



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

**2020 Update of Population, and Family and Household,
Projections for Waikato District, 2013-2063**

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The views expressed in this report are those of the authors and do not reflect any official position on the part of the University of Waikato.

Disclaimer

The projections discussed in this report are based on historical data and assumptions made by the authors. While the authors believe that the projections can provide plausible and indicative inputs into planning and policy formulation, the reported numbers cannot be relied upon as providing precise forecasts of future population levels. The University of Waikato will not be held liable for any loss suffered through the use, directly or indirectly, of the information contained in this report.

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1. Introduction

The University of Waikato has a long history of projecting subnational populations for the Waikato Region, and Waikato District in particular (e.g. see Cameron et al., 2007; 2008a; 2008b). Most recently, Cameron and Cochrane (2016) produced demographic projections for the period from 2013-2063. The delayed release of data from the 2018 Census, further delays to the Estimated Usually Resident Population (EURP) data, and the pressing need for data for planning purposes, led the Waikato District Council to approach the University of Waikato to update their 2013-base demographic projections. This followed similar exercises conducted for Hamilton City (Cameron, 2020a) and Waipā District (Cameron, 2020b). This brief report summarises the Waikato District 2020-update population, and family and household, projections. These updated projections follow the same methodology as that reported in Cameron and Cochrane (2015), thereby ensuring that the demographic projections follow an established and agreed methodology for projection of the population at the territorial authority level. We refer the reader to that earlier report for the methodology for population projections. The family and household projections follow the improved methodology noted in Cameron and Cochrane (2016).

The updated projections summarised in this report differ from those earlier projections in two main respects. First, although these projections begin with a 2013 base population, they are calibrated so that the total population matches the EURP for Waikato District in 2019 of 79,900. The EURP represents the best approximation of the population of Waikato District at that time, and exceeds the population that was projected for 2019 in the earlier projections (Cameron and Cochrane, 2015; 2016). This calibration was enacted through modifying the net migration for Waikato District in each year to ensure a match to a linear interpolation of the population between 2013 and 2019. Alternative approaches to the interpolation would have yielded substantially similar results.

Second, the COVID-19 crisis and associated border closures have resulted in a significant decrease in net international migration. This decrease is expected to continue for some time, although the exact duration of any disruption is unknown. Moreover, due to the delay in reporting of migration data, there is little empirical basis on which to ground alternative migration assumptions. Discussions with migration experts suggests an emerging consensus that there will be a rapid return to ‘normal’ international migration once border closures are lifted and visa processing resumes. The two-month lockdown period caused a temporary

reduction in *internal* migration, but we anticipate that any adjustments to internal migration will be reflected in the timing of migration, and not the size of migration flows on an annual basis.

In these updated projections, we assume that international migration flows are disrupted for a period of twelve months from March 2020. However, this assumption has an interesting implication for Waikato District. Whereas Hamilton City and Waipā District have historically experienced positive net international migration (more arrivals than departures), Waikato District has experienced negative net international migration (more departures than arrivals). This is true of both of the most recent inter-Censal periods for which we had data prior to these projections (2001-2006 and 2006-2013). So, the assumption of zero net international migration *increases* net migration to Waikato District by 71.8% over this period. As this period is partially captured in the year to June 2020, and partially in the year to June 2021, we spread the impact across those two years. We considered a tapered return to ‘normal’ net migration, but as noted above the emerging consensus is that this migration shock will be short-lived.

We present two alternative scenarios for the projections – a baseline (medium-variant) projection, and a high-variant projection that is based on an alternative set of underlying assumptions. A low-variant projection was not requested by Waikato District Council (this differs from Cameron (2020), where Hamilton City requested medium-variant and low-variant projection). The alternative assumptions for the high-variant population projection are identical to those employed by Cameron and Cochrane (2016). However, the high-variant projection is still calibrated to match the 2019 EURP, and it also includes the assumed reduction in net migration noted above.

The remainder of the report is structured as follows:

- Section 2 presents and briefly discusses the 2020 update of the population, and family and household, projections, for both (high-variant and medium-variant) scenarios; and
- Section 3 provides a brief discussion and concludes the report.

2. Population and Family and Household Projections

This section presents the 2020 update of the population, family and household, and labour force projections for Waikato District. For population, two projection scenarios are presented: (1) a

high-variant population projection; and (2) a medium-variant population projection. These scenarios should be viewed as two possible futures, based on known assumptions about future fertility, mortality and net migration, and should not be interpreted as forecasts of future population. However, as noted in the earlier projection reports (Cameron and Cochrane 2015; 2016) the projection assumptions are based on a continuation of previous population trends that can reasonably be expected to continue into the future, with some adjustments for the COVID-19 crisis and border closures as noted in the previous section. The family and household projections are also each presented for both scenarios. All projections are presented in diagrammatic form¹ – tables showing the population projections numerically are included in Appendix I. Tables showing the family and household projections numerically are included in Appendix II.

