LOCALITY PLANNING PROFILE
West Rodney

2013

Suggested citation: Martin, S. Locality Planning Profile: West Rodney. Auckland: Waitemata District Health Board, 2013.

Compiled: December 2013 by Waitemata District Health Board,
Private Bag 93503, Takapuna, North Shore 0740

Foreword

A locality is defined as a geographic area that encompasses all people usually resident in the area. A locality approach aims to place local communities at the heart of health service planning and delivery, and better co-ordinate and integrate health services at the locality level. This report was commissioned as a contribution to the on-going locality planning work underway in Auckland North.

This is the second locality planning profile to be developed by Waitemata District Health Board (DHB). The first publication was the West Auckland Integrated Care Project Locality and Cluster Level Analysis completed in October 2012.

Locality planning for Auckland North began in 2013 and is supported by the Auckland North Localities Operational Group. The group supports a collaborative approach between Waitemata DHB, Waitemata PHO Limited, ProCare Networks Limited, Te Rūnanga o Ngāti Whātua and our communities to help drive locality planning for Auckland North.

An initial focus has been placed on only part of the Rodney Local Board Area which will be called "West Rodney". This locality was chosen due to being an area of high needs and includes five marae of Ngāti Whātua referred to as South Kaipara: Araparera Marae, Haranui Marae, Kakanui Marae, Puatahi Marae and Rēweti Marae.

West Rodney is a unique rural community with established communities and provider networks. It includes six general practices from both Waitemata PHO Limited and ProCare Networks Limited.

This locality profile makes a valuable contribution to an understanding of the particular health needs in West Rodney, and will be of use in informing health planning for the area.

Many thanks to Sam Martin, Analyst for compiling this report and the resource that it provides for the on-going locality planning work in Auckland North.

Ailsa Claire
Lead Chief Executive Officer for Primary Care
Auckland and Waitemata District Health Boards

Dr Dale Bramley
Chief Executive Officer
Waitemata District Health Board

Executive Summary

Introduction

This executive summary briefly describes the aims, methods, and content of this West Rodney population and health profile. It includes a brief summary of the demography and health status of the West Rodney population. It looks at both the population domiciled in West Rodney as well as the enrolled populations of the six GP practices in the West Rodney area.

Aims

The purpose of this profile is to describe the health needs, service use, and population characteristics of the West Rodney area. The report attempts to describe these through looking at different aspects of the population groups of interest including demographics, social and economic factors, health status, and utilisation of health services.

Limitations

It is important to recognise the limitations of this profile. The profile is intended to provide an overview and a starting point for further discussion. We acknowledge that only a small part of the overall West Rodney picture is presented in this profile. It should be read and critiqued alongside on-going consultation with the community, discussion with health practitioners, and review of other sources of quantitative and qualitative information applicable to West Rodney.

Specifically, a few important limitations should be kept in mind:

- The report focuses largely on secondary care data to give a picture of the health need of the population.
- The report does not include a comprehensive analysis of mental health need.
- Due to the relatively small population of West Rodney some measures when broken down by age and ethnicity become too small to provide reliable guides. We have noted where this has been an issue throughout the profile.

Methods

This report was written using routinely collected data and results from published reports. Most information was of a quantitative nature. Some detail is provided below outlining particular methods used in the analysis of the data.

Age standardisation: Many rates presented below are age-standardised. The rates are age-standardised using the World Health Organisation (WHO) standard population. By taking age-specific rates for each population and applying these to the same standard hypothetical population by age group, a valid comparison between each population can be made which accounts for the difference in the population's respective age structures (See Appendix 1 for the WHO standard population).

Data matching: For the analysis of the enrolled population in the second part of the report the population base is determined by the aggregated enrolled population of each individual West Rodney practice. To determine this population group's access of secondary services, PHO Enrolment data has been linked with secondary services data by encrypted NHI. While practice registers will

change over time, for the purposes of this analysis the enrolled population was determined by a snapshot as at 2013 Quarter 1.

Summary of Findings

West Rodney in this report is defined by Census Area Unit boundaries and makes up about half of the Rodney Local Board Area. The estimated population of West Rodney for 2012 was 32,260, which accounts for about 2% of the total Auckland population. West Rodney had an age structure in 2012 largely similar to that of Waitemata DHB as a whole, with a slightly higher proportion of children and smaller proportion of adults in the 20 to 40 years age brackets.

Compared to Waitemata DHB, West Rodney had a slightly higher proportion of Māori (11% vs. 10%) but a much smaller proportion of Asian and Pacific people. A smaller proportion of people lived in deprived areas in West Rodney compared to the DHB. However, within West Rodney differences between Māori and Non-Māori in terms of deprivation were evident.

In terms of projected population growth West Rodney is expected to grow at a faster rate than that of the Waitemata DHB population as a whole (48% vs. 36% over 20 years). This population is also ageing, with the 65+ population expected to increase from 9% of the total to 19% (cf. Waitemata DHB 11% to 17%) from 2006 to 2026.

Based on three years mortality data (2009-2011), the life expectancy at birth for West Rodney was 83 years, slightly lower than 84 years for the DHB (but not a statistically significant difference). The population numbers were too small to show any statistically significant differences in life expectancy by ethnicity for West Rodney. However, between 2009 and 2011 while 50% of deaths among Non-Māori were of people aged 75+ only 20% of Māori deaths were of people aged 75+. For West Rodney adults the top three conditions contributing to Potentially Avoidable Mortality (PAM) were coronary disease, suicide, and breast cancer. For Māori adults the top three PAM conditions were diabetes, coronary disease, and cerebrovascular diseases.

For secondary services, the age-standardised rate of Potentially Avoidable Hospitalisation (PAH) for West Rodney adults (2,572 per 100,000) was lower than the Waitemata DHB total (3,267 per 100,000). The top three PAH conditions for adults were angina and chest pain, myocardial infarction, and cellulitis. For Māori adults the top three PAH conditions were angina and chest pain, cellulitis, and gastroenteritis. Similarly, West Rodney had a lower Ambulatory Sensitive Hospitalisation (ASH) rate compared with Waitemata DHB as a whole (1,805 per 100,000 vs. 2,331 per 100,000). The top three ASH conditions for West Rodney adults, both Māori and non-Māori were angina and chest pain, cellulitis, and gastroenteritis/dehydration. A greater proportion of acute admissions were considered avoidable for West Rodney Māori adults compared with Non-Māori.

The number of West Rodney children meant that rates for measures such as infant mortality, child mortality, and low birth rate did not provide for statistically significant differences from Waitemata DHB totals. In terms of secondary services, West Rodney children had a lower PAH and ASH rate. The top three ASH conditions for West Rodney children were dental conditions, gastroenteritis/dehydration, and asthma. For Māori children the top three ASH conditions were dental conditions, asthma, and cellulitis.

The analysis of the enrolled population of the West Rodney practices showed similar results. Differences between Māori and Non-Māori are noticeable in terms of ASH rates and acute admission rates. For enrolled adults, angina and chest pain was the top ASH condition and for children, dental

conditions. For enrolled Māori adults the top ASH condition was also cellulitis. For enrolled Māori children the top ASH condition was also dental conditions.

Conclusions

The analysis on the whole shows the West Rodney population to have a relatively good health status when compared with the Waitemata DHB total. However, two considerations are important in interpreting these results. First, the analysis has focussed on secondary services utilisation as a measure of relative health status. Low rates could potentially reflect a lack of access to service or unmet need; the data alone cannot answer this question. Further, there are clear differences within the West Rodney population between the health status of Māori and Non-Māori. Even given the relatively small size of West Rodney there is a diversity of socioeconomic and health status within the population which attention should be paid to.

Further, given the small size of West Rodney's population care should be taken in interpreting these results. There are limitations to the data and the focus of the profile. Further work can be done to explore more closely particular areas of interest and concern which arise from this profile and other work in the West Rodney community.

Acknowledgements

The author would like to thank all of the people who have contributed in different ways to the completion of this report.

In particular the members of the Auckland North Localities Operational Group: Dr Stuart Jenkins (Chair), Dr Sue Hawken (Clinical Director), Lara Smith (Project Manager), Heta Tobin (Kaumatua), Shayne Wijohn (Te Rūnanga o Ngāti Whātua), Craig Murray (Waitemata PHO Limited), Brian O'Shea (ProCare Networks Limited), Anne Curtis (Health Link North), Kate Rhind (Healthpoint) and Jean McQueen, Tim Wood, Rachel Mattison, Imelda King, Wai Vercoe, Leani Sandford, Wendy Hook (Waitemata DHB).

The author would also like to thank the six 'West Rodney' general practices for sharing their primary care data for the purposes of locality planning. This data is reported in the second section of the profile.

Country Medical Clinic
Huapai Family Medical Practice
Kaipara Medical Centre
Kumeu Village Medical Centre
Silver Fern Medical Centre
Waimauku Doctors

Special thanks also goes to Dr Sue Crengle, Public Health Physician and Dr Lifeng Zhou, Epidemiologist from Waitemata DHB for their expertise and advice that helped shape this profile.

Abbreviations

ASH	Ambulatory Sensitive Hospitalisations
ARF	Acute Rheumatic Fever
ASR	Age-Standardised Rate
AT&R	Assessment Treatment and Rehabilitation
CI	Confidence Interval
COPD	Chronic Obstructive Pulmonary Disease
CORD	Chronic Obstructive Respiratory Disease
CVD	Cardiovascular Disease
DHB	District Health Board
ED	Emergency Department
GP	General Practitioner
HNA	Health Needs Assessment
ICD	International Classification of Disease
MoH	Ministry of Health
NHI	National Health Index
NMDS	National Minimum Data Set
NZ	New Zealand
NZDep	New Zealand Deprivation Index
PAH	Potentially Avoidable Hospitalisation
PAM	Potentially Avoidable Mortality
PHO	Primary Health Organisation
PUC	Purchase Unit Code
SNZ	Statistics New Zealand
SUDI	Sudden Unexpected Death in Infancy
WDHB	Waitemata District Health Board
WHO	World Health Organisation

Table of Contents

List of Figures

List of Tables

List of Maps

WEST RODNEY DOMICILED POPULATION

The first part of this profile focusses on the demographics and health needs of the population domiciled in the West Rodney area as defined below. This included all people living in the West Rodney area whether they were enrolled with a West Rodney GP Practice, enrolled with a practice outside the area or not enrolled at all.

The second part of this profile will take a closer look at those who were enrolled with the six West Rodney practices.

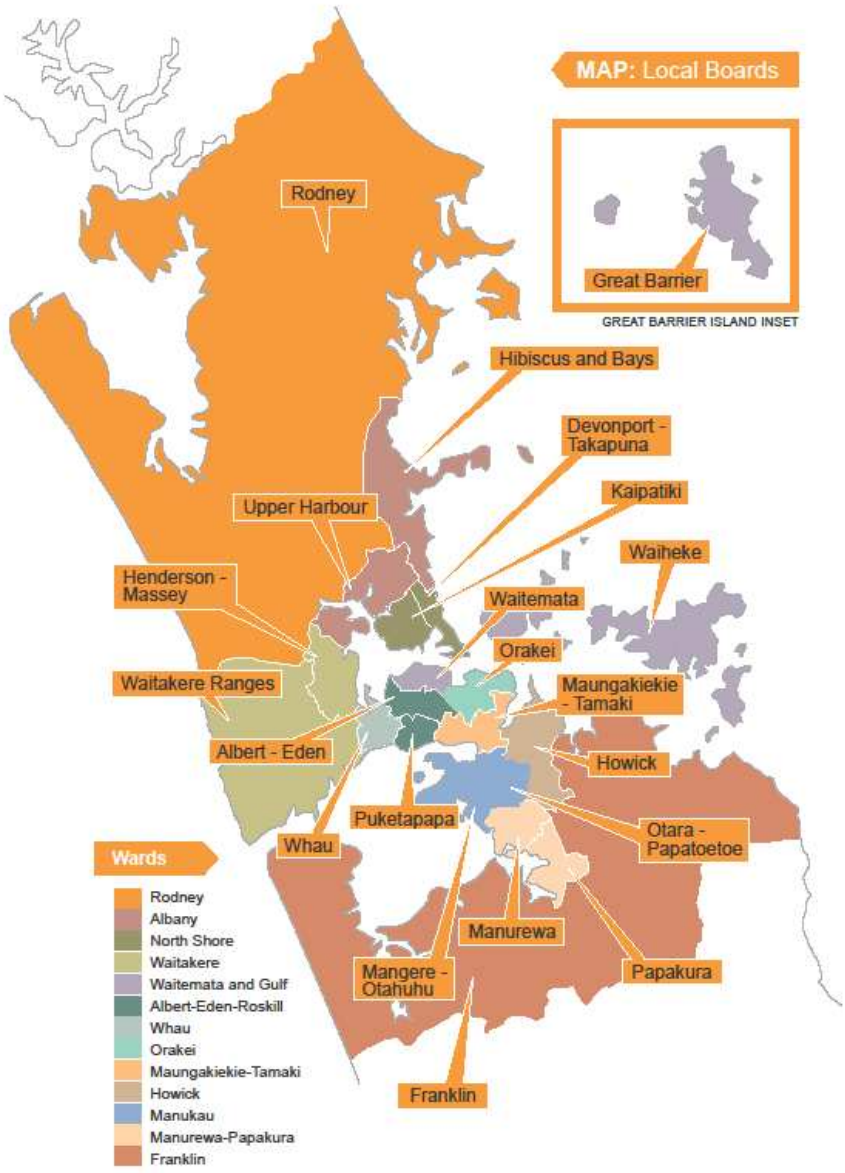
1. Population Demographics

1.1 West Rodney Boundaries

There are three broad areas in Auckland: West Auckland, Auckland North and Central Auckland. The map below shows the Rodney Ward / Local Board's place in the context of the greater Auckland area (The Rodney Ward and Local Board are geographically the same area).

The estimated population of the Rodney Ward for 2012 was 57,100. This made up about 3.8% of the Auckland total in 2012 (1,507,600) (See maps 1 – 2 below).

Map 1: Auckland Region by Local Board



Map 2: Rodney Ward

Source: Auckland Council, 2011

For the purposes of locality planning an initial focus has been placed on only part of the Rodney Local Board Area which will be called “West Rodney”. West Rodney is pictured below and is defined by the following 2013 Census Area Units (Table 1).

Some parts of the Waipareira West and Rewiti CAUs cross over into the Waitakere Ranges Local Board Area. However, for the purposes of analysis they are included in West Rodney with the acknowledgement that there is a small amount of population cross-over. This will not impact in a significant way our understanding of West Rodney’s population profile and health need (See Table 1 and Map 3 below).

Table 1: West Rodney, 2013 Census Area Units

CAU	CAU Description
505601	Waimauku
505602	Huapai
505603	Riverhead Urban
505604	Kumeu East
505605	Kumeu West
505700	Waipareira West
506400	Paremoremo West
506613	Tauhoa-Puhoi
506642	South Head
506644	Parakai Rural
506645	Parakai Urban
506646	Kaukapakapa Rural
506647	Kaukapakapa
506648	Helensville South
506652	Rewiti
506653	Riverhead
506654	Muriwai Beach
506655	Muriwai Valley
506800	Helensville
513701	Taupaki

Map 3: West Rodney by Census Area Unit

Map 4 below shows the five marae of Ngāti Whātua which are within the South Kaipara (Puatahi in the North to Reweti in the South). These are all within the boundaries of West Rodney as defined by this profile.

Map 4: Mahere O Te Rohe O Ngāti Whātua

1.2 Population Estimate

The estimated population of West Rodney at 30 June 2012 was 32,260 (Stats NZ, Estimated Subnational Population, 2012). This made West Rodney's population about 2% of the Auckland Region as a whole.

Table 2: Population Estimate 2012 by Age, West Rodney, Waitemata DHB, Auckland Region

Age	West Rodney	Waitemata DHB	Auckland Region
0-14	6,860	113,150	311,170
15-39	9,315	190,230	562,960
40-64	12,250	180,350	469,140
65+	3,815	68,850	164,370
Total	32,260	552,580	1,507,600

Source: Stats NZ, Estimated Subnational Population 2012

1.3 Population by Age and Gender

2012 Population Estimate numbers showed West Rodney to have a child population (0-14) of about 7,000; this made up 21% of the total West Rodney population. The 65+ age group made up 12% of the total.

(Note: Population totals throughout the report may vary insignificantly. This is due to the rounding of numbers at low levels in line with Stats NZ confidentiality policies.)

Table 3: West Rodney by Age and Gender, Population Estimate 2012

Age	Male	Female	Total
0-14	3,485	3,295	6,860
15-24	2,235	2,030	4,275
25-44	3,745	4,175	7,925
45-64	4,760	4,645	9,365
65+	2,000	1,815	3,815
Total	16,170	16,030	32,260

Source: Stats NZ

Waitemata DHB as a whole had a similar age structure to West Rodney - West Rodney's population having a slightly higher proportion of children and slightly smaller older population.

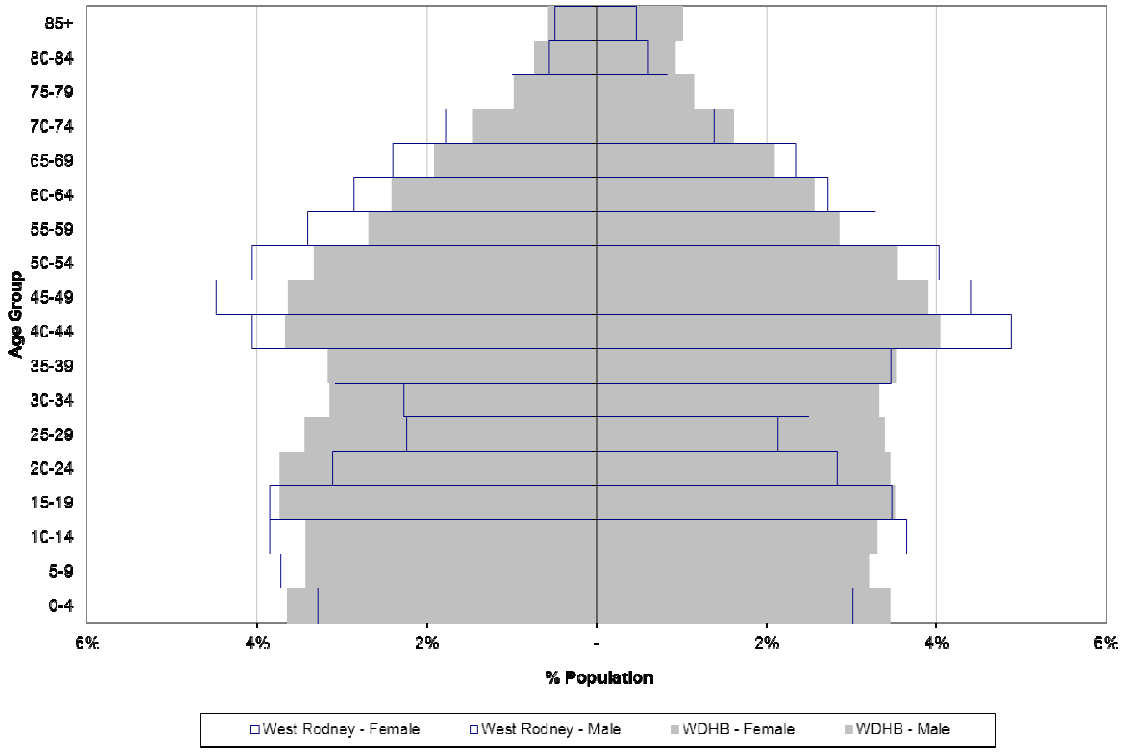
Table 4: West Rodney and Waitemata DHB - % Population by Age, Population Estimate 2012

Age	West Rodney	Waitemata DHB
0-14	21.3%	20.5%
15-24	13.3%	14.4%
25-44	24.6%	27.7%
45-64	29.0%	24.9%
65+	11.8%	12.5%
Total	100.0%	100.0%

Source: Stats NZ

Figure 1 below shows the differences between the age structure of the West Rodney population and the Waitemata DHB population. Compared to Waitemata DHB, West Rodney had a relatively smaller population in the age brackets of 20 to 40.

Figure 1: West Rodney and Waitemata DHB – Population Structure Comparison, Population Estimate 2012



Source: Stats NZ

1.4 Population by Ethnicity and Age

Table 5 and Figure 2 show West Rodney to have a greater proportion of Māori but smaller proportion of Asian and Pacific people as compared to the population of Waitemata DHB.

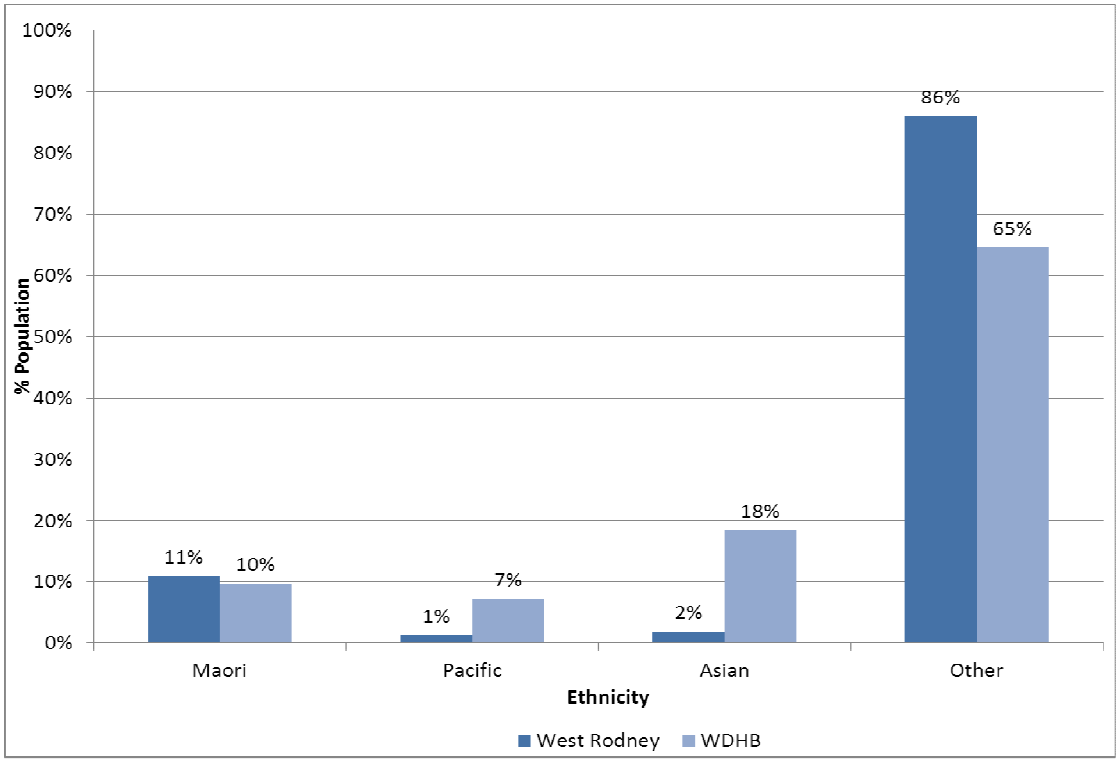
Note: Due to the fact that population estimates at the CAU level are not produced by ethnicity these ethnicity estimates are the product of multiple datasets combined. For this reason they should be seen as a general guide only (See Appendix 2 for an outline of the concept of "prioritised ethnicity").

Table 5: West Rodney and Waitemata DHB, Population by Ethnicity (Prioritised), Population Estimate 2012

Ethnicity	West Rodney	Waitemata DHB	% West Rodney	% Waitemata DHB
Māori	3,530	53,610	10.9%	9.7%
Pacific	403	40,000	1.2%	7.2%
Asian	599	102,210	1.9%	18.5%
Other	27,728	356,760	86.0%	64.6%
Total	32,260	552,580	100.0%	100.0%

Source: Stats NZ and Wang, K. (2012)

Figure 2: West Rodney and Waitemata DHB, % Population by Ethnicity, 2012



The Māori population in West Rodney had a much larger proportion of children and a smaller proportion of older adults when compared to Non-Māori.

