Nelson City Council – Tasman District Council Population Projection Comparison

The Tasman District Council (TDC) website states the following:

> *Population projections and demographic trends are a key consideration in the Council's forward planning. For the Long Term Plan 2021-2031, Council has engaged Natalie Jackson Demographics Ltd to provide district and ward population and household projections for Tasman District and its five Wards. In February 2020, Council approved the use of the medium scenario of these projections to guide the future demand for residential and business development for 2021-2051. The Council will also consider other factors, such as holiday house demand, visitor numbers, and major commercial developments, as we develop the Long Term Plan and review the Tasman Resource Management Plan.*
>
> *Under the updated medium population scenario, Tasman's population is projected to increase by 7,300 between 2021 and 2031, to reach almost 64,000. Across the 30 years from 2021 to 2051, Tasman's population is projected to increase by 19,300, to reach almost 76,000.*

The increase in population projected by TDC is around 13% for the ten year period 2021-2031. For the longer term 2021-2051 period TDC is projecting an increase of around 34%.

The population projections adopted by Nelson City Council for the 2021-31 Long Term Plan are as follows:

Year	Projected population	Year	Projected population	Year	Projected population	Year	Projected population
2020	54,620	2028	56,160	2036	59,760	2044	63,400
2021	54,700	2029	56,400	2037	60,260	2045	63,840
2022	54,780	2030	56,640	2038	60,760	2046	64,280
2023	54,960	2031	57,180	2039	61,200	2047	64,720
2024	55,080	2032	57,720	2040	61,640	2048	65,160
2025	55,200	2033	58,260	2041	62,080	2049	65,600
2026	55,520	2034	58,760	2042	62,520	2050	66,040
2027	55,840	2035	59,260	2043	62,960		

In comparison to the TDC projections, the Nelson City Council population projections are for an increase of 2400 residents over the ten year period 2021-2031 or a 4% increase. For the longer term, the Nelson City Council projection shows an increase of around 11300 people to a total population of 66040 or a 21% increase over the 30 years 2021-2051.

These differences in growth will have impacts on some of Nelson City Council's asset management planning, for example for transport.

Long Term Plan and Activity Management Plans 2021

Population Growth and Demographics

Nelson City Council

Executive Summary

The purpose of this report is to present a population projection for use in developing Nelson City Councils Asset Management Plans and Long Term Plan. Traditionally, Statistics New Zealand would provide high, medium and low scenarios for councils to use. In 2018, the latest census was completed but due to shortcomings in the move to online forms the return rate was lower than previously experienced. As a result, there has been significant delays in Statistics New Zealand providing updated population projections.

The COVID-19 event is expected to have significant immediate and future economic effects particularly as it restricts the movement of people regionally and internationally.

In this context there is a lot of uncertainty involved with projecting future population change. To account for this a custom, or hybrid, population projection for Nelson has been developed. This report looks back at trends over previous recessionary periods to assist in developing rationale for choosing variables to develop the custom population projection.

It is recommended that the following assumptions inform a future population projection for Nelson:

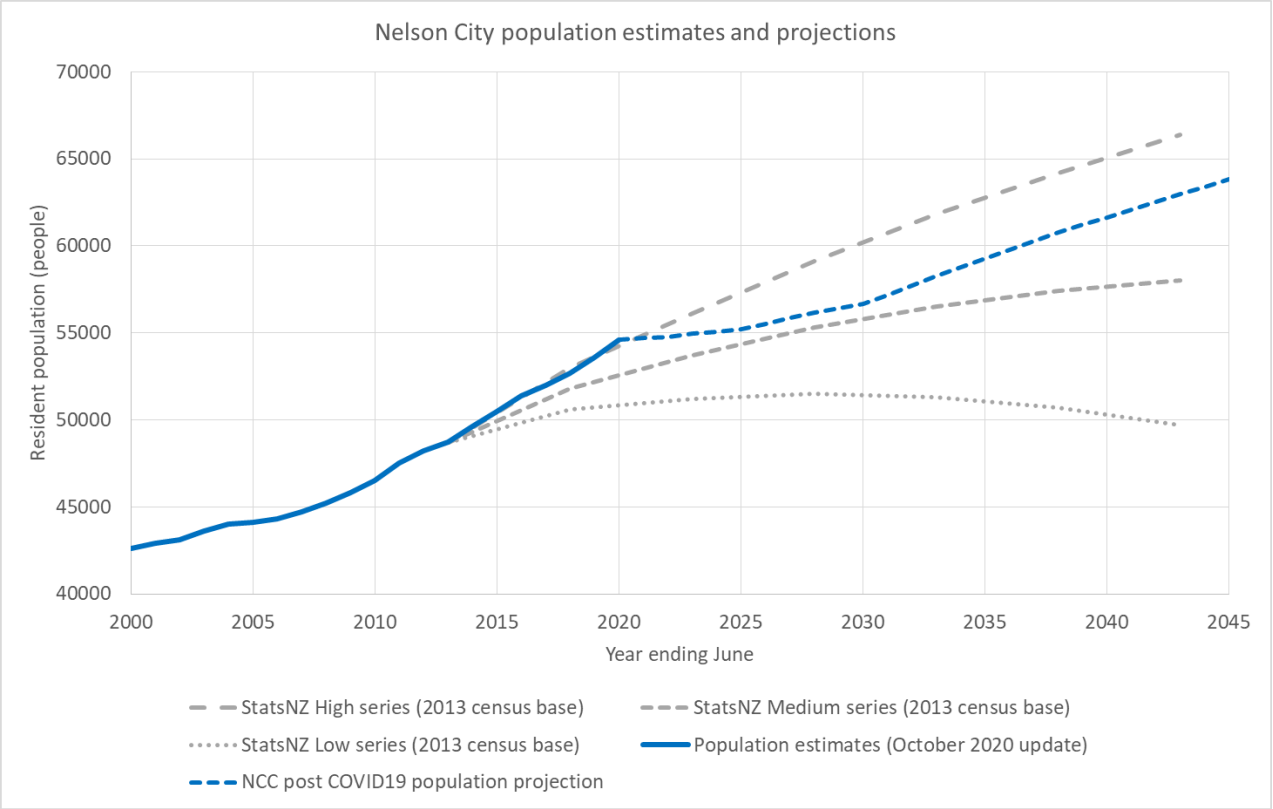
- medium births scenario for ten years
- high births scenario after that
- medium deaths
- zero net migration for two years
- low net migration for the next three years
- medium net migration for the next five years
- high net migration after that.

These assumptions result in a recommended population projection for use in developing the Asset Management Plans and Long Term Plan for 2021 as shown in the table below.

Year	Projected population	Year	Projected population	Year	Projected population	Year	Projected population
2020	54,620	2028	56,160	2036	59,760	2044	63,400
2021	54,700	2029	56,400	2037	60,260	2045	63,840
2022	54,780	2030	56,640	2038	60,760	2046	64,280
2023	54,960	2031	57,180	2039	61,200	2047	64,720
2024	55,080	2032	57,720	2040	61,640	2048	65,160
2025	55,200	2033	58,260	2041	62,080	2049	65,600
2026	55,520	2034	58,760	2042	62,520	2050	66,040
2027	55,840	2035	59,260	2043	62,960		

The starting population for the population projections in the table above has been adjusted to reflect the latest Nelson population estimates published by StatsNZ in October 2020. This adjustment has increased the population estimated in 2020 by around 1,600 residents compared to the figures presented in the draft of this report.

The figure below shows the recommended population projection in graphical form.



It is clear from the figure above that the recommended projection is very low compared to the Statistics New Zealand high and medium series scenarios. The projection anticipates very low growth out until around 2025 before the rate of growth returns gradually to the high growth rate.

It is important to recognise that there is very significant uncertainty in any population projection as the short, medium and long term effects of the COVID-19 event are not clear and are unlikely to be for some time. A precautionary approach is therefore recommended.

1.0 Introduction

1.1 This report provides the population and household projections recommended for use in the Nelson City Council Activity Management Plans and Long Term Plan for 2021. Predicting growth for the Long Term Plan and Asset Management Plans in 2021 has been made more complex by delays in receiving projections from Statistics New Zealand (StatsNZ) based on the 2018 census data.

1.2 With the release of 2018 census base projections delayed until at least December 2020, it has been necessary to utilise alternative methods for determining future population growth in Nelson. The following sections detail the methods used and the risks and uncertainty associated with using these methods and population projections in general.

1.3 Further complicating projecting the future population of Nelson is the COVID-19 event. This report provides summary data and commentary on the recommended population projection and highlights the uncertainties and risks associated with that projection.

1.4 This report has been reviewed by Infometrics (a specialist economics and demographics consultancy) and the resulting population projection has been adjusted slightly to reflect the feedback received as part of the review process.

1.5 The projections have been updated with the 2020 StatsNZ population estimates that were released on 22 October 2020. These estimates set the starting point for the projections at a 2020 population of 54,620 people in Nelson City. This represents a higher starting point compared to the October 2019 population estimates as a result of StatsNZ having underestimated the population.

2.0 Uncertainty

2.1 Predicting future populations is an activity that involves uncertainty and risk. In particular, there is a lot of uncertainty around post COVID-19 economic performance, movement of people, and the timelines of both. This creates greater uncertainty than usual, especially when combined with the delay in receipt of StatsNZ population projections.

2.2 Given this uncertainty, it is important to understand the consequences of projections being incorrect and how they can be represented to make them as useful as possible.

2.3 Given this situation, it is considered appropriate to make some broad assumptions and understand the limitations of these assumptions rather than building a complicated model that is credited with a greater level of accuracy than it actually represents.

2.4 This report contains analysis, figures, and tables showing different date ranges. This is a limitation of the available data and needs to be acknowledged.

2.5 One of the ways that Council manages the risk of using incorrect population projections is through the annual plan process and the three yearly LTP process. Both of these processes enable projections to be updated yearly and three-yearly.

3.0 The Pre COVID-19 population projections

Historical and current population

3.1 Every year, StatsNZ provides estimates of resident population for each territorial authority in New Zealand. The estimate is typically based on birth and death records as well as building consents and other indicative measures. The population estimates are validated every five years with census data. Figure 1 below shows the StatsNZ population estimates for Nelson City between 2000 and 2020.