Figure 1 presents the 2020 update of the 2013-base medium-variant population projection for Waikato District to 2063, along with historical population estimates from Statistics New Zealand back to 1991. The 2013-base Statistics New Zealand (SNZ) medium-variant projection prepared in 2014, and the corresponding updated projection prepared in 2017 are also included for comparison, along with the previous University of Waikato 2013-base medium-variant projections prepared in 2014 and 2016. All of these projections show a similar upward trajectory. However, it is notable that each subsequent update has resulted in an increase in the medium-variant projection – this is true both for Statistics New Zealand projections (2014 and 2017) and the University of Waikato projections (2014, 2016, and 2020).

Figure 2 presents the 2020 update of the 2013-base high-variant and medium-variant population projections for Waikato District to 2063, along with historical population estimates from Statistics New Zealand back to 1991. The June 2013 population estimate (base population) for Waikato District is 66,500. The June 2019 Estimated Usually Resident population for Waikato District is 79,900, and both variant projections pass within 4 people of that estimate. After 2019, the two variant projections diverge.

¹ In the figures for the family and household projections, the difference between the sum of the four categories presented (couples with children, two-parent families, one-parent families, and one-person households) and the total number of households is made up of the number of ‘other multi-person households’, as well as accounting for the number of households which contain more than one family.

