

Public Health Monograph Series

No.33

ISSN 1178-7139

**RECORD LINKAGE OF 2006 CENSUS RECORDS AND 2006-2011
MORTALITY AND CANCER REGISTRATION RECORDS: UNLOCK
RATIOS AND LINKAGE WEIGHTS**

New Zealand Census Mortality Study/CancerTrends

Technical Report No. 8.

Kate Sloane

June Atkinson

Neela Bastiampillai

Tony Blakely

April 2015

A technical report published by the Department of Public Health,
University of Otago, Wellington

ISBN 978-0-9876663-8-3

Acknowledgements

The Ministry of Health funds the New Zealand Census Mortality and CancerTrends Study 2006-2011 (NZCMS/CT). The NZCMS was merged with the CancerTrends project in 2010. The Health Research Council of New Zealand (HRC) initially funded the New Zealand Census Mortality Study (NZCMS), and the MoH initially funded the CancerTrends study, followed by funding by the HRC. The census data was provided by Statistics New Zealand and the mortality and cancer registration data was provided by the Ministry of Health.

We would like to thank those at Statistics New Zealand (in particular Gareth Meech, Rosemary Goodyear, Kirsten Nissen, Conrad MacCormick, Wendy Dobson and all the members of the Census and Datalab groups at SNZ) for help with the data, QualityStage and June Atkinson's secondment.

Statistics New Zealand Security Statement

The New Zealand Census Mortality Study and CancerTrends study were initiated by Professor Tony Blakely and his co-researchers from the University of Otago, Wellington. It was approved by the Government Statistician as a Data Laboratory project under the Microdata Access Protocols. All research publications are based on researcher initiated ideas.

Access to the data used in this study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in this study are the work of the authors, not Statistics New Zealand.

The full security statement is available at:

<http://www.otago.ac.nz/wellington/research/hirp/otago025301.html>

Table of Contents

Acknowledgements.....	2
Statistics New Zealand Security Statement	3
Table of Contents.....	4
List of Tables	6
List of Figures	10
Introduction	11
PROCESS OF RECORD LINKAGE.....	13
Linkage Bias.....	20
WEIGHTING OF MORTALITY AND CANCER REGISTRATION RECORDS.....	22
Territorial Authorities (TAs)	23
Weighting of Linked Records within ‘Acceptable’ Strata	28
Weighting of Non-Linked Census Records.....	30
MIGRATION ADJUSTMENTS.....	31
UNLOCK RATIOS FOR 2006-2011	39
Weighting of Unlock Dataset to represent all Mortality Records	40
Unlock Ratios for Mortality and Cancer Registration Data Compared to Census Data.....	44
UNLOCK RATIOS BY BY SOCIODEMOGRAPHICS.....	47
Unlock Ratio Conclusions.....	48
References	49
Appendix A.....	51
Appendix B	61
Unlock Ratios Stratified by Sex	61
Unlock Ratios Stratified by Age.....	63
Unlock Ratios Stratified by NZ Deprivation	79
Unlock Ratios Stratified by Regional Health Authority (RHA) or Regional Council	91
Unlock Ratios Stratified by District Health Board (DHB)	105
Unlock Ratios Stratified by Rurality	117

Unlock Ratios Stratified by Cause of Death	122
Appendix C	143
Appendix D	169

List of Tables

Table 1: QualityStage Pass details	14
Table 2: Number of linked and percentage of total linked Mortality, Cancer and Combined 2006-2011 data to the 2006 Census for QualityStage Match Pass Number	18
Table 3: Number of linked and percentage of total linked Mortality, Cancer and Combined 2006-2011 data to the 2006 Census for QualityStage Match Group.....	19
Table 4: Linkage and Unlock status.....	19
Table 5: Unlock status by QualityStage Match Group	19
Table 6: Number and percentage of linked and non-linked Total, Mortality and Cancer Registrations for the 2006-2011 datasets	21
Table 7: TA clusters for Mortality linkage weights	24
Table 8: TA clusters for Cancer linkage weights	24
Table 9: Parameter estimates, standard errors for TA clusters for Mortality records	25
Table 10: Parameter estimates, standard errors for TA clusters for Cancer Registration records.....	25
Table 11: Distribution of linkage weights for linked Mortality and Cancer Registration records	29
Table 12: Distribution of the age and ethnicity adjusted unlock weight for the Mortality (within 5 years) population, 2006-2011 cohort.....	42
Table 13: Distribution of the age and ethnicity adjusted unlock weight for Cancer Registration (within 5 years) population, 2006-2011 cohort	43
Table 14: Census Total Ethnicity by Mortality and NHI Total Ethnicity, 2006-2011....	45
Table 15: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity, 2006-2011	45
Table 16: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity, 2006-2011	46
Table 17: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity, 2006-2011	46
Table 18: Census Sole Ethnicity by Mortality and NHI Sole Ethnicity, 2006-2011	46

Table 19: Census Sole Ethnicity by Cancer Registration and NHI Sole Ethnicity, 2006-2011	47
Table 20: All-Cause Mortality 1996-2011 results by single year for Māori Ethnicity, age <75 years, all data, by sex	51
Table 21: All-Cause Mortality 1996-2011 results by single year for Pacific Ethnicity, age <75 years, all data, by sex	52
Table 22: All-Cause Mortality 1996-2011 results by single year for Pacific Ethnicity, age <75 years, born in NZ, by sex	53
Table 23: All-Cause Mortality 1996-2011 results by single year for Pacific Ethnicity, age <75 years, NOT born in NZ, by sex	54
Table 24: All-Cause Mortality 1996-2011 results by single year for Asian Ethnicity, age <75 years, all data, by sex	55
Table 25: All-Cause Mortality 1996-2011 results by single year for Asian Ethnicity, age <75 years, born in NZ, by sex	56
Table 26: All-Cause Mortality 1996-2011 results by single year for Asian Ethnicity, age <75 years, NOT born in NZ, by sex	57
Table 27: All-Cause Mortality 1996-2011 results by single year for European/Other Ethnicity, age <75 years, all data, by sex	58
Table 28: All-Cause Mortality 1996-2011 results by single year for European/Other Ethnicity, age <75 years, born in NZ, by sex	59
Table 29: All-Cause Mortality 1996-2011 results by single year for European/Other Ethnicity, age <75 years, NOT born in NZ, by sex	60
Table 30: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by Sex, 2006-2011	61
Table 31: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by Sex, 2006-2011	61
Table 32: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by Sex, 2006-2011	62
Table 33: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity Stratified by Sex, 2006-2011.....	62

Table 34: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by Age Group, 2006-2011	63
Table 35: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity Stratified by Age Group, 2006-2011	66
Table 36: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by Age Group, 2006-2011	70
Table 37: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity Stratified by Age Group, 2006-2011	74
Table 38: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by NZ Deprivation, 2006-2011	79
Table 39: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by NZ Deprivation, 2006-2011	81
Table 40: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by NZ Deprivation, 2006-2011	84
Table 41: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by NZ Deprivation, 2006-2011	87
Table 42: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by RHA or Regional Council, 2006-2011	91
Table 43: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by RHA or Regional Council, 2006-2011.....	94
Table 44: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by RHA or Regional Council, 2006-2011.....	96
Table 45: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by RHA or Regional Council, 2006-2011.....	100
Table 46: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by DHB, 2006-2011	105
Table 47: Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by DHB, 2006-2011	107
Table 48: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by DHB, 2006-2011.....	110

Table 49: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by DHB, 2006-2011.....	113
Table 50: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by Rurality, 2006-2011.....	117
Table 51: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by Rurality, 2006-2011	118
Table 52: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by Rurality, 2006-2011	119
Table 53: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by Rurality, 2006-2011	120
Table 54: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by Cause of Death Groupings, 2006-2011	122
Table 55: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by First Cancer Registration, 2006-2011	123
Table 56: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by ICD, 2006-2011	132
Table 57: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by first Cancer Registration, 2006-2011.....	133

List of Figures

Figure 1: Screenshot of QualityStage after running meshblock passes 1 to 3 and area unit passes 1 to 4	16
Figure 2: All-Cause Mortality <75 years All Data for NZMaori, Pacific, nonMPA and Asian by sex.....	33
Figure 3: All-Cause Mortality <75 yrs Born for NZMaori, Pacific and nonMPA by sex	34
Figure 4: All-Cause Mortality <75 years Not NZ born for Pacific, nonMPA and Asian by sex	35
Figure 5: All-Cause Mortality <75 years All Data for NZMaori, Pacific and nonMPA by sex	36
Figure 6: All-Cause Mortality <75 years NZ Born for NZMaori, Pacific and nonMPA by sex	37
Figure 7: All-Cause Mortality <75 years Not NZ Born for Pacific, nonMPA and Asian by sex	38

Introduction

This report outlines the process of linking mortality and cancer registration records from the years 2006 to 2011 to the 2006 Census data. In previous cohorts, only mortality records were linked to census data, however for the 2006-2011 cohort it was more efficient to combine the mortality and cancer registrations in the one dataset and link these to the census. This report is a short technical report, where much of the methods and theory can be found in previous NZCMS and/or CancerTrends technical reports (see: www.uow.otago.ac.nz/nzcms-info.html or www.uow.otago.ac.nz/cancertrends-info.html for the reports).

The objectives of this report are to:

1. Describe the **process of linking** mortality and cancer registration records to the census data.
2. Describe the calculation of separate mortality and cancer '**unlock ratios**' to correct for numerator-denominator bias caused by the numerator and denominator derived from different data sources.
3. Describe the calculation of separate mortality and cancer '**linkage weights**' to allow for incomplete record linkage between the 2006 census data and the corresponding 2006-2011 mortality and cancer records.
4. Describe the investigation of possibly including '**migration adjustors**' to possibly take account of the effect of migration bias.

Data and analyses from this report contribute to the existing literature on linkage bias and the numerator-denominator bias in New Zealand census and mortality and cancer registration records. Previous technical documentation for the census and mortality linkage include Blakely, Salmond and Woodward (1999); Blakely and Atkinson (2001); Hill, Atkinson and Blakely (2002); Ajwani, Blakely, Robson, Atkinson, Fawcett and Kiro (2002); Fawcett, Blakely and Atkinson (2002); Ajwani, Blakely, Robson, Tobias and Bonne (2003); Fawcett, Atkinson, Herd and Blakely (2008); Tan, Blakely and Atkinson (2010). All NZCMS reports are available at the website:

www.uow.otago.ac.nz/nzcms-info.html. Previous technical documentation for the census and cancer registration linkage include Atkinson, Shaw, Blakely, Stanley and Sloane (2010). All CancerTrends reports are available at the website:
www.uow.otago.ac.nz/cancertrends-info.html.

The numbers in the tables have been random rounded base 3 as per usual SNZ protocols and the minimum cell size reported has been rounded to 6.

PROCESS OF RECORD LINKAGE

The 2006-2011 mortality and cancer registration cohort was linked to the 2006 census dataset, using an anonymous and probabilistic linkage process. Mortality and cancer registrations in this five-year period were linked to the individual census records of the 2006 census. The process of record linkage is briefly covered in this report. The theory and methods of the record linkage can be found in previous published technical reports for the NZCMS and CancerTrends studies (NZCMS - Hill, Atkinson et al (2002); Fawcett, Atkinson et al (2008); Tan, Blakely and Atkinson (2010) and CancerTrends - Atkinson, Shaw, et al (2010)).

All of the mortality or cancer registration record linkages (1981 to 2006) have used variants of the same software to do the matching, however the product name and versions have changed over time. The 2006-2011 linkage process used the product called IBM InfoSphere DataStage and QualityStage Designer™. June Atkinson was seconded into Statistics New Zealand to prepare the datasets and conduct the linkage.

We combined both the mortality information and the cancer registry information together into the one file for linking with the census file. This would not have influenced any linkage outcome and was more efficient than conducting two separate linkages. An additional benefit is that for cancer analyses we now know when a person died, regardless of if they had cancer or not and therefore our person time calculations can be more accurate (previously if they did not have cancer we would have assumed that they lived for the whole follow-up period). Also we can now use the cause of death in any cancer analyses (previously we just had their date of death in the dataset).

We included extra mortality records for March to December 2011 in the file for linkage in case we would include them in our analyses but decided later to exclude

them because we did not have the corresponding Cancer Registration files. It was tidier to use five years of follow-up for our analyses.

Variables for matching were the same as in the previous cohorts except there was now an addition of a MELAA ethnicity variable (Middle Eastern, Latin American or African).

SAS was again used as an interface and to investigate possible cut-off values for accepting links. Appendix C gives the full SAS program used for the process.

Appendix D contains the match specification details of the first three meshblock passes.

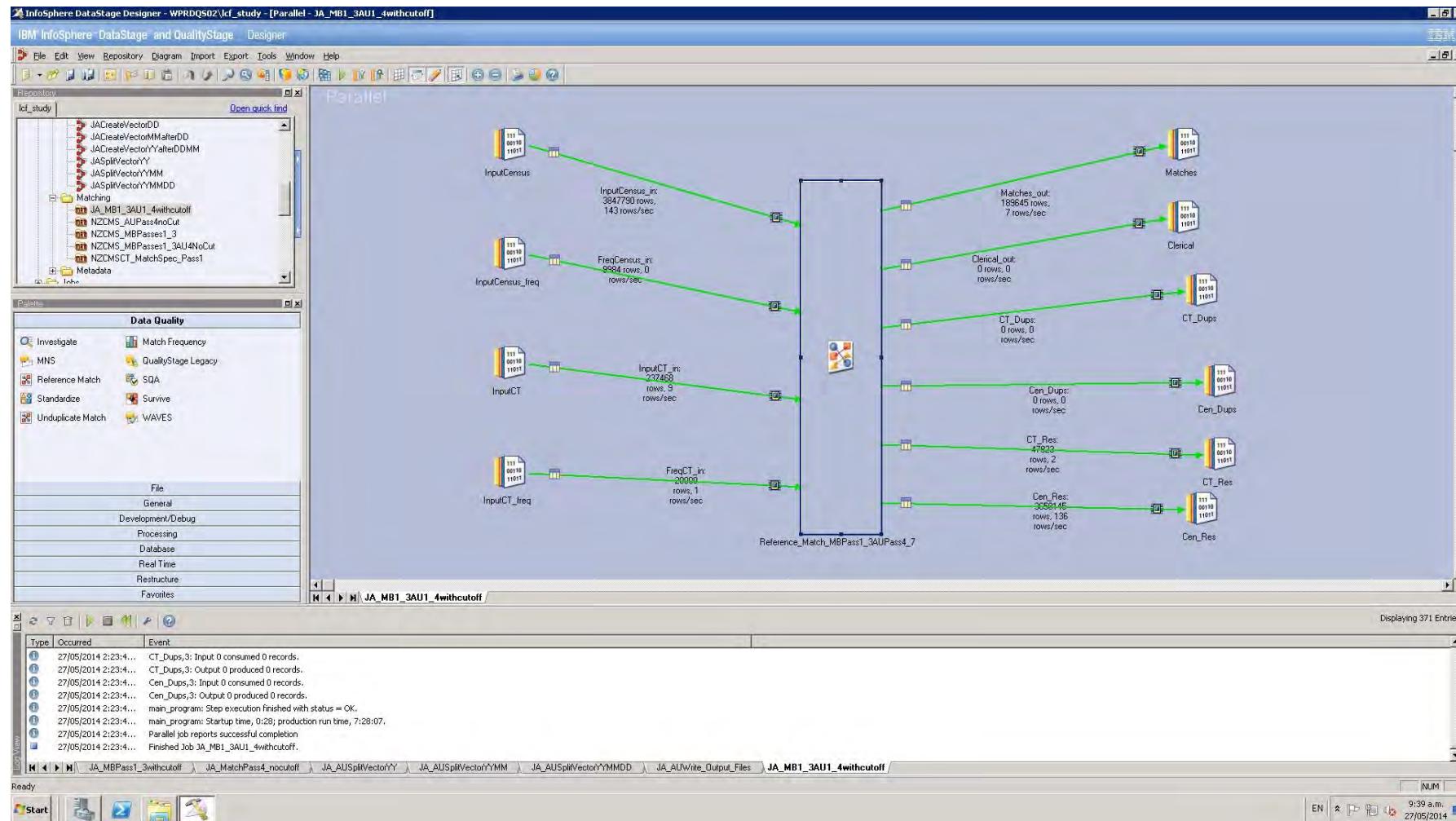
Figure 1 shows a screenshot of QualityStage after successfully running the three meshblock passes and the four area unit passes.

Table 1: QualityStage Pass details

Pass Number	Block Variable	Cut-off Value
1	Meshblock option 1	16.0
2	Meshblock option 2	16.0
3	Meshblock option 3	16.0
4	Area Unit option 1 with sex	15.0 (lower weight as sex is now a blocking variable)
5	Area Unit option 2 with sex	15.0
6	Area Unit option 3 with sex	15.0
7	Area Unit option 4 with sex	15.0
8	Meshblock option 1	No cut-off but processed in SAS for clerical review
9	Meshblock option 2	No cut-off but processed in SAS for clerical review
10	Meshblock option 3	No cut-off but processed in SAS for clerical review
11	Meshblock option 4	No cut-off but processed in SAS for clerical review
12	Area Unit option 1 with sex	No cut-off but processed in SAS for clerical review
13	Area Unit option 2 with sex	No cut-off but processed in SAS for clerical review
14	Area Unit option 3 with sex	No cut-off but processed in SAS for clerical review
15	Area Unit option 4 with sex	No cut-off but processed in SAS for clerical review
16	Area Unit option 5 with sex	No cut-off but processed in SAS for clerical review
17	Area Unit option 6 with sex	No cut-off but processed in SAS for clerical review

18	Area Unit option 7 with sex	No cut-off but processed in SAS for clerical review
19	Area Unit option 8 with sex	No cut-off but processed in SAS for clerical review
20	Area Unit option 1 (no sex block)	No cut-off but processed in SAS for clerical review

Figure 1: Screenshot of QualityStage after running meshblock passes 1 to 3 and area unit passes 1 to 4.



The following tables show the linkage statistics for looking at the mortality records, at the cancer registration records, and looking at the combined records that could contain mortality and/or cancer registration records.

In previous census-linkages, we were able to set the cut-off at the meshblock passes using a duplicate method (Blakely and Salmon (2002)). However, the version of QualityStage software used for the latest linkages now makes it difficult to extract the number of duplicate pairs (i.e. one mortality or cancer record linked to two or more census records). Given this issue, we were initially conservative at accepting links at the meshblock passes. On the initial area unit passes, however, many of these same ‘marginal’ links were again present with no duplicates, suggesting a high probability of being true links. They were accepted, and this explains why the percentage of links accepted at the initial area unit passes is higher than in previous years and why about a third of all links were found using area unit as the blocking variable.

Second, in the absence of being able to formally use the duplicate method, we could not calculate PPVs (positive predictive values; the proportion of accepted links that are expected to be true links). However, we have developed extensive experience with these estimations in past linkages where we attempted to ensure that the marginal PPV (i.e. that at the cut-off itself, not the average above the cut-off) was 80% or greater in the area unit passes. We applied these learnings (e.g. the combinations of matching variables by block variable) from previous linkages to the 2006-2011 linkage, and therefore by extension estimate that the overall PPV (i.e. all links) is probably in excess of 98%.

The SAS code related to the QualityStage Matching Process is available in Appendix C.

Table 2: Number of linked and percentage of total linked Mortality, Cancer and Combined 2006-2011 data to the 2006 Census for QualityStage Match Pass Number

	Mortality and/or					
	Mortality		Cancer		Cancer Combined	
	Number	% of		Number	% of	
		Linked	Total		Linked	Total
QS Match Pass Number						
Matched Meshblock 1	59,823	52.04	53,949	58.72	97,524	54.50
Matched Meshblock 2	10,047	8.74	9,183	9.99	16,176	9.04
Matched Meshblock 3	726	0.63	798	0.87	1,239	0.69
Matched AreaUnit 1 & sex	26,511	23.06	16,914	18.41	38,481	21.50
Matched AreaUnit 2 & sex	11,262	9.80	7,101	7.73	16,218	9.06
Matched AreaUnit 3 & sex	3,765	3.27	2,121	2.31	5,205	2.91
Matched AreaUnit 4 & sex	1,038	0.90	597	0.65	1,461	0.82
Matched Meshblock 1 clerical review	135	0.12	72	0.08	180	0.10
Matched Meshblock 2 clerical review	42	0.04	27	0.03	60	0.03
Matched Meshblock 3 clerical review	6	0.01	6	0.01	6	0.00
Matched Meshblock 4 clerical review	6	0.01	6	0.01	6	0.00
Matched AreaUnit 1 & sex clerical review	9	0.01	9	0.01	12	0.01
Matched AreaUnit 2 & sex clerical review	159	0.14	123	0.13	255	0.14
Matched AreaUnit 3 & sex clerical review	60	0.05	48	0.05	96	0.05
Matched AreaUnit 4 & sex clerical review	21	0.02	15	0.02	33	0.02
Matched AreaUnit 5 & sex clerical review	306	0.27	204	0.22	462	0.26
Matched AreaUnit 6 & sex clerical review	153	0.13	96	0.10	219	0.12
Matched AreaUnit 7 & sex clerical review	66	0.06	48	0.05	102	0.06
Matched AreaUnit 8 & sex clerical review	33	0.03	24	0.03	54	0.03
Matched AreaUnit 1 (no sex block) clerical review	798	0.69	540	0.59	1,164	0.65
Total	114,957	100	91,875	100	178,944	100

Table 3: Number of linked and percentage of total linked Mortality, Cancer and Combined 2006-2011 data to the 2006 Census for QualityStage Match Group

	Mortality and/or						
	Mortality		Cancer		Cancer Combined		
	% of		% of		% of		
	Number Linked	Total Linked	Number Linked	Total Linked	Number Linked	Total Linked	
QS Match Group							
Area Unit, Clerical Review, High Weights (>=15 or >=16)	576	0.50	390	0.42	867	0.48	
Area Unit, Clerical Review, Medium Weights (>=12 or >=13)	1,029	0.90	714	0.78	1,530	0.86	
Area Unit, High Weights (>=15)	42,576	37.04	26,730	29.10	61,365	34.29	
Meshblock, Clerical Review, High Weights (>=16)	33	0.03	21	0.02	48	0.03	
Meshblock, Clerical Review, High Weights (>=13)	147	0.13	81	0.09	198	0.11	
Meshblock, High Weights (>=16)	70,596	61.41	63,933	69.59	114,936	64.23	

Table 4: Linkage and Unlock status

Linkage Status	For Unlock	Mortality		Cancer	
		N	%	N	%
Not Linked	No	24,207	17.39	22,608	19.75
Linked	No	3,540	2.54	2,013	1.76
	Yes	111,414	80.06	89,859	78.49

Table 5: Unlock status by QualityStage Match Group

	Mortality For Unlock				Cancer For Unlock			
	No		Yes		No		Yes	
	Column		Column		Column		Column	
	N	%	N	%	N	%	N	%
QS Match Group								
Area Unit, Clerical Review, High Weights (>=15 or >=16)	60	1.69	516	0.46	54	2.67	336	0.37
Area Unit, Clerical Review, Medium Weights (>=12 or >=13)	1,005	28.37	24	0.02	525	26.00	192	0.21

	Mortality For Unlock				Cancer For Unlock			
	No		Yes		No		Yes	
	Column		Column		Column		Column	
	N	%	N	%	N	%	N	%
Area Unit, High Weights (>=15)	1,296	36.58	41,280	37.05	645	31.95	26,088	29.03
Meshblock, Clerical Review, High Weights (>=16)	33	0.93	6	0.01	21	1.04	6	0.01
Meshblock, Clerical Review, High Weights (>=13)	144	4.06	6	0.01	72	3.57	12	0.01
Meshblock, High Weights (>=16)	1,005	28.37	69,591	62.46	702	34.77	63,228	70.36

Linkage Bias

Linkage bias occurs when there are systematic differences by socio-demographic factors, such as age and deprivation, between linked and unlinked mortality and cancer registration records with census records. For detail on linkage bias refer to the previous NZCMS technical report (Tan, Blakely and Atkinson (2010)) and CancerTrends technical report (Atkinson, Shaw et al (2010)).

To compensate for linkage bias, it is necessary to calculate weights that adjust for the misclassification of mortality and/or cancer registration outcome.

The 2006-2011 **mortality dataset** included the following variables:

1. Age group (note the age was capped at 97 years)
2. Prioritised ethnicity i.e. Maori, Pacific, Asian and NonMaoriNonPacificNonAsian (nonMPA)
3. Gender
4. Territorial Local Authorities (TA) Cluster
5. Death months since Census
6. Level of mobility in area (% of area unit residents that had moved since the 2006 census)
7. International Cause of Death (ICD) Group
8. NZ Deprivation Index quintiles
9. Rurality

The 2006-2011 **cancer registration** dataset included the following variables:

1. Age group (note the age was capped at 97 years)
2. Prioritised ethnicity i.e. Maori, Pacific, Asian and NonMaoriNonPacificNonAsian (nonMPA)
3. Gender
4. Cancer registration months since Census
5. Level of mobility in area (% of area unit residents that had moved since the 2006 census)
6. Territorial Local Authorities (TA) Cluster
7. NZ Deprivation Index two groups

The overall percentage of deaths linked for the 2006-2011 cohort was 82.61% for mortality and 80.25% for cancer. The mortality proportion is more than the overall percentage of deaths linked for the previously combined years of 2001-2004 and 2004-2006, which was 80.81%. The cancer proportion is less than the overall percentage of linked cancer registrations in the 2001-2004 cohort of 82%.

Table 6 shows the number and percentage of linked and non-linked mortality and cancer registration datasets, 2006-2011.

Table 6: Number and percentage of linked and non-linked Total, Mortality and Cancer Registrations for the 2006-2011 datasets

Linkage Status	Mortality and/or Cancer					
	Mortality		Cancer		Combined	
	N	%	N	%	N	%
Non Linked	24,207	17.39	22,608	19.75	41,388	18.78
Linked	114,957	82.61	91,875	80.25	178,944	81.22
Total	139,164	100.00	114,483	100.00	220,332	100.00

WEIGHTING OF MORTALITY AND CANCER

REGISTRATION RECORDS

As only a proportion of the mortality and cancer registration records are linked to their respective census record, weighting the number of linked mortality and cancer registration records in each stratum allows the number of deaths and cancer registrations in those stratum to be estimated. Detailed linkage weight calculations for the linked and unlinked cohort records can be found in the previous NZCMS technical report (Tan, Blakely and Atkinson (2010)).

Originally for 2006/11, exactly the same method of calculating linkage and unlock weights was used as described for 2004/06. However after completing this, it was noticed that some linked records were being given weights less than one which they should not have. This was due to application of weights calculated at one level of stratification being applied to subsidiary strata. Therefore, all linkage weights for 2001/06 and 2006/11, and unlock weights for 2006/11 were redone with an additional step included in each loop of checking minimum and maximum weights and combining linked strata if otherwise they had a weight less than one or similarly combining non-linked strata if otherwise they had a weight greater than one. Full details of the new procedures and SAS programs are available from the authors and a short explanatory note explaining the new procedure will be placed on the website - www.uow.otago.ac.nz/nzcms-info.html.

Linkage weights were calculated separately for strata based on the sociodemographic variables that were predictors of linkage in the regression analyses:

Mortality linkage weights were derived within strata of these variables:

1. Age group
2. Prioritised ethnicity

3. Gender
4. TA Cluster
5. Death months since Census
6. Mobility
7. ICD Group
8. NZ Deprivation Index quintiles
9. Rurality

These variables created a number of non zero strata, with the majority of linked records meeting the acceptance criteria at the most detailed level. Details are available from the authors.

Cancer registration linkage weights were derived with the strata variables:

1. Age group
2. Prioritised ethnicity
3. Gender
4. Cancer registration months since Census
5. Mobility
6. TA Cluster
7. NZ Deprivation Index two groups

These variables created a number of non-zero strata, with the majority of linked records meeting the acceptance criteria at the most detailed level. Details are available from the authors.

Territorial Authorities (TAs)

Cluster analysis was used to group TAs systematically, based on the beta values obtained from the regression analysis. See the previous NZCMS technical report (Tan, Blakely and Atkinson (2010)) for more detail.

The optimal number of TA clusters found for **mortality linkage** weights was nine.

These were as follows:

Table 7: TA clusters for Mortality linkage weights

Cluster Name	TA
CL10	Ashburton, Buller, Westland, Whakatane, Kapiti Coast, New Plymouth, Invercargill, Waipa, Taupo, Waimakariri, North Shore, Waitakere
CL11	Carterton, Rodney, Porirua, Lower Hutt, Queenstown-Lakes, Kawerau, Mackenzie
CL13	Selwyn, Waitomo, Hastings (includes Chatham Islands), South Taranaki, Central Otago, Stratford, Hauraki, Tasman, Tararua, Upper Hutt, Hamilton
	Waikato
CL14	Kaikoura, Wanganui, Otorohanga Tauranga, Manukau
CL16	Horowhenua, Ruapehu, Papakura, Rotorua, Opotiki, Thames Coromandel, Timaru, Franklin, Nelson, Marlborough
CL18	Masterton, Wairoa, Christchurch, South Waikato, Southland, Matamata-Piako, Dunedin
CL24	Napier, Palmerston North, South Wairarapa, Rangitikei, Western Bay of Plenty
CL30	Clutha, Grey
CL9	Auckland, Central Hawkes Bay, Waimate, Waitaki, Hurunui, Whangarei, Gisborne, Gore, Manawatu, Wellington, Kaipara, Far North

The optimal number of TA clusters found for **cancer registration** linkage weights was ten. These were as follows:

Table 8: TA clusters for Cancer linkage weights

Cluster Name	TA
CL10	Opotiki, Southland, Grey, Western Bay of Plenty, Clutha, Ruapehu, Central Hawkes Bay, Horowhenua, Matamata-Piako, Christchurch, Whangarei
CL11	Far North, Wairoa, Westland, Kaipara
CL12	Otorohanga, Upper Hutt, Mackenzie, South Waikato, Manawatu, Stratford, Invercargill, Selwyn, North Shore, Tauranga, Taupo, Masterton, Kapiti Coast
CL13	Buller, Waimakariri, South Wairarapa, Waitakere, Ashburton, Hauraki, Porirua, Lower Hutt
CL14	Kawerau, Waipa, New Plymouth, Rangitikei, Central Otago, Franklin, Papakura, Thames Coromandel, Hamilton, Rotorua, Whakatane, Hurunui, South Taranaki, Nelson,
CL17	Gisborne, Malborough, Gore, Hastings, Queenstown-Lakes, Tararua, Tasman, Dunedin

CL19	Kaikoura, Manukau, Wanganui
CL21	Auckland, Wellington, Carterton, Waitaki
CL26	Napier, Waitomo, Rodney, Timaru, Waikato, Waimate
Palmerston	Palmerston North

The parameter estimates and standard errors for the TA clusters for mortality and cancer registration records are shown in Table 9 and Table 10.

Table 9: Parameter estimates, standard errors for TA clusters for Mortality records

ClassVal0	DF	Estimate	StdErr	WaldChiSq	ProbChiSq
1	1	0.5171	0.0415	155.0145	<.0001
2	1	0.4416	0.0295	224.6442	<.0001
3	1	0.2841	0.0290	96.1816	<.0001
4	1	0.1834	0.0284	41.7192	<.0001
5	1	0.3602	0.0253	202.6318	<.0001
6	1	0.1070	0.0249	18.5017	<.0001
8	1	0.6391	0.0409	244.0397	<.0001
9	1	-0.2730	0.0755	13.0859	0.0003

Table 10: Parameter estimates, standard errors for TA clusters for Cancer Registration records

ClassVal0	DF	Estimate	StdErr	WaldChiSq	ProbChiSq
1	1	0.2021	0.0296	46.5276	<.0001
2	1	0.1595	0.0337	22.4448	<.0001
3	1	0.3208	0.0294	119.1769	<.0001
4	1	0.1017	0.0284	12.7855	0.0003
5	1	-0.0670	0.0537	1.5586	0.2119
6	1	0.4116	0.0344	143.0294	<.0001
7	1	0.2745	0.0379	52.5752	<.0001
9	1	0.4599	0.0375	150.7476	<.0001
10	1	0.5361	0.0672	63.6658	<.0001

The order for collapsing/aggregating strata for both the mortality and cancer registration data was based on the ranking of the Wald Chi statistic from the respective final regression models.

The different steps in the collapsing process for **mortality** were:

1. Drop Rurality
2. Collapse NZ Deprivation Index to two groups
3. Drop NZ Deprivation Index
4. Collapse ICD group to six categories
5. Drop ICD group
6. Collapse mobility to two groups
7. Drop mobility
8. Collapse Death months since Census to two groups
9. Drop Death months since Census
10. Drop TA Cluster
11. Drop sex
12. Collapse prioritised ethnicity to three groups
13. Collapse prioritised ethnicity to two groups
14. Drop prioritised ethnicity
15. Drop age group

The different steps in the collapsing process for **cancer registrations** were:

1. Drop NZ Deprivation Index
2. Drop TA Cluster
3. Collapse mobility to two groups
4. Drop mobility
5. Collapse cancer registration months since Census
6. Drop cancer registration months since Census
7. Drop sex
8. Collapse prioritised ethnicity to three groups
9. Collapse prioritise ethnicity to two groups
10. Drop prioritised ethnicity
11. Drop age group

The SAS code for stratification and collapsing of strata is available upon request.

Weighting of Linked Records within ‘Acceptable’ Strata

For the method of calculating weighting of linked mortality and cancer registration records please see the NZCMS technical report (Tan, Blakely and Atkinson (2010)), plus the explanatory note of the amendment to the method which will be available from the authors and placed on the website - www.uow.otago.ac.nz/nzcms-info.html.

Although the mortality and the cancer registration data was combined for the linkage process, there may be differences in the linkage rates between census and mortality/cancer data by strata, and therefore separate weights for mortality records and cancer registration records needed to be calculated and the relevant one should be used in any analyses of the data.

Table 11 show the distribution of linkage weights for linked mortality and cancer registration records. The linkage weights, when applied in future analyses of data, will weight up the linked deaths/cancers such that they represent the estimated true number of deaths/cancers for each socio-demographic strata, removing (nearly all of) the misclassification bias of the death/cancer outcome introduced by imperfect sensitivity of the record linkage to determine death/cancer status.

Table 11: Distribution of linkage weights for linked Mortality and Cancer Registration records

	W_AgEthAdj Mortality	W_AgEthAdjCancer
Frequency	114,954	91,872
Mean	1.211	1.246
StdDev	0.159	0.222
Minimum	1.000	1.000
Maximum	2.720	5.710
P1	1.000	1.000
P5	1.000	1.008
P10	1.000	1.056
P25	1.133	1.107
P50	1.198	1.190
P75	1.278	1.318
P90	1.370	1.500
P95	1.476	1.691
P99	1.812	2.078

Weighting of Non-Linked Census Records

As per the previous 2001-2004 and 2004-2006 cohorts, linked census-mortality and cancer registration records only account for approx 1% of the total number of census records. Therefore weighting of non-linked weights occurred. Non-linked weights were derived from detailed strata - no acceptance testing or collapsing of strata was performed. For more information about the weighting of non-linked census records see the previous NZCMS technical report (Tan, Blakely and Atkinson (2010)), plus the new explanatory note.

The same strata variables were used for deriving both the **mortality and cancer registration** non-linked weights, these were as follows:

1. Age group
2. Prioritised ethnicity
3. Gender
4. Mobility
5. NZ Deprivation Index
6. Rurality

MIGRATION ADJUSTMENTS

As seen in previous years, the mortality rates were dropping more than expected for Pacific people in the five years following the census. One explanation for this is that Pacific people about to die are likely to return to their country of birth, and thus we do not have their mortality record. Put another way, the sensitivity of the linkage to ascertain ‘true’ deaths would diminish over time, biasing down Pacific rates with increasing time since census night. If this is true, then a sudden increase in ‘observed’ mortality would occur in 2006/07 (compared to 2005/06). Due to the NZCMS being a closed cohort, with no ability to censor census respondents when they emigrate (and not being able to link NZCMS data to immigration data), deaths amongst these census respondents who subsequently emigrate are not observed. This likely bias affects comparisions of mortality rates over time. Refer to the previous NZCMS technical report (Tan, Blakely and Atkinson (2010)) for more detail regarding this.

To check whether emigration effects the comparision of mortality rates we calculated all-cause mortality incidence rates for people <75 years of age by single year of follow-up for 1996-1998, 2001-2006, 2006-2011 by ethnicity (Maori, Pacific, Asian, nonMaoriPacificAsian, nonMaori and also splits of Pacific and/or Asian). This was calculated overall and by age groups, country of birth and year of New Zealand residency.

Figure 2 through

Figure 7 show the standardised rates for all-exposure and country of birth for <75 year olds. The all-cause mortality 1996-2011 results by single year can be found in Appendix A.

The figures possibly show a kick-up in mortality among non-New Zealand born Pacific people from 2005/06 to 2006/07. This could be consistent with increasing (post census night) migration of Pacific people back to their country of birth, and therefore a bias to missing deaths that increases with time post census. However, it is subtle if occurring. We will probably just present Pacific mortality rates by 2.5 year periods in the 2001/02 to 2010/11 period, and state that there may be some underestimation for the second and fourth 2.5 year periods. We will also undertake regression analyses to test whether any 'jump' in (observed) mortality rates from 2005/06 to 2006/07 is statistically significant.