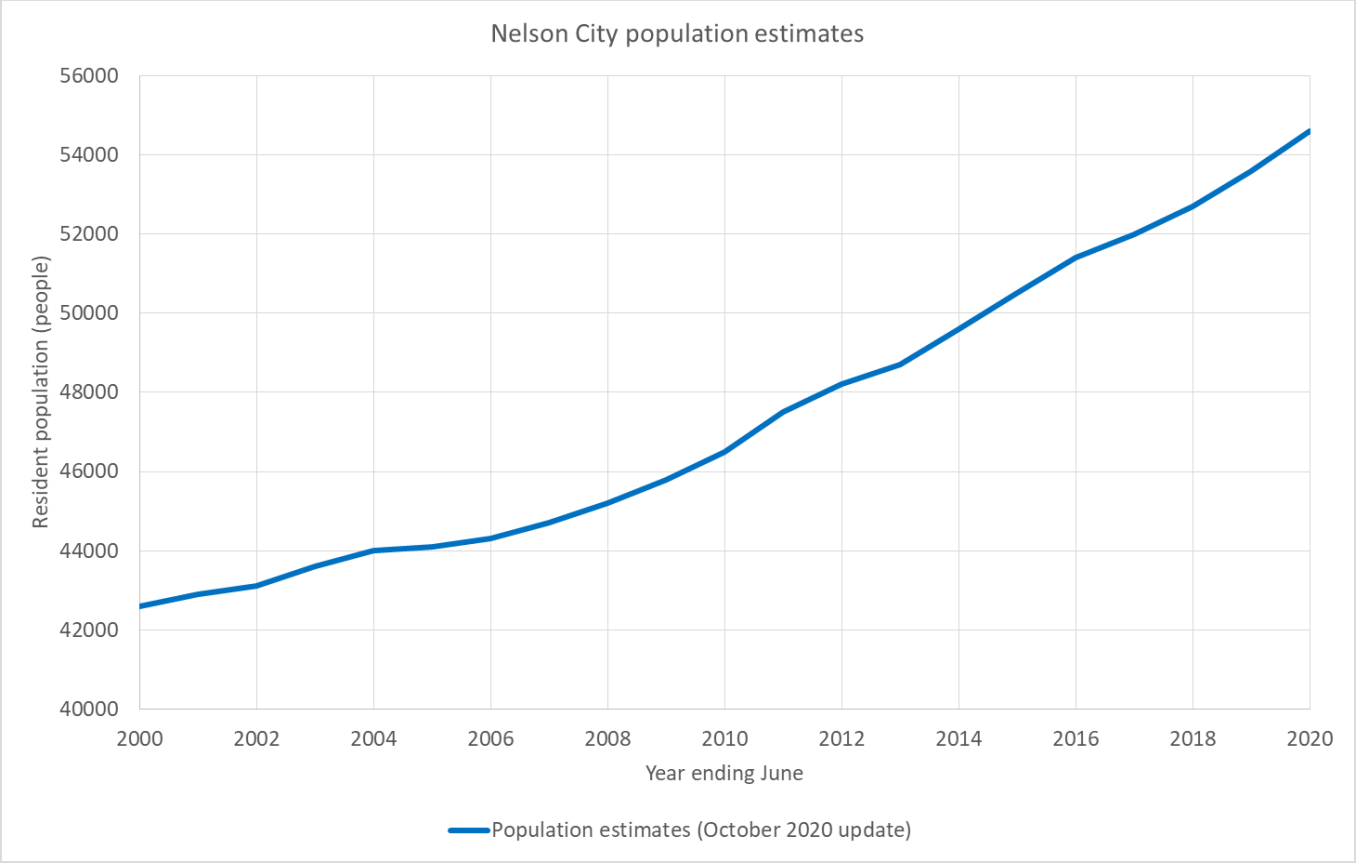


Figure 1: Nelson City population estimates from StatsNZ (as at end June 2020)[1]

3.2 Figure 1 shows that the estimated population has tracked in two distinct stages. Between 2000 and 2008 the population of Nelson grew by around 330 people or 130 households per year on average. Since 2008 the rate of population growth has increased to around 700 additional residents or 290 additional households per year.

[1] StatsNZ http://nzdotstat.stats.govt.nz/wbos/Index.aspx - Estimated Resident Population for Regional Council Areas, at 30 June (1996+) (Annual-Jun)

Future population

3.3 In previous Long Term Plan development rounds StatsNZ has supplied population projections within the five years previous, following a census, for around 30 years into the future. Due to challenges faced during the 2018 census, StatsNZ are not able to provide population projections in time for the development of activity management plans and the 2021 Long Term Plan. Instead, the latest population projections provided by StatsNZ at the end of 2018 are based on the 2013 census.

3.4 Figure 2 below shows the StatsNZ high, medium and low population projections based on the 2013 census data along with the Nelson City population estimates from Figure 1.

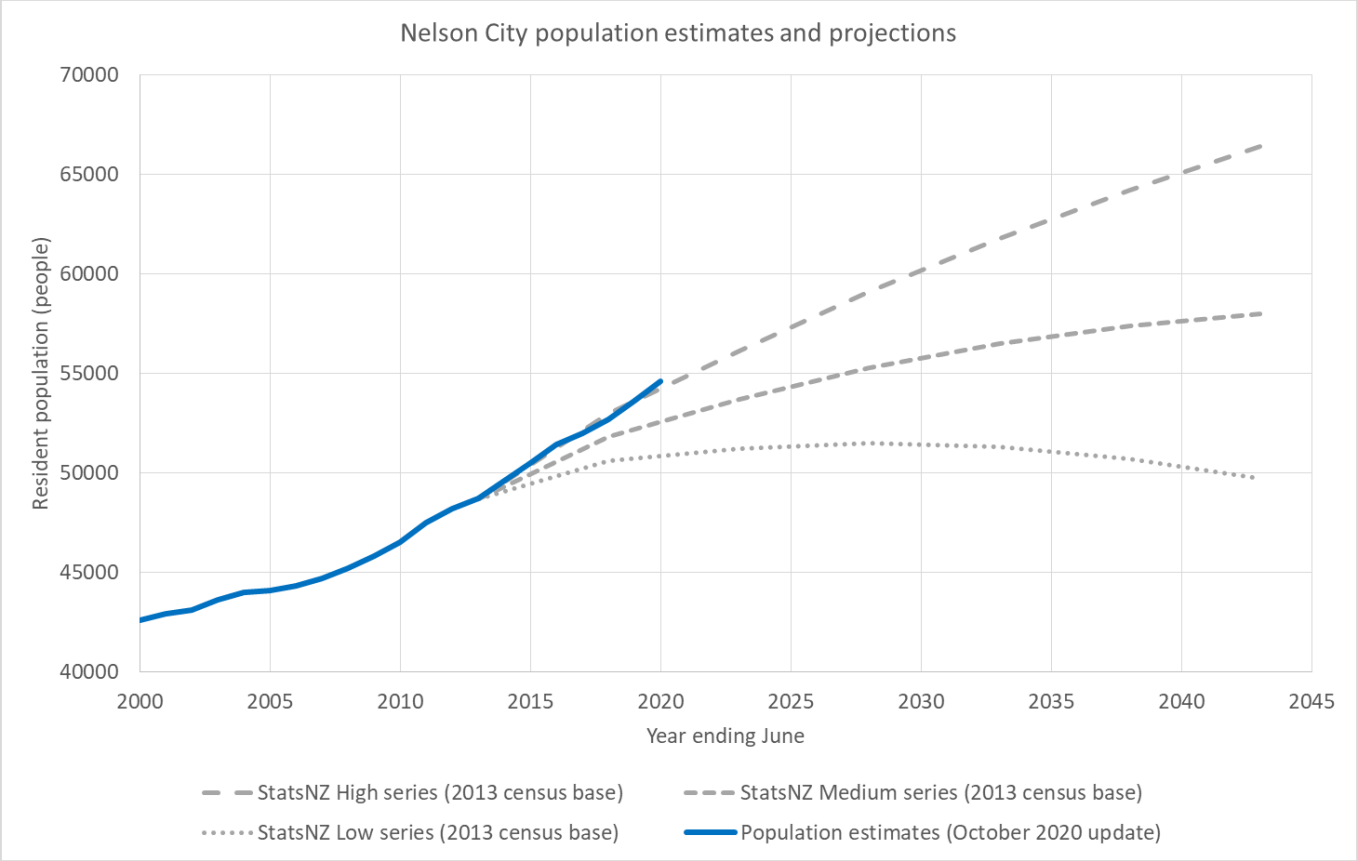


Figure 2: Nelson Population projections (2013 census base)[2]

3.5 These population projections are no longer relevant in the light of COVID-19 and alternative analysis methods are needed. The remainder of this report deals with these alternative methods.

[2] StatsNZ http://nzdotstat.stats.govt.nz/wbos/Index.aspx - Dataset: Subnational population projections, characteristics, 2013(base)-2043 update

4.0 Recessions through history

4.1 With a significant recessionary period expected during and following COVID-19 it is useful to look back at other recessions in history to see the effect on the various factors that influence population growth.

4.2 Since 1930 there have been seven clear recessions starting with the wool bust in 1930 through to the most recent, prior to COVID-19, with the Global Financial Crisis (GFC) in 2007-2008. Table 1 below summarises the recessions since 1930.

Recession name	Start year (inclusive)	Finish year (inclusive)	Period (years)
Depression	1930	1934	5
Wool bust	1967	1969	3
Oil price shock 1	1974	1977	4
Oil price shock 2	1979	1982	4
Recession	1991	1992	2
Asian Crisis	1997	1999	3
GFC	2007	2008	2

Table 1: Recessions through history[3]

4.3 It is important to consider the different characteristics of each recession in that they influence things like travel and unemployment in different ways depending on their size and geographical spread amongst other things. For example, COVID-19 has resulted in far more restrictions on travel internationally than all of the previous recessionary periods and as a result the tourism industry has been affected more severely. With the tourism industry employing approximately 11% of Nelsons employed population in 2019 this characteristic that is unique to COVID19 is particularly significant.

4.4 Figure 3 below shows a table from the Reserve Bank of New Zealand: Bulletin, Vol. 71, No. 2, June 2008 which provides a summary of the various attributes of the recessionary periods prior to the GFC. The document was prepared for the purposes of attempting to describe the likely economic effects to the GFC. While the document is over 10 years old now, its conclusions are still relevant.

[3] Reserve Bank of New Zealand: Bulletin, Vol. 71, No. 2, June 2008

			Recessionary Periods					
			Depress.	Wool Bust	1st Oil Shock	2nd Oil Shock	91-91	Asian Crisis
Pre-existing imbalances	Rapid credit and asset price expansion	Global						
		NZ						
	Well above trend	Commodity prices						
		Real exchange rate						
		House prices						
		Real interest rates						
	Unusually large current account deficit							
	Large public debt							
	Inflation problem							
	Domestic financial fragility							
Triggers and exacerbating events	World downturn							
	Global credit/asset price squeeze							
	Large fall in commodity prices							
	Large rise in oil prices							
	Drought							
	Contractionary discretionary fiscal policy							
	Tightened monetary policy/ interest rates rose after the downturn was under way							
Exacerbating structural factors	Fixed or pegged exchange rate							
	Capital controls in place							

Key:
- A critical factor
- A contributing factor
- Not a factor

Figure 3: The characteristics of recessionary periods[4]

4.5 Figure 3 shows that each recessionary period is unique and in fact no two periods had all of their attributes matching during the period of recession. During and following COVID-19 will have its own unique attributes which will make predicting population change with any certainty very difficult.