Figure 1: Comparison of population projections for Waikato District, 2013-2063

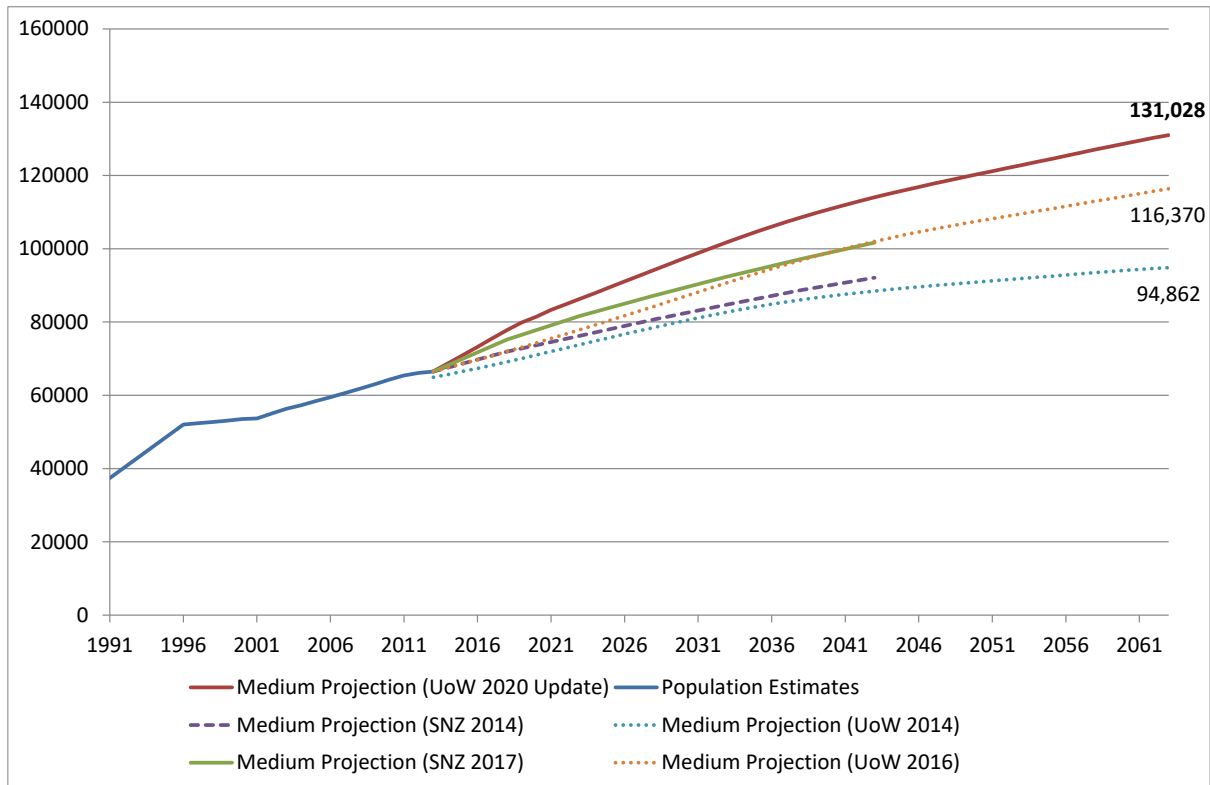
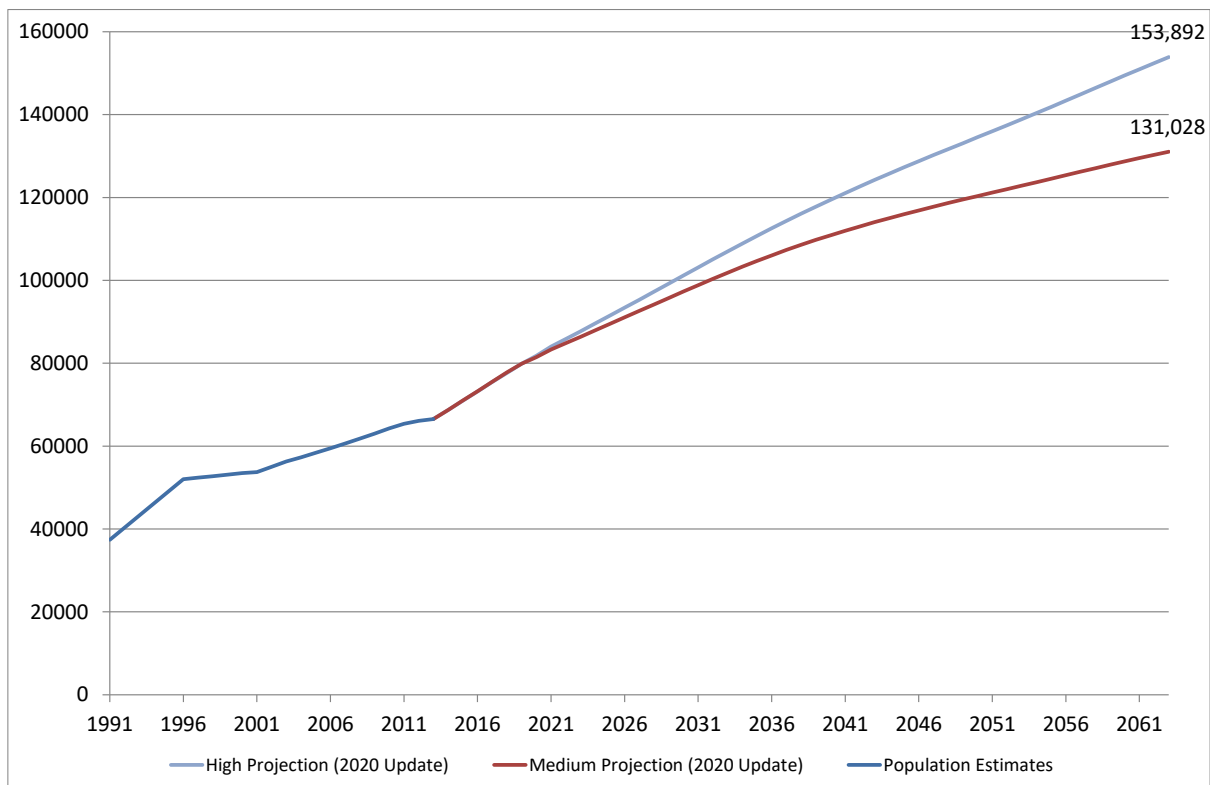


Figure 2: Population projections for Waikato District, 2013-2063



Under the medium-variant population projection scenario, the population increases over the entire projection period, with a projected population in 2063 of 131,028. The medium-variant projection appears somewhat higher than the recent trend in the Waikato District population, with annualised population growth over the period 2013-2031 of 2.22% per year, somewhat higher than the 1.46% annualised growth experienced over the period 1996-2013, but somewhat less than the 3.10% annualised growth based on Statistics New Zealand population estimates from 2013 to 2019. Under the high-variant scenario, the population increases over the entire period to a population of 153,892 in 2063. In comparison, the SNZ 2013-base revised medium-variant projection tracks initially higher than the medium-variant projection presented here, but is similar to the University of Waikato medium projection by the 2040s (refer to Figure 1).

Figure 3 disaggregates the components of population change for Waikato District over the period 2014-2063 for the medium-variant population projection. As previously noted, net population change in the medium-variant projection scenario is positive over the entire projection period. The flat trend in population change from 2013 to 2019 is a result of the calibration process noted earlier. The impact of the COVID-19 crisis and border closure is evident in the substantially *increased* net migration for 2021. However, the impact of the crisis is brief (as noted earlier), and the projections quickly return to a more ‘normal’ trajectory. This explains why the effect of the crisis is not immediately apparent in Figures 1 or 2. Net inward migration (more in-migration than out-migration) remains positive over the entire projection period, with some fluctuations. Natural increase declines throughout the projection period and becomes natural decrease (more deaths than births) in 2061.