Figure 2: All-Cause Mortality <75 years All Data for NZ Maori, Pacific, nonMPA and Asian by sex

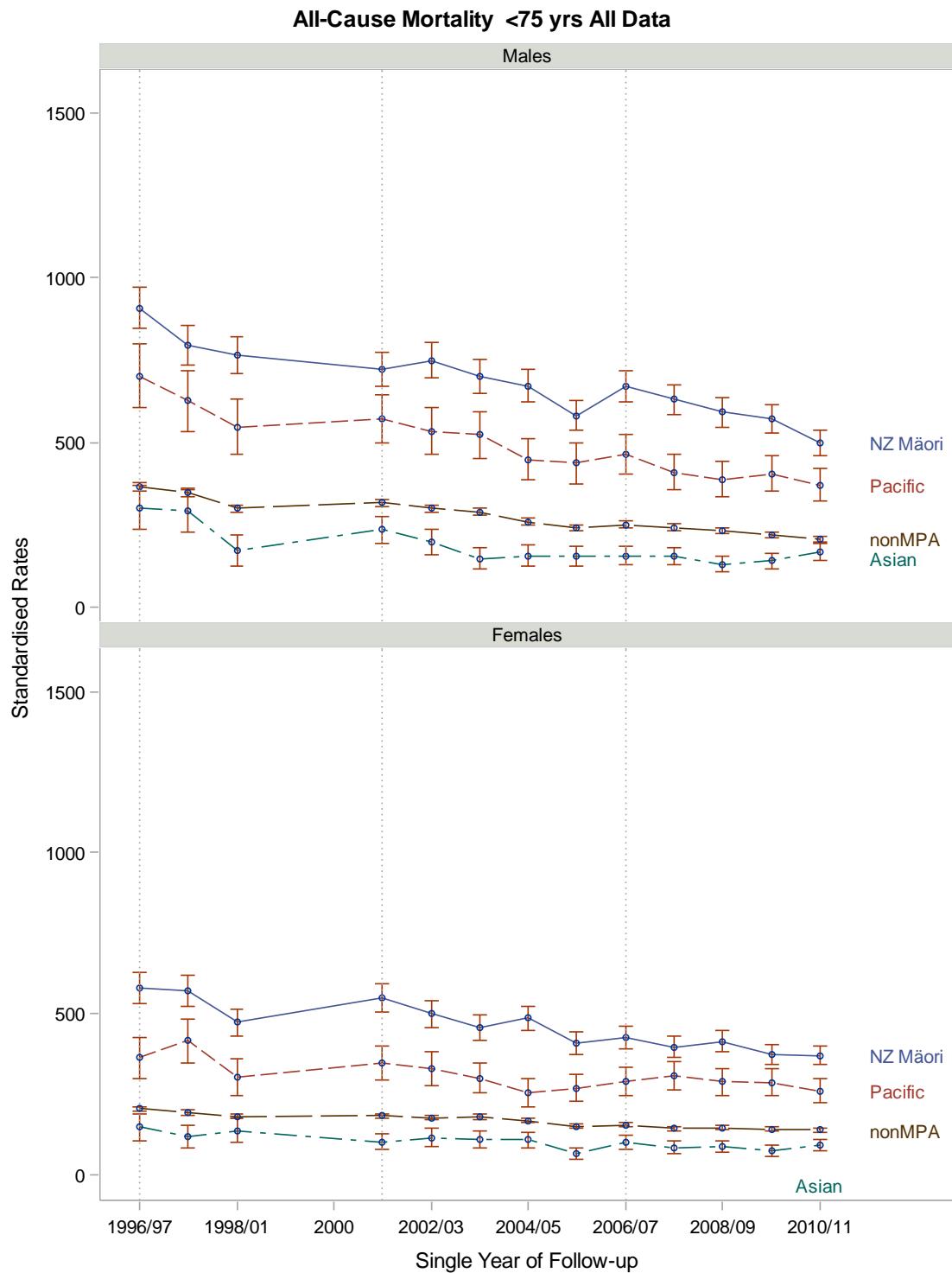


Figure 3: All-Cause Mortality <75 yrs Born for NZMaori, Pacific and nonMPA by sex

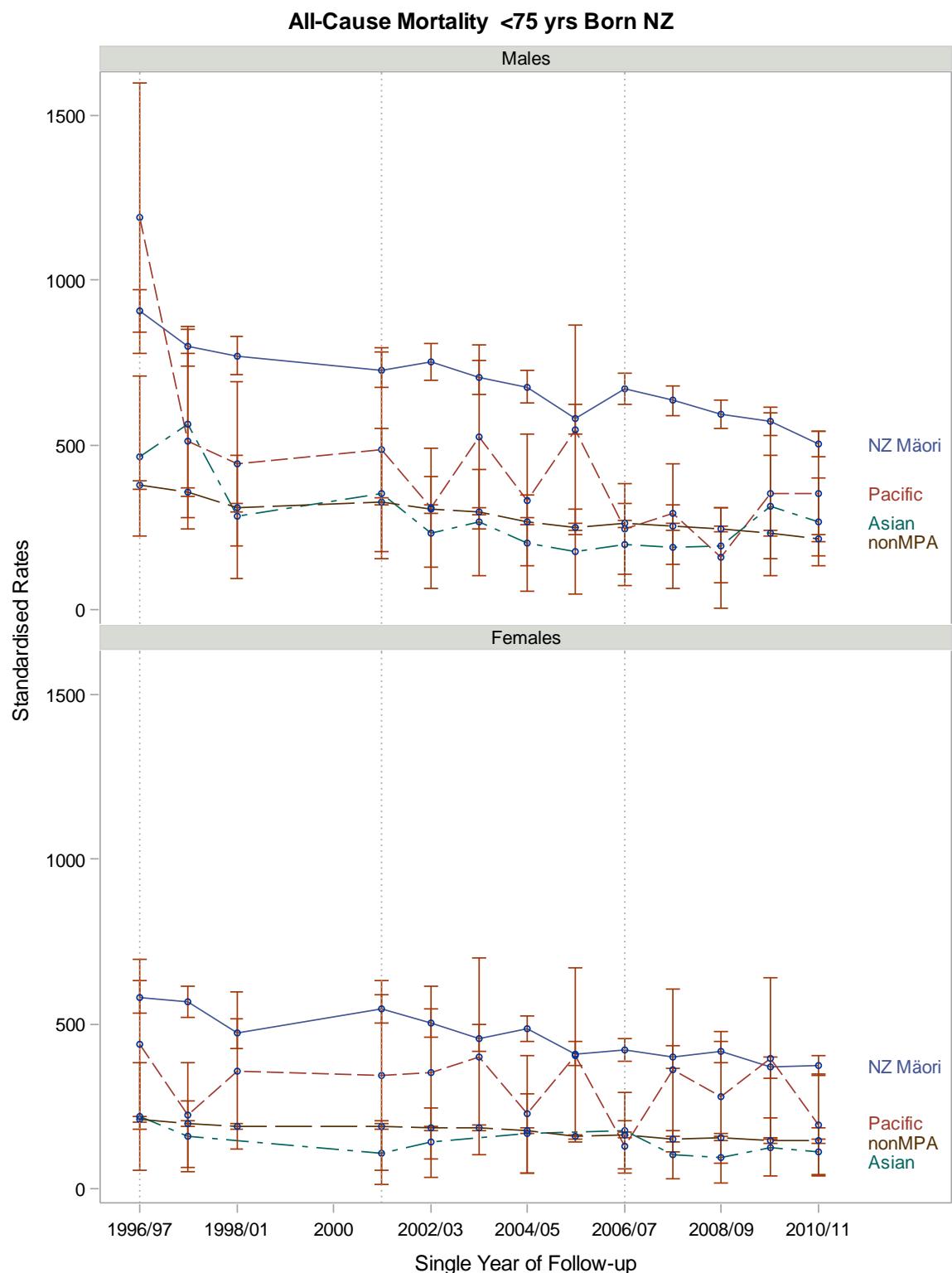


Figure 4: All-Cause Mortality <75 years Not NZ born for Pacific, nonMPA and Asian by sex

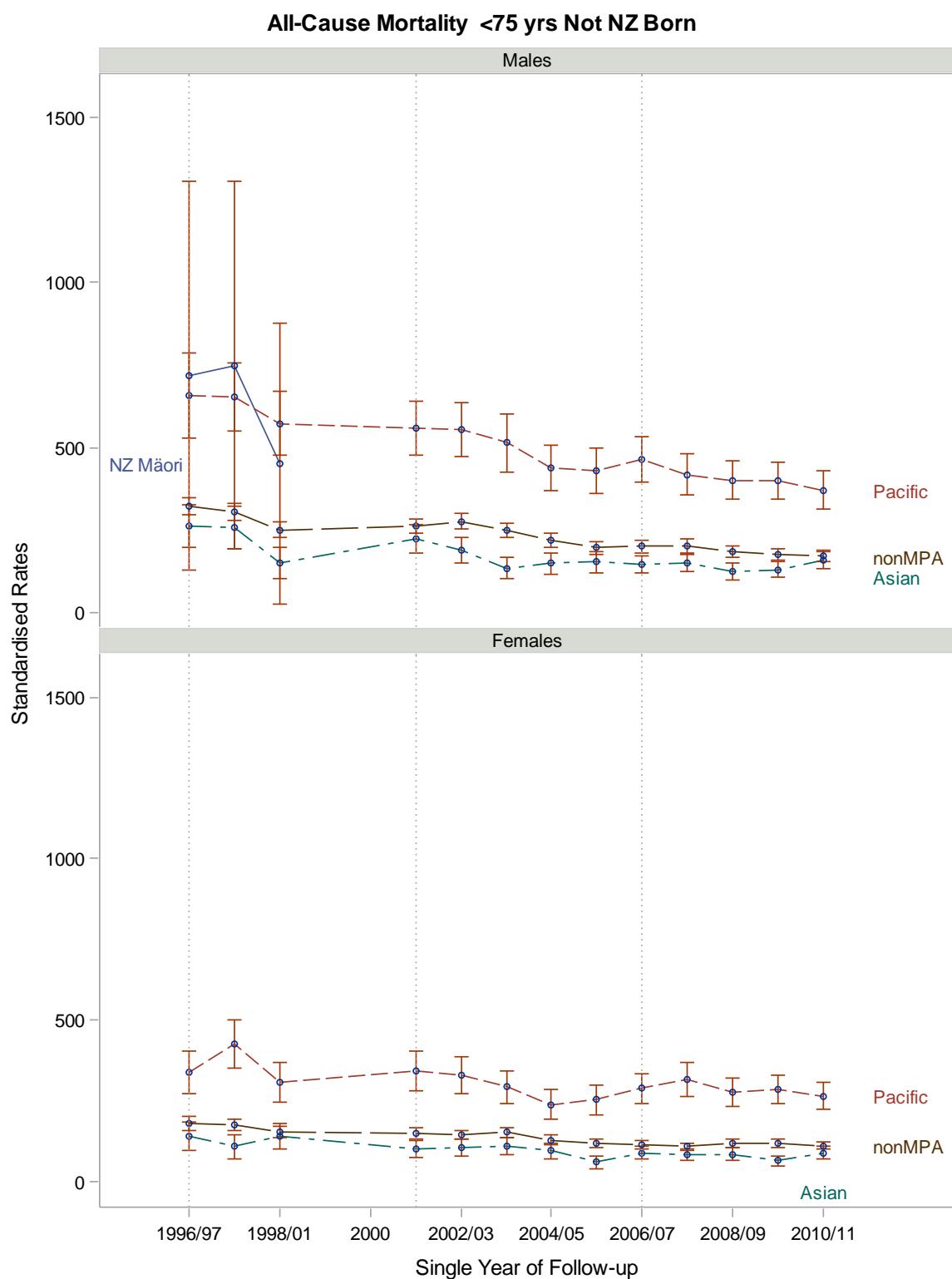


Figure 5: All-Cause Mortality <75 years All Data for NZMaori, Pacific and nonMPA by sex

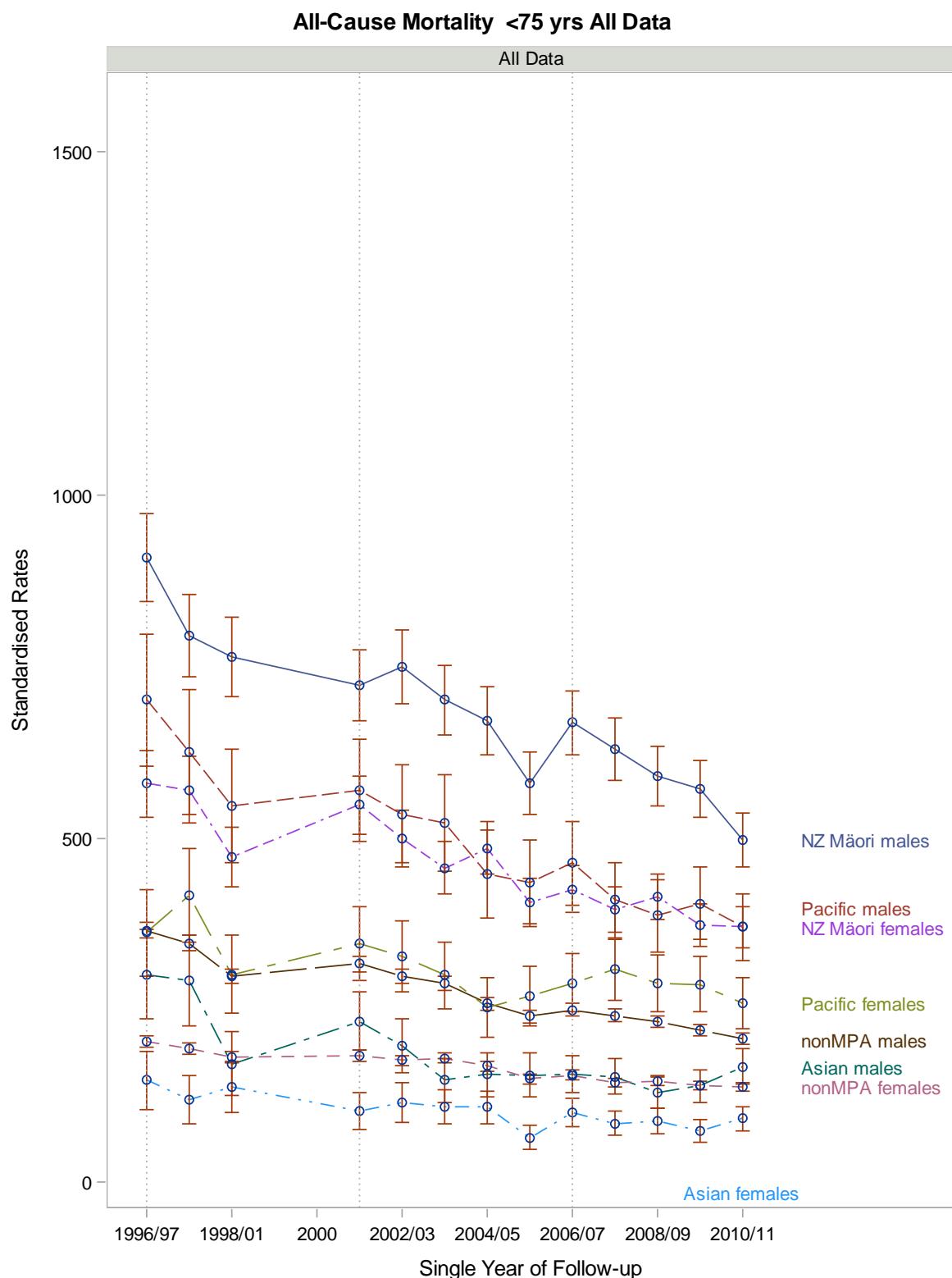


Figure 6: All-Cause Mortality <75 years NZ Born for NZMaori, Pacific and nonMPA by sex

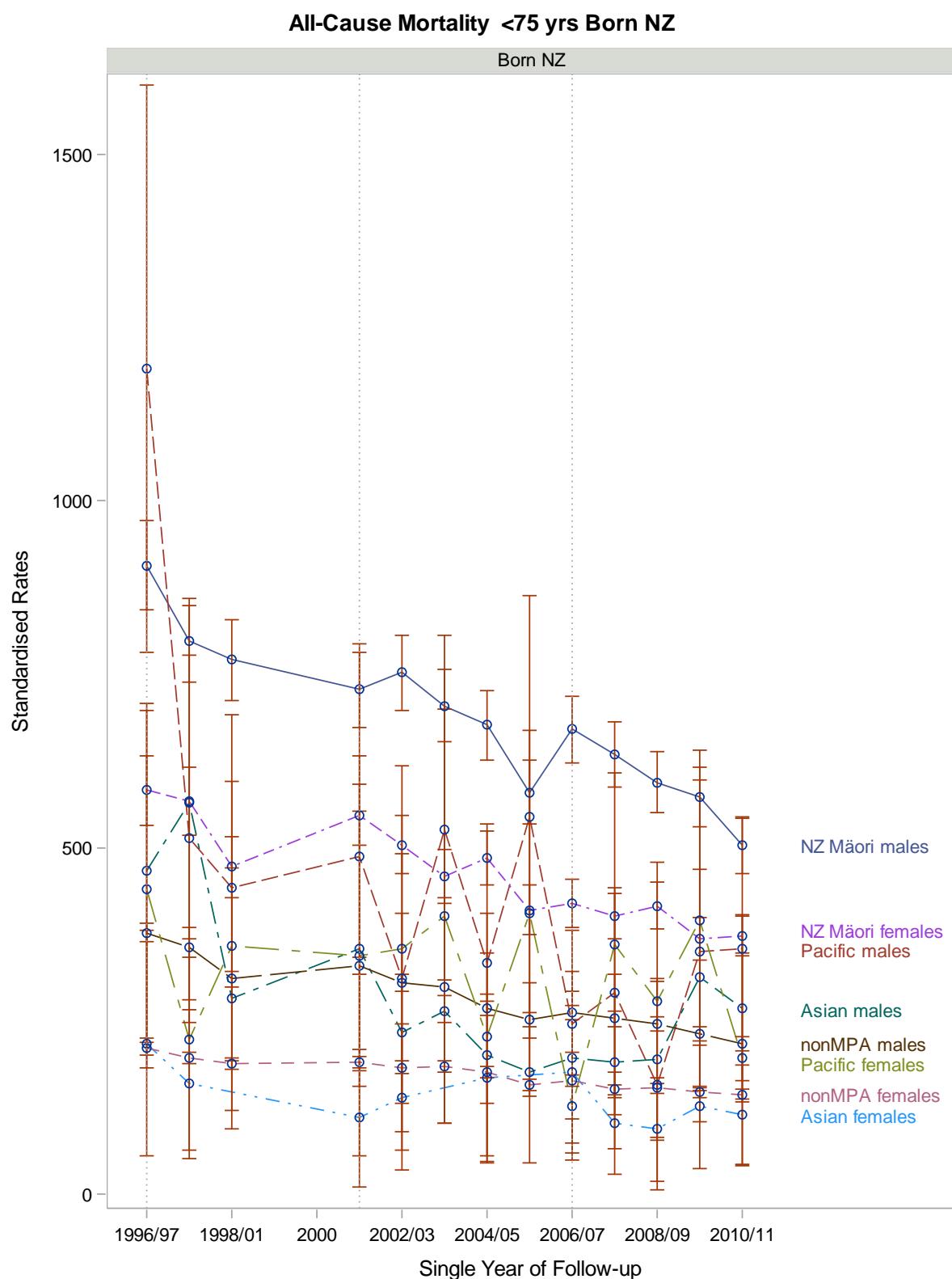
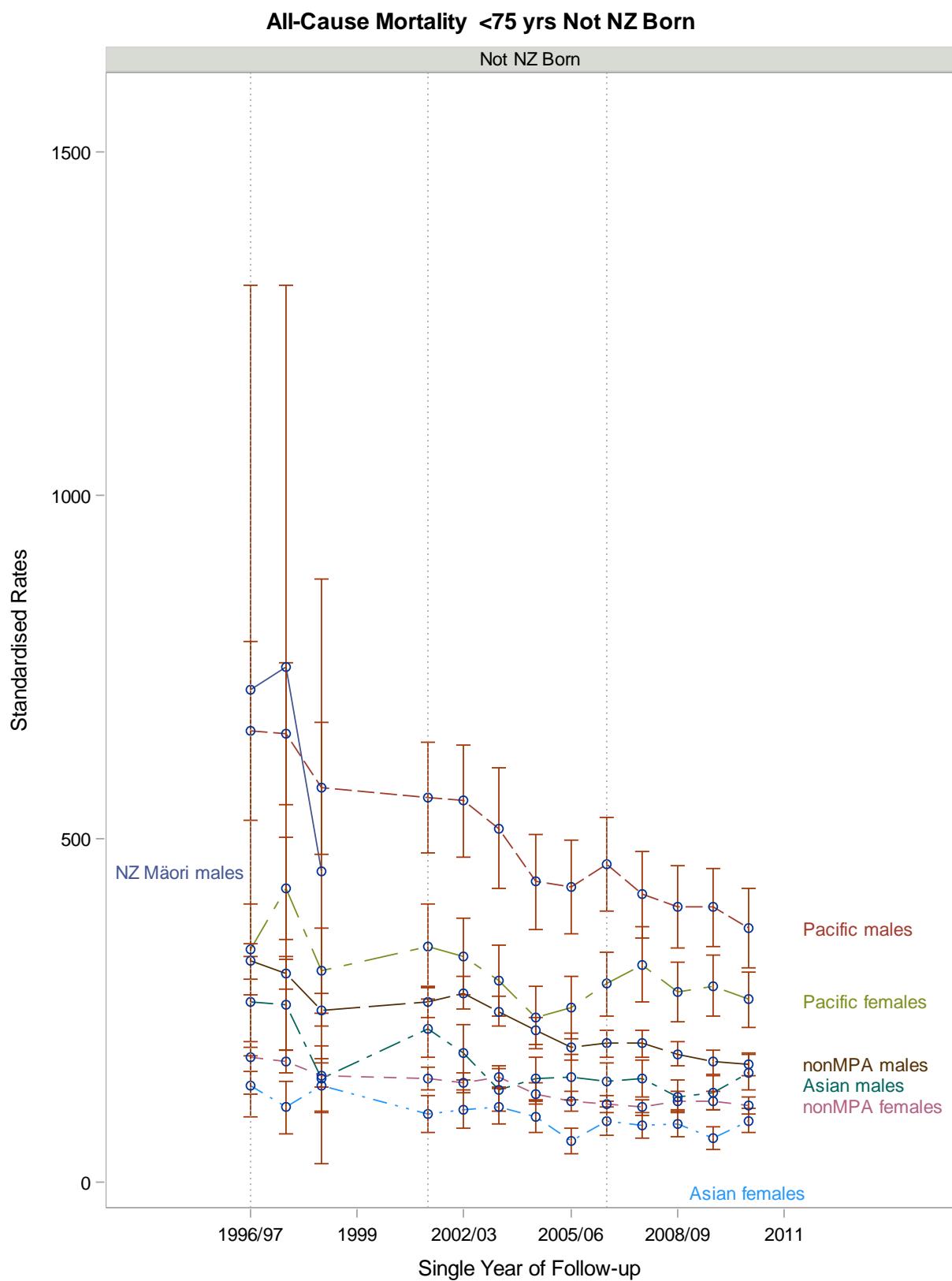


Figure 7: All-Cause Mortality <75 years Not NZ Born for Pacific, nonMPA and Asian by sex



UNLOCK RATIOS FOR 2006-2011

Unlock ratios are the adjustment ratios used to correct for the numerator-denominator bias in the calculation of ethnic-specific mortality and cancer registration rates. For more detail on unlock ratios refer to the previous NZCMS Technical Report (Tan, Blakely and Atkinson (2010)), and to a publication likely to appear soon in the NZMJ (Boyd, Atkinson and Blakely (under review)).

Ethnicity could be classified using one of three definitions:

1) TOTAL:

An individual was assigned as Māori if any ethnic group identified on the census or mortality record was Māori. The same was done for Pacific, Asian, nonMPA ethnicities; individuals could be assigned multiple ethnic groups and consequently the sum of counts across ethnic groups will be greater than actual number of decedents.

2) PRIORITYSED:

An individual was assigned as Māori if any of the three possible self-identified ethnicity responses was Māori. For non-Māori, an individual was assigned as Pacific if one of the self-identified ethnic groups was Pacific. For non-Māori non-Pacific, an individual was assigned as Asian if one of the self-identified ethnic groups was Asian. The remaining individuals were assigned as nonMPA (equivalent to sole nonMPA).

3) SOLE:

An individual was assigned as Māori if Māori was the only ethnic group self identified. Similarly, an individual was assigned as Pacific or Asian if it was the only self-identified ethnic group. All others were assigned as non-Māori non-Pacific non-Asian (nonMPA). The nonMPA group also included some extra decedents that, for example, self-identified multiple ethnic groups.

Weighting of Unlock Dataset to represent all Mortality

Records

As with the linkage weights, unlock weights were calculated using the same method as the 2004-2006 NZCMS update (Tan, Blakely and Atkinson (2010)). A stepwise logistic regression model was used to determine significant predictors of Highly Probable Links (HPL) linkage. Age group, prioritised ethnicity, sex and an age group by sex interaction term were forced into each model. All other predictor variables were determined by the stepwise algorithm assuming a 5% entry level. The Wald Chi-square statistics were used to determine the order of collapse of the original strata. Unlock strata were considered acceptable if the following criteria were met:

1. Not down to the final three collapses AND Strata has at least three HPL links AND derived weight for current strata is less than two OR,
2. Down to the final three collapses AND Strata has at least three HPL links, OR
3. No further collapse is possible
4. HPL links did not have a weight less than 1.0

For more detail on the methods for calculating unlock linkage weights, see the previous NZCMS technical report (Tan, Blakely and Atkinson (2010)), and the new explanatory note of the amendment to the method on the website - www.uow.otago.ac.nz/nzcms-info.html.

Mortality unlock weights were derived with the following strata variables:

1. Age group
2. Prioritised ethnicity
3. Gender
4. Mobility
5. ICD Group
6. RHA
7. NZ Deprivation Index

The order of collapsing of strata variables for **mortality** was as follows:

1. Collapse NZ Deprivation Index to quintiles
2. Collapse NZ Deprivation Index to two groups
3. Drop NZ Deprivation Index
4. Drop RHA
5. Collapse ICD group to six categories
6. Drop ICD group
7. Collapse mobility to two groups
8. Drop mobility
9. Drop sex
10. Collapse prioritised ethnicity to three groups
11. Collapse prioritised ethnicity to two groups
12. Drop prioritised ethnicity
13. Drop age group

Cancer registration unlock weights were derived with the following strata variables:

1. Age group
2. Prioritised ethnicity
3. Gender
4. Mobility
5. RHA
6. NZ Deprivation Index

The order of collapsing of strata variables for **cancer registration** was as follows:

0. Collapse NZ Deprivation Index to quintiles
1. Collapse NZ Deprivation Index to two groups
2. Drop NZ Deprivation Index
3. Drop RHA
4. Collapse mobility to two groups
5. Drop mobility

6. Drop sex
7. Collapse prioritised ethnicity to three groups
8. Collapse prioritised ethnicity to two groups
9. Drop prioritised ethnicity
10. Drop age group

The distribution of unlock weights for mortality can be seen in Table 12 and for cancer registrations in Table 13.

Table 12: Distribution of the age and ethnicity adjusted unlock weight for the Mortality (within 5 years) population, 2006-2011 cohort

	W_AgeEthAdj_Unlock_Mort
Frequency	111,414
Mean	1.249
StdDev	0.207
Minimum	0.998
Maximum	3.979
P1	0.999
P5	1.000
P10	1.000
P25	1.106
P50	1.206
P75	1.343
P90	1.500
P95	1.660
P99	1.985

Table 13: Distribution of the age and ethnicity adjusted unlock weight for Cancer Registration (within 5 years) population, 2006-2011 cohort

	W_AgeEthAdj_Unlock_CT
Frequency	89,859
Mean	1.274
StdDev	0.237
Minimum	0.998
Maximum	5.737
P1	1.000
P5	1.076
P10	1.100
P25	1.143
P50	1.203
P75	1.313
P90	1.515
P95	1.750
P99	2.343

Unlock Ratios for Mortality and Cancer

Registration Data Compared to Census Data

The tables below show the number of deaths by census, mortality record and National Health Index (NHI) and the number of those who identified as a particular ethnicity by census, cancer registration and by NHI, using the total, prioritised and sole ethnicity definitions (as stated above).

The New Zealand Census-Mortality Study (NZCMS) previously demonstrated substantial undercounting of Māori and Pacific deaths on mortality data relative to census data for the 1980s and 1990s. This ‘numerator-denominator’ bias had markedly improved by 2006. This ethnic undercounting phenomenon has also been demonstrated in the New Zealand Cancer Registry.

A ‘total’ definition of ethnicity showed the closest agreement between census and the other data sources. The census to mortality ratios are close to 1.0 for Māori (1.01), Pacific (0.98) and ‘non-Māori non-Pacific non-Asian’ people (0.98), but have increased for Asian (1.05 compared to 0.99 in 2001). Census to Cancer Registry ratios are also close to 1.0 for ‘non-Māori non-Pacific non-Asian’ people (1.03), and dramatically improved for the other ethnicities when compared to 2001 (Māori 1.18 to 1.01, Pacific 1.11 to 0.97, Asian 1.15 to 1.08). This coincides with changes to the way the Cancer Registry extracts ethnicity. There is an apparent pattern for residual undercounting of Māori deaths and cancer registrations in DHBs with a low proportion of Māori in their population.

With this analysis of 2006-11 mortality data, Cancer Registry data, and linked 2006 census records, we have demonstrated that the ‘total’ definition of ethnicity continues to be the best method to use for alignment of health data and census data ethnicity counts. That is, we recommend using total ethnicity counts on mortality

and Cancer Registry data when using census data as the denominator in the calculation of rates to avoid numerator-denominator bias.

For more information about the classification of ethnicities and ethnicity groupings refer to the previous NZCMS technical report (Tan, Blakely and Atkinson (2010)).

Table 14: Census Total Ethnicity by Mortality and NHI Total Ethnicity, 2006-2011

Total Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
Total NZ Māori	13,686	13,527	1.01	12,684	1.08
Total Pacific	4,533	4,632	0.98	4,302	1.05
Total Asian	2,994	2,865	1.05	2,655	1.13
nonMPA (European/Other)	116,235	118,320	0.98	113,133	1.03
Missing	1,998	51	39.18	6,546	0.31
Total	139,143	139,143		139,143	

Table 15: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity, 2006-2011

Total Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
Total NZ Māori	10,497	10,431	1.01	9,729	1.08
Total Pacific	3,390	3,507	0.97	3,306	1.03
Total Asian	3,768	3,483	1.08	3,417	1.10
nonMPA (European/Other)	96,306	93,222	1.03	93,498	1.03
Missing	903	4,263	0.21	4,770	0.19
Total	114,498	114,498		114,498	

Table 16: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity, 2006-2011

Prioritised Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
Mäori	13,686	13,527	1.01	12,684	1.08
Pacific People	4,347	4,524	0.96	4,215	1.03
NonMäoriNonPac	119,115	121,041	0.98	115,701	1.03
Asian	2,880	2,721	1.06	2,565	1.12
NonMäoriNonPacNonAs	116,235	118,320	0.98	113,133	1.03
Missing	1,998	51	39.18	6,546	0.31
Total	139,143	139,143		139,143	

Table 17: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity, 2006-2011

Prioritised Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
Mäori	10,497	10,431	1.01	9,729	1.08
Pacific People	3,180	3,285	0.97	3,183	1.00
NonMäoriNonPac	99,918	96,513	1.04	96,813	1.03
Asian	3,612	3,294	1.10	3,315	1.09
NonMäoriNonPacNonAs	96,306	93,222	1.03	93,498	1.03
Missing	903	4,263	0.21	4,770	0.19
Total	114,498	114,498		114,498	

Table 18: Census Sole Ethnicity by Mortality and NHI Sole Ethnicity, 2006-2011

Sole Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
Mäori	10,518	12,042	0.87	11,343	0.93
Pacific People	4,053	4,191	0.97	4,005	1.01
Asian	2,775	2,589	1.07	2,511	1.11
Remainder	121,800	120,327	1.01	121,287	1.00
Total	139,143	139,143		139,143	

Table 19: Census Sole Ethnicity by Cancer Registration and NHI Sole Ethnicity, 2006-2011

Sole Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
Māori	6,963	6,696	1.04	7,731	0.90
Pacific People	2,790	2,754	1.01	2,916	0.96
Asian	3,465	2,943	1.18	3,243	1.07
Remainder	101,280	102,102	0.99	100,611	1.01
Total	114,498	114,498		114,498	

UNLOCK RATIOS BY BY SOCIODEMOGRAPHICS

The tables in Appendix B present count of deaths by census and mortality ethnicity for the strata variables sex, age, NZ deprivation, Regional Health Authority or Regional Council, District Health Board, rurality and cause of death.

Unlock Ratio Conclusions

These results generally resemble those obtained with the 2004-2006 unlock data, as per the previous 2001-2004 unlock data. As before, there is little differences in the census and mortality ethnicity counts when using Total and Prioritised Ethnicity definitions. For a fuller interpretation, please see the paper Boyd, Atkinson and Blakely (under review) which is also available from the authors.

References

- Atkinson, J., Shaw, C., Blakely, T., Stanley, J., Sloane, K. (2010). Linkage of Census and Cancer Registrations, 1981-2004. *CancerTrends Technical Report No. 1. Wellington: Department of Public Health, University of Otago, Wellington.* (Available at www.uow.otago.ac.nz/cancertrends-info.html).
- Ajwani, S., Blakely, T., Robson, B., Atkinson, J., Fawcett, J., & Kiro, K. (2002). Unlocking the Numerator-Denominator Bias for the 1980s and 1990s: NZCMS Technical Report No. 4. *Wellington: Department of Public Health, Wellington School of Medicine and Health Sciences, University of Otago.* (Available at www.uow.otago.ac.nz/nzcms-info.html).
- Ajwani, S., Blakely, T., Robson, B., Atkinson, J., & Kiro, C. (2004). Unlocking the Numerator-Denominator Bias III: adjustment ratios by ethnicity for 1981-1999 mortality data. *The New Zealand Census-Mortality Study. New Zealand Medical Journal, 116*, 6.
- Ajwani, S., Blakely, T., Robson, B., Bonne, M., & Tobias, M. (2003). Decades of Disparity: Ethnic mortality trends in New Zealand 1980-1999. *Wellington: Ministry of Health.* (Available at www.uow.otago.ac.nz/nzcms-info.html).
- Blakely, T. (2001). *Socio-Economic Factors and Mortality Among 25-64 Year Olds: The New Zealand Census-Mortality Study.* Unpublished Doctorate, University of Otago. (Available at www.uow.otago.ac.nz/nzcms-info.html).
- (2002). Anonymous and probabilistic linkage of census and mortality data: The New Zealand Census-Mortality Study, *New Zealand Conference on Database Integration and Linked Employer-Employee Data.* Wellington: Department of Labour.

Blakely, T., & Salmond, C. (2002). Probabilistic record linkage and a method to calculate the positive predictive value. *ije*, 31, 1246-1252.

Blakely, T., Salmond, C., & Woodward, A. (1999). Anonymous record linkage of 1991 census records and 1991-94 mortality records: The New Zealand Census-Mortality Study. *Wellington: Department of Public Health, Wellington School of Medicine, University of Otago*. (Available at www.uow.otago.ac.nz/nzcms-info.html).

Boyd, M., Atkinson, J., & Blakely, T. Ethnic counts on mortality, NZ Cancer Registry and census data: 2006-2011, *NZMJ* (under review).

Fawcett, J., Blakely, T., & Atkinson, J. (2002). Weighting the 81, 86, 91 & 96 census-mortality cohorts to adjust for linkage bias. NZCMS Technical Report No. 5. (pp. 92). Wellington: Department of Public Health, Wellington School of Medicine and Health Sciences, University of Otago. (Available at www.uow.otago.ac.nz/nzcms-info.html).

Hill, S., Atkinson, J., & Blakely, T. (2002). Anonymous Record Linkage of Census and Mortality Records: 1981, 1986, 1991, 1996 Census Cohorts: NZCMS Technical Report No 3. *Wellington: Department of Public Health, Wellington School of Medicine and Health Sciences, University of Otago*. (Available at www.uow.otago.ac.nz/nzcms-info.html).

Fawcett, J., Atkinson, J., Blakely, T. (2008) Record Linkage of Census and Mortality 2001-04 Records: New Zealand Census-Mortality Study Technical Report No. 6. *Wellington: Department of Public Health, University of Otago, Wellington*. (Available at www.uow.otago.ac.nz/nzcms-info.html).