4.6 In April 2020 Treasury released a paper titled "COVID-19 Information Release" which detailed some of the thinking and analysis that Treasury had been undertaking. A key statement in this paper is:

> *The path the economy takes from here is extremely uncertain. The magnitude and duration of the downturn and the subsequent pace of the recovery depends on many unknown factors, including the course of the virus, how long activity restrictions are in place, how quickly the global*

[4] Reserve Bank of New Zealand: Bulletin, Vol. 71, No. 2, June 2008

economy will recover, how behaviours and production might change, and how successful government policies will be in supporting households and firms.[5]

4.7 In light of the above information and given the unprecedented nature of COVID-19, it is impossible to predict the extent and timing of the potential impacts on Nelson's population with any degree of accuracy. Instead, the following sections of this report assess the factors that are likely to influence any change in population in a broad way so the level of uncertainty around the final proposed population projection is understood.

[5] Treasury Report T2020/973: Economic scenarios - 13 April 2020 - https://treasury.govt.nz/sites/default/files/2020-04/c19-4265378-t2020-973-economic-scenarios-v3.pdf

5.0 Factors influencing population change

5.1 There are three major influencers of population change that represent the collated wider factors. These are:

- Births
- Deaths
- Net migration

5.2 Within each of these bulk factors are multiple others such as economic performance and immigration policy. These factors themselves may have further dependencies on things like how easy it is to sell and buy houses, or gain employment. All of these factors are not related in a purely linear fashion but instead form a complex web of interdependency.

5.3 Figure 4 below provides a simplified description of the relationship between the main factors that influence population change.

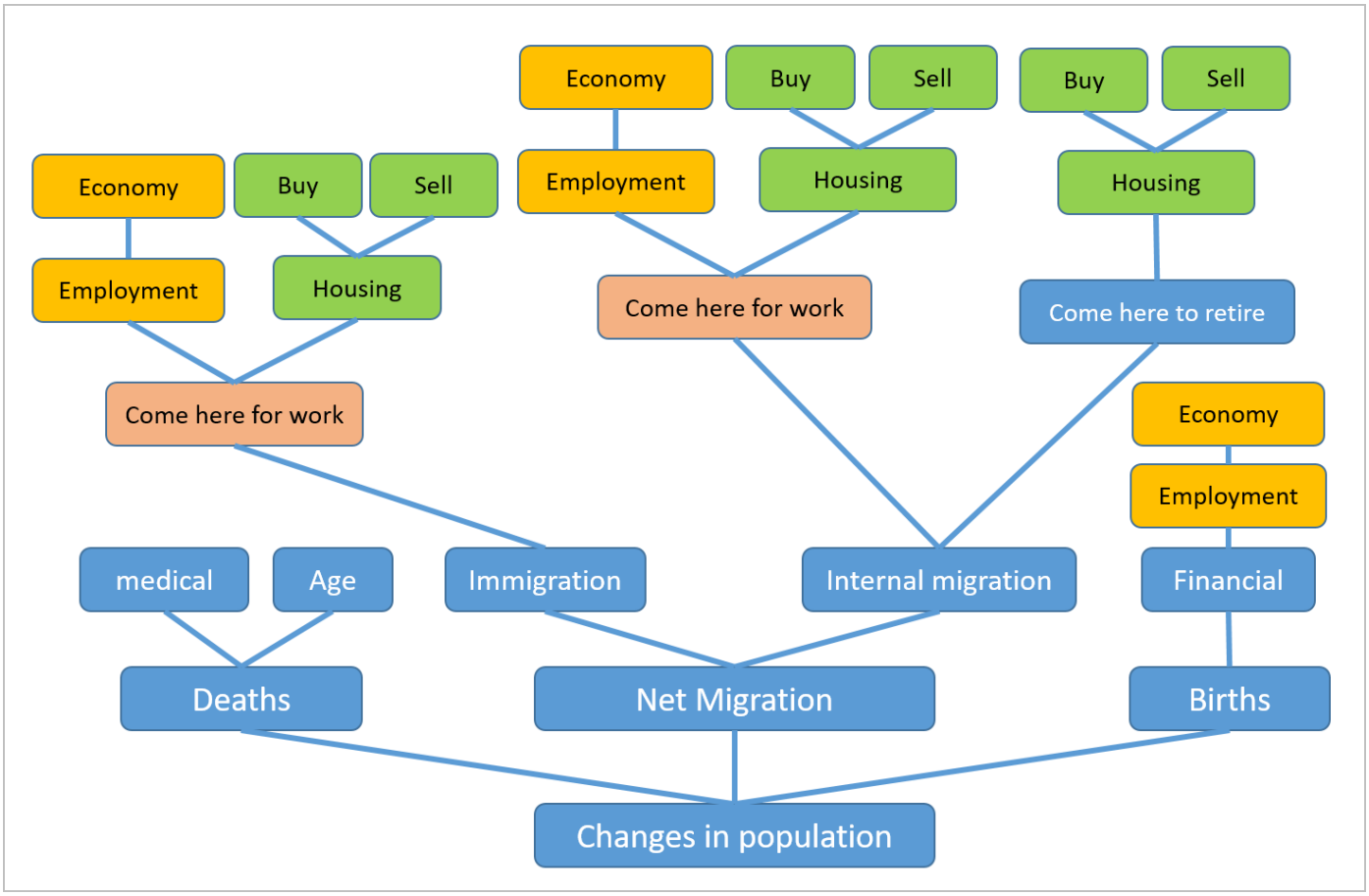


Figure 4: Simplified relationship between factors influencing changes in population

5.4 It is clear from Figure 4 above that the economy and housing market are two key drivers of population change. The remainder of section 3 provides commentary on the effect of each of the factors on population change in the Nelson region.

6.0 Births

6.1 One major influencer of births in a developed country like New Zealand is its economic performance and how that influences unemployment rates.

6.2 Figure 5 below shows the number of live births over time for New Zealand as a whole with the timelines of each of the recessionary periods since 1935.

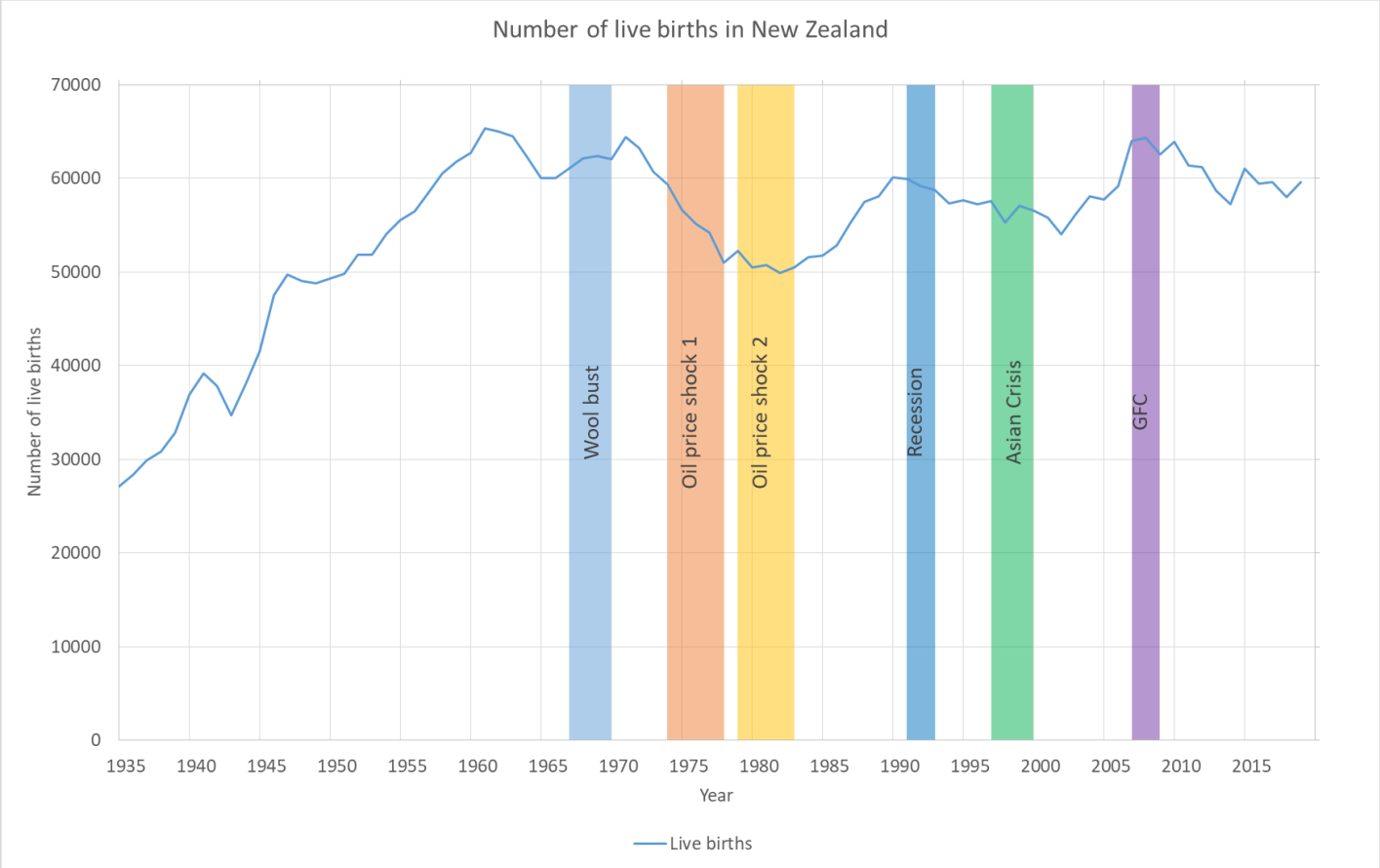


Figure 5: Live births in New Zealand over time[6]

6.3 Figure 5 above shows that for all recessionary periods other than the wool bust there was a dip in births for some time during or after the period of recession. In three of the recessions the number of births picked up almost immediately in the economic recovery. The immediate increase in births after the GFC has moved to a gradually reducing trend to return to the 60,000 births mark that the number has varied around since around the late 1950s.

6.4 Long term births data at a regional level are not available at the resolution needed to test whether the trend holds in Nelson over all of the same recessionary periods. In the shorter term, reliable births data is available from 2004 and can be compared to the national response during the GFC. Figure 6 below compares the two.