Figure 4 shows the age structure of Waikato District in 2013, and the corresponding projected age structure in 2043. In 2013, 11.7 percent of the population are aged 65 years and over, and this is projected to increase to 26.0 percent by 2043. This rapid rate of ageing explains the gradual shift from natural increase to natural decrease shown in the previous figure.

The medium-variant family and household projection (by type) for Waikato District is shown in Figure 5. In terms of total households, the projection closely follows the medium-variant population projection, with total number of households increasing over the entire projection period, from 22,739 in 2013 to 54,066 in 2063. All household and family types increase in number over the entire projection period. The high-variant family and household projection (by type) for Waikato District is shown in Figure 6. In terms of total households, the projection

closely follows the high-variant population projection, with the total number of households increasing over the entire projection period, to 63,047 in 2063. The relative size of the families and households by type are similar in the high-variant and medium-variant projections.

Figure 3: Projected components of population change for Waikato District, medium-variant projection, 2014-2063

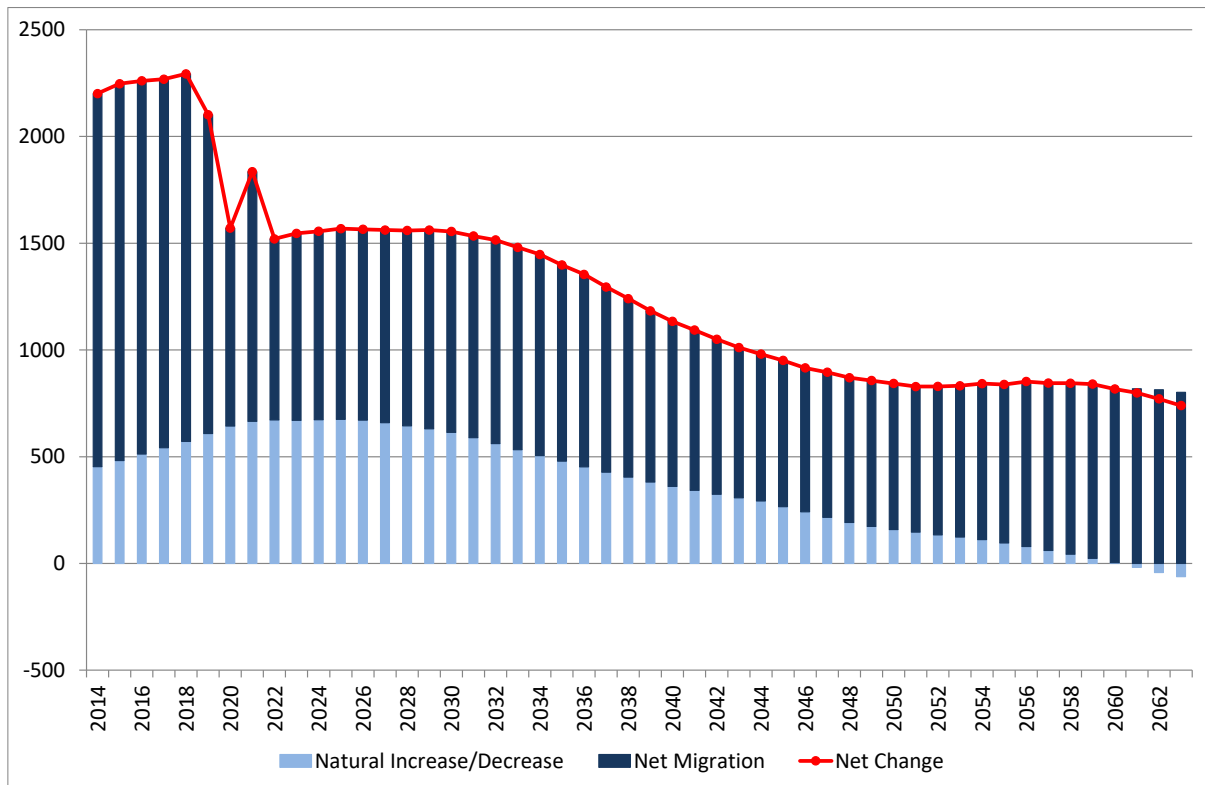


Figure 4: Age-sex structure for Waikato District, 2013 and 2043 (medium-variant projection)