Tan, L., Blakely, T., Tobias, M., Atkinson, J. Mortality by ethnic group to 2006: is extending census-mortality linkage robust? *NZ Med J* 2012; 125(1357)

Appendix A

Table 20: All-Cause Mortality 1996-2011 results by single year for Māori Ethnicity, age <75 years, all data, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs	Total NZ Māori		All Exposures			
Total NZ Māori	All Data	Males	1996/97	910 (846 - 973)	235,953.1	1293
			1997/98	796 (736 - 855)	234,547.6	1101
			1998/01	765 (708 - 823)	233,141.3	1086
			2001/02	723 (671 - 776)	231,345.1	1068
			2002/03	750 (697 - 804)	229,965.9	1095
			2003/04	702 (651 - 753)	228,507.5	1065
			2004/05	672 (623 - 722)	227,100.0	1029
			2005/06	581 (536 - 626)	225,705.0	942
			2006/07	669 (622 - 716)	251,381.7	1152
			2007/08	631 (585 - 677)	249,783.2	1119
Total NZ Māori	All Data	Females	2008/09	592 (548 - 635)	248,278.0	1071
			2009/10	572 (530 - 614)	246,685.3	1071
			2010/11	499 (460 - 537)	245,114.8	972
			1996/97	580 (531 - 629)	247,682.8	852
			1997/98	571 (523 - 619)	246,498.2	834
			1998/01	473 (430 - 516)	245,347.0	717
			2001/02	549 (506 - 592)	246,172.3	861
			2002/03	500 (459 - 541)	244,921.6	789
			2003/04	458 (419 - 496)	243,730.8	747
			2004/05	486 (448 - 525)	242,513.4	834
Total NZ Māori	All Data	Females	2005/06	407 (372 - 442)	241,246.5	708
			2006/07	427 (393 - 461)	269,824.2	828
			2007/08	397 (365 - 429)	268,465.0	777
			2008/09	415 (383 - 448)	267,074.2	837
			2009/10	374 (344 - 405)	265,681.0	786
			2010/11	371 (342 - 401)	264,308.3	813

Table 21: All-Cause Mortality 1996-2011 results by single year for Pacific Ethnicity, age <75 years, all data, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs			Total Pacific			All Exposures
Total Pacific	All Data	Males	1996/97	702 (606 - 798)	93,865.5	375
			1997/98	626 (534 - 718)	93,431.9	309
			1998/01	548 (466 - 631)	93,006.9	291
			2001/02	571 (497 - 646)	104,258.2	345
			2002/03	535 (464 - 607)	103,804.4	336
			2003/04	523 (453 - 594)	103,283.0	330
			2004/05	449 (385 - 512)	102,845.9	294
			2005/06	437 (375 - 498)	102,370.8	297
			2006/07	465 (404 - 525)	122,501.1	366
			2007/08	411 (356 - 466)	121,971.3	327
			2008/09	388 (335 - 441)	121,462.5	303
			2009/10	406 (353 - 458)	120,953.2	333
			2010/11	371 (323 - 420)	120,432.9	330
			Females	363 (300 - 427)	97,220.8	210
			1997/98	417 (349 - 485)	96,865.7	237
			1998/01	303 (246 - 359)	96,502.4	174
			2001/02	347 (293 - 401)	108,646.7	228
			2002/03	329 (276 - 381)	108,235.5	216
			2003/04	301 (253 - 349)	107,800.8	213
			2004/05	255 (211 - 299)	107,402.6	183
			2005/06	270 (227 - 314)	106,983.4	204
			2006/07	290 (248 - 333)	127,434.6	249
			2007/08	309 (266 - 353)	126,940.5	264
			2008/09	289 (248 - 330)	126,415.3	264
			2009/10	288 (248 - 328)	125,887.0	264
			2010/11	261 (224 - 298)	125,338.7	252

Table 22: All-Cause Mortality 1996-2011 results by single year for Pacific Ethnicity, age <75 years, born in NZ, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs Total Pacific			Country of Birth			
Total Pacific	Born NZ	Males	1996/97	1190 (781 - 1600)	55,387.8	126
			1997/98	513 (247 - 778)	55,295.0	48
			1998/01	443 (193 - 692)	55,233.2	51
			2001/02	486 (178 - 794)	61,935.9	78
			2002/03	311 (131 - 492)	61,864.5	63
			2003/04	527 (247 - 806)	61,787.7	81
			2004/05	333 (131 - 534)	61,715.7	63
			2005/06	545 (226 - 863)	61,642.8	63
			2006/07	245 (108 - 381)	74,297.0	84
			2007/08	291 (139 - 442)	74,215.4	69
			2008/09	158 (5 - 311)	74,145.2	48
			2009/10	351 (105 - 597)	74,082.6	72
			2010/11	353 (163 - 543)	74,007.5	69
		Females	1996/97	439 (181 - 697)	54,370.3	48
			1997/98	224 (63 - 385)	54,315.2	42
			1998/01	359 (122 - 596)	54,267.6	30
			2001/02	344 (55 - 633)	62,111.8	42
			2002/03	354 (91 - 617)	62,080.0	30
			2003/04	401 (103 - 699)	62,040.7	36
			2004/05	226 (47 - 405)	62,004.0	33
			2005/06	405 (141 - 670)	61,956.3	42
			2006/07	127 (49 - 206)	75,613.5	42
			2007/08	360 (114 - 607)	75,565.3	45
			2008/09	278 (78 - 478)	75,511.7	48
			2009/10	395 (149 - 641)	75,451.0	48
			2010/11	195 (43 - 347)	75,402.4	39

Table 23: All-Cause Mortality 1996-2011 results by single year for Pacific Ethnicity, age <75 years, NOT born in NZ, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs Total Pacific			Country of Birth			
Total Pacific	Not NZ Born	Males	1996/97	658 (528 - 788)	37,088.4	246
			1997/98	653 (550 - 757)	36,752.5	258
			1998/01	574 (479 - 669)	36,392.6	237
			2001/02	560 (479 - 640)	41,514.3	270
			2002/03	555 (473 - 637)	41,137.1	267
			2003/04	515 (428 - 603)	40,697.3	249
			2004/05	437 (368 - 507)	40,334.8	225
			2005/06	430 (362 - 499)	39,940.6	231
			2006/07	463 (395 - 532)	46,355.8	276
			2007/08	419 (355 - 483)	45,916.1	252
			2008/09	401 (342 - 460)	45,487.6	255
			2009/10	400 (344 - 457)	45,046.5	261
			2010/11	371 (313 - 429)	44,613.6	246
			Females	1996/97	41,450.0	156
				1997/98	428 (354 - 503)	198
				1998/01	308 (246 - 370)	147
				2001/02	344 (283 - 404)	186
				2002/03	330 (274 - 386)	186
				2003/04	293 (241 - 345)	171
				2004/05	239 (195 - 284)	147
				2005/06	254 (209 - 299)	162
				2006/07	289 (243 - 335)	201
				2007/08	317 (262 - 372)	210
				2008/09	277 (234 - 321)	204
				2009/10	286 (242 - 330)	213
				2010/11	266 (225 - 307)	210

Table 24: All-Cause Mortality 1996-2011 results by single year for Asian Ethnicity, age <75 years, all data, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs			Total Asian			All Exposures
Total Asian	All Data	Males	1996/97	303 (237 - 368)	78,598.3	147
			1997/98	294 (228 - 359)	78,377.9	132
			1998/01	172 (125 - 220)	78,165.7	96
			2001/02	235 (193 - 276)	104,001.5	192
			2002/03	199 (160 - 238)	103,653.4	162
			2003/04	148 (117 - 179)	103,300.0	129
			2004/05	156 (124 - 189)	102,942.6	135
			2005/06	156 (124 - 187)	102,540.3	147
			2006/07	157 (129 - 184)	159,686.8	192
			2007/08	153 (127 - 180)	159,160.9	201
			2008/09	131 (107 - 154)	158,579.7	177
			2009/10	140 (116 - 164)	157,948.8	195
			2010/11	168 (142 - 193)	157,249.4	249
			Females	1996/97	148 (105 - 191)	85,749.8
				1997/98	120 (84 - 156)	85,546.9
				1998/01	139 (101 - 176)	85,329.7
				2001/02	103 (77 - 129)	116,018.3
				2002/03	116 (87 - 145)	115,707.1
				2003/04	109 (84 - 135)	115,378.5
				2004/05	109 (85 - 133)	115,029.6
				2005/06	65 (47 - 83)	114,640.6
				2006/07	101 (80 - 122)	175,152.6
				2007/08	86 (67 - 104)	174,670.6
				2008/09	89 (71 - 108)	174,124.2
				2009/10	74 (57 - 91)	173,560.1
				2010/11	93 (75 - 111)	172,903.9

Table 25: All-Cause Mortality 1996-2011 results by single year for Asian Ethnicity, age <75 years, born in NZ, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs Total Asian			Country of Birth			
Total Asian	Born NZ	Males	1996/97	466 (225 - 708)	21,053.3	42
			1997/98	565 (281 - 850)	21,008.6	27
			1998/01	282 (94 - 471)	20,968.0	21
			2001/02	353 (155 - 551)	24,371.0	27
			2002/03	234 (63 - 405)	24,340.5	18
			2003/04	265 (103 - 427)	24,309.2	21
			2004/05	201 (56 - 347)	24,281.7	15
			2005/06	175 (46 - 305)	24,256.9	15
			2006/07	197 (74 - 321)	34,308.7	24
			2007/08	191 (65 - 316)	34,270.6	21
			2008/09	194 (81 - 308)	34,239.7	24
			2009/10	312 (155 - 469)	34,197.1	27
			2010/11	267 (133 - 401)	34,158.6	27
		Females	1996/97	218 (54 - 381)	20,650.4	15
			1997/98	159 (51 - 267)	20,625.4	18
			2002/03	110 (11 - 208)	24,131.3	12
			2004/05	140 (35 - 245)	24,100.6	18
			2005/06	167 (46 - 289)	24,038.1	18
			2006/07	176 (59 - 292)	33,471.6	21
			2007/08	102 (28 - 176)	33,438.4	12
			2008/09	94 (19 - 168)	33,412.0	12
			2009/10	126 (37 - 215)	33,379.8	18
			2010/11	114 (41 - 187)	33,344.1	15

Table 26: All-Cause Mortality 1996-2011 results by single year for Asian Ethnicity, age <75 years, NOT born in NZ, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs Total Asian			Country of Birth			
Total Asian	Not NZ Born	Males	1996/97	263 (197 - 329)	56,828.5	102
			1997/98	258 (193 - 324)	56,656.2	105
			1998/01	151 (104 - 199)	56,488.1	75
			2001/02	224 (181 - 267)	79,092.6	165
			2002/03	189 (149 - 229)	78,777.5	141
			2003/04	135 (104 - 166)	78,458.8	111
			2004/05	150 (117 - 182)	78,129.4	117
			2005/06	154 (121 - 186)	77,754.9	135
			2006/07	146 (119 - 174)	124,154.0	165
			2007/08	151 (124 - 178)	123,672.9	183
			2008/09	125 (101 - 149)	123,127.6	156
			2009/10	130 (106 - 155)	122,543.9	165
			2010/11	160 (134 - 186)	121,890.3	216
			Females	1996/97	64,312.8	63
				1997/98	64,137.0	54
				1998/01	63,957.3	78
				2001/02	91,314.8	81
				2002/03	91,036.9	84
				2003/04	90,743.5	102
				2004/05	90,428.3	93
				2005/06	90,076.1	60
				2006/07	140,357.3	114
				2007/08	139,914.4	114
				2008/09	139,403.4	120
				2009/10	138,881.5	99
				2010/11	138,267.0	138

Table 27: All-Cause Mortality 1996-2011 results by single year for European/Other Ethnicity, age <75 years, all data, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs	European/Other		All Exposures			
European/Other	All Data	Males	1996/97	366 (355 - 378)	1,142,811.1	5490
			1997/98	348 (337 - 359)	1,129,968.5	5223
			1998/01	299 (289 - 309)	1,117,287.8	4530
			2001/02	317 (307 - 328)	1,130,470.9	4881
			2002/03	300 (289 - 310)	1,117,406.6	4602
			2003/04	290 (280 - 300)	1,104,444.7	4494
			2004/05	260 (250 - 269)	1,091,886.7	4101
			2005/06	241 (232 - 251)	1,079,427.4	3849
			2006/07	251 (241 - 261)	1,171,844.7	4080
			2007/08	243 (233 - 252)	1,159,539.6	4008
			2008/09	234 (225 - 243)	1,147,483.9	3999
			2009/10	221 (212 - 229)	1,135,271.2	3873
			2010/11	208 (200 - 216)	1,123,236.3	3750
		Females	1996/97	205 (197 - 213)	1,168,108.9	3288
			1997/98	194 (186 - 202)	1,155,112.2	3120
			1998/01	182 (174 - 190)	1,142,423.4	2940
			2001/02	184 (176 - 191)	1,167,173.8	3024
			2002/03	177 (170 - 185)	1,154,697.1	2919
			2003/04	180 (173 - 188)	1,142,174.4	3021
			2004/05	169 (162 - 177)	1,129,707.2	2853
			2005/06	150 (143 - 158)	1,117,375.4	2568
			2006/07	156 (149 - 163)	1,206,639.5	2763
			2007/08	144 (138 - 150)	1,194,636.6	2601
			2008/09	146 (140 - 153)	1,182,805.7	2688
			2009/10	141 (135 - 148)	1,170,917.0	2655
			2010/11	139 (133 - 145)	1,159,198.2	2712

Table 28: All-Cause Mortality 1996-2011 results by single year for European/Other Ethnicity, age <75 years, born in NZ, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs	European/Other	Country of Birth				
European/Other	Born NZ	Males	1996/97	377 (364 - 390)	965,736.4	4305
			1997/98	355 (342 - 368)	955,973.4	4056
			1998/01	310 (298 - 322)	946,307.1	3576
			2001/02	329 (316 - 341)	956,125.6	3882
			2002/03	305 (293 - 317)	946,302.4	3606
			2003/04	298 (287 - 310)	936,633.4	3567
			2004/05	268 (257 - 279)	927,290.8	3273
			2005/06	251 (240 - 261)	917,965.4	3114
			2006/07	262 (251 - 273)	960,709.1	3258
			2007/08	253 (242 - 264)	951,571.9	3195
			2008/09	246 (235 - 256)	942,616.1	3219
			2009/10	231 (222 - 241)	933,558.3	3120
			2010/11	217 (207 - 226)	924,633.8	3012
		Females	1996/97	210 (201 - 220)	995,989.1	2655
			1997/98	197 (188 - 206)	985,942.5	2481
			1998/01	188 (179 - 196)	976,162.1	2397
			2001/02	190 (181 - 199)	992,854.1	2484
			2002/03	183 (175 - 191)	982,928.3	2397
			2003/04	185 (176 - 193)	973,038.1	2457
			2004/05	177 (169 - 185)	963,218.7	2376
			2005/06	157 (149 - 165)	953,493.0	2139
			2006/07	164 (157 - 172)	991,908.4	2271
			2007/08	151 (144 - 158)	982,758.3	2109
			2008/09	153 (146 - 161)	973,765.4	2205
			2009/10	147 (140 - 154)	964,686.0	2154
			2010/11	144 (137 - 151)	955,844.3	2205

Table 29: All-Cause Mortality 1996-2011 results by single year for European/Other Ethnicity, age <75 years, NOT born in NZ, by sex

By Variable	Level	Sex	Single Year of Follow-up	StdRate	Person Time (years)	Deaths
All-Cause Mortality, <75 yrs	European/Other	Country of Birth				
European/Other	Not NZ Born	Males	1996/97	322 (296 - 348)	165,582.7	1131
			1997/98	305 (280 - 329)	162,641.0	1092
			1998/01	251 (227 - 275)	159,760.7	906
			2001/02	263 (241 - 285)	169,223.7	969
			2002/03	276 (252 - 299)	166,087.1	972
			2003/04	249 (227 - 271)	162,883.0	897
			2004/05	220 (200 - 240)	159,755.3	792
			2005/06	197 (178 - 216)	156,727.5	714
			2006/07	202 (183 - 221)	201,430.4	765
			2007/08	202 (182 - 222)	198,481.2	762
			2008/09	186 (169 - 204)	195,592.8	732
			2009/10	175 (158 - 192)	192,646.0	699
			2010/11	172 (155 - 188)	189,719.0	690
	Females		1996/97	182 (161 - 204)	161,055.0	582
			1997/98	175 (159 - 191)	158,288.3	606
			1998/01	156 (138 - 174)	155,534.3	507
			2001/02	150 (134 - 167)	168,762.3	501
			2002/03	145 (131 - 160)	166,363.9	498
			2003/04	154 (139 - 169)	163,867.8	540
			2004/05	129 (114 - 144)	161,364.7	435
			2005/06	118 (104 - 131)	158,894.1	414
			2006/07	113 (101 - 126)	204,656.8	432
			2007/08	109 (98 - 120)	202,110.2	432
			2008/09	118 (105 - 132)	199,562.3	441
			2009/10	119 (106 - 131)	197,014.8	459
			2010/11	112 (100 - 124)	194,399.1	453

Appendix B

Unlock Ratios Stratified by Sex

Table 30: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by Sex, 2006-2011

Sex	Total Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
Male	Total NZ Mäori	7,422	7,272	1.02	6,756	1.10
	Total Pacific	2,394	2,433	0.98	2,226	1.08
	Total Asian	1,623	1,557	1.04	1,437	1.13
	nonMPA (European/Other)	56,820	57,819	0.98	55,041	1.03
Female	Total NZ Mäori	6,264	6,258	1.00	5,925	1.06
	Total Pacific	2,136	2,199	0.97	2,076	1.03
	Total Asian	1,374	1,311	1.05	1,221	1.13
	nonMPA (European/Other)	59,412	60,498	0.98	58,095	1.02

Table 31: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by Sex, 2006-2011

Sex	Total Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
Male	Total NZ Mäori	3,924	3,846	1.02	3,531	1.11
	Total Pacific	1,335	1,404	0.95	1,293	1.03
	Total Asian	1,389	1,266	1.10	1,245	1.12
	nonMPA (European/Other)	47,154	44,895	1.05	45,099	1.05
Female	Total NZ Mäori	6,570	6,585	1.00	6,195	1.06
	Total Pacific	2,055	2,106	0.98	2,010	1.02
	Total Asian	2,379	2,217	1.07	2,172	1.10
	nonMPA (European/Other)	49,152	48,327	1.02	48,399	1.02

Table 32: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by Sex, 2006-2011

Sex	Prioritised Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
Male	Mäori	7,422	7,272	1.02	6,756	1.10
	Pacific People	2,298	2,382	0.96	2,193	1.05
	NonMäoriNonPac	58,383	59,292	0.98	56,427	1.03
	Asian	1,563	1,470	1.06	1,389	1.13
	NonMäoriNonPacNonAs	56,820	57,819	0.98	55,041	1.03
Female	Mäori	6,264	6,258	1.00	5,925	1.06
	Pacific People	2,046	2,139	0.96	2,025	1.01
	NonMäoriNonPac	60,729	61,752	0.98	59,271	1.02
	Asian	1,317	1,254	1.05	1,176	1.12
	NonMäoriNonPacNonAs	59,412	60,498	0.98	58,095	1.02

Table 33: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity Stratified by Sex, 2006-2011

Sex	Prioritised Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
Male	Mäori	3,924	3,846	1.02	3,531	1.11
	Pacific People	1,269	1,341	0.95	1,260	1.01
	NonMäoriNonPac	48,489	46,095	1.05	46,314	1.05
	Asian	1,332	1,197	1.11	1,215	1.10
	NonMäoriNonPacNonAs	47,154	44,895	1.05	45,099	1.05
Female	Mäori	6,570	6,585	1.00	6,195	1.06
	Pacific People	1,914	1,944	0.98	1,920	1.00
	NonMäoriNonPac	51,426	50,418	1.02	50,502	1.02
	Asian	2,277	2,094	1.09	2,103	1.08
	NonMäoriNonPacNonAs	49,152	48,327	1.02	48,399	1.02

Unlock Ratios Stratified by Age

Table 34: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by Age Group, 2006-2011

Age Group	5 Year Age Group	Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to NHI Ratio
			Deaths	Deaths		Deaths	NHI Ratio
0- 4 yrs	Total NZ Māori		105	114	0.92	105	1.00
	Total Pacific		57	48	1.19	48	1.19
	Total Asian		21	21	1.00	21	1.00
	nonMPA (European/Other)		129	123	1.05	129	1.00
5- 9 yrs	Total NZ Māori		72	72	1.00	69	1.04
	Total Pacific		24	27	0.89	18	1.33
	nonMPA (European/Other)		84	84	1.00	87	0.97
10-14 yrs	Total NZ Māori		228	222	1.03	195	1.17
	Total Pacific		57	54	1.06	51	1.12
	Total Asian		24	18	1.33	18	1.33
	nonMPA (European/Other)		255	270	0.94	270	0.94
15-19 yrs	Total NZ Māori		306	300	1.02	285	1.07
	Total Pacific		105	84	1.25	84	1.25
	Total Asian		39	27	1.44	27	1.44
	nonMPA (European/Other)		570	588	0.97	576	0.99
20-24 yrs	Total NZ Māori		234	234	1.00	222	1.05
	Total Pacific		87	90	0.97	87	1.00
	Total Asian		42	33	1.27	33	1.27
	nonMPA (European/Other)		438	453	0.97	420	1.04
25-29 yrs	Total NZ Māori		234	222	1.05	210	1.11
	Total Pacific		75	72	1.04	63	1.19
	Total Asian		51	42	1.21	42	1.21
	nonMPA (European/Other)		450	468	0.96	444	1.01
30-34 yrs	Total NZ Māori		339	336	1.01	297	1.14
	Total Pacific		120	108	1.11	96	1.25
	Total Asian		48	45	1.07	42	1.14
	nonMPA (European/Other)		696	714	0.97	678	1.03
35-39 yrs	Total NZ Māori		468	447	1.05	411	1.14
	Total Pacific		189	186	1.02	168	1.13
	Total Asian		78	69	1.13	66	1.18

Age Group	5 Year Age Group	Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to
			Deaths	Deaths		Deaths	NHI Ratio
		nonMPA (European/Other)	1,071	1,107	0.97	1,056	1.01
40-44 yrs	Total NZ Māori		726	729	1.00	708	1.03
	Total Pacific		216	201	1.07	192	1.13
	Total Asian		105	102	1.03	93	1.13
	nonMPA (European/Other)		1,611	1,644	0.98	1,506	1.07
45-49 yrs	Total NZ Māori		963	954	1.01	912	1.06
	Total Pacific		246	237	1.04	237	1.04
	Total Asian		138	129	1.07	120	1.15
	nonMPA (European/Other)		2,346	2,400	0.98	2,226	1.05
50-54 yrs	Total NZ Māori		1,182	1,164	1.02	1,110	1.06
	Total Pacific		306	333	0.92	303	1.01
	Total Asian		210	195	1.08	192	1.09
	nonMPA (European/Other)		3,243	3,297	0.98	3,084	1.05
55-59 yrs	Total NZ Māori		1,440	1,428	1.01	1,380	1.04
	Total Pacific		423	429	0.99	393	1.08
	Total Asian		225	207	1.09	195	1.15
	nonMPA (European/Other)		4,995	5,076	0.98	4,743	1.05
60-64 yrs	Total NZ Māori		1,524	1,494	1.02	1,437	1.06
	Total Pacific		441	465	0.95	438	1.01
	Total Asian		282	264	1.07	237	1.19
	nonMPA (European/Other)		6,558	6,669	0.98	6,300	1.04
65-69 yrs	Total NZ Māori		1,731	1,731	1.00	1,617	1.07
	Total Pacific		549	567	0.97	528	1.04
	Total Asian		297	294	1.01	267	1.11
	nonMPA (European/Other)		8,799	8,907	0.99	8,535	1.03
70-74 yrs	Total NZ Māori		1,563	1,509	1.04	1,464	1.07
	Total Pacific		534	558	0.96	522	1.02
	Total Asian		372	369	1.01	339	1.10
	nonMPA (European/Other)		12,165	12,357	0.98	11,739	1.04
75-79 yrs	Total NZ Māori		1,239	1,212	1.02	1,104	1.12
	Total Pacific		486	522	0.93	498	0.98
	Total Asian		342	351	0.97	309	1.11
	nonMPA (European/Other)		18,822	19,134	0.98	18,381	1.02
80-84 yrs	Total NZ Māori		804	828	0.97	705	1.14
	Total Pacific		342	363	0.94	336	1.02

Age Group	5 Year Age Group	Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to
			Deaths	Deaths		Deaths	NHI Ratio
85-89 yrs	Total Asian		339	333	1.02	303	1.12
	nonMPA (European/Other)		22,599	22,968	0.98	22,155	1.02
	Total NZ Māori		351	357	0.98	306	1.15
	Total Pacific		192	204	0.94	180	1.07
90-94 yrs	Total Asian		240	225	1.07	222	1.08
	nonMPA (European/Other)		18,690	19,062	0.98	18,363	1.02
	Total NZ Māori		135	135	1.00	120	1.13
	Total Pacific		69	75	0.92	57	1.21
95-96 yrs	Total Asian		96	96	1.00	90	1.07
	nonMPA (European/Other)		9,789	9,996	0.98	9,594	1.02
	Total NZ Māori		12	12	1.00	9	1.33
	Total Asian		18	18	1.00	18	1.00
97+ yrs	nonMPA (European/Other)		1,566	1,614	0.97	1,539	1.02
	Total NZ Māori		18	21	0.86	9	2.00
	Total Pacific		9	9	1.00	9	1.00
	Total Asian		15	15	1.00	15	1.00
0-14 yrs	nonMPA (European/Other)		1,359	1,380	0.98	1,302	1.04
	Total NZ Māori		411	405	1.01	375	1.10
	Total Pacific		138	129	1.07	114	1.21
	Total Asian		57	48	1.19	48	1.19
15-24 yrs	nonMPA (European/Other)		465	483	0.96	486	0.96
	Total NZ Māori		543	531	1.02	504	1.08
	Total Pacific		192	171	1.12	168	1.14
	Total Asian		81	63	1.29	60	1.35
25-44 yrs	nonMPA (European/Other)		1,008	1,041	0.97	996	1.01
	Total NZ Māori		1,773	1,737	1.02	1,626	1.09
	Total Pacific		597	564	1.06	513	1.16
	Total Asian		288	261	1.10	240	1.20
45-64 yrs	nonMPA (European/Other)		3,825	3,933	0.97	3,687	1.04
	Total NZ Māori		5,109	5,043	1.01	4,839	1.06
	Total Pacific		1,416	1,461	0.97	1,374	1.03
	Total Asian		852	795	1.07	744	1.15
	nonMPA (European/Other)		17,142	17,445	0.98	16,353	1.05

Age Group	5 Year Age Group	Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
65-74 yrs	Total NZ Māori	3,297	3,240	1.02	3,081	1.07	
	Total Pacific	1,083	1,125	0.96	1,050	1.03	
	Total Asian	666	663	1.00	606	1.10	
	nonMPA (European/Other)	20,964	21,267	0.99	20,274	1.03	
75-84 yrs	Total NZ Māori	2,043	2,040	1.00	1,806	1.13	
	Total Pacific	828	882	0.94	834	0.99	
	Total Asian	681	681	1.00	612	1.11	
	nonMPA (European/Other)	41,421	42,102	0.98	40,536	1.02	
>= 85 yrs	Total NZ Māori	513	528	0.97	450	1.14	
	Total Pacific	279	297	0.94	252	1.11	
	Total Asian	366	354	1.03	345	1.06	
	nonMPA (European/Other)	31,407	32,052	0.98	30,795	1.02	

Table 35: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity Stratified by Age Group, 2006-2011

Age Group	5 Year Age Group	Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
0- 4 yrs	Total NZ Māori	54	54	1.00	54	1.00	
	Total Pacific	27	24	1.13	21	1.29	
	Total Asian	24	18	1.33	21	1.14	
	nonMPA (European/Other)	90	96	0.94	96	0.94	
5- 9 yrs	Total NZ Māori	24	36	0.67	36	0.67	
	Total Pacific	21	24	0.88	21	1.00	
	nonMPA (European/Other)	84	78	1.08	78	1.08	
10-14 yrs	Total NZ Māori	75	66	1.14	69	1.09	
	Total Pacific	36	36	1.00	33	1.09	
	Total Asian	12	9	1.33	9	1.33	
	nonMPA (European/Other)	183	189	0.97	192	0.95	
15-19 yrs	Total NZ Māori	354	312	1.13	294	1.20	
	Total Pacific	72	51	1.41	54	1.33	
	Total Asian	57	36	1.58	36	1.58	

Age Group	5 Year Age Group	Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI	Census to NHI Ratio
						Eth	
		nonMPA (European/Other)	1,116	1,152	0.97	1,170	0.95
20-24 yrs	Total NZ Māori		552	501	1.10	480	1.15
	Total Pacific		135	102	1.32	105	1.29
	Total Asian		126	87	1.45	102	1.24
	nonMPA (European/Other)		1,887	1,881	1.00	1,947	0.97
25-29 yrs	Total NZ Māori		555	513	1.08	486	1.14
	Total Pacific		144	126	1.14	123	1.17
	Total Asian		153	126	1.21	123	1.24
	nonMPA (European/Other)		1,998	1,950	1.02	2,028	0.99
30-34 yrs	Total NZ Māori		495	483	1.02	462	1.07
	Total Pacific		162	165	0.98	162	1.00
	Total Asian		213	183	1.16	183	1.16
	nonMPA (European/Other)		2,295	2,196	1.05	2,250	1.02
35-39 yrs	Total NZ Māori		558	534	1.04	531	1.05
	Total Pacific		228	228	1.00	225	1.01
	Total Asian		261	219	1.19	231	1.13
	nonMPA (European/Other)		2,859	2,766	1.03	2,766	1.03
40-44 yrs	Total NZ Māori		801	774	1.03	765	1.05
	Total Pacific		285	282	1.01	258	1.10
	Total Asian		399	375	1.06	378	1.06
	nonMPA (European/Other)		4,164	3,981	1.05	4,023	1.04
45-49 yrs	Total NZ Māori		984	1,002	0.98	948	1.04
	Total Pacific		303	312	0.97	297	1.02
	Total Asian		423	378	1.12	390	1.08
	nonMPA (European/Other)		5,787	5,520	1.05	5,565	1.04
50-54 yrs	Total NZ Māori		1,059	1,056	1.00	1,002	1.06
	Total Pacific		294	324	0.91	303	0.97
	Total Asian		378	342	1.11	348	1.09
	nonMPA (European/Other)		7,251	6,804	1.07	6,915	1.05
55-59 yrs	Total NZ Māori		1,251	1,263	0.99	1,188	1.05
	Total Pacific		375	387	0.97	378	0.99

Age Group	5 Year Age Group	Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI	Census to NHI Ratio
						Eth	
		Total Asian	348	345	1.01	327	1.06
		nonMPA (European/Other)	10,332	9,780	1.06	9,897	1.04
60-64 yrs	Total NZ Māori		1,188	1,197	0.99	1,128	1.05
	Total Pacific		378	414	0.91	387	0.98
	Total Asian		375	366	1.02	342	1.10
	nonMPA (European/Other)		11,676	11,136	1.05	11,217	1.04
65-69 yrs	Total NZ Māori		1,080	1,101	0.98	981	1.10
	Total Pacific		351	378	0.93	345	1.02
	Total Asian		369	363	1.02	339	1.09
	nonMPA (European/Other)		11,826	11,391	1.04	11,481	1.03
70-74 yrs	Total NZ Māori		753	771	0.98	690	1.09
	Total Pacific		258	282	0.91	258	1.00
	Total Asian		291	294	0.99	273	1.07
	nonMPA (European/Other)		10,947	10,641	1.03	10,611	1.03
75-79 yrs	Total NZ Māori		450	465	0.97	399	1.13
	Total Pacific		186	222	0.84	204	0.91
	Total Asian		183	186	0.98	177	1.03
	nonMPA (European/Other)		10,872	10,713	1.01	10,599	1.03
80-84 yrs	Total NZ Māori		195	231	0.84	171	1.14
	Total Pacific		90	99	0.91	93	0.97
	Total Asian		102	102	1.00	90	1.13
	nonMPA (European/Other)		8,007	7,977	1.00	7,830	1.02
85-89 yrs	Total NZ Māori		48	63	0.76	45	1.07
	Total Pacific		30	30	1.00	27	1.11
	Total Asian		36	33	1.09	33	1.09
	nonMPA (European/Other)		3,657	3,666	1.00	3,561	1.03
90-94 yrs	Total NZ Māori		15	18	0.83	9	1.67
	Total Pacific		9	15	0.60	9	1.00
	Total Asian		9	12	0.75	9	1.00
	nonMPA (European/Other)		1,104	1,116	0.99	1,092	1.01
95-96 yrs	nonMPA (European/Other)		117	120	0.98	120	0.98

Age Group	5 Year Age Group	Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
	97+ yrs	nonMPA (European/Other)	63	63	1.00	60	1.05
0-14 yrs		Total NZ Māori	159	156	1.02	156	1.02
		Total Pacific	84	84	1.00	78	1.08
		Total Asian	45	36	1.25	36	1.25
		nonMPA (European/Other)	360	366	0.98	366	0.98
15-24 yrs		Total NZ Māori	906	813	1.11	774	1.17
		Total Pacific	204	153	1.33	159	1.28
		Total Asian	183	123	1.49	135	1.36
		nonMPA (European/Other)	3,000	3,033	0.99	3,114	0.96
25-44 yrs		Total NZ Māori	2,406	2,301	1.05	2,244	1.07
		Total Pacific	819	804	1.02	765	1.07
		Total Asian	1,029	903	1.14	915	1.12
		nonMPA (European/Other)	11,313	10,893	1.04	11,067	1.02
45-64 yrs		Total NZ Māori	4,482	4,518	0.99	4,260	1.05
		Total Pacific	1,353	1,440	0.94	1,362	0.99
		Total Asian	1,524	1,428	1.07	1,407	1.08
		nonMPA (European/Other)	35,046	33,240	1.05	33,597	1.04
65-74 yrs		Total NZ Māori	1,836	1,872	0.98	1,671	1.10
		Total Pacific	609	657	0.93	609	1.00
		Total Asian	657	657	1.00	615	1.07
		nonMPA (European/Other)	22,770	22,029	1.03	22,092	1.03
75-84 yrs		Total NZ Māori	645	696	0.93	570	1.13
		Total Pacific	279	321	0.87	297	0.94
		Total Asian	285	288	0.99	264	1.08
		nonMPA (European/Other)	18,879	18,690	1.01	18,426	1.02
>= 85 yrs		Total NZ Māori	63	78	0.81	54	1.17
		Total Pacific	39	45	0.87	36	1.08
		Total Asian	42	45	0.93	42	1.00

Age Group	5 Year Age Group	Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
		nonMPA (European/Other)	4,941	4,968	0.99	4,836	1.02

Table 36: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by Age Group, 2006-2011

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
0- 4 yrs	Mäori	105	114	0.92	105	1.00	
	Pacific People	33	36	0.92	36	0.92	
	NonMäoriNonPac	147	141	1.04	147	1.00	
	Asian	21	15	1.40	15	1.40	
	NonMäoriNonPacNonAs	129	123	1.05	129	1.00	
5- 9 yrs	Mäori	72	72	1.00	69	1.04	
	Pacific People	18	12	1.50	12	1.50	
	NonMäoriNonPac	93	96	0.97	96	0.97	
	NonMäoriNonPacNonAs	84	84	1.00	87	0.97	
10-14 yrs	Mäori	228	222	1.03	195	1.17	
	Pacific People	36	39	0.92	42	0.86	
	NonMäoriNonPac	279	291	0.96	282	0.99	
	Asian	24	18	1.33	12	2.00	
	NonMäoriNonPacNonAs	255	270	0.94	270	0.94	
15-19 yrs	Mäori	306	300	1.02	285	1.07	
	Pacific People	78	75	1.04	69	1.13	
	NonMäoriNonPac	603	612	0.99	603	1.00	
	Asian	33	27	1.22	24	1.38	
	NonMäoriNonPacNonAs	570	588	0.97	576	0.99	
20-24 yrs	Mäori	234	234	1.00	222	1.05	
	Pacific People	84	84	1.00	81	1.04	
	NonMäoriNonPac	477	483	0.99	453	1.05	
	Asian	39	30	1.30	33	1.18	
	NonMäoriNonPacNonAs	438	453	0.97	420	1.04	

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
25-29 yrs	Mäori		234	222	1.05	210	1.11
	Pacific People		63	66	0.95	60	1.05
	NonMäoriNonPac		492	510	0.96	483	1.02
	Asian		45	39	1.15	39	1.15
	NonMäoriNonPacNonAs		450	468	0.96	444	1.01
30-34 yrs	Mäori		339	336	1.01	297	1.14
	Pacific People		108	102	1.06	96	1.13
	NonMäoriNonPac		744	756	0.98	720	1.03
	Asian		48	45	1.07	39	1.23
	NonMäoriNonPacNonAs		696	714	0.97	678	1.03
35-39 yrs	Mäori		468	447	1.05	411	1.14
	Pacific People		180	177	1.02	165	1.09
	NonMäoriNonPac		1,146	1,173	0.98	1,122	1.02
	Asian		75	66	1.14	66	1.14
	NonMäoriNonPacNonAs		1,071	1,107	0.97	1,056	1.01
40-44 yrs	Mäori		726	729	1.00	708	1.03
	Pacific People		195	192	1.02	177	1.10
	NonMäoriNonPac		1,716	1,737	0.99	1,602	1.07
	Asian		102	93	1.10	93	1.10
	NonMäoriNonPacNonAs		1,611	1,644	0.98	1,506	1.07
45-49 yrs	Mäori		963	954	1.01	912	1.06
	Pacific People		237	234	1.01	228	1.04
	NonMäoriNonPac		2,475	2,520	0.98	2,340	1.06
	Asian		129	123	1.05	114	1.13
	NonMäoriNonPacNonAs		2,346	2,400	0.98	2,226	1.05
50-54 yrs	Mäori		1,182	1,164	1.02	1,110	1.06
	Pacific People		300	330	0.91	300	1.00
	NonMäoriNonPac		3,447	3,477	0.99	3,267	1.06
	Asian		204	177	1.15	183	1.11
	NonMäoriNonPacNonAs		3,243	3,297	0.98	3,084	1.05
55-59 yrs	Mäori		1,440	1,428	1.01	1,380	1.04
	Pacific People		420	426	0.99	393	1.07

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
		NonMäoriNonPac	5,208	5,268	0.99	4,926	1.06
		Asian	210	195	1.08	186	1.13
		NonMäoriNonPacNonAs	4,995	5,076	0.98	4,743	1.05
60-64 yrs	Mäori		1,524	1,494	1.02	1,437	1.06
		Pacific People	432	462	0.94	438	0.99
		NonMäoriNonPac	6,819	6,912	0.99	6,519	1.05
		Asian	264	240	1.10	219	1.21
		NonMäoriNonPacNonAs	6,558	6,669	0.98	6,300	1.04
65-69 yrs	Mäori		1,731	1,731	1.00	1,617	1.07
		Pacific People	543	561	0.97	528	1.03
		NonMäoriNonPac	9,090	9,192	0.99	8,796	1.03
		Asian	288	285	1.01	258	1.12
		NonMäoriNonPacNonAs	8,799	8,907	0.99	8,535	1.03
70-74 yrs	Mäori		1,563	1,509	1.04	1,464	1.07
		Pacific People	528	555	0.95	516	1.02
		NonMäoriNonPac	12,522	12,708	0.99	12,066	1.04
		Asian	360	351	1.03	327	1.10
		NonMäoriNonPacNonAs	12,165	12,357	0.98	11,739	1.04
75-79 yrs	Mäori		1,239	1,212	1.02	1,104	1.12
		Pacific People	483	519	0.93	495	0.98
		NonMäoriNonPac	19,161	19,473	0.98	18,690	1.03
		Asian	339	336	1.01	306	1.11
		NonMäoriNonPacNonAs	18,822	19,134	0.98	18,381	1.02
80-84 yrs	Mäori		804	828	0.97	705	1.14
		Pacific People	336	363	0.93	336	1.00
		NonMäoriNonPac	22,929	23,289	0.98	22,452	1.02
		Asian	330	324	1.02	297	1.11
		NonMäoriNonPacNonAs	22,599	22,968	0.98	22,155	1.02
85-89 yrs	Mäori		351	357	0.98	306	1.15
		Pacific People	189	204	0.93	180	1.05
		NonMäoriNonPac	18,930	19,287	0.98	18,582	1.02
		Asian	240	222	1.08	219	1.10