Table 6: West Rodney by Ethnicity and Age, Population Estimate 2012

Age	Māori	Non-Māori	Total
0-14	1,282	5,681	6,963
15-24	609	3,292	3,901
25-44	808	6,861	7,669
45-64	564	8,541	9,106
65+	267	4,354	4,621
Total	3,530	28,730	32,260

Source: Stats NZ

Table 7: West Rodney by Ethnicity and Age %, Population Estimate 2012

Age	Māori	Non-Māori	Total
0-14	36%	20%	22%
15-24	17%	11%	12%
25-44	23%	24%	24%
45-64	16%	30%	28%
65+	8%	15%	14%
Total	100%	100%	100%

Source: Stats NZ

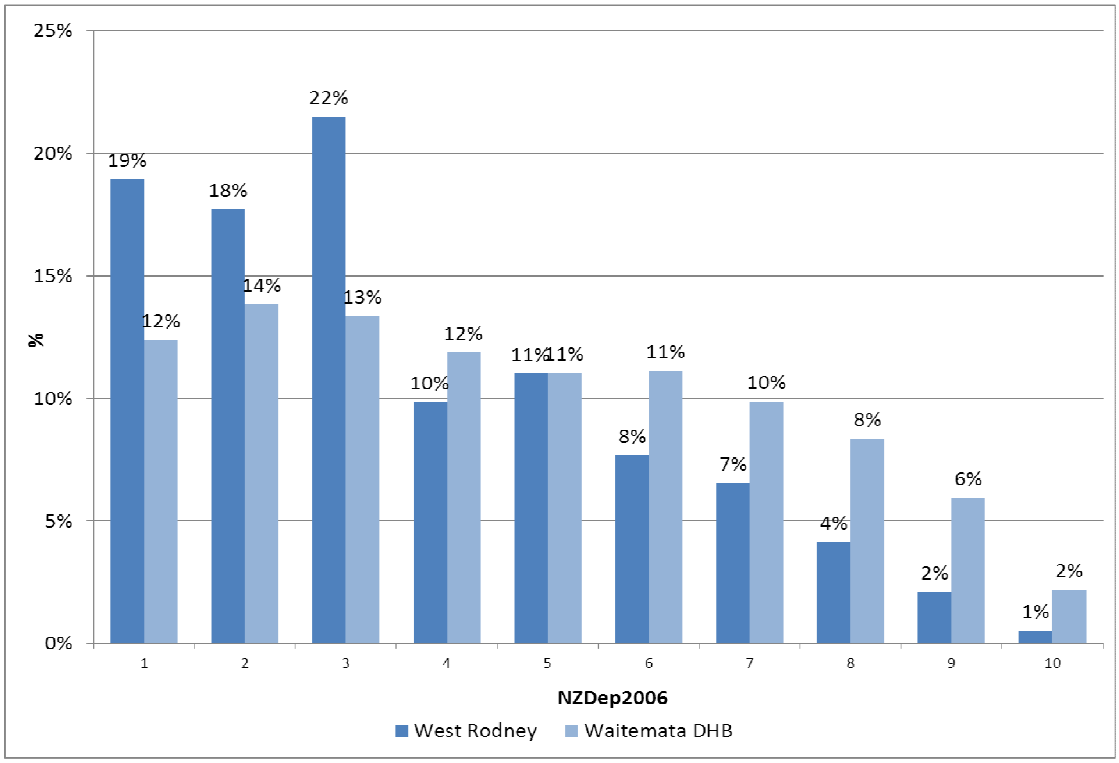
1.5 Population by Deprivation

The NZ Deprivation score provides a measure of relative socioeconomic deprivation for all areas in New Zealand. It is calculated by taking into account a variety of Census variables which reflect different dimensions of deprivation. The NZDep2006 score of 1 represents the least deprived areas and the score of 10 represents the most deprived areas. As this is a relative scale, by definition 10% of all mesh blocks (small geographical areas) in the country make up each NZDep2006 index score.

Figure 3 below shows that much of West Rodney's population lived in relatively less deprived areas according to NZ Dep 2006. About 80% of the population lived in the least deprived half of NZ areas (NZdep2006 scores 1 to 5). For Waitemata DHB the proportion was less; about 63% of the population lived in the least deprived half of areas.

However, for West Rodney Māori, the proportion living in the least deprived areas was significantly less (about 56%).

Figure 3: West Rodney and Waitemata DHB, Proportion Population by NZDep2006, Census 2006



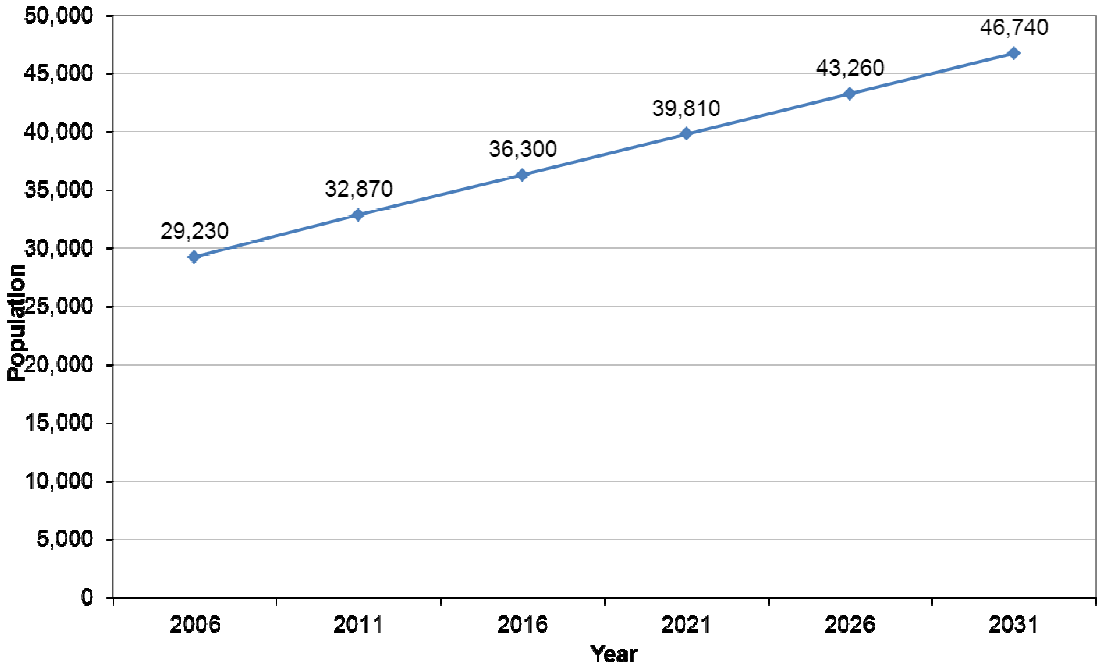
1.6 Population Projection

Current projections suggest that in the 20 years from 2006 to 2026 the West Rodney population will grow by a further 48% (about 14,000 people).

For the Waitemata DHB population current projections suggest that in the 20 years from 2006 to 2026 the population will grow by a further 36% (about 180,000 people).

The comparison shows that West Rodney is expected to grow at a faster rate than that of the DHB as a whole.

Figure 4: West Rodney, Population Projection

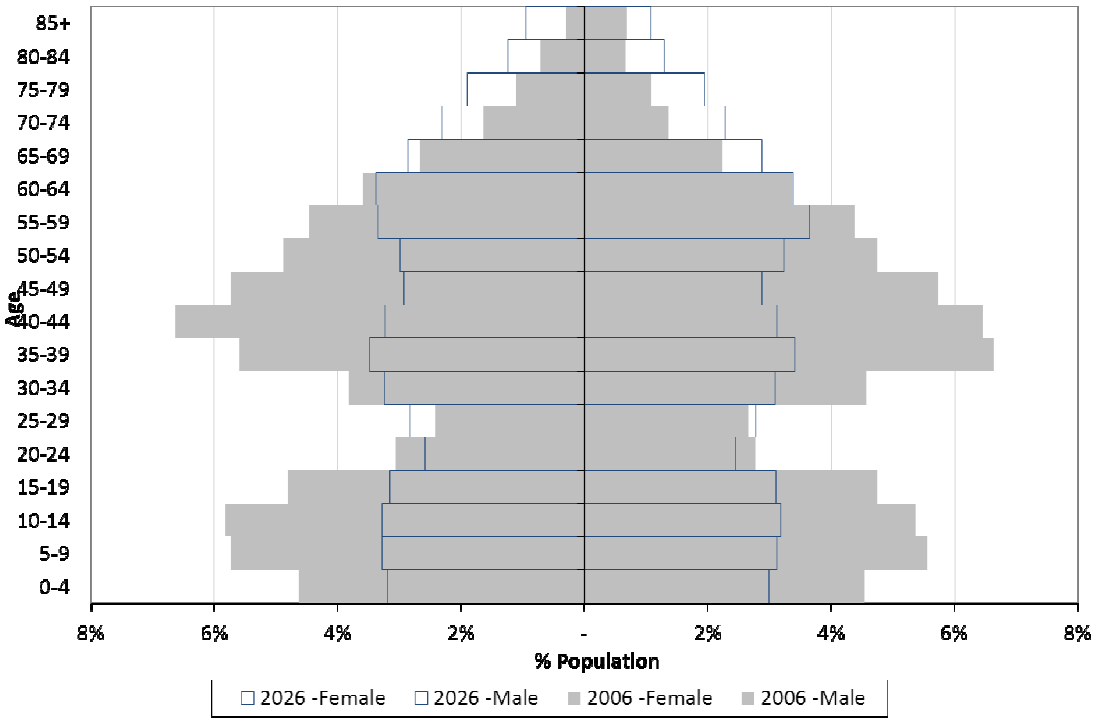


Importantly, current projections expect not only growth in West Rodney's total population but also aging. The 65+ years population is expected to grow by about 5,500 people between 2006 and 2026; meaning the 65+ years population of West Rodney would go from making up 9% of the total to 19% of the total. Corresponding to this the child population (0-14) will go from making up 23% of the total to making up 19%.See Figure 5 below shows how the age-structure of West Rodney will change over time.

Population projections for West Rodney by ethnicity should be seen as only suggestive and subject to change. However, projections do suggest that the West Rodney Māori population will also become relatively older between the years 2006 and 2026. The West Rodney Māori population is expected to go from making up about 7% of the West Rodney total in 2006 to about 14% in 2026.

Waitemata DHB's population is expected to face a similar change in age structure. The 65+ years population is expected to grow by about 60,000 people between 2006 and 2026; meaning the 65+ years population of Waitemata DHB would go from making up 11% of the total to 17% of the total.

Figure 5: West Rodney – Projected Age Structure Change – 2006-2026



2 Health Outcomes

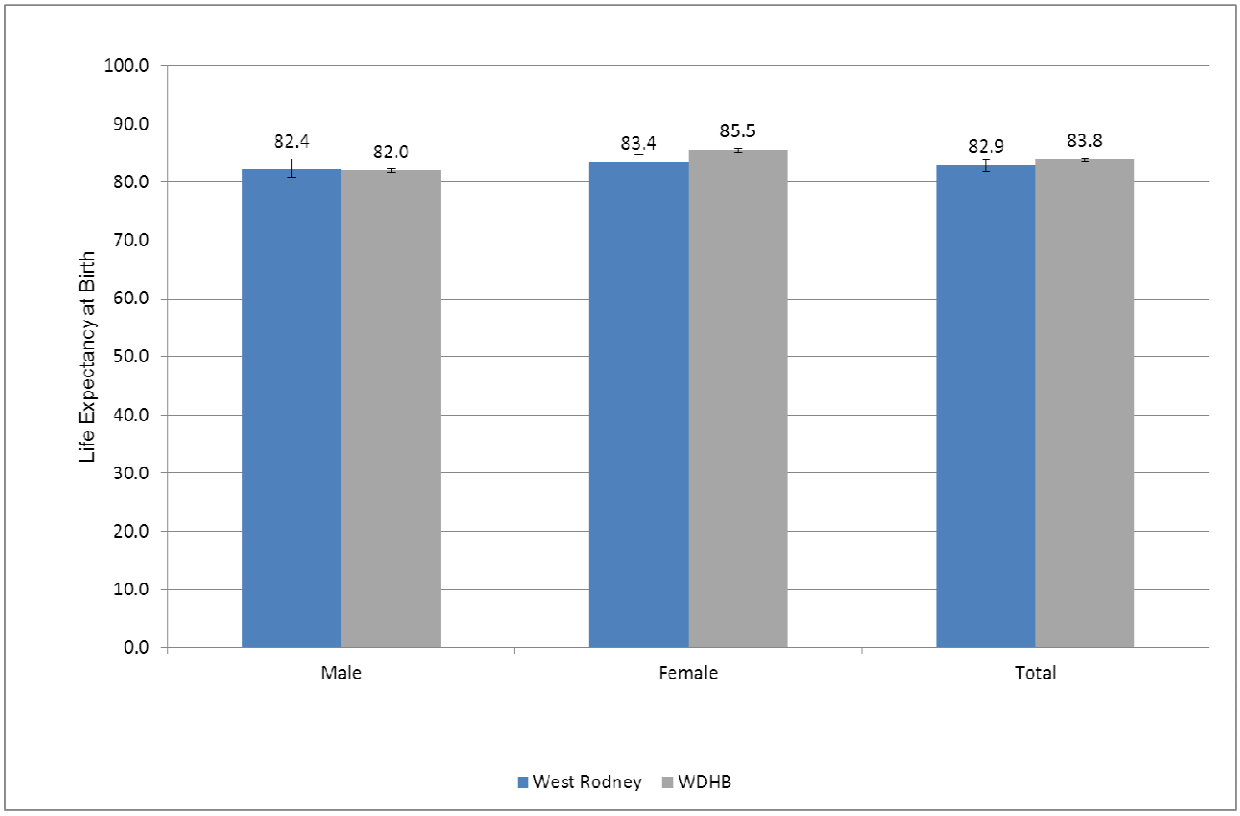
2.1 Life Expectancy

Life expectancy at birth is defined as the number of years a newborn would be expected to live based on today's pattern of death rates; the definition excludes stillbirths.

The life expectancy at birth for West Rodney, based on three years of deaths from 2009 to 2011, was 83 years. This was not significantly different from the Waitemata DHB total life expectancy.

The life expectancy for West Rodney males was slightly lower than that for females (See Figure 6 below).

Figure 6: Life Expectancy at Birth – Waitemata DHB and West Rodney, 2009-2011, By Sex



2.2 Age at Death

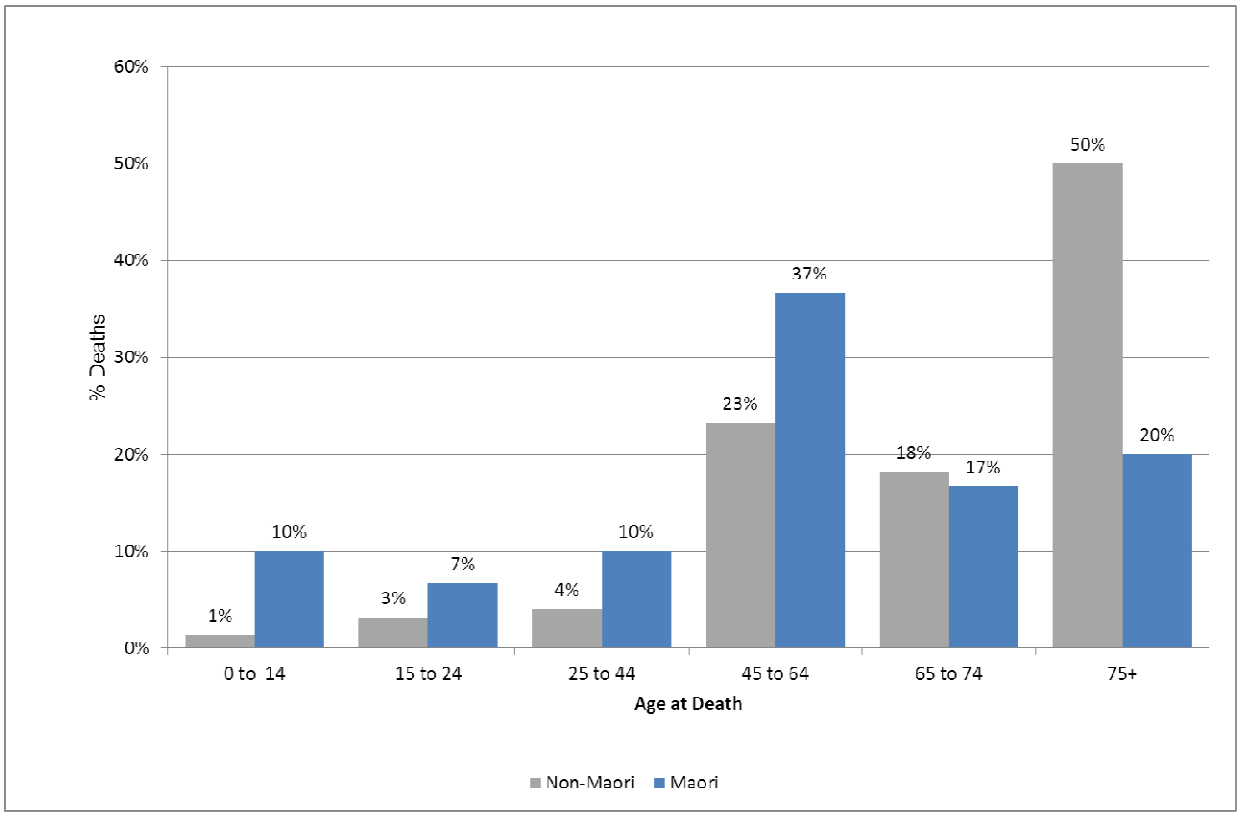
Life expectancy is not available by ethnicity for West Rodney because of the small numbers and unreliable population denominators. However, age at death can highlight the contrast in health outcome between Māori and Non-Māori. Nevertheless care should be taken in interpreting this data given the relatively small numbers (a total of 30 deaths for Māori over three years, and 370 for Non-Māori).

Age at death for West Rodney shows differences between Māori and Non-Māori. 50% of Non-Māori deaths were for those 75+, while for Māori only 20% of total deaths were for people aged over 75.

The contrast between Māori and Non-Māori age at death is cause for concern. Only 20% of Māori die in the 75+ age bracket; that is, 80% of Maori do not live to the age of 75 compared to 50% for Non-Maori. This reveals a contrasting health outcome.

Further, particular note should be given to child (0 – 14 years) deaths for Māori which represented 10% of all deaths in this period compared with 1% for Non-Māori.

Figure 7: Age at Death – West Rodney, 2009-2011 – Māori, Non-Māori



2.3 Potentially Avoidable Mortality

Potentially Avoidable Mortality (PAM) is an indicator that seeks to show those deaths which occur from conditions determined to be either treatable or preventable (assuming current knowledge of health behaviour, health care, social and economic policy, and other factors). PAM numbers exclude deaths of people aged over 75 years as there is a high prevalence of multiple co-morbidities in this age group (See Appendix 3 for more detail).

For the three years 2007-2009 there were 200 deaths of 15-74 year olds from the West Rodney population. Of these deaths, 40% (766) were considered potentially avoidable. This was a slightly smaller proportion than that seen among the Waitemata DHB population as a whole. Figure 8 shows that West Rodney had an age-standardised PAM rate equivalent with Waitemata DHB.

Figure 8: Adult (15-74 years) Age Standardised PAM Rate, Waitemata DHB and West Rodney, 2007-2009

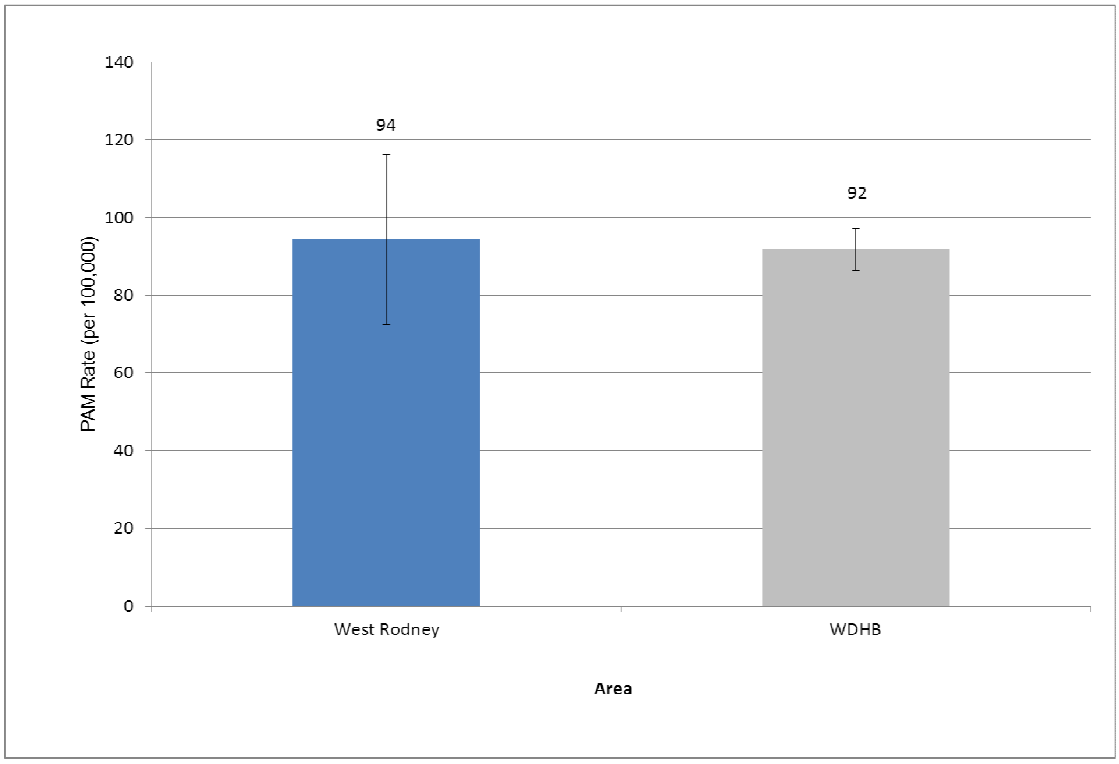


Table 8 below shows the top 10 conditions which contributed to West Rodney Potentially Avoidable Mortality for adults.

Table 8: PAM by Condition (Top 10), 2007-2009 - West Rodney Adults (15-74)

PAM Condition	Deaths	% PAM
Coronary disease	18	24%
Suicide	11	14%
Cancer – Breast	9	12%
Diabetes	8	11%
Cerebrovascular diseases	7	9%
Road traffic accidents	6	8%
Cancer - Melanoma	<5	<7%
Cancer - Stomach	<5	<7%
Cancer - Prostate	<5	<7%
Pulmonary tuberculosis	<5	<7%
Other PAM	<5	<7%
PAM Total	76	100%

Tables 9 and 10 show which broad categories contributed most to Potentially Avoidable Mortality for West Rodney adults by ethnicity. For Māori 75% of PAM was attributable to chronic diseases.

Table 9: PAM by Category, 2007-2009 - West Rodney Adults (15-74) - Māori

PAM Category	Deaths	% PAM
Chronic disorders	12	75%
Other	4	25%
PAM Total	16	100%

Table 10: PAM by Category, 2007-2009 - West Rodney Adults (15-74) – Non-Māori

PAM Category	Deaths	% PAM
Chronic disorders	25	42%
Cancers	19	32%
Injuries	15	25%
Other	1	2%
PAM Total	60	100%

Table 11 shows that West Rodney's Māori population had a much higher proportion of deaths considered as potentially avoidable (67%) in comparison with Non- Māori.

