

Timaru District Council – Population and Household Projections 2013-2063

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EXECUTIVE SUMMARY

- ☞ This report presents population and household projections for the Timaru District Council Territorial Local Authority Area, for the period 2013-2063. The projections are based on the 2013-Census based ERP, released on August 14th 2014. A detailed methodology outlines the cohort component projection method and the development of the underlying assumptions.
- ☞ High, Medium and Low projections are provided. While the medium variant indicates the most likely scenario, trends over time are likely to fluctuate between the upper and lower bounds.
- ☞ Under the medium variant the population of the Timaru District is projected to increase to around 48,853 (+7.6 per cent) by 2033, peaking around 2038 at 49,041 persons and declining very slightly over the remaining period to 48,660 in 2063.
- ☞ Projected numbers under the high variant reach 52,168 in 2033 (+14.9 per cent) and continue to increase steadily to 59,829 in 2063 (+31.8 per cent over 2013). Under the low variant, numbers peak around 2028 at 46,182 persons (+1.7 per cent) and decline steadily, to 39,513 in 2063 (-13.0 per cent over 2013).
- ☞ Projected numbers under the medium variant are slightly higher in 2031 than projected by Statistics New Zealand in 2006, in part because of the higher 2013 base population, and in part because of more positive migration assumptions ensuing from the 2008-2013 census, which showed a significant slowing of earlier loss at 20-24 years. Projected numbers under the low variant in 2031 are somewhat higher again, for the same reasons, while numbers under the high variant are fractionally lower, in part because greater numbers at 65+ years generate their own slowing momentum.
- ☞ In keeping with trends elsewhere the projections indicate significant structural ageing of the population under all projection variants, with the proportion aged 65+ years increasing from 20.1 per cent in 2013 to 30.3, 31.0 and 31.9 per cent in 2033 under the high, medium and low variants respectively. Structural ageing continues across the remaining period but at a slower pace, with those proportions reaching 32.3, 34.3 and 36.5 per cent in 2063.
- ☞ As elsewhere these trends mean that virtually all future growth in the Timaru District will be at older ages. Between 2013 and 2033, all Timaru District's growth under the medium variant (+3,453) will be accounted for at 65+ years, offsetting decline at all younger ages. This is similarly the case under the low variant, where overall growth of 422 persons is indicated. Only under the high variant is there likely to be growth at 0-24 years, with that at 65+ years still contributing the somewhat greater proportion. In

each case these trends continue between 2033 and 2063, but growth at older ages generally levels off after the baby boomer cohorts pass through each age group.

- ∞ The projected trends to slower growth, and, under the medium and low variants, to negative growth within the projection period are explained by the Timaru population shifting from natural increase (more births than deaths) to natural decline respectively from 2033, 2023, and 2018 under the high, medium and low variants. This follows a shift to more elderly (65+ years) than children (0-14 years) already extant in the Timaru District, and also evidenced in around one-fifth of New Zealand's TA's.
- ∞ Reflecting these demographic changes, projected household/dwelling numbers follow a similar trajectory to the population projections. Family households (couple without family, one-parent and two-parent) increase under both the high and medium variants, but under the medium variant numbers peak in 2033 at 13,642 then decline to just above their starting point in 2063. With more older people living alone, a reflection of structural ageing, one-person households increase under all variants, although peak in 2048 under the low variant.
- ∞ The majority of the overall increase in family households is in couple-without children families (albeit these decline overall under the low variant). These households contain three different sets of couples: those who do not yet have children, those who will not or did not have children, and those whose children have left home. The types of dwellings that such people seek—and their location—is likely to differ from those sought by one- and two-parent families with children, whose numbers continue to grow across the projection period only under the high variant assumptions. Under both the medium and variant assumptions, both of these family types decline. The future dwelling demand of the Timaru District will thus be increasingly driven by non-family households, predominantly comprised of one-person and couples without children, characteristics of population ageing.
- ∞ Also reflecting population ageing, the gap between projected household and population numbers increases under the high variant, while it decreases under the low variant. This is because in the former case there are proportionately more family households, average household size is higher and declines at a slower rate, while in the latter case there are proportionately more one-person households, average household size is lower and declines more rapidly.
- ∞ A brief discussion on the possible impact on the projections of internal migration following the Christchurch earthquakes is included at Appendix B. It is plausible that Timaru District made a small, direct earthquake-related gain, but overall migration trends indicate that other factors are involved, among which could be an *indirect* earthquake effect which reduced previous migration loss, particularly at 20-24 years.

Preamble

This report presents population and household/dwelling projections for the Timaru District Council Territorial Local Authority Area, for the period 2013-2063. The projection results are prefaced by a detailed methodology, with supporting material in Appendices.

The population projections are based on the 2013-Census based ERP, drawn from Statistics New Zealand 'Estimated Resident Population (ERP) subnational population by ethnic group, age, and sex, at 30th June 1996, 2001, 2006, and 2013', released on August 14th 2014. These are the first ERP data based on the 2013 Census to be made available by Statistics New Zealand. The ERP is the final revision of census night counts and includes adjustments for births, deaths and migration occurring between census night (March 5th) and June 30th 2013, along with further adjustments for people temporarily overseas on census night, and census night undercount. Further information on the methods used to derive the June 2013 population estimates is available at: Statistics New Zealand:

[Estimated resident population 2013: Data sources and methods](#)

The household/dwelling projections are based on the population projections by age and sex, to which age-specific rates of the propensity to live in different family and household types have been applied, according to Statistics New Zealand's definition of a private household equating to a private dwelling.

Three sets of projections are provided: 'high', 'medium' and 'low'. It is conventional to see the medium variant as indicating the most likely scenario; however the high and low variants should be kept in mind at all times. Changing economic, political and social circumstances can have an impact on the underlying assumptions regarding births, deaths, and especially migration, and cause trends to fluctuate between the upper and lower bounds.

When interpreting the results it is also important to remember that population projections are not forecasts in the sense that they incorporate interventions or circumstances that may change the demographic future. Rather, they simply indicate what future population size and structure will be if the underlying assumptions regarding births, deaths, migration prevail. The household projections based on the population projections are additionally dependent on current age-specific propensities of living in different family and household types remaining constant—for example, family households concentrated at younger and middle adult ages, and single person households at older ages.

1. Methodology

The population projections have been developed via the cohort component method, using a software programme developed by Rowland (2003) and modified to meet our requirements. This step-wise method first survives, then migrates, reproduces, and finally 'ages' the base population, repeating the process for each year of the projection period using *assumptions* regarding future mortality, migration and fertility.

The base population for the projections was drawn from the recently released 2013-census based ERP for June 2013, by age and sex. Numbers are given at Table 1.1 below.

Surviving the population involves determining a base population by age and sex and surviving it to the next year (or five year period, as we have done here) by applying the probability of surviving to the next age/age group (px). The probability of surviving to each age is drawn initially from the 'Life Table', a tool via which underlying life expectancy is calculated for each sex by age. Sub-routines in the modified Rowland projection software calculate and raise life expectancy over the projection period in accordance with pre-determined life expectancies applied at the beginning, mid- and end points of the projection. The precise assumptions, which are based on Statistics New Zealand's assumptions to 2031 and the application of regional multipliers to 2063, are given in Table 1.2.

Migrating the population involves the estimation and application of age- and sex-specific migration rates to the surviving population separately by age and sex. These rates are typically both positive and negative for different age-sex groups, irrespective of whether overall (total) migration is positive or negative. The approach of using age-specific migration rates differs in one important way from the methodology employed by Statistics New Zealand, which instead applies a pre-determined and constant number of migrants to the migration age distribution. Where populations increase or decrease over time, that approach results in the *number* of migrants becoming respectively smaller or larger as a proportion of the changing population, and can be particularly problematic where population size is small. By instead applying age-specific migration *rates* to each successively survived population number by age and sex, the number of migrants is automatically generated and keeps pace with the unfolding increase or decrease in the population.

The estimation of the age-specific migration profile and respective rates is, however, less straightforward. The process employs a 'residual migration methodology' which draws on past migration data by age and sex and a similar cohort component process. Using survivorship rates as indicated above, numbers by age and sex at each of the 1996, 2001 and 2006 censuses are survived to the subsequent census (thus 1996-2001, 2001-2006, 2006-2013), the process simultaneously calculating and removing deaths; recorded births are drawn from Statistics New Zealand *Births* and added separately. The resulting 'expected' population by age and sex is then compared with the 'observed' population at the subsequent census, and the difference taken to approximate net migration numbers (Figure 1.1). Similar data generated by Statistics New Zealand for the periods 1997-2001 and 2002-2006 (also shown on Figure 1.1) results in almost identical numbers and indicates that the method is highly robust.

The resulting migration profiles were distributed to the client and discussed in terms of which profiles might most closely approximate future 'high', 'medium' and 'low' migration scenarios. Numbers were converted to age-specific rates for each variant as indicated in Figure 1.2. As a general guide, rates for the 2002-2006 and 2008-2013 periods were used to develop the 'high' variant assumptions, while the 'low' assumptions were based on the average of the three periods, paying attention to the low migration situation of 1997-2001 but also taking account of successively reducing net loss at 20-24 years. The medium assumptions were set midway between high and low.

Reproducing the population is relatively straightforward, involving the application of age-specific fertility rates for women aged 15-49 years to the relevant numbers or women at each age, weighted by each future assumed total fertility rate (TFR²). The resulting number of births is summed and apportioned into males and females according to the sex ratio at birth: 105.5 males per 100 females.

The underlying age-specific fertility rates for the Timaru District are based on those for the Canterbury Region, since these are not available at TA level, and are shown in Figure 1.3—the profile for 2006 was considered the most appropriate assumption for the

² The TFR is the average number of births a woman would have across her lifetime if she was to experience each of the age specific rates occurring in that particular year—it is thus a 'synthetic period rate' used as a proxy for average family size, because completed family size can only be calculated for women who have reached age 50.

projections as this reflects the shift to older age at childbearing. The assumptions regarding future fertility levels (TFR) for the Timaru District are given in Table 1.4.

The resulting population is then 'aged' by inserting births at age 0 (separately for males and females) and ageing each age group by one year, those aged 1 year becoming the new cohort at 2 years of age etc. (Where a 5 year age group methodology is used, births are calculated for a five year period and inserted at age 0-4; each five-year age group is then aged by five years). Numbers for the upper age groups (here 80-84 and 85+ years) are summed to give the new population at 85+ years.

All major projection assumptions and resulting birth, death and migration numbers are given at Appendix A.

Table 1-1: Timaru District, Base Population by Age and Sex (2013-Census Based ERP).

	Males	Females	Total
0-4	1,430	1,250	2,690
5-9	1,400	1,290	2,690
10-14	1,470	1,450	2,920
15-19	1,540	1,370	2,920
20-24	1,170	1,120	2,290
25-29	1,030	1,090	2,120
30-34	1,020	1,080	2,100
35-39	1,150	1,280	2,420
40-44	1,410	1,590	3,000
45-49	1,540	1,730	3,280
50-54	1,720	1,820	3,550
55-59	1,580	1,590	3,170
60-64	1,550	1,600	3,140
65-69	1,300	1,360	2,670
70-74	1,060	1,150	2,210
75-79	740	930	1,680
80-84	610	740	1,360
85+	410	830	1,240
Total	22,100	23,300	45,400

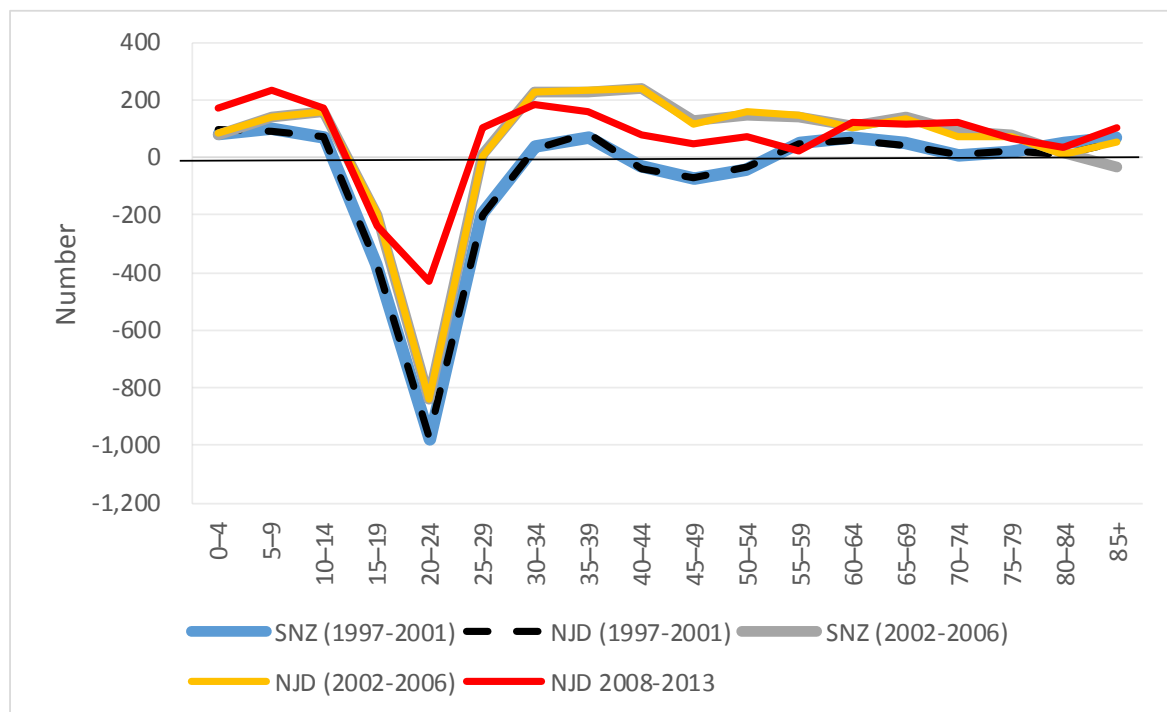
Source: Statistics New Zealand (2014) ERP subnational population by ethnic group, age, and sex, at 30th June 1996, 2001, 2006, and 2013