[6] StatsNZ Infoshare – Table: Birth numbers - VSBA (Annual-Dec)

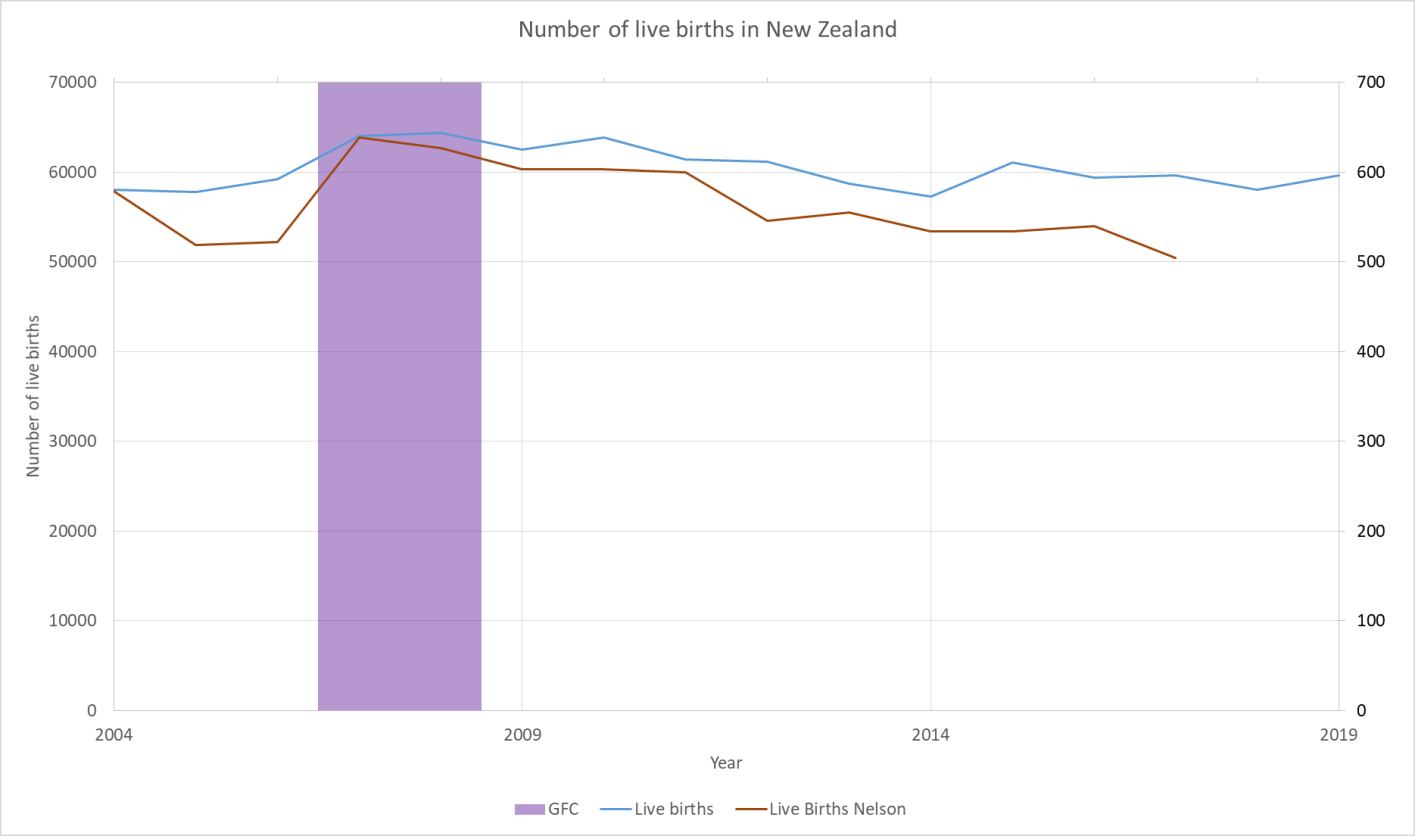


Figure 6: Nelson births over time compared to New Zealand trend[7]

6.5 Figure 6 shows that the number of live births in Nelson broadly followed the same trend as the rest of New Zealand during and after the GFC. The number of births in Nelson flattened then dropped during the GFC and have continued to drop through to 2017. The trend of reducing births continues for around ten years although there are other factors influencing this such as the generally reducing birth rates in developed countries.

6.6 Economists are divided in how long they see any economic recovery taking with some predicting sometime in late 2021 and others the end of 2022 or beyond.

6.7 Figure 7 below shows the latest StatsNZ population projections (2013 census base) for live births in Nelson.

[7] https://www.stats.govt.nz/information-releases/births-and-deaths-year-ended-december-2018

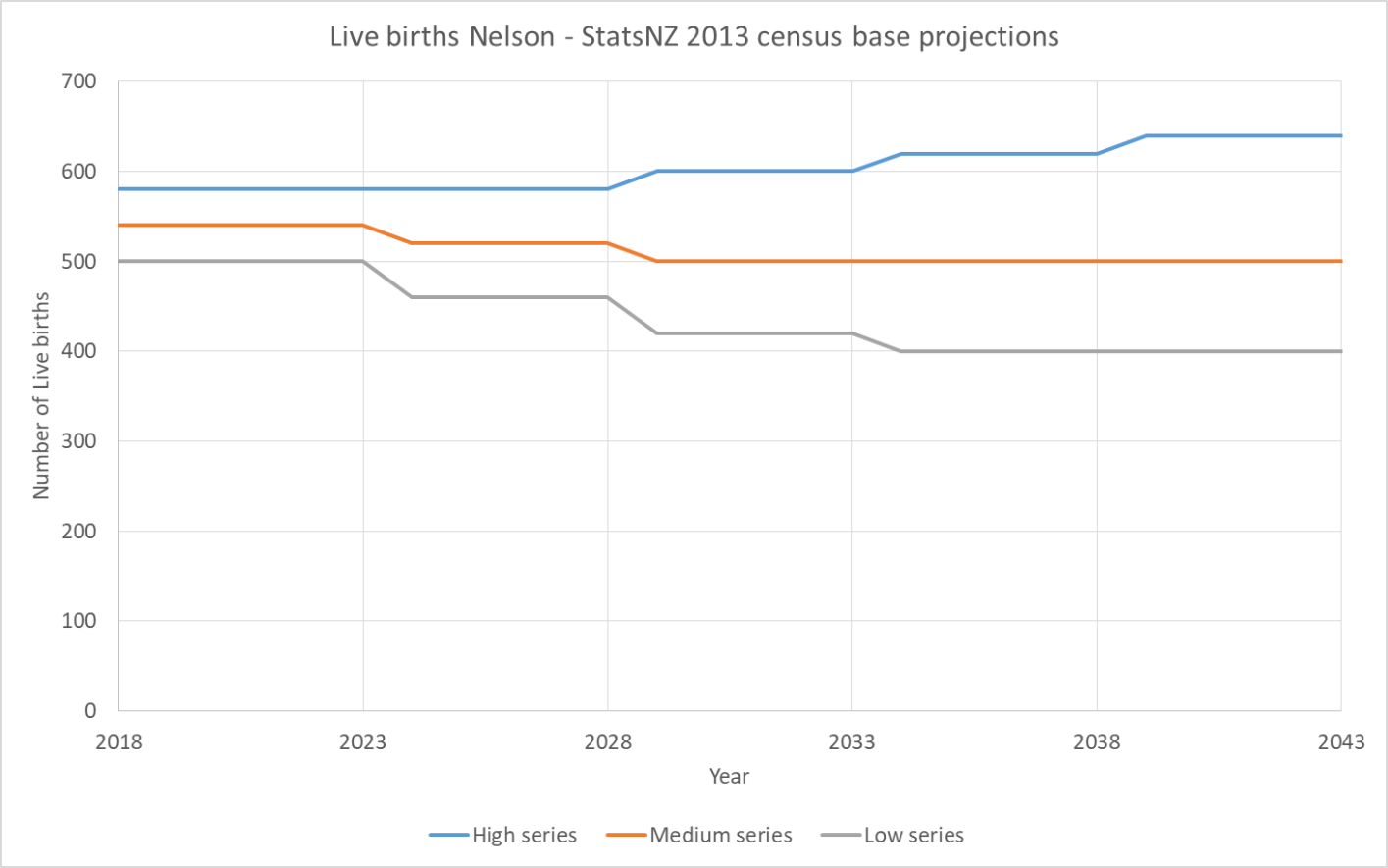


Figure 7: Live births assumptions in StatsNZ population projections[8]

6.8 Figure 7 above shows that both the low and medium series of the StatsNZ population projections anticipate a drop in live births in Nelson. The records of births for Nelson in figure 6 show that the current number of births per year are around the 500 live births per year. This is the same as the low series shown in figure 7 above and can be expected to drop lower during the economic recession that will follow COVID-19.

6.9 Countering the current low birth rate is the fact that the population of Nelson is slightly younger, with more residents of childbearing age than anticipated by the 2013 census base projections. This is likely to result in the birth rate being slightly higher than currently anticipated by each of the StatsNZ projection scenarios.

6.10 With this in mind it is recommended that the medium birth rate be adopted in any analysis for the next ten years to mirror the trend seen post GFC. It is recommended to return the birth rate to high after that to allow for some recovery, keeping in mind that the current high scenario still reflects the generally reducing birth rate in first world countries.

7.0 Deaths

7.1 The number of deaths in Nelson number around 470 per year currently. The majority of these deaths are as a result of natural aging. In estimating the likely effect of the COVID-19 event on the death rate, the most important influencing factor is the ability of the medical system to deal with COVID19 and the normal medical services. With the

[8] StatsNZ NZ.Stat - Dataset: Subnational population projections, characteristics, 2013(base)-2043 update

government's response to COVID19 so far being comprehensive enough to keep additional deaths very low the number of deaths is not expected to increase noticeably over the normal year to year variation.

7.2 The StatsNZ high and medium series use the same the same death rates so it is recommended that these be used rather than the higher death rate of the low series. This should be used for the full period of the population projections.

8.0 Net Migration

8.1 The third main factor influencing population change is net migration. In Nelson, net migration has typically accounted for the majority of population growth. There are a lot of different factors that influence peoples decision making when choosing to move to or from Nelson but the major ones that need to be considered in the context of COVID-19 are the following:

- Tourism
- Unemployment
- International migration
- Housing market

8.2 It is clear that the variables above are not independent of each other but it is useful to consider them separately in the first instance to simplify description of the issues associated with each of them.

Tourism

8.3 Tourism is a strong driver of employment in Nelson with around 11% of all jobs in the region linked to this activity. Since 1965 tourism has grown at a rapid rate from almost zero to over three million visitors every year in Nelson.

8.4 Figure 8 below shows the trend in visitor numbers in New Zealand over time and how they are affected by the various recessionary periods.

