

**A New Zealand Urban
Population Database**

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Abstract

This paper documents a comprehensive database for the populations of 60 New Zealand towns and cities (henceforth “towns”). Populations are provided for every tenth year from 1926 through to 2006. New Zealand towns have experienced very different growth rates over this period. Economic geography theories posit that people migrate to (and from) places according to a few key factors. In order to analyse the determinants of urban growth empirically, we need a comprehensive database of urban populations over time, as provided here.

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1. Purpose

This paper documents a comprehensive database for the populations of 60 New Zealand towns and cities (henceforth “towns”). Populations are provided for every tenth year from 1926 through to 2006. New Zealand towns have experienced very different growth rates over this period. Economic geography theories posit that people migrate to (and from) places according to a few key factors including: income prospects (determined by productivity in a particular location), amenities, and costs of living (Glaeser and Gottlieb, 2009; McCann, 2009 and 2013; Overman et al, 2010; Grimes, 2013). In order to analyse the determinants of urban growth empirically, we need a comprehensive database of urban populations over time, as provided here.

2. Town Choice and Definition

Towns are included in the database if they meet at least one of the following criteria:

- a) They were categorised as an “urban area” by Statistics New Zealand (SNZ) in 2006;
- b) They were categorised as a “secondary urban area” by SNZ in 1986;
- c) The borough population was at least 3,000 in 1956;
- d) The borough population was at least 1,500 in 1926.

These criteria ensure that all significant towns in 1926 and 1956 are included, as well as larger urban areas in 1986 and 2006.

Table 1 shows the towns that meet each of these criteria. Each town is shown only once (in prioritised order), although many towns qualify under multiple criteria. All current “reasonably sized” towns in New Zealand are captured by at least one of the criteria except for Queenstown and Kawerau. These towns are not included in the dataset because: (a) they do not meet any of the criteria, and (b) consistent data are not available to measure their population over time.

As towns expand in population, their spatial definition may also expand. For example, the Hamilton urban area now includes Te Awamutu and Cambridge, whereas this was not the case prior to 1986. Wherever possible, we have attempted to use the 2006 definition of each town when obtaining data for prior years. In some cases, this involves prorating data for a borough population upwards for previous years. In general, this prorating is small. One major discontinuity exists for Hamilton in 1986, when the definition of its urban area changed. We have backdated Hamilton’s population prior to 1986 using a definition as close as possible to the 2006 definition, as described in the Appendix. While the Hamilton urban area now includes Te Awamutu and Cambridge, we also include these two towns separately in case researchers require

continuous population data for them. Smaller discontinuities in urban area definitions also occur in 1986 for Tauranga and Hastings; the Appendix shows how we deal with these two cases.

The demise of boroughs and their replacement with Territorial Local Authorities creates challenges in updating several borough populations for 1996 and 2006. In order to do so, we matched combinations of area unit populations as closely as possible to borough populations in 1986 and then used the populations of these combined area units to calculate the 1996 and 2006 populations. The ratio of the borough population to the summed area unit population in 1986 was used to prorate the 1996 and 2006 summed area unit populations to be consistent with the borough definition.

Four towns listed in Table 1 are excluded from our database. They are: Thames, Mt Maunganui, Taradale and Kaiapoi. Thames is excluded as it lacked consistent historical data. The other three towns each became subsumed within a larger urban entity over time (Tauranga, Napier and Christchurch respectively) and lacked recent independent data. No data are available for Taupo prior to 1956, Tokoroa prior to 1976, or Kapiti prior to 1976. All other towns have populations included for the full period.

3. Data Sources and Availability

Almost all data, excluding area unit data for 1986 onwards, are sourced from SNZ Yearbooks pertaining to census years.¹ Area unit data were obtained directly from SNZ census databases.

One issue that we faced is that Māori populations were excluded prior to 1946.² In 1946, most large town populations were reported both including and excluding Māori. For those towns, we prorated the 1926 and 1936 populations upwards to reflect the Māori proportion of the population in 1946. For all other towns, we prorated the 1926 and 1936 populations upward according to the Māori proportion of the population in the nearest town for which both measures were reported in 1946. In all cases (reflecting the small number of urbanised Māori up to the end of the Second World War) the prorating was small, the maximum percentage being 5.4% for Gisborne.

¹ A very few observations were also obtained from a population spreadsheet available from SNZ. Data from this source were used to provide estimates of town populations in larger towns (such as Masterton) in 1986 and 1996 where the area unit method (see above) was difficult to apply. See: Table A.1.5 from http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/long-term-data-series/population.aspx (New Zealand long-term data series, town and city populations).

² The census was actually taken in 1945, but we refer to this census as 1946 to stay in keeping with the other decades.

The Appendix provides detailed notes for each town in which adjustments to the raw official data were made in order to obtain consistent series. Table 2 provides the final population data for the derived series for all 60 towns.³

4. Illustrative Use of Data

Figures 1–6 illustrate the very different population growth paths that New Zealand towns have experienced since 1926. Figure 1 plots the populations over the 80 years for the ten smallest towns in our database as at 1926. Figure 2 similarly graphs the populations for the next ten smallest towns as at 1926, and so on to Figure 6 which graphs the populations for the seven largest towns as at 1926. (We exclude Taupo, Tokoroa and Kapiti from the graphs owing to their lack of data in early years; Te Awamutu and Cambridge are included as separate entities and as part of the Hamilton population.)