Table 1-2: Timaru District, Life Expectancy Assumptions by Age, Sex and Projection Variant 2013-2063

Period	High		Medium		Low	
	Males	Females	Males	Females	Males	Females
2013-	80.2	83.5	79.9	83.2	79.4	83.1
2018-	81.3	84.5	80.8	84.0	80.1	83.7
2023-	82.3	85.4	81.7	84.8	80.8	84.3
2028-	83.3	86.4	82.5	85.6	81.4	84.9
2033-	84.3	87.3	83.3	86.3	82.1	85.4
2038-	85.3	88.3	84.1	87.0	82.6	85.9
2043-	86.3	89.1	84.9	87.7	83.2	86.4
2048-	87.3	90.0	85.7	88.4	83.7	86.9
2053-	88.2	90.7	86.4	89.1	84.2	87.4
2058-	89.1	91.5	87.2	89.7	84.6	87.9
2063	90.0	92.1	87.9	90.3	85.1	88.3

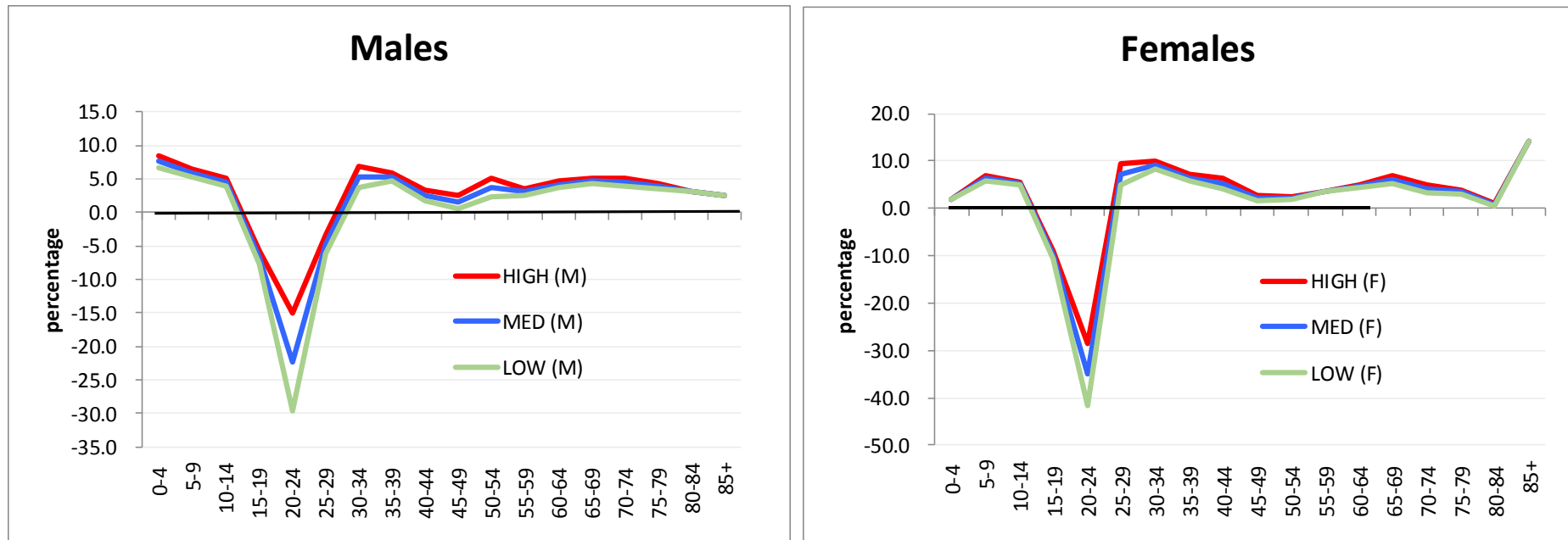
Life expectancy for 2013-2033 is based on Statistics New Zealand Subnational Population Projection Assumptions 2006 (base)-2031 (2012 Update) for the Timaru District, approximated to the 2013 base. Assumptions for 2033-2063 apply pro-rata regional multipliers to Statistics New Zealand's National Population Projection Assumptions 2011 (base)-2061.

Figure 1-1: Timaru District, Estimated Net Migration by Age (Number) 1997-01, 2002-06, 2008-13



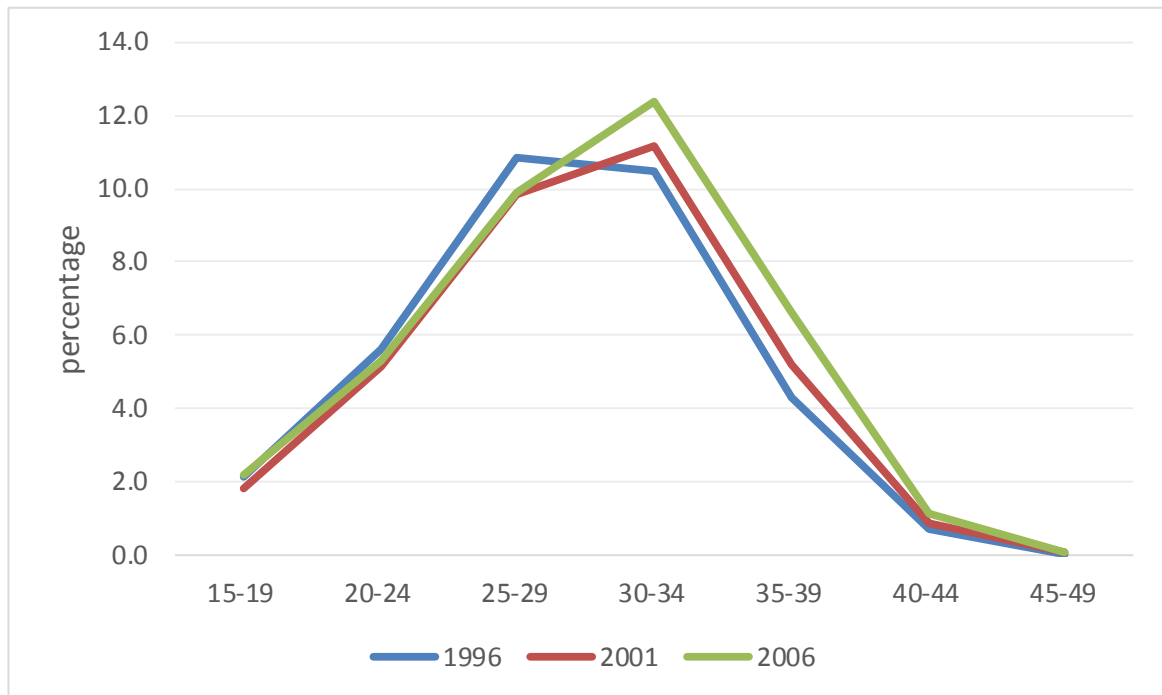
Source: SNZ = Statistics New Zealand Local Population Trends (2007) Table 8
 NJD = Jackson and Pawar 2014

Figure 1-2: Timaru District, Estimated Net Migration Rates by Sex, Projection Variant and Age



Note Different scales on Y-Axis

Figure 1-3: Percentage of Women Giving Birth by Five-Year Age Group, Canterbury Region, 1996, 2001, 2006



Source: Statistics New Zealand, Age-Specific Fertility Rates for Regional Council Areas 1996, 2001, 2006

Table 1-3: Timaru District, Total Fertility Rate Assumptions by Projection Variant 2013-2063

	High	Medium	Low
2013-	2.22	2.20	2.18
2018-	2.20	2.08	1.97
2023-	2.19	2.05	1.91
2028-	2.19	2.02	1.84
2033-	2.19	1.99	1.79
2038-	2.19	1.99	1.79
2043-	2.19	1.99	1.79
2048-	2.19	1.99	1.79
2053-	2.19	1.99	1.79
2058-	2.19	1.99	1.79
2063			

The TFR for 2013-2033 is based on Statistics New Zealand Subnational Population Projection Assumptions 2006 (base)-2031 (2012 Update) for the Timaru District. For 2033-2063 the assumed rates for 2031 are held constant.

2. Results – Population Projections

Figure 2.1 provides an overview of the projection results (see also Table 2.1). Under the medium variant the population of the Timaru District is projected to increase to around 48,853 (+7.6 per cent) in 2033, peaking around 2038 at 49,041 persons and declining very slightly over the remaining projection period to 48,660 in 2063.

Projected numbers under the high variant reach 52,168 in 2033 (+14.9 per cent) and continue to increase steadily to 59,829 in 2063 (+31.8 per cent over 2013). Under the low variant, numbers peak around 2028 at 46,182 persons (+1.7 per cent) and decline steadily, to 39,513 in 2063 (-13.0 per cent over 2013).

Projected numbers under the medium variant are a little higher around 2031-2033 than those developed in 2006 by Statistics New Zealand, but follow a similar trajectory in indicating a slowing of growth from that point. Numbers under the high variant (52,168) in 2031 fall just inside their Statistics New Zealand counterpart (52,600), while those under the low variant are considerably higher than the Statistics New Zealand projection. In each case these differences will partly reflect the higher 2013 base population, and for the medium and low variants, more positive migration assumptions ensuing from the 2008-2013 census data, which showed a significant slowing of earlier loss at 20-24 years.

Figure 2-1: Projected Population of the Timaru District 2013-2063 and Comparison with Statistics New Zealand Projections (2006-2031), by Projection Variant

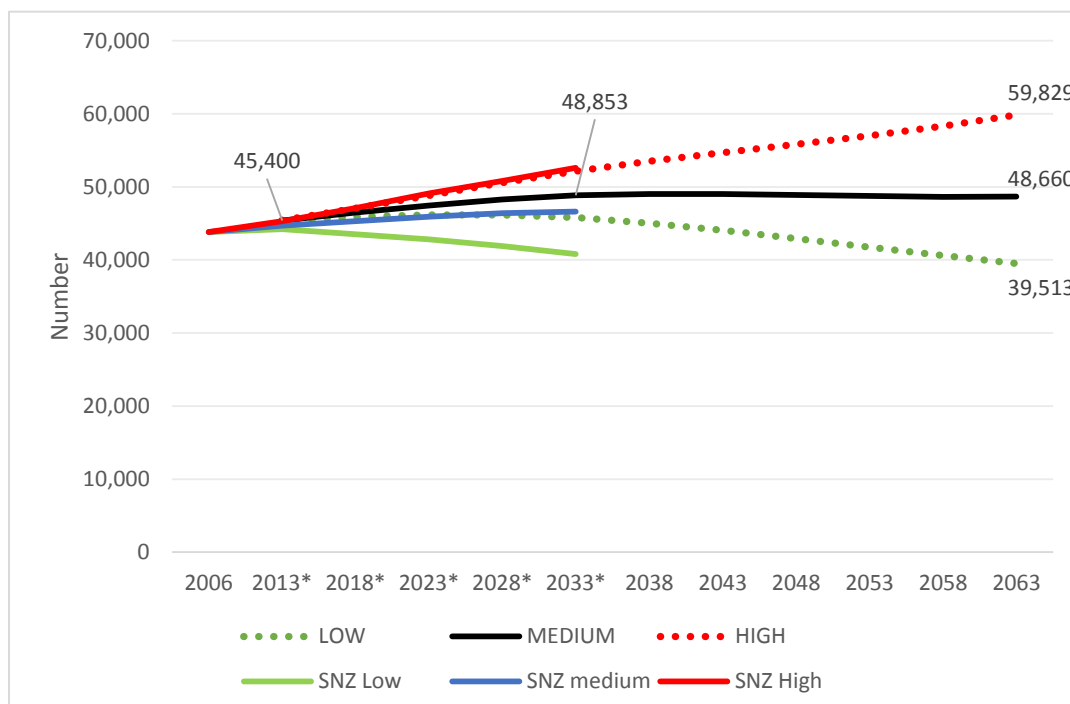


Table 2-1: Projected Population of the Timaru District 2013-2063 and Comparison with Statistics New Zealand Projections (2006-2031), by Projection Variant

	2006	2013*	2018*	2023*	2028*	2033*	2038	2043	2048	2053	2058	2063
LOW	...	45,400	45,882	46,166	46,182	45,822	45,031	44,049	42,927	41,751	40,596	39,513
MEDIUM	...	45,400	46,480	47,459	48,293	48,853	49,041	49,034	48,901	48,746	48,645	48,660
HIGH	...	45,400	47,084	48,822	50,557	52,168	53,511	54,701	55,826	57,010	58,322	59,829
SNZ Low	43,800	44,200	43,500	42,800	41,900	40,800	...	...	...	...	...	...
SNZ medium	43,800	44,700	45,300	45,900	46,400	46,600	...	...	...	...	...	...
SNZ High	43,800	45,300	47,100	49,100	50,800	52,600	...	...	...	...	...	...

SNZ = Statistics New Zealand, Subnational Population Projections by Age and Sex, 2006(base)-2031 (October 2012 update)

*SNZ data are for 2011, 2016, 2021, 2016 and 2031

It should be noted that the improving migration scenario indicated above may or may not be permanent. As Figure 1.1 earlier showed, improvements were primarily in the nature of a reduced loss at 20-24 years, as opposed to an actual net gain, while gains at 30-64 years were down on the previous period. The approach here has been to develop high and medium migration assumptions which approximate the upper and lower bounds of the average of the two periods. A brief discussion of the migration-related impact of the Christchurch earthquakes is at Appendix B; in general it would appear that Timaru made a small direct net migration gain from the Christchurch earthquakes, but larger gains from elsewhere in New Zealand indicate a broader range of explanatory factors.

