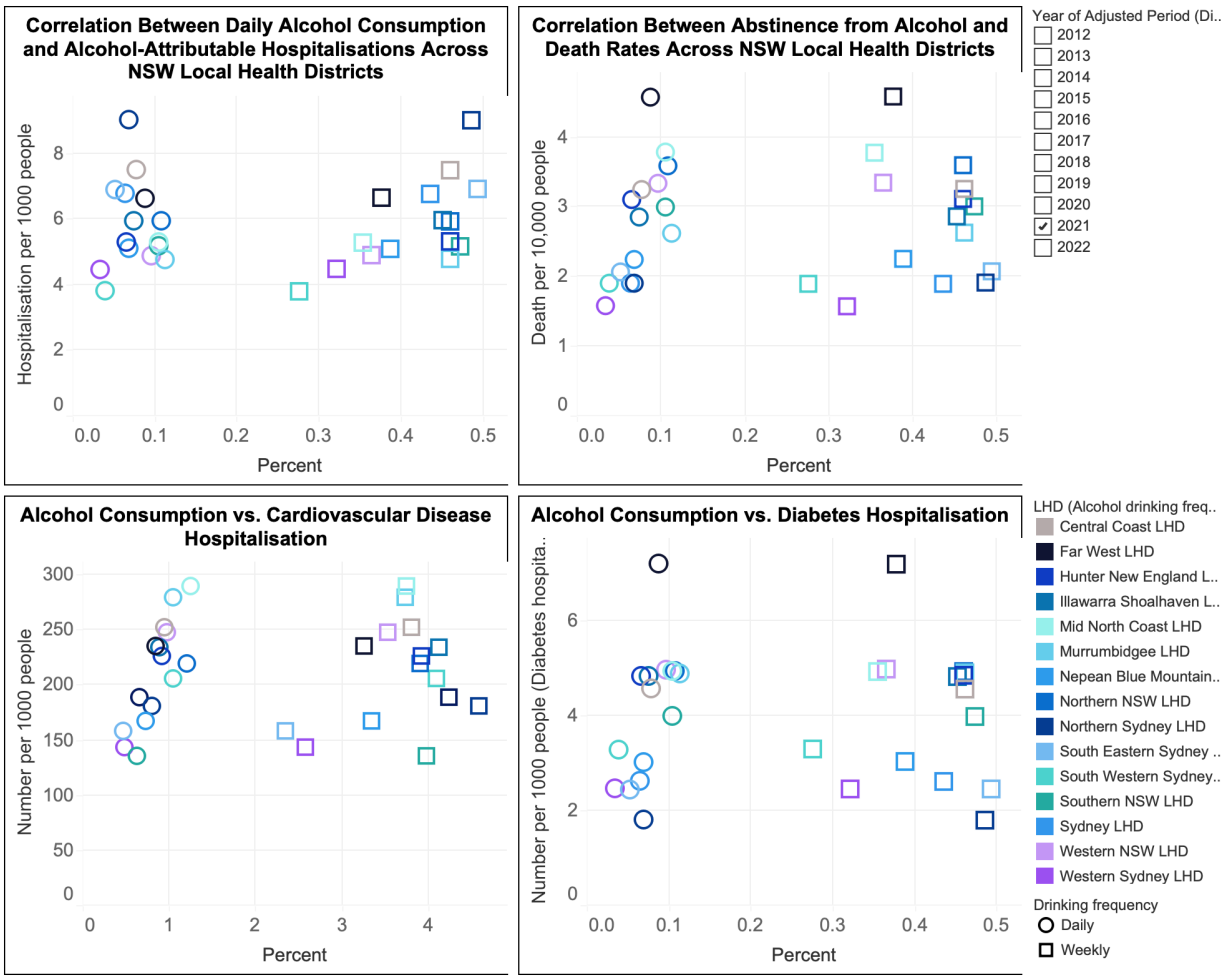
Dashboard 4: Risk factors: Smoking & Vaping