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
		NonMäoriNonPacNonAs	18,690	19,062	0.98	18,363	1.02
90-94 yrs	Mäori		135	135	1.00	120	1.13
		Pacific People	66	75	0.88	57	1.16
	Asian	NonMäoriNonPac	9,885	10,086	0.98	9,684	1.02
		NonMäoriNonPacNonAs	93	93	1.00	90	1.03
		NonMäoriNonPacNonAs	9,789	9,996	0.98	9,594	1.02
95-96 yrs	Mäori		12	12	1.00	9	1.33
		NonMäoriNonPac	1,581	1,629	0.97	1,557	1.02
	Asian	Asian	18	18	1.00	18	1.00
		NonMäoriNonPacNonAs	1,566	1,614	0.97	1,539	1.02
		NonMäoriNonPacNonAs	1,359	1,380	0.98	1,302	1.04
97+ yrs	Mäori		18	21	0.86	9	2.00
		Pacific People	9	9	1.00	9	1.00
	Asian	NonMäoriNonPac	1,374	1,392	0.99	1,317	1.04
		NonMäoriNonPacNonAs	15	15	1.00	15	1.00
		NonMäoriNonPacNonAs	1,359	1,380	0.98	1,302	1.04
0-14 yrs	Mäori		411	405	1.01	375	1.10
		Pacific People	87	90	0.97	90	0.97
	Asian	NonMäoriNonPac	516	528	0.98	525	0.98
		NonMäoriNonPacNonAs	54	45	1.20	39	1.38
		NonMäoriNonPacNonAs	465	483	0.96	486	0.96
15-24 yrs	Mäori		543	531	1.02	504	1.08
		Pacific People	162	156	1.04	147	1.10
	Asian	NonMäoriNonPac	1,080	1,098	0.98	1,053	1.03
		NonMäoriNonPacNonAs	69	57	1.21	57	1.21
		NonMäoriNonPacNonAs	1,008	1,041	0.97	996	1.01
25-44 yrs	Mäori		1,773	1,737	1.02	1,626	1.09
		Pacific People	546	537	1.02	498	1.10
	Asian	NonMäoriNonPac	4,092	4,179	0.98	3,924	1.04
		NonMäoriNonPacNonAs	267	246	1.09	237	1.13
		NonMäoriNonPacNonAs	3,825	3,933	0.97	3,687	1.04

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio	NHI Deaths	Census to NHI Ratio
45-64 yrs	Mäori	5,109	5,043	1.01	4,839	1.06	
	Pacific People	1,389	1,449	0.96	1,353	1.03	
	NonMäoriNonPac	17,952	18,180	0.99	17,055	1.05	
	Asian	807	735	1.10	702	1.15	
	NonMäoriNonPacNonAs	17,142	17,445	0.98	16,353	1.05	
65-74 yrs	Mäori	3,297	3,240	1.02	3,081	1.07	
	Pacific People	1,068	1,116	0.96	1,047	1.02	
	NonMäoriNonPac	21,612	21,900	0.99	20,862	1.04	
	Asian	648	633	1.02	585	1.11	
	NonMäoriNonPacNonAs	20,964	21,267	0.99	20,274	1.03	
75-84 yrs	Mäori	2,043	2,040	1.00	1,806	1.13	
	Pacific People	822	879	0.94	828	0.99	
	NonMäoriNonPac	42,090	42,762	0.98	41,142	1.02	
	Asian	669	660	1.01	603	1.11	
	NonMäoriNonPacNonAs	41,421	42,102	0.98	40,536	1.02	
>= 85 yrs	Mäori	513	528	0.97	450	1.14	
	Pacific People	276	294	0.94	252	1.10	
	NonMäoriNonPac	31,770	32,397	0.98	31,134	1.02	
	Asian	366	345	1.06	342	1.07	
	NonMäoriNonPacNonAs	31,407	32,052	0.98	30,795	1.02	

**Table 37: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity
Stratified by Age Group, 2006-2011**

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI Eth	Census to NHI Ratio
0- 4 yrs	Mäori	54	54	1.00	54	1.00	
	Pacific People	18	18	1.00	18	1.00	
	NonMäoriNonPac	111	114	0.97	114	0.97	
	Asian	18	15	1.20	18	1.00	
	NonMäoriNonPacNonAs	90	96	0.94	96	0.94	

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI	Census to
						Eth	NHI Ratio
5- 9 yrs	Mäori		24	36	0.67	36	0.67
	Pacific People		21	18	1.17	18	1.17
	NonMäoriNonPac		93	84	1.11	84	1.11
	NonMäoriNonPacNonAs		84	78	1.08	78	1.08
10-14 yrs	Mäori		75	66	1.14	69	1.09
	Pacific People		24	33	0.73	30	0.80
	NonMäoriNonPac		198	198	1.00	201	0.99
	Asian		12	9	1.33	6	2.00
	NonMäoriNonPacNonAs		183	189	0.97	192	0.95
15-19 yrs	Mäori		354	312	1.13	294	1.20
	Pacific People		57	45	1.27	51	1.12
	NonMäoriNonPac		1,164	1,188	0.98	1,200	0.97
	Asian		48	33	1.45	30	1.60
	NonMäoriNonPacNonAs		1,116	1,152	0.97	1,170	0.95
20-24 yrs	Mäori		552	501	1.10	480	1.15
	Pacific People		105	78	1.35	84	1.25
	NonMäoriNonPac		1,992	1,962	1.02	2,037	0.98
	Asian		105	84	1.25	93	1.13
	NonMäoriNonPacNonAs		1,887	1,881	1.00	1,947	0.97
25-29 yrs	Mäori		555	513	1.08	486	1.14
	Pacific People		114	105	1.09	108	1.06
	NonMäoriNonPac		2,136	2,070	1.03	2,148	0.99
	Asian		138	120	1.15	120	1.15
	NonMäoriNonPacNonAs		1,998	1,950	1.02	2,028	0.99
30-34 yrs	Mäori		495	483	1.02	462	1.07
	Pacific People		147	147	1.00	150	0.98
	NonMäoriNonPac		2,493	2,367	1.05	2,427	1.03
	Asian		201	174	1.16	180	1.12
	NonMäoriNonPacNonAs		2,295	2,196	1.05	2,250	1.02
35-39 yrs	Mäori		558	534	1.04	531	1.05
	Pacific People		213	216	0.99	216	0.99
	NonMäoriNonPac		3,108	2,982	1.04	2,994	1.04
	Asian		249	213	1.17	228	1.09
	NonMäoriNonPacNonAs		2,859	2,766	1.03	2,766	1.03

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to Cancer Ratio	NHI	Census to
						Eth	NHI Ratio
40-44 yrs	Mäori		801	774	1.03	765	1.05
	Pacific People		261	267	0.98	249	1.05
	NonMäoriNonPac		4,554	4,347	1.05	4,395	1.04
	Asian		393	363	1.08	375	1.05
	NonMäoriNonPacNonAs		4,164	3,981	1.05	4,023	1.04
45-49 yrs	Mäori		984	1,002	0.98	948	1.04
	Pacific People		288	294	0.98	285	1.01
	NonMäoriNonPac		6,195	5,877	1.05	5,946	1.04
	Asian		408	360	1.13	381	1.07
	NonMäoriNonPacNonAs		5,787	5,520	1.05	5,565	1.04
50-54 yrs	Mäori		1,059	1,056	1.00	1,002	1.06
	Pacific People		279	303	0.92	291	0.96
	NonMäoriNonPac		7,620	7,122	1.07	7,251	1.05
	Asian		369	318	1.16	336	1.10
	NonMäoriNonPacNonAs		7,251	6,804	1.07	6,915	1.05
55-59 yrs	Mäori		1,251	1,263	0.99	1,188	1.05
	Pacific People		360	378	0.95	372	0.97
	NonMäoriNonPac		10,671	10,098	1.06	10,212	1.04
	Asian		339	318	1.07	315	1.08
	NonMäoriNonPacNonAs		10,332	9,780	1.06	9,897	1.04
60-64 yrs	Mäori		1,188	1,197	0.99	1,128	1.05
	Pacific People		369	399	0.92	378	0.98
	NonMäoriNonPac		12,027	11,463	1.05	11,541	1.04
	Asian		351	327	1.07	324	1.08
	NonMäoriNonPacNonAs		11,676	11,136	1.05	11,217	1.04
65-69 yrs	Mäori		1,080	1,101	0.98	981	1.10
	Pacific People		348	363	0.96	345	1.01
	NonMäoriNonPac		12,183	11,742	1.04	11,817	1.03
	Asian		357	351	1.02	336	1.06
	NonMäoriNonPacNonAs		11,826	11,391	1.04	11,481	1.03
70-74 yrs	Mäori		753	771	0.98	690	1.09
	Pacific People		258	276	0.93	261	0.99
	NonMäoriNonPac		11,229	10,923	1.03	10,881	1.03
	Asian		285	288	0.99	270	1.06
	NonMäoriNonPacNonAs		10,947	10,641	1.03	10,611	1.03

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to	NHI Eth	Census to NHI Ratio
					Cancer Ratio		
75-79 yrs	Mäori		450	465	0.97	399	1.13
	Pacific People		186	219	0.85	201	0.93
	NonMäoriNonPac		11,055	10,887	1.02	10,770	1.03
	Asian		180	174	1.03	171	1.05
	NonMäoriNonPacNonAs		10,872	10,713	1.01	10,599	1.03
80-84 yrs	Mäori		195	231	0.84	171	1.14
	Pacific People		90	99	0.91	93	0.97
	NonMäoriNonPac		8,106	8,079	1.00	7,917	1.02
	Asian		102	102	1.00	87	1.17
	NonMäoriNonPacNonAs		8,007	7,977	1.00	7,830	1.02
85-89 yrs	Mäori		48	63	0.76	45	1.07
	Pacific People		30	30	1.00	27	1.11
	NonMäoriNonPac		3,690	3,699	1.00	3,594	1.03
	Asian		36	33	1.09	33	1.09
	NonMäoriNonPacNonAs		3,657	3,666	1.00	3,561	1.03
90-94 yrs	Mäori		15	18	0.83	9	1.67
	Pacific People		9	15	0.60	9	1.00
	NonMäoriNonPac		1,113	1,125	0.99	1,098	1.01
	NonMäoriNonPacNonAs		1,104	1,116	0.99	1,092	1.01
95-96 yrs	NonMäoriNonPac		117	120	0.98	120	0.98
	NonMäoriNonPacNonAs		117	120	0.98	120	0.98
97+ yrs	NonMäoriNonPac		63	63	1.00	60	1.05
	NonMäoriNonPacNonAs		63	63	1.00	60	1.05
0-14 yrs	Mäori		159	156	1.02	156	1.02
	Pacific People		63	69	0.91	66	0.95
	NonMäoriNonPac		399	399	1.00	399	1.00
	Asian		39	33	1.18	30	1.30
	NonMäoriNonPacNonAs		360	366	0.98	366	0.98
15-24 yrs	Mäori		906	813	1.11	774	1.17
	Pacific People		162	123	1.32	135	1.20
	NonMäoriNonPac		3,153	3,150	1.00	3,237	0.97
	Asian		150	117	1.28	123	1.22
	NonMäoriNonPacNonAs		3,000	3,033	0.99	3,114	0.96

Age Group	5 Year Age Group	Prioritised Ethnicity	Census Ethnicity	First Cancer Register Eth	Census to	NHI Eth	Census to NHI Ratio
					Cancer Ratio		
25-44 yrs	Mäori	2,406	2,301	1.05	2,244	1.07	
	Pacific People	738	729	1.01	723	1.02	
	NonMäoriNonPac	12,294	11,766	1.04	11,964	1.03	
	Asian	984	870	1.13	900	1.09	
	NonMäoriNonPacNonAs	11,313	10,893	1.04	11,067	1.02	
45-64 yrs	Mäori	4,482	4,518	0.99	4,260	1.05	
	Pacific People	1,299	1,368	0.95	1,329	0.98	
	NonMäoriNonPac	36,513	34,563	1.06	34,953	1.04	
	Asian	1,467	1,323	1.11	1,356	1.08	
	NonMäoriNonPacNonAs	35,046	33,240	1.05	33,597	1.04	
65-74 yrs	Mäori	1,836	1,872	0.98	1,671	1.10	
	Pacific People	606	639	0.95	603	1.00	
	NonMäoriNonPac	23,412	22,668	1.03	22,698	1.03	
	Asian	642	636	1.01	609	1.05	
	NonMäoriNonPacNonAs	22,770	22,029	1.03	22,092	1.03	
75-84 yrs	Mäori	645	696	0.93	570	1.13	
	Pacific People	276	315	0.88	294	0.94	
	NonMäoriNonPac	19,161	18,963	1.01	18,687	1.03	
	Asian	279	273	1.02	258	1.08	
	NonMäoriNonPacNonAs	18,879	18,690	1.01	18,426	1.02	
>= 85 yrs	Mäori	63	78	0.81	54	1.17	
	Pacific People	39	45	0.87	36	1.08	
	NonMäoriNonPac	4,986	5,010	1.00	4,878	1.02	
	Asian	42	42	1.00	42	1.00	
	NonMäoriNonPacNonAs	4,941	4,968	0.99	4,836	1.02	

Unlock Ratios Stratified by NZ Deprivation

Table 38: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by NZ Deprivation, 2006-2011

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Total Ethnicity	Census			Census		
				Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI	
				Ratio		Ratio			
Dep 1	Total NZ Mäori		195	195	1.00	165	1.18		
	Total Pacific		60	69	0.87	51	1.18		
	Total Asian		243	237	1.03	225	1.08		
	nonMPA (European/Other)		8,937	9,012	0.99	8,541	1.05		
Dep 2	Total NZ Mäori		345	345	1.00	318	1.08		
	Total Pacific		111	123	0.90	102	1.09		
	Total Asian		255	243	1.05	231	1.10		
	nonMPA (European/Other)		10,119	10,230	0.99	9,690	1.04		
Dep 3	Total NZ Mäori		477	465	1.03	426	1.12		
	Total Pacific		108	114	0.95	96	1.13		
	Total Asian		291	291	1.00	273	1.07		
	nonMPA (European/Other)		11,049	11,253	0.98	10,728	1.03		
Dep 4	Total NZ Mäori		609	594	1.03	531	1.15		
	Total Pacific		186	186	1.00	165	1.13		
	Total Asian		333	315	1.06	291	1.14		
	nonMPA (European/Other)		12,321	12,522	0.98	11,931	1.03		
Dep 5	Total NZ Mäori		735	717	1.03	633	1.16		
	Total Pacific		165	180	0.92	153	1.08		
	Total Asian		321	315	1.02	297	1.08		
	nonMPA (European/Other)		12,639	12,828	0.99	12,288	1.03		
Dep 6	Total NZ Mäori		1,023	957	1.07	888	1.15		
	Total Pacific		255	276	0.92	258	0.99		
	Total Asian		294	276	1.07	258	1.14		

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Total Ethnicity	Census		Census		
				Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	
						Ratio	to NHI	
			nonMPA (European/Other)	12,801	13,038	0.98	12,498	1.02
Dep 7			Total NZ Mäori	1,362	1,341	1.02	1,248	1.09
			Total Pacific	363	363	1.00	342	1.06
			Total Asian	300	285	1.05	279	1.08
			nonMPA (European/Other)	14,235	14,523	0.98	13,872	1.03
Dep 8			Total NZ Mäori	1,839	1,803	1.02	1,671	1.10
			Total Pacific	612	630	0.97	597	1.03
			Total Asian	342	330	1.04	294	1.16
			nonMPA (European/Other)	13,641	13,929	0.98	13,332	1.02
Dep 9			Total NZ Mäori	2,847	2,841	1.00	2,703	1.05
			Total Pacific	915	933	0.98	867	1.06
			Total Asian	303	285	1.06	243	1.25
			nonMPA (European/Other)	12,288	12,597	0.98	12,177	1.01
Dep10			Total NZ Mäori	4,248	4,269	1.00	4,101	1.04
			Total Pacific	1,758	1,758	1.00	1,674	1.05
			Total Asian	312	285	1.09	261	1.20
			nonMPA (European/Other)	8,202	8,376	0.98	8,070	1.02
Dep 1-2			Total NZ Mäori	540	540	1.00	480	1.13
			Total Pacific	174	192	0.91	150	1.16
			Total Asian	498	483	1.03	456	1.09
			nonMPA (European/Other)	19,053	19,242	0.99	18,231	1.05
Dep 3-4			Total NZ Mäori	1,089	1,059	1.03	957	1.14
			Total Pacific	297	300	0.99	264	1.13
			Total Asian	624	606	1.03	567	1.10
			nonMPA (European/Other)	23,370	23,775	0.98	22,662	1.03
Dep 5-6			Total NZ Mäori	1,758	1,671	1.05	1,521	1.16
			Total Pacific	417	456	0.91	408	1.02

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Total Ethnicity	Census		Census				
				Census Deaths	Mortality Deaths	to Mortality	NHI Deaths			
						Ratio				
		Total Asian nonMPA (European/Other)		612	591	1.04	555	1.10		
Dep 7-8		25,440		25,869	0.98	24,786	1.03			
		Total NZ Māori		3,201	3,141	1.02	2,922	1.10		
		Total Pacific		975	993	0.98	939	1.04		
		Total Asian nonMPA (European/Other)		642	615	1.04	576	1.11		
		27,873		28,452	0.98	27,204	1.02			
Dep 9-10		Total NZ Māori		7,095	7,110	1.00	6,804	1.04		
		Total Pacific		2,670	2,691	0.99	2,541	1.05		
		Total Asian nonMPA (European/Other)		618	570	1.08	504	1.23		
		20,487		20,973	0.98	20,247	1.01			
Dep 1-6		Total NZ Māori		3,387	3,273	1.03	2,958	1.15		
		Total Pacific		885	948	0.93	822	1.08		
		Total Asian nonMPA (European/Other)		1,734	1,680	1.03	1,578	1.10		
		67,863		68,886	0.99	65,676	1.03			
Dep 7-10		Total NZ Māori		10,293	10,254	1.00	9,723	1.06		
		Total Pacific		3,645	3,684	0.99	3,480	1.05		
		Total Asian nonMPA (European/Other)		1,260	1,185	1.06	1,077	1.17		
		48,360		49,425	0.98	47,451	1.02			

Table 39: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by NZ Deprivation, 2006-2011

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Total Ethnicity	First		Census		Census			
				Census Ethnicity	Cancer Register	to Cancer	NHI Eth	to NHI			
				Eth	Ratio						
Dep 1		Total NZ Māori		333	315	1.06	285	1.17			
		Total Pacific		63	87	0.72	72	0.88			

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Total Ethnicity	First		Census	Census	
				Census Ethnicity	Cancer Register	to Cancer	NHI Eth	to NHI
				Eth	Ratio			Ratio
			Total Asian	375	345	1.09	342	1.10
			nonMPA (European/Other)	11,277	10,632	1.06	10,722	1.05
Dep 2			Total NZ Mäori	402	369	1.09	336	1.20
			Total Pacific	96	105	0.91	93	1.03
			Total Asian	375	345	1.09	348	1.08
			nonMPA (European/Other)	11,094	10,524	1.05	10,608	1.05
Dep 3			Total NZ Mäori	465	420	1.11	375	1.24
			Total Pacific	117	120	0.98	114	1.03
			Total Asian	399	372	1.07	372	1.07
			nonMPA (European/Other)	10,812	10,356	1.04	10,380	1.04
Dep 4			Total NZ Mäori	525	510	1.03	462	1.14
			Total Pacific	168	192	0.88	165	1.02
			Total Asian	393	363	1.08	348	1.13
			nonMPA (European/Other)	10,698	10,329	1.04	10,353	1.03
Dep 5			Total NZ Mäori	708	669	1.06	618	1.15
			Total Pacific	153	150	1.02	147	1.04
			Total Asian	447	417	1.07	411	1.09
			nonMPA (European/Other)	10,548	10,272	1.03	10,275	1.03
Dep 6			Total NZ Mäori	933	918	1.02	870	1.07
			Total Pacific	240	267	0.90	249	0.96
			Total Asian	381	342	1.11	336	1.13
			nonMPA (European/Other)	10,116	9,861	1.03	9,849	1.03
Dep 7			Total NZ Mäori	1,074	1,059	1.01	981	1.09
			Total Pacific	288	276	1.04	267	1.08
			Total Asian	420	381	1.10	390	1.08
			nonMPA (European/Other)	10,113	9,900	1.02	9,852	1.03
Dep 8			Total NZ Mäori	1,410	1,425	0.99	1,329	1.06
			Total Pacific	501	519	0.97	489	1.02

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Total Ethnicity	First	Census	<i>Census</i>		
				Census Ethnicity	Cancer Register	to Cancer	NHI <i>Eth</i>	
				Eth	Ratio	Ratio		
			Total Asian	378	339	1.12	336	1.13
			nonMPA (European/Other)	8,889	8,742	1.02	8,766	1.01
Dep 9			Total NZ Mäori	2,004	2,028	0.99	1,908	1.05
			Total Pacific	651	687	0.95	657	0.99
			Total Asian	309	291	1.06	270	1.14
			nonMPA (European/Other)	7,806	7,692	1.01	7,710	1.01
Dep10			Total NZ Mäori	2,646	2,715	0.97	2,574	1.03
			Total Pacific	1,113	1,107	1.01	1,056	1.05
			Total Asian	291	291	1.00	270	1.08
			nonMPA (European/Other)	4,950	4,902	1.01	4,962	1.00
Dep 1-2			Total NZ Mäori	732	681	1.07	621	1.18
			Total Pacific	159	192	0.83	162	0.98
			Total Asian	753	690	1.09	690	1.09
			nonMPA (European/Other)	22,371	21,153	1.06	21,333	1.05
Dep 3-4			Total NZ Mäori	987	930	1.06	834	1.18
			Total Pacific	285	312	0.91	279	1.02
			Total Asian	792	735	1.08	717	1.10
			nonMPA (European/Other)	21,507	20,682	1.04	20,736	1.04
Dep 5-6			Total NZ Mäori	1,641	1,584	1.04	1,485	1.11
			Total Pacific	393	414	0.95	393	1.00
			Total Asian	825	759	1.09	744	1.11
			nonMPA (European/Other)	20,658	20,133	1.03	20,127	1.03
Dep 7-8			Total NZ Mäori	2,481	2,490	1.00	2,310	1.07
			Total Pacific	789	795	0.99	753	1.05
			Total Asian	798	720	1.11	726	1.10
			nonMPA (European/Other)	19,002	18,645	1.02	18,618	1.02

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Total Ethnicity	First	Census	<i>Census</i>		
				Census Ethnicity	Cancer Register	to Cancer	NHI <i>Eth</i>	to NHI
				Eth	Ratio	Ratio		
Dep 9-10	Total NZ Mäori	4,650	4,746	0.98	4,479	1.04		
	Total Pacific	1,764	1,791	0.98	1,713	1.03		
	Total Asian	597	579	1.03	537	1.11		
	nonMPA (European/Other)	12,756	12,594	1.01	12,675	1.01		
Dep 1-6	Total NZ Mäori	3,360	3,198	1.05	2,943	1.14		
	Total Pacific	834	921	0.91	834	1.00		
	Total Asian	2,373	2,184	1.09	2,154	1.10		
	nonMPA (European/Other)	64,536	61,971	1.04	62,190	1.04		
Dep 7-10	Total NZ Mäori	7,134	7,233	0.99	6,789	1.05		
	Total Pacific	2,553	2,589	0.99	2,469	1.03		
	Total Asian	1,395	1,296	1.08	1,263	1.10		
	nonMPA (European/Other)	31,758	31,236	1.02	31,293	1.01		

Table 40: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by NZ Deprivation, 2006-2011

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Prioritised Ethnicity	Census		<i>Census</i>		
				Census Deaths	Mortality Deaths	to Mortality	NHI <i>Deaths</i>	to NHI
				Eth	Ratio	Ratio		
Dep 1	Mäori	195	195	1.00	165	1.18		
	Pacific People	54	69	0.78	51	1.06		
	NonMäoriNonPac	9,174	9,246	0.99	8,766	1.05		
	Asian	240	231	1.04	225	1.07		
	NonMäoriNonPacNonAs	8,937	9,012	0.99	8,541	1.05		
Dep 2	Mäori	345	345	1.00	318	1.08		
	Pacific People	108	123	0.88	96	1.13		
	NonMäoriNonPac	10,371	10,473	0.99	9,918	1.05		
	Asian	252	243	1.04	231	1.09		
	NonMäoriNonPacNonAs	10,119	10,230	0.99	9,690	1.04		

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Prioritised Ethnicity	Census			Census	
				Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI
				Ratio			Ratio	
Dep 3	Mäori		477	465	1.03	426	1.12	
	Pacific People		108	111	0.97	93	1.16	
	NonMäoriNonPac		11,334	11,541	0.98	10,995	1.03	
	Asian		285	285	1.00	270	1.06	
	NonMäoriNonPacNonAs		11,049	11,253	0.98	10,728	1.03	
Dep 4	Mäori		609	594	1.03	531	1.15	
	Pacific People		174	180	0.97	165	1.05	
	NonMäoriNonPac		12,648	12,831	0.99	12,219	1.04	
	Asian		324	309	1.05	288	1.13	
	NonMäoriNonPacNonAs		12,321	12,522	0.98	11,931	1.03	
Dep 5	Mäori		735	717	1.03	633	1.16	
	Pacific People		156	174	0.90	150	1.04	
	NonMäoriNonPac		12,957	13,137	0.99	12,579	1.03	
	Asian		318	306	1.04	291	1.09	
	NonMäoriNonPacNonAs		12,639	12,828	0.99	12,288	1.03	
Dep 6	Mäori		1,023	957	1.07	888	1.15	
	Pacific People		246	273	0.90	252	0.98	
	NonMäoriNonPac		13,089	13,305	0.98	12,750	1.03	
	Asian		285	264	1.08	249	1.14	
	NonMäoriNonPacNonAs		12,801	13,038	0.98	12,498	1.02	
Dep 7	Mäori		1,362	1,341	1.02	1,248	1.09	
	Pacific People		345	360	0.96	339	1.02	
	NonMäoriNonPac		14,526	14,796	0.98	14,139	1.03	
	Asian		294	270	1.09	270	1.09	
	NonMäoriNonPacNonAs		14,235	14,523	0.98	13,872	1.03	
Dep 8	Mäori		1,839	1,803	1.02	1,671	1.10	
	Pacific People		588	606	0.97	576	1.02	
	NonMäoriNonPac		13,965	14,232	0.98	13,611	1.03	
	Asian		327	303	1.08	282	1.16	
	NonMäoriNonPacNonAs		13,641	13,929	0.98	13,332	1.02	
Dep 9	Mäori		2,847	2,841	1.00	2,703	1.05	
	Pacific People		876	906	0.97	849	1.03	
	NonMäoriNonPac		12,573	12,849	0.98	12,405	1.01	
	Asian		285	252	1.13	228	1.25	
	NonMäoriNonPacNonAs		12,288	12,597	0.98	12,177	1.01	

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Prioritised Ethnicity	Census			Census	
				Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI
				Ratio			Ratio	
Dep10			Mäori	4,248	4,269	1.00	4,101	1.04
			Pacific People	1,689	1,725	0.98	1,641	1.03
			NonMäoriNonPac	8,469	8,628	0.98	8,307	1.02
			Asian	270	252	1.07	237	1.14
			NonMäoriNonPacNonAs	8,202	8,376	0.98	8,070	1.02
Dep 1-2			Mäori	540	540	1.00	480	1.13
			Pacific People	162	189	0.86	150	1.08
			NonMäoriNonPac	19,545	19,719	0.99	18,684	1.05
			Asian	492	474	1.04	453	1.09
			NonMäoriNonPacNonAs	19,053	19,242	0.99	18,231	1.05
Dep 3-4			Mäori	1,089	1,059	1.03	957	1.14
			Pacific People	282	294	0.96	258	1.09
			NonMäoriNonPac	23,979	24,372	0.98	23,214	1.03
			Asian	609	597	1.02	555	1.10
			NonMäoriNonPacNonAs	23,370	23,775	0.98	22,662	1.03
Dep 5-6			Mäori	1,758	1,671	1.05	1,521	1.16
			Pacific People	402	447	0.90	402	1.00
			NonMäoriNonPac	26,046	26,439	0.99	25,326	1.03
			Asian	603	573	1.05	540	1.12
			NonMäoriNonPacNonAs	25,440	25,869	0.98	24,786	1.03
Dep 7-8			Mäori	3,201	3,141	1.02	2,922	1.10
			Pacific People	936	963	0.97	918	1.02
			NonMäoriNonPac	28,494	29,025	0.98	27,753	1.03
			Asian	621	576	1.08	549	1.13
			NonMäoriNonPacNonAs	27,873	28,452	0.98	27,204	1.02
Dep 9-10			Mäori	7,095	7,110	1.00	6,804	1.04
			Pacific People	2,562	2,631	0.97	2,487	1.03
			NonMäoriNonPac	21,042	21,480	0.98	20,712	1.02
			Asian	552	507	1.09	465	1.19
			NonMäoriNonPacNonAs	20,487	20,973	0.98	20,247	1.01
Dep 1-6			Mäori	3,387	3,273	1.03	2,958	1.15
			Pacific People	849	930	0.91	810	1.05

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Prioritised Ethnicity	Census			Census	
				Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI
				Ratio			Ratio	
			NonMäoriNonPac	69,570	70,530	0.99	67,227	1.03
			Asian	1,707	1,644	1.04	1,551	1.10
			NonMäoriNonPacNonAs	67,863	68,886	0.99	65,676	1.03
Dep 7-10			Mäori	10,293	10,254	1.00	9,723	1.06
			Pacific People	3,498	3,591	0.97	3,408	1.03
			NonMäoriNonPac	49,536	50,505	0.98	48,465	1.02
			Asian	1,173	1,077	1.09	1,014	1.16
			NonMäoriNonPacNonAs	48,360	49,425	0.98	47,451	1.02

Table 41: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by NZ Deprivation, 2006-2011

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Prioritised Ethnicity	First			Census		Census	
				Census	Cancer	to	NHI	to		
				Ethnicity	Register	Cancer	Eth	NHI		
					Eth	Ratio			Ratio	
Dep 1			Mäori	333	315	1.06	285	1.17		
			Pacific People	54	75	0.72	63	0.86		
			NonMäoriNonPac	11,643	10,965	1.06	11,061	1.05		
			Asian	366	333	1.10	336	1.09		
			NonMäoriNonPacNonAs	11,277	10,632	1.06	10,722	1.05		
Dep 2			Mäori	402	369	1.09	336	1.20		
			Pacific People	90	96	0.94	90	1.00		
			NonMäoriNonPac	11,466	10,857	1.06	10,947	1.05		
			Asian	372	336	1.11	339	1.10		
			NonMäoriNonPacNonAs	11,094	10,524	1.05	10,608	1.05		
Dep 3			Mäori	465	420	1.11	375	1.24		
			Pacific People	108	117	0.92	111	0.97		
			NonMäoriNonPac	11,199	10,722	1.04	10,749	1.04		
			Asian	390	369	1.06	369	1.06		
			NonMäoriNonPacNonAs	10,812	10,356	1.04	10,380	1.04		
Dep 4			Mäori	525	510	1.03	462	1.14		
			Pacific People	156	186	0.84	159	0.98		
			NonMäoriNonPac	11,082	10,671	1.04	10,695	1.04		

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Prioritised Ethnicity			First	Census	Census	
				Census	Ethnicity	Cancer	to	NHI	to
				Eth	Ratio			Eth	NHI
			Asian	387	345	1.12	342	1.13	
			NonMäoriNonPacNonAs	10,698	10,329	1.04	10,353	1.03	
Dep 5			Mäori	708	669	1.06	618	1.15	
			Pacific People	138	135	1.02	135	1.02	
			NonMäoriNonPac	10,977	10,674	1.03	10,680	1.03	
			Asian	435	405	1.07	402	1.08	
			NonMäoriNonPacNonAs	10,548	10,272	1.03	10,275	1.03	
Dep 6			Mäori	933	918	1.02	870	1.07	
			Pacific People	225	252	0.89	240	0.94	
			NonMäoriNonPac	10,473	10,179	1.03	10,173	1.03	
			Asian	360	321	1.12	324	1.11	
			NonMäoriNonPacNonAs	10,116	9,861	1.03	9,849	1.03	
Dep 7			Mäori	1,074	1,059	1.01	981	1.09	
			Pacific People	261	261	1.00	258	1.01	
			NonMäoriNonPac	10,509	10,263	1.02	10,227	1.03	
			Asian	396	363	1.09	378	1.05	
			NonMäoriNonPacNonAs	10,113	9,900	1.02	9,852	1.03	
Dep 8			Mäori	1,410	1,425	0.99	1,329	1.06	
			Pacific People	474	480	0.99	471	1.01	
			NonMäoriNonPac	9,240	9,057	1.02	9,090	1.02	
			Asian	351	312	1.13	324	1.08	
			NonMäoriNonPacNonAs	8,889	8,742	1.02	8,766	1.01	
Dep 9			Mäori	2,004	2,028	0.99	1,908	1.05	
			Pacific People	615	642	0.96	630	0.98	
			NonMäoriNonPac	8,097	7,956	1.02	7,968	1.02	
			Asian	291	267	1.09	255	1.14	
			NonMäoriNonPacNonAs	7,806	7,692	1.01	7,710	1.01	
Dep10			Mäori	2,646	2,715	0.97	2,574	1.03	
			Pacific People	1,065	1,044	1.02	1,026	1.04	
			NonMäoriNonPac	5,214	5,148	1.01	5,205	1.00	
			Asian	264	249	1.06	246	1.07	
			NonMäoriNonPacNonAs	4,950	4,902	1.01	4,962	1.00	
Dep 1-2			Mäori	732	681	1.07	621	1.18	
			Pacific People	144	174	0.83	153	0.94	

NZDep06 Grp1	NZDep06 Grp2	NZDep06 Grp3	Prioritised Ethnicity			First	Census	Census	
				Census	Ethnicity	Cancer	to	NHI	to
				Eth	Ratio	Eth	Ratio	Eth	NHI
			NonMäoriNonPac	23,109	21,825	1.06	22,008	1.05	
			Asian	741	669	1.11	675	1.10	
			NonMäoriNonPacNonAs	22,371	21,153	1.06	21,333	1.05	
Dep 3-4			Mäori	987	930	1.06	834	1.18	
			Pacific People	264	300	0.88	270	0.98	
			NonMäoriNonPac	22,278	21,396	1.04	21,444	1.04	
			Asian	774	711	1.09	711	1.09	
			NonMäoriNonPacNonAs	21,507	20,682	1.04	20,736	1.04	
Dep 5-6			Mäori	1,641	1,584	1.04	1,485	1.11	
			Pacific People	363	384	0.95	375	0.97	
			NonMäoriNonPac	21,453	20,853	1.03	20,853	1.03	
			Asian	795	723	1.10	726	1.10	
			NonMäoriNonPacNonAs	20,658	20,133	1.03	20,127	1.03	
Dep 7-8			Mäori	2,481	2,490	1.00	2,310	1.07	
			Pacific People	735	744	0.99	729	1.01	
			NonMäoriNonPac	19,749	19,320	1.02	19,320	1.02	
			Asian	747	678	1.10	699	1.07	
			NonMäoriNonPacNonAs	19,002	18,645	1.02	18,618	1.02	
Dep 9-10			Mäori	4,650	4,746	0.98	4,479	1.04	
			Pacific People	1,677	1,686	0.99	1,656	1.01	
			NonMäoriNonPac	13,311	13,104	1.02	13,176	1.01	
			Asian	558	513	1.09	501	1.11	
			NonMäoriNonPacNonAs	12,756	12,594	1.01	12,675	1.01	
Dep 1-6			Mäori	3,360	3,198	1.05	2,943	1.14	
			Pacific People	768	858	0.90	798	0.96	
			NonMäoriNonPac	66,843	64,074	1.04	64,308	1.04	
			Asian	2,307	2,103	1.10	2,112	1.09	
			NonMäoriNonPacNonAs	64,536	61,971	1.04	62,190	1.04	
Dep 7-10			Mäori	7,134	7,233	0.99	6,789	1.05	
			Pacific People	2,412	2,427	0.99	2,385	1.01	
			NonMäoriNonPac	33,060	32,427	1.02	32,493	1.02	
			Asian	1,302	1,191	1.09	1,200	1.09	

NZDep06	NZDep06	NZDep06	Prioritised Ethnicity	Census	Cancer	to	<i>NHI</i>	<i>to</i>	<i>Census</i>
Grp1	Grp2	Grp3		Ethnicity	Register	Cancer	<i>Eth</i>	<i>NHI</i>	
					Eth	Ratio			<i>Ratio</i>
NonMäori	NonPac	NonAs		31,758	31,236	1.02	31,293	1.01	

Unlock Ratios Stratified by Regional Health Authority (RHA) or Regional Council

Table 42: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by RHA or Regional Council, 2006-2011

Regional Health Authority	Regional Council	Total Ethnicity	Census	Census			
			Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI
Not Applicable	Northland Region	Total NZ Mäori	1,446	1,479	0.98	1,374	1.05
		Total Pacific	51	48	1.06	36	1.42
		Total Asian	24	21	1.14	18	1.33
		nonMPA (European/Other)	4,485	4,578	0.98	4,533	0.99
	Auckland Region	Total NZ Mäori	2,793	2,799	1.00	2,613	1.07
		Total Pacific	3,186	3,321	0.96	3,105	1.03
		Total Asian	1,872	1,818	1.03	1,707	1.10
		nonMPA (European/Other)	26,499	26,964	0.98	25,689	1.03
	Waikato Region	Total NZ Mäori	2,073	1,965	1.05	1,938	1.07
		Total Pacific	201	207	0.97	186	1.08
		Total Asian	150	132	1.14	126	1.19
		nonMPA (European/Other)	11,043	11,325	0.98	10,719	1.03
	Bay of Plenty Region	Total NZ Mäori	1,929	1,926	1.00	1,896	1.02
		Total Pacific	135	126	1.07	123	1.10
		Total Asian	81	72	1.13	66	1.23
		nonMPA (European/Other)	8,613	8,769	0.98	8,532	1.01
	Gisborne Region	Total NZ Mäori	663	711	0.93	672	0.99
		nonMPA (European/Other)	1,134	1,119	1.01	1,128	1.01
	Hawke's Bay Region	Total NZ Mäori	948	885	1.07	891	1.06
		Total Pacific	78	81	0.96	66	1.18
		Total Asian	60	51	1.18	42	1.43