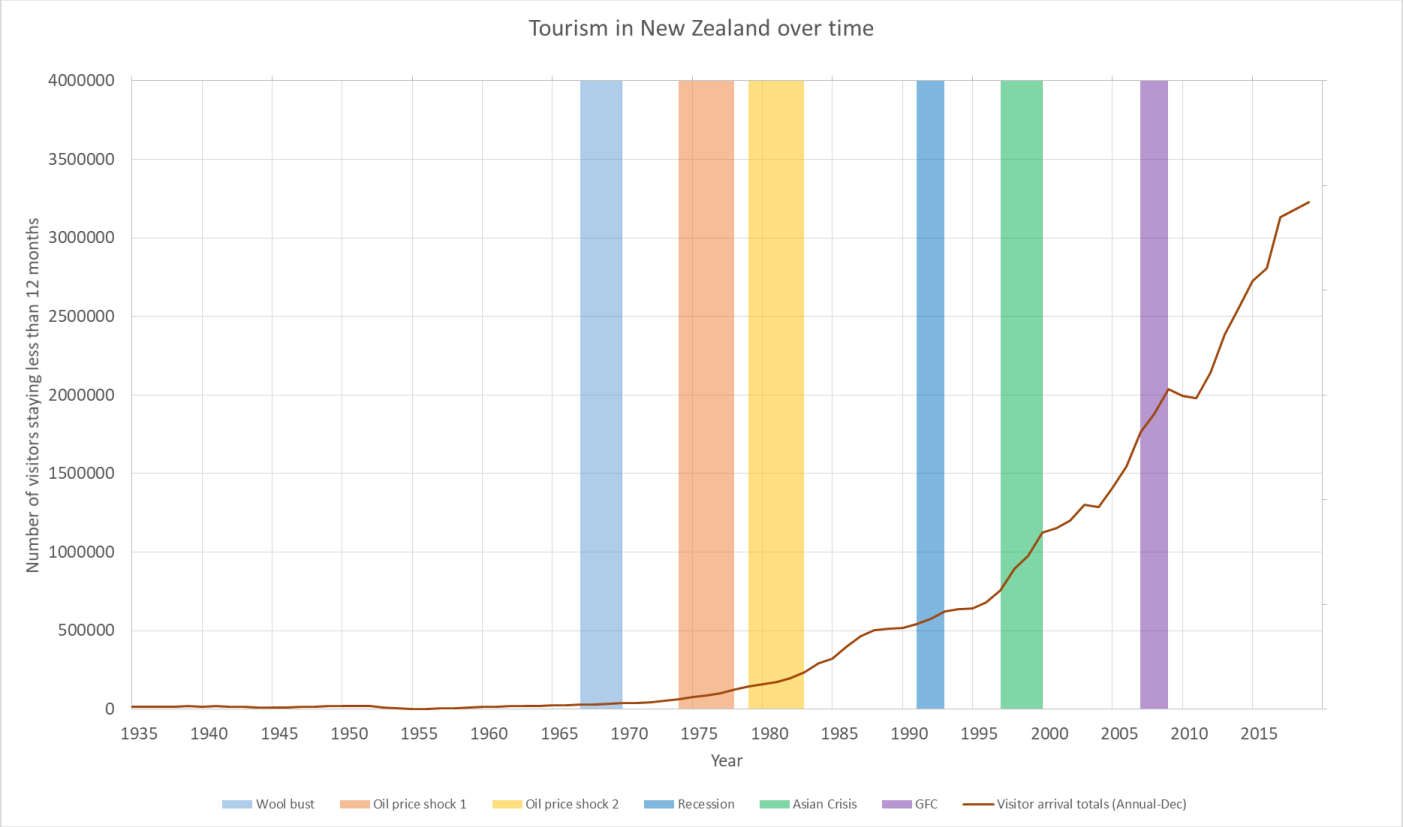


Figure 8: Visitor numbers to New Zealand[9]

[9] StatsNZ Infoshare – Table: Visitor arrival totals (Annual-Dec)

8.5 Figure 8 above shows that when visitor numbers were low between 1965 and 1985 the recessionary periods had very little effect but for the last three recessionary periods the effect has grown. The GFC resulted in visitor numbers dropping for two years before recovering to a similar trajectory as before the GFC.

8.6 One factor that is unique to COVID-19 is the full shutdown of international travel. This has had the effect of greatly reducing the scale of the airlines that service New Zealand. This factor, along with the fact that the borders are likely to stay closed to a large number of countries for some time will mean that the effect on tourism is going to be severe, potentially for several years.

8.7 With the relatively high number of jobs associated with tourism in Nelson it can be expected that unemployment will remain higher than normal for around 2-5 years.

Unemployment

8.8 Increased unemployment is a very likely outcome of COVID-19 in Nelson. Figure 9 shows the total number of people unemployed in New Zealand over time against the backdrop of each of the recessionary periods since 1986.

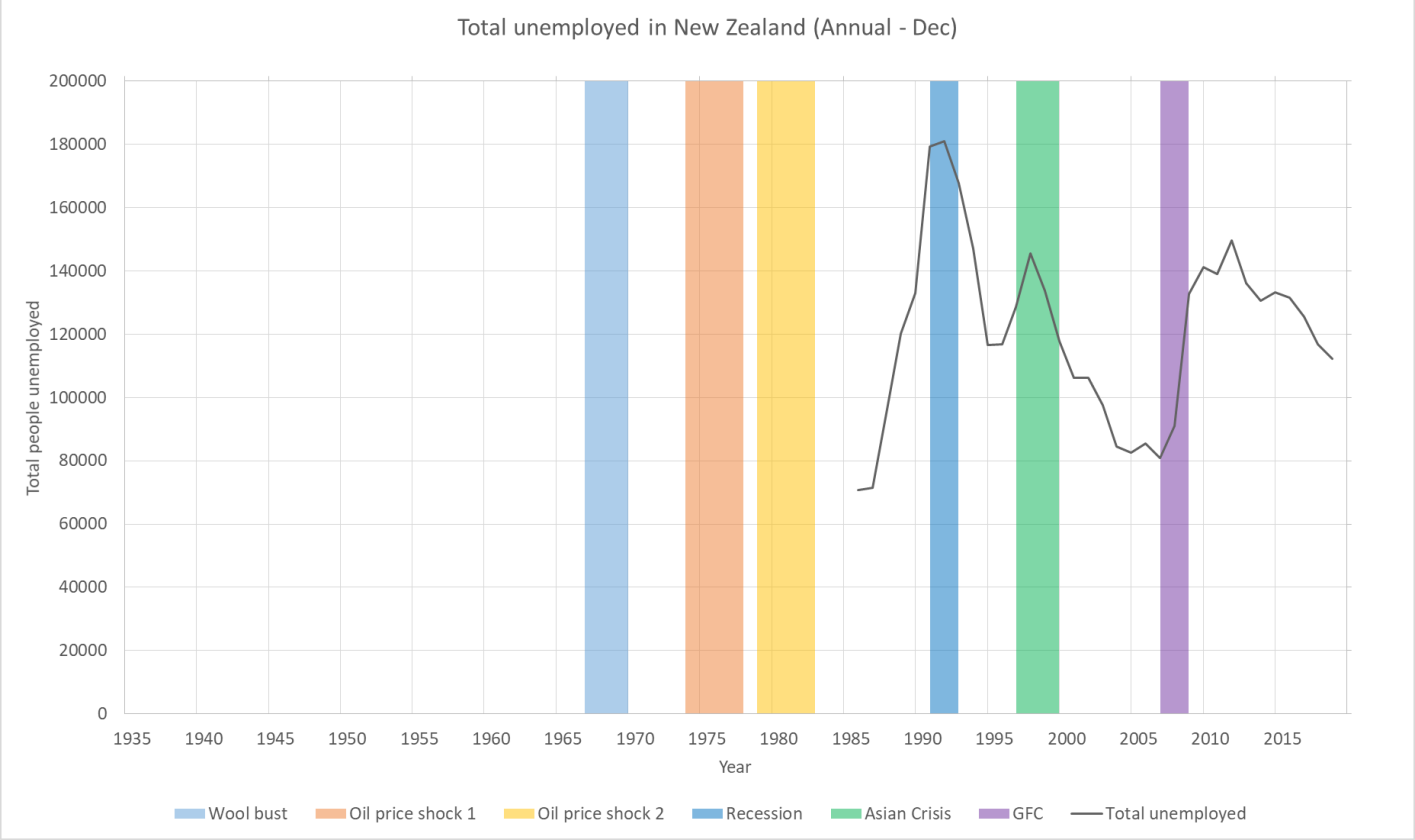


Figure 9: New Zealand unemployment – Long term trend[10]

8.9 Figure 9 shows that there is an inevitable increase in unemployment in New Zealand in the lead up to or during each of the last three recessionary periods. Of interest is the recovery after the GFC being delayed slightly compared to the two previous recessionary periods.

[10] StatsNZ Infoshare – Table: Unemployed by Sex by Duration of Unemployment (Annual-Dec)

8.10 To compare Nelson's unemployment to the rest of New Zealand, underutilisation is a more effective measure as more reliable data is available over a longer period. Underutilisation is defined as the following:

- do not have a job, but are available to work and are actively seeking employment – unemployed
- are employed part time (fewer than 30 hours a week) and who both want and are available to increase the number of hours they work – underemployed
- want a job and are available to work, but are not currently looking for a job – available potential jobseeker
- are unavailable to start work but are looking for a job as they will be able to start work within the next month – unavailable jobseeker.

8.11 Figure 10 below shows the underutilisation for Nelson and New Zealand over the period leading up to, during and following the GFC.

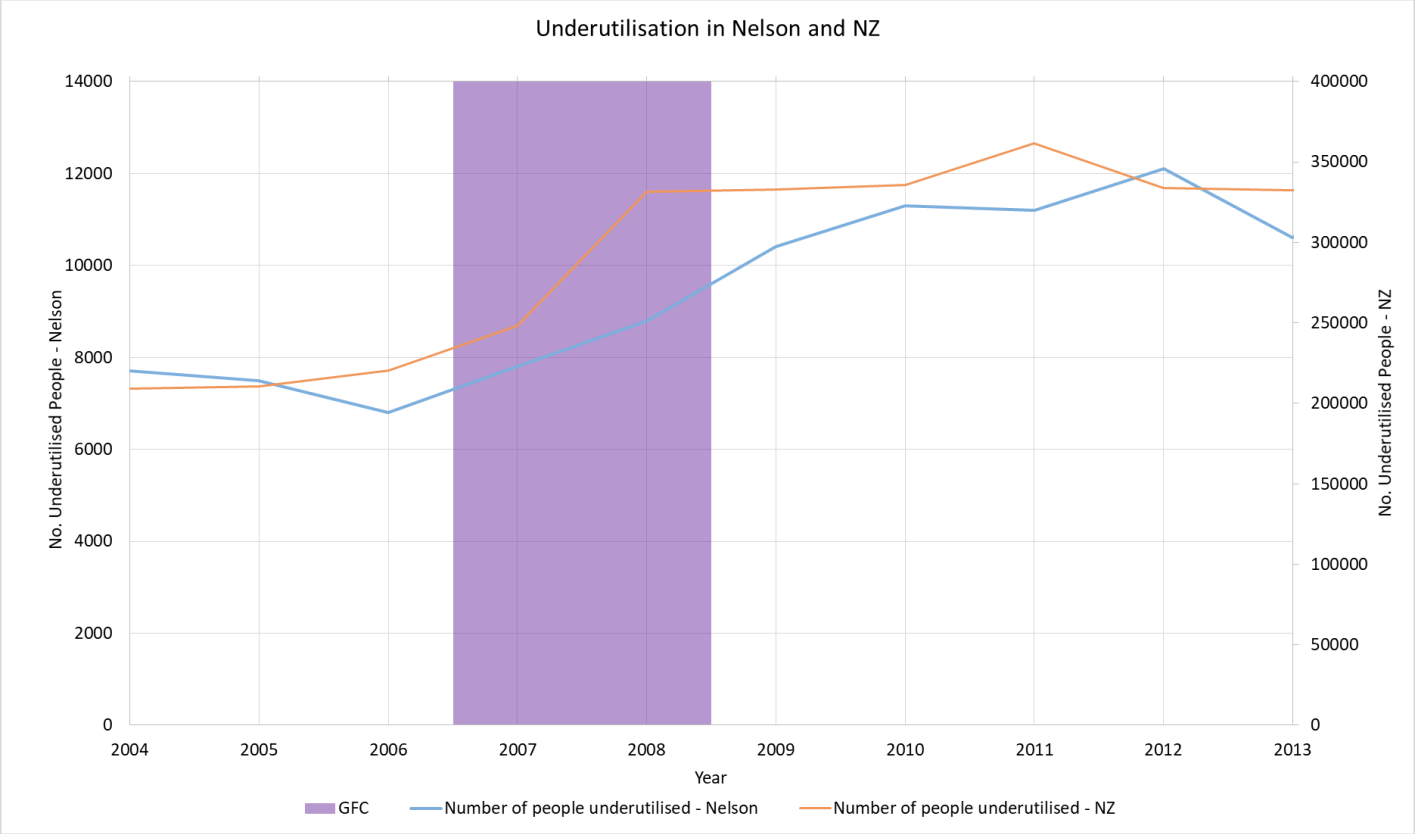


Figure 10: Workforce underutilisation[11]