Table 11: % Deaths PAM – 2007-2009, West Rodney Adults (15-74), Māori and Non-Māori

Admissions	Māori	Non-Māori	Total
PAM	16	60	76
Total Deaths	24	168	192
% PAM	67%	36%	40%

3 Secondary Care Services

3.1 Definition of Avoidable Hospitalisations – PAH and ASH

Potentially Avoidable Hospitalisations (PAH) are proxy indicators of 'non-fatal' avoidable health outcomes and are defined by the following three sub-categories:

> **Preventable hospitalisations (PH):** hospitalisations resulting from diseases preventable through population-based health promotion strategies, e.g. conditions related to lifestyle and diet such as alcohol related conditions, dental conditions, and diabetes.
>
> **Ambulatory-sensitive hospitalisations (ASH):** hospitalisations resulting from diseases sensitive to prophylactic or therapeutic interventions deliverable in a primary health care setting, e.g. asthma, cellulitis, diabetes.
>
> **Injury-preventable hospitalisations (IP):** hospitalisations avoidable through injury prevention.

In adults (15 years +), an upper age threshold of 75 years is used when reporting on PAH and ASH indicators as there is a high level of co-morbidities from age 75 years up.

This analysis of PAH excludes 'injury preventable hospitalisation' data, as different preventive strategies are needed to address them. Only acute admissions are counted in this analysis as potentially avoidable with the exception of dental conditions (for dental conditions elective admissions are included).[1]

[1] Perumal L. (2010). Health Needs Assessment of Middle Eastern, Latin American and African people living in the Auckland region. Auckland: Auckland District Health Board

3.2 Potentially Avoidable Hospitalisations

As a proportion of total adult (15-74) acute hospital admissions for the West Rodney population over the three years 2010 – 2012, 21% were potentially avoidable (2,050 admissions out of a total of 9,950 acute admissions). This was a proportion similar to the corresponding one for the Waitemata DHB population as a whole of 22% (See Appendix 4 for more detail).

Figure 9 shows that as an age-standardised rate, West Rodney had a lower PAH rate than Waitemata DHB among adults.

Figure 9: Adult (15-74 years) Age Standardised PAH Rate, Waitemata DHB and West Rodney, 2010-2012

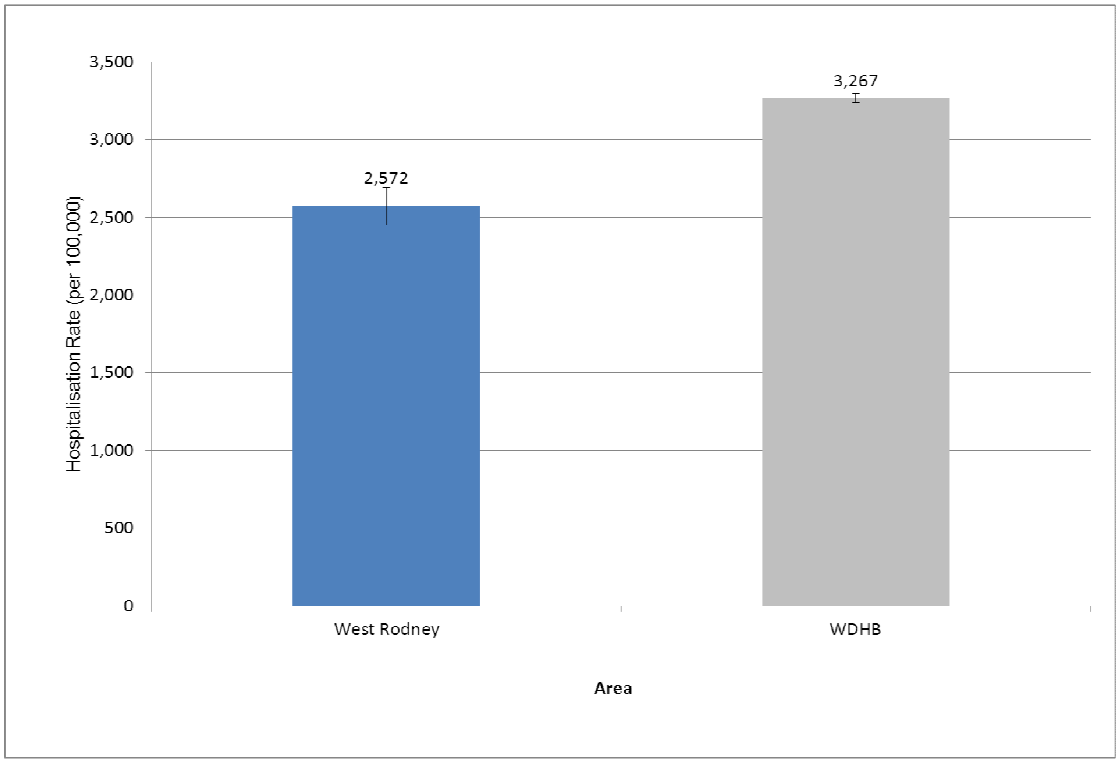


Table 12 below shows the top 10 conditions which contributed to West Rodney Potentially Avoidable Hospitalisations for adults.

Table 12: PAH by Category (top 10) – 2009-2012, West Rodney Adults (15-74)

PAH Category	Admissions	%
Angina and chest pain	469	23%
Myocardial infarction	195	10%
Cellulitis	177	9%
Gastroenteritis	134	7%
Respiratory infections - Pneumonia	112	5%
CORD	93	5%
Diabetes	84	4%
Alcohol related conditions	82	4%
Kidney/urinary infection	80	4%
Dental conditions	67	3%
Other PAH	554	27%
Grand Total	2,047	100%

*Chronic Obstructive Respiratory Disease
Source: NMDS

Tables 13 and 14 below show which conditions contributed most to Potentially Avoidable Hospitalisations for West Rodney's population by ethnicity.

For both Māori and Non-Māori angina and chest pain is the most common cause of potentially avoidable hospitalisation. Of note is the noticeably higher contribution to PAH for Māori from Cellulitis and Sexually transmitted diseases when compared with Non-Māori.

Table 13: PAH by Category (Top 10) – 2010-2012, West Rodney Adults (15-74) – Māori

PAH Category	Admissions	%
Angina and chest pain	44	18%
Cellulitis	27	11%
Gastroenteritis	22	9%
CORD	20	8%
Sexually transmitted diseases	19	8%
Diabetes	13	5%
Dental conditions	12	5%
Asthma	11	5%
Myocardial infarction	10	4%
Alcohol related conditions	10	4%
Other PAH	54	22%
Total PAH	242	100%

Table 14: PAH by Category (Top 10) – 2010-2012, West Rodney Adults (15-74) – Non-Māori

PAH Category	Admissions	%
Angina and chest pain	425	24%
Myocardial infarction	185	10%
Cellulitis	150	8%
Gastroenteritis	112	6%
Respiratory infections - Pneumonia	103	6%
Kidney/urinary infection	73	4%
CORD	73	4%
Alcohol related conditions	72	4%
Diabetes	71	4%
Dental conditions	55	3%
Other PAH	486	27%
Total PAH	1805	100%

Table 15 shows that West Rodney's Māori population had a higher proportion of acute admissions considered as potentially avoidable (23%) in comparison to Non-Māori.

Table 15: % Acute Admissions PAH – 2010-2012, West Rodney Adults (15-74), Māori and Non-Māori

Admissions	Māori	Non-Māori	Total
PAH	242	1,805	2,047
Total Acute	1,050	8,895	9,945
% PAH	23%	20%	21%

3.3 Ambulatory Sensitive Hospitalisations

As a proportion of total adult (15-74) acute hospital admissions for the West Rodney population over the three years 2010 – 2012, 14% were ambulatory sensitive (1,400 admissions out of a total of 9,950 acute admissions). This was a slightly lower proportion than the corresponding one for the Waitemata DHB population as a whole of 16%.

Expressed as an age-standardised rate, West Rodney had a lower ASH rate than Waitemata DHB among adults.

Figure 10: Adult (15-74 years) Age Standardised ASH Rate, Waitemata DHB and West Rodney 2010-2012

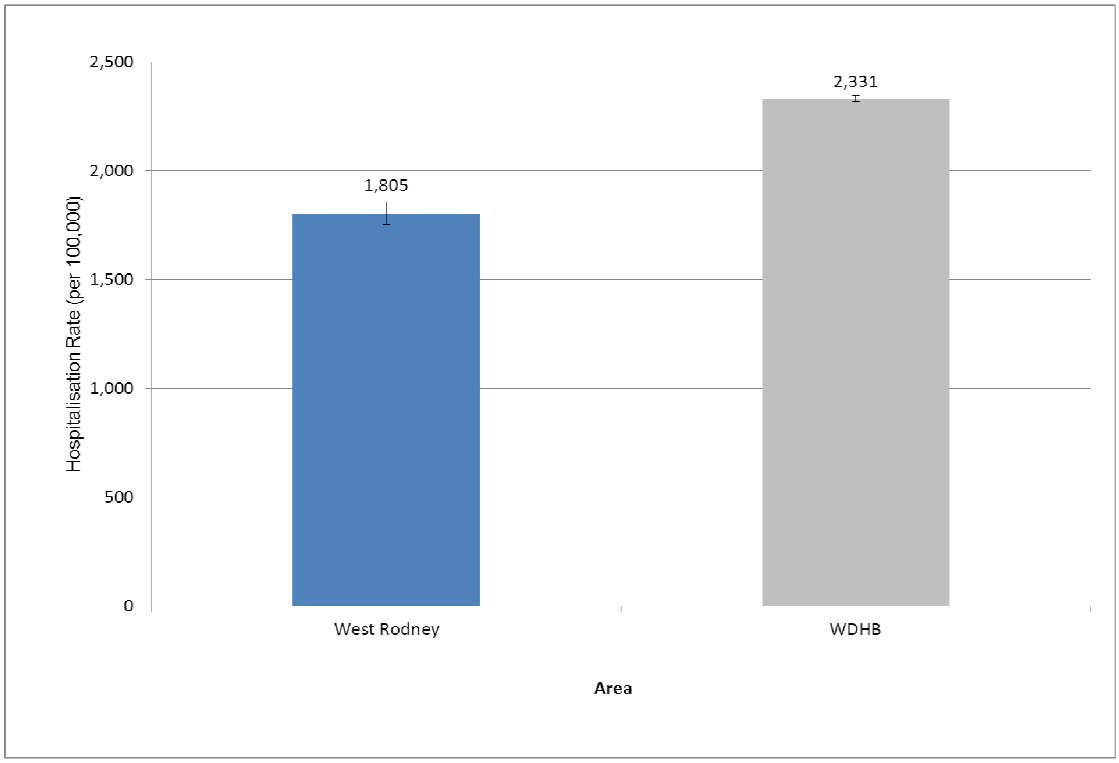


Table 16 shows the top 10 conditions which contributed to West Rodney Ambulatory Sensitive Hospitalisations for adults.

Important to note is that due to the fact that some ASH condition admissions are weighted, differences will be evident between ASH numbers and PAH numbers, e.g. for hospitalisation due to Angina and Chest Pain the ASH definition determines that only half of these are ambulatory sensitive (See Appendix 5 for more detail).

Table 16: ASH by Category (Top 10) – 2010-2012, West Rodney Adults (15-74)

ASH Category	Admissions	%
Angina and chest pain	235	17%
Cellulitis	170	12%
Gastroenteritis/dehydration	160	11%
Respiratory infections - Pneumonia	112	8%
Myocardial infarction	98	7%
Diabetes	84	6%
Kidney/urinary infection	80	6%
Asthma	65	5%
Epilepsy	55	4%
Congestive heart failure	49	3%
Other ASH	299	21%
Total ASH	1,406	100%

Tables 17 and 18 below show which conditions contributed most to Ambulatory Sensitive Hospitalisations for West Rodney's population by ethnicity.

For Māori adults in West Rodney Cellulitis was the most common cause of ASH compared with angina and chest pain for Non-Māori. Given West Rodney's Māori population is much younger than the Non-Māori population it is a concern to see angina and chest pain in the top three ASH conditions.

Also of note and concern is the presence of dental conditions in the top 10 ASH categories for Māori. Although this may be partly explained by the younger age structure of the Māori population this finding raises concern about access to dental services.

Table 17: ASH by Category (Top 10) – 2010-2012, West Rodney Adults (15-74), Māori

ASH Category	Admissions	%
Cellulitis	24	15%
Gastroenteritis/dehydration	24	15%
Angina and chest pain	22	14%
Diabetes	13	8%
Asthma	11	7%
Dental conditions	9	6%
Respiratory infections - Pneumonia	9	6%
Upper respiratory tract and ENT infections	9	6%
Congestive heart failure	8	5%
Kidney/urinary infection	7	4%
Other ASH	23	14%
Total ASH	159	100%

Table 18: ASH by Category (Top 10) – 2010-2012, West Rodney Adults (15-74), Non-Māori

ASH Category	Admissions	%
Angina and chest pain	213	17%
Cellulitis	146	12%
Gastroenteritis/dehydration	136	11%
Respiratory infections - Pneumonia	103	8%
Myocardial infarction	93	7%
Kidney/urinary infection	73	6%
Diabetes	71	6%
Asthma	54	4%
Epilepsy	52	4%
Congestive heart failure	41	3%
Other ASH	266	21%
Total ASH	1,247	100%

Table 19 shows that West Rodney's Māori population had a similar proportion of acute admissions that were considered to be ambulatory sensitive (15%) as the Non-Māori population (14%). The absence of an inequality in the proportion of ASHs is noted. Further investigation of this by age groups within the adult bracket could reveal differences that are masked by using the 15-74 age groups.

Table 19: % Acute Admissions ASH – 2010-2011, West Rodney Adults (15-74), Māori and Non-Māori

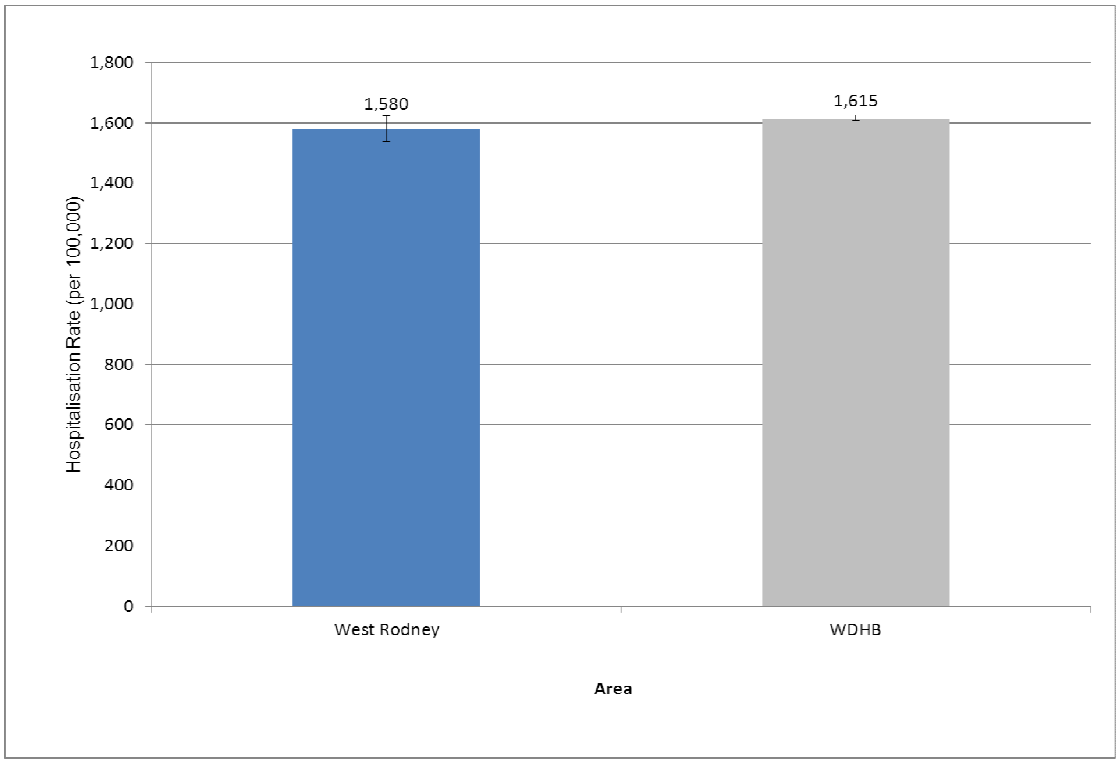
Admissions	Māori	Non-Māori	Total
ASH	159	1,247	1,406
Total Acute	1,050	8,895	9,945
% ASH	15%	14%	14%

3.4 CVD Admissions

Over the three years 2010–2012, there were 1,500 hospital admissions with a CVD primary diagnosis from West Rodney's adult population (15+) (electives and acutes). Figure 11 shows that as an age-standardised rate the West Rodney rate was not significantly different from the corresponding rate for Waitemata DHB.

Because the size of the Māori and non-Māori population groups are relatively small, and developing an accurate denominator for the three year period is challenging it is difficult to age standardise for hospitalisations by ethnicity in the West Rodney locality. There were not significant differences in Māori and non-Māori age standardised rates of CVD admissions; however this finding may be due to the small numbers rather than a 'true' finding.

Figure 11: Age Standardised CVD Admission Rate, Waitemata DHB and West Rodney, 2010-2012, 15+



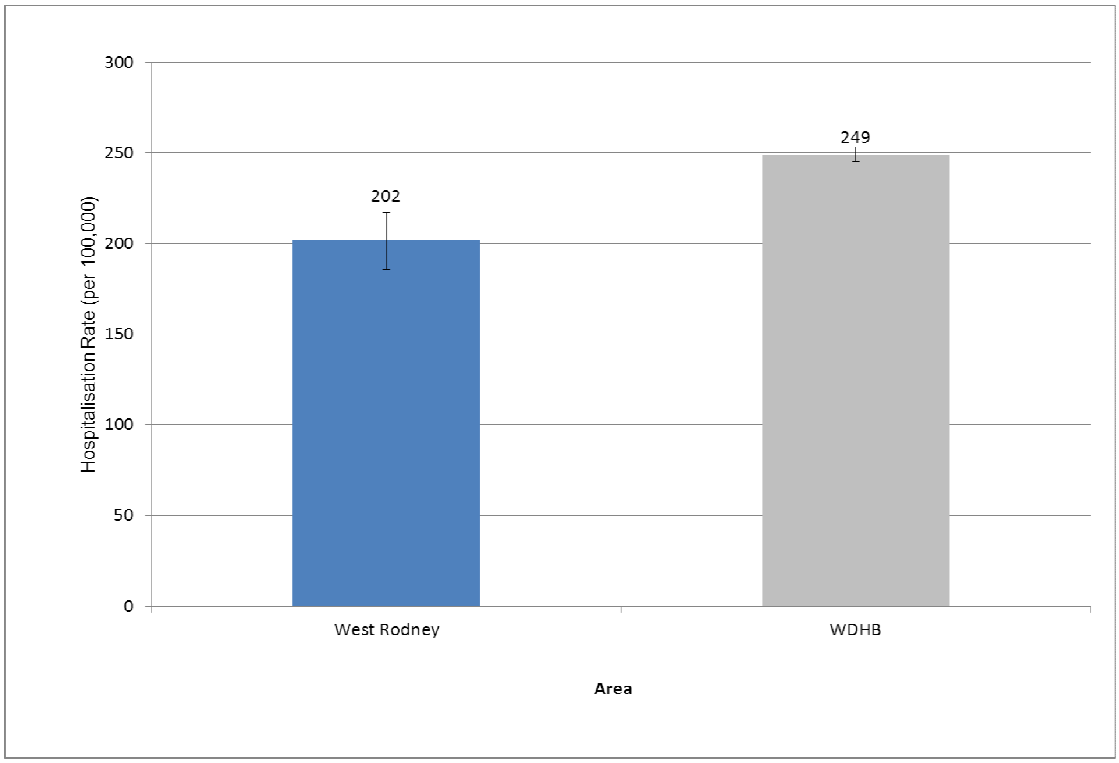
3.5 Diabetes Admissions

Over the three years 2010 – 2012, there were 180 hospital admissions with a diabetes primary diagnosis for West Rodney's adults (electives and acutes). Expressed as an age-standardised rate, West Rodney had a slightly lower rate of diabetes admissions than that of Waitemata DHB's population as a whole.

Similarly to CVD admissions, differences between age-standardised rates of diabetes admissions are not significant by ethnicity – most likely due to the small numbers.

However, of the 180 adult diabetes admissions over the three years, 23 were for Māori. This means that 13% of adult West Rodney diabetes admissions were for Māori (Māori make up 9% of the West Rodney 15+ population).

Figure 12: Age Standardised Diabetes Admission Rate, Waitemata DHB and West Rodney, 2010-2012, 15+



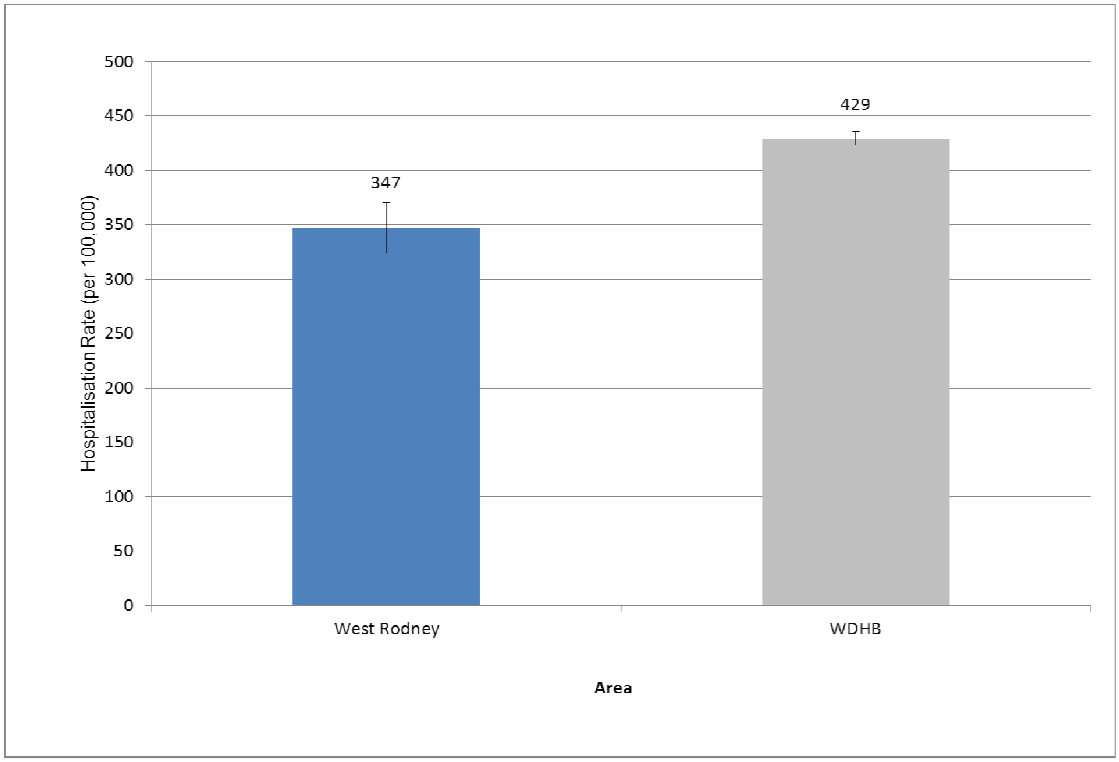
3.6 Mental Health Admissions

Over the three years 2010 – 2012, there were 250 mental health hospital admissions for West Rodney's adults. Expressed as an age-standardised rate, West Rodney had a lower rate of mental health hospital admission than that of Waitemata DHB as a whole. The 30 – 54 year old bracket accounted for the largest portion of admissions.