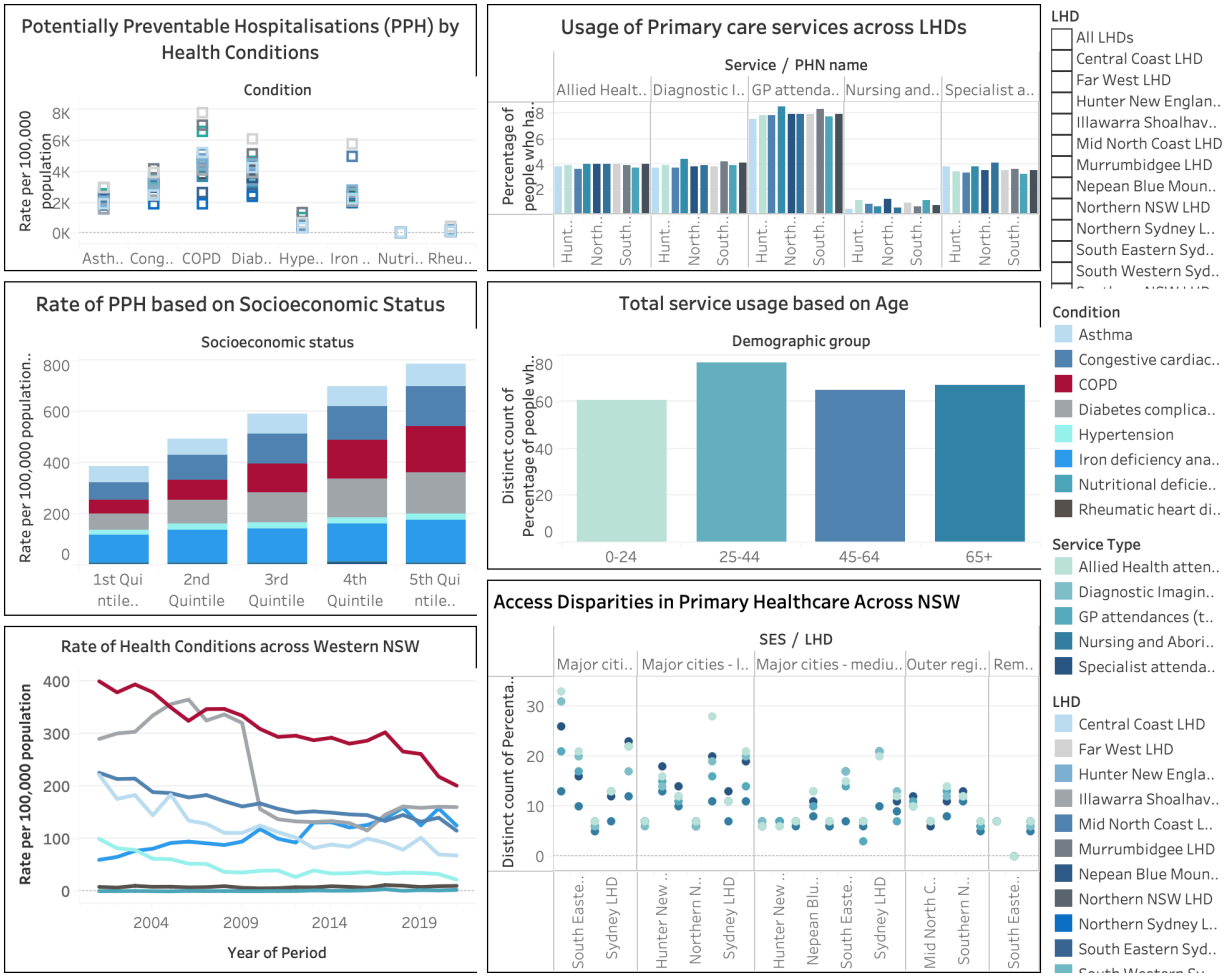
Dashboard 5: Risk factors: Insufficient physical activity



Dashboard 6: Risk factors: Alcohol Consumption overtime



Dashboard 7: Risk factors: Alcohol consumption and its correlation with hospitalisations



Dashboard 8: Disparities in Healthcare System

Appendix B: Acknowledgment Statement of Use of GAITs

I/we acknowledge that I/we have used GAITs (e.g., ChatGPT) in doing this project, which is permitted in the assignment instructions. This is how I/we used GAITS: ChatGPT was used to elaborate on our ideas, refine sections of the report, and ensure coherence across sections. Additionally, it provided coding support for work in Python. All insights, interpretations, and recommendations presented in this report were original and based on the data collected and analysed by our team, with ChatGPT serving as a supplementary tool to support writing clarity, structure, and organisation.

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