8.12 Figure 10 above shows that the underutilisation for Nelson generally follows the trend in New Zealand as a whole with an increase in underutilisation in the lead up to, during and after the GFC.

8.13 An increase in underutilisation or unemployment has the potential to limit the ability of people to migrate to and from Nelson. In the case of domestic migration, it is unlikely that employment will be any better elsewhere in the country and therefore we could expect

[11] StatsNZ Infoshare – Table: Underutilisation by Sex by Regional Council (Annual-Dec)

internal migration to be relatively balanced for around the next five years if the GFC example is used.

8.14 In the case of migration to and from international locations, the response to COVID-19 will limit people's ability to move here or move away, likely for several years.

Housing market

8.15 A key factor in attracting people to move to Nelson, aside from employment, is the availability of housing and their ability to sell their existing house. Figure 11 below shows the average number of days that it has taken to sell residential properties in New Zealand since 1992. The data is sourced from REINZ monthly reporting but needs to be treated with some caution as the data does not take into account properties being on the market for a longer period but the vendor changing estate agents throughout the process.

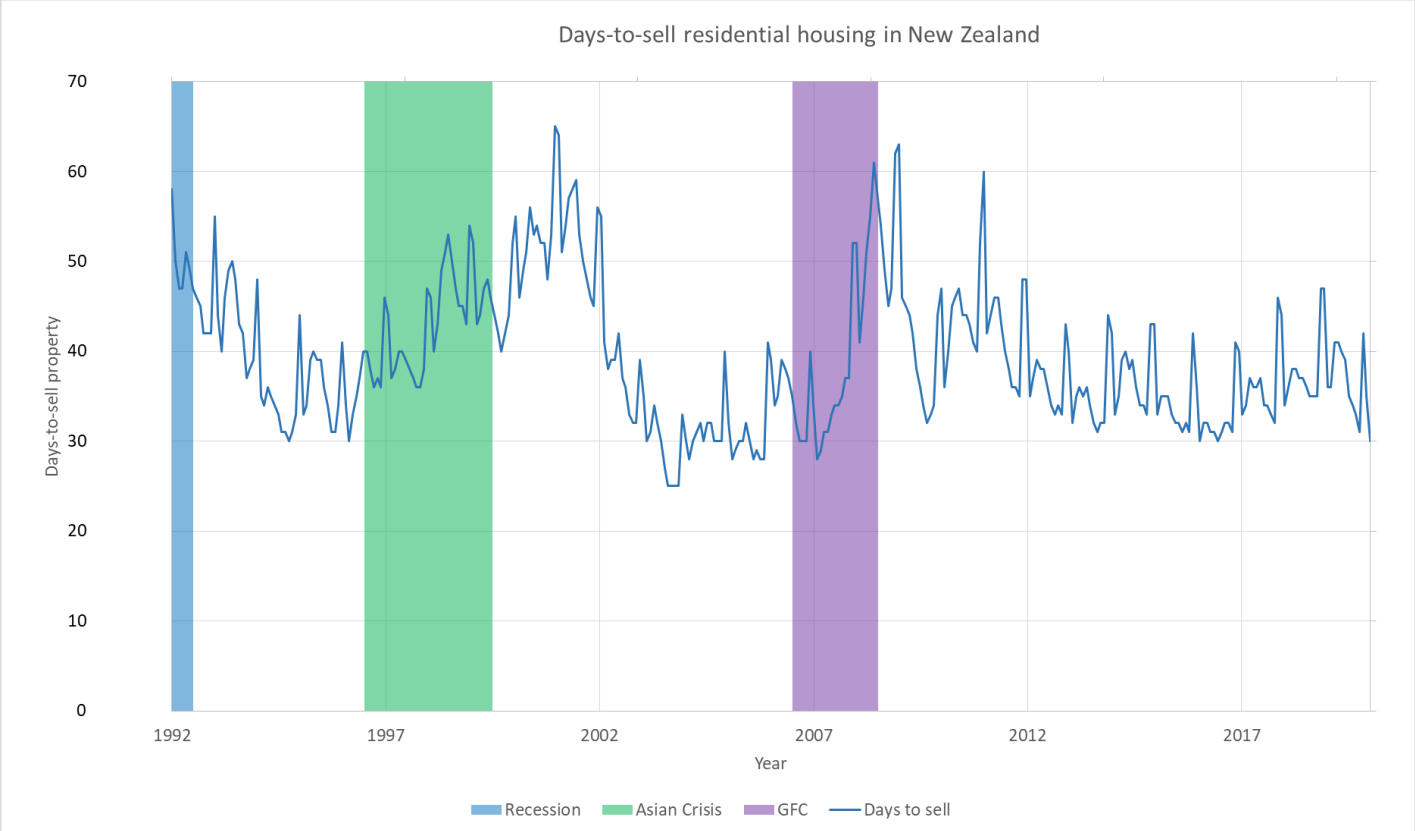


Figure 11: Days to sell residential property in New Zealand[12]

8.16 Figure 11 above shows that over the last two recessionary periods the housing market has slowed with the time taken to sell property increasing significantly before, during and after the recessions. This has the effect of limiting people's ability to move between centres within New Zealand. Those wanting to move from overseas have the same problems as the property market in places like Australia and the United Kingdom often mirror what the happening in the housing market in New Zealand.

[12] https://www.interest.co.nz/charts/real-estate/days-sell

International Migration

8.17 As discussed in the unemployment and housing market sections above, the increased unemployment and the slowing of the housing market globally is likely to significantly slow the arrivals of international migrants to Nelson. The data available to provide analysis of this issue is not of suitable quality or resolution to allow meaningful numbers for determining the actual arrival rate.

Net Migration Summary

8.18 In summary, there are a lot of interrelated factors that influence net migration for Nelson. There is uncertainty in how the factors may work together to limit the actual net migration creating uncertainty in population projections. A broad overall view of the factors is therefore taken and a StatsNZ net migration figure (or figures) selected that limits Councils financial risk.

8.19 It is recommended that the following net migration numbers be adopted for the purposes of the Asset Management Plans and LTP:

- zero net migration for two years
- low net migration for the next three years
- medium net migration for the next five years
- high net migration after that

8.20 The above recommended net migration profile will limit Councils financial risk by giving time to monitor the actual growth over the next three years and adjust as needed without overinvesting in infrastructure and services or under collecting rates.

9.0 Final recommended variables

9.1 The assumptions for the purposes of developing a population projection for Asset Management Plans and the LTP are recommended as follows:

- medium births for ten years
- high births after that
- medium deaths
- zero net migration for two years
- low net migration for the next three years
- medium net migration for the next five years
- high net migration after that

9.2 All are Statistics New Zealand variables from the latest population projections.

10.0 Population Projection

10.1 Using the variables recommended for adoption in section 7 above, population projections in table 2 below have been developed.

Year	Projected population	Year	Projected population	Year	Projected population	Year	Projected population
2020	54,620	2028	56,160	2036	59,760	2044	63,400
2021	54,700	2029	56,400	2037	60,260	2045	63,840
2022	54,780	2030	56,640	2038	60,760	2046	64,280
2023	54,960	2031	57,180	2039	61,200	2047	64,720
2024	55,080	2032	57,720	2040	61,640	2048	65,160
2025	55,200	2033	58,260	2041	62,080	2049	65,600
2026	55,520	2034	58,760	2042	62,520	2050	66,040
2027	55,840	2035	59,260	2043	62,960		

Table 2: Recommended population projection for AMPs and LTP

10.2 Figure 12 below shows the projection in graphical form along with the StatsNZ high and medium series projections adjusted for the latest October 2020 population estimates which were higher than expected.