Similarly as above, differences between rates of age-standardised mental health admissions are not significant by ethnicity due to the small numbers of interest.

However, of the 254 adult mental health admissions over the three years, 49 were for Māori. This means that almost 20% of all adult West Rodney admissions were for Māori, a clear over-representation (Māori make up 9% of the West Rodney 15+ population).

Figure 13: Age Standardised Mental Health Admission Rate, Waitemata DHB and West Rodney, 2010-2012, 15+



3.7 Outpatient Attendances

Outpatient attendances for West Rodney adults have been ranked below to give a sense of the type of hospital services that West Rodney residents have been accessing. Further work on any particular service of interest could be undertaken to determine if the level of access is adequate.

For the purposes of comparison outpatient visits in this analysis have been restricted to First Specialist Assessments (FSAs) and Follow Ups measured by "attendances". The below tables show which health specialties accounted for the most FSAs and Follow Ups for West Rodney adults.

Table 20: Outpatient FSA Attendances by Purchase Unit – 2012, West Rodney Adults

PUC	Purchase Unit Description	Attendances	%
S40002	Ophthalmology	221	9%
S30002	Gynaecology	219	9%
S00006	General Surgery (excl vascular surgery)	218	9%
S45002	Orthopaedics	194	8%
M10002	Cardiology	173	7%
W03002	First obstetric consults	131	5%
S25002	Ear Nose and Throat	105	4%
M65002	Respiratory	102	4%
M25002	Gastroenterology	101	4%
M00002	General Medicine	96	4%
S70002	Urology	94	4%
MS01001	Nurse Led Outpatient Clinics	84	3%
S45004	Fracture Clinic	78	3%
M45002	Neurology	77	3%
M30002	Haematology	62	3%
HOP215	AT & R Outpatient - Clinics	55	2%
M50022	Radiation Oncology	54	2%
M20002	Endocrinology	51	2%
M70002	Rheumatology (incl immunology)	45	2%
M20004	Diabetes	42	2%
Other	Other FSA Attendances	264	11%
Total		2,466	100%

Table 21: Outpatient Follow Up Attendances by Purchase Unit – 2012, West Rodney Adults

PUC	Purchase Unit Description	Attendances	%
S45003	Orthopaedics	1102	13%
S40003	Ophthalmology	746	8%
S00007	General Surgery (excl vascular surgery)	665	8%
MS01001	Nurse Led Outpatient Clinics	604	7%
M60008	Renal Medicine - Incentre Haemodialysis	547	6%
M30003	Haematology	453	5%
M50021	Medical Oncology	423	5%
M10003	Cardiology	354	4%
MS02009	IV Chemotherapy - cancer - Any health specialty	280	3%
M50023	Radiation Oncology	279	3%
S30003	Gynaecology	270	3%
M70003	Rheumatology (incl immunology)	252	3%
M00003	General Medicine	251	3%
S60003	Plastics (incl Burns and Maxillofacial)	250	3%
S25003	Ear Nose and Throat	229	3%
M25003	Gastroenterology	225	3%
M60003	Renal Medicine	225	3%
M65003	Respiratory	203	2%
S70003	Urology	182	2%
D01002	Outpatient Dental treatment	170	2%
Other	Other FU Attendances	1,086	12%
Total		8,796	100%

Tables 22 and 23 show which hospital facilities West Rodney adults travelled to for outpatient appointments in 2012.

Table 22: Outpatient FSA Attendances by Hospital – 2012, West Rodney Adults

Hospital	OP FSA Attendances	%
North Shore	941	38%
Waitakere	843	34%
Auckland	651	26%
Other	31	1%
Total	2,466	100%

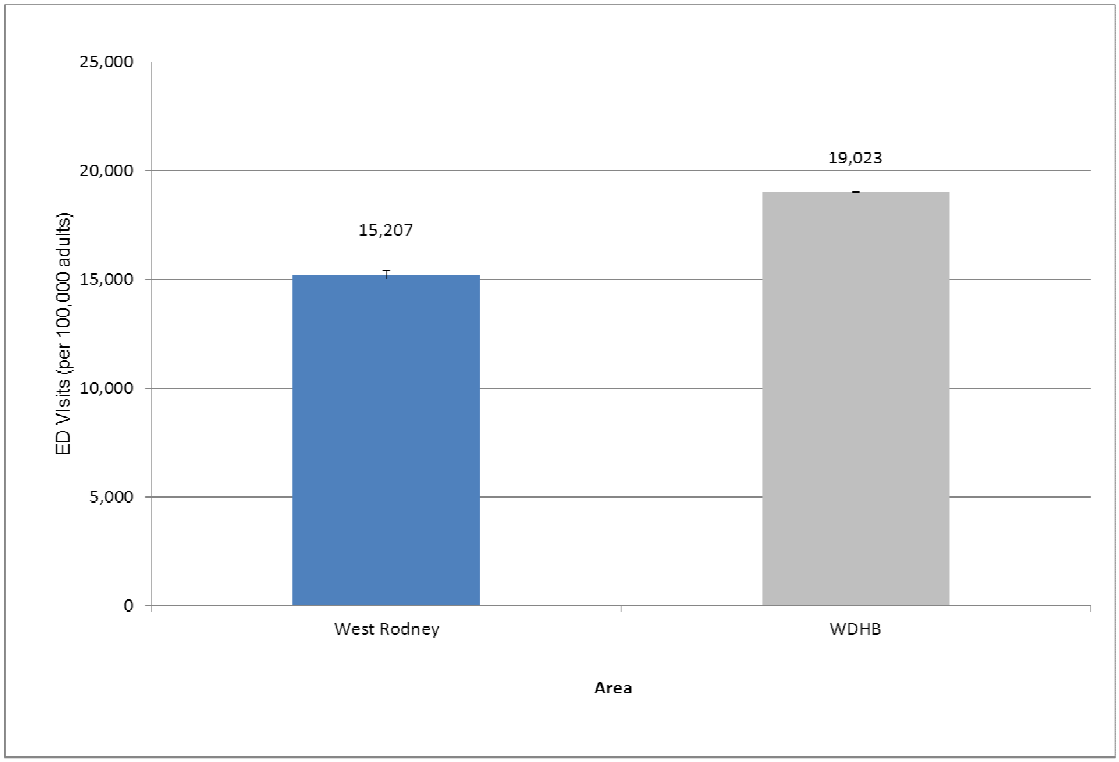
Table 23: Outpatient Follow Up Attendances by Hospital – 2012, West Rodney Adults

Hospital	OP Follow Up Attendances	%
Auckland	3,466	39%
North Shore	2,844	32%
Waitakere	2,227	25%
Other	259	3%
Total	8,796	100%

3.8 Emergency Department Attendances

For the two years 2011 to 2012, there were 7,800 Emergency Department visits from West Rodney's adult (15+) population. Expressed as an age-standardised rate, West Rodney had a rate of ED attendance of 15,200 per 100,000 adults. This was a rate lower than that for Waitemata DHB as a whole over this time period (19,200 ED visits per 100,000).

Figure 14: Age Standardised ED Visit Rate, Waitemata DHB and West Rodney, 2011-2012, 15+



By ethnicity, West Rodney Māori had a higher age-standardised rate of Emergency Department Attendances than Non-Maori. (Note: Figure 14 and Figure 15 are not directly comparable because of the need for some added estimation in the population base by ethnicity. However, the relative differences provide a good guide).

Figure 15: Age Standardised ED Visit Rate, Waitemata DHB and West Rodney, 2011-2012, 15+, By Ethnicity

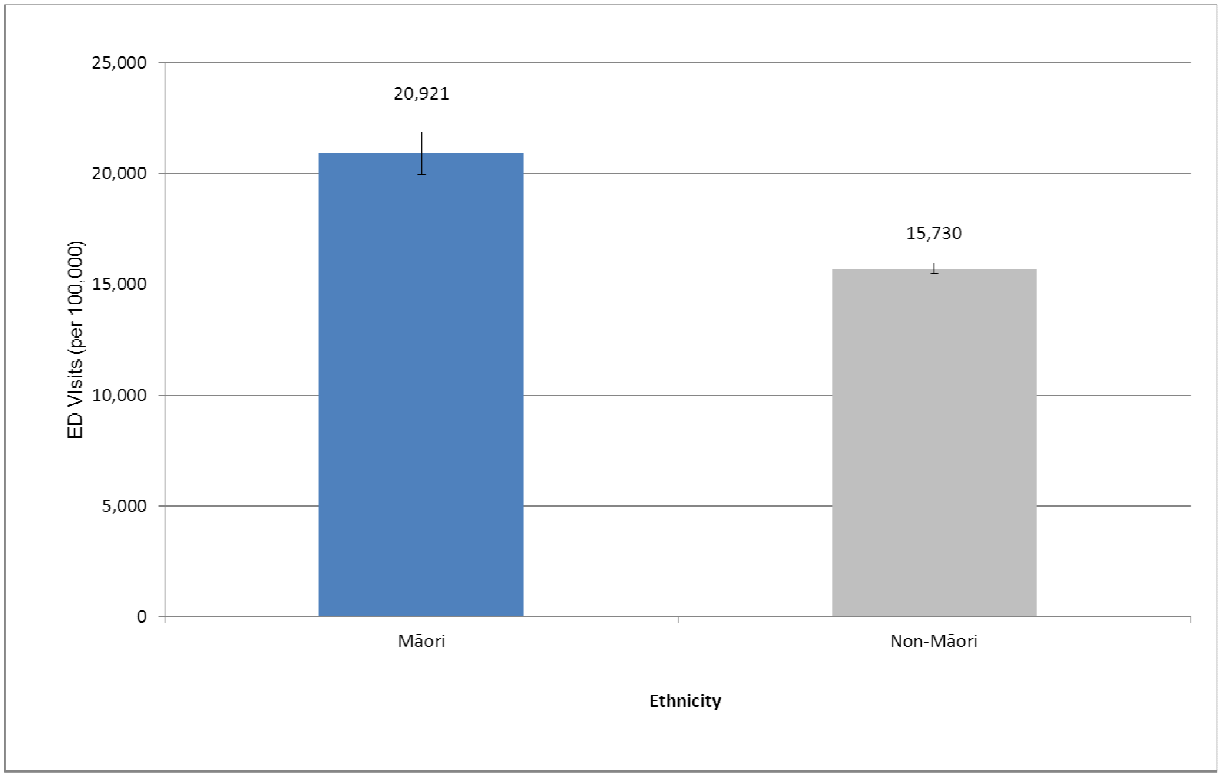


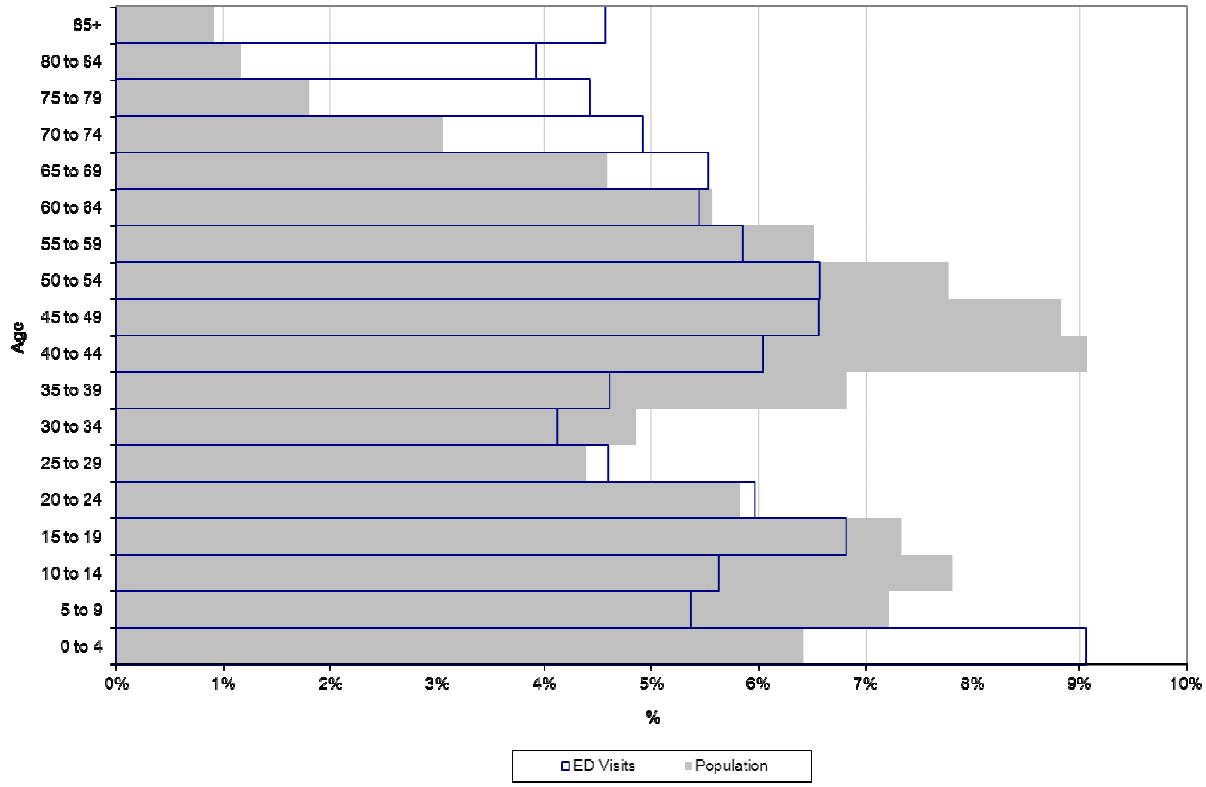
Table 24 shows which Hospital Emergency Departments West Rodney adults travelled to over the two years 2011 and 2012.

Table 24: ED Attendances by Hospital – 2011-2012, West Rodney Adults

Hospital	ED Attendances	%
North Shore	4,986	64%
Waitakere	1,645	21%
Auckland City	596	8%
Other	557	7%
Total	7,784	100%

Figure 16 gives a picture of the age groups most represented in ED attendances. For West Rodney the 0-4 population and the 65+ population were over-represented in ED attendances relative to West Rodney's total population. This was similar to the ED attendances for Waitemata DHB as a whole.

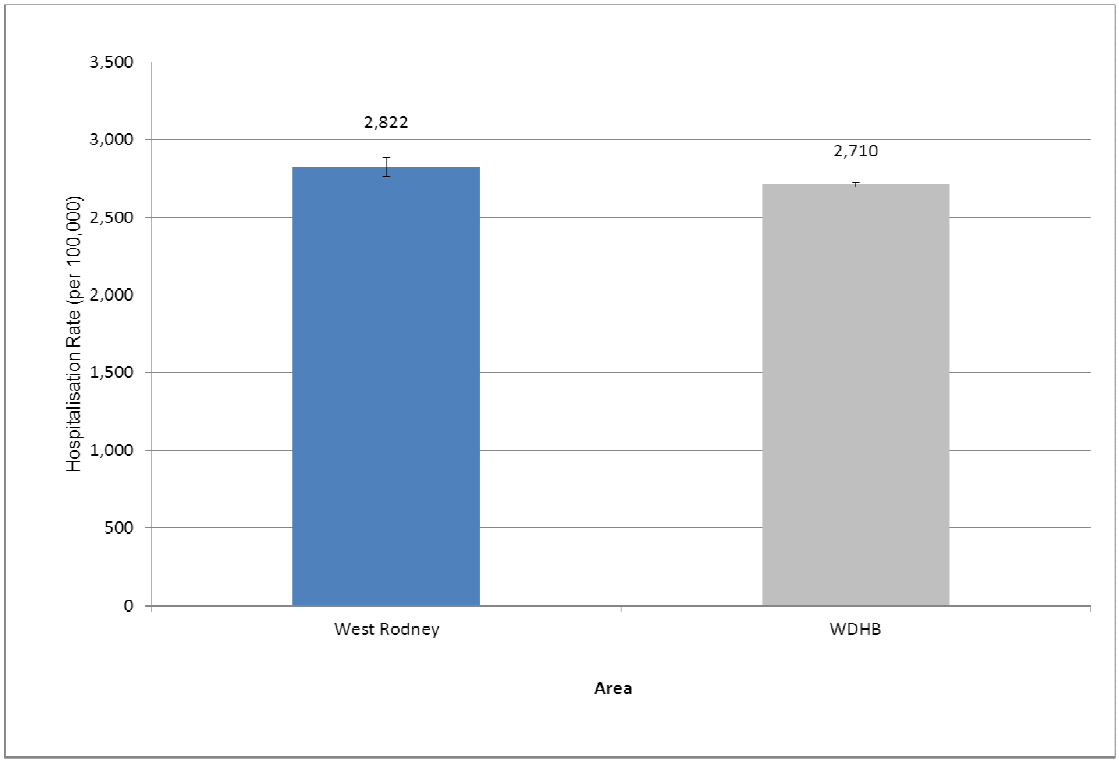
Figure 16: West Rodney ED Visits and West Rodney Population, 2011-2012, proportion by Age



3.9 Elective Surgery

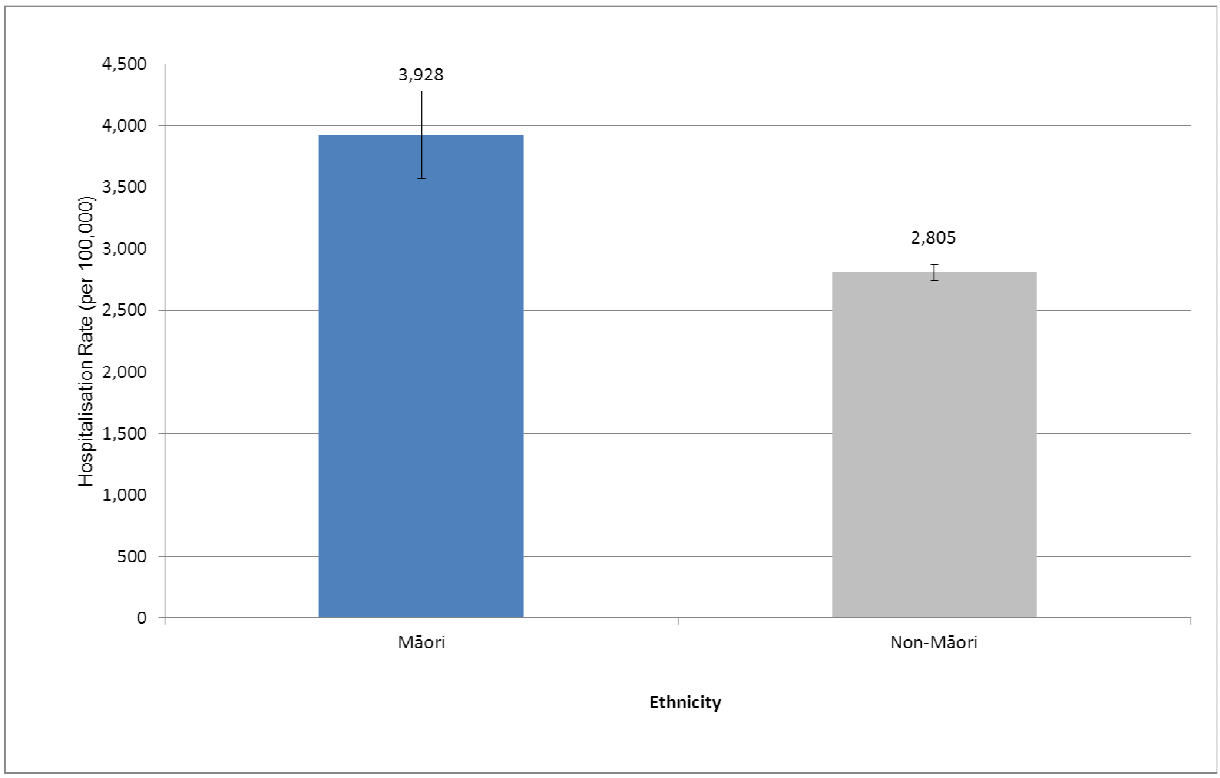
Over the three years 2010 – 2012, there were 2,400 elective hospital admissions to a surgical specialty from West Rodney's adult (15+) population. Expressed as an age-standardised rate, West Rodney had a slightly higher rate of elective surgery than that of Waitemata DHB's population as a whole.

Figure 17: Age Standardised Elective Surgery Admission Rate, Waitemata DHB and West Rodney, 2010-2012, 15+



By ethnicity, West Rodney Māori had a higher age-standardised rate of elective surgery than Non-Maori.

Figure 18: Age Standardised Elective Surgery Admission Rate, West Rodney, 2010-2012, 15+, By Ethnicity



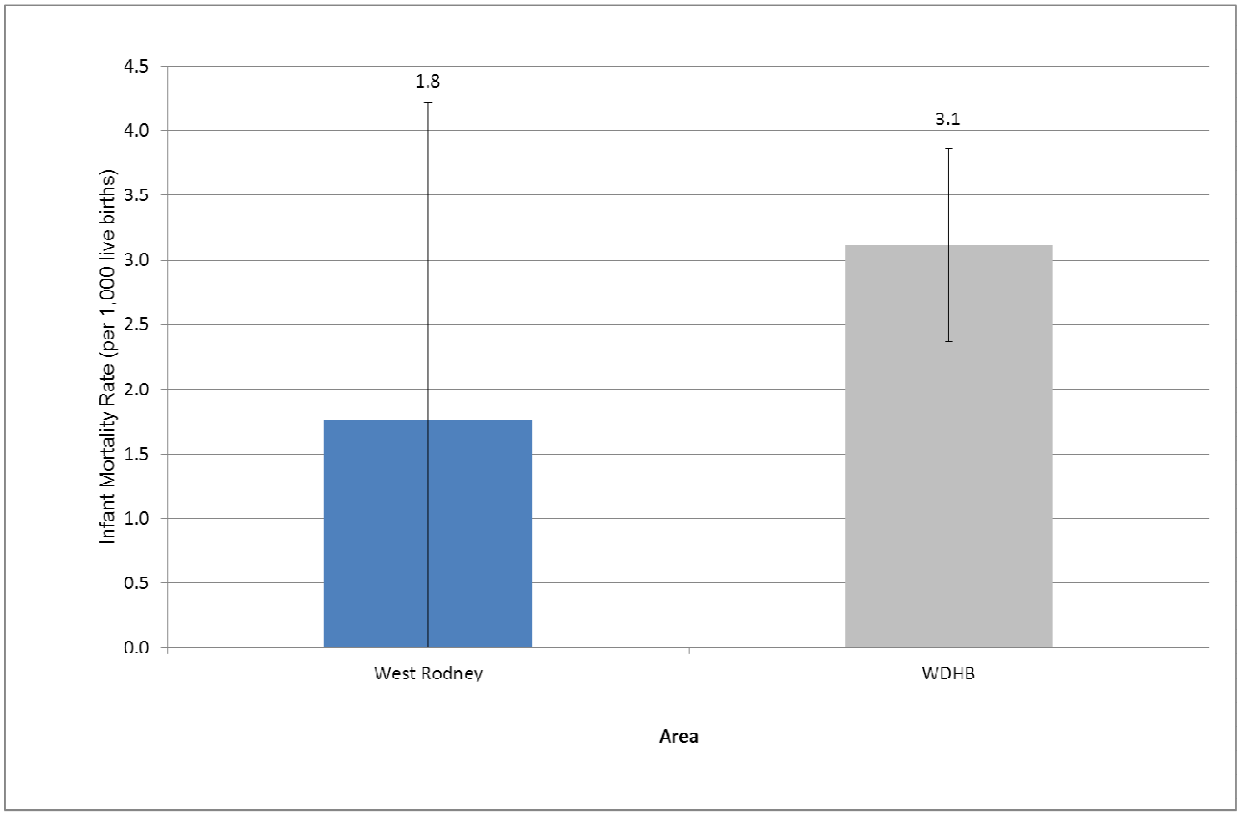
4 Child Health

4.1 Infant Mortality

Infant mortality is an important measure of social wellbeing. For the three years 2007-2009 there were 2 live born infants who died before one year of life from West Rodney.