Regional Health Authority	Regional Council	Total Ethnicity	Census	Mortality	to	NHI	Census
			Deaths	Deaths	Mortality	Deaths	NHI
		nonMPA (European/Other)	4,959	5,052	0.98	4,788	1.04
Taranaki Region	Total NZ Mäori	390	390	1.00	354	1.10	
	Total Pacific	18	18	1.00	9	2.00	
	Total Asian	12	15	0.80	12	1.00	
	nonMPA (European/Other)	3,801	3,891	0.98	3,675	1.03	
Manawatu-Wanganui Region	Total NZ Mäori	1,029	1,050	0.98	912	1.13	
	Total Pacific	60	51	1.18	42	1.43	
	Total Asian	81	78	1.04	69	1.17	
	nonMPA (European/Other)	7,719	7,770	0.99	7,071	1.09	
Wellington Region	Total NZ Mäori	996	1,023	0.97	900	1.11	
	Total Pacific	552	549	1.01	528	1.05	
	Total Asian	402	384	1.05	363	1.11	
	nonMPA (European/Other)	11,469	11,661	0.98	11,040	1.04	
West Coast Region	Total NZ Mäori	63	69	0.91	57	1.11	
	nonMPA (European/Other)	1,230	1,251	0.98	1,227	1.00	
Canterbury Region	Total NZ Mäori	696	615	1.13	555	1.25	
	Total Pacific	153	144	1.06	138	1.11	
	Total Asian	216	198	1.09	174	1.24	
	nonMPA (European/Other)	19,521	19,848	0.98	18,891	1.03	
Otago Region	Total NZ Mäori	180	168	1.07	144	1.25	
	Total Pacific	36	42	0.86	30	1.20	
	Total Asian	54	57	0.95	51	1.06	
	nonMPA (European/Other)	7,404	7,533	0.98	7,398	1.00	
Southland Region	Total NZ Mäori	261	249	1.05	204	1.28	
	Total Pacific	27	27	1.00	27	1.00	
	Total Asian	12	9	1.33	6	2.00	

Regional Health Authority	Regional Council	Total Ethnicity	Census Deaths		Mortality	to	NHI	Census		
					Deaths	Mortality	Deaths	NHI		
		nonMPA (European/Other)	3,477	3,558	0.98	3,525	0.99			
Tasman Region	Total NZ Mäori	45	51	0.88	39	1.15				
	nonMPA (European/Other)	1,488	1,497	0.99	1,476	1.01				
Nelson Region	Total NZ Mäori	60	36	1.67	30	2.00				
	Total Pacific	12	9	1.33	9	1.33				
	nonMPA (European/Other)	1,716	1,794	0.96	1,758	0.98				
Marlborough Region	Total NZ Mäori	105	96	1.09	90	1.17				
	nonMPA (European/Other)	1,671	1,701	0.98	1,671	1.00				
Northern	Total NZ Mäori	4,308	4,362	0.99	4,065	1.06				
	Total Pacific	3,243	3,375	0.96	3,138	1.03				
	Total Asian	1,902	1,845	1.03	1,725	1.10				
	nonMPA (European/Other)	31,287	31,842	0.98	30,510	1.03				
Midland	Total NZ Mäori	5,103	5,028	1.01	4,899	1.04				
	Total Pacific	363	348	1.04	324	1.12				
	Total Asian	252	228	1.11	213	1.18				
	nonMPA (European/Other)	24,534	25,053	0.98	24,000	1.02				
Central	Total NZ Mäori	3,075	3,033	1.01	2,757	1.12				
	Total Pacific	708	696	1.02	645	1.10				
	Total Asian	552	525	1.05	483	1.14				
	nonMPA (European/Other)	28,782	29,235	0.98	27,582	1.04				
Southern	Total NZ Mäori	1,200	1,104	1.09	963	1.25				
	Total Pacific	219	216	1.01	195	1.12				
	Total Asian	288	270	1.07	237	1.22				
	nonMPA (European/Other)	31,635	32,187	0.98	31,041	1.02				

Table 43: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by RHA or Regional Council, 2006-2011

Regional Health Authority	Regional Council	Total Ethnicity	Census	First	Census	Census	
			Ethnicity	Cancer Register	to Cancer	NHI Eth	to NHI
			Eth	Ratio			Ratio
Not Applicable	Northland Region	Total NZ Mäori	900	936	0.96	870	1.03
		Total Pacific	42	42	1.00	36	1.17
		Total Asian	18	24	0.75	15	1.20
		nonMPA (European/Other)	3,726	3,687	1.01	3,741	1.00
	Auckland Region	Total NZ Mäori	2,364	2,295	1.03	2,160	1.09
		Total Pacific	2,295	2,385	0.96	2,268	1.01
		Total Asian	2,502	2,352	1.06	2,340	1.07
		nonMPA (European/Other)	23,886	22,629	1.06	23,088	1.03
	Waikato Region	Total NZ Mäori	1,386	1,377	1.01	1,275	1.09
		Total Pacific	147	150	0.98	141	1.04
		Total Asian	159	138	1.15	138	1.15
		nonMPA (European/Other)	9,207	8,832	1.04	8,673	1.06
	Bay of Plenty Region	Total NZ Mäori	1,413	1,410	1.00	1,329	1.06
		Total Pacific	87	87	1.00	84	1.04
		Total Asian	93	69	1.35	75	1.24
		nonMPA (European/Other)	7,575	7,449	1.02	7,548	1.00
	Gisborne Region	Total NZ Mäori	432	444	0.97	423	1.02
		nonMPA (European/Other)	939	930	1.01	951	0.99
	Hawke's Bay Region	Total NZ Mäori	660	681	0.97	633	1.04
		Total Pacific	60	63	0.95	51	1.18
		Total Asian	48	36	1.33	36	1.33
		nonMPA (European/Other)	4,008	3,804	1.05	3,876	1.03
	Taranaki Region	Total NZ Mäori	264	285	0.93	264	1.00
		Total Pacific	9	9	1.00	6	1.50
		Total Asian	24	21	1.14	21	1.14

Regional Health Authority	Regional Council	Total Ethnicity	First	Census	<i>Census</i>		
			Census	Cancer	to	NHI	
			Ethnicity	Register	Cancer	Eth	
		nonMPA (European/Other)	2,988	2,901	1.03	2,937	1.02
Manawatu-Wanganui Region	Total NZ Mäori	810	789	1.03	732	1.11	
	Total Pacific	60	48	1.25	45	1.33	
	Total Asian	81	72	1.13	60	1.35	
	nonMPA (European/Other)	6,237	6,048	1.03	5,721	1.09	
Wellington Region	Total NZ Mäori	897	948	0.95	873	1.03	
	Total Pacific	450	480	0.94	459	0.98	
	Total Asian	447	420	1.06	405	1.10	
	nonMPA (European/Other)	8,937	8,598	1.04	8,631	1.04	
West Coast Region	Total NZ Mäori	60	66	0.91	60	1.00	
	nonMPA (European/Other)	933	921	1.01	921	1.01	
Canterbury Region	Total NZ Mäori	729	675	1.08	630	1.16	
	Total Pacific	147	156	0.94	135	1.09	
	Total Asian	303	273	1.11	249	1.22	
	nonMPA (European/Other)	16,020	15,696	1.02	15,651	1.02	
Otago Region	Total NZ Mäori	177	165	1.07	150	1.18	
	Total Pacific	39	45	0.87	39	1.00	
	Total Asian	63	51	1.24	51	1.24	
	nonMPA (European/Other)	5,463	5,415	1.01	5,403	1.01	
Southland Region	Total NZ Mäori	195	189	1.03	159	1.23	
	Total Pacific	21	18	1.17	18	1.17	
	nonMPA (European/Other)	2,268	2,238	1.01	2,268	1.00	
Tasman Region	Total NZ Mäori	57	45	1.27	54	1.06	
	nonMPA (European/Other)	1,335	1,314	1.02	1,314	1.02	
Nelson Region	Total NZ Mäori	48	42	1.14	42	1.14	

Regional Health Authority	Regional Council	Total Ethnicity	First	Census	<i>Census</i>		
			Census	Cancer	to	NHI	
			Ethnicity	Register	Cancer	Eth	
				Eth	Ratio	Ratio	
		Total Asian	12	9	1.33	12	1.00
		nonMPA (European/Other)	1,338	1,311	1.02	1,326	1.01
	Marlborough Region	Total NZ Mäori	93	75	1.24	69	1.35
		nonMPA (European/Other)	1,443	1,443	1.00	1,452	0.99
Northern		Total NZ Mäori	3,318	3,285	1.01	3,081	1.08
		Total Pacific	2,343	2,430	0.96	2,307	1.02
		Total Asian	2,526	2,376	1.06	2,358	1.07
		nonMPA (European/Other)	27,963	26,652	1.05	27,174	1.03
Midland		Total NZ Mäori	3,519	3,543	0.99	3,321	1.06
		Total Pacific	255	255	1.00	240	1.06
		Total Asian	279	231	1.21	237	1.18
		nonMPA (European/Other)	20,559	19,971	1.03	19,953	1.03
Central		Total NZ Mäori	2,493	2,511	0.99	2,337	1.07
		Total Pacific	585	600	0.98	561	1.04
		Total Asian	588	537	1.09	516	1.14
		nonMPA (European/Other)	23,100	22,326	1.03	22,131	1.04
Southern		Total NZ Mäori	1,164	1,095	1.06	996	1.17
		Total Pacific	207	222	0.93	198	1.05
		Total Asian	375	330	1.14	303	1.24
		nonMPA (European/Other)	24,684	24,273	1.02	24,240	1.02

Table 44: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by RHA or Regional Council, 2006-2011

Regional Health Authority	Regional Council	Prioritised Ethnicity	Census	Census			
			Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI
							Ratio
Not Applicable	Northland Region	Mäori	1,446	1,479	0.98	1,374	1.05
		Pacific People	39	39	1.00	30	1.30
		NonMäoriNonPac	4,503	4,593	0.98	4,548	0.99
		Asian	18	15	1.20	12	1.50
		NonMäoriNonPacNonAs	4,485	4,578	0.98	4,533	0.99
	Auckland Region	Mäori	2,793	2,799	1.00	2,613	1.07
		Pacific People	3,105	3,267	0.95	3,066	1.01
		NonMäoriNonPac	28,311	28,674	0.99	27,324	1.04
		Asian	1,812	1,707	1.06	1,635	1.11
		NonMäoriNonPacNonAs	26,499	26,964	0.98	25,689	1.03
	Waikato Region	Mäori	2,073	1,965	1.05	1,938	1.07
		Pacific People	177	192	0.92	177	1.00
		NonMäoriNonPac	11,181	11,442	0.98	10,842	1.03
		Asian	138	120	1.15	123	1.12
		NonMäoriNonPacNonAs	11,043	11,325	0.98	10,719	1.03
	Bay of Plenty Region	Mäori	1,929	1,926	1.00	1,896	1.02
		Pacific People	120	114	1.05	117	1.03
		NonMäoriNonPac	8,691	8,838	0.98	8,595	1.01
		Asian	78	72	1.08	63	1.24
		NonMäoriNonPacNonAs	8,613	8,769	0.98	8,532	1.01
	Gisborne Region	Mäori	663	711	0.93	672	0.99
		NonMäoriNonPac	1,140	1,128	1.01	1,137	1.00
		NonMäoriNonPacNonAs	1,134	1,119	1.01	1,128	1.01
	Hawke's Bay Region	Mäori	948	885	1.07	891	1.06
		Pacific People	72	75	0.96	60	1.20

Regional Health Authority	Regional Council	Prioritised Ethnicity	Census Deaths		Mortality	to	NHI	Census to
					Deaths	Mortality	Deaths	NHI
						Ratio		Ratio
Taranaki Region	Māori	NonMäoriNonPac	5,016	5,103	0.98	4,830	1.04	
		Asian	54	48	1.13	42	1.29	
		NonMäoriNonPacNonAs	4,959	5,052	0.98	4,788	1.04	
		NonMäoriNonPac	3,813	3,906	0.98	3,690	1.03	
		Asian	12	15	0.80	12	1.00	
	Pacific People	NonMäoriNonPacNonAs	3,801	3,891	0.98	3,675	1.03	
		Mäori	390	390	1.00	354	1.10	
		Pacific People	12	18	0.67	9	1.33	
		NonMäoriNonPac	3,813	3,906	0.98	3,690	1.03	
		Asian	12	15	0.80	12	1.00	
Manawatu-Wanganui Region	Mäori	NonMäoriNonPacNonAs	3,801	3,891	0.98	3,675	1.03	
		Mäori	1,029	1,050	0.98	912	1.13	
		Pacific People	51	48	1.06	39	1.31	
		NonMäoriNonPac	7,788	7,848	0.99	7,137	1.09	
		Asian	69	75	0.92	66	1.05	
	Pacific People	NonMäoriNonPacNonAs	7,719	7,770	0.99	7,071	1.09	
		Mäori	996	1,023	0.97	900	1.11	
		Pacific People	540	537	1.01	516	1.05	
		NonMäoriNonPac	11,859	12,036	0.99	11,397	1.04	
		Asian	387	378	1.02	357	1.08	
Wellington Region	NonMäoriNonPac	NonMäoriNonPacNonAs	11,469	11,661	0.98	11,040	1.04	
		Mäori	996	1,023	0.97	900	1.11	
		Pacific People	540	537	1.01	516	1.05	
		NonMäoriNonPac	11,859	12,036	0.99	11,397	1.04	
		Asian	387	378	1.02	357	1.08	
	Asian	NonMäoriNonPacNonAs	11,469	11,661	0.98	11,040	1.04	
		Mäori	63	69	0.91	57	1.11	
		NonMäoriNonPac	1,233	1,254	0.98	1,230	1.00	
		NonMäoriNonPacNonAs	1,230	1,251	0.98	1,227	1.00	
		NonMäoriNonPac	19,737	20,043	0.98	19,062	1.04	
West Coast Region	Mäori	Asian	213	198	1.08	171	1.25	
		Pacific People	150	144	1.04	132	1.14	
	Pacific People	NonMäoriNonPac	19,737	20,043	0.98	19,062	1.04	
		Asian	213	198	1.08	171	1.25	
Canterbury Region	Mäori	NonMäoriNonPac	19,737	20,043	0.98	19,062	1.04	
		Pacific People	150	144	1.04	132	1.14	
	NonMäoriNonPac	Asian	213	198	1.08	171	1.25	
		Mäori	696	615	1.13	555	1.25	

Regional Health Authority	Regional Council	Prioritised Ethnicity	Census	Census		
			Deaths	Mortality Deaths	to Mortality	NHI Deaths
			Ratio		Ratio	
		NonMäoriNonPacNonAs	19,521	19,848	0.98	18,891 1.03
Otago Region		Mäori	180	168	1.07	144 1.25
		Pacific People	36	39	0.92	30 1.20
		NonMäoriNonPac	7,458	7,590	0.98	7,449 1.00
		Asian	54	57	0.95	51 1.06
		NonMäoriNonPacNonAs	7,404	7,533	0.98	7,398 1.00
Southland Region		Mäori	261	249	1.05	204 1.28
		Pacific People	21	24	0.88	24 0.88
		NonMäoriNonPac	3,486	3,567	0.98	3,528 0.99
		NonMäoriNonPacNonAs	3,477	3,558	0.98	3,525 0.99
Tasman Region		Mäori	45	51	0.88	39 1.15
		NonMäoriNonPac	1,491	1,497	1.00	1,479 1.01
		NonMäoriNonPacNonAs	1,488	1,497	0.99	1,476 1.01
Nelson Region		Mäori	60	36	1.67	30 2.00
		Pacific People	12	9	1.33	9 1.33
		NonMäoriNonPac	1,725	1,803	0.96	1,767 0.98
		NonMäoriNonPacNonAs	1,716	1,794	0.96	1,758 0.98
Marlborough Region		Mäori	105	96	1.09	90 1.17
		NonMäoriNonPac	1,674	1,707	0.98	1,674 1.00
		NonMäoriNonPacNonAs	1,671	1,701	0.98	1,671 1.00
Northern		Mäori	4,308	4,362	0.99	4,065 1.06
		Pacific People	3,144	3,309	0.95	3,096 1.02
		NonMäoriNonPac	33,120	33,567	0.99	32,160 1.03
		Asian	1,833	1,725	1.06	1,650 1.11
		NonMäoriNonPacNonAs	31,287	31,842	0.98	30,510 1.03

Regional Health Authority	Regional Council	Prioritised Ethnicity	Census Deaths		Mortality	to	NHI Deaths	Census to
					Deaths	Mortality		NHI
					Ratio			Ratio
Midland		Mäori	5,103	5,028	1.01	4,899	1.04	
		Pacific People	318	327	0.97	306	1.04	
		NonMäoriNonPac	24,771	25,266	0.98	24,207	1.02	
		Asian	237	213	1.11	207	1.14	
		NonMäoriNonPacNonAs	24,534	25,053	0.98	24,000	1.02	
Central		Mäori	3,075	3,033	1.01	2,757	1.12	
		Pacific People	678	678	1.00	627	1.08	
		NonMäoriNonPac	29,307	29,751	0.99	28,056	1.04	
		Asian	525	516	1.02	474	1.11	
		NonMäoriNonPacNonAs	28,782	29,235	0.98	27,582	1.04	
Southern		Mäori	1,200	1,104	1.09	963	1.25	
		Pacific People	210	210	1.00	189	1.11	
		NonMäoriNonPac	31,914	32,454	0.98	31,275	1.02	
		Asian	282	270	1.04	234	1.21	
		NonMäoriNonPacNonAs	31,635	32,187	0.98	31,041	1.02	

Table 45: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by RHA or Regional Council, 2006-2011

Regional Health Authority	Regional Council	Prioritised Ethnicity	First Census		Census		
			Census Ethnicity	Cancer Register	Cancer	to Eth	NHI
			Eth	Ratio			to NHI
Not Applicable	Northland Region	Mäori	900	936	0.96	870	1.03
		Pacific People	39	33	1.18	30	1.30
		NonMäoriNonPac	3,741	3,702	1.01	3,756	1.00
		Asian	15	18	0.83	15	1.00
						100	

Regional Health Authority	Regional Council	Prioritised Ethnicity	Census	First	Census	Census	
			Ethnicity	Cancer Register	to Cancer	NHI Eth	to NHI
				Eth	Ratio	Ratio	
Auckland Region		NonMäoriNonPacNonAs	3,726	3,687	1.01	3,741	1.00
		Mäori	2,364	2,295	1.03	2,160	1.09
		Pacific People	2,208	2,286	0.97	2,211	1.00
		NonMäoriNonPac	26,298	24,852	1.06	25,353	1.04
		Asian	2,415	2,226	1.08	2,262	1.07
Waikato Region		NonMäoriNonPacNonAs	23,886	22,629	1.06	23,088	1.03
		Mäori	1,386	1,377	1.01	1,275	1.09
		Pacific People	126	126	1.00	132	0.95
		NonMäoriNonPac	9,360	8,961	1.04	8,805	1.06
		Asian	150	129	1.16	132	1.14
Bay of Plenty Region		NonMäoriNonPacNonAs	9,207	8,832	1.04	8,673	1.06
		Mäori	1,413	1,410	1.00	1,329	1.06
		Pacific People	60	66	0.91	63	0.95
		NonMäoriNonPac	7,662	7,512	1.02	7,623	1.01
		Asian	87	63	1.38	75	1.16
Gisborne Region		NonMäoriNonPacNonAs	7,575	7,449	1.02	7,548	1.00
		Mäori	432	444	0.97	423	1.02
		NonMäoriNonPac	948	936	1.01	957	0.99
		NonMäoriNonPacNonAs	939	930	1.01	951	0.99
Hawke's Bay Region		Mäori	660	681	0.97	633	1.04
		Pacific People	48	51	0.94	48	1.00
		NonMäoriNonPac	4,050	3,840	1.05	3,909	1.04
		Asian	45	33	1.36	33	1.36
		NonMäoriNonPacNonAs	4,008	3,804	1.05	3,876	1.03
Taranaki Region		Mäori	264	285	0.93	264	1.00

Regional Health Authority	Regional Council	Prioritised Ethnicity	Census	First	Census	<i>Census</i>	
			Ethnicity	Cancer Register	Cancer	NHI	to NHI
			Eth	Ratio	to	Eth	Ratio
Manawatu-Wanganui Region		NonMäoriNonPac	3,009	2,922	1.03	2,958	1.02
		Asian	24	21	1.14	21	1.14
		NonMäoriNonPacNonAs	2,988	2,901	1.03	2,937	1.02
		Mäori	810	789	1.03	732	1.11
		Pacific People	51	39	1.31	42	1.21
Wellington Region		NonMäoriNonPac	6,306	6,117	1.03	5,778	1.09
		Asian	72	69	1.04	60	1.20
		NonMäoriNonPacNonAs	6,237	6,048	1.03	5,721	1.09
		Mäori	897	948	0.95	873	1.03
		Pacific People	435	456	0.95	444	0.98
West Coast Region		NonMäoriNonPac	9,366	8,994	1.04	9,027	1.04
		Asian	429	396	1.08	396	1.08
		NonMäoriNonPacNonAs	8,937	8,598	1.04	8,631	1.04
		Mäori	60	66	0.91	60	1.00
		NonMäoriNonPac	936	921	1.02	924	1.01
Canterbury Region		NonMäoriNonPacNonAs	933	921	1.01	921	1.01
		Mäori	729	675	1.08	630	1.16
		Pacific People	135	144	0.94	129	1.05
		NonMäoriNonPac	16,305	15,963	1.02	15,894	1.03
		Asian	285	267	1.07	246	1.16
Otago Region		NonMäoriNonPacNonAs	16,020	15,696	1.02	15,651	1.02
		Mäori	177	165	1.07	150	1.18
		Pacific People	39	39	1.00	39	1.00
		NonMäoriNonPac	5,526	5,463	1.01	5,451	1.01
		Asian	60	51	1.18	51	1.18

Regional Health Authority	Regional Council	Prioritised Ethnicity	Census	First	Census	Census	
			Ethnicity	Cancer Register	Cancer	NHI Eth	to NHI
				Eth	Ratio	Ratio	
Southland Region		NonMäoriNonPacNonAs	5,463	5,415	1.01	5,403	1.01
		Mäori	195	189	1.03	159	1.23
		Pacific People	21	18	1.17	18	1.17
		NonMäoriNonPac	2,271	2,244	1.01	2,271	1.00
Tasman Region		NonMäoriNonPacNonAs	2,268	2,238	1.01	2,268	1.00
		Mäori	57	45	1.27	54	1.06
		NonMäoriNonPac	1,338	1,320	1.01	1,317	1.02
		NonMäoriNonPacNonAs	1,335	1,314	1.02	1,314	1.02
Nelson Region		Mäori	48	42	1.14	42	1.14
		NonMäoriNonPac	1,350	1,317	1.03	1,335	1.01
		Asian	12	9	1.33	12	1.00
		NonMäoriNonPacNonAs	1,338	1,311	1.02	1,326	1.01
Marlborough Region		Mäori	93	75	1.24	69	1.35
		NonMäoriNonPac	1,446	1,446	1.00	1,455	0.99
		NonMäoriNonPacNonAs	1,443	1,443	1.00	1,452	0.99
Northern		Mäori	3,318	3,285	1.01	3,081	1.08
		Pacific People	2,250	2,316	0.97	2,244	1.00
		NonMäoriNonPac	30,396	28,899	1.05	29,457	1.03
		Asian	2,436	2,247	1.08	2,283	1.07
		NonMäoriNonPacNonAs	27,963	26,652	1.05	27,174	1.03
Midland		Mäori	3,519	3,543	0.99	3,321	1.06
		Pacific People	201	207	0.97	207	0.97
		NonMäoriNonPac	20,820	20,184	1.03	20,184	1.03
		Asian	264	213	1.24	231	1.14
		NonMäoriNonPacNonAs	20,559	19,971	1.03	19,953	1.03

Regional Health Authority	Regional Council	Prioritised Ethnicity	Census	First	Census	<i>Census</i>	
			Ethnicity	Cancer Register	Cancer	<i>NHI Eth</i>	<i>NHI</i>
			Eth	Ratio	<i>Ratio</i>		
Central		Mäori	2,493	2,511	0.99	2,337	1.07
		Pacific People	540	555	0.97	540	1.00
		NonMäoriNonPac	23,661	22,842	1.04	22,632	1.05
		Asian	561	513	1.09	501	1.12
		NonMäoriNonPacNonAs	23,100	22,326	1.03	22,131	1.04
Southern		Mäori	1,164	1,095	1.06	996	1.17
		Pacific People	192	204	0.94	189	1.02
		NonMäoriNonPac	25,038	24,591	1.02	24,543	1.02
		Asian	357	318	1.12	303	1.18
		NonMäoriNonPacNonAs	24,684	24,273	1.02	24,240	1.02

Unlock Ratios Stratified by District Health Board (DHB)

Table 46: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by DHB, 2006-2011

DHB	Total Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to
		Deaths	Deaths		Deaths	NHI Ratio
Northland	Total NZ Mäori	1,446	1,479	0.98	1,374	1.05
	Total Pacific	51	48	1.06	36	1.42
	Total Asian	24	21	1.14	18	1.33
	nonMPA (European/Other)	4,485	4,578	0.98	4,533	0.99
Waitemata	Total NZ Mäori	684	678	1.01	627	1.09
	Total Pacific	483	525	0.92	474	1.02
	Total Asian	456	447	1.02	420	1.09
	nonMPA (European/Other)	11,115	11,253	0.99	10,572	1.05
Auckland	Total NZ Mäori	708	681	1.04	651	1.09
	Total Pacific	1,137	1,185	0.96	1,107	1.03
	Total Asian	771	762	1.01	711	1.08
	nonMPA (European/Other)	8,592	8,841	0.97	8,559	1.00
Counties Manukau	Total NZ Mäori	1,470	1,521	0.97	1,410	1.04
	Total Pacific	1,569	1,617	0.97	1,524	1.03
	Total Asian	648	609	1.06	576	1.13
	nonMPA (European/Other)	7,095	7,173	0.99	6,846	1.04
Waikato	Total NZ Mäori	1,827	1,686	1.08	1,695	1.08
	Total Pacific	189	195	0.97	180	1.05
	Total Asian	150	129	1.16	123	1.22
	nonMPA (European/Other)	10,002	10,302	0.97	9,729	1.03
Lakes	Total NZ Mäori	909	951	0.96	900	1.01
	Total Pacific	99	96	1.03	90	1.10
	Total Asian	21	24	0.88	21	1.00
	nonMPA (European/Other)	2,601	2,613	1.00	2,541	1.02
Bay of Plenty	Total NZ Mäori	1,314	1,290	1.02	1,281	1.03
	Total Pacific	48	39	1.23	39	1.23
	Total Asian	63	51	1.24	48	1.31
	nonMPA (European/Other)	6,990	7,125	0.98	6,924	1.01
Tairawhiti	Total NZ Mäori	663	711	0.93	672	0.99

DHB	Total Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to
		Deaths	Deaths		Deaths	NHI Ratio
Taranaki	nonMPA (European/Other)	1,134	1,119	1.01	1,128	1.01
	Total NZ Mäori	390	393	0.99	354	1.10
	Total Pacific	18	18	1.00	9	2.00
	Total Asian	12	15	0.80	12	1.00
Hawke's Bay	nonMPA (European/Other)	3,807	3,894	0.98	3,681	1.03
	Total NZ Mäori	963	897	1.07	906	1.06
	Total Pacific	78	81	0.96	66	1.18
	Total Asian	60	51	1.18	42	1.43
Whanganui	nonMPA (European/Other)	4,965	5,061	0.98	4,794	1.04
	Total NZ Mäori	420	441	0.95	384	1.09
	Total Pacific	21	18	1.17	18	1.17
	Total Asian	18	12	1.50	12	1.50
Midcentral	nonMPA (European/Other)	2,403	2,412	1.00	2,415	1.00
	Total NZ Mäori	534	528	1.01	447	1.19
	Total Pacific	39	30	1.30	27	1.44
	Total Asian	63	63	1.00	54	1.17
Hutt	nonMPA (European/Other)	5,349	5,403	0.99	4,680	1.14
	Total NZ Mäori	375	396	0.95	354	1.06
	Total Pacific	165	162	1.02	153	1.08
	Total Asian	117	108	1.08	108	1.08
Capital and Coast	nonMPA (European/Other)	3,681	3,774	0.98	3,633	1.01
	Total NZ Mäori	438	441	0.99	381	1.15
	Total Pacific	369	369	1.00	360	1.03
	Total Asian	267	264	1.01	243	1.10
Wairarapa	nonMPA (European/Other)	6,063	6,138	0.99	5,763	1.05
	Total NZ Mäori	141	141	1.00	129	1.09
	Total Pacific	15	15	1.00	15	1.00
	Total Asian	12	12	1.00	12	1.00
Nelson Marlborough	nonMPA (European/Other)	1,443	1,455	0.99	1,386	1.04
	Total NZ Mäori	210	186	1.13	162	1.30
	Total Pacific	21	18	1.17	12	1.75
	Total Asian	15	15	1.00	15	1.00
West Coast	nonMPA (European/Other)	4,875	4,995	0.98	4,908	0.99
	Total NZ Mäori	63	69	0.91	57	1.11
	nonMPA (European/Other)	1,230	1,251	0.98	1,227	1.00

DHB	Total Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to
		Deaths	Deaths		Deaths	NHI Ratio
Canterbury	Total NZ Mäori	636	558	1.14	501	1.27
	Total Pacific	144	138	1.04	129	1.12
	Total Asian	213	195	1.09	171	1.25
	nonMPA (European/Other)	16,932	17,229	0.98	16,497	1.03
South Canterbury	Total NZ Mäori	60	57	1.05	54	1.11
	nonMPA (European/Other)	2,547	2,574	0.99	2,349	1.08
Otago	Total NZ Mäori	174	168	1.04	144	1.21
	Total Pacific	36	39	0.92	30	1.20
	Total Asian	54	57	0.95	51	1.06
	nonMPA (European/Other)	7,224	7,347	0.98	7,215	1.00
Southland	Total NZ Mäori	267	252	1.06	207	1.29
	Total Pacific	30	30	1.00	27	1.11
	Total Asian	12	9	1.33	6	2.00
	nonMPA (European/Other)	3,699	3,789	0.98	3,750	0.99

Table 47: Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by DHB, 2006-2011

DHB	Total Ethnicity	Census	First	Census to Cancer Ratio	NHI	Census to
		Ethnicity	Cancer Register Eth		Eth	NHI Ratio
Northland	Total NZ Mäori	900	936	0.96	870	1.03
	Total Pacific	42	42	1.00	36	1.17
	Total Asian	18	24	0.75	15	1.20
	nonMPA (European/Other)	3,726	3,687	1.01	3,741	1.00
Waitemata	Total NZ Mäori	741	699	1.06	651	1.14
	Total Pacific	447	465	0.96	426	1.05
	Total Asian	696	651	1.07	648	1.07
	nonMPA (European/Other)	10,767	10,152	1.06	10,317	1.04
Auckland	Total NZ Mäori	621	597	1.04	570	1.09
	Total Pacific	804	825	0.97	780	1.03
	Total Asian	1,092	1,029	1.06	1,017	1.07
	nonMPA (European/Other)	7,077	6,732	1.05	6,957	1.02

DHB	Total Ethnicity	Census Ethnicity	First	Census to	<i>NHI</i> <i>Eth</i>	<i>Census to</i> <i>NHI Ratio</i>
			Cancer Register	Cancer Ratio		
			Eth			
Counties Manukau	Total NZ Mäori	1,062	1,053	1.01	993	1.07
	Total Pacific	1,050	1,098	0.96	1,062	0.99
	Total Asian	717	675	1.06	681	1.05
	nonMPA (European/Other)	6,390	6,084	1.05	6,165	1.04
Waikato	Total NZ Mäori	1,233	1,218	1.01	1,128	1.09
	Total Pacific	141	141	1.00	135	1.04
	Total Asian	150	129	1.16	132	1.14
	nonMPA (European/Other)	8,160	7,827	1.04	7,656	1.07
Lakes	Total NZ Mäori	600	624	0.96	594	1.01
	Total Pacific	60	51	1.18	57	1.05
	Total Asian	30	24	1.25	21	1.43
	nonMPA (European/Other)	2,250	2,178	1.03	2,187	1.03
Bay of Plenty	Total NZ Mäori	987	969	1.02	912	1.08
	Total Pacific	33	42	0.79	36	0.92
	Total Asian	69	51	1.35	54	1.28
	nonMPA (European/Other)	6,216	6,126	1.01	6,219	1.00
Tairawhiti	Total NZ Mäori	432	444	0.97	423	1.02
	nonMPA (European/Other)	939	930	1.01	951	0.99
Taranaki	Total NZ Mäori	264	285	0.93	264	1.00
	Total Pacific	9	9	1.00	6	1.50
	Total Asian	24	21	1.14	21	1.14
	nonMPA (European/Other)	2,994	2,907	1.03	2,943	1.02
Hawke's Bay	Total NZ Mäori	666	690	0.97	639	1.04
	Total Pacific	60	63	0.95	51	1.18
	Total Asian	48	36	1.33	36	1.33
	nonMPA (European/Other)	4,011	3,810	1.05	3,879	1.03
Whanganui	Total NZ Mäori	306	312	0.98	297	1.03
	Total Pacific	15	9	1.67	15	1.00
	Total Asian	15	12	1.25	12	1.25
	nonMPA (European/Other)	1,875	1,818	1.03	1,857	1.01
Midcentral	Total NZ Mäori	483	447	1.08	405	1.19
	Total Pacific	42	39	1.08	33	1.27
	Total Asian	66	57	1.16	48	1.38

DHB	Total Ethnicity	Census Ethnicity	First	Census to	<i>NHI</i> <i>Eth</i>	<i>Census to</i> <i>NHI Ratio</i>
			Cancer Register	Cancer Ratio		
	nonMPA (European/Other)	4,422	4,287	1.03	3,921	1.13
Hutt	Total NZ Māori	333	357	0.93	333	1.00
	Total Pacific	111	117	0.95	114	0.97
	Total Asian	138	132	1.05	126	1.10
	nonMPA (European/Other)	2,724	2,646	1.03	2,658	1.02
Capital and Coast	Total NZ Māori	396	423	0.94	390	1.02
	Total Pacific	327	348	0.94	333	0.98
	Total Asian	294	276	1.07	270	1.09
	nonMPA (European/Other)	4,848	4,635	1.05	4,659	1.04
Wairarapa	Total NZ Māori	108	117	0.92	108	1.00
	Total Pacific	9	12	0.75	12	0.75
	Total Asian	9	12	0.75	9	1.00
	nonMPA (European/Other)	1,104	1,065	1.04	1,065	1.04
Nelson Marlborough	Total NZ Māori	201	165	1.22	168	1.20
	Total Pacific	15	9	1.67	6	2.50
	Total Asian	18	18	1.00	15	1.20
	nonMPA (European/Other)	4,113	4,065	1.01	4,089	1.01
West Coast	Total NZ Māori	60	66	0.91	60	1.00
	nonMPA (European/Other)	933	921	1.01	921	1.01
Canterbury	Total NZ Māori	666	621	1.07	576	1.16
	Total Pacific	141	153	0.92	132	1.07
	Total Asian	285	261	1.09	234	1.22
	nonMPA (European/Other)	13,962	13,644	1.02	13,668	1.02
South Canterbury	Total NZ Māori	60	54	1.11	48	1.25
	Total Asian	18	12	1.50	12	1.50
	nonMPA (European/Other)	2,010	2,007	1.00	1,935	1.04
Otago	Total NZ Māori	174	165	1.05	147	1.18
	Total Pacific	39	45	0.87	39	1.00
	Total Asian	60	48	1.25	48	1.25
	nonMPA (European/Other)	5,238	5,190	1.01	5,172	1.01
Southland	Total NZ Māori	201	195	1.03	165	1.22

DHB	Total Ethnicity	Census Ethnicity	First	Census to	<i>NHI</i> <i>Eth</i>	<i>Census to</i> <i>NHI Ratio</i>
			Cancer Register	Cancer Ratio		
			Eth			
	Total Pacific	21	18	1.17	18	1.17
	nonMPA (European/Other)	2,541	2,508	1.01	2,541	1.00

Table 48: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by DHB, 2006-2011

DHB	Prioritised Ethnicity	Census Deaths	Mortality	Census to	<i>NHI</i> <i>Deaths</i>	<i>Census to</i> <i>NHI Ratio</i>
			Deaths	Mortality Ratio		
Northland	Mäori	1,446	1,479	0.98	1,374	1.05
	Pacific People	39	39	1.00	30	1.30
	NonMäoriNonPac	4,503	4,593	0.98	4,548	0.99
	Asian	18	15	1.20	12	1.50
	NonMäoriNonPacNonAs	4,485	4,578	0.98	4,533	0.99
Waitemata	Mäori	684	678	1.01	627	1.09
	Pacific People	465	513	0.91	465	1.00
	NonMäoriNonPac	11,565	11,682	0.99	10,974	1.05
	Asian	450	432	1.04	402	1.12
	NonMäoriNonPacNonAs	11,115	11,253	0.99	10,572	1.05
Auckland	Mäori	708	681	1.04	651	1.09
	Pacific People	1,110	1,173	0.95	1,101	1.01
	NonMäoriNonPac	9,348	9,555	0.98	9,261	1.01
	Asian	753	717	1.05	702	1.07
	NonMäoriNonPacNonAs	8,592	8,841	0.97	8,559	1.00
Counties Manukau	Mäori	1,470	1,521	0.97	1,410	1.04
	Pacific People	1,530	1,584	0.97	1,500	1.02
	NonMäoriNonPac	7,707	7,737	1.00	7,380	1.04
	Asian	612	564	1.09	534	1.15
	NonMäoriNonPacNonAs	7,095	7,173	0.99	6,846	1.04
Waikato	Mäori	1,827	1,686	1.08	1,695	1.08
	Pacific People	171	186	0.92	168	1.02
	NonMäoriNonPac	10,143	10,422	0.97	9,849	1.03
	Asian	138	120	1.15	120	1.15
	NonMäoriNonPacNonAs	10,002	10,302	0.97	9,729	1.03