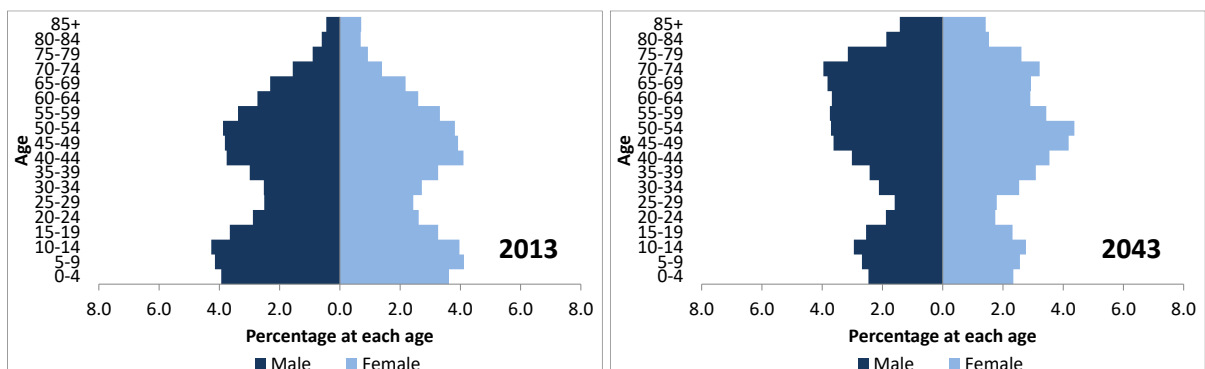


Figure 5: Medium-variant family and household projections for Waikato District, 2013-2063

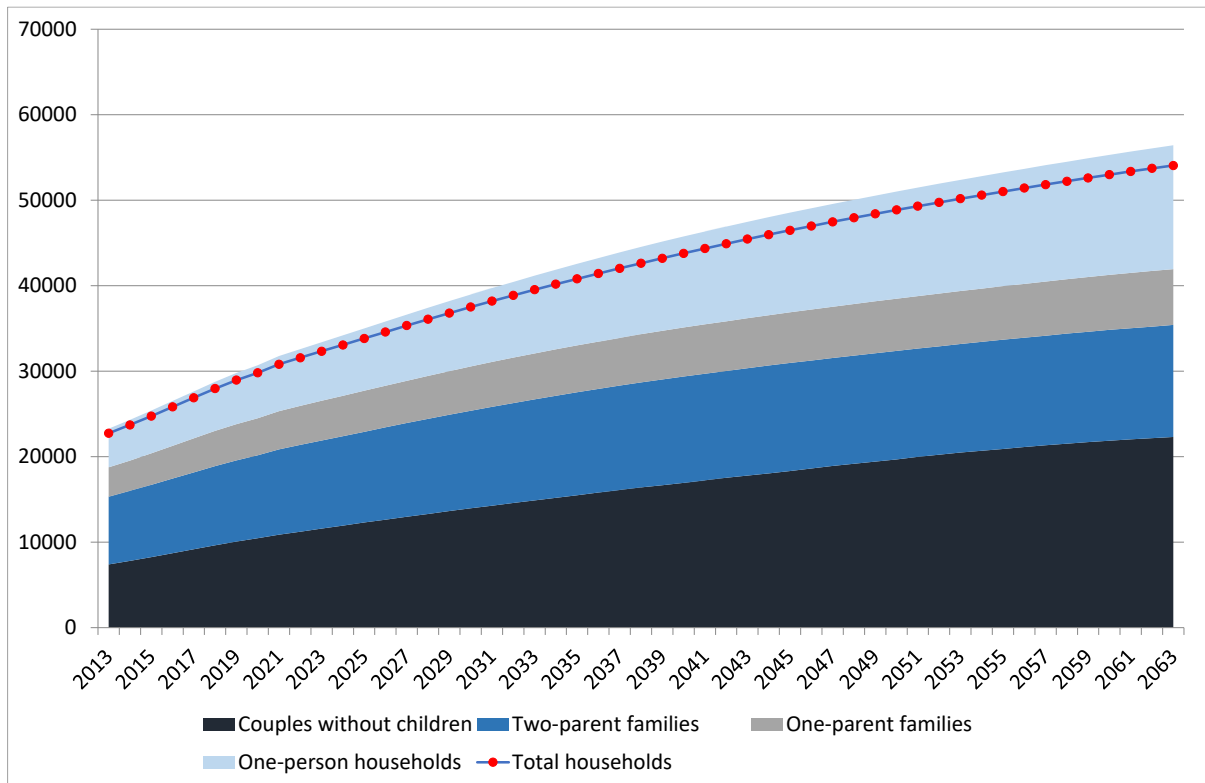
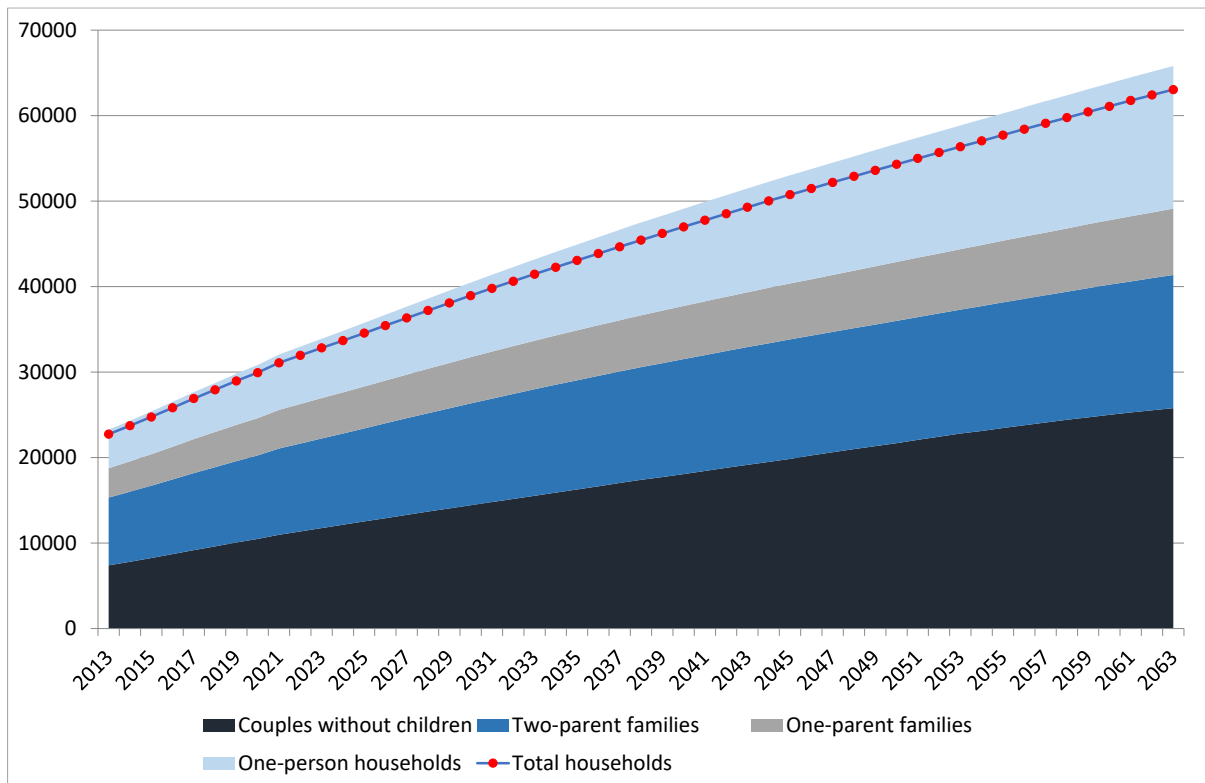