For this period the infant mortality rate for West Rodney was 1.8 infant deaths per 1,000 live births. On account of small numbers this rate was not significantly different from that of Waitemata DHB.

Figure 19: Infant Mortality Rate, Waitemata DHB and West Rodney, 2007-2009



4.2 SUDI

Sudden Unexpected Death in Infancy (SUDI) accounts for all deaths of live born infants before one year of life where the cause of death is attributed to SIDS (Sudden Infant Death Syndrome), Accidental Suffocation / Strangulation in Bed, or death from Ill-Defined / Unspecified causes.

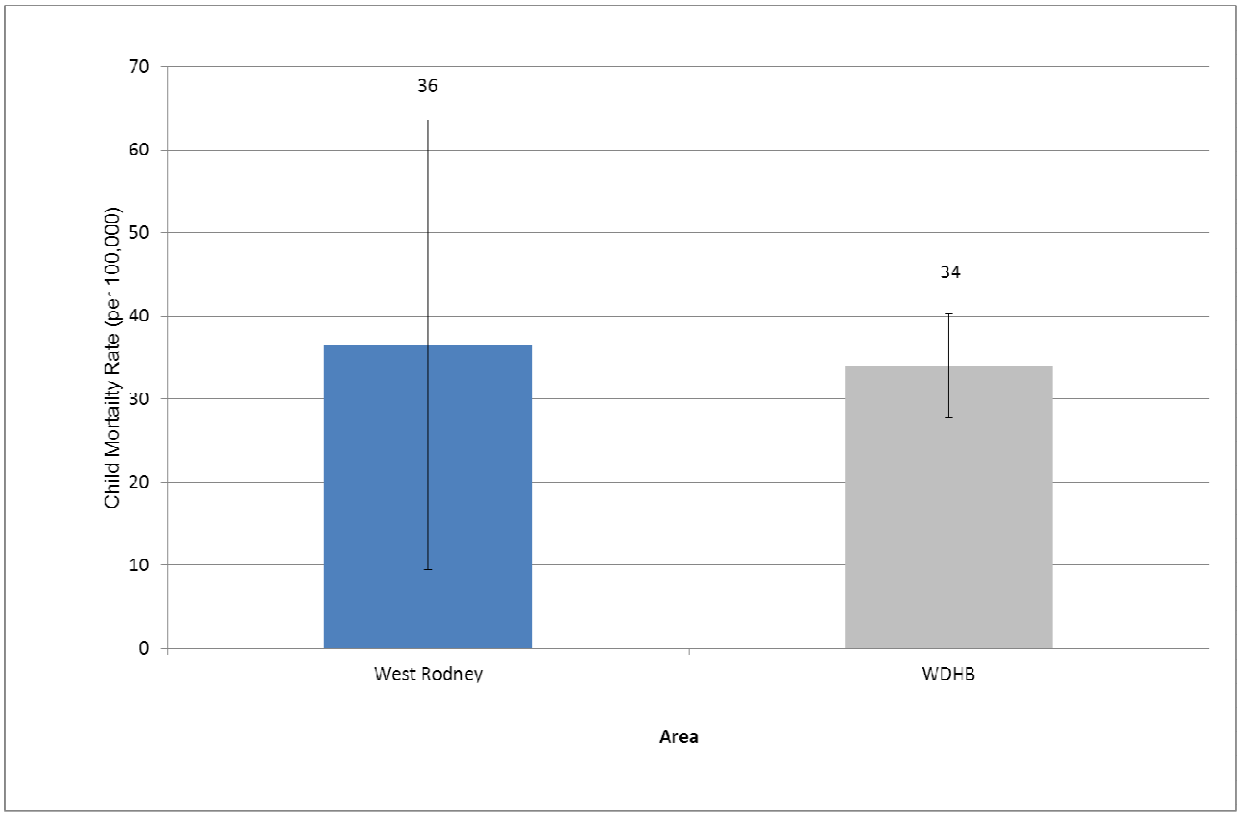
For the three years 2007-2009 there were no live born infants who died before one year of life in West Rodney with SUDI as the cause of death.

4.3 Child Mortality

For the three years 2007-2009 there were seven child deaths (0-14 years old) from West Rodney's population.

Figure 20 shows that West Rodney had a slightly higher age standardised rate of child mortality than that of Waitemata DHB (but this was not a statistically significant difference); 36 per 100,000 compared with 34 per 100,000 children.

Figure 20: Child Age Standardised Mortality Rate, Waitemata DHB and West Rodney, 2007-2009



4.4 Child Potentially Avoidable Mortality

In the three years 2007-2009 there were seven deaths among West Rodney 0-14 year olds. Of these deaths three were considered potentially avoidable. Among the Waitemata DHB child population as a whole 31% of child deaths were considered potentially avoidable in this time period.

Figure 21 shows that West Rodney had a slightly higher PAM age standardised rate than that of Waitemata DHB; 15 per 100,000 compared with 10 per 100,000 children. However, this difference was not statistically significant.

Figure 21: Child Age Standardised PAM rate, Waitemata DHB and West Rodney, 2007-2009

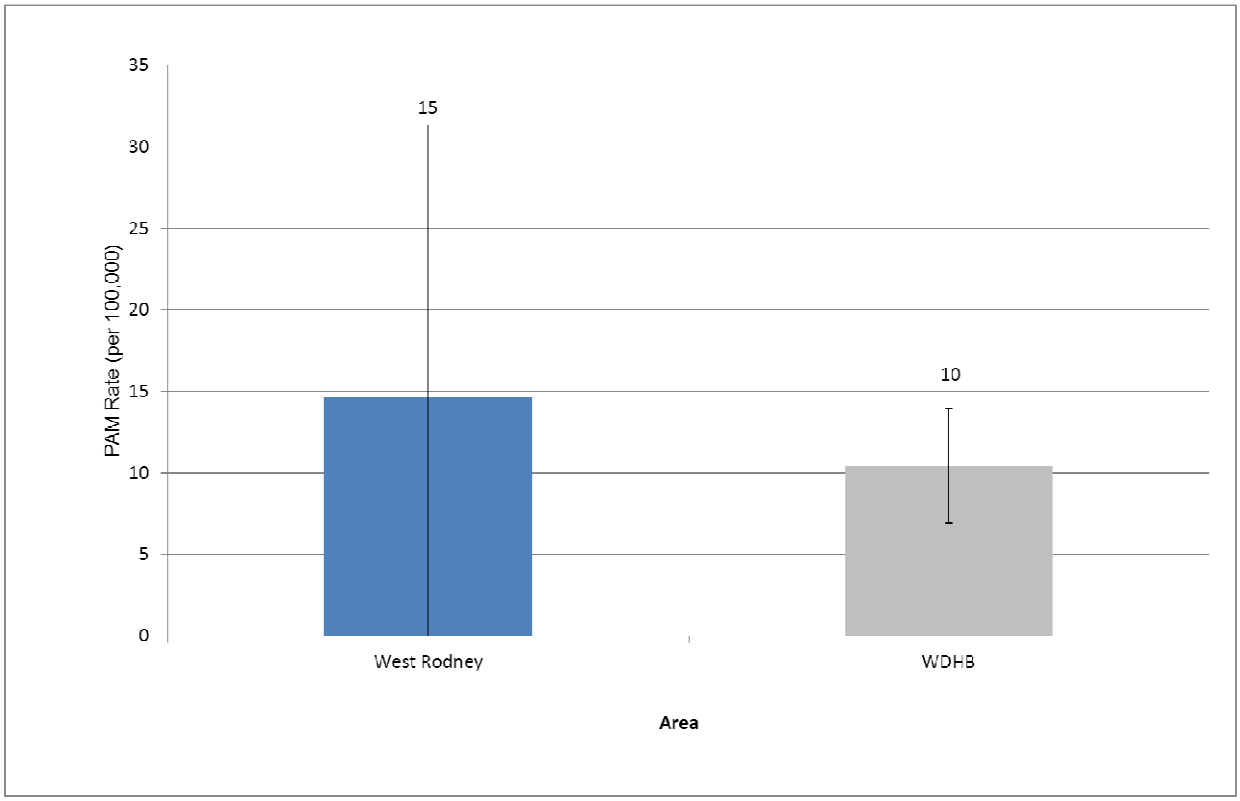


Table 25 below shows the conditions which contributed to West Rodney PAM for children.

Table 25: PAM by Condition (Top 5) – 2007-2009, West Rodney children

PAM Condition	Deaths
Asthma	1
Meningococcal disease	1
Road traffic accidents	1
PAM Total	3

Source: NZHIS, NZ Mortality Collection

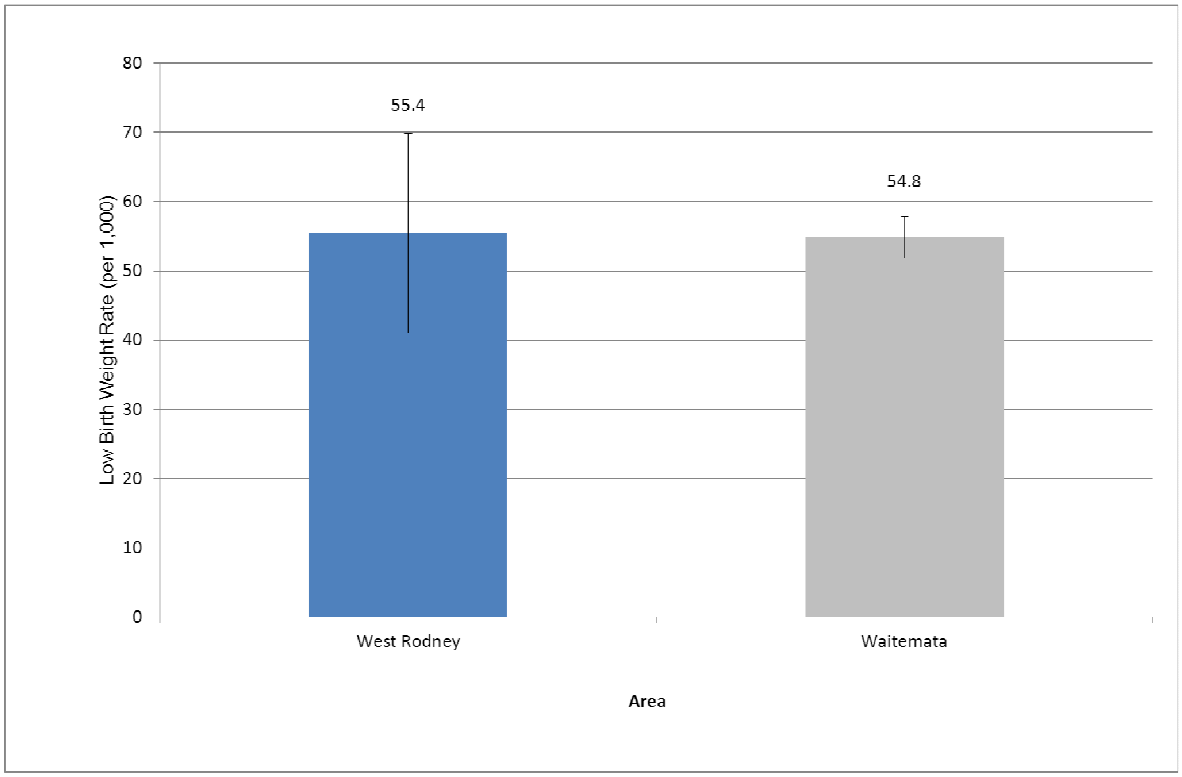
4.5 Low Birth Weight

Low birth weight refers to babies born with a weight of less than 2.5kg. It is a predictor of neonatal morbidity and mortality. It has an associated increased risk of serious health problems. Low birth weight here is based on hospital births only (as recorded in NMDS).

Over the three years 2010-2012 there were about 60 births of babies classified as having low birth weight from the West Rodney population. This represented a low birth weight rate of 55 per 1,000 live hospital births. This rate was not significantly different from the rate for the Waitemata DHB population as a whole.

By ethnicity, the numbers are too small for any significant comparison.

Figure 22: Low Birth Weight Rate, Waitemata DHB and Rodney, 2010-2012



4.6 Potentially Avoidable Hospitalisations

As a proportion of total child (0-14) acute hospital admissions for the West Rodney population over the three years 2010 – 2012, 21% were potentially avoidable (650 admissions out of a total of 3,300 acute admissions). This was a slightly lower proportion than the corresponding one for the Waitemata DHB child population as a whole of 23%.

Figure 23 shows that as an age-standardised rate, West Rodney had a lower PAH rate than Waitemata DHB among children.

Figure 23: Child Age Standardised PAH Rate, Waitemata DHB and West Rodney, 2010-2012

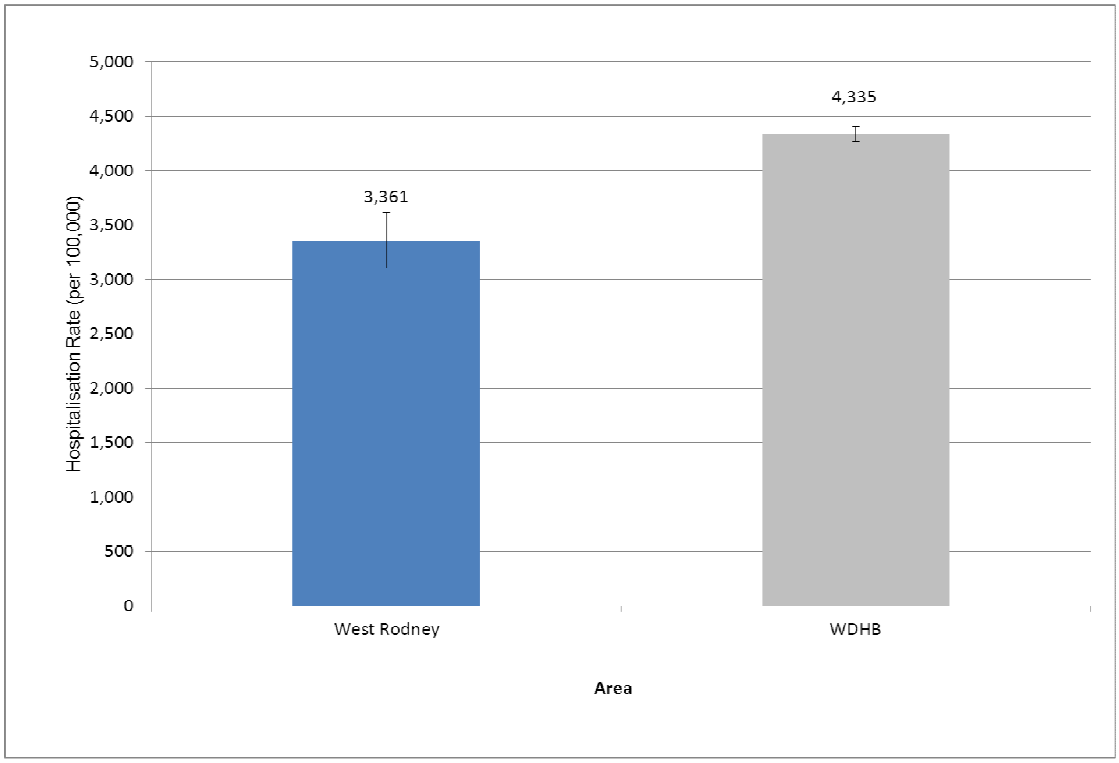


Table 26 below shows the top 10 conditions which contributed to PAH for West Rodney's children.

Tables 27 and 28 show the differences by ethnicity.

For West Rodney Māori children 19% of all PAH admissions were for Dental conditions, 16% for Asthma, and 15% for Acute bronchiolitis. For Non-Māori children 18% of all PAH admissions were for Dental conditions, 12% for Gastroenteritis, and 11% for Asthma.

Table 26: PAH by Category (Top 10) – 2010-2012, West Rodney Children

PAH Category	Admissions	%
Dental conditions	122	18%
Asthma	83	13%
Gastroenteritis	70	11%
Cellulitis	69	10%
Respiratory infections - Acute bronchiolitis	64	10%
Respiratory infections - Pneumonia	42	6%
Respiratory infections - Other	41	6%
Epilepsy	39	6%
ENT infections	28	4%
Kidney/urinary infection	28	4%
Other PAH	77	12%
PAH Total	663	100%

Table 27: PAH by Category (Top 10) – 2010-2012, West Rodney Children, Māori

PAH Category	Admissions	%
Dental conditions	33	19%
Asthma	28	16%
Respiratory infections - Acute bronchiolitis	25	15%
Cellulitis	23	13%
Respiratory infections - Other	14	8%
Gastroenteritis	12	7%
Respiratory infections - Pneumonia	8	5%
Epilepsy	7	4%
ENT infections	5	3%
Kidney/urinary infection	4	2%
Other PAH	12	7%
Total PAH	171	100%

Table 28: PAH by Category (Top 10) – 2010-2012, West Rodney Children, Non-Māori

PAH Category	Admissions	%
Dental conditions	89	18%
Gastroenteritis	58	12%
Asthma	55	11%
Cellulitis	46	9%
Respiratory infections - Acute bronchiolitis	39	8%
Respiratory infections - Pneumonia	34	7%
Epilepsy	32	7%
Respiratory infections - Other	27	5%
Kidney/urinary infection	24	5%
ENT infections	23	5%
Other PAH	65	13%
Total PAH	492	100%

4.7 Ambulatory Sensitive Hospitalisations

As a proportion of total child (0-14) acute hospital admissions for the West Rodney population over the three years 2010 – 2012, 16% were ambulatory sensitive (500 admissions out of a total of 3,300 acute admissions). This was a slightly lower proportion than the corresponding one for the Waitemata DHB population as a whole of 18%.

Expressed as an age-standardised rate, West Rodney had a lower ASH rate than Waitemata DHB among children.

Figure 24: Child Age Standardised ASH Rate, Waitemata DHB and West Rodney, 2010-2012

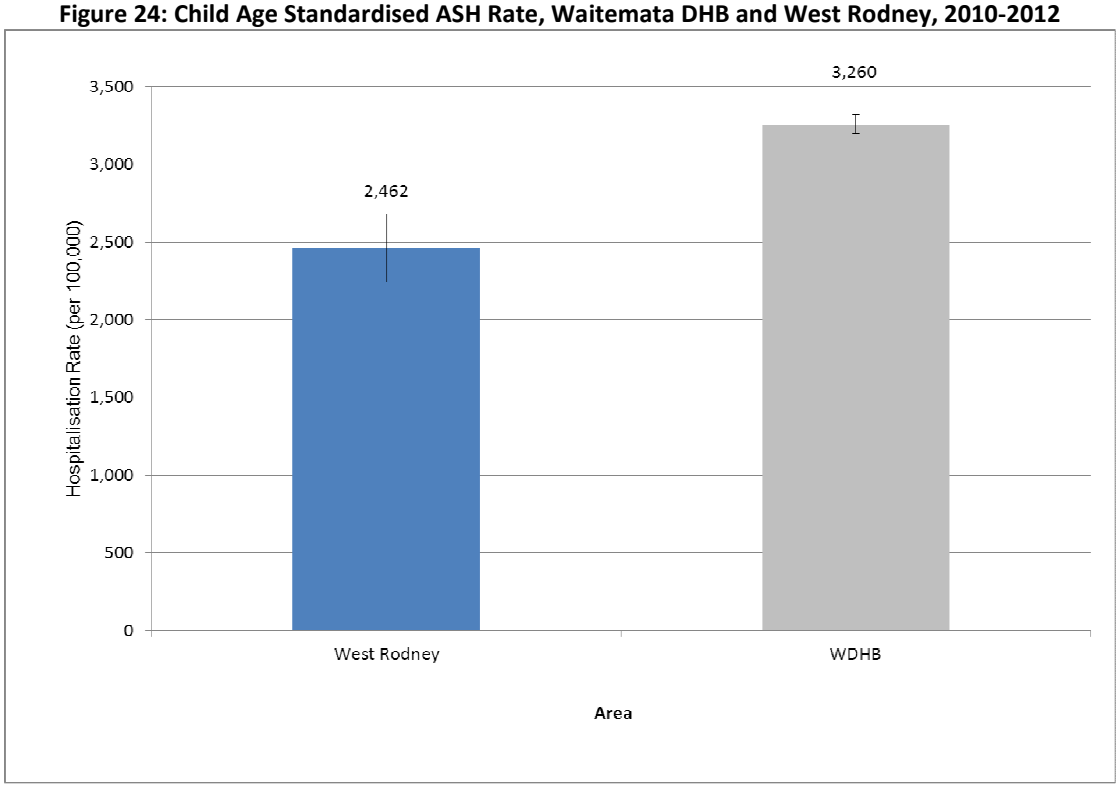


Table 29 below shows the top 10 conditions which contributed to ASH for West Rodney children.

Tables 30 and 31 show the differences by ethnicity.

For West Rodney Māori children 25% of all ASH admissions were for Dental conditions, 21% for Asthma, and 17% for Cellulitis. These top three conditions together account for nearly two thirds of all Māori child ASH and so are worthy of close attention. For Non-Māori children 22% of all ASH admissions were for Dental conditions, 19% for Gastroenteritis/dehydration, and 15% for Asthma.