DHB	Prioritised Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to
		Deaths	Deaths		Deaths	NHI Ratio
Lakes	Mäori	909	951	0.96	900	1.01
	Pacific People	90	87	1.03	87	1.03
	NonMäoriNonPac	2,622	2,634	1.00	2,559	1.02
	Asian	21	24	0.88	15	1.40
	NonMäoriNonPacNonAs	2,601	2,613	1.00	2,541	1.02
Bay of Plenty	Mäori	1,314	1,290	1.02	1,281	1.03
	Pacific People	36	39	0.92	36	1.00
	NonMäoriNonPac	7,050	7,173	0.98	6,972	1.01
	Asian	57	51	1.12	48	1.19
	NonMäoriNonPacNonAs	6,990	7,125	0.98	6,924	1.01
Tairawhiti	Mäori	663	711	0.93	672	0.99
	NonMäoriNonPac	1,140	1,128	1.01	1,137	1.00
	NonMäoriNonPacNonAs	1,134	1,119	1.01	1,128	1.01
Taranaki	Mäori	390	393	0.99	354	1.10
	Pacific People	12	18	0.67	9	1.33
	NonMäoriNonPac	3,822	3,909	0.98	3,696	1.03
	Asian	12	15	0.80	12	1.00
	NonMäoriNonPacNonAs	3,807	3,894	0.98	3,681	1.03
Hawke's Bay	Mäori	963	897	1.07	906	1.06
	Pacific People	72	75	0.96	60	1.20
	NonMäoriNonPac	5,019	5,109	0.98	4,836	1.04
	Asian	54	48	1.13	42	1.29
	NonMäoriNonPacNonAs	4,965	5,061	0.98	4,794	1.04
Whanganui	Mäori	420	441	0.95	384	1.09
	Pacific People	18	18	1.00	15	1.20
	NonMäoriNonPac	2,415	2,424	1.00	2,424	1.00
	Asian	12	12	1.00	9	1.33
	NonMäoriNonPacNonAs	2,403	2,412	1.00	2,415	1.00
Midcentral	Mäori	534	528	1.01	447	1.19
	Pacific People	30	30	1.00	24	1.25
	NonMäoriNonPac	5,409	5,466	0.99	4,734	1.14
	Asian	60	63	0.95	54	1.11
	NonMäoriNonPacNonAs	5,349	5,403	0.99	4,680	1.14
Hutt	Mäori	375	396	0.95	354	1.06
	Pacific People	162	162	1.00	147	1.10
	NonMäoriNonPac	3,795	3,879	0.98	3,738	1.02

DHB	Prioritised Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to
		Deaths	Deaths		Deaths	NHI Ratio
Capital and Coast	Asian	117	108	1.08	105	1.11
	NonMäoriNonPacNonAs	3,681	3,774	0.98	3,633	1.01
	Mäori	438	441	0.99	381	1.15
	Pacific People	360	360	1.00	357	1.01
	NonMäoriNonPac	6,324	6,396	0.99	6,003	1.05
Wairarapa	Asian	261	261	1.00	240	1.09
	NonMäoriNonPacNonAs	6,063	6,138	0.99	5,763	1.05
	Mäori	141	141	1.00	129	1.09
	Pacific People	15	12	1.25	12	1.25
Nelson Marlborough	NonMäoriNonPac	1,452	1,464	0.99	1,395	1.04
	NonMäoriNonPacNonAs	1,443	1,455	0.99	1,386	1.04
	Mäori	210	186	1.13	162	1.30
	Pacific People	21	18	1.17	12	1.75
	Asian	15	15	1.00	15	1.00
West Coast	NonMäoriNonPacNonAs	4,875	4,995	0.98	4,908	0.99
	Mäori	63	69	0.91	57	1.11
	NonMäoriNonPac	1,233	1,254	0.98	1,230	1.00
Canterbury	NonMäoriNonPacNonAs	1,230	1,251	0.98	1,227	1.00
	Mäori	636	558	1.14	501	1.27
	Pacific People	141	138	1.02	126	1.12
	NonMäoriNonPac	17,145	17,421	0.98	16,665	1.03
	Asian	207	195	1.06	168	1.23
South Canterbury	NonMäoriNonPacNonAs	16,932	17,229	0.98	16,497	1.03
	Mäori	60	57	1.05	54	1.11
	NonMäoriNonPac	2,550	2,580	0.99	2,352	1.08
Otago	NonMäoriNonPacNonAs	2,547	2,574	0.99	2,349	1.08
	Mäori	174	168	1.04	144	1.21
	Pacific People	30	36	0.83	30	1.00
	NonMäoriNonPac	7,278	7,404	0.98	7,263	1.00
	Asian	54	57	0.95	51	1.06
Southland	NonMäoriNonPacNonAs	7,224	7,347	0.98	7,215	1.00
	Mäori	267	252	1.06	207	1.29
	Pacific People	24	27	0.89	24	1.00
NonMäoriNonPac	NonMäoriNonPac	3,708	3,798	0.98	3,759	0.99

DHB	Prioritised Ethnicity	Census	Mortality	Census to Mortality Ratio	NHI	Census to
		Deaths	Deaths		Deaths	NHI Ratio
	NonMäoriNonPacNonAs	3,699	3,789	0.98	3,750	0.99

Table 49: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by DHB, 2006-2011

DHB	Prioritised Ethnicity	Census	First	Census to Cancer Ratio	NHI	Census to
		Ethnicity	Cancer Register		Eth	NHI Ratio
Northland	Mäori	900	936	0.96	870	1.03
	Pacific People	39	33	1.18	30	1.30
	NonMäoriNonPac	3,741	3,702	1.01	3,756	1.00
	Asian	15	18	0.83	15	1.00
	NonMäoriNonPacNonAs	3,726	3,687	1.01	3,741	1.00
Waitemata	Mäori	741	699	1.06	651	1.14
	Pacific People	426	432	0.99	411	1.04
	NonMäoriNonPac	11,448	10,782	1.06	10,956	1.04
	Asian	678	630	1.08	639	1.06
	NonMäoriNonPacNonAs	10,767	10,152	1.06	10,317	1.04
Auckland	Mäori	621	597	1.04	570	1.09
	Pacific People	774	801	0.97	765	1.01
	NonMäoriNonPac	8,139	7,716	1.05	7,950	1.02
	Asian	1,059	987	1.07	996	1.06
	NonMäoriNonPacNonAs	7,077	6,732	1.05	6,957	1.02
Counties Manukau	Mäori	1,062	1,053	1.01	993	1.07
	Pacific People	1,014	1,050	0.97	1,041	0.97
	NonMäoriNonPac	7,068	6,693	1.06	6,795	1.04
	Asian	681	612	1.11	633	1.08
	NonMäoriNonPacNonAs	6,390	6,084	1.05	6,165	1.04
Waikato	Mäori	1,233	1,218	1.01	1,128	1.09
	Pacific People	123	123	1.00	129	0.95
	NonMäoriNonPac	8,301	7,950	1.04	7,782	1.07
	Asian	141	123	1.15	126	1.12
	NonMäoriNonPacNonAs	8,160	7,827	1.04	7,656	1.07
Lakes	Mäori	600	624	0.96	594	1.01

DHB	Prioritised Ethnicity	Census Ethnicity	First	Census to	NHI Eth	Census to
			Cancer Register	Cancer Ratio		NHI Ratio
Bay of Plenty	Pacific People	42	39	1.08	45	0.93
	NonMäoriNonPac	2,274	2,196	1.04	2,205	1.03
	Asian	27	21	1.29	21	1.29
	NonMäoriNonPacNonAs	2,250	2,178	1.03	2,187	1.03
	Mäori	987	969	1.02	912	1.08
Tairawhiti	Pacific People	21	33	0.64	24	0.88
	NonMäoriNonPac	6,282	6,168	1.02	6,273	1.00
	Asian	66	45	1.47	54	1.22
	NonMäoriNonPacNonAs	6,216	6,126	1.01	6,219	1.00
	Mäori	432	444	0.97	423	1.02
Taranaki	NonMäoriNonPac	948	936	1.01	957	0.99
	NonMäoriNonPacNonAs	939	930	1.01	951	0.99
	Mäori	264	285	0.93	264	1.00
	NonMäoriNonPac	3,018	2,928	1.03	2,964	1.02
Hawke's Bay	Asian	24	21	1.14	21	1.14
	NonMäoriNonPacNonAs	2,994	2,907	1.03	2,943	1.02
	Mäori	666	690	0.97	639	1.04
	Pacific People	48	51	0.94	48	1.00
	NonMäoriNonPac	4,056	3,843	1.06	3,915	1.04
Whanganui	Asian	45	33	1.36	33	1.36
	NonMäoriNonPacNonAs	4,011	3,810	1.05	3,879	1.03
	Mäori	306	312	0.98	297	1.03
	Pacific People	12	6	2.00	9	1.33
	NonMäoriNonPac	1,890	1,830	1.03	1,869	1.01
Midcentral	Asian	12	12	1.00	12	1.00
	NonMäoriNonPacNonAs	1,875	1,818	1.03	1,857	1.01
	Mäori	483	447	1.08	405	1.19
	Pacific People	39	33	1.18	30	1.30
	NonMäoriNonPac	4,485	4,344	1.03	3,969	1.13
Hutt	Asian	63	57	1.11	48	1.31
	NonMäoriNonPacNonAs	4,422	4,287	1.03	3,921	1.13
	Mäori	333	357	0.93	333	1.00
	Pacific People	102	108	0.94	108	0.94
	NonMäoriNonPac	2,853	2,766	1.03	2,778	1.03
	Asian	129	120	1.08	120	1.08

DHB	Prioritised Ethnicity	Census Ethnicity	First	Census to	NHI Eth	Census to
			Cancer Register	Cancer Ratio		NHI Ratio
	NonMäoriNonPacNonAs	2,724	2,646	1.03	2,658	1.02
Capital and Coast	Mäori	396	423	0.94	390	1.02
	Pacific People	318	339	0.94	327	0.97
	NonMäoriNonPac	5,136	4,899	1.05	4,923	1.04
	Asian	288	264	1.09	264	1.09
	NonMäoriNonPacNonAs	4,848	4,635	1.05	4,659	1.04
Wairarapa	Mäori	108	117	0.92	108	1.00
	Pacific People	9	9	1.00	12	0.75
	NonMäoriNonPac	1,113	1,074	1.04	1,071	1.04
	Asian	9	12	0.75	9	1.00
	NonMäoriNonPacNonAs	1,104	1,065	1.04	1,065	1.04
Nelson Marlborough	Mäori	201	165	1.22	168	1.20
	Pacific People	12	12	1.00	6	2.00
	NonMäoriNonPac	4,128	4,083	1.01	4,104	1.01
	Asian	18	18	1.00	15	1.20
	NonMäoriNonPacNonAs	4,113	4,065	1.01	4,089	1.01
West Coast	Mäori	60	66	0.91	60	1.00
	NonMäoriNonPac	936	921	1.02	924	1.01
	NonMäoriNonPacNonAs	933	921	1.01	921	1.01
Canterbury	Mäori	666	621	1.07	576	1.16
	Pacific People	129	141	0.91	123	1.05
	NonMäoriNonPac	14,232	13,896	1.02	13,902	1.02
	Asian	273	252	1.08	234	1.17
	NonMäoriNonPacNonAs	13,962	13,644	1.02	13,668	1.02
South Canterbury	Mäori	60	54	1.11	48	1.25
	NonMäoriNonPac	2,028	2,022	1.00	1,947	1.04
	Asian	15	12	1.25	12	1.25
	NonMäoriNonPacNonAs	2,010	2,007	1.00	1,935	1.04
Otago	Mäori	174	165	1.05	147	1.18
	Pacific People	39	39	1.00	39	1.00
	NonMäoriNonPac	5,295	5,238	1.01	5,220	1.01
	Asian	60	48	1.25	48	1.25
	NonMäoriNonPacNonAs	5,238	5,190	1.01	5,172	1.01

DHB	Prioritised Ethnicity	Census	First	Census to	<i>NHI</i>	<i>Census to</i>
		Ethnicity	Cancer Register	Cancer Ratio		<i>Eth</i>
Southland	Mäori	201	195	1.03	165	1.22
	Pacific People	21	18	1.17	18	1.17
	NonMäoriNonPac	2,550	2,514	1.01	2,550	1.00
	NonMäoriNonPacNonAs	2,541	2,508	1.01	2,541	1.00

Unlock Ratios Stratified by Rurality

Table 50: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by Rurality, 2006-2011.

Rurality Grp1	Rurality Grp2	Ethnicity	Census			Census	
			Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI
			Ratio		Ratio		
Main Urban	Total NZ Māori	7,851	7,785	1.01	7,254	1.08	
	Total Pacific	4,431	4,581	0.97	4,260	1.04	
	Total Asian	2,946	2,853	1.03	2,649	1.11	
	nonMPA (European/Other)	80,835	82,218	0.98	78,882	1.02	
Secondary Urban Area	Total NZ Māori	999	1,026	0.97	951	1.05	
	Total Pacific	27	21	1.29	12	2.25	
	nonMPA (European/Other)	10,941	11,070	0.99	10,449	1.05	
Minor Urban Area	Total NZ Māori	2,379	2,310	1.03	2,184	1.09	
	Total Pacific	39	12	3.25	15	2.60	
	Total Asian	24	6	4.00	3	8.00	
	nonMPA (European/Other)	13,983	14,313	0.98	13,620	1.03	
Rural	Total NZ Māori	2,457	2,406	1.02	2,298	1.07	
	Total Pacific	36	21	1.71	18	2.00	
	Total Asian	12	3	4.00	.	.	
	nonMPA (European/Other)	10,473	10,722	0.98	10,182	1.03	
All Urban	Total NZ Māori	11,229	11,127	1.01	10,389	1.08	
	Total Pacific	4,518	4,611	0.98	4,287	1.05	
	Total Asian	2,988	2,850	1.05	2,652	1.13	
	nonMPA (European/Other)	105,726	107,601	0.98	102,942	1.03	
Rural	Total NZ Māori	2,457	2,400	1.02	2,289	1.07	

Rurality Grp1	Rurality Grp2	Ethnicity	Census		Census	
			Census Deaths	Mortality Deaths	to Mortality	NHI Deaths
					Ratio	to NHI
	Total Pacific		12	21	0.57	15
	Total Asian		6	15	0.40	6
	nonMPA (European/Other)		10,506	10,719	0.98	10,191
						1.03

Table 51: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by Rurality, 2006-2011

Rurality Grp1	Rurality Grp2	Ethnicity	First		Census	
			Census	Cancer	to	NHI
			Ethnicity	Register	Cancer	Eth
					Eth	Ratio
	Main Urban	Total NZ Mäori	6,426	6,396	1.00	5,946
		Total Pacific	3,282	3,450	0.95	3,258
		Total Asian	3,732	3,471	1.08	3,414
		nonMPA (European/Other)	65,361	62,916	1.04	63,387
	Secondary Urban Area	Total NZ Mäori	684	684	1.00	639
		Total Pacific	21	18	1.17	9
		nonMPA (European/Other)	7,905	7,779	1.02	7,641
	Minor Urban Area	Total NZ Mäori	1,614	1,620	1.00	1,509
		Total Pacific	45	21	2.14	18
		Total Asian	18	6	3.00	3
		nonMPA (European/Other)	10,245	10,074	1.02	10,023
	Rural	Total NZ Mäori	1,773	1,734	1.02	1,635
		Total Pacific	36	21	1.71	21
		Total Asian	15	3	5.00	.
		nonMPA (European/Other)	12,792	12,453	1.03	12,453
All Urban		Total NZ Mäori	8,724	8,700	1.00	8,097
		Total Pacific	3,354	3,489	0.96	3,285
		Total Asian	3,750	3,477	1.08	3,417

Rurality	Rurality	Ethnicity	First	Census	<i>Census</i>	
Grp1	Grp2		Census	Cancer	to	<i>NHI</i>
			Ethnicity	Register	Cancer	<i>Eth</i>
				Eth	Ratio	<i>Ratio</i>
		nonMPA (European/Other)	83,511	80,769	1.03	<i>81,048</i>
Rural		Total NZ Māori	1,773	1,734	1.02	<i>1,635</i>
		Total Pacific	36	21	1.71	<i>21</i>
		Total Asian	15	3	5.00	.
		nonMPA (European/Other)	12,792	12,453	1.03	<i>12,453</i>

Table 52: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by Rurality, 2006-2011

Rurality	Rurality	Prioritised Ethnicity	First	Census	<i>Census</i>	
Grp1	Grp2		Census	Mortality	to	<i>NHI</i>
			Deaths	Deaths	Mortality	<i>Deaths</i>
					Ratio	<i>Ratio</i>
	Main Urban	Māori	7,851	7,785	1.01	<i>7,254</i>
		Pacific People	4,284	4,494	0.95	<i>4,194</i>
		NonMāoriNonPac	83,697	84,939	0.99	<i>81,447</i>
		Asian	2,859	2,721	1.05	<i>2,565</i>
		NonMāoriNonPacNonAs	80,835	82,218	0.98	<i>78,882</i>
	Secondary Urban Area	Māori	999	1,026	0.97	<i>951</i>
		Pacific People	15	12	1.25	<i>3</i>
		NonMāoriNonPac	10,947	11,070	0.99	<i>10,449</i>
		NonMāoriNonPacNonAs	10,941	11,070	0.99	<i>10,449</i>
	Minor Urban Area	Māori	2,379	2,310	1.03	<i>2,184</i>
		Pacific People	24	9	2.67	<i>6</i>
		NonMāoriNonPac	13,995	14,316	0.98	<i>13,623</i>
		Asian	12	3	4.00	<i>3</i>
		NonMāoriNonPacNonAs	13,983	14,313	0.98	<i>13,620</i>

Rurality Grp1	Rurality Grp2	Prioritised Ethnicity	Census		Census		
			Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	
					Ratio		
Rural		Mäori	2,457	2,406	1.02	2,298	1.07
		Pacific People	24	9	2.67	12	2.00
		NonMäoriNonPac	10,476	10,722	0.98	10,182	1.03
		NonMäoriNonPacNonAs	10,473	10,722	0.98	10,182	1.03
All Urban		Mäori	11,229	11,127	1.01	10,389	1.08
		Pacific People	4,347	4,515	0.96	4,206	1.03
		NonMäoriNonPac	108,609	110,310	0.98	105,504	1.03
		Asian	2,880	2,709	1.06	2,559	1.13
		NonMäoriNonPacNonAs	105,726	107,601	0.98	102,942	1.03
Rural		Mäori	2,457	2,400	1.02	2,289	1.07
		NonMäoriNonPac	10,506	10,731	0.98	10,194	1.03
		Asian	.	12	.	6	.
		NonMäoriNonPacNonAs	10,506	10,719	0.98	10,191	1.03

Table 53: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by Rurality, 2006-2011

Rurality Grp1	Rurality Grp2	Prioritised Ethnicity	First		Census		Census	
			Census Ethnicity	Cancer Register	to Cancer	NHI Eth	to NHI	
			Eth	Ratio			Ratio	
Main Urban		Mäori	6,426	6,396	1.00	5,946	1.08	
		Pacific People	3,120	3,282	0.95	3,165	0.99	
		NonMäoriNonPac	68,961	66,207	1.04	66,699	1.03	
		Asian	3,597	3,291	1.09	3,315	1.09	
		NonMäoriNonPacNonAs	65,361	62,916	1.04	63,387	1.03	
Secondary Urban Area		Mäori	684	684	1.00	639	1.07	
		Pacific People	12	.	.	3	4.00	
		NonMäoriNonPac	7,908	7,779	1.02	7,641	1.03	

Rurality Grp1	Rurality Grp2	Prioritised Ethnicity	First	Census	<i>Census</i>		
			Census Ethnicity	Cancer Register	to Cancer	NHI <i>Eth</i>	
			Eth	Ratio	Ratio		
		NonMäoriNonPacNonAs	7,905	7,779	1.02	7,641	1.03
Minor Urban Area		Mäori	1,614	1,620	1.00	1,509	1.07
		Pacific People	24	.	.	3	8.00
		NonMäoriNonPac	10,251	10,074	1.02	10,023	1.02
		NonMäoriNonPacNonAs	10,245	10,074	1.02	10,023	1.02
Rural		Mäori	1,773	1,734	1.02	1,635	1.08
		Pacific People	24	3	8.00	9	2.67
		NonMäoriNonPac	12,801	12,453	1.03	12,453	1.03
		NonMäoriNonPacNonAs	12,792	12,453	1.03	12,453	1.03
All		Mäori	8,724	8,700	1.00	8,097	1.08
Urban		Pacific People	3,156	3,282	0.96	3,174	0.99
		NonMäoriNonPac	87,117	84,063	1.04	84,363	1.03
		Asian	3,603	3,294	1.09	3,315	1.09
		NonMäoriNonPacNonAs	83,511	80,769	1.03	81,048	1.03
Rural		Mäori	1,773	1,734	1.02	1,635	1.08
		Pacific People	24	3	8.00	9	2.67
		NonMäoriNonPac	12,801	12,453	1.03	12,453	1.03
		NonMäoriNonPacNonAs	12,792	12,453	1.03	12,453	1.03

Unlock Ratios Stratified by Cause of Death

Table 54: Census Total Ethnicity by Mortality and NHI Total Ethnicity stratified by Cause of Death Groupings, 2006-2011

Cause of Death	Total Ethnicity	Census			Census	
		Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI
				Ratio		Ratio
Cancer	Total NZ Mäori	4,254	4,137	1.03	4,011	1.06
	Total Pacific	1,302	1,332	0.98	1,254	1.04
	Total Asian	999	960	1.04	906	1.10
	nonMPA (European/Other)	34,974	35,550	0.98	34,059	1.03
Respiratory	Total NZ Mäori	1,086	1,080	1.01	1,014	1.07
	Total Pacific	261	276	0.95	261	1.00
	Total Asian	132	123	1.07	114	1.16
	nonMPA (European/Other)	8,220	8,370	0.98	8,091	1.02
Congenital, Perinatal, SIDS	Total NZ Mäori	102	99	1.03	93	1.10
	Total Pacific	36	33	1.09	36	1.00
	Total Asian	30	30	1.00	30	1.00
	nonMPA (European/Other)	462	474	0.97	462	1.00
Other Causes	Total NZ Mäori	2,436	2,406	1.01	2,289	1.06
	Total Pacific	1,071	1,122	0.95	1,047	1.02
	Total Asian	621	597	1.04	549	1.13
	nonMPA (European/Other)	22,503	22,977	0.98	22,086	1.02
Unintentional Injury, Suicide, Violent	Total NZ Mäori	1,521	1,482	1.03	1,353	1.12
	Total Pacific	357	324	1.10	279	1.28
	Total Asian	255	231	1.10	210	1.21
	nonMPA (European/Other)	6,417	6,576	0.98	6,102	1.05
CVD & IHD	Total NZ Mäori	4,290	4,323	0.99	3,921	1.09
	Total Pacific	1,503	1,545	0.97	1,425	1.05
	Total Asian	954	930	1.03	852	1.12
	nonMPA (European/Other)	43,659	44,373	0.98	42,333	1.03

Table 55: Census Total Ethnicity by Cancer Registration and NHI Total Ethnicity stratified by First Cancer Registration, 2006-2011

Ethnicity	Cancer Grouping	Ethnicity	First		Census	Census	
			Census	Cancer	to	NHI	to
					Eth	Cancer	Eth
Total	C00X Lip, oral cavity and pharynx	Total NZ Māori	120	111	1.08	102	1.18
Ethnicity		Total Pacific	81	87	0.93	75	1.08
		Total Asian	78	81	0.96	81	0.96
		nonMPA (European/Other)	1,326	1,293	1.03	1,290	1.03
	C15- Oesophagus	Total NZ Māori	78	84	0.93	72	1.08
		Total Pacific	18	21	0.86	18	1.00
		Total Asian	24	18	1.33	21	1.14
		nonMPA (European/Other)	1,155	1,161	0.99	1,119	1.03
	C16- Stomach	Total NZ Māori	312	327	0.95	300	1.04
		Total Pacific	120	129	0.93	123	0.98
		Total Asian	96	93	1.03	87	1.10
		nonMPA (European/Other)	1,107	1,089	1.02	1,077	1.03
	C180 Caecum	Total NZ Māori	51	63	0.81	57	0.89
		Total Pacific	15	18	0.83	18	0.83
		Total Asian	24	24	1.00	24	1.00
		nonMPA (European/Other)	1,605	1,581	1.02	1,560	1.03
	C182 Ascending colon	Total NZ Māori	54	51	1.06	48	1.13
		Total Pacific	15	15	1.00	9	1.67
		Total Asian	36	33	1.09	33	1.09
		nonMPA (European/Other)	1,656	1,629	1.02	1,635	1.01
	C183 Hepatic flexure	Total NZ Māori	24	21	1.14	18	1.33
		nonMPA (European/Other)	435	426	1.02	426	1.02
	C184 Transverse colon	Total NZ Māori	45	39	1.15	36	1.25
		Total Asian	24	18	1.33	18	1.33
		nonMPA (European/Other)	804	807	1.00	789	1.02

Ethnicity	Cancer Grouping	Ethnicity	First	Census	Census		
			Census	Cancer	to	NHI	
			Ethnicity	Register	Cancer	Eth	
				Eth	Ratio	Ratio	
	C185 Splenic flexure	Total NZ Māori	12	18	0.67	12	1.00
		nonMPA (European/Other)	258	255	1.01	255	1.01
	C186 Descending colon	Total NZ Māori	18	24	0.75	21	0.86
		Total Asian	15	12	1.25	9	1.67
		nonMPA (European/Other)	438	429	1.02	429	1.02
	C187 Sigmoid	Total NZ Māori	153	147	1.04	132	1.16
		Total Pacific	45	42	1.07	39	1.15
		Total Asian	90	90	1.00	87	1.03
		nonMPA (European/Other)	2,304	2,286	1.01	2,277	1.01
	C188&C181 Overlapping and appendix	Total NZ Māori	15	15	1.00	15	1.00
		nonMPA (European/Other)	192	186	1.03	183	1.05
	C189 Unspecified Colon	Total NZ Māori	30	36	0.83	27	1.11
		Total Pacific	9	12	0.75	12	0.75
		nonMPA (European/Other)	459	459	1.00	444	1.03
	C19- Rectosigmoid junction	Total NZ Māori	45	48	0.94	39	1.15
		Total Pacific	12	15	0.80	12	1.00
		Total Asian	24	21	1.14	24	1.00
		nonMPA (European/Other)	786	780	1.01	780	1.01
	C20- Rectum	Total NZ Māori	201	204	0.99	180	1.12
		Total Pacific	81	90	0.90	81	1.00
		Total Asian	105	102	1.03	102	1.03
		nonMPA (European/Other)	2,745	2,703	1.02	2,676	1.03
	C21- Anus and anal canal	Total NZ Māori	24	30	0.80	27	0.89
		nonMPA (European/Other)	198	189	1.05	192	1.03

Ethnicity	Cancer Grouping	Ethnicity	First	Census	Census		
			Census	Cancer	to	NHI	
			Ethnicity	Register	Cancer	Eth	
				Eth	Ratio	Ratio	
C22- Liver and intrahepatic bile ducts		Total NZ Māori	210	213	0.99	204 1.03	
		Total Pacific	96	111	0.86	108 0.89	
		Total Asian	105	93	1.13	96 1.09	
		nonMPA (European/Other)	696	690	1.01	672 1.04	
C23X Gallbladder and extra-hepatic biliary tract		Total NZ Māori	57	60	0.95	51 1.12	
		Total Pacific	30	30	1.00	27 1.11	
		Total Asian	30	30	1.00	30 1.00	
		nonMPA (European/Other)	375	372	1.01	366 1.02	
C25- Pancreas		Total NZ Māori	204	213	0.96	177 1.15	
		Total Pacific	48	51	0.94	45 1.07	
		Total Asian	69	72	0.96	63 1.10	
		nonMPA (European/Other)	1,761	1,764	1.00	1,698 1.04	
C26X Digestive tract-other, including small intestine		Total NZ Māori	81	81	1.00	75 1.08	
		Total Pacific	27	36	0.75	30 0.90	
		Total Asian	27	30	0.90	24 1.13	
		nonMPA (European/Other)	654	654	1.00	639 1.02	
C30X Ear, larynx and nasal cavity		Total NZ Māori	60	60	1.00	54 1.11	
		Total Pacific	15	15	1.00	15 1.00	
		nonMPA (European/Other)	393	396	0.99	387 1.02	
C33X Trachea and bronchus		Total NZ Māori	120	132	0.91	120 1.00	
		Total Pacific	33	30	1.10	33 1.00	
		Total Asian	12	6	2.00	9 1.33	
		nonMPA (European/Other)	531	528	1.01	513 1.04	
C341 Upper lobe		Total NZ Māori	603	666	0.91	594 1.02	
		Total Pacific	111	114	0.97	108 1.03	
		Total Asian	123	123	1.00	108 1.14	

Ethnicity	Cancer Grouping	Ethnicity	First	Census	Census		
			Census	Cancer	to	NHI	
		Ethnicity	Ethnicity	Register	Cancer	Eth	
					Eth	Ratio	
		nonMPA (European/Other)	2,277	2,247	1.01	2,253	1.01
C342 Middle lobe	Total NZ Māori	60	69	0.87	60	1.00	
	Total Pacific	12	9	1.33	9	1.33	
	Total Asian	12	12	1.00	15	0.80	
	nonMPA (European/Other)	255	249	1.02	249	1.02	
C343 Lower lobe	Total NZ Māori	189	213	0.89	177	1.07	
	Total Pacific	60	69	0.87	63	0.95	
	Total Asian	60	63	0.95	54	1.11	
	nonMPA (European/Other)	1,188	1,170	1.02	1,161	1.02	
C348 Unspecified and overlapping lung	Total NZ Māori	426	468	0.91	420	1.01	
	Total Pacific	78	93	0.84	78	1.00	
	Total Asian	81	84	0.96	75	1.08	
	nonMPA (European/Other)	2,202	2,181	1.01	2,127	1.04	
C40X Bone and articular cartilage	Total NZ Māori	24	30	0.80	30	0.80	
	Total Pacific	15	15	1.00	9	1.67	
	nonMPA (European/Other)	120	120	1.00	114	1.05	
C43- Melanoma	Total NZ Māori	189	129	1.47	120	1.58	
	Total Pacific	27	30	0.90	24	1.13	
	Total Asian	30	9	3.33	6	5.00	
	nonMPA (European/Other)	10,419	9,759	1.07	9,897	1.05	
C44- Other skin	Total NZ Māori	39	33	1.18	33	1.18	
	nonMPA (European/Other)	519	513	1.01	522	0.99	
C45- Mesothelioma	Total NZ Māori	18	15	1.20	12	1.50	
	nonMPA (European/Other)	390	393	0.99	384	1.02	

Ethnicity	Cancer Grouping	Ethnicity	First Census		Census		
			Census	Cancer	to	NHI	
			Ethnicity	Register	Cancer	Eth	
				Eth	Ratio	Ratio	
	C46X Mesothelial and soft tissue (except mesothelioma)	Total NZ Māori	105	105	1.00	96	1.09
		Total Pacific	42	45	0.93	45	0.93
		Total Asian	27	24	1.13	24	1.13
		nonMPA (European/Other)	537	516	1.04	516	1.04
	C50- Breast	Total NZ Māori	1,584	1,587	1.00	1,509	1.05
		Total Pacific	558	585	0.95	543	1.03
		Total Asian	627	603	1.04	588	1.07
		nonMPA (European/Other)	10,002	9,816	1.02	9,798	1.02
	C51X Other female genital organs	Total NZ Māori	45	51	0.88	48	0.94
		Total Pacific	12	12	1.00	9	1.33
		Total Asian	12	12	1.00	12	1.00
		nonMPA (European/Other)	366	360	1.02	363	1.01
	C53- Cervix	Total NZ Māori	150	147	1.02	141	1.06
		Total Pacific	48	51	0.94	54	0.89
		Total Asian	54	48	1.13	48	1.13
		nonMPA (European/Other)	417	417	1.00	405	1.03
	C54- Uterus	Total NZ Māori	261	267	0.98	261	1.00
		Total Pacific	225	237	0.95	231	0.97
		Total Asian	87	84	1.04	81	1.07
		nonMPA (European/Other)	1,362	1,332	1.02	1,326	1.03
	C56- Ovary	Total NZ Māori	144	147	0.98	141	1.02
		Total Pacific	51	57	0.89	57	0.89
		Total Asian	45	39	1.15	33	1.36
		nonMPA (European/Other)	1,014	1,008	1.01	1,005	1.01
	C61- Prostate	Total NZ Māori	846	756	1.12	720	1.18
		Total Pacific	330	336	0.98	327	1.01
		Total Asian	318	270	1.18	282	1.13

Ethnicity	Cancer Grouping	Ethnicity	First	Census	Census	
			Census	Cancer	to	NHI
		Ethnicity	Ethnicity	Register	Cancer	Eth
					Eth	Ratio
		nonMPA (European/Other)	12,009	11,184	1.07	11,421 1.05
C62- Testes	Total NZ Māori	186	195	0.95	189	0.98
	Total Pacific	30	21	1.43	24	1.25
	Total Asian	21	15	1.40	15	1.40
	nonMPA (European/Other)	501	456	1.10	480	1.04
C64- Kidney, except renal pelvis	Total NZ Māori	204	207	0.99	189	1.08
	Total Pacific	69	72	0.96	66	1.05
	Total Asian	60	60	1.00	54	1.11
	nonMPA (European/Other)	1,728	1,698	1.02	1,677	1.03
C65X Renal pelvis, ureter, other/unspec. urinary organs	Total NZ Māori	15	12	1.25	15	1.00
	nonMPA (European/Other)	252	249	1.01	243	1.04
	Total NZ Māori	90	87	1.03	81	1.11
	Total Pacific	36	39	0.92	36	1.00
C67- Bladder	Total Asian	15	24	0.63	24	0.63
	nonMPA (European/Other)	1,392	1,380	1.01	1,371	1.02
	Total NZ Māori	18	15	1.20	15	1.20
	nonMPA (European/Other)	276	279	0.99	279	0.99
C69X Eye, meninges and rest of CNS	Total NZ Māori	90	108	0.83	90	1.00
	Total Pacific	51	51	1.00	48	1.06
	Total Asian	42	36	1.17	33	1.27
	nonMPA (European/Other)	1,119	1,101	1.02	1,095	1.02
C71- Brain	Total NZ Māori	198	183	1.08	189	1.05
	Total Pacific	75	90	0.83	84	0.89
	Total Asian	144	132	1.09	135	1.07
	nonMPA (European/Other)	693	678	1.02	678	1.02

Ethnicity	Cancer Grouping	Ethnicity	First Census		Census		
			Census	Cancer	to	NHI	
			Ethnicity	Register	Cancer	Eth	
				Eth	Ratio	Ratio	
	C76X III defined, secondary or unspecified sites	Total NZ Māori	156	174	0.90	159	0.98
		Total Pacific	69	81	0.85	75	0.92
		Total Asian	24	24	1.00	18	1.33
		nonMPA (European/Other)	1,680	1,677	1.00	1,617	1.04
	C81- Hodgkin's Disease	Total NZ Māori	30	33	0.91	33	0.91
		Total Pacific	24	27	0.89	27	0.89
		Total Asian	24	21	1.14	18	1.33
		nonMPA (European/Other)	381	381	1.00	378	1.01
	C82- Follicular Non-Hodgkin's Disease	Total NZ Māori	39	39	1.00	39	1.00
		Total Pacific	9	9	1.00	12	0.75
		Total Asian	21	21	1.00	24	0.88
		nonMPA (European/Other)	711	687	1.03	693	1.03
	C83- Diffuse NHL	Total NZ Māori	153	153	1.00	147	1.04
		Total Pacific	54	54	1.00	54	1.00
		Total Asian	75	75	1.00	72	1.04
		nonMPA (European/Other)	1,548	1,512	1.02	1,503	1.03
	C84- Peripheral and T cell lymphoma	Total NZ Māori	18	21	0.86	15	1.20
		Total Pacific	12	15	0.80	12	1.00
		Total Asian	9	9	1.00	9	1.00
		nonMPA (European/Other)	219	210	1.04	213	1.03
	C85- Other NHL	Total NZ Māori	36	42	0.86	33	1.09
		Total Pacific	15	15	1.00	15	1.00
		Total Asian	27	24	1.13	24	1.13
		nonMPA (European/Other)	534	519	1.03	522	1.02
	C900 Multiple myeloma	Total NZ Māori	111	108	1.03	96	1.16
		Total Pacific	66	72	0.92	66	1.00

Ethnicity	Cancer Grouping	Ethnicity	First	Census	Census		
			Census	Cancer	to	NHI	
			Ethnicity	Register	Cancer	Eth	
					Eth	Ratio	
	Total Asian		45	42	1.07	45	1.00
	nonMPA		972	966	1.01	972	1.00
	(European/Other)						
C910 Acute lymphoid leukaemia	Total NZ Māori		57	57	1.00	57	1.00
	Total Pacific		24	24	1.00	24	1.00
	Total Asian		24	24	1.00	24	1.00
	nonMPA		174	171	1.02	168	1.04
	(European/Other)						
C911 Chronic lymphoid leukaemia	Total NZ Māori		81	78	1.04	78	1.04
	nonMPA		849	825	1.03	834	1.02
	(European/Other)						
C919 Other lymphoid leukaemia	nonMPA		102	96	1.06	99	1.03
	(European/Other)						
C920 Acute myeloid leukaemia	Total NZ Māori		57	57	1.00	54	1.06
	Total Pacific		48	48	1.00	45	1.07
	Total Asian		24	27	0.89	24	1.00
	nonMPA		510	513	0.99	504	1.01
	(European/Other)						
C921 Chronic myeloid leukaemia	Total NZ Māori		33	36	0.92	36	0.92
	Total Asian		21	21	1.00	21	1.00
	nonMPA		150	141	1.06	135	1.11
	(European/Other)						
C929 Other myeloid leukaemia	Total NZ Māori		18	18	1.00	15	1.20
	nonMPA		87	87	1.00	87	1.00
	(European/Other)						
C930 Other leukaemia including monocytic	Total NZ Māori		21	30	0.70	24	0.88
	Total Pacific		9	12	0.75	12	0.75
	nonMPA		267	249	1.07	252	1.06
	(European/Other)						
C96- Other lymphoid or haematopoietic malignancies	nonMPA		18	18	1.00	18	1.00
	(European/Other)						
CXXX Other Cancers	Total NZ Māori		57	48	1.19	51	1.12
	Total Pacific		21	18	1.17	18	1.17