Figure 6: High-variant family and household projections for Waikato District, 2013-2063

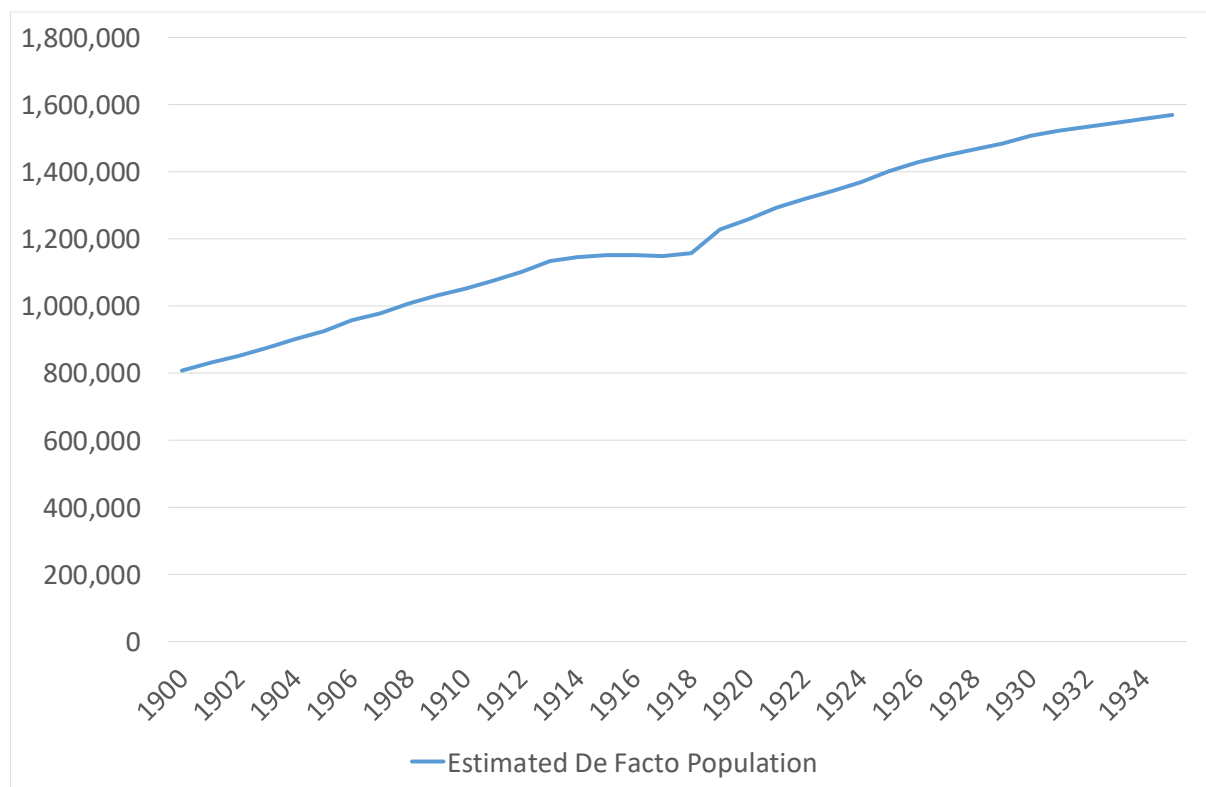


3. Discussion and Conclusion

This report briefly outlined the results of updated demographic projections for Waikato District from 2013 to 2063. The overall picture is one of continuing population growth in spite of the COVID-19 crisis and border closures, albeit growth that is interrupted, and growth that slowing throughout the projection period. Overall, the number of households is projected to closely follow the trajectory of the population. However, there is a substantial change in the distribution of households and families, with fewer couples with children and two-parent families, and more one-parent families and one-person households.

The almost-imperceptible effect of the COVID-19 crisis on the demographic projections might be a surprise to many readers. However, an important fact is that most demographic processes involve long-term ‘momentum’ effects, and so short-term changes to the components of population change tend not to be as impactful as might be expected. To illustrate, consider the combined impact of World War I and the Spanish Flu epidemic on the population of New Zealand over the period from 1914 to 1920. Arguably, the combined demographic impact of those two events is substantially larger than the impact of the COVID-19 crisis. However, as shown in Figure 7, even those significant events have only a moderate impact on the total population, which quickly returns to long-term trend growth. We observe something similar in our projections for Waikato District, albeit with a much smaller initial impact, and as noted earlier, the impact on Waikato District leads to an *increase* in the projected population.

Figure 7: New Zealand population, 1900-1935 (source: Stats NZ long term data series)



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Appendix I

Appendix Table A1: Population projections for Waikato District, 2013-2063

Year	Absolute population		Growth Rate (Annualised)	
	Medium-variant	High-variant	Medium-variant	High-variant
2013	66,530	66,530	-	-
2014	68,731	68,732	3.3%	3.3%
2015	70,978	70,967	3.3%	3.3%
2016	73,239	73,200	3.2%	3.1%
2017	75,507	75,488	3.1%	3.1%
2018	77,800	77,638	3.0%	2.8%
2019	79,903	79,900	2.7%	2.9%
2020	81,473	81,805	2.0%	2.4%
2021	83,308	84,047	2.3%	2.7%
2022	84,829	85,861	1.8%	2.2%
2023	86,375	87,714	1.8%	2.2%
2024	87,931	89,588	1.8%	2.1%
2025	89,499	91,489	1.8%	2.1%
2026	91,064	93,400	1.7%	2.1%
2027	92,626	95,323	1.7%	2.1%
2028	94,185	97,258	1.7%	2.0%
2029	95,747	99,207	1.7%	2.0%
2030	97,302	101,163	1.6%	2.0%
2031	98,835	103,107	1.6%	1.9%
2032	100,350	105,046	1.5%	1.9%
2033	101,831	106,964	1.5%	1.8%
2038	108,566	116,089	1.3%	1.7%
2043	114,038	124,217	1.0%	1.4%
2048	118,650	131,660	0.8%	1.2%
2053	122,840	138,879	0.7%	1.1%
2058	127,062	146,388	0.7%	1.1%
2063	131,028	153,892	0.6%	1.0%

Appendix II

Appendix Table A2: Medium-variant family and household projections for Waikato District, 2013-2063