Table 29: ASH by Category (Top 10) – 2010-2012, West Rodney Children

ASH Category	Admissions	%
Dental conditions	111	23%
Gastroenteritis/dehydration	84	17%
Asthma	83	17%
Cellulitis	67	14%
Upper respiratory tract and ENT infections	60	12%
Respiratory infections - Pneumonia	42	9%
Constipation	19	4%
Kidney/urinary infection	9	2%
Dermatitis & eczema	3	1%
GORD (Gastro-oesophageal reflux disease)	3	1%
Other ASH	7	1%
Total ASH	488	100%

Table 30: ASH by Category (Top 10) – 2010-2012, West Rodney Children, Māori

ASH Category	Admissions	%
Dental conditions	33	25%
Asthma	28	21%
Cellulitis	23	17%
Gastroenteritis/dehydration	17	13%
Upper respiratory tract and ENT infections	16	12%
Respiratory infections - Pneumonia	8	6%
Other ASH	8	6%
Total ASH	133	100%

Table 31: ASH by Category (Top 10) – 2010-2012, West Rodney Children, Non-Māori

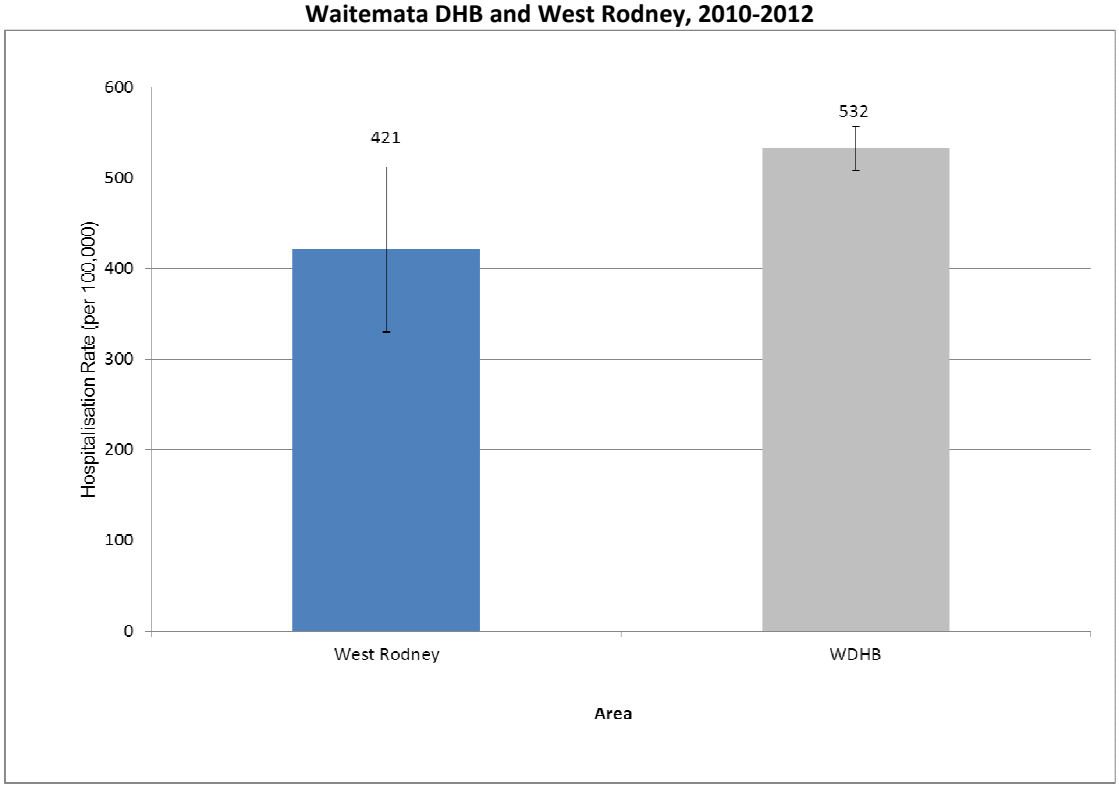
ASH Category	Admissions	%
Dental conditions	78	22%
Gastroenteritis/dehydration	67	19%
Asthma	55	15%
Cellulitis	44	12%
Upper respiratory tract and ENT infections	44	12%
Respiratory infections - Pneumonia	34	10%
Constipation	17	5%
Kidney/urinary infection	8	2%
Other ASH	8	2%
Total ASH	355	100%

4.8 Asthma Admissions

Over the three years 2010-2012 there were 80 hospital admissions for West Rodney children with a primary diagnosis of asthma. This represented an age-standardised rate of 421 admissions per 100,000 children, a rate lower than the Waitemata DHB rate of 534 admissions per 100,000 children (See Figure 25).

34% of the West Rodney child asthma admissions were for Māori children; this shows an over-representation of Māori children given that the West Rodney 0-14 population is about 18% Māori.

Figure 25: Child Age Standardised Rate – Asthma Admissions, Waitemata DHB and West Rodney, 2010-2012



4.9 Rheumatic Fever Admissions

Over the three years 2010-2012 there were three hospital admissions for West Rodney children with a primary diagnosis of acute rheumatic fever.

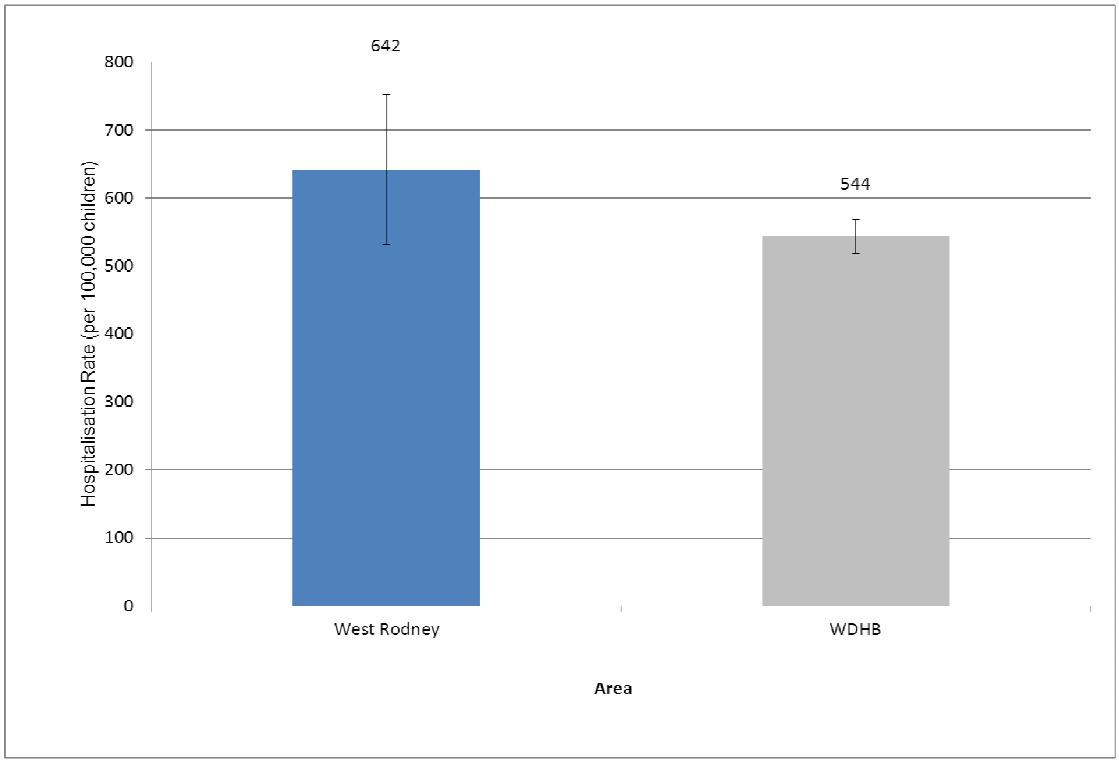
4.10 Oral Health

Over the three years 2010-2012 there were 130 hospital admissions for West Rodney children with a dental caries or oral health issue primary diagnosis. This represented an age-standardised rate of 642 admissions per 100,000 children, a rate slightly higher than the Waitemata DHB rate.

Differences between age-standardised rates of dental admissions are not significant by ethnicity due to the small numbers.

However, of the 130 child dental admissions over the three years, 34 were for Māori children. This means that 26% of these child West Rodney admissions were for Māori (Māori make up 18% of the West Rodney 0-14 population).

Figure 26: Child Age Standardised Rate – Dental Caries and Oral Health Admissions, Waitemata DHB and Rodney, 2010-2012



4.11 Outpatient Attendances

Outpatient attendances for West Rodney children have been ranked below to give a sense of the type of hospital services that West Rodney residents have been accessing. Further work on any particular service of interest could be undertaken to determine if the level of access is adequate.

For the purposes of comparison outpatient visits in this analysis have been restricted to First Specialist Assessments (FSAs) and Follow Ups measured by "attendances". The below tables show which health specialties accounted for the most FSAs and Follow Ups for West Rodney children.

Table 32: Outpatient FSA Attendances by Purchase Unit – 2012, West Rodney Children

PUC	Purchase Unit Description	Attendances	%
M55002	Paediatric Medical Outpatient	177	38%
S25002	Ear Nose and Throat	68	14%
S45002	Orthopaedics	56	12%
S55002	Paediatric Surgery Outpatient	29	6%
MS01001	Nurse Led Outpatient Clinics	28	6%
S45004	Fracture Clinic - 1st attendance	23	5%
S40002	Ophthalmology - 1st attendance	21	4%
NS10040	National Services Specialist Paediatric Cardiac	18	4%
M49002	Specialist Paediatric Neurology Outpatient	8	2%
M15002	Dermatology	6	1%
Other	Other FSA OP Attendances	37	8%
Total		471	100%

Table 33: Outpatient Follow Up Attendances by Purchase Unit – 2012, West Rodney Children

PUC	Purchase Unit Description	Attendances	%
S45003	Orthopaedics	161	16%
M55003	Paediatric Medical Outpatient	139	14%
S25003	Ear Nose and Throat	99	10%
S40003	Ophthalmology	81	8%
MS01001	Nurse Led Outpatient Clinics	76	8%
M20009	Specialist Paediatric Endocrinology	70	7%
S55003	Paediatric Surgery Outpatient	63	6%
D01002	Outpatient Dental treatment	62	6%
NS10041	National Services Specialist Paediatric Cardiac	46	5%
M49003	Specialist Paediatric Neurology Outpatient	36	4%
Other	Other FU OP Attendances	174	17%
Total		1,007	100%

Tables 34 and 35 show which hospital facilities West Rodney children travelled to for outpatient appointments.

Table 34: Outpatient FSA Attendances by Hospital – 2012, West Rodney Children

Hospital	OP FSA Attendances	%
Auckland	191	41%
Waitakere	171	36%
North Shore	102	22%
Other	7	1%
Total	471	100%

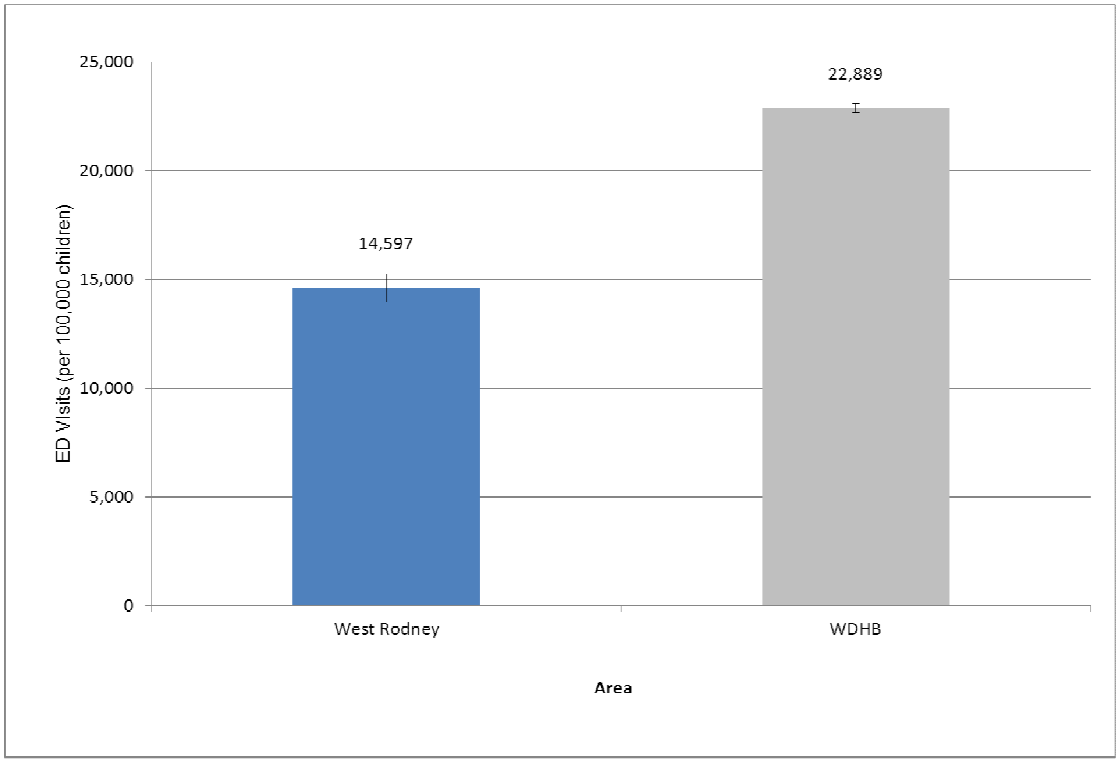
Table 35: Outpatient Follow Up Attendances by Hospital – 2012, West Rodney Children

Hospital	OP Follow Up Attendances	%
Auckland	692	69%
Waitakere	153	15%
North Shore	124	12%
Other	38	4%
Total	1,007	100%

4.12 Emergency Department Attendances

For the two years 2011 to 2012, there were 1,950 Emergency Department visits from West Rodney's child (0-14) population. Expressed as an age-standardised rate, West Rodney had a rate of ED attendance of 14,600 per 100,000 children. This was a rate lower than that for Waitemata DHB as a whole over this time period (22,900 ED visits per 100,000).

Figure 27: Age Standardised ED Visit Rate, Waitemata DHB and West Rodney, 2011-2012, Children



By ethnicity, West Rodney Non-Māori had a higher age-standardised rate of Emergency Department Attendances than Māori among children. (These rates are based on relatively small numbers: About 2,000 child ED attendances over two years). (Note: Figure 27 and Figure 28 are not directly comparable because of the need for some added estimation in the population base by ethnicity. However, the relative differences provide a good guide).

Figure 28: Age Standardised ED Visit Rate, Waitemata DHB and West Rodney, 2011-2012, Children, by Ethnicity

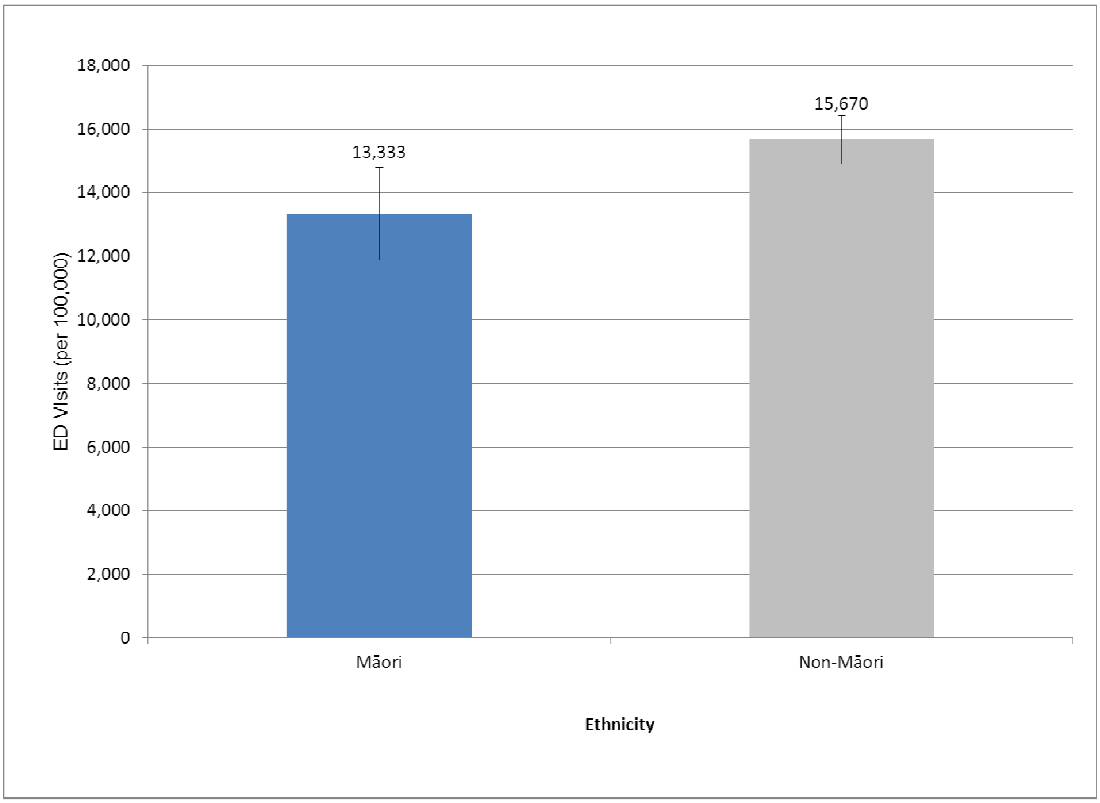


Table 36 shows which Hospital Emergency Departments West Rodney children travelled to over the two years 2011 and 2012.

Table 36: ED Attendances by Hospital – 2011-2012, West Rodney Children

Hospital	ED Attendances	%
Waitakere	934	48%
Auckland	711	36%
North Shore	214	11%
Other	94	5%
Total	1,953	100%

WEST RODNEY ENROLLED POPULATION

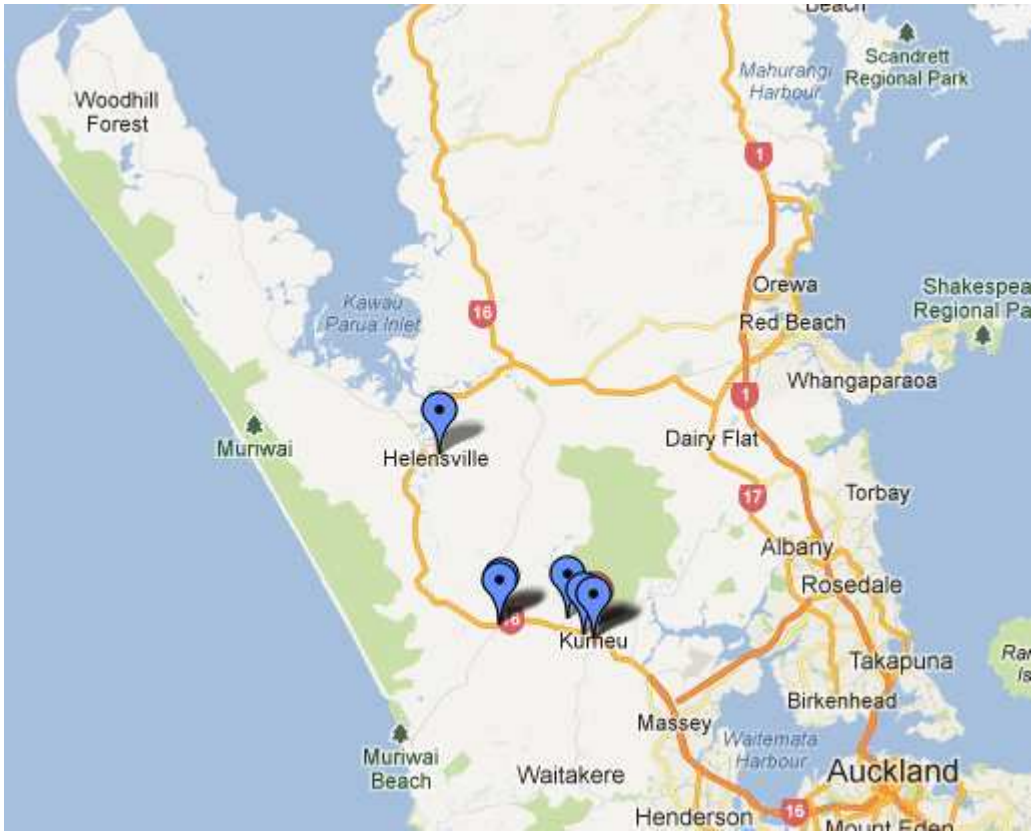
The second part of this profile focusses on an analysis of the population enrolled with the six West Rodney GP Practices (this will include some people who live outside the district). Some of the same measures looked at in the previous part of the profile will be repeated here.

1. Population Demographics

1.1 Enrolled population by practice

The map below shows the location of the six practices which make up the 'West Rodney Cluster': Kaipara Medical Centre, Waimauku Doctors, Kumeu Village Medical Centre, Huapai Family Medical Practice, Silver Fern Medical Centre, and Country Medical Centre (The practice located in Helensville is Kaipara Medical Centre).

Map 5: West Rodney Practices



Source: Google Maps, 2013

The table below shows the enrolled populations of the six West Rodney practices.

Table 37: Enrolled Population 2013 Q1, West Rodney by Practice

Practice	Total	%
Kaipara Medical Centre	6,021	29%
Waimauku Doctors	4,540	22%
Kumeu Village Medical Centre	4,352	21%
Huapai Family Medical Practice	2,725	13%
Silver Fern Medical Centre	2,002	10%
Country Medical Clinic	814	4%
Total	20,454	100%

Source: PHO Enrolment Database

1.2 Enrolled population by age

Table 38 below shows the age structure of the West Rodney enrolled population. The age structure is similar to that of Waitemata DHB's age structure as a whole.

Table 38: Enrolled Population 2013 Q1, West Rodney by Age

Age	Total	%
0 - 14	4,578	22%
15 - 24	2,678	13%
25 - 44	4,855	24%
45 - 64	5,724	28%
65+	2,619	13%
Total	20,454	100%

Source: PHO Enrolment Database

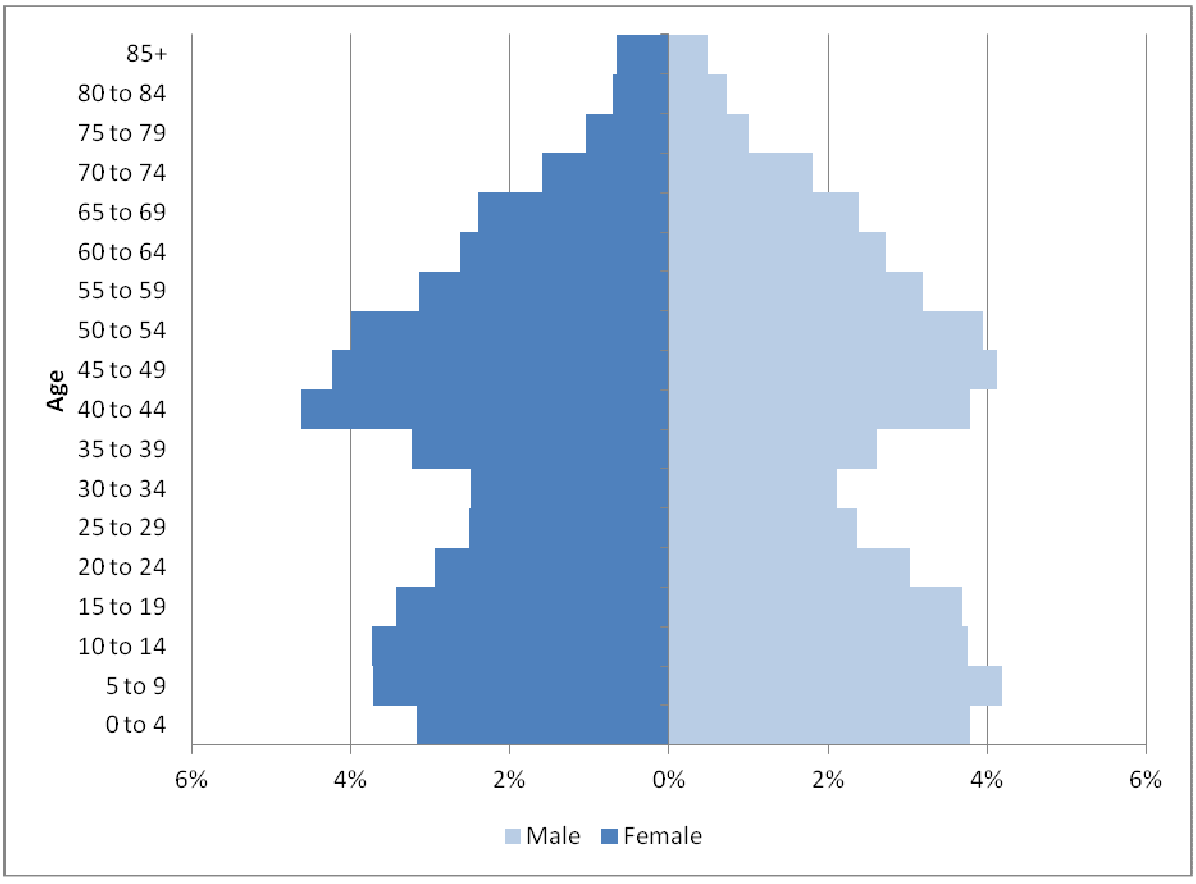
Table 39 shows that West Rodney's Māori population was much younger than that of the rest of West Rodney (35% children compared to 21% children for Other).

The population pyramids below highlight these differences.