Table 2.2 provides a summary breakdown of projected numbers by age (see Appendix C1-3 for full tables by age and sex). In keeping with trends elsewhere the data indicate significant structural ageing of the population under all projection variants, with the proportion aged 65+ years increasing from 20.1 per cent in 2013 to 30.3, 31.0 and 31.9 per cent in 2033 under the high, medium and low variants respectively (Figure 2.2, see also Figure 2.3). Structural ageing continues across the remaining period but at a slower pace, with those proportions reaching 32.3, 34.3 and 36.5 per cent in 2063. The lower proportions aged 65+ years under the high variant and vice versa under the low variant primarily reflects the migration assumptions, higher migration resulting in more people at younger ages. The life expectancy assumptions do of course play a significant role, as can be seen with somewhat greater numbers at older ages under the high variant (19,332 and 14,418 aged 65+ years under the high and low variants respectively). At younger ages, numbers decline under both the medium and low variants—as they do at some ages even under the high variant (25-64 years across the period 2013-2033, and 65-74 years between 2033 and 2063)—reflecting the passage of the Baby Boomers.

Table 2-2: Projected Population of the Timaru District 2013-2063 by Projection Variant and Broad Age Group

	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063	2013- 2033	2033- 2063	2013- 2063
High Variant												(% Change)		
0-14	8,290	8,553	8,966	9,276	9,400	9,434	9,475	9,641	9,937	10,261	10,514	13.4	11.9	26.8
15-24	5,200	5,113	4,838	4,982	5,343	5,560	5,645	5,675	5,649	5,703	5,880	2.7	10.1	13.1
25-54	16,460	15,890	15,607	15,322	15,468	16,014	16,548	16,877	17,079	17,457	17,924	-6.0	15.9	8.9
55-64	6,320	6,824	7,097	6,774	6,143	5,491	5,405	5,832	6,334	6,396	6,179	-2.8	0.6	-2.2
65-74	4,870	5,768	6,423	7,024	7,392	7,180	6,600	5,952	5,832	6,259	6,816	51.8	-7.8	40.0
75+	4,260	4,936	5,892	7,180	8,422	9,832	11,028	11,849	12,179	12,246	12,516	97.7	48.6	193.8
Total	45,400	47,084	48,822	50,557	52,168	53,511	54,701	55,826	57,010	58,322	59,829	14.9	14.7	31.8
65+ (N)	9,130	10,704	12,315	14,204	15,814	17,012	17,628	17,801	18,012	18,505	19,332	73.2	22.2	111.7
65+ (%)	20.1	22.7	25.2	28.1	30.3	31.8	32.2	31.9	31.6	31.7	32.3	50.7	6.6	60.7
Medium Variant														
0-14	8,290	8,403	8,541	8,484	8,256	8,019	7,839	7,787	7,808	7,799	7,712	-0.4	-6.6	-7.0
15-24	5,200	4,925	4,648	4,778	5,005	4,946	4,810	4,670	4,509	4,468	4,505	-3.8	-10.0	-13.4
25-54	16,460	15,721	15,139	14,586	14,482	14,758	14,900	14,756	14,570	14,506	14,456	-12.0	-0.2	-12.2
55-64	6,320	6,801	7,031	6,651	5,969	5,283	5,171	5,530	5,799	5,628	5,364	-5.6	-10.1	-15.1
65-74	4,870	5,724	6,329	6,887	7,199	6,922	6,290	5,615	5,476	5,834	6,151	47.8	-14.6	26.3
75+	4,260	4,906	5,771	6,906	7,943	9,112	10,023	10,543	10,584	10,409	10,472	86.4	31.8	145.8
Total	45,400	46,480	47,459	48,293	48,853	49,041	49,034	48,901	48,746	48,645	48,660	7.6	-0.4	7.2
65+ (N)	9,130	10,630	12,100	13,793	15,142	16,034	16,313	16,158	16,060	16,244	16,623	65.8	9.8	82.1
65+ (%)	20.1	22.9	25.5	28.6	31.0	32.7	33.3	33.0	32.9	33.4	34.2	54.1	10.2	69.9
Low Variant														
0-14	8,290	8,263	8,142	7,741	7,198	6,743	6,406	6,208	6,045	5,823	5,539	-13.2	-23.0	-33.2
15-24	5,200	4,738	4,480	4,587	4,691	4,380	4,058	3,789	3,547	3,458	3,398	-9.8	-27.6	-34.7
25-54	16,460	15,551	14,671	13,877	13,544	13,580	13,374	12,838	12,369	11,963	11,541	-17.7	-14.8	-29.9
55-64	6,320	6,776	6,961	6,520	5,781	5,061	4,920	5,205	5,242	4,884	4,618	-8.5	-20.1	-26.9
65-74	4,870	5,677	6,231	6,743	6,990	6,640	5,950	5,245	5,080	5,358	5,431	43.5	-22.3	11.5
75+	4,260	4,877	5,680	6,714	7,617	8,628	9,339	9,642	9,469	9,109	8,987	78.8	18.0	111.0
Total	45,400	45,882	46,166	46,182	45,822	45,031	44,049	42,927	41,751	40,596	39,513	0.9	-13.8	-13.0
65+ (N)	9,130	10,554	11,911	13,457	14,607	15,268	15,289	14,887	14,548	14,467	14,418	60.0	-1.3	57.9
65+ (%)	20.1	23.0	25.8	29.1	31.9	33.9	34.7	34.7	34.8	35.6	36.5	58.5	14.5	81.4

Figure 2-2: Projected Percentage Aged 65+ Years 2013-2063 by Projection Variant, Timaru District

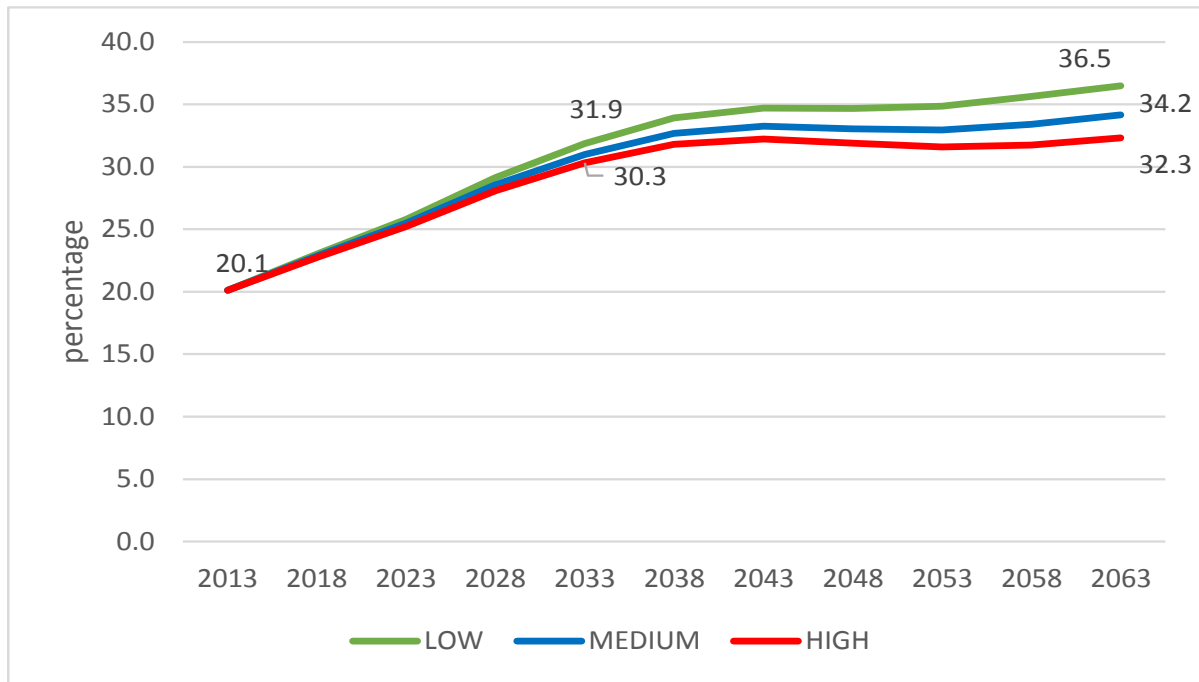
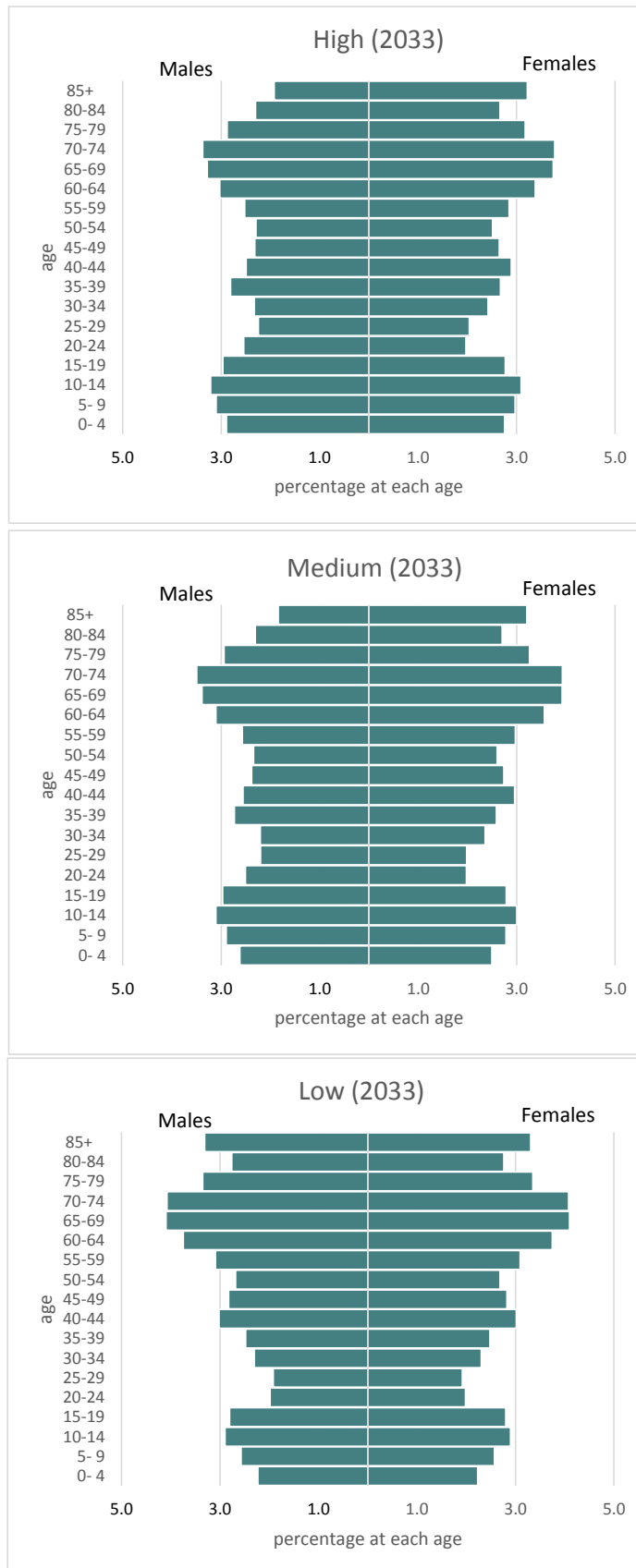


Figure 2-3: Projected Age-Sex Structure in 2033 by Projection Variant, Timaru District



The projected structural ageing for Timaru District is in keeping with that for total New Zealand, where the proportion aged 65+ years is projected to increase under the medium variant from its current 14.3 per cent to 21.3 per cent in 2031 and 25.8 per cent in 2061 (an overall increase of 80.2 per cent). By comparison the increase for Timaru District under the medium variant to 2063 is just 69.9 per cent, and 60.7 and 81.4 per cent respectively under the high and low variants.