Ethnicity	Cancer Grouping	Ethnicity	First	Census	Census		
			Census	Cancer	to	NHI	
			Ethnicity	Register	Cancer	Eth	
					Eth	Ratio	
	Total Asian		18	18	1.00	15	1.20
	nonMPA		279	279	1.00	285	0.98
	(European/Other)						
D03- Melanoma in situ	Total NZ Māori		135	87	1.55	90	1.50
	Total Pacific		12	6	2.00	6	2.00
	Total Asian		30	12	2.50	9	3.33
	nonMPA		8,052	7,368	1.09	7,554	1.07
	(European/Other)						
D05- Carcinoma in situ breast	Total NZ Māori		192	195	0.98	186	1.03
	Total Pacific		66	66	1.00	66	1.00
	Total Asian		198	192	1.03	195	1.02
	nonMPA		1,581	1,533	1.03	1,533	1.03
	(European/Other)						
D06- Carcinoma in situ cervix	Total NZ Māori		1,659	1,521	1.09	1,476	1.12
	Total Pacific		327	258	1.27	258	1.27
	Total Asian		486	405	1.20	423	1.15
	nonMPA		5,919	5,886	1.01	6,039	0.98
	(European/Other)						
D09X Carcinoma in situ other	Total NZ Māori		105	108	0.97	99	1.06
	Total Pacific		12	24	0.50	24	0.50
	Total Asian		75	66	1.14	69	1.09
	nonMPA		2,004	1,956	1.02	1,968	1.02
	(European/Other)						
D45X Chron. myeloproliferative & myelodysplastic disorders	Total NZ Māori		141	144	0.98	135	1.04
	Total Pacific		60	63	0.95	63	0.95
	Total Asian		60	60	1.00	57	1.05
	nonMPA		1,356	1,356	1.00	1,353	1.00
	(European/Other)						

Table 56: Census Prioritised Ethnicity by Mortality and NHI Prioritised Ethnicity stratified by ICD, 2006-2011

Cause of Death	Prioritised Ethnicity	Census			Census	
		Census Deaths	Mortality Deaths	to Mortality	NHI Deaths	to NHI
				Ratio		Ratio
Cancer	Mäori	4,254	4,137	1.03	4,011	1.06
	Pacific People	1,266	1,308	0.97	1,236	1.02
	NonMäoriNonPac	35,946	36,477	0.99	34,944	1.03
	Asian	969	927	1.05	888	1.09
	NonMäoriNonPacNonAs	34,974	35,550	0.98	34,059	1.03
Respiratory	Mäori	1,086	1,080	1.01	1,014	1.07
	Pacific People	258	273	0.95	261	0.99
	NonMäoriNonPac	8,346	8,475	0.98	8,199	1.02
	Asian	129	105	1.23	105	1.23
	NonMäoriNonPacNonAs	8,220	8,370	0.98	8,091	1.02
Congenital, Perinatal, SIDS	Mäori	102	99	1.03	93	1.10
	Pacific People	27	30	0.90	27	1.00
	NonMäoriNonPac	492	501	0.98	492	1.00
	Asian	30	27	1.11	27	1.11
	NonMäoriNonPacNonAs	462	474	0.97	462	1.00
Other Causes	Mäori	2,436	2,406	1.01	2,289	1.06
	Pacific People	1,026	1,098	0.93	1,029	1.00
	NonMäoriNonPac	23,091	23,523	0.98	22,608	1.02
	Asian	591	546	1.08	525	1.13
	NonMäoriNonPacNonAs	22,503	22,977	0.98	22,086	1.02
Unintentional Injury, Suicide, Violent	Mäori	1,521	1,482	1.03	1,353	1.12
	Pacific People	297	282	1.05	246	1.21
	NonMäoriNonPac	6,666	6,801	0.98	6,306	1.06
	Asian	246	222	1.11	204	1.21
	NonMäoriNonPacNonAs	6,417	6,576	0.98	6,102	1.05
CVD & IHD	Mäori	4,290	4,323	0.99	3,921	1.09
	Pacific People	1,473	1,527	0.96	1,416	1.04
	NonMäoriNonPac	44,574	45,270	0.98	43,155	1.03
	Asian	918	894	1.03	819	1.12
	NonMäoriNonPacNonAs	43,659	44,373	0.98	42,333	1.03

Table 57: Census Prioritised Ethnicity by Cancer Registration and NHI Prioritised Ethnicity stratified by first Cancer Registration, 2006-2011

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First		Census	Census	
			Census	Ethnicity	Cancer Register	to Cancer	NHI Eth
			Eth				to NHI
Prioritised Ethnicity	C00X Lip, oral cavity and pharynx	Mäori	120	111	1.08	102	1.18
		Pacific People	78	81	0.96	75	1.04
		NonMäoriNonPac	1,404	1,365	1.03	1,368	1.03
		Asian	75	75	1.00	78	0.96
		NonMäoriNonPacNonAs	1,326	1,293	1.03	1,290	1.03
	C15- Oesophagus	Mäori	78	84	0.93	72	1.08
		Pacific People	18	18	1.00	18	1.00
		NonMäoriNonPac	1,179	1,179	1.00	1,140	1.03
		Asian	21	18	1.17	21	1.00
		NonMäoriNonPacNonAs	1,155	1,161	0.99	1,119	1.03
	C16- Stomach	Mäori	312	327	0.95	300	1.04
		Pacific People	120	120	1.00	120	1.00
		NonMäoriNonPac	1,194	1,179	1.01	1,158	1.03
		Asian	90	90	1.00	87	1.03
		NonMäoriNonPacNonAs	1,107	1,089	1.02	1,077	1.03
	C180 Caecum	Mäori	51	63	0.81	57	0.89
		Pacific People	15	18	0.83	18	0.83
		NonMäoriNonPac	1,626	1,605	1.01	1,584	1.03
		Asian	21	24	0.88	21	1.00
		NonMäoriNonPacNonAs	1,605	1,581	1.02	1,560	1.03
	C182 Ascending colon	Mäori	54	51	1.06	48	1.13
		Pacific People	15	12	1.25	9	1.67
		NonMäoriNonPac	1,689	1,659	1.02	1,671	1.01
		Asian	36	33	1.09	36	1.00
		NonMäoriNonPacNonAs	1,656	1,629	1.02	1,635	1.01
	C183 Hepatic flexure	Mäori	24	21	1.14	18	1.33
		NonMäoriNonPac	438	435	1.01	432	1.01
		NonMäoriNonPacNonAs	435	426	1.02	426	1.02
	C184 Transverse colon	Mäori	45	39	1.15	36	1.25
		NonMäoriNonPac	828	828	1.00	810	1.02
		Asian	24	18	1.33	18	1.33
		NonMäoriNonPacNonAs	804	807	1.00	789	1.02

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First Census		Census	
			Census	Cancer	to	NHI
			Ethnicity	Register	Cancer	Eth
			Eth		Ratio	
C185 Splenic flexure	Mäori	12	18	0.67	12	1.00
	NonMäoriNonPac	261	261	1.00	261	1.00
	NonMäoriNonPacNonAs	258	255	1.01	255	1.01
C186 Descending colon	Mäori	18	24	0.75	21	0.86
	NonMäoriNonPac	453	441	1.03	435	1.04
	Asian	15	12	1.25	9	1.67
	NonMäoriNonPacNonAs	438	429	1.02	429	1.02
C187 Sigmoid	Mäori	153	147	1.04	132	1.16
	Pacific People	39	42	0.93	39	1.00
	NonMäoriNonPac	2,388	2,370	1.01	2,361	1.01
	Asian	84	84	1.00	84	1.00
	NonMäoriNonPacNonAs	2,304	2,286	1.01	2,277	1.01
C188&C181 Overlapping and appendix	Mäori	15	15	1.00	15	1.00
	NonMäoriNonPac	195	189	1.03	186	1.05
	NonMäoriNonPacNonAs	192	186	1.03	183	1.05
C189 Unspecified Colon	Mäori	30	36	0.83	27	1.11
	Pacific People	9	12	0.75	12	0.75
	NonMäoriNonPac	465	465	1.00	450	1.03
	NonMäoriNonPacNonAs	459	459	1.00	444	1.03
C19- Rectosigmoid junction	Mäori	45	48	0.94	39	1.15
	Pacific People	12	15	0.80	12	1.00
	NonMäoriNonPac	810	801	1.01	801	1.01
	Asian	24	21	1.14	24	1.00
	NonMäoriNonPacNonAs	786	780	1.01	780	1.01
C20- Rectum	Mäori	201	204	0.99	180	1.12
	Pacific People	78	81	0.96	81	0.96
	NonMäoriNonPac	2,844	2,796	1.02	2,766	1.03
	Asian	102	93	1.10	93	1.10
	NonMäoriNonPacNonAs	2,745	2,703	1.02	2,676	1.03
C21- Anus and anal canal	Mäori	24	30	0.80	27	0.89
	NonMäoriNonPac	198	192	1.03	195	1.02
	NonMäoriNonPacNonAs	198	189	1.05	192	1.03

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First Census		Census	
			Census	Cancer	to	NHI
			Ethnicity	Register	Cancer	Eth
C22- Liver and intrahepatic bile ducts	Mäori	210	213	0.99	204	1.03
	Pacific People	93	108	0.86	102	0.91
	NonMäoriNonPac	798	777	1.03	765	1.04
	Asian	102	87	1.17	90	1.13
	NonMäoriNonPacNonAs	696	690	1.01	672	1.04
C23X Gallbladder and extra-hepatic biliary tract	Mäori	57	60	0.95	51	1.12
	Pacific People	30	30	1.00	27	1.11
	NonMäoriNonPac	402	402	1.00	393	1.02
	Asian	30	27	1.11	30	1.00
	NonMäoriNonPacNonAs	375	372	1.01	366	1.02
C25- Pancreas	Mäori	204	213	0.96	177	1.15
	Pacific People	48	48	1.00	42	1.14
	NonMäoriNonPac	1,830	1,836	1.00	1,761	1.04
	Asian	66	69	0.96	63	1.05
	NonMäoriNonPacNonAs	1,761	1,764	1.00	1,698	1.04
C26X Digestive tract-other, including small intestine	Mäori	81	81	1.00	75	1.08
	Pacific People	27	36	0.75	30	0.90
	NonMäoriNonPac	684	681	1.00	663	1.03
	Asian	27	24	1.13	24	1.13
	NonMäoriNonPacNonAs	654	654	1.00	639	1.02
C30X Ear, larynx and nasal cavity	Mäori	60	60	1.00	54	1.11
	Pacific People	15	12	1.25	15	1.00
	NonMäoriNonPac	402	405	0.99	399	1.01
	NonMäoriNonPacNonAs	393	396	0.99	387	1.02
	Mäori	120	132	0.91	120	1.00
C33X Trachea and bronchus	Pacific People	33	27	1.22	33	1.00
	NonMäoriNonPac	543	534	1.02	522	1.04
	Asian	12	6	2.00	9	1.33
	NonMäoriNonPacNonAs	531	528	1.01	513	1.04
	Mäori	603	666	0.91	594	1.02
C341 Upper lobe	Pacific People	108	105	1.03	105	1.03

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First Census		Census	
			Census	Cancer Register	to Cancer	NHI to Eth
			Eth	Ratio		Ratio
C342 Middle lobe	NonMäoriNonPac	2,394	2,367	1.01	2,361	1.01
	Asian	117	120	0.98	108	1.08
	NonMäoriNonPacNonAs	2,277	2,247	1.01	2,253	1.01
	Mäori	60	69	0.87	60	1.00
	Pacific People	12	9	1.33	9	1.33
C343 Lower lobe	NonMäoriNonPac	264	258	1.02	261	1.01
	Asian	9	9	1.00	15	0.60
	NonMäoriNonPacNonAs	255	249	1.02	249	1.02
	Mäori	189	213	0.89	177	1.07
	Pacific People	60	66	0.91	63	0.95
C348 Unspecified and overlapping lung	NonMäoriNonPac	1,248	1,233	1.01	1,215	1.03
	Asian	60	60	1.00	54	1.11
	NonMäoriNonPacNonAs	1,188	1,170	1.02	1,161	1.02
	Mäori	426	468	0.91	420	1.01
	Pacific People	78	84	0.93	75	1.04
C40X Bone and articular cartilage	NonMäoriNonPac	2,283	2,265	1.01	2,202	1.04
	Asian	78	84	0.93	75	1.04
	NonMäoriNonPacNonAs	2,202	2,181	1.01	2,127	1.04
	Mäori	24	30	0.80	30	0.80
	Pacific People	12	12	1.00	9	1.33
C43- Melanoma	NonMäoriNonPac	132	126	1.05	123	1.07
	NonMäoriNonPacNonAs	120	120	1.00	114	1.05
	Mäori	189	129	1.47	120	1.58
	Pacific People	21	30	0.70	24	0.88
	NonMäoriNonPac	10,449	9,768	1.07	9,903	1.06
C44- Other skin	Asian	30	9	3.33	6	5.00
	NonMäoriNonPacNonAs	10,419	9,759	1.07	9,897	1.05
	Mäori	39	33	1.18	33	1.18
C45- Mesothelioma	NonMäoriNonPac	525	519	1.01	528	0.99
	NonMäoriNonPacNonAs	519	513	1.01	522	0.99
	Mäori	18	15	1.20	12	1.50
NonMäoriNonPac	390	396	0.98	384	1.02	
	NonMäoriNonPacNonAs	390	393	0.99	384	1.02

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First Census		Census	
			Census Ethnicity	Cancer Register	Cancer to Eth	NHI to Eth
			Eth	Ratio		Ratio
C46X Mesothelial and soft tissue (except mesothelioma)						
	Mäori		105	105	1.00	96 1.09
	Pacific People		36	42	0.86	39 0.92
	NonMäoriNonPac		561	540	1.04	540 1.04
	Asian		24	24	1.00	24 1.00
	NonMäoriNonPacNonAs		537	516	1.04	516 1.04
C50- Breast	Mäori		1,584	1,587	1.00	1,509 1.05
	Pacific People		522	552	0.95	528 0.99
	NonMäoriNonPac		10,611	10,374	1.02	10,371 1.02
	Asian		606	558	1.09	570 1.06
	NonMäoriNonPacNonAs		10,002	9,816	1.02	9,798 1.02
C51X Other female genital organs	Mäori		45	51	0.88	48 0.94
	Pacific People		12	12	1.00	9 1.33
	NonMäoriNonPac		378	372	1.02	372 1.02
	Asian		12	12	1.00	12 1.00
	NonMäoriNonPacNonAs		366	360	1.02	363 1.01
C53- Cervix	Mäori		150	147	1.02	141 1.06
	Pacific People		48	48	1.00	54 0.89
	NonMäoriNonPac		465	465	1.00	450 1.03
	Asian		48	45	1.07	45 1.07
	NonMäoriNonPacNonAs		417	417	1.00	405 1.03
C54- Uterus	Mäori		261	267	0.98	261 1.00
	Pacific People		219	231	0.95	228 0.96
	NonMäoriNonPac		1,443	1,410	1.02	1,404 1.03
	Asian		84	78	1.08	78 1.08
	NonMäoriNonPacNonAs		1,362	1,332	1.02	1,326 1.03
C56- Ovary	Mäori		144	147	0.98	141 1.02
	Pacific People		51	54	0.94	54 0.94
	NonMäoriNonPac		1,053	1,041	1.01	1,038 1.01
	Asian		39	33	1.18	33 1.18
	NonMäoriNonPacNonAs		1,014	1,008	1.01	1,005 1.01
C61- Prostate	Mäori		846	756	1.12	720 1.18
	Pacific People		324	333	0.97	324 1.00

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First Census		Census	
			Census	Cancer Register	to Cancer	NHI to Eth
			Eth	Ratio		Ratio
		NonMäoriNonPac	12,312	11,436	1.08	11,694 1.05
		Asian	303	252	1.20	273 1.11
		NonMäoriNonPacNonAs	12,009	11,184	1.07	11,421 1.05
	C62- Testes	Mäori	186	195	0.95	189 0.98
		Pacific People	18	21	0.86	21 0.86
		NonMäoriNonPac	519	468	1.11	489 1.06
		Asian	18	12	1.50	12 1.50
		NonMäoriNonPacNonAs	501	456	1.10	480 1.04
	C64- Kidney, except renal pelvis	Mäori	204	207	0.99	189 1.08
		Pacific People	66	66	1.00	66 1.00
		NonMäoriNonPac	1,785	1,752	1.02	1,734 1.03
		Asian	60	54	1.11	54 1.11
		NonMäoriNonPacNonAs	1,728	1,698	1.02	1,677 1.03
	C65X Renal pelvis, ureter, other/unspec. urinary organs	Mäori	15	12	1.25	15 1.00
		NonMäoriNonPac	261	258	1.01	255 1.02
		NonMäoriNonPacNonAs	252	249	1.01	243 1.04
		Mäori	90	87	1.03	81 1.11
		Pacific People	30	36	0.83	36 0.83
	C67- Bladder	NonMäoriNonPac	1,410	1,401	1.01	1,395 1.01
		Asian	15	21	0.71	21 0.71
		NonMäoriNonPacNonAs	1,392	1,380	1.01	1,371 1.02
		Mäori	18	15	1.20	15 1.20
		NonMäoriNonPac	285	285	1.00	285 1.00
	C69X Eye, meninges and rest of CNS	NonMäoriNonPacNonAs	276	279	0.99	279 0.99
		Mäori	90	108	0.83	90 1.00
		Pacific People	42	45	0.93	42 1.00
		NonMäoriNonPac	1,152	1,134	1.02	1,125 1.02
		Asian	36	36	1.00	33 1.09
	C71- Brain	NonMäoriNonPacNonAs	1,119	1,101	1.02	1,095 1.02
		Mäori	198	183	1.08	189 1.05
		Pacific People	72	84	0.86	78 0.92

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First Census		Census	
			Census	Cancer Register	to Cancer	NHI to Eth
			Eth	Ratio		Ratio
		NonMäoriNonPac	837	810	1.03	810 1.03
		Asian	144	129	1.12	135 1.07
		NonMäoriNonPacNonAs	693	678	1.02	678 1.02
C76X III defined, secondary or unspecified sites		Mäori	156	174	0.90	159 0.98
		Pacific People	69	81	0.85	75 0.92
		NonMäoriNonPac	1,707	1,698	1.01	1,638 1.04
		Asian	24	21	1.14	18 1.33
		NonMäoriNonPacNonAs	1,680	1,677	1.00	1,617 1.04
C81- Hodgkin's Disease		Mäori	30	33	0.91	33 0.91
		Pacific People	24	24	1.00	24 1.00
		NonMäoriNonPac	402	399	1.01	393 1.02
		Asian	21	18	1.17	18 1.17
		NonMäoriNonPacNonAs	381	381	1.00	378 1.01
C82- Follicular Non-Hodgkin's Disease		Mäori	39	39	1.00	39 1.00
		Pacific People	9	9	1.00	12 0.75
		NonMäoriNonPac	735	708	1.04	714 1.03
		Asian	21	21	1.00	24 0.88
		NonMäoriNonPacNonAs	711	687	1.03	693 1.03
C83- Diffuse NHL		Mäori	153	153	1.00	147 1.04
		Pacific People	51	51	1.00	51 1.00
		NonMäoriNonPac	1,623	1,590	1.02	1,575 1.03
		Asian	72	75	0.96	72 1.00
		NonMäoriNonPacNonAs	1,548	1,512	1.02	1,503 1.03
C84- Peripheral and T cell lymphoma		Mäori	18	21	0.86	15 1.20
		Pacific People	12	12	1.00	12 1.00
		NonMäoriNonPac	228	219	1.04	222 1.03
		Asian	9	9	1.00	9 1.00
		NonMäoriNonPacNonAs	219	210	1.04	213 1.03
C85- Other NHL		Mäori	36	42	0.86	33 1.09
		Pacific People	15	12	1.25	12 1.25
		NonMäoriNonPac	564	543	1.04	549 1.03
		Asian	27	24	1.13	24 1.13

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First Census		Census	
			Census	Cancer Register	to Cancer	NHI to Eth
			Ethnicity	Ratio		Ratio
		NonMäoriNonPacNonAs	534	519	1.03	522 1.02
C900 Multiple myeloma	Mäori		111	108	1.03	96 1.16
	Pacific People		66	72	0.92	66 1.00
	NonMäoriNonPac		1,017	1,005	1.01	1,014 1.00
	Asian		45	39	1.15	45 1.00
	NonMäoriNonPacNonAs		972	966	1.01	972 1.00
C910 Acute lymphoid leukaemia	Mäori		57	57	1.00	57 1.00
	Pacific People		18	24	0.75	24 0.75
	NonMäoriNonPac		198	195	1.02	195 1.02
	Asian		24	24	1.00	24 1.00
	NonMäoriNonPacNonAs		174	171	1.02	168 1.04
C911 Chronic lymphoid leukaemia	Mäori		81	78	1.04	78 1.04
	NonMäoriNonPac		855	828	1.03	840 1.02
	NonMäoriNonPacNonAs		849	825	1.03	834 1.02
C919 Other lymphoid leukaemia	NonMäoriNonPac		102	99	1.03	99 1.03
	NonMäoriNonPacNonAs		102	96	1.06	99 1.03
C920 Acute myeloid leukaemia	Mäori		57	57	1.00	54 1.06
	Pacific People		48	45	1.07	45 1.07
	NonMäoriNonPac		534	537	0.99	525 1.02
	Asian		24	27	0.89	24 1.00
	NonMäoriNonPacNonAs		510	513	0.99	504 1.01
C921 Chronic myeloid leukaemia	Mäori		33	36	0.92	36 0.92
	NonMäoriNonPac		171	159	1.08	156 1.10
	Asian		21	18	1.17	21 1.00
	NonMäoriNonPacNonAs		150	141	1.06	135 1.11
C929 Other myeloid leukaemia	Mäori		18	18	1.00	15 1.20
	NonMäoriNonPac		93	93	1.00	93 1.00
	NonMäoriNonPacNonAs		87	87	1.00	87 1.00

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First Census		Census	
			Census	Cancer	to	NHI
			Ethnicity	Register	Cancer	Eth
			Eth		Ratio	
C930 Other leukaemia including monocytic	Mäori	21	30	0.70	24	0.88
	Pacific People	6	12	0.50	9	0.67
	NonMäoriNonPac	270	252	1.07	255	1.06
	NonMäoriNonPacNonAs	267	249	1.07	252	1.06
C96- Other lymphoid or haematopoietic malignancies	NonMäoriNonPac	21	18	1.17	21	1.00
	NonMäoriNonPacNonAs	18	18	1.00	18	1.00
CXXX Other Cancers	Mäori	57	48	1.19	51	1.12
	Pacific People	12	15	0.80	15	0.80
	NonMäoriNonPac	297	297	1.00	297	1.00
	Asian	18	18	1.00	15	1.20
	NonMäoriNonPacNonAs	279	279	1.00	285	0.98
D03- Melanoma in situ	Mäori	135	87	1.55	90	1.50
	Pacific People	12	6	2.00	6	2.00
	NonMäoriNonPac	8,082	7,383	1.09	7,563	1.07
	Asian	30	12	2.50	9	3.33
	NonMäoriNonPacNonAs	8,052	7,368	1.09	7,554	1.07
D05- Carcinoma in situ breast	Mäori	192	195	0.98	186	1.03
	Pacific People	66	63	1.05	63	1.05
	NonMäoriNonPac	1,776	1,719	1.03	1,722	1.03
	Asian	198	186	1.06	192	1.03
	NonMäoriNonPacNonAs	1,581	1,533	1.03	1,533	1.03
D06- Carcinoma in situ cervix	Mäori	1,659	1,521	1.09	1,476	1.12
	Pacific People	273	204	1.34	222	1.23
	NonMäoriNonPac	6,363	6,276	1.01	6,444	0.99
	Asian	444	390	1.14	405	1.10
	NonMäoriNonPacNonAs	5,919	5,886	1.01	6,039	0.98
D09X Carcinoma in situ other	Mäori	105	108	0.97	99	1.06
	Pacific People	12	21	0.57	18	0.67
	NonMäoriNonPac	2,082	2,013	1.03	2,034	1.02

Ethnicity	Cancer Grouping	Prioritised Ethnicity	First	Census	<i>Census</i>	
			Census	Cancer	to	NHI
			Ethnicity	Register	Cancer	Eth
					Eth	Ratio
		Asian	75	57	1.32	66
		NonMäoriNonPacNonAs	2,004	1,956	1.02	1,968
D45X Chron.						1.02
myeloproliferative &	Mäori		141	144	0.98	135
myelodysplastic disorders		Pacific People	60	63	0.95	63
		NonMäoriNonPac	1,413	1,413	1.00	1,410
		Asian	60	60	1.00	57
		NonMäoriNonPacNonAs	1,356	1,356	1.00	1,353
						1.00

Appendix C

```
/*Read QualityStage Files for NZCMS/CT linkage*/
/*File ReadQSFiles.sas 22.5.2014*/

options papersize=A4;

libname PDefault
"\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\Pass1NoCu
toffs";
libname P1MB1NC
"\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\Pass1MB1N
oCutoffs";
libname P1_3MBWC
"\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\Pass1_3MB
1_3Cut16_5";
libname P4AU1NC
"\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\Pass4NoCu
toffs";
libname P1_7WC
"\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\Pass1_7MB
1_3AU1_4";
libname TryRunNC
"\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\TryRunsNC
";
libname FinLinks
"\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\FinalLink
s";

x "cd \\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\outputs";

%macro
ReadDat (libn=P1MB1NC,passdir=Pass1NoCutoffs,fnname=MatchesPass1,dsname=MatchesPass1,
basedir=\\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);

DATA &libn..&dsname;
LENGTH
    persID      8
    sexa       8
    mb        8
    au        8
    cob1x      8
    DayA       8
    MonthA     8
    YearA      8
    maoriA     8
    pacifA     8
    asianA     8
```

melaaA	8
nonmpaA	8
pacfix	8
asnfix	8
age	8
agemtor	8
BirthCC	8
COB2X	8
Resdnt	8
SexMtor	8
YrOrig	8
temp	\$ 1
patid	\$ 8
sexm	8
mb1	8
mb2	8
mb3	8
mb4	8
mb5	8
auopt01	8
auopt02	8
auopt03	8
auopt04	8
auopt05	8
auopt06	8
auopt07	8
auopt08	8
cobm	8
maorim	8
pacifm	8
asianm	8
melaam	8
nonmpam	8
pacfixm	8
asnfixm	8
nummbs	8
numaus	8
numdobs	8
numMgen	8
numFgen	8
numUgen	8
tempm	\$ 1
qsMatchRefID	8
qsMatchType	\$ 2
qsMatchWeight	8
qsMatchPattern	8
qsMatchLRFlag	\$ 1
qsMatchExactFlag	\$ 1
qsMatchPassNumber	8
qsMatchSetID	8
qsMatchDataID	8

dobdd0	8
dobdd1	8
dobdd2	8
dobdd3	8
dobdd4	8
dobmm0	8
dobmm1	8
dobmm2	8
dobmm3	8
dobmm4	8
dobyy0	8
dobyy1	8
dobyy2	8
dobyy3	8
dobyy4	8 ;
FORMAT	
persID	BEST7.
sex a	BEST1.
mb	BEST7.
au	BEST6.
coblx	BEST1.
DayA	BEST2.
MonthA	BEST2.
YearA	BEST4.
maoriA	BEST1.
pacifA	BEST1.
asianA	BEST1.
mela aA	BEST1.
nonmpaA	BEST1.
pacfix	BEST1.
asnfix	BEST1.
age	BEST3.
agemtor	BEST1.
BirthCC	BEST4.
COB2X	BEST2.
Resdnt	BEST1.
SexMtor	BEST1.
YrOrig	BEST4.
temp	\$CHAR1.
patid	\$CHAR8.
sexm	BEST1.
mb1	BEST7.
mb2	BEST7.
mb3	BEST7.
mb4	BEST7.
mb5	BEST7.
auopt01	BEST6.
auopt02	BEST6.
auopt03	BEST6.
auopt04	BEST6.
auopt05	BEST6.

```

auopt06      BEST6.
auopt07      BEST6.
auopt08      BEST6.
cobm        BEST1.
maorim      BEST1.
pacifm      BEST1.
asianm      BEST1.
melaam      BEST1.
nonmpam     BEST1.
pacfixm     BEST1.
asnfixm     BEST1.
nummbs      BEST1.
numaus      BEST2.
numdobs     BEST1.
numMgen     BEST4.
numFgen     BEST4.
numUgen     BEST1.
tempm       $CHAR1.
qsMatchRefID  BEST7.
qsMatchType   $CHAR2.
qsMatchWeight  BEST13.
qsMatchPattern  z16.
qsMatchLRFlag   $CHAR1.
qsMatchExactFlag $CHAR1.
qsMatchPassNumber BEST1.
qsMatchSetID    BEST7.
qsMatchDataID   BEST6.
dobdd0       BEST2.
dobdd1       BEST2.
dobdd2       BEST2.
dobdd3       BEST2.
dobdd4       BEST2.
dobmm0       BEST2.
dobmm1       BEST2.
dobmm2       BEST2.
dobmm3       BEST2.
dobmm4       BEST2.
dobyy0       BEST4.
dobyy1       BEST4.
dobyy2       BEST4.
dobyy3       BEST4.
dobyy4       BEST4. ;
INFORMAT
persID      BEST7.
sexa        BEST1.
mb          BEST7.
au          BEST6.
coblx       BEST1.
DayA        BEST2.
MonthA      BEST2.
YearA       BEST4.

```

maoria	BEST1.
pacifA	BEST1.
asianA	BEST1.
melaaaA	BEST1.
nonmpaA	BEST1.
pacfix	BEST1.
asnfix	BEST1.
age	BEST3.
agemtor	BEST1.
BirthCC	BEST4.
COB2X	BEST2.
Resdnt	BEST1.
SexMtor	BEST1.
YrOrig	BEST4.
temp	\$CHAR1.
patid	\$CHAR8.
sexm	BEST1.
mb1	BEST7.
mb2	BEST7.
mb3	BEST7.
mb4	BEST7.
mb5	BEST7.
auopt01	BEST6.
auopt02	BEST6.
auopt03	BEST6.
auopt04	BEST6.
auopt05	BEST6.
auopt06	BEST6.
auopt07	BEST6.
auopt08	BEST6.
cobm	BEST1.
maorim	BEST1.
pacifm	BEST1.
asianm	BEST1.
melaam	BEST1.
nonmpam	BEST1.
pacfixm	BEST1.
asnfixm	BEST1.
nummbs	BEST1.
numaus	BEST2.
numdobs	BEST1.
numMgen	BEST4.
numFgen	BEST4.
numUgen	BEST1.
tempm	\$CHAR1.
qsMatchRefID	BEST7.
qsMatchType	\$CHAR2.
qsMatchWeight	BEST13.
qsMatchPattern	BEST16.
qsMatchLRFlag	\$CHAR1.
qsMatchExactFlag	\$CHAR1.

```

qsMatchPassNumber BEST1.
qsMatchSetID      BEST7.
qsMatchDataID     BEST6.
dobdd0           BEST2.
dobdd1           BEST2.
dobdd2           BEST2.
dobdd3           BEST2.
dobdd4           BEST2.
dobmm0           BEST2.
dobmm1           BEST2.
dobmm2           BEST2.
dobmm3           BEST2.
dobmm4           BEST2.
dobyy0           BEST4.
dobyy1           BEST4.
dobyy2           BEST4.
dobyy3           BEST4.
dobyy4           BEST4. ;
INFILE "&basedir.&passdir\&fnname..csv"
LRECL=1000
FIRSTOBS=2
ENCODING="WLATIN1"
DLM='2c'x
MISSOVER
DSD ;
INPUT
persID          : ?? BEST7.
sexa            : ?? BEST1.
mb              : ?? BEST7.
au              : ?? BEST6.
coblx           : ?? BEST1.
DayA            : ?? BEST2.
MonthA          : ?? BEST2.
YearA           : ?? BEST4.
maoriA          : ?? BEST1.
pacifA          : ?? BEST1.
asianA          : ?? BEST1.
melaaaA         : ?? BEST1.
nonmpaaA        : ?? BEST1.
pacfix          : ?? BEST1.
asnfix          : ?? BEST1.
age              : ?? BEST3.
agemtor         : ?? BEST1.
BirthCC          : ?? BEST4.
COB2X           : ?? BEST2.
Resdnt          : ?? BEST1.
SexMtor         : ?? BEST1.
YrOrig          : ?? BEST4.
temp             : $CHAR1.
patid            : $CHAR8.
sexm             : ?? BEST1.

```

```

mb1          : ?? BEST7.
mb2          : ?? BEST7.
mb3          : ?? BEST7.
mb4          : ?? BEST7.
mb5          : ?? BEST7.
auopt01      : ?? BEST6.
auopt02      : ?? BEST6.
auopt03      : ?? BEST6.
auopt04      : ?? BEST6.
auopt05      : ?? BEST6.
auopt06      : ?? BEST6.
auopt07      : ?? BEST6.
auopt08      : ?? BEST6.
cobm         : ?? BEST1.
maorim       : ?? BEST1.
pacifm       : ?? BEST1.
asianm       : ?? BEST1.
melaam       : ?? BEST1.
nonmpam      : ?? BEST1.
pacfixm      : ?? BEST1.
asnfixm      : ?? BEST1.
nummbs       : ?? BEST1.
numaus       : ?? BEST2.
numdobs      : ?? BEST1.
numMgen      : ?? BEST4.
numFgen      : ?? BEST4.
numUgen      : ?? BEST1.
tempm        : $CHAR1.
qsMatchRefID : ?? BEST7.
qsMatchType   : $CHAR2.
qsMatchWeight : ?? COMMA13.
qsMatchPattern: ?? BEST16.
qsMatchLRFlag : $CHAR1.
qsMatchExactFlag: $CHAR1.
qsMatchPassNumber: ?? BEST1.
qsMatchSetID  : ?? BEST7.
qsMatchDataID : ?? BEST6.
dobdd0       : ?? BEST2.
dobdd1       : ?? BEST2.
dobdd2       : ?? BEST2.
dobdd3       : ?? BEST2.
dobdd4       : ?? BEST2.
dobmm0       : ?? BEST2.
dobmm1       : ?? BEST2.
dobmm2       : ?? BEST2.
dobmm3       : ?? BEST2.
dobmm4       : ?? BEST2.
dobyy0       : ?? BEST4.
dobyy1       : ?? BEST4.
dobyy2       : ?? BEST4.
dobyy3       : ?? BEST4.

```

```

dobyy4      : ?? BEST4. ;
RUN;

%mend;
%macro

RdCenRes(libn=P1_7WC,passdir=Pass1_7MB1_3AU1_4,fnname=Cen_ResPass1_7,dsname=Cen_ResPas
s1_7,

basedir=\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);

DATA &libn..&dsname;
LENGTH
    persID      8
    sexa        8
    mb          8
    au          8
    cob1x       8
    DayA        8
    MonthA     8
    YearA      8
    maoriA     8
    pacifA      8
    asianA      8
    melaaaA    8
    nonmpaA    8
    pacfix      8
    asnfix      8
    age         8
    agemtor     8
    BirthCC     8
    COB2X       8
    Resdnt     8
    SexMtor     8
    YrOrig      8
    temp        $ 1
    qsMatchRefID 8
    qsMatchType $ 2
;

FORMAT
    persID      BEST7.
    sexa        BEST1.
    mb          BEST7.
    au          BEST6.
    cob1x       BEST1.
    DayA        BEST2.
    MonthA     BEST2.
    YearA      BEST4.
    maoriA     BEST1.
    pacifA      BEST1.
    asianA      BEST1.
    melaaaA    BEST1.

```

```

nonmpaA      BEST1.
pacfix       BEST1.
asnfix       BEST1.
age          BEST3.
agemtor     BEST1.
BirthCC      BEST4.
COB2X        BEST2.
Resdnt      BEST1.
SexMtor     BEST1.
YrOrig       BEST4.
temp         $CHAR1.
qsMatchRefID  BEST7.
qsMatchType   $CHAR2.

;

INFORMAT
persID      BEST7.
sexa        BEST1.
mb          BEST7.
au          BEST6.
cob1x       BEST1.
DayA        BEST2.
MonthA      BEST2.
YearA       BEST4.
maoriaA    BEST1.
pacifA      BEST1.
asianA      BEST1.
melaaaA    BEST1.
nonmpaA    BEST1.
pacfix      BEST1.
asnfix      BEST1.
age          BEST3.
agemtor     BEST1.
BirthCC      BEST4.
COB2X        BEST2.
Resdnt      BEST1.
SexMtor     BEST1.
YrOrig       BEST4.
temp         $CHAR1.
qsMatchRefID  BEST7.
qsMatchType   $CHAR2.

;

INFILE "&basedir.&passdir\&fnname..csv"
LRECL=1000
FIRSTOBS=2
ENCODING="WLATIN1"
DLM='2c'x
MISSOVER
DSD ;

INPUT
persID      : ?? BEST7.
sexa        : ?? BEST1.