Table 39: Enrolled Population 2013 Q1, West Rodney by Age, Māori and Other

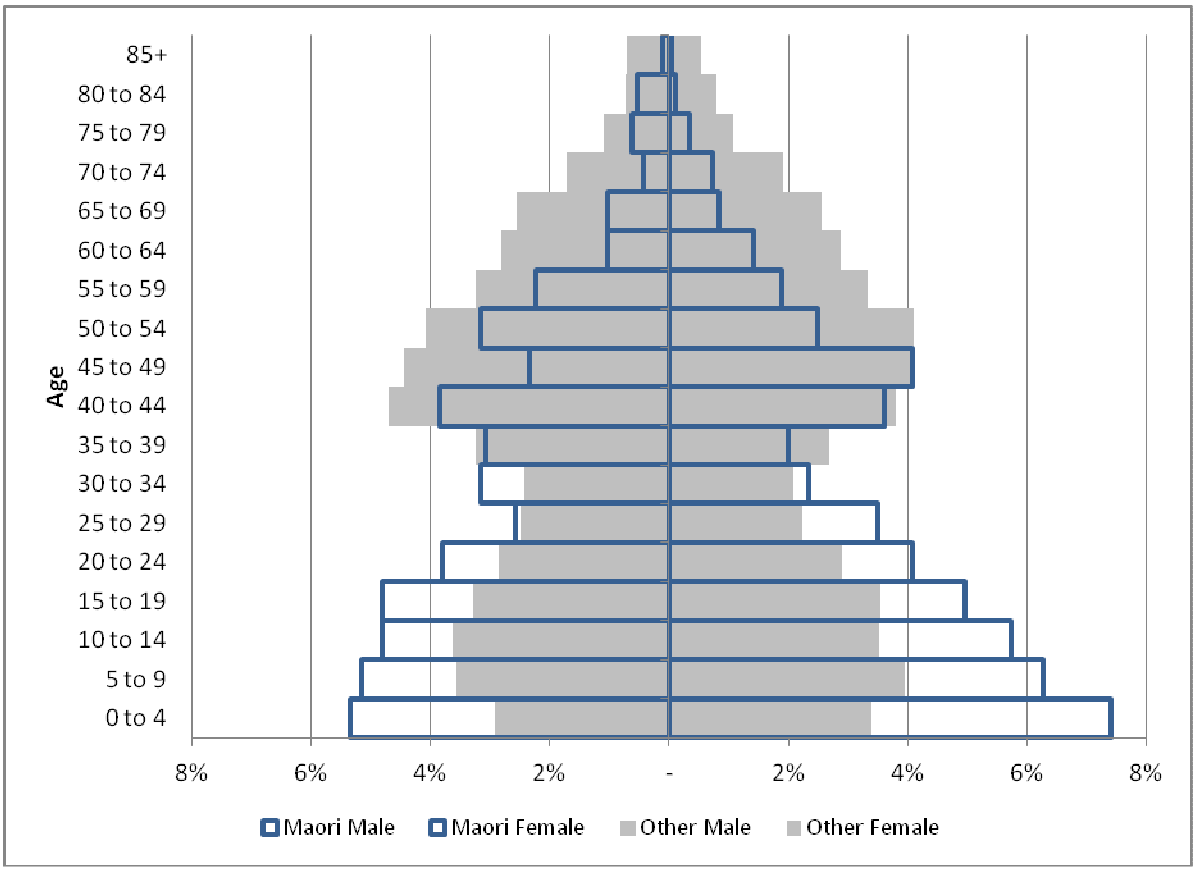
Age	Māori	Māori %	Other	Other %
0 to 14	714	35%	3,864	21%
15 to 24	363	18%	2,315	13%
25 to 44	495	24%	4,360	24%
45 to 64	383	19%	5,341	29%
65+	98	5%	2,521	14%
Total	2,053	100%	18,401	100%

Figure 29: Enrolled Population 2013 Q1, West Rodney by Age



Source: PHO Enrolment Database

Figure 30: Enrolled Population 2013 Q1, West Rodney by Age, Māori and Other



1.3 Enrolled population by ethnicity

Broken down by ethnicity, West Rodney had small populations of Pacific and Asian people (2% each). Māori made up 10% of the population.

Table 40: Enrolled Population 2013 Q1, West Rodney by Ethnicity

Ethnicity	Total	%
Māori	2,053	10%
Pacific	399	2%
Asian	377	2%
Other	17,625	86%
Total	20,454	100%

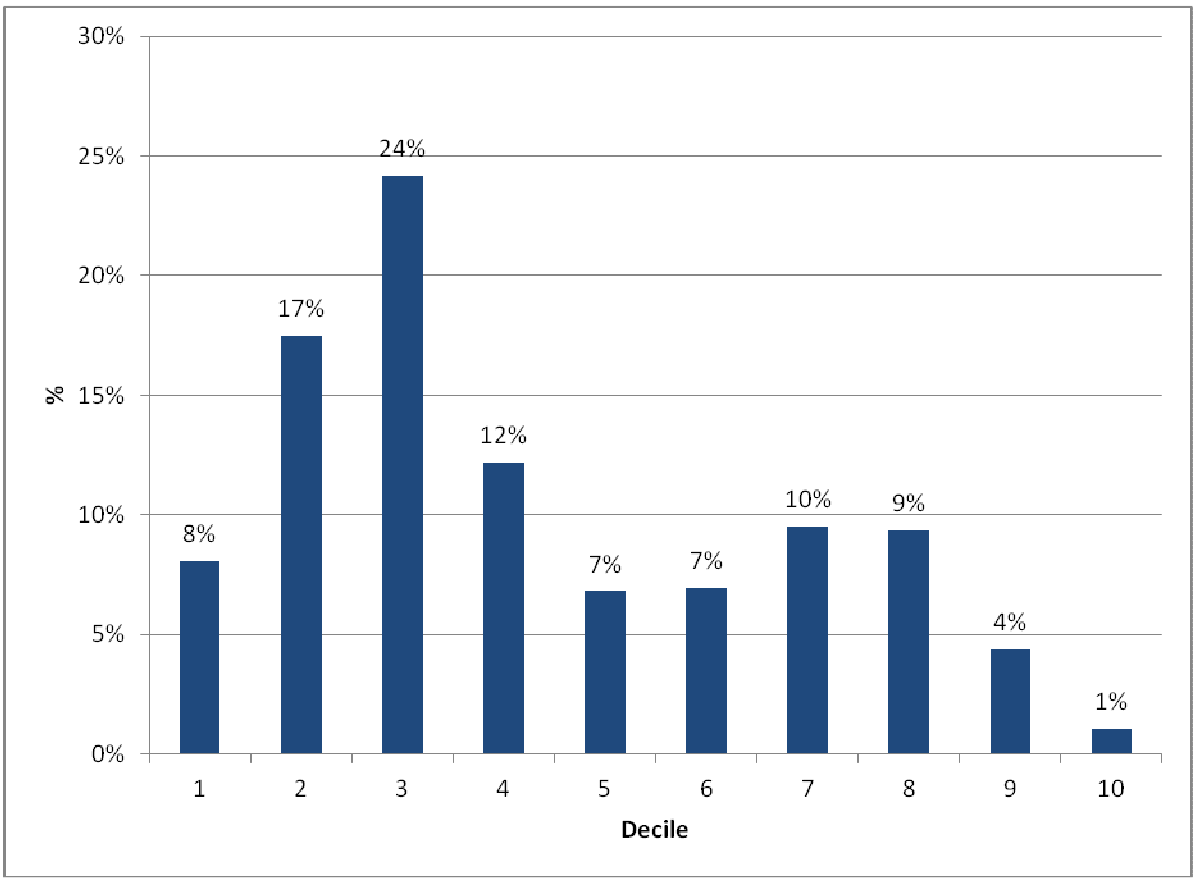
Source: PHO Enrolment Database

1.4 Enrolled population by deprivation

Figure 31 below shows that much of West Rodney's population lived in relatively less-deprived areas. About 68% of the population lived in the less deprived half of NZ Areas (NZDep2006 scores 1 to 5).

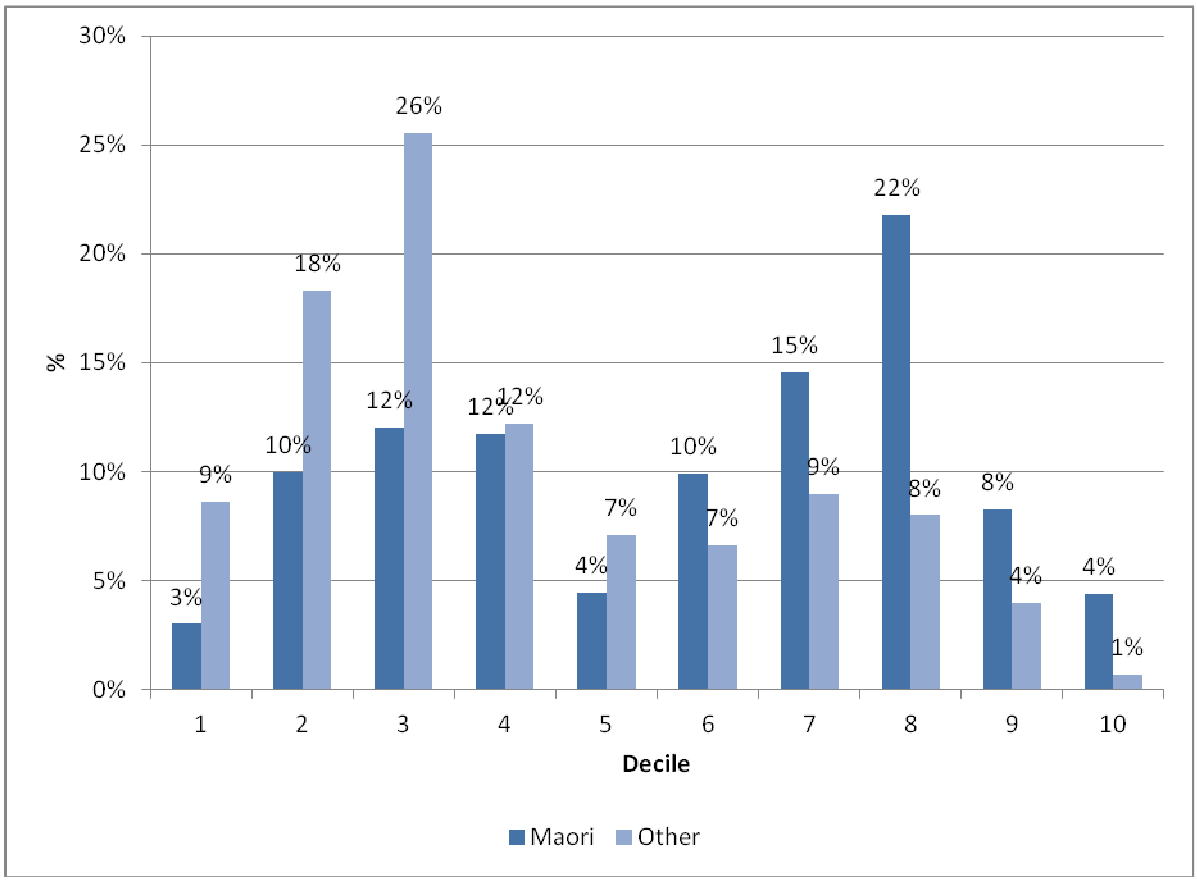
However, for Māori in West Rodney the picture is different. Figure 32 shows much of West Rodney's Māori population lived in relatively more deprived areas when compared with the rest of the West Rodney population.

Figure 31: West Rodney – Deprivation, 2013 Q1



Source: PHO Enrolment Database (excludes 'Unknown' deprivation)

Figure 32: West Rodney – Deprivation, Māori – Non-Māori, 2013 Q1



1.5 Enrolled population by domicile

The table below shows where the patients enrolled with West Rodney practices lived. The 'Unknown' domicile is assigned when a patients address is not recorded clearly enough to assign a domicile. The majority of West Rodney patients lived in the vicinity of the location of the practices.

Table 41: Enrolled Population 2013 Q1, West Rodney by Domicile

Domicile	Total	% (Excludes 'Unknown')
'Unknown'	5,597	
Kumeu	3,861	26%
Helensville	1,810	12%
Kaukapakapa	1,289	9%
Muriwai Beach	1,094	7%
South Head	1,025	7%
Riverhead	967	7%
Parakai	871	6%
Rewiti	613	4%
Waipareira West	302	2%
Taupaki	276	2%
Tauhoa – Puhoi	273	2%
Paremoremo West	184	1%
Whenuapai West	167	1%
Tahekeroa	143	1%
Herald	107	1%
Royal Heights	94	1%
Lucken Point	84	1%
Hobsonville	78	1%
Ranui North	68	0%
West Harbour	61	0%
Other	1,490	10%
Total	20,454	100%

2. Hospital Admissions

The following section uses encrypted NHI to link those patients enrolled with West Rodney practices with Public Hospital data. This makes it possible to analyse hospital admissions and to identify those conditions which commonly have led to hospitalisation for West Rodney enrolled patients.

2.1 Acute Admissions, 2012

In 2012 there were over 3,000 acute hospital admissions for West Rodney patients.

Figures 33 and 34 below show that older people faced a much higher rate of acute hospitalisation. However, the rate of acute admission for West Rodney patients was less than that of the Waitemata DHB total for 2013.

Table 42: Acute Hospital Admissions, West Rodney, 2012

Age Group	Māori	Pacific	Asian	Other	Total
0 to 14	136	13	15	458	622
15 to 74	323	56	26	1,817	2,222
75+	23	6	<5	374	404
Total	482	75	42	2,649	3,248

Table 43 below shows that of all acute admissions 19% were among children and 12% were for adults 75+ for West Rodney's enrolled population. However, for Māori 28% were among children and only 5% among adults 75+.

Table 43: Acute Hospital Admissions, West Rodney, 2012, % by Age and Ethnicity

Age Group	Māori	Pacific	Asian	Other	Total
0 to 14	28%	17%	36%	17%	19%
15 to 74	67%	75%	62%	69%	68%
75+	5%	8%	<5%	14%	12%
Total	28%	17%	36%	17%	19%

Figure 33: West Rodney – Acute Hospital Admission Rate 2012, by Age

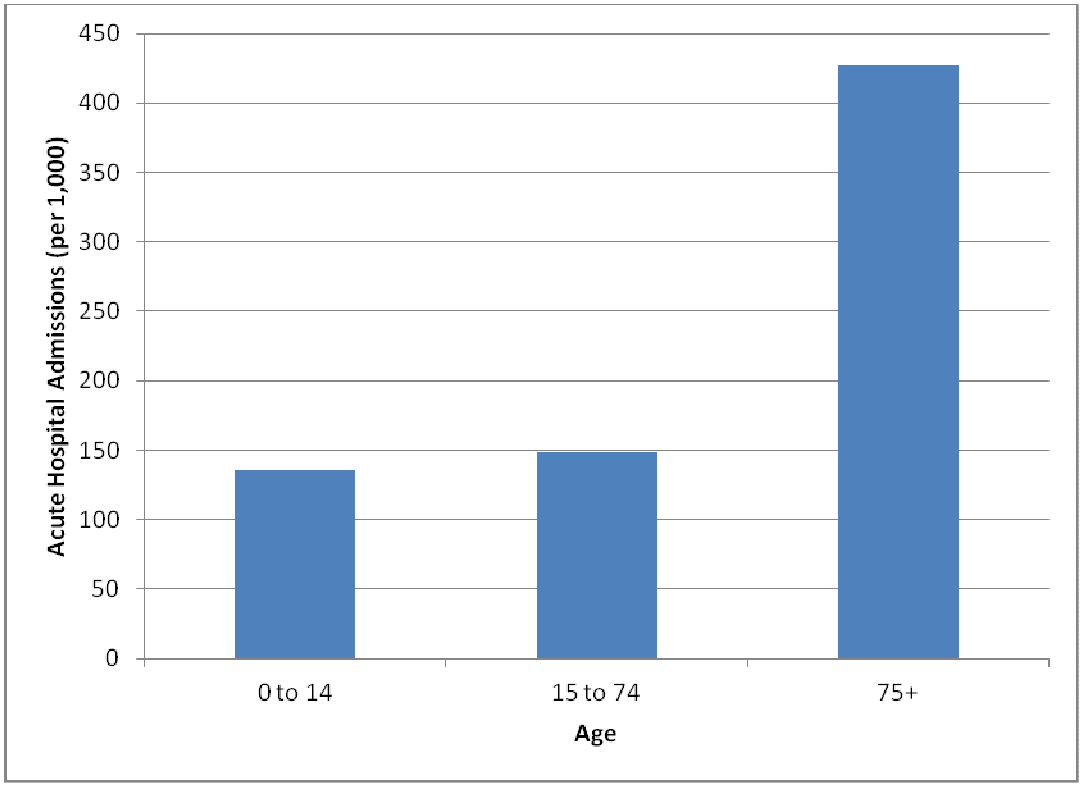
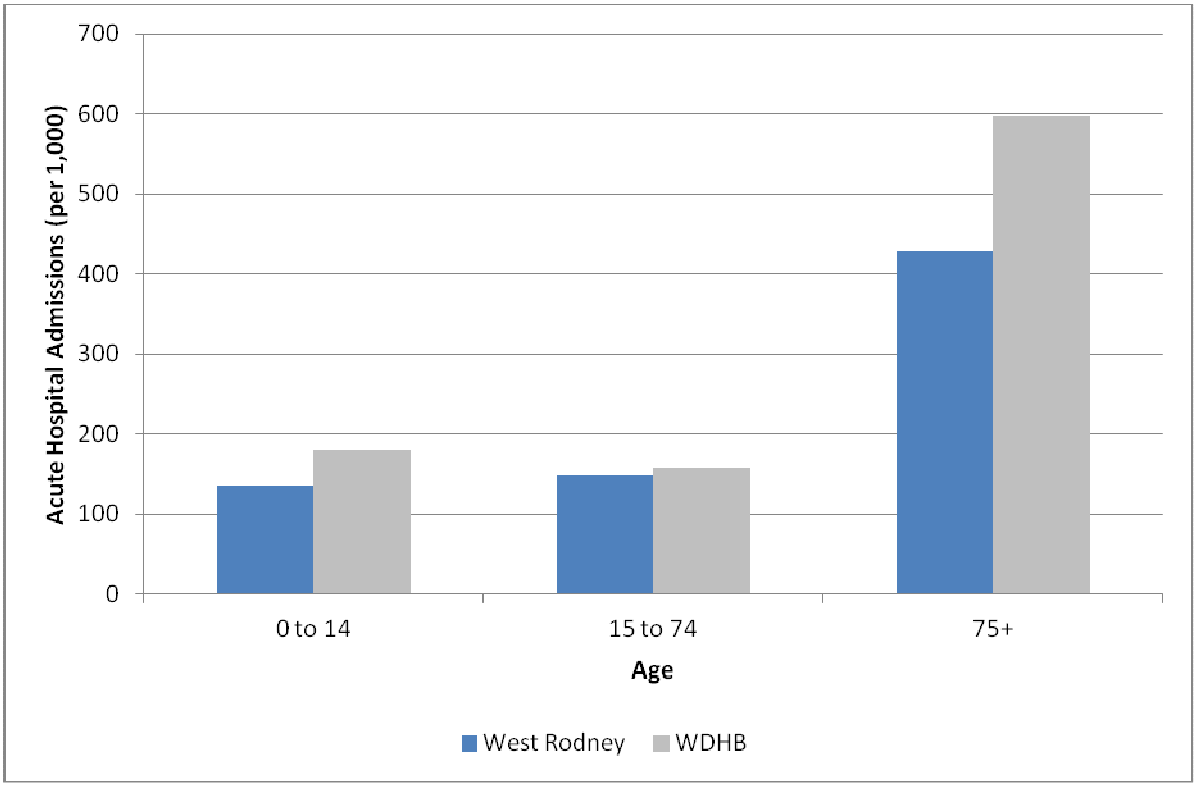


Figure 34: West Rodney and Waitemata DHB Total – Acute Hospital Admission Rate 2012, by Age



When broken down by ethnicity the highest rate of acute hospitalisation for West Rodney patients was among Māori. Figures 35 and 36 show rates for all ages.

Figure 35: Age Standardised Acute Hospital Admission Rate, West Rodney, 2012, by Ethnicity

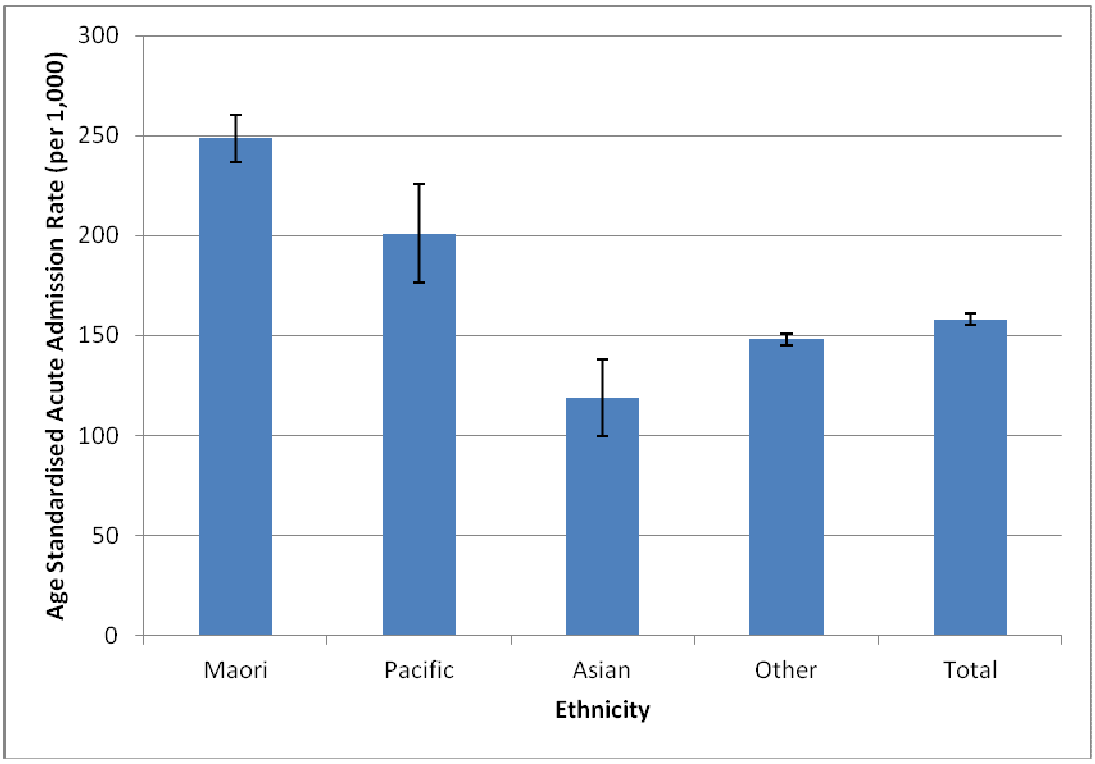
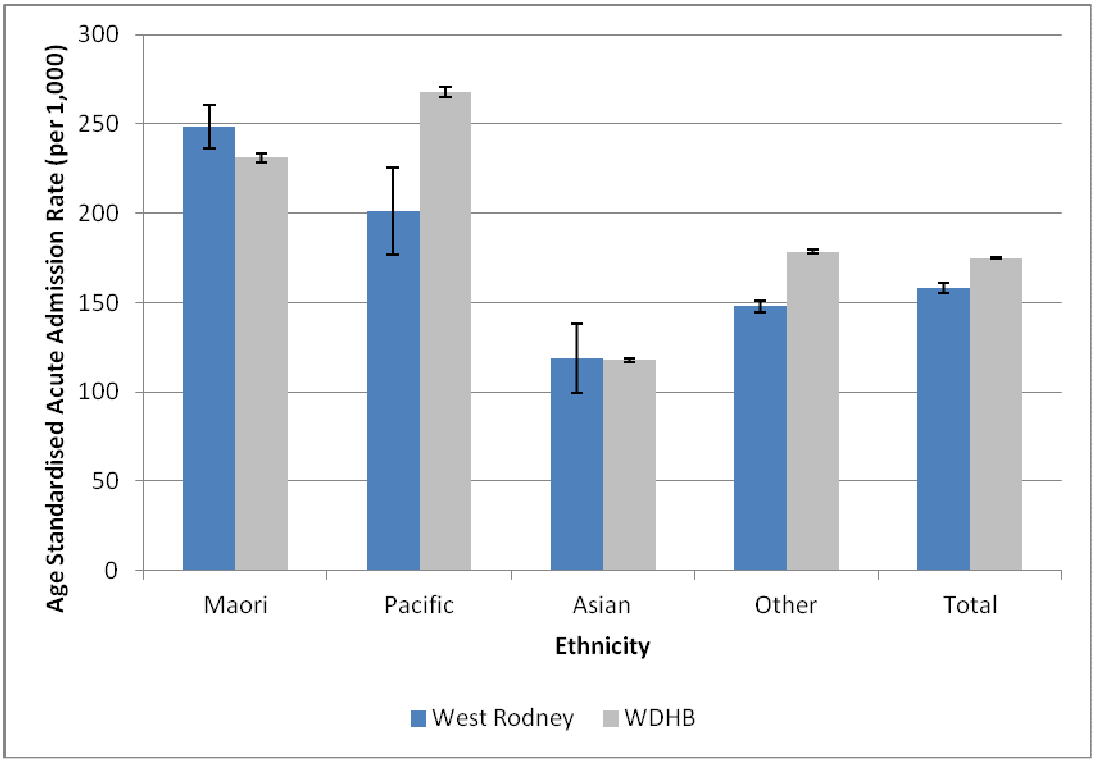


Figure 36 shows that West Rodney enrolled Māori had a higher acute admissions rate than Waitemata DHB Māori. This is an important observation. More work could be done to understand these differences, particularly given concerns with PHO enrolment ethnicity data.