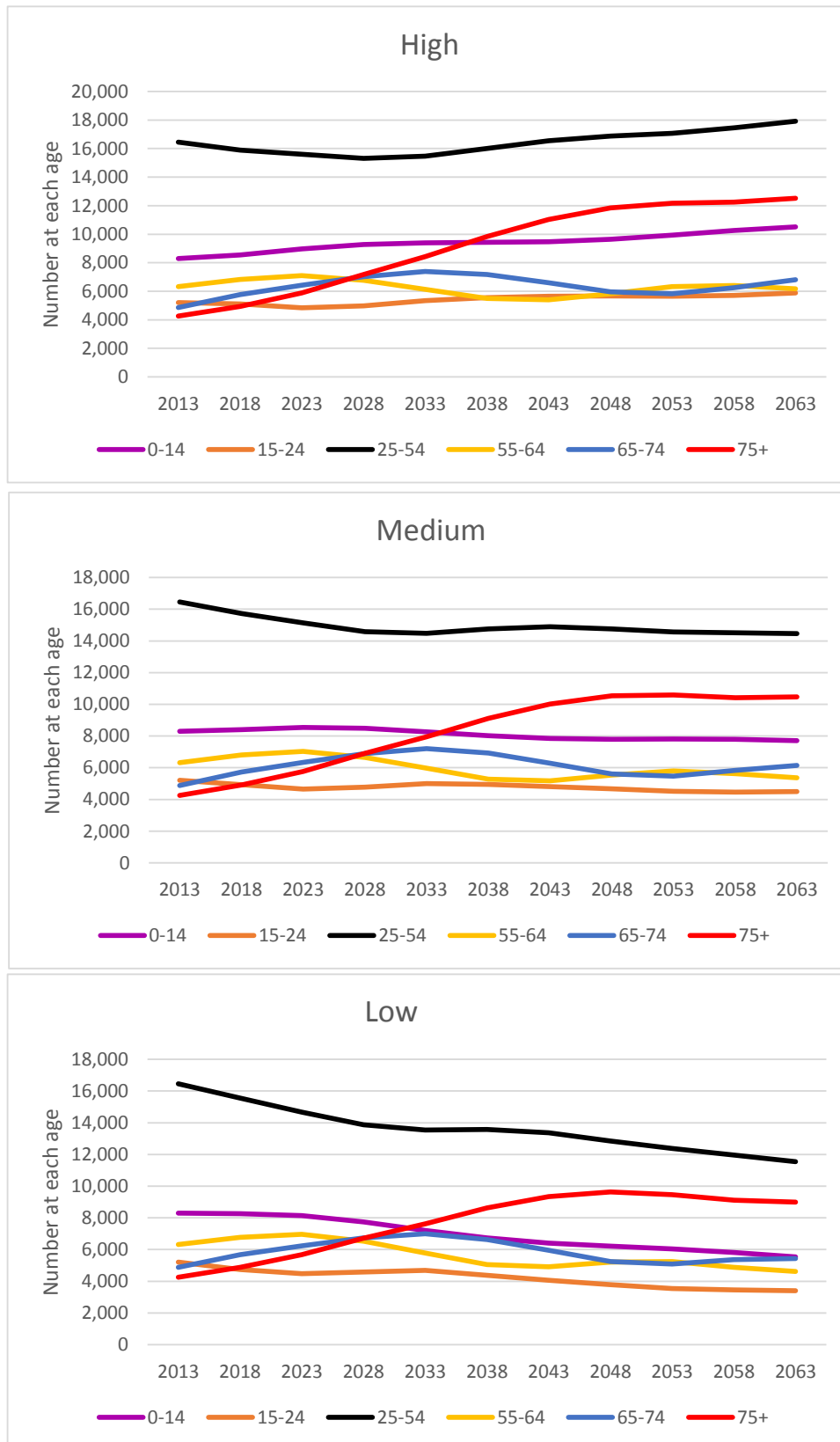
These trends mean that virtually all future growth in the Timaru District will be at older ages—as elsewhere. Between 2011 and 2031 all growth in 84 per cent (56) of New Zealand's 67 TAs is projected to be at 65+ years, offsetting decline at most other ages (Jackson *passim*). Table 2.3 shows that between 2013 and 2033, all Timaru's growth under the medium variant (+3,453) will be similarly accounted for at 65+ years, offsetting decline at all younger ages (shaded cells). This is similarly the case under the low variant, where overall growth of 422 is indicated. Only under the high variant is there likely to be growth at 0-24 years, with that at 65+ years still contributing the somewhat greater proportion. In each case these trends continue between 2033 and 2063, but growth at older ages generally levels off after the baby boomer cohorts pass through each age group (Figure 2.4).

Table 2-3: Projected Contribution to Change 2013-2033 and 2033-2063 by Broad Age Group and Projection Variant, Timaru District

	High			Medium			Low		
	2013-2033	2033-2063	2013-2063	2013-2033	2033-2063	2013-2063	2013-2033	2033-2063	2013-2063
Numerical Contribution to Change									
0-14	1,110	1,114	2,224	-34	-543	-578	-1,092	-1,659	-2,751
15-24	143	537	680	-195	-500	-695	-509	-1,293	-1,802
25-54	-992	2,456	1,464	-1,978	-26	-2,004	-2,916	-2,004	-4,919
55-64	-177	36	-141	-351	-605	-956	-539	-1,163	-1,702
65-74	2,522	-576	1,946	2,329	-1,048	1,281	2,120	-1,559	561
75+	4,162	4,094	8,256	3,683	2,529	6,212	3,357	1,370	4,727
Total	6,768	7,661	14,429	3,453	-192	3,260	422	-6,309	-5,887
65+	6,684	3,518	10,202	6,012	1,481	7,493	5,477	-190	5,288
Percentage Contribution to Change									
0-14	16.4	14.5	15.4	-1.0	-282.5	-17.7	-258.8	-26.3	-46.7
15-24	2.1	7.0	4.7	-5.7	-260.1	-21.3	-120.7	-20.5	-30.6
25-54	-14.7	32.1	10.1	-57.3	-13.3	-61.5	-690.9	-31.8	-83.6
55-64	-2.6	0.5	-1.0	-10.2	-314.5	-29.3	-127.6	-18.4	-28.9
65-74	37.3	-7.5	13.5	67.5	-545.1	39.3	502.4	-24.7	9.5
75+	61.5	53.4	57.2	106.7	1315.6	190.5	795.6	21.7	80.3
Total	100.0	100.0	100.0	100.0	-100.0	100.0	100.0	-100.0	-100.0
65+	98.8	45.9	70.7	174.1	770.5	229.8	1297.9	-3.0	89.8

Notes: negative and positive values sum to 100

Figure 2-4: Projected Numbers by Broad Age Group and Projection Variant, 2013-2063, Timaru District



Note different scales on Y-axis

The projected trend to slower growth, and, under the medium and low variants, to negative growth within the projection period are explained by Figure 2.5, which shows the Timaru population shifting from natural increase (more births than deaths) to natural decline respectively from 2033, 2023, and 2018 under the high, medium and low variants (Table 2.5 and Appendix A); of note, the shift to natural decline was also projected by Statistics New Zealand (2012) to occur under the medium variant around 2021. This follows a shift to more elderly than children (65+ and 0-14 years respectively) which is already the case in the Timaru District (Table 2.4) and in one-fifth of New Zealand's TA's. Under the medium variant, the Timaru District is projected to have 1.83 'elderly per children' by 2033 (up from 1.10 in 2013), 1.68 under the high variant and 2.03 under the low variant.

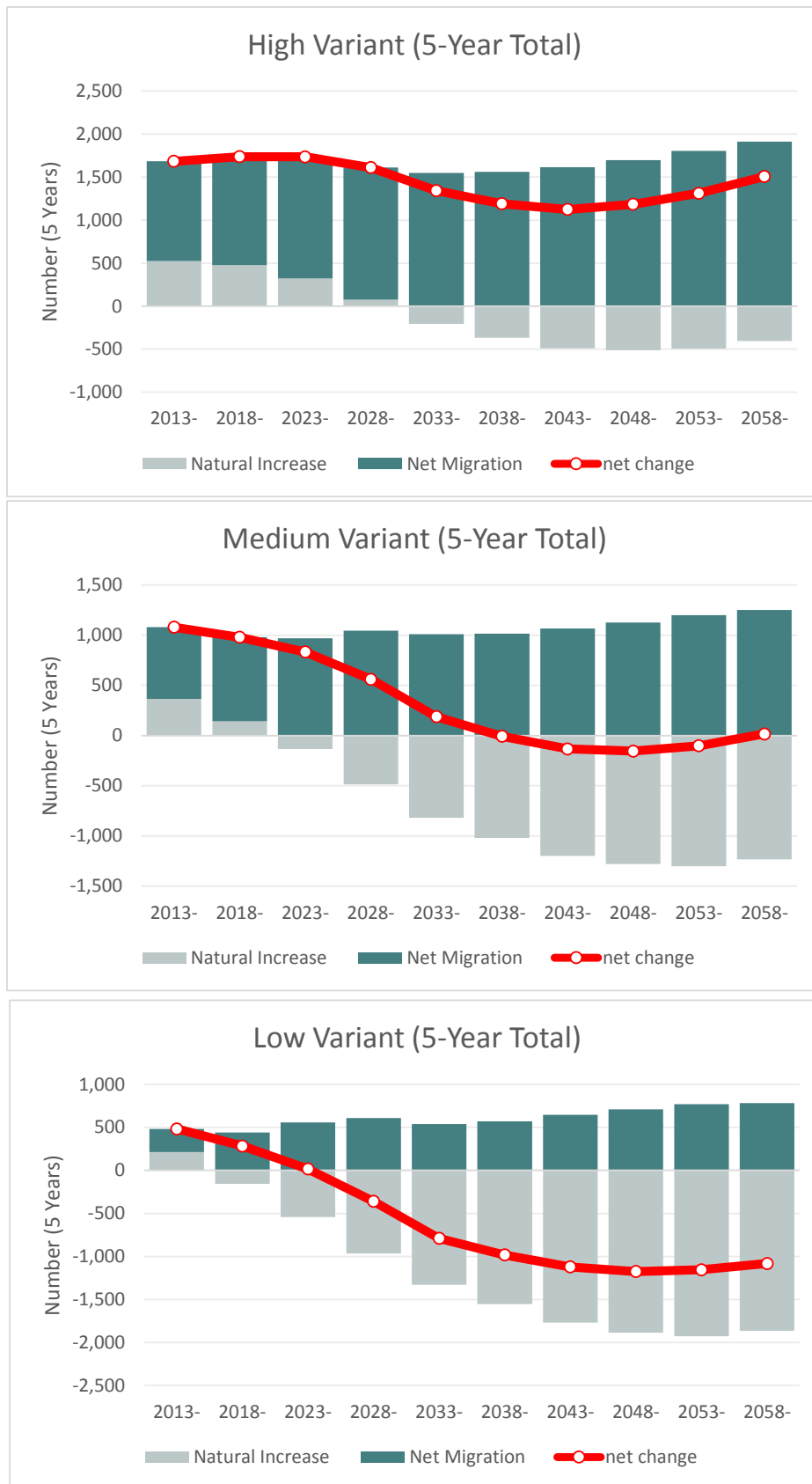
Table 2-4: Projected Numbers 0-14 and 65+ Years 2013-2063 by Projection Variant, Timaru District

	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
High											
0-14	8,290	8,553	8,966	9,276	9,400	9,434	9,475	9,641	9,937	10,261	10,514
65+	9,130	10,704	12,315	14,204	15,814	17,012	17,628	17,801	18,012	18,505	19,332
Ratio*	1.10	1.25	1.37	1.53	1.68	1.80	1.86	1.85	1.81	1.80	1.84
Medium											
0-14	8,290	8,403	8,541	8,484	8,256	8,019	7,839	7,787	7,808	7,799	7,712
65+	9,130	10,630	12,100	13,793	15,142	16,034	16,313	16,158	16,060	16,244	16,623
Ratio*	1.10	1.27	1.42	1.63	1.83	2.00	2.08	2.08	2.06	2.08	2.16
Low											
0-14	8,290	8,263	8,142	7,741	7,198	6,743	6,406	6,208	6,045	5,823	5,539
65+	9,130	10,554	11,911	13,457	14,607	15,268	15,289	14,887	14,548	14,467	14,418
Ratio*	1.10	1.28	1.46	1.74	2.03	2.26	2.39	2.40	2.41	2.48	2.60

Notes: * Numbers aged 65+ years to numbers aged 0-14 years

Together these trends illustrate the force of structural ageing which leads to slowing and declining growth, even under high migration, fertility and life expectancy scenarios. As indicated throughout the text these trends are not being experienced by Timaru alone. The shift to zero natural increase and/or natural decline is projected for 32 (47.8 per cent) of New Zealand's TA's by 2031.

Figure 2-5: Projected Components of Change 2013-2063 by Projection Variant, Timaru District



Note different scales on Y-axis

Table 2-5: Projected Components of Change 2013-2063 by Projection Variant, Timaru District

	Natural Increase	Net Migration	Net Change
High Variant			
2013-18	523	1,161	1,684
2018-23	476	1,262	1,738
2023-28	322	1,413	1,735
2028-33	76	1,535	1,611
2033-38	-205	1,548	1,343
2038-43	-369	1,560	1,191
2043-48	-490	1,615	1,124
2048-53	-513	1,697	1,184
2053-58	-493	1,805	1,311
2058-63	-406	1,913	1,507
Medium Variant			
2013-18	364	716	1,080
2018-23	142	837	979
2023-28	-135	968	833
2028-33	-485	1045	560
2033-38	-820	1009	189
2038-43	-1021	1015	-7
2043-48	-1200	1066	-133
2048-53	-1280	1125	-155
2053-58	-1302	1200	-102
2058-63	-1234	1250	16
Low Variant			
2013-18	212	270	482
2018-23	-157	441	284
2023-28	-543	559	16
2028-33	-967	607	-360
2033-38	-1330	539	-791
2038-43	-1554	571	-983
2043-48	-1769	648	-1,121
2048-53	-1885	709	-1,176
2053-58	-1926	771	-1,155
2058-63	-1865	783	-1,082

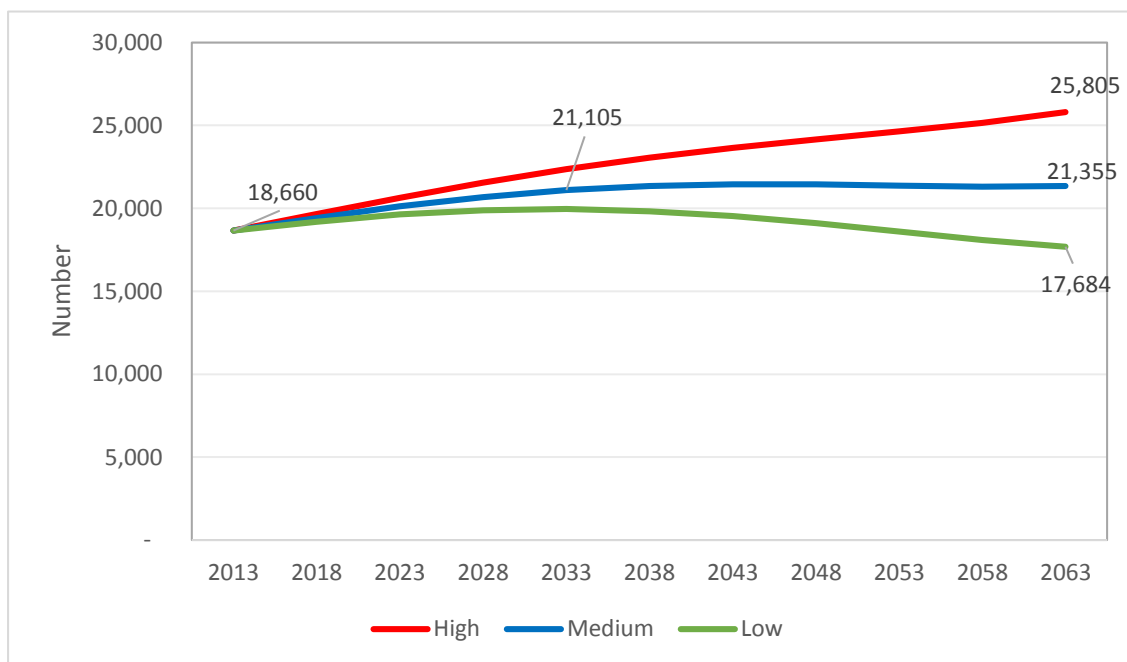
3. Results – Household/Dwelling Projections

Household/dwelling projections are developed by applying the propensity of living in each household type by age (and sex for single person and single parent households), to the above population projections. Baseline data (average household size) and the related methodology is given at Appendix D1.