Each of the graphs demonstrates that towns that had similar populations to each other in 1926, in some cases experienced highly differentiated growth over the following 80 years. The data are currently being used in a range of projects designed to understand the causes of these very different population trajectories. This research is designed to assist in the development of a deeper understanding of the causes of town and city “success” as measured by the population dynamics of places in which people choose to live.

5. References

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³ The data will be placed on the Motu website and will be downloadable and freely available for anyone to use.

6. Appendix: Notes on Town Population Adjustments

General notes

- Yearbook figures were used for all populations up to and including 1986 (except for Te Kuiti and Waipukurau which use area unit data for 1986).
- Yearbook figures were used for 1996 and 2006 for the 20 largest urban areas: Whangarei, Auckland, Hamilton, Tauranga, Rotorua, Gisborne, Napier, Hastings, New Plymouth, Taupo, Wanganui, Palmerston North, Masterton, Wellington, Nelson, Blenheim, Christchurch, Timaru, Dunedin, Invercargill.
- Area unit populations were used for 1996 and 2006 for all other towns, pro-rated by the ratio of yearbook population figure for 1986 to population of matching area units in 1986.
- 1926 and 1936 figures were pro-rated to include Māori, using 1946 ratio of population including Māori to population excluding Māori (for own town, or for nearest town if own town ratio for 1946 was not available).

Whangarei

- 1926 and 1936 figures pro-rated by Auckland 1946 Māori ratio

Auckland

- 1926 and 1936 figures pro-rated by Auckland 1946 Māori ratio

Pukekohe

- Area units: Pukekohe North, Pukekohe West, Bledisloe Park, Bombay, Patumahoe, Buckland, Eden Road-Hill Top, Paerata-Cape Hill (used only for 1996 figure as figure for 2006 urban area population given in Yearbook)
- 1926 and 1936 figures pro-rated by Auckland 1946 Māori ratio
- All years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Hamilton

- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio
- The 2008 Yearbook definition of urban area population for 1986 (138645) is 36.2% higher than that in the 1987 Yearbook (101814). Part of the discrepancy is due to the inclusion of Te Awamutu and Cambridge zones into the expanded Hamilton definition. Adding the Te Awamutu and Cambridge borough populations to the 1986 definition of the Hamilton population gives a combined population of 120055. This still leaves the 2008 definition of urban area population for 1986 15.5% higher than that in the 1987 Yearbook (e.g. due to inclusion of Ngaruawahia and other local areas). We have used the 2007 definition and pro-rated series prior to 1986 upwards by 15.5%. We have left Te Awamutu and Cambridge in the database for the full period as separate towns for information purposes
- Note: Pre-1986 urban area definitions gave population for Hamilton urban area as: (1926: 16352), (1936: 19931), (1946: 26401), (1956: 40646), (1966: 63303), (1976: 94777), (1986: 101814).

Tauranga

- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio
- The 2008 Yearbook definition of urban area population for 1986 is 4.9% higher than that in the 1987 Yearbook. We have used the 2008 definition and pro-rated series prior to 1986 upwards by 4.9%

Rotorua

- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Taupo

- Population data unavailable prior to 1956
- All available years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Gisborne

- 1926 and 1936 figures pro-rated by Gisborne 1946 Māori ratio

Napier

- 1926 and 1936 figures pro-rated by Napier 1946 Māori ratio

Hastings

- 1926 and 1936 figures pro-rated by Hastings 1946 Māori ratio
- The 2008 Yearbook definition of urban area population for 1986 is 3.3% higher than that in the 1987 Yearbook. We have used the 2008 definition and pro-rated series prior to 1986 upwards by 3.3%

New Plymouth

- 1926 and 1936 figures pro-rated by New Plymouth 1946 Māori ratio

Wanganui

- 1926 and 1936 figures pro-rated by Wanganui 1946 Māori ratio

Palmerston North

- 1926 and 1936 figures pro-rated by Palmerston North 1946 Māori ratio

Masterton

- 1926 and 1936 figures pro-rated by Palmerston North 1946 Māori ratio

Kapiti

- Population data unavailable prior to 1976

Wellington

- All figures include the Hutt Valley
- 1926 and 1936 figures pro-rated by Wellington 1946 Māori ratio

Nelson

- 1926 and 1936 figures pro-rated by Nelson 1946 Māori ratio

Blenheim

- 1926 and 1936 figures pro-rated by Nelson 1946 Māori ratio
- All years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Christchurch

- 1926 and 1936 figures pro-rated by Christchurch 1946 Māori ratio

Timaru

- 1926 and 1936 figures pro-rated by Timaru 1946 Māori ratio

Dunedin

- 1926 and 1936 figures pro-rated by Dunedin 1946 Māori ratio

Invercargill

- 1926 and 1936 figures pro-rated by Invercargill 1946 Māori ratio

Levin

- Area units: Lake Horowhenua, Waipoehu, Kohitere, Mangaore-Manukau, Levin North, Levin West, Playford Park, Levin South, Levin East
- 1926 and 1936 figures pro-rated by Palmerston North 1946 Māori ratio
- All years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Tokoroa