Figure 36: Age Standardised Acute Admission Rate, West Rodney and Waitemata DHB, 2012, by Ethnicity



2.2 Ambulatory Sensitive Hospitalisations, 2010-2012

Ambulatory Sensitive Hospitalisations are defined as those hospital admissions resulting from diseases sensitive to prophylactic or therapeutic interventions deliverable in a primary health care setting.

In adults (15+) an upper age threshold of 75 years is used when reporting on ASH indicators as there is a high level of com-morbidities from age 75 years and above. Given the relatively small population group of interest, three years of data have been presented to allow for a more robust picture.

For the three years 2010 to 2012 there were over 1,000 ambulatory sensitive hospital admissions for enrolled West Rodney patients.

Table 44: Ambulatory Sensitive Hospital Admissions, West Rodney, 2010-2012

Age Group	Māori	Pacific	Asian	Other	Total
0 to 14	95	10	10	233	348
15 to 74	139	27	12	737	915
Total (0-74)	234	37	22	970	1,263

Table 45 below shows that of all ASH admissions 28% were among children for West Rodney's enrolled population. However, for Māori this proportion was much higher with 41% of all ASH admissions being among children.

Table 45: Ambulatory Sensitive Hospital Admissions, West Rodney, 2010-2012, % by Age and Ethnicity

Age Group	Māori	Pacific	Asian	Other	Total
0 to 14	41%	27%	45%	24%	28%
15 to 74	59%	73%	55%	76%	72%
Total (0-74)	41%	27%	45%	24%	28%

Table 46 shows the proportion of acute admissions which were deemed ambulatory sensitive for the three years 2010 to 2012 by ethnicity and age group for West Rodney. It is important to keep in mind the small number of patients, particularly Pacific and Asian. A higher proportion of acute child admissions were considered ambulatory sensitive than for adults.

Table 46: % Acute Admissions ASH, West Rodney, 2010-2012

Age Group	Māori	Pacific	Asian	Other	Total
0 to 14	22%	19%	25%	14%	16%
15 to 74	15%	16%	18%	14%	14%
Total (0-74)	17%	17%	21%	14%	15%

Table 47: % Acute Admissions ASH, Waitemata DHB, 2010-2012

Age Group	Māori	Pacific	Asian	Other	Total
0 to 14	22%	25%	17%	14%	18%
15 to 74	18%	20%	14%	15%	16%
Total (0-74)	19%	22%	15%	15%	16%

Figure 37 shows ASH rates for West Rodney by ethnicity. Māori compared to others had a higher rate of ambulatory sensitive hospitalisation for the three years 2010 to 2012.

Compared to Waitemata DHB as a whole West Rodney's ASH rate was slightly lower for the past three years.

Figure 37: Age Standardised ASH Rate 2010-2012, West Rodney 0-74, by Ethnicity

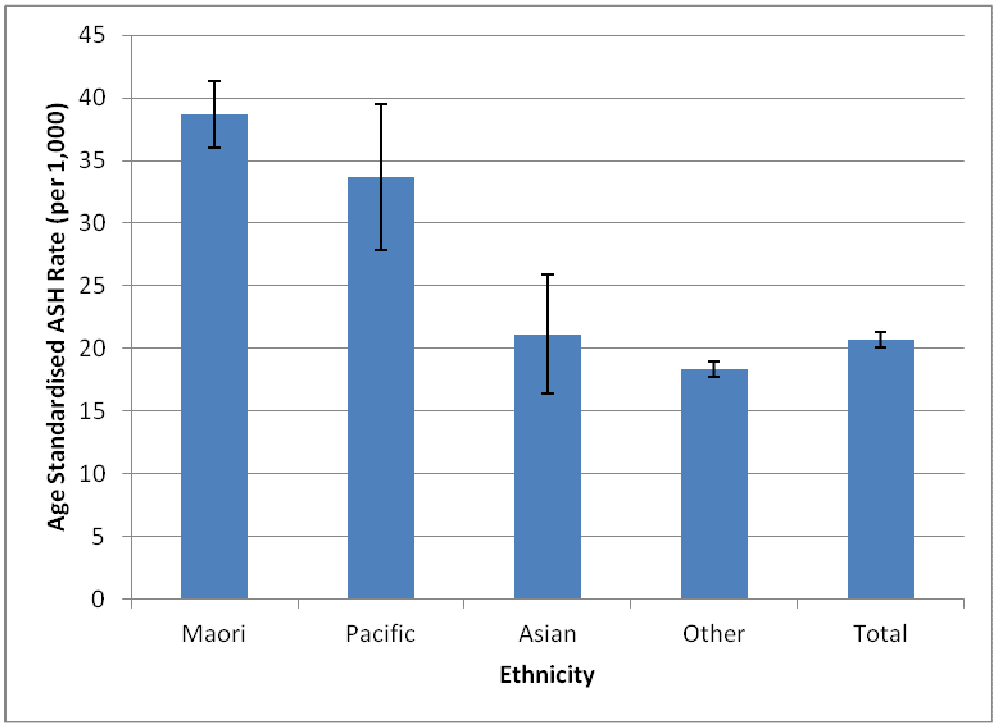


Figure 38 shows that West Rodney enrolled Māori had a lower ASH rate than Waitemata DHB Māori. This is an interesting result given the previous observation of West Rodney Māori's higher acute admission rate compared with Waitemata DHB Māori. More work could be done to understand these differences, particularly given concerns with PHO enrolment ethnicity data.

Figure 38: Age Standardised ASH Rate, West Rodney and Waitemata DHB, 2010-2012, by Ethnicity

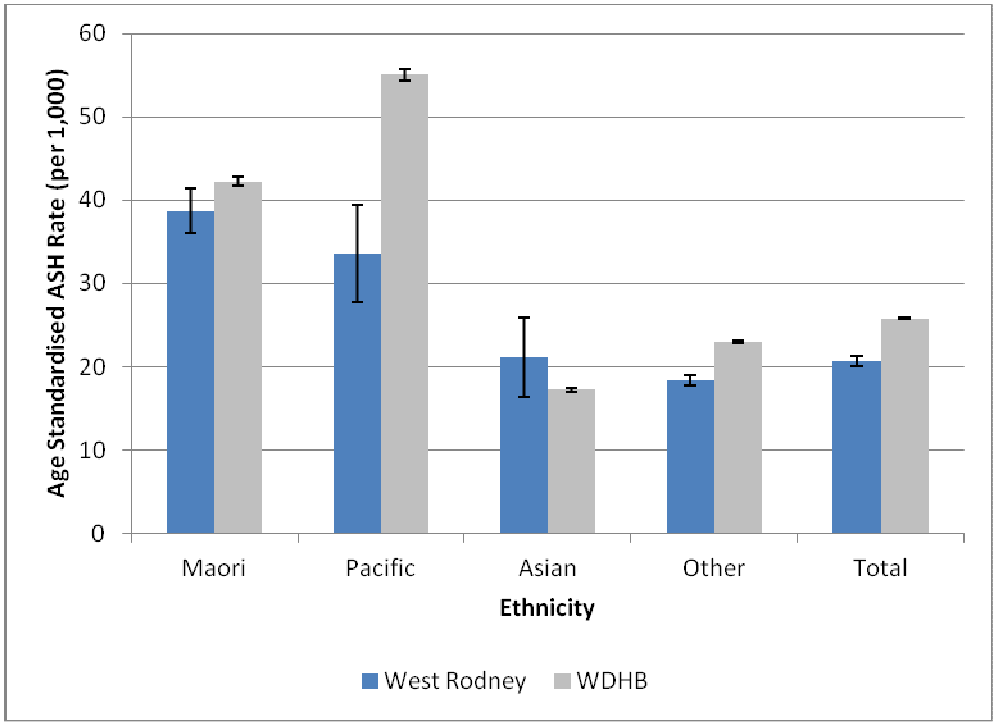


Table 48 below shows which conditions led to the most ambulatory sensitive hospitalisations for West Rodney children. Over half of all ASH admissions were on account of dental conditions, gastroenteritis/dehydration, and asthma.

For West Rodney Māori children 29% of all ASH admissions were for Dental Conditions, 18% for Asthma, and 17% for Cellulitis. For Non-Māori children 23% of all ASH admissions were for Dental Conditions, 20% for Gastroenteritis/dehydration, and 15% Asthma.

Table 48: Child (0-14) ASH Admissions 2010-2012, West Rodney, by Condition

ASH Category	Admissions	% ASH
Dental conditions	90	26%
Gastroenteritis/dehydration	62	18%
Asthma	58	17%
Cellulitis	45	13%
Upper respiratory tract and ENT infections	39	11%
Respiratory infections - Pneumonia	25	7%
Constipation	15	4%
Kidney/urinary infection	8	2%
Other	6	2%
Total ASH	348	100%

For West Rodney adults, the top conditions contributing to ASH admissions were angina and chest pain, cellulitis, and gastroenteritis/dehydration.

For West Rodney Māori adults 19% of all ASH admissions were for Cellulitis, 14% for Angina and chest pain, and 8% for Gastroenteritis/dehydration. For Non- Māori adults 20% of all ASH admissions were for Angina and chest pain, 12% for Cellulitis, and 10% Gastroenteritis/dehydration.

Table 49: Adult (15-74) ASH Admissions 2010-2012, West Rodney, by Condition

ASH Category	Admissions	% ASH
Angina and chest pain	177	19%
Cellulitis	122	13%
Gastroenteritis/dehydration	86	9%
Myocardial infarction	66	7%
Respiratory infections - Pneumonia	57	6%
Diabetes	50	5%
Kidney/urinary infection	48	5%
Epilepsy	42	5%
Dental conditions	41	4%
Asthma	38	4%
Upper respiratory tract and ENT infections	34	4%
Congestive heart failure	29	3%
Nutrition Deficiency and Anaemia	28	3%
GORD (Gastro-oesophageal reflux disease)	27	3%
Constipation	21	2%
Stroke	16	2%
Other ischaemic heart disease	10	1%
Dermatitis & eczema	8	1%
Hypertensive disease	7	1%
Other	9	1%
Total ASH	915	100%

3. Primary Care Indicators

The following primary care indicators are based on the aggregated data of four West Rodney practices. While this does not include every West Rodney practice it does give a guide to the coverage among these practices for these important primary care indicators as compared to Waitemata DHB as whole. (Source: PHO CPI Reports.)

Indicator Definitions available in document:
PHO Performance Programme Indicator Definitions – 1 July 2012 Set

'High Needs' is defined as the total Maori, Pacific, and Quintile 5 population.

3.1 CVD Risk Assessment

Table 50: % CVD Risk Assessment, as at June 2013

Eligible Group	West Rodney	Waitemata DHB Total
Māori	72%	68%
Non-Māori	68%	72%
High Needs	71%	71%
Total Population	68%	71%

3.2 Diabetes Annual Review

Table 51: % Diabetes Annual Review, as at June 2013

Eligible Group	West Rodney	Waitemata DHB Total
Māori	50%	N.A.
Non-Māori	51%	N.A.
High Needs	64%	58%
Total Population	51%	59%

3.3 Smoking Status Recorded

Table 52: % Smoking Status Recorded, as at June 2013

Eligible Group	West Rodney	Waitemata DHB Total
Māori	75%	84%
Non-Māori	71%	85%
High Needs	75%	84%
Total Population	72%	85%

3.4 Smoking Brief Advice

Table 53: % Smoking Brief Advice, as at June 2013

Eligible Group	West Rodney	Waitemata DHB Total
Māori	36%	38%
Non-Māori	26%	34%
High Needs	38%	38%
Total Population	27%	35%

3.5 Cervical Screening

Table 54: % Cervical Screen, as at June 2013

Eligible Group	West Rodney	Waitemata DHB Total
High Needs	76%	69%
Total Population	83%	77%

3.6 Breast Screening

Table 55: % Breast Screen (50-69), as at June 2013

Eligible Group	West Rodney	Waitemata DHB Total
High Needs	71%	69%
Total Population	N.A.	72%

Appendices

These appendices contain information on data sources and definitions used throughout this report.

Appendix 1 - WHO Standard Population

WHO World Standard Population Distribution (%), based on world average population between 2000 and 2025.

Age Group	%	Per 100,000
0-4	8.86	8,860
05-09	8.69	8,690
10-14	8.6	8,600
15-19	8.47	8,470
20-24	8.22	8,220
25-29	7.93	7,930
30-34	7.61	7,610
35-39	7.15	7,150
40-44	6.59	6,590
45-49	6.04	6,040
50-54	5.37	5,370
55-59	4.55	4,550
60-64	3.72	3,720
65-69	2.96	2,960
70-74	2.21	2,210
75-79	1.52	1,520
80-84	0.91	910
85-89	0.44	440
90-94	0.15	150
95-99	0.04	40
100+	0.005	5

Appendix 2 - Ethnicity

Throughout this report prioritised ethnicity is used. In the 'prioritised' method, each respondent is allocated to a single ethnic group using the priority system. At level 1 the system places Māori first then Pacific peoples, then Asian peoples and finally Other peoples. For example a person who selects (when asked their ethnicity) both Māori and European would only be included in the Māori grouping. The table below shows priority order of each ethnic group.

Prioritisation for Level 2 ethnicity

Priority Order	Ethnic group code (L2)	Ethnic group code description
1	21	Māori
2	35	Tokelauan
3	36	Fijian
4	34	Niuean
5	33	Tongan
6	32	Cook Island Māori
7	31	Samoan
8	37	Other Pacific Island
9	30	Pacific Island NFD*
10	41	South East Asian
11	43	Indian
12	42	Chinese
13	44	Other Asian
14	40	Asian NFD
15	52	Latin American / Hispanic
16	53	African
17	51	Middle Eastern
18	54	Other
19	12	Other European
20	10	European NFD
21	11	NZ European

Appendix 3 - Potentially Avoidable Mortality (PAM) indicators and their ICD 10 Codes

PAM Group categories	Condition description	ICD-10 Diagnosis Codes
Infections	Pulmonary tuberculosis	A15
	Meningococcal disease	A39
	Pneumococcal disease	J13, A40.3, G00.1
	HIV/AIDS	B20-B24
Cancers	Stomach	C16
	Rectum	C19-C21
	Melanoma	C43
	Female breast	C50
	Cervix	C53
	Testis	C62
	Prostate	C61
	Thyroid	C73
	Bone & cartilage	C40-C41
	Hodgkin's disease	C81
	Acute lymphocytic leukaemia	C91.0
Maternal & newborn	Complications of pregnancy	O01-O99
	Complications of the perinatal period	P02-P94
	Congenital heart disease (subset)	Q21
Chronic disorders	Diabetes	E10-E14
	Valvular heart disease	I01, I05-I09, I33-I37
	Hypertensive diseases	I10-I15
	Coronary disease	I20-I25
	Heart failure	I50
	Cerebrovascular diseases	I60-I69
	Renal failure	N17-N18
	Pulmonary embolism	I26
	COPD	J42
	Asthma	J45-J46
	Peptic ulcer disease	K25-K26
	Cholelithiasis	K80
Injuries	Suicide	X60 –X84
	Road traffic accidents	V01-V79, V87, V89, V99
	Falls (Fracture Neck of Femur)	S72
	Burns	T20-T31
	Adverse health care events (subset)	T80-T88

Appendix 4 - Potentially Avoidable Hospitalisation (PAH) indicators and their ICD 10 Codes

PAH Categories	ICD-10 Diagnosis Codes
Alcohol related conditions	F10, I426, K290, K70
Angina and chest pain	I20, R072-R074
Asthma	J45-J46
Breast cancer	C50
Cellulitis	H000, H010, H050, J340, K122, L01-L04, L08, L980
Cervical cancer	C53
Colo-rectal cancer	C18-C21
Congestive heart failure	I50, J81
CORD	J40-J44, J47
Dehydration	E86, E870
Dental conditions	K00-K06, K08
Diabetes	E10-E14, E162
ENT infections	H65-H67, H70, J01-J03
Epilepsy	G40-G41, O15, R560, R568
Failure to thrive	R62, R633, P923
Gangrene	R02
Gastroenteritis	A01-A09
Hepatitis and liver cancer	B15-B19, C220, C221, C229, P353
HIV /AIDS	B20-B24
Hypertensive disease	I10-I15, I674
Immunisation preventable - Hib	A413, A492, B9631, B9639, G000
Immunisation preventable - MMR	B05, B06,B26, M014, P350
Immunisation preventable - Other	A33-A35, A36, A80
Immunisation preventable - Whooping cough	A37
Kidney/urinary infection	N10, N12, N136, N390
Legionnaires' disease	A481, A482
Lung cancer	C33-C34
Meningococcal infection	A39,M010,M030
Myocardial infarction	I21-I23;I241
Nutrition	D50-D53, E40-E46, E50-E64, M833
Obstructed hernia	K400, K401, K403, K404, K410, K411, K413, K414, K420, K421, K430, K431, K440, K441, K450, K451, K460, K461
Oral cancers	C01-C06, C09, C10
Other infections	A23, A26, A28, A32, A38, A46, B50-B54, P23, P351, P352, P358, P359, P36, P371-P379
Other ischaemic heart disease	I240, I248,I249, I25
Peptic ulcer	K25-K28
Respiratory infections - Acute bronchiolitis	J21
Respiratory infections - Other	J00, J06, J10-J11, J20
Respiratory infections - Pneumonia	J13-J16, J18
Rheumatic fever/heart disease	I00-I09
Ruptured appendix	K350, K351
Sexually transmitted diseases	A50-A59,A60, A63, A64, I980, M023, M031, M730, M731, N290, N341, N70-N77, O00
Skin cancers	C00, C43, C44
Stroke	I61, I63-I66
Thyroid disease	E00-E05, E890
Tuberculosis	A150-A199,B900-B909, M011, P370

Appendix 5 - Ambulatory Sensitive Hospitalisation (ASH) indicators and their ICD 10 Codes

Condition	ICD 10 Diagnosis Codes	Age group	ASH Weight
Angina and chest pain	I20, R072-R074	A	0.5
Asthma	J45-J46	B	1
Bronchiectasis	J47	C	1
Cellulitis	H000, H010, J340, L01-L04, L08, L980	B	1
Cervical cancer	C53	A	1
Congestive heart failure	I50, J81	A	1
Constipation	K590	B	1
Dental conditions	K02, K04, K05	B	1
Dermatitis & eczema	L20-L30	B	1
Diabetes	E10-E14, E162	A	1
Epilepsy	G40-G41, O15, R560, R568	A	1
Gastroenteritis/dehydration	A02-A09, R11	B	1
GORD (Gastro-oesophageal reflux disease)	K21	B	1
Hypertensive disease	I10-I15, I674	A	1
Kidney/urinary infection	N10, N12, N136, N309, N390	F	1
Myocardial infarction	I21-I23; I241	A	0.5
Nutrition Deficiency and Anaemia	D50-D53, E40-E46, E50-E64, M833*	B	1
Other ischaemic heart disease	I240, I248,I249, I25	A	0.5
Peptic ulcer	K25-K28	A	1
Respiratory infections - Pneumonia	J13-J16, J18	B	1
Rheumatic fever/heart disease	I00-I02,I05-I09	B	1
Sexually transmitted Infections	A50-A59,A60, A63, A64, I980, M023, M031, M730, M731, N290, N341	A	1
Stroke	I61, I63-I66	A	0.5
Upper respiratory tract and ENT infections	J00-J04, J06, H65-H67	B	1
Vaccine-preventable disease - Meningitis, Whooping Cough, Hep B, Pneumococcal disease, Other	A33-A37, A403, A80, B16, B18	D	1
Vaccine-preventable disease - MMR	B05, B06,B26, M014, P350**	E	1

Age Group
A >= 15 yrs
B all ages
C < 15 yrs
6mth <= D < 15 yr
15mth <= E < 15 yr
F >= 5 yrs

Appendix 6 - Data Sources

Hospitalisation data

Data on the morbidity of various diseases and conditions are primarily based on all discharges from public hospitals. This is known as the National Minimum Data Set (NMDS). Day cases are included in this data but attendances at outpatient clinics or emergency departments (which don't lead to an admission) are not included. Analysis of hospitalisation data focusses on the number of episodes of care rather than the number of individual people. Hospital data includes patients who die in hospital after formal admission, as well.

A general issue when using hospitalisation rates for outcome measures is that reductions in such rates can reflect either a real decrease in incidence, improved primary health care (thus reducing the need for hospital care), or a decrease in access to (or provision of) hospital services. The relative importance of these factors is hard to quantify.

Outpatient and ED data

The National Non-Admitted Patient Data Collection (NNPAC) was introduced in July 2006 and provides nationally consistent data on non-admitted patient activity. Information about use of outpatient clinics and emergency departments was drawn from this source.

Mortality data

The mortality statistics maintained by NZHIS are based on death certificates completed by medical practitioners, post-mortem reports, coroners' certificates, and death registration forms completed by funeral directors. Supplementary data are obtained from a variety of other sources (such as public hospitals and the National Cancer Registry). Mortality data for three years was used in an attempt to ensure sufficient numbers for analysis.

Census and demographic data

A New Zealand Census of Population and Dwellings is held every five years. Every person in the country on census night, including visitors to the country, must fill out an individual census form. The last Census was carried out in March 2013 and data is slowly becoming available (population data in this report is still based on Census 2006 as a starting point.)

The New Zealand Census collects limited health information but contains much social and economic information that is useful in describing the factors that determine health. In addition, the Census forms the basis for determining West Rodney's and Waitemata DHB's estimated denominator populations. Projections of population sizes for the years after 2006 and estimates of population sizes up to 2012 have been made. Projections are made on the basis of assumptions about a number of factors including migration, fertility, and mortality. It is worth noting that projections and estimates cannot be guaranteed to be completely accurate.

Birth registrations

This includes all live and still births registrations from Births, Deaths, and Marriages.

PHO Enrolment data

The PHO Enrolment database is a national collection of publicly funded primary health information for patients enrolled with a PHO. Unit record data is collected and stored. The collection was established in 2005.