The results follow a similar trajectory to the population projections (Figure 3.1, see also Table 3.1 and Appendix D2). Under the medium variant, total household/dwelling numbers increase from 18,660 in 2013 to 21,105 in 2033 (+13.1 per cent), peaking in 2043 at 21,451 households, then declining slightly to 21,355 by 2063 (+14.4 per cent over 2013).

Under the high variant, numbers increase to 22,363 in 2033 and 25,805 in 2963 (+19.8 and 38.3 per cent over 2013 respectively), while under the low variant numbers peak in 2033 at 19,969 (+7.0 per cent) and decline to 17,684 in 2063 (-5.2 per cent over 2013).

Figure 3-1: Projected Number of Households by Projection Variant, 2013-2063, Timaru District



The trends are marked by important compositional changes, outlined below. Most notably, while family- and one-person households account for both the majority of household types (69 and 28 per cent respectively in 2013) and the majority of change, the increase in family households pertains primarily to couples-without children, a complex category that will drive demand for certain types of dwellings.

Table 3-1: Projected Number of Households by Family and Household Type and Projection Variant, 2013-2063, Timaru District

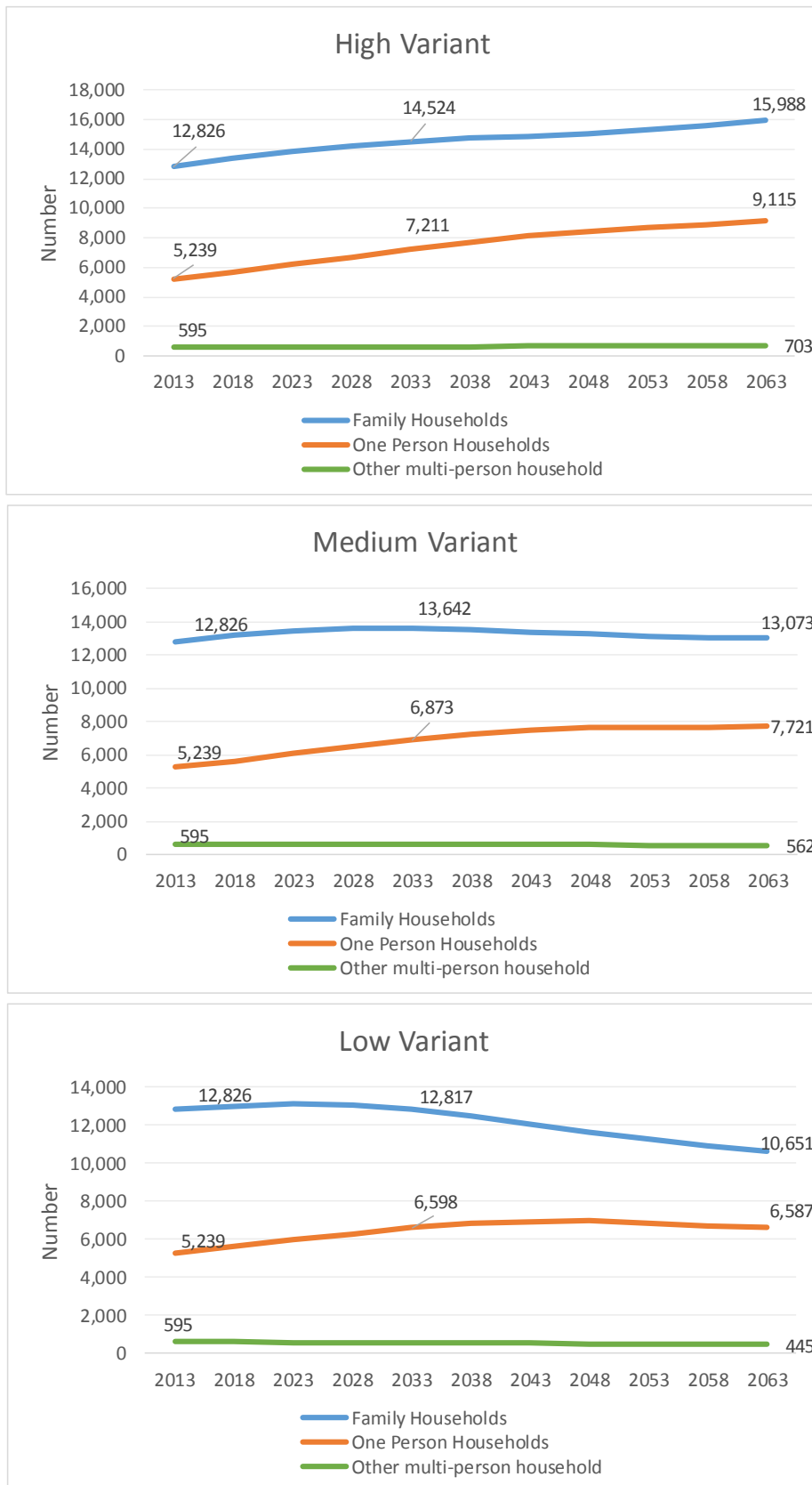
Timaru District - High Series Projections											
	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
Couple without children families	6,599	7,151	7,590	7,861	8,015	8,104	8,161	8,210	8,287	8,417	8,629
Two parent families	4,665	4,638	4,676	4,766	4,856	4,931	5,001	5,088	5,206	5,343	5,475
One parent families	1,797	1,802	1,825	1,870	1,920	1,960	1,994	2,029	2,071	2,122	2,178
Total Families	13,062	13,592	14,090	14,496	14,791	14,995	15,155	15,327	15,563	15,882	16,282
Family Households	12,826	13,346	13,836	14,235	14,524	14,724	14,882	15,050	15,282	15,595	15,988
One Person Households	5,239	5,687	6,184	6,692	7,211	7,683	8,112	8,441	8,683	8,875	9,115
Other multi-person household	595	613	613	613	628	645	660	672	681	689	703
Total Households	18,660	19,647	20,632	21,539	22,363	23,051	23,653	24,163	24,646	25,160	25,805

Timaru District - Medium Series Projections											
	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
Couple without children families	6,599	7,085	7,442	7,626	7,686	7,660	7,576	7,466	7,376	7,336	7,372
Two parent families	4,665	4,568	4,511	4,484	4,443	4,390	4,342	4,309	4,293	4,277	4,245
One parent families	1,797	1,773	1,762	1,765	1,763	1,748	1,731	1,717	1,707	1,703	1,697
Total Families	13,062	13,426	13,715	13,875	13,892	13,798	13,648	13,492	13,376	13,317	13,313
Family Households	12,826	13,184	13,467	13,625	13,642	13,549	13,402	13,248	13,134	13,076	13,073
One Person Households	5,239	5,639	6,060	6,473	6,873	7,201	7,463	7,610	7,663	7,667	7,721
Other multi-person household	595	599	589	583	590	590	586	580	570	564	562
Total Households	18,660	19,422	20,117	20,680	21,105	21,339	21,451	21,438	21,367	21,307	21,355

Timaru District - Low Series Projections											
	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
Couple without children families	6,599	7,014	7,295	7,400	7,379	7,252	7,045	6,801	6,573	6,397	6,287
Two parent families	4,665	4,500	4,353	4,217	4,056	3,893	3,750	3,626	3,513	3,392	3,250
One parent families	1,797	1,745	1,703	1,667	1,617	1,555	1,497	1,446	1,401	1,357	1,310
Total Families	13,062	13,259	13,351	13,283	13,053	12,700	12,292	11,873	11,487	11,146	10,847
Family Households	12,826	13,019	13,110	13,044	12,817	12,470	12,070	11,659	11,279	10,945	10,651
One Person Households	5,239	5,595	5,954	6,291	6,598	6,812	6,942	6,943	6,843	6,693	6,587
Other multi-person household	595	584	567	555	554	540	519	498	475	458	445
Total Households	18,660	19,199	19,631	19,890	19,969	19,822	19,531	19,100	18,597	18,096	17,684

Figure 3.2 provides a comparison of projected households by household type under each projection variant. Family households (couple without family, one-parent and two-parent) increase under both the high and medium variants, but under the medium variant numbers peak in 2033 at 13,642 then decline to just above their starting point by 2063. Reflecting structural ageing, more older people living alone sees one-person households increase under all variants, although peaking in 2048 under the low variant.

Figure 3-2: Projected Number of Households by Household Type and Projection Variant, 2013-2063, Timaru District



Note different scales on Y-Axis

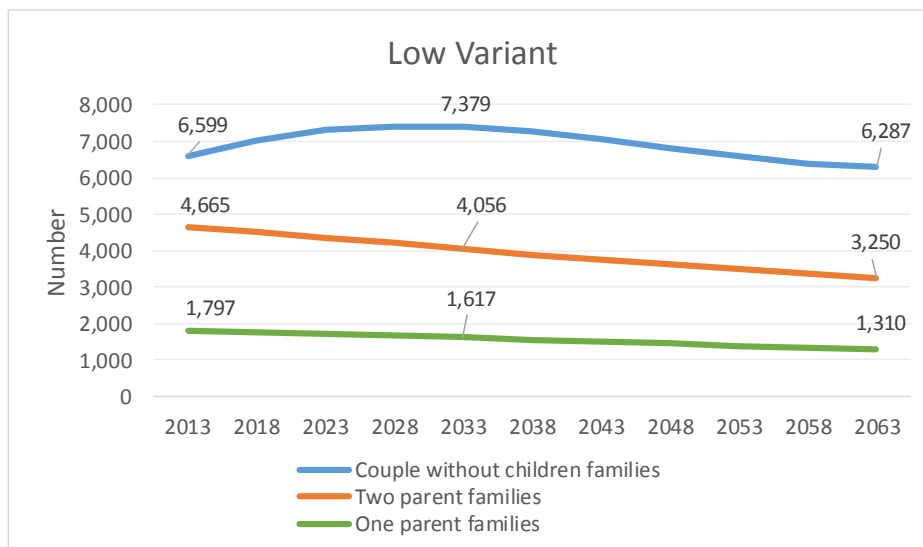
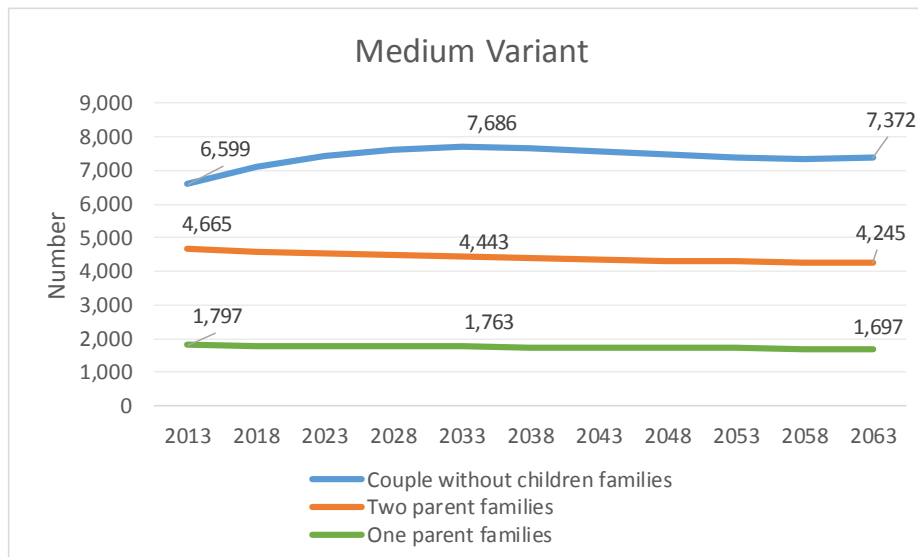
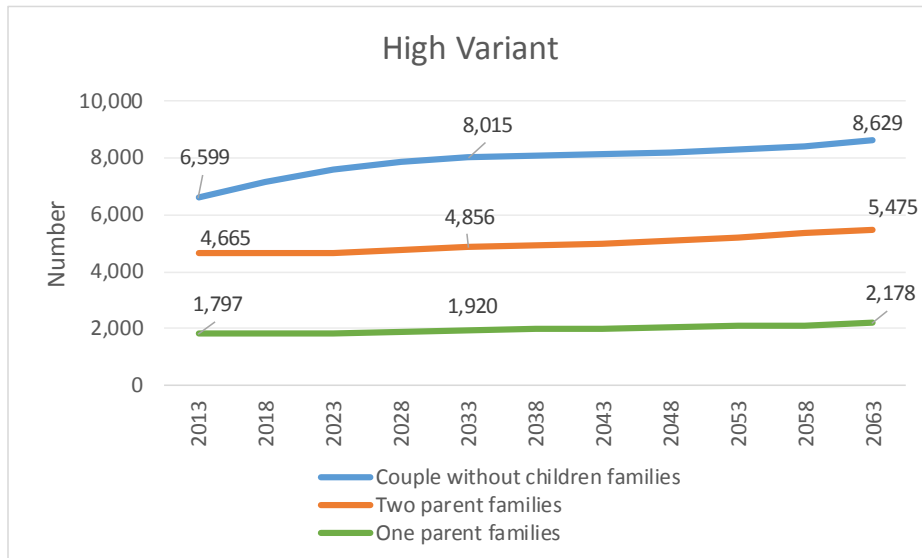
Figure 3.3 provides a further breakdown of changes within the broader family household category. As noted above this information is of critical importance as it shows that the majority of the overall increase in family households is in fact in 'couple-without children' families (except under the low variant where they decline overall). These households contain three different sets of couples: those who do not yet have children, those who did not or will not have children, and those whose children have left home. The types of dwellings that such people seek—and their location—is likely to differ from those sought by one- and two-parent families with children, whose numbers continue to grow across the projection period only under the high variant assumptions. Under both the medium and variant assumptions, both of these family types decline. The future dwelling demand for the Timaru District will thus (as elsewhere) be increasingly driven by non-family households, predominantly comprised of one-person and couples without children.