```

```

        mb          : ?? BEST7.
        au          : ?? BEST6.
        cob1x       : ?? BEST1.
        DayA        : ?? BEST2.
        MonthA      : ?? BEST2.
        YearA       : ?? BEST4.
        maoriA      : ?? BEST1.
        pacifA      : ?? BEST1.
        asianA      : ?? BEST1.
        melaA       : ?? BEST1.
        nonmpaA     : ?? BEST1.
        pacfix      : ?? BEST1.
        asnfix      : ?? BEST1.
        age          : ?? BEST3.
        agemtor     : ?? BEST1.
        BirthCC     : ?? BEST4.
        COB2X       : ?? BEST2.
        Resdnt      : ?? BEST1.
        SexMtor     : ?? BEST1.
        YrOrig       : ?? BEST4.
        temp         : $CHAR1.
        qsMatchRefID: ?? BEST7.
        qsMatchType  : $CHAR2.

;

RUN;

%mend;

%macro
RdCTRes(libn=P1_7WC,passdir=Pass1_7MB1_3AU1_4,fnname=Ct_ResPass1_7,dsname=Ct_ResPass1_
7,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);

DATA &libn..&dsname;
LENGTH
    patid      $ 8
    sexm       8
    mb1        8
    mb2        8
    mb3        8
    mb4        8
    mb5        8
    auopt01    8
    auopt02    8
    auopt03    8
    auopt04    8
    auopt05    8
    auopt06    8
    auopt07    8
    auopt08    8

```

cobm	8
maorim	8
pacifm	8
asianm	8
melaam	8
nonmpam	8
pacfixm	8
asnfixm	8
nummbs	8
numaus	8
numdobs	8
numMgen	8
numFgen	8
numUgen	8
tempm	\$ 1
qsMatchDataID	8
qsMatchType	\$ 2
dobdd0	8
dobdd1	8
dobdd2	8
dobdd3	8
dobdd4	8
dobmm0	8
dobmm1	8
dobmm2	8
dobmm3	8
dobmm4	8
doby0	8
doby1	8
doby2	8
doby3	8
doby4	8 ;

FORMAT

patid	\$CHAR8.
sexm	BEST1.
mb1	BEST7.
mb2	BEST7.
mb3	BEST7.
mb4	BEST7.
mb5	BEST7.
auopt01	BEST6.
auopt02	BEST6.
auopt03	BEST6.
auopt04	BEST6.
auopt05	BEST6.
auopt06	BEST6.
auopt07	BEST6.
auopt08	BEST6.
cobm	BEST1.
maorim	BEST1.
pacifm	BEST1.

```

asianm      BEST1.
melaam      BEST1.
nonmpam     BEST1.
pacfixm     BEST1.
asnfixm     BEST1.
nummbs      BEST1.
numaus      BEST2.
numdobs     BEST1.
numMgen     BEST4.
numFgen     BEST4.
numUgen     BEST1.
tempm       $CHAR1.
qsMatchDataID  BEST6.
qsMatchType   $CHAR2.
dobdd0      BEST2.
dobdd1      BEST2.
dobdd2      BEST2.
dobdd3      BEST2.
dobdd4      BEST2.
dobmm0      BEST2.
dobmm1      BEST2.
dobmm2      BEST2.
dobmm3      BEST2.
dobmm4      BEST2.
dobyy0      BEST4.
dobyy1      BEST4.
dobyy2      BEST4.
dobyy3      BEST4.
dobyy4      BEST4. ;
INFORMAT
  patid      $CHAR8.
  sexm      BEST1.
  mb1       BEST7.
  mb2       BEST7.
  mb3       BEST7.
  mb4       BEST7.
  mb5       BEST7.
  auopt01    BEST6.
  auopt02    BEST6.
  auopt03    BEST6.
  auopt04    BEST6.
  auopt05    BEST6.
  auopt06    BEST6.
  auopt07    BEST6.
  auopt08    BEST6.
  cobm      BEST1.
  maorim    BEST1.
  pacifm    BEST1.
  asianm    BEST1.
  melaam    BEST1.
  nonmpam   BEST1.

```

```

pacfixm      BEST1.
asnfixm      BEST1.
nummbs       BEST1.
numaus       BEST2.
numdobs      BEST1.
numMgen      BEST4.
numFgen      BEST4.
numUgen      BEST1.
tempm        $CHAR1.
qsMatchDataID BEST6.
qsMatchType   $CHAR2.
dobdd0       BEST2.
dobdd1       BEST2.
dobdd2       BEST2.
dobdd3       BEST2.
dobdd4       BEST2.
dobmm0       BEST2.
dobmm1       BEST2.
dobmm2       BEST2.
dobmm3       BEST2.
dobmm4       BEST2.
dobyy0       BEST4.
dobyy1       BEST4.
dobyy2       BEST4.
dobyy3       BEST4.
dobyy4       BEST4. ;
INFILE "&basedir.&passdir\&fnname..csv"
LRECL=1000
FIRSTOBS=2
ENCODING="WLATIN1"
DLM='2c'x
MISSOVER
DSD ;
INPUT
patid        : $CHAR8.
sexm         : ?? BEST1.
mb1          : ?? BEST7.
mb2          : ?? BEST7.
mb3          : ?? BEST7.
mb4          : ?? BEST7.
mb5          : ?? BEST7.
auopt01      : ?? BEST6.
auopt02      : ?? BEST6.
auopt03      : ?? BEST6.
auopt04      : ?? BEST6.
auopt05      : ?? BEST6.
auopt06      : ?? BEST6.
auopt07      : ?? BEST6.
auopt08      : ?? BEST6.
cobm         : ?? BEST1.
maorim       : ?? BEST1.

```

```

pacifm      : ?? BEST1.
asianm      : ?? BEST1.
melaam      : ?? BEST1.
nonmpam     : ?? BEST1.
pacfixm     : ?? BEST1.
asnfixm     : ?? BEST1.
nummbs      : ?? BEST1.
numaus      : ?? BEST2.
numdobs     : ?? BEST1.
numMgen     : ?? BEST4.
numFgen     : ?? BEST4.
numUgen     : ?? BEST1.
tempm       : $CHAR1.
qsMatchDataID : ?? BEST6.
qsMatchType  : $CHAR2.
dobdd0      : ?? BEST2.
dobdd1      : ?? BEST2.
dobdd2      : ?? BEST2.
dobdd3      : ?? BEST2.
dobdd4      : ?? BEST2.
dobmm0      : ?? BEST2.
dobmm1      : ?? BEST2.
dobmm2      : ?? BEST2.
dobmm3      : ?? BEST2.
dobmm4      : ?? BEST2.
dobyy0      : ?? BEST4.
dobyy1      : ?? BEST4.
dobyy2      : ?? BEST4.
dobyy3      : ?? BEST4.
dobyy4      : ?? BEST4. ;

RUN;

%mend;

%macro FindCut(libn=P1MB1NC,passdir=Pass1NoCutoffs,dsname=MatchesPass1,
basedir=\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\",
plabel=Pass 1 No Cutoff,lowc=16,upc=20,fmtbase=5.0,fmtsub=5.1,dosub=Y);

%let dosub=%upcase(&dosub);
goptions papersize=a4;
options papersize=a4;

options orientation=portrait;
ods rtf file="&basedir.&passdir\&libn.freqs.rtf";
options orientation=portrait;

TITLE1 "NZCMS/CT 2006/11 : &plabel Distribution of Weights";

proc freq data=&libn..&dsname;
tables qsMatchType qsMatchPassNumber qsMatchLRFlag qsMatchExactFlag
/*qsMatchPattern*/;

```

```

run;

proc tabulate data=&libn..&dsname;
class qsMatchPassNumber qsMatchPattern;
var qsMatchWeight;
table all qsMatchPassNumber qsmatchpattern,n qsMatchWeight*(min p1 p5 p10 p25 mean
median P75 p90 p95 p99 max)*f=5.2;
run;

ods rtf close;

proc sort data=&libn..&dsname out=&dsname.sorted;
by qsMatchPassNumber descending qsmatchweight qsmatchpattern;
run;

ods graphics on/width=280mm height=200mm;

options orientation=landscape;
ods rtf file="&basedir.&passdir\WeightDist.rtf";
options orientation=landscape;

TITLE1 "NZCMS/CT 2006/11 : &plabel      Distribution of Weights";
PROC sgplot DATA=&libn..&dsname;
    histogram qsMatchWeight
;
RUN; QUIT;

proc tabulate data=&libn..&dsname;
class qsMatchPassNumber qsmatchpattern qsmatchweight;
format qsmatchweight &fmtbase;
table all qsMatchPassNumber qsmatchpattern,(all qsmatchweight)*n=''*f=6.;
run;

%if "&dosub" eq "Y" %then %do;

proc tabulate data=&libn..&dsname;
where qsmatchweight ge &lowc and qsmatchweight le &upc;
class qsMatchPassNumber qsmatchpattern qsmatchweight;
format qsmatchweight &fmtsub;
table all qsMatchPassNumber qsmatchpattern,(all qsmatchweight)*n=''*f=6.;
run;

PROC sgplot DATA=&libn..&dsname;
where qsmatchweight ge &lowc and qsmatchweight le &upc;
    histogram qsMatchWeight
;
RUN; QUIT;
ods rtf close;

data look;
set &dsname.sorted;

```

```

where qsmatchweight ge &lowc and qsmatchweight le &upc;
run;

%end;

title;

%mend;

%ReadDat(libn=P1MB1NC,passdir=Pass1MB1NoCutoffs,fnname=MatchesPass1,dsname=MatchesPass
1,
basedir=\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);

%FindCut(libn=P1MB1NC,passdir=Pass1MB1NoCutoffs,dsname=MatchesPass1,
basedir=\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\",
plabel=Pass 1 No Cutoff,lowc=15,upc=16.9,fmtbase=5.0,fmtsub=5.1);

/*Make cutoff 16.499 for meshblock passes (Later changed to 16 because of QualityStage
issues - doesn't make much difference)*/

%ReadDat(libn=P1_3MBWC,passdir=Pass1_3MB1_3Cut16_5,fnname=MatchesPass1,dsname=MatchesP
ass1);
%FindCut(libn=P1_3MBWC,passdir=Pass1_3MB1_3Cut16_5,dsname=MatchesPass1,
plabel=Passes 1 to 3 MB1-MB3 Cutoff
16.5,lowc=16,upc=20,fmtbase=5.0,fmtsub=5.1,dosub=Y);

%ReadDat(libn=P4AU1NC,passdir=Pass4NoCutoffs,fnname=AUMatchesPass4,dsname=AUMatchesPas
s4);
%FindCut(libn=P4AU1NC,passdir=Pass4NoCutoffs,dsname=AUMatchesPass4,
plabel=Passes 4 AU1 No Cutoff,lowc=14,upc=15.9,fmtbase=5.0,fmtsub=5.1,dosub=Y);

%ReadDat(libn=P1_7WC,passdir=Pass1_7MB1_3AU1_4,fnname=MatchesPass1_7,dsname=MatchesPas
s1_7);
%RdCenRes(libn=P1_7WC,passdir=Pass1_7MB1_3AU1_4,fnname=Cen_ResPass1_7,dsname=Cen_ResPa
ss1_7,
basedir=\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%RdCTRes(libn=P1_7WC,passdir=Pass1_7MB1_3AU1_4,fnname=Ct_ResPass1_7,dsname=Ct_ResPass1
_7,
basedir=\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);

data look;
set p1_7wc.ct_respass1_7;
where abs(nummgen-numfgen-numugen) ne sum(nummgen,numfgen,numugen);
run;

proc freq data=p1_7wc.ct_respass1_7;
tables nummbs numaus numdobs;

```

```

run;

/*Look at possible matches*/
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=TryMB1,dsname=TryMB1,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=TryMB2,dsname=TryMB2,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=TryMB3,dsname=TryMB3,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=TryMB4,dsname=TryMB4,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU1,dsname=TryAU1nc,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU1wb,dsname=TryAU1wb,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU2wb,dsname=TryAU2wb,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU3wb,dsname=TryAU3wb,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU4wb,dsname=TryAU4wb,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU5wb,dsname=TryAU5wb,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU6wb,dsname=TryAU6wb,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU7wb,dsname=TryAU7wb,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);
%ReadDat(libn=TryRunNC,passdir=TryRunsNC,fnname=MatchesTryAU8wb,dsname=TryAU8wb,
basedir=\\stats.govt.nz\sas\02bau\SocPopStats\Census\NZCMS_CT2006Linkage\QSDatasets\);

TITLE1 "NZCMS/CT 2006/11 : TryMB1 No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryMB1;
    histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryMB2 No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryMB2;
    histogram qsMatchWeight;
RUN; QUIT;

```

```

TITLE1 "NZCMS/CT 2006/11 : TryMB3 No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryMB3;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryMB4 No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryMB4;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU1nc No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU1nc;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU1wb No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU1wb;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU2wb No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU2wb;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU3wb No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU3wb;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU4wb No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU4wb;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU5wb No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU5wb;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU6wb No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU6wb;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU7wb No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU7wb;
   histogram qsMatchWeight;
RUN; QUIT;
TITLE1 "NZCMS/CT 2006/11 : TryAU8wb No Cutoff      Distribution of Weights";
PROC sgplot DATA=TryRunNC.TryAU8wb;
   histogram qsMatchWeight;
RUN; QUIT;

title;

/*For MB passes, blocked on MB
in qsmatchpattern : 1=sex, 2=dob DD, 3=MM, 4=YY, 5=COB, 6=Maori, 7=Pacific, 8=Asian,
9=nonMPA, 10=PacFix, 11=AsianFix, 12=MELAA 13-16 all 0*/
data possibleMBs;

```

```

set tryrunnc.trymb1(in=a) tryrunnc.trymb2(in=b) tryrunnc.trymb3(in=c)
tryrunnc.trymb4(in=d);
where qsmatchweight ge 13;
format qsmatchpassnumber;
if a then qsMatchpassnumber=11;
else if b then qsMatchpassnumber=12;
else if c then qsMatchpassnumber=13;
else if d then qsMatchpassnumber=14;
keepmatch=.;
if qsmatchweight ge 16 then keepmatch=1;
else if qsmatchweight ge 13 and qsmatchpattern in (3333333331130000,
3333333001130000,333330301130000,333303301130000,3333233331130000,
3333233301100000,3333233001230000,3333233001130000,3333230301130000,
3333203301130000,3333033331130000,3332333331130000,333233331030000,
3323333331130000,3303333331130000,3233333331130000,3033333331130000,
3033333330130000,303330332130000,3033233331130000,0333333331130000,
0333233331130000,0333033332130000,0333033331230000,0333033331130000,
3033333331030000,3033333331100000,3233233331130000,3303333330130000,
3303333331030000,3323033331130000,3323233331130000,
0333333330130000,0333333331030000,3333033331100000)

then keepmatch=1;
else keepmatch=0;
run;

options orientation=landscape;
ods rtf file="PossibleMBs.rtf";
options orientation=landscape;

TITLE1 "NZCMS/CT 2006/11 : Possible MB passes      Distribution of Weights";

proc tabulate data=possibleMBs;
class qsMatchPassNumber qsmatchpattern qsmatchweight keepmatch;
format qsmatchweight 5.1;
table keepmatch,all qsMatchPassNumber qsmatchpattern,(all qsmatchweight)*n=''*f=6. ;
run;

ods rtf close;

data tryrunnc.KeepMBmatches(drop=keepmatch);
set possibleMBs;
where keepmatch eq 1;
run;

/*Look at difference between AU1 with sex block and without sex block*/
data matchauloptions(keep=persid patid sexa sexm numfgen numugen qsmatchweight
qsmatchpattern source);
set tryrunnc.tryaulnc(in=a) tryrunnc.tryaulwb(in=b);
if a then source=1; else if b then source=2;
run;

proc sort data=matchauloptions;

```

```

by persid patid source qsmatchpattern;
run;

data matchaulpairs(drop=qsmatchweight qsmatchpattern source);
set matchauloptions;
by persid patid source;
retain ncweight ncmatchpattern wbweight wbmatchpattern status;
length ncmatchpattern wbmatchpattern $16;
if first.patid then do;
  ncweight=.; ncmatchpattern=''; wbweight=.; wbmatchpattern=''; status=0;
end;
if source eq 1 then do;
  ncweight=qsmatchweight; ncmatchpattern=qsmatchpattern;status+10;
end;
else if source eq 2 then do;
  wbweight=qsmatchweight; wbmatchpattern=qsmatchpattern;status+1;
end;
if last.patid then output;
run;

proc freq data=matchaulpairs;
table status;
run;

data diffaupair sameaupair;
set matchaulpairs;
diffweight=ncweight-wbweight;
if status in (1,10) then output diffaupair;
else if status eq 11 then output sameaupair;
run;

proc summary data=diffaupair(keep=persid patid ncweight wbweight) chartype;
class persid patid;
types persid patid;
var ncweight wbweight;
output out=checkfreq min=minncwgt minwbwgt max=maxncwgt maxwbwgt;
run;

data multpairs;
set checkfreq;
where _freq_ gt 1;
run;
/*Above shows that for most one of the duplicates has a much lower weight than the
other*/

/*suggest look at possible pairs separately for AU1nc, and aulwb-au8wb and then look
to see
  if there are duplicates*/
/*For AU passes, blocked on AU but not sex
weight is 1.01 higher for males and 0.94 higher for females

```

```

in qsmatchpattern : 1=sex, 2=dob DD, 3=MM, 4=YY, 5=COB, 6=Maori, 7=Pacific, 8=Asian,
9=nonMPA, 10=PacFix, 11=AsianFix, 12=MELAA 13-16 all 0*/
data possibleAUsNC;
set tryrunnc.tryaulnc(in=a);
where qsmatchweight ge 13;
format qsmatchpassnumber;
qsMatchpassnumber=30;
keepmatch=.;
if qsmatchweight ge 16 then keepmatch=1;
else if qsmatchweight ge 13 and qsmatchpattern in (3333333331130000,
3333333001130000,3333330301130000,3333303301130000,3333233331130000,
3333233301100000,3333233001230000,3333233001130000,3333230301130000,
3333203301130000,3333033331130000,3332333331130000,3332333331030000,
332333331130000,3303333331130000,3233333331130000,3033333331130000,
3033333330130000,3033330332130000,3033233331130000,0333333331130000,
0333233331130000,0333033332130000,0333033331230000,0333033331130000,
303333331030000,303333331100000,3233233331130000,3303333330130000,
3303333331030000,3323033331130000,3323233331130000,
0333333330130000,0333333331030000,3333033331100000)
then keepmatch=1;
else keepmatch=0;
run;

options orientation=landscape;
ods rtf file="PossibleAU.nc.rtf";
options orientation=landscape;

TITLE1 "NZCMS/CT 2006/11 : Possible AU (no sex block) passes      Distribution of
Weights";

proc tabulate data=possibleAUsNC;
class qsMatchPassNumber qsmatchpattern qsmatchweight keepmatch;
format qsmatchweight 5.1;
table keepmatch,all qsMatchPassNumber qsmatchpattern,(all qsmatchweight)*n=''*f=6. ;
run;

ods rtf close;

data tryrunnc.KeepAUncmatches(drop=keepmatch);
set possibleAUsNC;
where keepmatch eq 1;
run;

/*For AU passes, blocked on AU and on sex
in qsmatchpattern : 1=dob DD, 2=MM, 3=YY, 4=COB, 5=Maori, 6=Pacific, 7=Asian,
8=nonMPA, 9=PacFix, 10=AsianFix, 11=MELAA 12-16 all 0*/
data possibleAUsWB;
set tryrunnc.tryaulwb(in=a) tryrunnc.tryau2wb(in=b) tryrunnc.tryau3wb(in=c)
tryrunnc.tryau4wb(in=d) tryrunnc.tryau5wb(in=e) tryrunnc.tryau6wb(in=f)
tryrunnc.tryau7wb(in=g) tryrunnc.tryau8wb(in=h);
where qsmatchweight ge 12;

```

```

format qsmatchpassnumber;
if a then qsMatchpassnumber=21;
else if b then qsMatchpassnumber=22;
else if c then qsMatchpassnumber=23;
else if d then qsMatchpassnumber=24;
else if e then qsMatchpassnumber=25;
else if f then qsMatchpassnumber=26;
else if g then qsMatchpassnumber=27;
else if h then qsMatchpassnumber=28;
keepmatch=.;
if qsmatchweight ge 15 then keepmatch=1;
else if qsmatchweight ge 12 and qsmatchpattern in (3333333311300000,
3333330011300000,3333303011300000,3333033011300000,3332333311300000,
3332333011000000,3332330012300000,3332330011300000,3332303011300000,
3332033011300000,3330333311300000,3323333311300000,3323333310300000,
3233333311300000,3033333311300000,2333333311300000,0333333311300000,
0333333301300000,0333303321300000,0332333311300000,3333333311300000,
3332333311300000,3330333321300000,3330333312300000,3330333311300000,
0333333310300000,0333333311000000,2332333311300000,3033333301300000,
3033333310300000,3230333311300000,3232333311300000,
3333333301300000,3333333310300000,3330333311000000)
then keepmatch=1;
else keepmatch=0;
run;

options orientation=landscape;
ods rtf file="PossibleAUswb.rtf";
options orientation=landscape;

TITLE1 "NZCMS/CT 2006/11 : Possible AU (with sex block) passes      Distribution of
Weights";

proc tabulate data=possibleAUsWB;
class qsMatchPassNumber qsmatchpattern qsmatchweight keepmatch;
format qsmatchweight 5.1;
table keepmatch,all qsMatchPassNumber qsmatchpattern,(all qsmatchweight)*n=''*f=6. ;
run;

ods rtf close;

data tryrunnc.KeepAUwbmatches(drop=keepmatch);
set possibleAUswb;
where keepmatch eq 1;
run;

data look;
set tryrunnc.KeepAUwbmatches;
where qsmatchweight lt 13;
run;
/*The links look acceptable*/

```

```

data tryrunnc.keepmatchesposs;
set tryrunnc.keepmbmatches tryrunnc.keepauncmatches(in=b)
tryrunnc.keepauwbmatches(in=c);
run;

proc summary data=tryrunnc.keepmatchesposs(keep=persid patid qsMatchPassNumber)
chartype;
class persid patid;
types persid patid persid*patid;
var qsMatchPassNumber;
output out=checkfreq min=minpass max=maxpass;
run;

data multipairs;
set checkfreq;
where _freq_ gt 1;
run;

proc sort data=tryrunnc.keepmatchesposs;
by persid patid descending qsmatchweight qsmatchpassnumber;
run;

data tryrunnc.keepmatchesposs;
set tryrunnc.keepmatchesposs;
by persid patid;
retain persmatchopt;
if first.persid then persmatchopt=1; else persmatchopt+1;
run;

proc sort data=tryrunnc.keepmatchesposs;
by patid persid descending qsmatchweight qsmatchpassnumber;
run;

data tryrunnc.keepmatchesposs;
set tryrunnc.keepmatchesposs;
by patid persid;
retain patmatchopt;
if first.patid then patmatchopt=1; else patmatchopt+1;
run;

data tryrunnc.keepmatchesposs;
set tryrunnc.keepmatchesposs;
if persmatchopt ge 2 and patmatchopt ge 2 and persmatchopt eq patmatchopt then delete;
run;

/*Second pass of counting pairs*/
proc summary data=tryrunnc.keepmatchesposs(keep=persid patid qsMatchPassNumber
qsmatchweight) chartype;
class persid patid;
types persid patid persid*patid;
var qsMatchPassNumber qsmatchweight;

```

```

output out=checkfreq min=minpass minwgt max=maxpass maxwgt;
run;

data multpairs;
set checkfreq;
where _freq_ gt 1;
run;

proc sort data=tryrunnc.keepmatchesposs;
by persid patid descending qsmatchweight qsmatchpassnumber;
run;

data tryrunnc.keepmatchesposs;
set tryrunnc.keepmatchesposs(drop=persmatchopt patmatchopt);
by persid patid;
retain persmatchopt;
if first.persid then persmatchopt=1; else persmatchopt+1;
run;

proc sort data=tryrunnc.keepmatchesposs;
by patid persid descending qsmatchweight qsmatchpassnumber;
run;

data tryrunnc.keepmatchesposs;
set tryrunnc.keepmatchesposs;
by patid persid;
retain patmatchopt;
if first.patid then patmatchopt=1; else patmatchopt+1;
run;

data tryrunnc.keepmatchesposs;
set tryrunnc.keepmatchesposs;
if persmatchopt ge 2 and patmatchopt ge 2 and persmatchopt eq patmatchopt then delete;
run;

proc summary data=tryrunnc.keepmatchesposs chartype nway;
class persid;
var qsmatchweight;
output out=totpersids(rename=(_freq_=NumPersId) drop=_type_) min=minperswgt
max=maxperswgt;
run;

proc summary data=tryrunnc.keepmatchesposs chartype nway;
class patid;
var qsmatchweight;
output out=totpatids(rename=(_freq_=NumPatid) drop=_type_) min=minpatwgt
max=maxpatwgt;
run;

proc sort data=tryrunnc.keepmatchesposs;
by persid;

```

```

run;

proc sort data=totpersids;
by persid;
run;

data tryrunnc.keepmatchesposs;
merge tryrunnc.keepmatchesposs(in=a) totpersids(in=b);
by persid;
run;

proc sort data=tryrunnc.keepmatchesposs;
by patid;
run;

proc sort data=totpatids;
by patid;
run;

data tryrunnc.keepmatchesposs;
merge tryrunnc.keepmatchesposs(in=a) totpatids(in=b);
by patid;
run;

data keep posskeep possdel;
retain persid patid numpersid numpatid qsmatchpattern qsmatchweight qsmatchpassnumber
minperswgt maxperswgt minpatwgt maxpatwgt;
set tryrunnc.keepmatchesposs;
if NumPersId eq 1 and NumPatid eq 1 then output keep;
else do;
  if (numpersid eq 1 and numpatid ge 2) then do;
    if qsmatchweight eq maxpatwgt and minpatwgt lt 15 and maxpatwgt ge 15 then output
    posskeep;
    else output possdel;
  end;
  if (numpersid ge 2 and numpatid eq 1) then do;
    if qsmatchweight eq maxperswgt and minperswgt lt 15 and maxperswgt ge 15 then output
    posskeep;
    else output possdel;
  end;
end;
run;

proc summary data=posskeep chartype;
class persid patid;
types persid patid persid*patid;
var qsMatchPassNumber qsmatchweight;
output out=checkfreq min=minpass minwgt max=maxpass maxwgt;
run;

```

```

data tryrunnc.keepTryMatches(drop=umpersid numpatid minperswgt maxperswgt minpatwgt
maxpatwgt);
set keep posskeep;
run;

data finlinks.finallinksCT2006;
set P1_7WC.MatchesPass1_7 tryrunnc.keepTryMatches;
format qsmatchpassnumber 3.;
run;

options orientation=landscape;
ods rtf file="NZCMSCT2006LinkStats.rtf";
options orientation=landscape;

TITLE1 "NZCMS/CT 2006/11 : Linkage Details      Distribution of Weights";

proc tabulate data=finlinks.finallinksCT2006;
class qsMatchPassNumber qsmatchpattern;
var qsMatchWeight;
table all qsMatchPassNumber,n*f=comma9. qsMatchWeight*(min p1 p5 p10 p25 mean median
P75 p90 p95 p99 max)*f=5.2;
table all qsmatchpattern,(all qsMatchPassNumber)*n=''*f=7. ;
run;

proc tabulate data=finlinks.finallinksCT2006;
class qsMatchPassNumber qsmatchpattern qsmatchweight;
format qsmatchweight 5.0;
table all qsMatchPassNumber qsmatchpattern,(all qsmatchweight)*n=''*f=6. ;
run;

ods rtf close;

```

Appendix D

Match Specification Description

Project:	WPRDQS02:lcf_study
Report Name:	NZCMS MB Passes 1-3 Match Specification
Report Generated:	2014-05-23 16:45:08
Time Zone:	UTC +12:00
User:	null null
Match Specification:	NZCMS_MBPasses1_3

Introduction

The Match Specification Description presents the contents of a match specification that was created in the Match Designer. This report also describes all the active match passes (passes that are not in the holding area) that are contained in the match specification. For more information about match specifications, match passes, and other information related to defining and testing match criteria, refer to the IBM InfoSphere QualityStage User Guide.

The following terms are referenced throughout this report and are defined as follows:

Blocking Columns

Subsets of columns that you define as a block because they have a certain data value within the columns that is the same. Each match pass then searches for matching records in your data source or between data sources but only within the specified block of columns. This restriction is pivotal to the success of your match because it allows for efficient and manageable processing.

Comparison Type

Provides different ways to match values. Comparison types provide a means to score records by using various criteria that contribute to the determination of a match.

NUMERIC

Performs an algebraic comparison of two numbers. Leading spaces are converted to zeros and the numbers are then compared.

Cutoffs

Match Cutoff

The composite weight at or above which a pair of values is considered a match. In other words, any record pair that receives a composite weight that is greater than or equal to this cutoff is considered a match.

Clerical Cutoff

The composite weight at or above which a pair of values is marked for clerical review. In other words, any record pair that receives a composite weight that is lower than this cutoff is considered a non-match, while a record pair that receives a composite weight that is greater than or equal to this cutoff but less than the match cutoff is considered for clerical review. Records marked for clerical review fall between the clerical and match cutoffs.

Duplicate Cutoff

For a reference match only, the weight at or above which a pair of values is considered a duplicate. In other words, any record pair that receives a composite weight that is greater than or equal to this cutoff is considered a duplicate. The duplicate cutoff must be greater than the match cutoff.

169

Default Handling for Missing Weights

Sets the default score for a column when one or both values are missing in a comparison.



Match Specification Description

Introduction

Match Command

The set of parameters within a match pass that define the type of matching that occurs and the adjustments that are applied to the results. A match pass can contain multiple match commands.

Match Pass

A named collection of matching criteria that are applied during a single pass through the match specification input data. A match specification can contain multiple match passes.

Match Type

Reference Match

A match that has two input sources: a data source and a reference source. The match type defines the way that the reference match uses the input sources.

One-to-one

Matches only one data source record to one reference source record. In other words, each reference source record can match only one data source record.

Reverse

A match option that assigns the agreement weight when the columns disagree and the disagreement weight when the columns agree.

Vector

A matching option that you must select when the column values that you want to match consist of one-dimensional data arrays (vectors).

Match Specification

Name	Match Type	Maximum Frequency	Default Handling for Missing Weights
NZCMS_MBPasses1_3	Reference One-to-one	0	Zero (default)

Match Pass #1

Name	Match Cutoff	Clerical Cutoff	Duplicate Cutoff	Data Overflow	Reference Overflow
NZCMS_MBPass1	16	16	-	10000	10000

Blocking Columns

Block Name	Comparison Type	Data Column Name	Reference Column Name
mb1 And mb	NUMERIC	mb1	mb

Match Commands

Command Name	Comparison Type	Data Column Name	Reference Column Name	
sexm And sexa	NUMERIC	sexm	sexa	
	m-prob	u-prob	Vector	Reverse
	0.99	0.5	No	No

Command Name	Comparison Type	Data Column Name	Reference Column Name
dobdd And DayA	NUMERIC	dobdd, DayA	-



Match Specification Description

	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.97	0.033	Yes	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
dobmm And MonthA	NUMERIC		dobmm, MonthA		-
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.98	0.083	Yes	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
dobyy And YearA	NUMERIC		dobyy, YearA		-
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.99	0.013	Yes	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
cobm And cob1x	NUMERIC		cobm		cob1x
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.85	0.4	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
maorim And maoriA	NUMERIC		maorim		maoriA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.8	0.5	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
pacifm And pacifA	NUMERIC		pacifm		pacifA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.8	0.5	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
asianm And asianA	NUMERIC		asianm		asianA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.8	0.5	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
nonmpam And nonmpaA	NUMERIC		nonmpam		nonmpaA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.8	0.5	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
pacfixm And pacfix	NUMERIC		pacfixm		pacfix
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.92	0.033	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
asnfixm And asnfix	NUMERIC		asnfixm		asnfix
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.92	0.033	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
melaam And melaaA	NUMERIC		melaam		melaaA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode



Match Specification Description

0.8 0.5 No No -

Match Pass #2

Name	Match Cutoff	Clerical Cutoff	Duplicate Cutoff	Data Overflow	Reference Overflow
NZCMS_MBPass2	16	16	-	10000	10000
Blocking Columns					
Block Name	Comparison Type		Data Column Name		Reference Column Name
mb2 And mb	NUMERIC		mb2		mb
Match Commands					
Command Name	Comparison Type		Data Column Name		Reference Column Name
sexm And sexa	NUMERIC		sexm		sexा
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.99	0.5	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
dobdd And DayA	NUMERIC		dobdd, DayA		-
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.97	0.033	Yes	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
dobmm And MonthA	NUMERIC		dobmm, MonthA		-
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.98	0.083	Yes	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
dobyx And YearA	NUMERIC		dobyx, YearA		-
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.99	0.013	Yes	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
cobm And cob1x	NUMERIC		cobm		cob1x
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.85	0.4	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
maorim And maoriA	NUMERIC		maorim		maoriA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.8	0.5	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
pacifm And pacifA	NUMERIC		pacifm		pacifA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.8	0.5	No	No	-
Command Name	Comparison Type		Data Column Name		Reference Column Name
asianm And asianA	NUMERIC		asianm		asianA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode



Match Specification Description

	0.8	0.5	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
nonmpam And nonmpaA	NUMERIC		nonmpam			nonmpaA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.8	0.5	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
pacfixm And pacfix	NUMERIC		pacfixm			pacfix
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.92	0.033	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
asnfixm And asnfix	NUMERIC		asnfixm			asnfix
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.92	0.033	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
melaam And melaaA	NUMERIC		melaam			melaaA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.8	0.5	No	No	-	

Match Pass #3

Name	Match Cutoff	Clerical Cutoff	Duplicate Cutoff	Data Overflow	Reference Overflow
NZCMS_MBPass3	16	16	-	10000	10000
Blocking Columns					
Block Name	Comparison Type		Data Column Name		
mb3 And mb	NUMERIC		mb3		
Match Commands					
Command Name	Comparison Type		Data Column Name		
sexm And sexa	NUMERIC		sexm		
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.99	0.5	No	No	-
Command Name	Comparison Type		Data Column Name		
dobdd And DayA	NUMERIC		dobdd, DayA		
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.97	0.033	Yes	No	-
Command Name	Comparison Type		Data Column Name		
dobmm And MonthA	NUMERIC		dobmm, MonthA		
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode
	0.98	0.083	Yes	No	-
Command Name	Comparison Type		Data Column Name		
dobyy And YearA	NUMERIC		dobyy, YearA		
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode



Match Specification Description

	0.99	0.013	Yes	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
cobm And cob1x	NUMERIC		cobm			cob1x
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.85	0.4	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
maorim And maoriA	NUMERIC		maorim			maoriA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.8	0.5	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
pacifm And pacifA	NUMERIC		pacifm			pacifA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.8	0.5	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
asianm And asianA	NUMERIC		asianm			asianA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.8	0.5	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
nonmpam And nonmpaA	NUMERIC		nonmpam			nonmpaA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.8	0.5	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
pacfixm And pacfix	NUMERIC		pacfixm			pacfix
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.92	0.033	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
asnfixm And asnfix	NUMERIC		asnfixm			asnfix
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.92	0.033	No	No	-	
Command Name	Comparison Type		Data Column Name			Reference Column Name
melaam And melaaA	NUMERIC		melaam			melaaA
	m-prob	u-prob	Vector	Reverse	Parameter(s)/Mode	
	0.8	0.5	No	No	-	

Data Table Definition: CTLINKAFTERDDMMYY

Column Name	Used in Pass #n Blocks	Used in Pass #n Commands	SQL Type	Length	Description	Nullable
patid	-	-	VarChar	8	-	Yes
sexm	-	1	Integer	10	-	Yes
mb1	1	-	Integer	10	-	Yes
mb2	2	-	Integer	10	-	Yes



Match Specification Description

Data Table Definition: CTLINKafterDDMMYY

Column Name	Used in Pass #n Blocks	Used in Pass #n Commands	SQL Type	Length	Description	Nullable
mb3	3	-	Integer	10	-	Yes
mb4	-	-	Integer	10	-	Yes
mb5	-	-	Integer	10	-	Yes
auopt01	-	-	Integer	10	-	Yes
auopt02	-	-	Integer	10	-	Yes
auopt03	-	-	Integer	10	-	Yes
auopt04	-	-	Integer	10	-	Yes
auopt05	-	-	Integer	10	-	Yes
auopt06	-	-	Integer	10	-	Yes
auopt07	-	-	Integer	10	-	Yes
auopt08	-	-	Integer	10	-	Yes
cobm	-	1	Integer	10	-	Yes
maorim	-	1	Integer	10	-	Yes
pacifm	-	1	Integer	10	-	Yes
asianm	-	1	Integer	10	-	Yes
melaam	-	1	Integer	10	-	Yes
nonmpam	-	1	Integer	10	-	Yes
pacfixm	-	1	Integer	10	-	Yes
asnfixm	-	1	Integer	10	-	Yes
nummbs	-	-	Integer	10	-	Yes
numaus	-	-	Integer	10	-	Yes
numdobs	-	-	Integer	10	-	Yes
numMgen	-	-	Integer	10	-	Yes
numFgen	-	-	Integer	10	-	Yes
numUgen	-	-	Integer	10	-	Yes
tempm	-	-	VarChar	1	-	Yes
dobdd	-	1	Integer	10	-	Yes
dobmm	-	1	Integer	10	-	Yes
dobyy	-	1	Integer	10	-	Yes

Reference Table Definition: CensusInLink

Column Name	Used in Pass #n Blocks	Used in Pass #n Commands	SQL Type	Length	Description	Nullable
persID	-	-	Integer	10	-	Yes
sex	-	1	Integer	10	-	Yes
mb	1	-	Integer	10	-	Yes
au	-	-	Integer	10	-	Yes



Match Specification Description

Reference Table Definition: CensusInLink

Column Name	Used in Pass #n Blocks	Used in Pass #n Commands	SQL Type	Length	Description	Nullable
cob1x	-	1	Integer	10	-	Yes
DayA	-	-	Integer	10	-	Yes
MonthA	-	-	Integer	10	-	Yes
YearA	-	-	Integer	10	-	Yes
maoriA	-	1	Integer	10	-	Yes
pacifA	-	1	Integer	10	-	Yes
asianA	-	1	Integer	10	-	Yes
melaaA	-	1	Integer	10	-	Yes
nonmpaA	-	1	Integer	10	-	Yes
pacfix	-	1	Integer	10	-	Yes
asnfix	-	1	Integer	10	-	Yes
age	-	-	Integer	10	-	Yes
agemtor	-	-	Integer	10	-	Yes
BirthCC	-	-	Integer	10	-	Yes
COB2X	-	-	Integer	10	-	Yes
Resndt	-	-	Integer	10	-	Yes
SexMtor	-	-	Integer	10	-	Yes
YrOrig	-	-	Integer	10	-	Yes
temp	-	-	VarChar	1	-	Yes