Year	Families				Households			
	Couples without children	Two-parent families	One-parent families	Total families	Family households	Other multi-person households	One-person households	Total households
2013	7,400	7,936	3,415	18,750	17,799	404	4,536	22,739
2014	7,820	8,190	3,542	19,551	18,542	418	4,762	23,722
2015	8,257	8,453	3,679	20,389	19,318	434	4,998	24,749
2016	8,716	8,726	3,827	21,270	20,133	450	5,245	25,829
2017	9,171	8,999	3,973	22,143	20,940	466	5,496	26,902
2018	9,637	9,261	4,114	23,013	21,742	481	5,750	27,973
2019	10,073	9,493	4,239	23,804	22,468	495	5,996	28,959
2020	10,459	9,699	4,345	24,502	23,105	504	6,202	29,811
2021	10,881	9,982	4,474	25,336	23,869	513	6,433	30,816
2022	11,238	10,151	4,555	25,944	24,418	519	6,643	31,581
2023	11,600	10,304	4,639	26,544	24,959	525	6,854	32,338
2024	11,953	10,451	4,717	27,121	25,478	530	7,070	33,079
2025	12,305	10,610	4,800	27,714	26,011	535	7,288	33,834
2026	12,640	10,789	4,872	28,300	26,536	538	7,514	34,588
2027	12,974	10,964	4,948	28,886	27,059	542	7,738	35,339
2028	13,309	11,120	5,027	29,456	27,568	546	7,961	36,075
2029	13,640	11,262	5,105	30,008	28,058	551	8,188	36,796
2030	13,962	11,411	5,181	30,553	28,541	554	8,411	37,506
2031	14,276	11,554	5,247	31,078	29,004	556	8,642	38,202
2032	14,586	11,692	5,306	31,583	29,448	558	8,866	38,873
2033	14,892	11,824	5,366	32,083	29,886	561	9,090	39,537
2038	16,417	12,274	5,638	34,329	31,830	575	10,218	42,623
2043	17,791	12,567	5,850	36,207	33,571	610	11,270	45,451
2048	19,182	12,643	6,025	37,850	35,094	642	12,204	47,941
2053	20,483	12,693	6,204	39,379	36,512	668	12,997	50,177
2058	21,535	12,858	6,361	40,754	37,787	685	13,745	52,218
2063	22,305	13,105	6,538	41,948	38,894	696	14,475	54,066

Appendix Table A3: High-variant family and household projections for Waikato District, 2013-2063

Year	Families				Households			
	Couples without children	Two-parent families	One-parent families	Total families	Family households	Other multi-person households	One-person households	Total households
2013	7,400	7,936	3,415	18,750	17,799	404	4,536	22,739
2014	7,821	8,196	3,543	19,561	18,551	418	4,762	23,731
2015	8,258	8,464	3,681	20,403	19,331	433	4,995	24,760
2016	8,716	8,738	3,828	21,281	20,144	449	5,240	25,834
2017	9,173	9,017	3,974	22,164	20,959	465	5,492	26,917
2018	9,621	9,262	4,106	22,989	21,720	479	5,735	27,934
2019	10,075	9,515	4,239	23,828	22,491	493	5,992	28,976
2020	10,498	9,759	4,362	24,618	23,215	504	6,222	29,942
2021	10,966	10,090	4,515	25,570	24,090	517	6,484	31,091
2022	11,356	10,296	4,612	26,264	24,719	525	6,717	31,961
2023	11,755	10,485	4,714	26,954	25,345	532	6,951	32,829
2024	12,146	10,670	4,811	27,628	25,954	539	7,193	33,687
2025	12,539	10,870	4,914	28,323	26,582	546	7,437	34,565
2026	12,918	11,091	5,007	29,015	27,207	551	7,691	35,449
2027	13,298	11,310	5,104	29,712	27,834	557	7,945	36,336
2028	13,682	11,511	5,206	30,399	28,451	564	8,199	37,214
2029	14,065	11,700	5,309	31,073	29,054	570	8,458	38,083
2030	14,440	11,896	5,409	31,745	29,655	576	8,716	38,946
2031	14,810	12,088	5,501	32,399	30,237	580	8,981	39,799
2032	15,176	12,276	5,584	33,036	30,803	584	9,242	40,629
2033	15,541	12,460	5,670	33,671	31,365	589	9,503	41,458
2038	17,394	13,184	6,070	36,648	33,980	615	10,844	45,439
2043	19,151	13,771	6,416	39,338	36,474	663	12,146	49,283
2048	20,989	14,145	6,737	41,871	38,823	709	13,363	52,895
2053	22,806	14,498	7,074	44,378	41,147	753	14,471	56,370
2058	24,425	14,985	7,398	46,809	43,401	788	15,570	59,759
2063	25,785	15,586	7,752	49,123	45,546	817	16,684	63,047