Tables 3.2 and 3.3 summarise these points. Table 3.2 shows family households declining from 69 per cent of all household types in 2013 to 62, 61 and 60 per cent respectively under the high, medium and low variant assumptions, and one-person households increasing from 28 per cent in 2013 to 35, 36 and 37 per cent respectively under the high, medium and low variants.

Within the family household category, Table 3.3 shows couple-without-children families increasing from 51 per cent of all family households in 2013 to 53, 55 and 58 per cent respectively under the high, medium and low variants; two-parent families declining from 36 per cent in 2013 to 34, 32 and 30 per cent respectively under the high, medium and low variants; and one-parent families declining from 14 per cent in 2013 to 13, 13 and 12 per cent respectively under the high, medium and low variants.

Finally, Figure 3.4 compares projected households and projected population. Under the high variant, the gap between household and population numbers increases, while under the low variant it decreases. This is because in the former case there are more family households, average household size is slightly higher and declines at a slower rate over the period, while in the latter case there are more one-person households, average household size is lower, and it declines at a greater rate.

Figure 3-3: Projected Number of Family Households by Family Household Type and Projection Variant, 2013-2063, Timaru District



Note different scales on Y-Axis

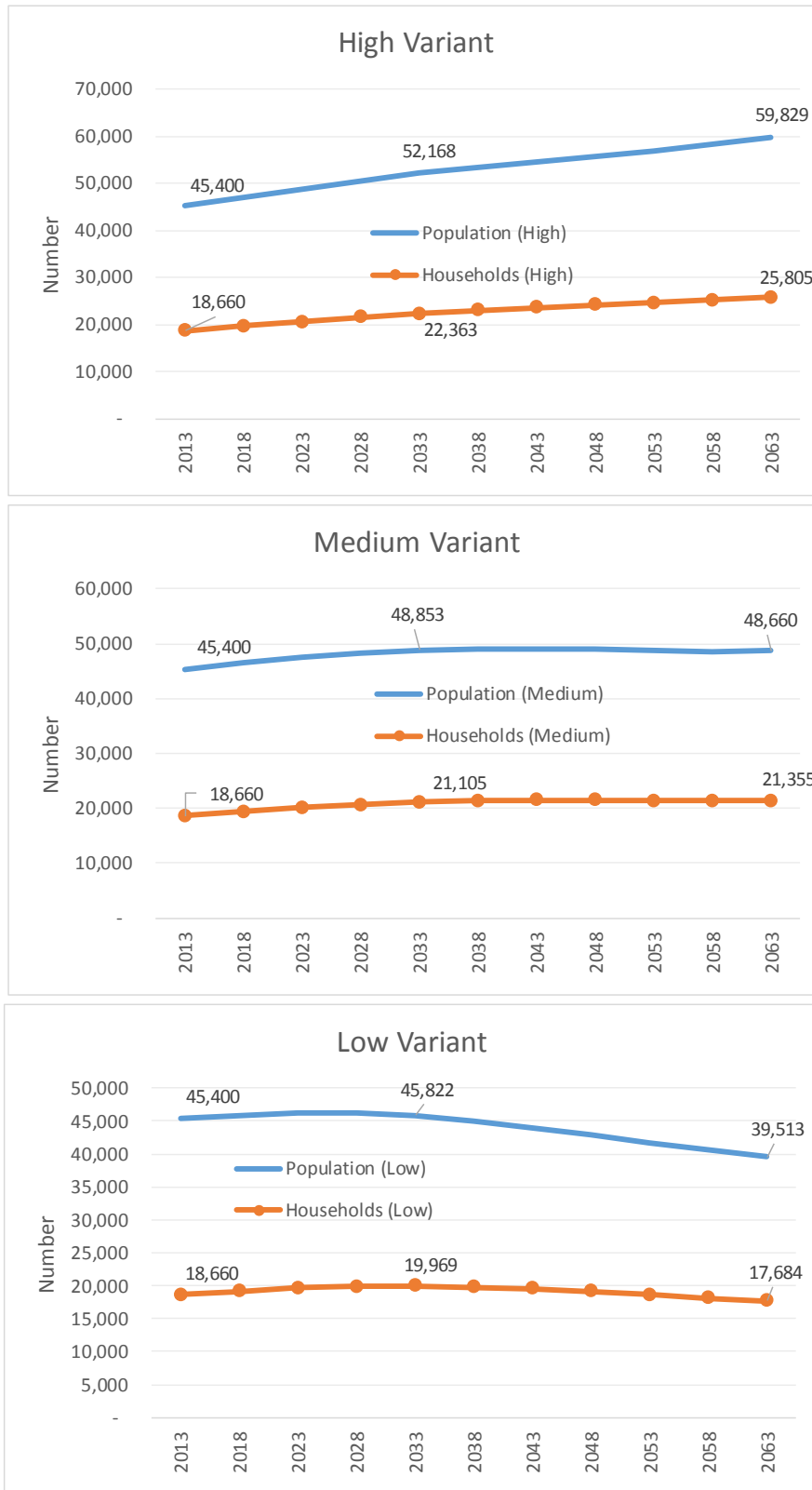
Table 3-2: Projected Distribution (%) of Households by Family/Household Type and Projection Variant, 2013-2063, Timaru District

	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
High Variant											
Family Households	69	68	67	66	65	64	63	62	62	62	62
One Person Households	28	29	30	31	32	33	34	35	35	35	35
Other multi-person household	3	3	3	3	3	3	3	3	3	3	3
Total Households	100	100	100	100	100	100	100	100	100	100	100
Medium Variant											
Family Households	69	68	67	66	65	63	62	62	61	61	61
One Person Households	28	29	30	31	33	34	35	35	36	36	36
Other multi-person household	3	3	3	3	3	3	3	3	3	3	3
Total Households	100	100	100	100	100	100	100	100	100	100	100
Low Variant											
Family Households	69	68	67	66	64	63	62	61	61	60	60
One Person Households	28	29	30	32	33	34	36	36	37	37	37
Other multi-person household	3	3	3	3	3	3	3	3	3	3	3
Total Households	100	100	100	100	100	100	100	100	100	100	100

Table 3-3: Projected Distribution (%) of Family Households by Family Type and Projection Variant, 2013-2063, Timaru District

	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
High Variant											
Couple without children families	51	53	54	54	54	54	54	54	53	53	53
Two parent families	36	34	33	33	33	33	33	33	33	34	34
One parent families	14	13	13	13	13	13	13	13	13	13	13
Total Families	100	100	100	100	100	100	100	100	100	100	100
Medium Variant											
Couple without children families	51	53	54	55	55	56	56	55	55	55	55
Two parent families	36	34	33	32	32	32	32	32	32	32	32
One parent families	14	13	13	13	13	13	13	13	13	13	13
Total Families	100	100	100	100	100	100	100	100	100	100	100
Low Variant											
Couple without children families	51	53	55	56	57	57	57	57	57	57	58
Two parent families	36	34	33	32	31	31	31	31	31	30	30
One parent families	14	13	13	13	12	12	12	12	12	12	12
Total Families	100	100	100	100	100	100	100	100	100	100	100

Figure 3-4: Projected Population and Projected Households by Projection Variant, 2013-2063, Timaru District



Note different scales on Y-Axis

Appendices

Appendix A: Projected Population and Major Projection Assumptions by Projection Variant, Timaru District

Timaru District		Annual Growth Rate %	Average Annual Increase	TFR	Male e0	Female e0	Annual Net Migration (includes deaths)	Annual Births	Annual Deaths	Annual Natural Increase	Crude Birth Rate	Crude Death Rate	
Year	Population												
High	2013-	45,400	0.73	337	2.22	80.2	83.5	232	572	468	105	12.4	10.1
High	2018-	47,084	0.73	348	2.20	81.3	84.5	252	586	491	95	12.2	10.2
High	2023-	48,822	0.70	347	2.19	82.3	85.4	283	594	530	64	12.0	10.7
High	2028-	50,557	0.63	322	2.19	83.3	86.4	307	591	576	15	11.5	11.2
High	2033-	52,168	0.51	269	2.19	84.3	87.3	310	590	631	-41	11.2	11.9
High	2038-	53,511	0.44	238	2.19	85.3	88.3	312	601	675	-74	11.1	12.5
High	2043-	54,701	0.41	225	2.19	86.3	89.1	323	625	723	-98	11.3	13.1
High	2048-	55,826	0.42	237	2.19	87.3	90.0	339	648	751	-103	11.5	13.3
High	2053-	57,010	0.46	262	2.19	88.2	90.7	361	662	761	-99	11.5	13.2
High	2058-	58,322	0.51	301	2.19	89.1	91.5	383	670	751	-81	11.3	12.7
High	2063	59,829				90.0	92.1						
Medium	2013-	45,400	0.47	216	2.20	79.9	83.2	143	549	476	73	11.9	10.4
Medium	2018-	46,480	0.42	196	2.08	80.8	84.0	167	534	506	28	11.4	10.8
Medium	2023-	47,459	0.35	167	2.05	81.7	84.8	194	522	549	-27	10.9	11.5
Medium	2028-	48,293	0.23	112	2.02	82.5	85.6	209	501	598	-97	10.3	12.3
Medium	2033-	48,853	0.08	38	1.99	83.3	86.3	202	488	652	-164	10.0	13.3
Medium	2038-	49,041	0.00	-1	1.99	84.1	87.0	203	488	693	-204	10.0	14.1
Medium	2043-	49,034	-0.05	-27	1.99	84.9	87.7	213	494	733	-240	10.1	15.0
Medium	2048-	48,901	-0.06	-31	1.99	85.7	88.4	225	494	750	-256	10.1	15.4
Medium	2053-	48,746	-0.04	-20	1.99	86.4	89.1	240	486	746	-260	10.0	15.3
Medium	2058-	48,645	0.01	3	1.99	87.2	89.7	250	475	722	-247	9.8	14.8
Medium	2063	48,660				87.9	90.3						
Low	2013-	45,400	0.21	96	2.18	79.4	83.1	54	527	485	42	11.5	10.6
Low	2018-	45,882	0.12	57	1.97	80.1	83.7	88	487	518	-31	10.6	11.3
Low	2023-	46,166	0.01	3	1.91	80.8	84.3	112	455	564	-109	9.9	12.2
Low	2028-	46,182	-0.16	-72	1.84	81.4	84.9	121	420	614	-193	9.1	13.3
Low	2033-	45,822	-0.35	-158	1.79	82.1	85.4	108	400	666	-266	8.8	14.7
Low	2038-	45,031	-0.44	-197	1.79	82.6	85.9	114	393	704	-311	8.8	15.8
Low	2043-	44,049	-0.51	-224	1.79	83.2	86.4	130	385	739	-354	8.9	17.0
Low	2048-	42,927	-0.55	-235	1.79	83.7	86.9	142	370	747	-377	8.7	17.6
Low	2053-	41,751	-0.56	-231	1.79	84.2	87.4	154	349	734	-385	8.5	17.8
Low	2058-	40,596	-0.54	-216	1.79	84.6	87.9	157	330	703	-373	8.2	17.5
Low	2063	39,513				85.1	88.3						

TFR = total fertility rate

e0 = life expectancy at birth (Values are slightly higher than Stats NZ as based on 2013 not 2011 rates)

Appendix B1: Arrivals From and Leavers To Christchurch 2001-2006 and 2006-2013

Figure 1.1 in Section 1 showed an improving migration scenario for Timaru, primarily involving a reducing net loss at 20-24 years and gains at 30-79 years, albeit the latter reducing at 30-64 years over the previous (2001-2006) period. The gains at 30-49 years were also accompanied by gains at 0-14 years.

The extent to which the trends may reflect recent gains related to the Christchurch earthquakes is indicated in Figure B1 and Table B1. Between 2008 and 2013 Timaru made a net gain of 87 persons from Christchurch, which contrasted with a net loss to Christchurch of 795 people between 2001 and 2006. Between 2008 and 2013 the net gain from Christchurch accounted for 4.7 per cent of Timaru District's overall net internal migration gain of 1,851 persons. By contrast, between 2001 and 2006 the net loss to Christchurch reduced an overall net internal migration gain for Timaru of 843 persons by 94.3 per cent. Between 2008 and 2013, Arrivals from Christchurch also accounted for a larger proportion of all internal Arrivals than in the period 2001-2006, while Leavers to Christchurch accounted for a smaller proportion of all Leavers. In sum, these data imply that the Christchurch earthquakes resulted in a small direct net gain for Timaru, but that factors other than the earthquakes caused the District's generally improving migration. However the Christchurch earthquakes may also have had a generalised *indirect* effect in reducing the desire to leave Timaru for Christchurch.