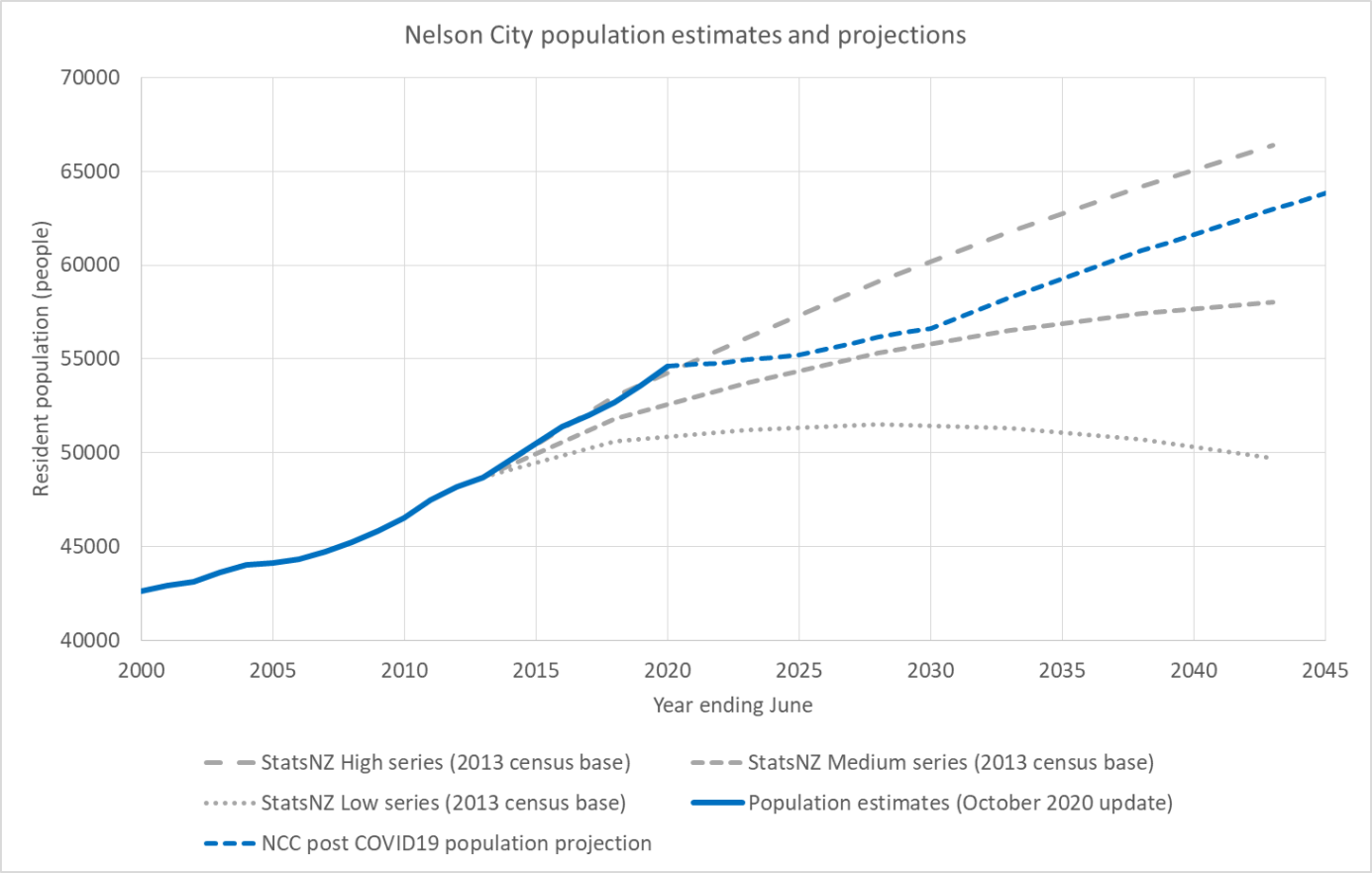


Figure 12: Recommended population projection and comparison projections

10.3 Figure 12 above shows that the recommended population projection tracks down, away from the high series before gradually returning to the same rate of growth as the high series some eight years later.

11.0 Households

11.1 To calculate the number of households that correspond to the recommended population projection in section 8, a household occupancy rate of 2.3 people per house was used for up until 2028 and 2.2 people per household after that based broadly on the StatsNZ recommended occupancy rates. Minor smoothing between the two rates has been done to allow for the fact that the jump would not occur in single year.

11.2 Table 3 below summarises the number of households expected each year under the recommended population projection.

Year	Projected households	Year	Projected households	Year	Projected households	Year	Projected households
2020	23,748	2028	24,960	2036	27,164	2044	28,818
2021	23,783	2029	25,348	2037	27,391	2045	29,018
2022	23,817	2030	25,745	2038	27,618	2046	29,218
2023	23,896	2031	25,991	2039	27,818	2047	29,418
2024	23,948	2032	26,236	2040	28,018	2048	29,618
2025	24,000	2033	26,482	2041	28,218	2049	29,818
2026	24,139	2034	26,709	2042	28,418	2050	30,018
2027	24,545	2035	26,936	2043	28,618		

Table 3: Households by year under recommended population projection

11.3 Figure 13 below shows the household projection in graphical form.

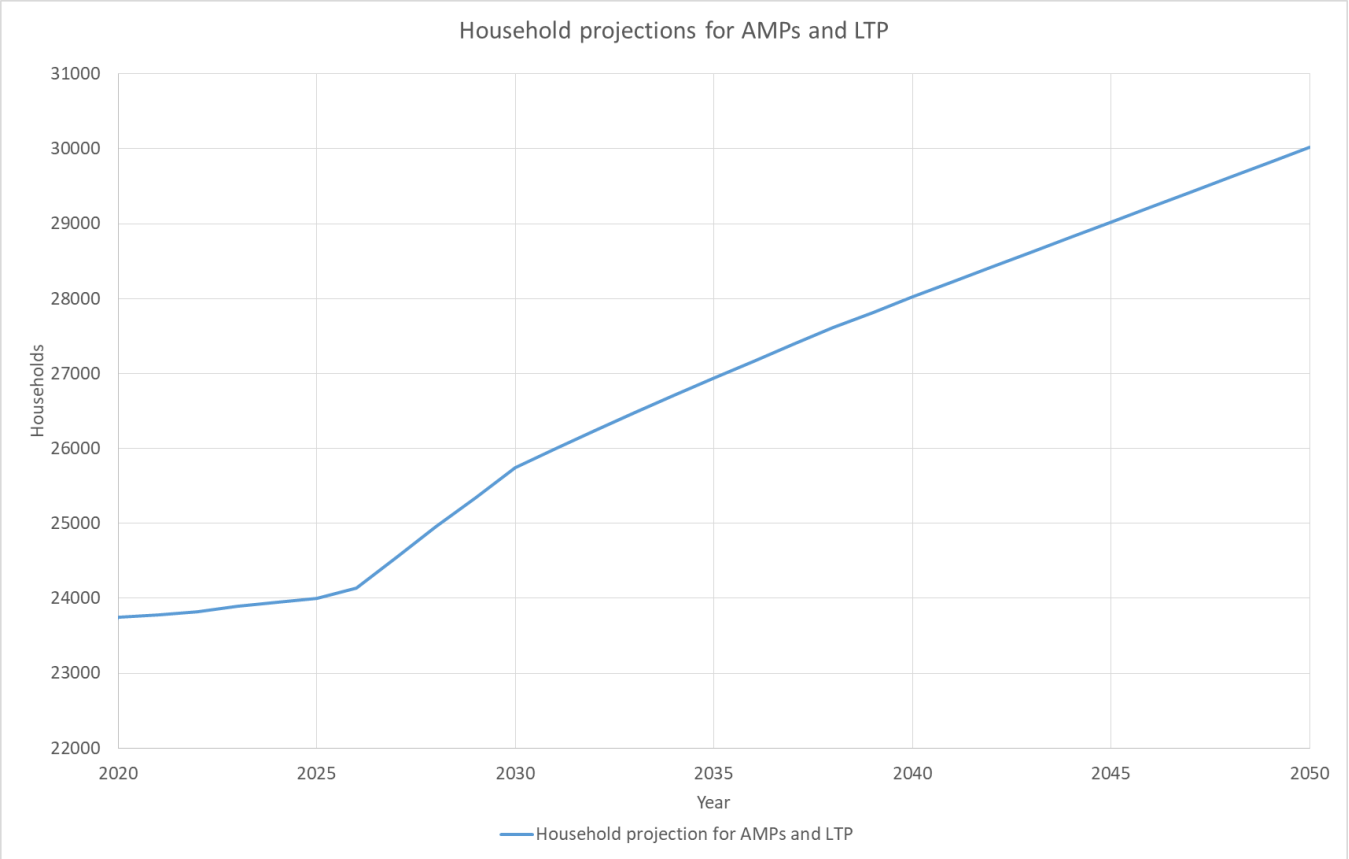


Figure 13: Household projection based on recommended population projection

12.0 Age profile

12.1 It is important to consider the age breakdown of Nelson residents when considering what, how, when and where Council should provide services. The age demographics provided by StatsNZ begin to break down under a hybrid population due to the complex relationship between births, deaths and net migration.

12.2 For the purposes of enabling decision making around an aging population figure 14 shows the breakdown of the Nelson population by age group and gender from the 2018 census.

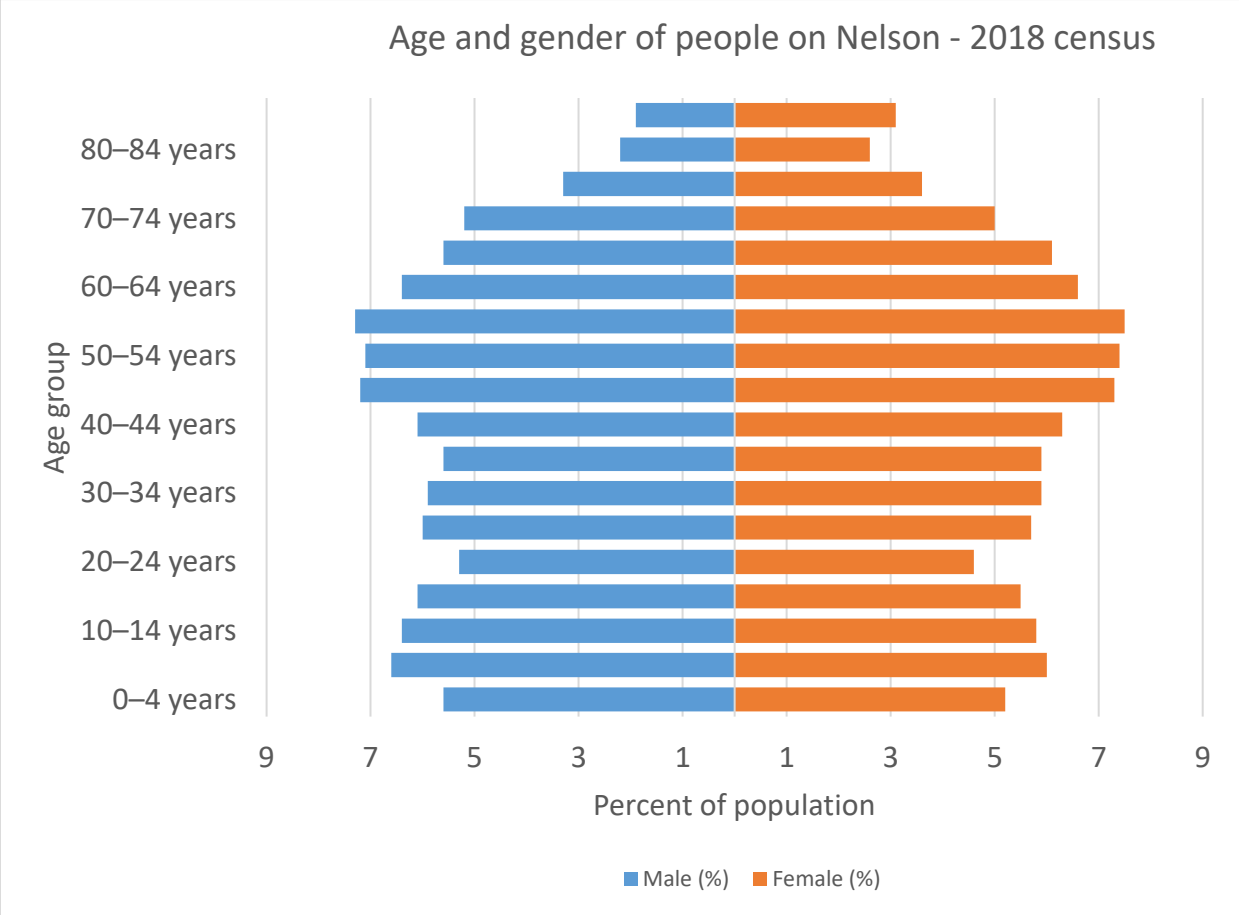


Figure 14: Age and gender breakdown of Nelson population at census 2018[13]

12.3 Figure 14 shows there are two distinct bulges for the age groups 5-19 years old and 45-59 years old with a narrowing between these ages at the 20-24 year old cohort.