Appendix Figure B1: Percentage of All Internal Arrivals From/Leavers To Christchurch and Net Impact on Internal Migration, 2001-2006 and 2008-2013



Source: Jackson and Pawar 2014

Appendix Table B1: Arrivals From/Leavers to Christchurch 2001-2006 and 2008-2013

	Arrivals	Leavers	Net
0-4*	...	...	...
5-9	105	42	63
10-14	78	42	36
15-19	54	186	-132
20-24	99	402	-303
25-29	156	81	75
30-34	108	57	51
35-39	111	66	45
40-44	93	66	27
45-49	81	48	33
50-54	90	54	36
55-59	63	36	27
60-64	69	39	30
65+	180	69	111
Total	1,284	1,197	87
From/To Christchurch (%)	19.4	25.1	4.7
Timaru District (Summary 2008-2013)			
	Arrivals	Leavers	Net
Total Internal Migrants	6,615	4,764	1,851
Not Born 5 Years Ago	2,538	...	...
Overseas	1,467	...	...
NEI/Not Stated	1,743	...	...
STAYERS	...	...	31,446
Timaru- five next largest groups of movers (2008-2013)			
	Arrivals	Leavers	Net
Ashburton	396	372	24
Waimate	357	318	39
Auckland	309	225	84
Dunedin	300	531	-231
Mackenzie	207	183	24

Notes: *children aged 0-4 in 2013 were not born in 2008 and thus there are no data. Note also that numbers do not always sum to the total because of underlying rounding of small cell sizes

ARRIVALS = lived elsewhere in 2008;

LEAVERS lived in Timaru District in 2008

2001-2006

From/To Christchurch (N)	981	1776	-795
Total Internal Migrants (N)	6627	5784	843
From/To Christchurch (%)	14.8	30.7	-94.3

ARRIVALS = lived elsewhere in 2001;

LEAVERS lived in Timaru District in 2001

Appendix C1: Projected Population of the Timaru District by Age and Sex, LOW Variant

Males		High Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	1,430	1,459	1,493	1,514	1,507	1,503	1,532	1,592	1,652	1,689	1,709
5- 9	1,400	1,520	1,556	1,593	1,616	1,611	1,607	1,635	1,697	1,761	1,802
10-14	1,470	1,474	1,594	1,636	1,676	1,701	1,697	1,693	1,720	1,784	1,851
15-19	1,540	1,377	1,390	1,509	1,545	1,582	1,605	1,600	1,596	1,624	1,686
20-24	1,170	1,360	1,169	1,212	1,324	1,343	1,378	1,396	1,388	1,385	1,414
25-29	1,030	1,131	1,317	1,120	1,170	1,280	1,296	1,330	1,347	1,339	1,337
30-34	1,020	1,096	1,202	1,395	1,213	1,250	1,363	1,386	1,422	1,442	1,435
35-39	1,150	1,084	1,156	1,266	1,466	1,296	1,323	1,438	1,468	1,506	1,528
40-44	1,410	1,189	1,117	1,187	1,299	1,502	1,340	1,362	1,477	1,512	1,551
45-49	1,540	1,437	1,217	1,140	1,209	1,323	1,528	1,373	1,391	1,507	1,545
50-54	1,720	1,607	1,502	1,280	1,194	1,259	1,376	1,586	1,445	1,456	1,573
55-59	1,580	1,741	1,640	1,535	1,316	1,225	1,287	1,407	1,621	1,489	1,497
60-64	1,550	1,602	1,766	1,680	1,578	1,362	1,266	1,324	1,447	1,666	1,548
65-69	1,300	1,539	1,610	1,779	1,712	1,616	1,407	1,306	1,362	1,488	1,713
70-74	1,060	1,249	1,493	1,583	1,759	1,716	1,632	1,434	1,333	1,388	1,518
75-79	740	953	1,145	1,388	1,499	1,683	1,667	1,603	1,425	1,331	1,386
80-84	610	597	784	967	1,200	1,327	1,516	1,532	1,496	1,351	1,273
85+	410	532	610	777	1,001	1,301	1,598	1,943	2,224	2,436	2,535
Total	22,130	22,947	23,760	24,563	25,284	25,880	26,416	26,939	27,512	28,154	28,901

Females		High Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	1,250	1,390	1,424	1,444	1,437	1,434	1,462	1,520	1,578	1,613	1,633
5- 9	1,290	1,339	1,483	1,527	1,550	1,545	1,542	1,569	1,629	1,692	1,731
10-14	1,450	1,371	1,415	1,562	1,613	1,639	1,636	1,633	1,660	1,722	1,788
15-19	1,370	1,327	1,251	1,303	1,445	1,484	1,507	1,502	1,499	1,526	1,586
20-24	1,120	1,050	1,027	958	1,029	1,151	1,156	1,177	1,166	1,167	1,194
25-29	1,090	1,220	1,162	1,134	1,063	1,128	1,255	1,272	1,295	1,287	1,287
30-34	1,080	1,195	1,337	1,293	1,261	1,187	1,244	1,378	1,408	1,434	1,429
35-39	1,280	1,170	1,277	1,426	1,394	1,359	1,283	1,335	1,473	1,513	1,543
40-44	1,590	1,377	1,254	1,353	1,509	1,487	1,452	1,374	1,422	1,562	1,612
45-49	1,730	1,625	1,412	1,284	1,381	1,539	1,522	1,488	1,410	1,456	1,598
50-54	1,820	1,758	1,655	1,442	1,311	1,405	1,566	1,555	1,521	1,443	1,488
55-59	1,590	1,849	1,800	1,698	1,487	1,352	1,441	1,606	1,602	1,569	1,492
60-64	1,600	1,632	1,892	1,860	1,763	1,552	1,411	1,495	1,665	1,671	1,641
65-69	1,360	1,639	1,696	1,958	1,952	1,862	1,654	1,505	1,580	1,756	1,777
70-74	1,150	1,342	1,625	1,704	1,969	1,986	1,907	1,708	1,557	1,628	1,808
75-79	930	1,079	1,273	1,556	1,655	1,922	1,962	1,901	1,717	1,573	1,643
80-84	740	787	931	1,118	1,388	1,499	1,762	1,821	1,783	1,626	1,501
85+	830	987	1,149	1,374	1,679	2,100	2,523	3,049	3,534	3,929	4,178
Total	23,270	24,137	25,062	25,994	26,884	27,631	28,286	28,887	29,499	30,168	30,928

Total		High Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	2,680	2,849	2,917	2,958	2,945	2,938	2,993	3,112	3,230	3,302	3,341
5- 9	2,690	2,859	3,039	3,120	3,166	3,156	3,149	3,204	3,326	3,453	3,533
10-14	2,920	2,845	3,009	3,198	3,289	3,340	3,333	3,326	3,380	3,506	3,639
15-19	2,910	2,704	2,642	2,812	2,990	3,066	3,112	3,102	3,095	3,151	3,272
20-24	2,290	2,409	2,196	2,169	2,353	2,494	2,533	2,573	2,554	2,552	2,608
25-29	2,120	2,351	2,479	2,254	2,232	2,408	2,551	2,602	2,642	2,626	2,623
30-34	2,100	2,292	2,539	2,688	2,474	2,437	2,607	2,764	2,830	2,876	2,864
35-39	2,430	2,253	2,433	2,692	2,859	2,655	2,606	2,773	2,941	3,019	3,071
40-44	3,000	2,566	2,371	2,540	2,808	2,989	2,792	2,736	2,899	3,074	3,163
45-49	3,270	3,063	2,629	2,425	2,589	2,862	3,050	2,861	2,801	2,963	3,143
50-54	3,540	3,366	3,157	2,722	2,506	2,664	2,942	3,141	2,965	2,900	3,061
55-59	3,170	3,590	3,439	3,234	2,802	2,576	2,728	3,012	3,222	3,059	2,990
60-64	3,150	3,234	3,658	3,540	3,341	2,914	2,677	2,820	3,112	3,337	3,189
65-69	2,660	3,178	3,306	3,737	3,664	3,478	3,061	2,810	2,942	3,244	3,490
70-74	2,210	2,590	3,118	3,287	3,728	3,701	3,539	3,142	2,890	3,016	3,326
75-79	1,670	2,032	2,418	2,944	3,154	3,605	3,629	3,504	3,142	2,903	3,029
80-84	1,350	1,384	1,715	2,085	2,588	2,826	3,278	3,354	3,279	2,977	2,775
85+	1,240	1,519	1,759	2,151	2,680	3,402	4,121	4,992	5,758	6,366	6,712
Total	45,400	47,084	48,822	50,557	52,168	53,511	54,701	55,826	57,010	58,322	59,829

Appendix C2: Projected Population of the Timaru District by Age and Sex, MEDIUM Variant

Males		Medium Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	1,430	1,398	1,363	1,332	1,280	1,247	1,247	1,261	1,262	1,242	1,215
5- 9	1,400	1,510	1,485	1,448	1,416	1,362	1,326	1,324	1,338	1,340	1,320
10-14	1,470	1,465	1,575	1,555	1,517	1,484	1,427	1,389	1,386	1,399	1,402
15-19	1,540	1,362	1,369	1,479	1,452	1,416	1,385	1,332	1,297	1,296	1,310
20-24	1,170	1,274	1,074	1,126	1,225	1,176	1,152	1,126	1,079	1,055	1,060
25-29	1,030	1,116	1,216	1,013	1,075	1,170	1,118	1,096	1,072	1,026	1,005
30-34	1,020	1,080	1,169	1,274	1,077	1,129	1,227	1,180	1,156	1,131	1,084
35-39	1,150	1,077	1,133	1,226	1,336	1,145	1,188	1,288	1,247	1,221	1,195
40-44	1,410	1,177	1,100	1,154	1,249	1,361	1,175	1,213	1,315	1,276	1,250
45-49	1,540	1,420	1,189	1,110	1,164	1,259	1,373	1,190	1,226	1,329	1,293
50-54	1,720	1,582	1,461	1,230	1,144	1,196	1,294	1,412	1,235	1,265	1,369
55-59	1,580	1,732	1,605	1,485	1,257	1,167	1,217	1,317	1,439	1,269	1,295
60-64	1,550	1,594	1,748	1,636	1,519	1,294	1,200	1,247	1,350	1,476	1,316
65-69	1,300	1,531	1,591	1,749	1,656	1,545	1,327	1,229	1,275	1,381	1,513
70-74	1,060	1,239	1,470	1,547	1,709	1,638	1,539	1,335	1,238	1,283	1,393
75-79	740	946	1,122	1,346	1,438	1,601	1,559	1,479	1,298	1,210	1,257
80-84	610	594	766	925	1,128	1,227	1,386	1,374	1,323	1,179	1,111
85+	410	529	593	728	898	1,118	1,317	1,541	1,692	1,779	1,774
Total	22,130	22,628	23,031	23,365	23,538	23,537	23,456	23,335	23,227	23,158	23,160

Females		Medium Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	1,250	1,333	1,299	1,270	1,219	1,188	1,188	1,201	1,202	1,183	1,157
5- 9	1,290	1,331	1,417	1,388	1,358	1,305	1,271	1,269	1,282	1,284	1,265
10-14	1,450	1,365	1,402	1,490	1,465	1,434	1,380	1,342	1,339	1,352	1,354
15-19	1,370	1,314	1,234	1,279	1,363	1,330	1,302	1,251	1,219	1,218	1,231
20-24	1,120	976	970	893	965	1,023	971	961	914	898	903
25-29	1,090	1,197	1,061	1,046	968	1,034	1,097	1,050	1,036	988	969
30-34	1,080	1,186	1,302	1,177	1,151	1,071	1,130	1,199	1,157	1,141	1,091
35-39	1,280	1,160	1,258	1,381	1,264	1,231	1,149	1,203	1,275	1,239	1,220
40-44	1,590	1,358	1,226	1,318	1,445	1,337	1,298	1,214	1,264	1,339	1,307
45-49	1,730	1,616	1,384	1,249	1,338	1,468	1,363	1,322	1,239	1,287	1,363
50-54	1,820	1,752	1,640	1,409	1,271	1,357	1,489	1,389	1,347	1,264	1,311
55-59	1,590	1,848	1,793	1,683	1,453	1,310	1,392	1,527	1,433	1,389	1,306
60-64	1,600	1,628	1,885	1,848	1,741	1,512	1,363	1,439	1,578	1,493	1,447
65-69	1,360	1,624	1,672	1,931	1,916	1,816	1,590	1,434	1,501	1,645	1,573
70-74	1,150	1,330	1,595	1,660	1,919	1,923	1,834	1,618	1,462	1,526	1,673
75-79	930	1,072	1,251	1,511	1,593	1,848	1,873	1,801	1,603	1,455	1,517
80-84	740	781	913	1,079	1,320	1,410	1,654	1,696	1,648	1,481	1,355
85+	830	983	1,126	1,317	1,566	1,907	2,235	2,651	3,021	3,306	3,458
Total	23,270	23,852	24,428	24,928	25,314	25,504	25,578	25,567	25,519	25,487	25,500

Total		Medium Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	2,680	2,731	2,661	2,602	2,499	2,435	2,435	2,462	2,464	2,425	2,372
5- 9	2,690	2,842	2,903	2,837	2,774	2,667	2,597	2,593	2,620	2,623	2,585
10-14	2,920	2,830	2,977	3,045	2,983	2,917	2,807	2,732	2,725	2,751	2,756
15-19	2,910	2,676	2,604	2,759	2,815	2,747	2,687	2,583	2,516	2,515	2,541
20-24	2,290	2,250	2,044	2,020	2,190	2,200	2,123	2,088	1,993	1,953	1,963
25-29	2,120	2,313	2,277	2,058	2,043	2,205	2,215	2,146	2,109	2,014	1,974
30-34	2,100	2,266	2,472	2,451	2,228	2,200	2,357	2,379	2,314	2,272	2,175
35-39	2,430	2,237	2,391	2,607	2,600	2,376	2,336	2,491	2,522	2,460	2,415
40-44	3,000	2,535	2,326	2,472	2,694	2,698	2,473	2,427	2,579	2,615	2,557
45-49	3,270	3,036	2,573	2,359	2,502	2,727	2,736	2,513	2,465	2,616	2,656
50-54	3,540	3,334	3,101	2,639	2,415	2,553	2,783	2,800	2,583	2,529	2,680
55-59	3,170	3,580	3,398	3,168	2,709	2,477	2,609	2,844	2,872	2,658	2,601
60-64	3,150	3,221	3,633	3,484	3,259	2,806	2,562	2,686	2,928	2,969	2,763
65-69	2,660	3,155	3,264	3,680	3,572	3,360	2,917	2,663	2,776	3,026	3,086
70-74	2,210	2,569	3,065	3,207	3,627	3,562	3,373	2,952	2,700	2,809	3,066
75-79	1,670	2,018	2,373	2,857	3,030	3,450	3,432	3,280	2,900	2,664	2,774
80-84	1,350	1,375	1,679	2,004	2,448	2,637	3,040	3,070	2,971	2,660	2,466
85+	1,240	1,512	1,719	2,044	2,464	3,026	3,551	4,193	4,713	5,085	5,232
Total	45,400	46,480	47,459	48,293	48,853	49,041	49,034	48,901	48,746	48,645	48,660

Appendix C3: Projected Population of the Timaru District by Age and Sex, LOW Variant

Males		Low Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	1,430	1,343	1,240	1,161	1,072	1,021	1,002	983	944	892	841
5- 9	1,400	1,501	1,420	1,313	1,228	1,135	1,080	1,057	1,037	998	943
10-14	1,470	1,456	1,557	1,479	1,369	1,280	1,184	1,125	1,100	1,079	1,039
15-19	1,540	1,347	1,348	1,449	1,364	1,261	1,181	1,091	1,039	1,018	999
20-24	1,170	1,188	991	1,051	1,134	1,025	955	895	823	793	781
25-29	1,030	1,102	1,116	919	991	1,069	956	893	838	770	744
30-34	1,020	1,063	1,137	1,154	958	1,023	1,104	994	927	870	800
35-39	1,150	1,070	1,110	1,186	1,206	1,013	1,068	1,151	1,046	975	914
40-44	1,410	1,165	1,083	1,121	1,198	1,220	1,028	1,080	1,164	1,061	989
45-49	1,540	1,403	1,161	1,079	1,117	1,194	1,217	1,027	1,078	1,163	1,061
50-54	1,720	1,557	1,420	1,179	1,093	1,130	1,208	1,233	1,046	1,093	1,179
55-59	1,580	1,722	1,569	1,433	1,195	1,106	1,141	1,220	1,248	1,065	1,108
60-64	1,550	1,584	1,727	1,588	1,454	1,220	1,126	1,158	1,238	1,270	1,093
65-69	1,300	1,522	1,570	1,714	1,593	1,463	1,236	1,139	1,169	1,250	1,287
70-74	1,060	1,226	1,445	1,506	1,651	1,551	1,433	1,220	1,125	1,153	1,235
75-79	740	935	1,096	1,304	1,377	1,520	1,447	1,347	1,158	1,070	1,098
80-84	610	585	746	889	1,073	1,152	1,286	1,243	1,170	1,017	946
85+	410	519	574	696	849	1,044	1,211	1,394	1,492	1,524	1,471
Total	22,130	22,291	22,310	22,221	21,923	21,428	20,860	20,250	19,642	19,060	18,526

Females		Low Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	1,250	1,280	1,182	1,107	1,022	974	955	937	901	850	802
5- 9	1,290	1,323	1,355	1,259	1,179	1,090	1,036	1,015	995	958	905
10-14	1,450	1,359	1,388	1,421	1,328	1,242	1,149	1,092	1,067	1,047	1,008
15-19	1,370	1,300	1,217	1,256	1,285	1,188	1,113	1,028	980	961	942
20-24	1,120	902	923	832	908	906	810	775	705	686	675
25-29	1,090	1,173	960	971	880	952	953	858	818	746	724
30-34	1,080	1,176	1,268	1,063	1,057	966	1,030	1,037	942	895	819
35-39	1,280	1,150	1,239	1,335	1,136	1,119	1,028	1,087	1,097	1,004	951
40-44	1,590	1,338	1,199	1,282	1,383	1,189	1,164	1,072	1,128	1,141	1,048
45-49	1,730	1,606	1,355	1,214	1,295	1,397	1,206	1,179	1,087	1,141	1,155
50-54	1,820	1,746	1,624	1,375	1,231	1,309	1,413	1,226	1,196	1,105	1,158
55-59	1,590	1,847	1,786	1,665	1,417	1,267	1,341	1,447	1,267	1,232	1,141
60-64	1,600	1,623	1,879	1,834	1,716	1,469	1,312	1,380	1,489	1,318	1,276
65-69	1,360	1,610	1,649	1,903	1,877	1,766	1,523	1,360	1,421	1,533	1,373
70-74	1,150	1,319	1,567	1,619	1,869	1,859	1,758	1,525	1,365	1,421	1,536
75-79	930	1,068	1,233	1,472	1,535	1,777	1,784	1,698	1,485	1,334	1,388
80-84	740	780	904	1,052	1,266	1,333	1,554	1,574	1,511	1,332	1,205
85+	830	989	1,128	1,302	1,517	1,802	2,058	2,385	2,653	2,832	2,880
Total	23,270	23,591	23,856	23,961	23,899	23,603	23,188	22,677	22,109	21,536	20,987

Total		Low Variant									
Year:	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063
0- 4	2,680	2,623	2,422	2,268	2,094	1,995	1,957	1,920	1,845	1,742	1,644
5- 9	2,690	2,825	2,775	2,572	2,407	2,225	2,116	2,072	2,032	1,956	1,848
10-14	2,920	2,815	2,945	2,901	2,697	2,523	2,333	2,216	2,168	2,126	2,047
15-19	2,910	2,648	2,566	2,705	2,649	2,449	2,294	2,119	2,019	1,979	1,941
20-24	2,290	2,090	1,914	1,883	2,042	1,931	1,765	1,670	1,528	1,479	1,457
25-29	2,120	2,276	2,076	1,890	1,871	2,021	1,910	1,751	1,656	1,516	1,467
30-34	2,100	2,239	2,405	2,216	2,015	1,989	2,134	2,031	1,869	1,765	1,619
35-39	2,430	2,220	2,348	2,521	2,343	2,132	2,096	2,238	2,143	1,978	1,865
40-44	3,000	2,504	2,282	2,403	2,580	2,408	2,192	2,152	2,292	2,202	2,036
45-49	3,270	3,009	2,516	2,292	2,412	2,590	2,423	2,206	2,166	2,304	2,216
50-54	3,540	3,303	3,044	2,554	2,324	2,439	2,620	2,459	2,242	2,198	2,336
55-59	3,170	3,569	3,355	3,098	2,612	2,373	2,482	2,667	2,514	2,296	2,248
60-64	3,150	3,207	3,606	3,421	3,170	2,688	2,438	2,538	2,728	2,588	2,370
65-69	2,660	3,132	3,219	3,618	3,470	3,230	2,759	2,500	2,590	2,784	2,660
70-74	2,210	2,545	3,011	3,125	3,520	3,410	3,191	2,746	2,489	2,575	2,771
75-79	1,670	2,003	2,329	2,775	2,913	3,297	3,231	3,045	2,643	2,403	2,486
80-84	1,350	1,366	1,649	1,941	2,339	2,485	2,840	2,817	2,680	2,349	2,150
85+	1,240	1,508	1,702	1,998	2,366	2,846	3,269	3,780	4,145	4,356	4,351
Total	45,400	45,882	46,166	46,182	45,822	45,031	44,049	42,927	41,751	40,596	39,513

Appendix D1: Baseline Average Household Size and Methodology³, Timaru District 2013

	Timaru District
Average number of people per 'Other Multi-Person Household'	2.24
Average Size per 'Couple with Children Families'	3.90
Average Size per 'One-Parent Families'	2.55
Average Number of Families per 'Family Household'	1.02

Household Projection Methodology:

According to Statistics New Zealand 2010, the definition of a household is:

"either one person who usually resides alone, or two or more people who usually reside together and share facilities in a private dwelling."

Thus it reasonable to conclude that the number of households is equal to the number of private dwellings (Jackson et al. 2014: 22).

STEP ONE: Calculate age-specific rates for each family/household type by sex (Living Arrangement Type or LATR Rates for 2013)

One Person Households = (Number of people living in 'One-Person households' in each 5 year age group by sex)/Usually Resident population in age-sex group

Couple without Children Families = (Number of people living in 'Couple without Children' families in each 5 year age group by sex)/Usually Resident population in age-sex group

Couple with Children Families = (Number of people living in 'Couple with Children' families in each 5 year age group by sex)/Usually Resident population in age-sex group

One-Parent Families = (Number of people living in 'One Parent with Children' families in each 5 year age group by sex)/Usually Resident population in age-sex group

Multi-Person Households = (Number of people living in 'Multi-person households' in each 5 year age group by sex)/Usually Resident population in age-sex group

³ The household projections were undertaken as a sub-contract to the project by Shefali Pawar, Senior Research Officer, National Institute of Demographic and Economic Analysis, University of Waikato

STEP TWO: Apply these LATR rates to the projected population (by 5 year age group and sex) of the District to get the number of usually resident population living in each family/household type.

STEP THREE: Calculate the number of Families by Family Type and Household by Household Type as follows:

Number of One-Person Households = Number of males living in One-Person households + Number of females living in One-Person households

Number of Multi-Person Households = (Number of males living in Multi-Person households + Number of females living in Multi-Person households) / Average number of people per 'Other Multi-Person Household

Number of Two parent families = (Number of males living in Couple with Children families + Number of females living in Couple with Children families) / Average Size per Couple with Children families

Number of One Parent Families = (Number of males living in One-Parent families + Number of females living in One-Parent families) / Average Size per One-Parent Family

Number of Couple without Children Families = (Number of males living in Couple without Children families + Number of females living in Couple without Children families) / 2

Number of Family Households = Sum of the number of families (all three Family Types) / Average Number of Families per Family Household

Data sources for household projections

- ∞ Statistics New Zealand (2013): Area of Usual Residence (2013) by Household Composition and Age - 5 Year Groups to 85 years and over for Usual Residents in Multi Person Households in Private Occupied Dwellings
- ∞ Statistics New Zealand (2013): Area of Usual Residence (2013) by Household Composition and Number of Usual Residents in Household Recode for households in private occupied dwellings
- ∞ Statistics New Zealand (2013): Area of Usual Residence (2013) by Family Type by Number of Children in Family for Usual Residents in Families in Private Occupied Dwellings
- ∞ Statistics New Zealand (2013): Area of Usual Residence (2013) by Age and Five Year Groups and Sex for the Census Usually Resident Population Count

Appendix D2: Projected Change in Number of Households by Family and Household Type, 2013-2063

		Change (Number)			Change (%)		
High Variant		2013-2033	2033-2063	2013-2063	2013-2033	2033-2063	2013-2063
FAMILIES	Couple without children families	1,415	614	2,029	21.4	7.7	30.7
	Two parent families	191	618	809	4.1	12.7	17.3
	One parent families	123	258	381	6.8	13.4	21.2
	Total Families	1,729	1,491	3,220	13.2	10.1	24.7
HOUSEHOLDS	Family Households	1,698	1,464	3,162	13.2	10.1	24.7
	One Person Households	1,972	1,904	3,876	37.6	26.4	74.0
	Other multi-person household	33	75	108	5.6	12.0	18.2
	Total Households	3,703	3,443	7,146	19.8	15.4	38.3

		Change (Number)			Change (%)		
Medium Variant		2013-2033	2033-2063	2013-2063	2013-2033	2033-2063	2013-2063
FAMILIES	Couple without children families	1,087	-315	772	16.5	-4.1	11.7
	Two parent families	-222	-198	-421	-4.8	-4.5	-9.0
	One parent families	-34	-66	-100	-1.9	-3.8	-5.6
	Total Families	831	-579	251	6.4	-4.2	1.9
HOUSEHOLDS	Family Households	816	-569	247	6.4	-4.2	1.9
	One Person Households	1,634	847	2,482	31.2	12.3	47.4
	Other multi-person household	-5	-28	-33	-0.9	-4.7	-5.6
	Total Households	2,445	251	2,695	13.1	1.2	14.4

		Change (Number)			Change (%)		
Low Variant		2013-2033	2033-2063	2013-2063	2013-2033	2033-2063	2013-2063
FAMILIES	Couple without children families	780	-1,092	-312	11.8	-14.8	-4.7
	Two parent families	-609	-807	-1,415	-13.1	-19.9	-30.3
	One parent families	-180	-308	-487	-10.0	-19.0	-27.1
	Total Families	-9	-2,206	-2,215	-0.1	-16.9	-17.0
HOUSEHOLDS	Family Households	-9	-2,166	-2,175	-0.1	-16.9	-17.0
	One Person Households	1,359	-11	1,348	25.9	-0.2	25.7
	Other multi-person household	-41	-109	-150	-6.9	-19.6	-25.2
	Total Households	1,309	-2,286	-976	7.0	-11.4	-5.2

References

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