12.4 Previous analysis has shown that the Nelson population, under all three of the StatsNZ growth series, will age rapidly and at a much faster rate than New Zealand as a whole. Figure 15 below shows the estimated proportion of each age cohort over time. Again, this is a high level estimate and only the overall trends should be considered rather than the actual numbers.

[13] NZStats Place Summaries - https://www.stats.govt.nz/tools/2018-census-place-summaries/nelson-region#population-counts

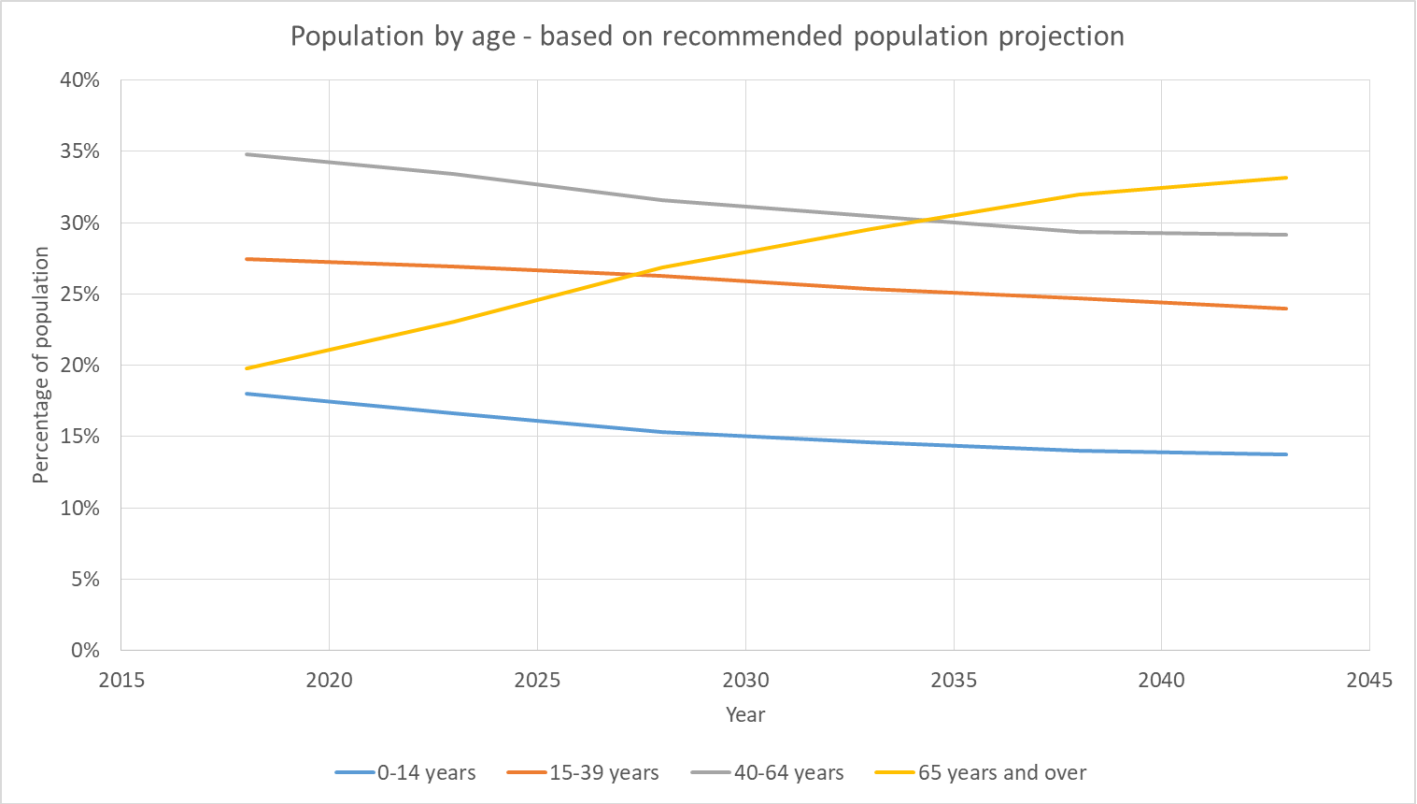


Figure 15: Age cohort trends for Nelson

12.5 Figure 15 above shows, as expected, the 65 years and over cohort to be the only increasing cohort. The reduction in all other cohorts is as a result of the low birth rate in the projection as well as the large number of people moving from the 40-65 years group into the 65 years and over group.

12.6 Broadly, the 65 years and over cohort will make up around a third of Nelsons population by 2043 under this scenario.

13.0 Conclusion

13.1 The purpose of the preceding report is to present a population projection for use in developing Nelson City Councils Asset Management Plans and Long Term Plan.

13.2 In 2018, the latest census was completed but due to shortcomings in the move to online forms the return rate was lower than previously experienced. As a result, there has been significant delays in Statistics New Zealand providing updated population projections.

13.3 Additionally, the COVID-19 event is expected to have significant immediate and future economic effects particularly as it restricts the movement of people regionally and internationally.

13.4 New population estimates were published by StatsNZ in October 2020 and these have been used to provide an updated 2020 base population for the population projections. This base population is higher than previously presented in the draft of this report.

13.5 In this context there is a lot of uncertainty involved with projecting future population change. To account for this a custom, or hybrid, population projection for Nelson has been developed.

13.6 It is recommended that the following assumptions inform a future population projection for Nelson:

- medium births for ten years
- high births after that
- medium deaths
- zero net migration for two years
- low net migration for the next three years
- medium net migration for the next five years
- high net migration after that

13.7 These assumptions result in a recommended population projection for use in developing the Asset Management Plans and Long Term Plan for 2021 as shown in table 4 below.

Year	Projected population	Year	Projected population	Year	Projected population	Year	Projected population
2020	54,620	2028	56,160	2036	59,760	2044	63,400
2021	54,700	2029	56,400	2037	60,260	2045	63,840
2022	54,780	2030	56,640	2038	60,760	2046	64,280
2023	54,960	2031	57,180	2039	61,200	2047	64,720
2024	55,080	2032	57,720	2040	61,640	2048	65,160
2025	55,200	2033	58,260	2041	62,080	2049	65,600
2026	55,520	2034	58,760	2042	62,520	2050	66,040
2027	55,840	2035	59,260	2043	62,960		

Table 4: Recommended population projection for AMPs and LTP

13.8 Figure 16 below shows the recommended population projection in graphical form along with the latest (2018) Statistics New Zealand high and medium and low series based on the 2013 census for the purposes of comparison.

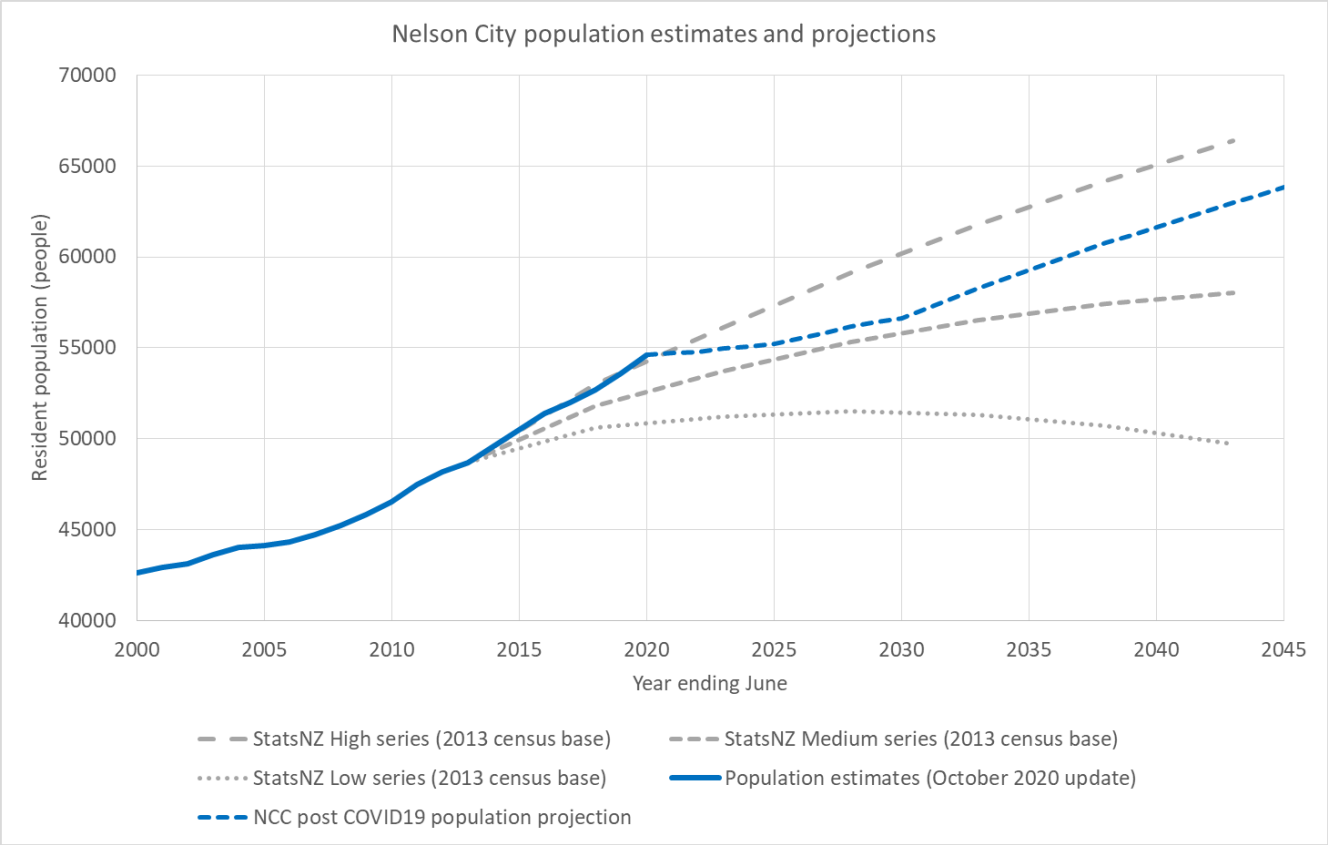


Figure 16: Recommended population projection for AMPs and LTP

13.9 It is clear from figure 16 above that the recommended projection is very low compared to the Statistics New Zealand high and medium series scenarios. The projection anticipates very low growth out until around 2030 before the rate of growth eventually increases to the same as the high series.

13.10 It is important to recognise that there is very significant uncertainty in any population projection as the short, medium and long term effects of the COVID-19 event are not clear and are unlikely to be for some time. A precautionary approach is therefore recommended.