- Population data unavailable prior to 1976
- Area units: Mangakaretu, Kinleith, Parounui, Parkdale, Matarawa, Stanley Park, Tokoroa Central, Aotea, Strathmore, Aimsfield

Whakatane

- Area units: Ohope, Whakatane North, Coastlands, Whakatane West, Trident, Allandale-Mokorua, Orini, Maraetotara, Poroporo
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Ashburton

- Area units: Fairton, Plains Railway, Allenton, Central Ashburton West, Netherby, Central Ashburton East, Hampstead, Tinwald
- 1926 and 1936 figures pro-rated by Timaru 1946 Māori ratio
- All years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Oamaru

- Area units: Oamaru North, Orana Park, Oamaru Central, Oamaru South, Weston, Ardgowan, Cape Wanbrow
- 1926 and 1936 figures pro-rated by Dunedin 1946 Māori ratio
- All years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Feilding

- Area units: Oroua Bridge, Maewa, Feilding North, Feilding West, Feilding Central, Feilding East, Rakiraki
- 1926 and 1936 figures pro-rated by Palmerston North 1946 Māori ratio
- All years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Hawera

- Area units: Normanby, Hawera North, Hawera South, Ohawe Beach, Tawhiti, Waingongoro, Hawera West
- 1926 and 1936 figures pro-rated by New Plymouth 1946 Māori ratio

Greymouth

- 1926 and 1936 figures pro-rated by Nelson 1946 Māori ratio
- Area units: Karoro, Kaiata, South Beach-Camerons, Point Elizabeth, Dobson, Coal Creek, Greymouth Rural, Marsden-Hohonu, Runanga-Rapahoe, Cobden, Blaketown, Greymouth Central, Greymouth South
- All years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Gore

- Area units: North Gore, East Gore, Central Gore, West Gore, South Gore, Charlton, Chatton, Kaiwera
- 1926 and 1936 figures pro-rated by Invercargill 1946 Māori ratio
- All years prior to 1986 were pro-rated by the ratio of 1986 secondary urban area population to 1986 borough population

Dargaville

- Area units: Dargaville
- 1926 and 1936 figures pro-rated by Auckland 1946 Māori ratio

Huntly

- Area units: Huntly West, Huntly East
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Cambridge

- Area units: Cambridge North, Cambridge West, Cambridge Central, Leamington West, Leamington East
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Te Awamutu

- Area units: Te Awamutu West, Te Awamutu East, Te Awamutu Central, Te Awamutu South
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Te Kuiti

- No borough population in 1986 year book so have used area unit population for 1986
- Area units: Te Kuiti
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Taumarunui

- Area units: Tarrangower, Taumarunui Central, Sunshine-Hospital Hill, Manunui
- 1926 and 1936 figures pro-rated by New Plymouth 1946 Māori ratio

Waihi

- Area units: Waihi
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Morrinsville

- Area units: Morrinsville West, Morrinsville East
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Wairoa

- Area units: Wairoa
- 1926 and 1936 figures pro-rated by Gisborne 1946 Māori ratio

Dannevirke

- Area units: Dannevirke West, Dannevirke East
- 1926 and 1936 figures pro-rated by Palmerston North 1946 Māori ratio

Waitara

- Area units: Waitara West, Waitara East
- 1926 and 1936 figures pro-rated by New Plymouth 1946 Māori ratio

Stratford

- Area units: Stratford West, Stratford East
- 1926 and 1936 figures pro-rated by New Plymouth 1946 Māori ratio

Marion

- Area units: Marion
- 1926 and 1936 figures pro-rated by Wanganui 1946 Māori ratio

Westport

- Area units: Westport Urban, Westport Rural
- 1926 and 1936 figures pro-rated by Nelson 1946 Māori ratio

Hokitika

- Area units: Kanieri, Hokitika Urban
- 1926 and 1936 figures pro-rated by Nelson 1946 Māori ratio

Rangiora

- Area units: Rangiora North, Rangiora West, Rangiora East, Southbrook
- 1926 and 1936 figures pro-rated by Christchurch 1946 Māori ratio

Waimate

- Area units: Waimate
- 1926 and 1936 figures pro-rated by Timaru 1946 Māori ratio

Balclutha

- Area units: Balclutha
- 1926 and 1936 figures pro-rated by Dunedin 1946 Māori ratio

Te Aroha

- Area units: Te Aroha
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Paeroa

- Area units: Paeroa
- 1926 and 1936 figures pro-rated by Hamilton 1946 Māori ratio

Waipukurau

- No borough population in 1986 year book so have used area unit population for 1986
- Area units: Waipukurau
- 1926 and 1936 figures pro-rated by Hastings 1946 Māori ratio

Eltham

- Area units: Eltham
- 1926 and 1936 figures pro-rated by New Plymouth 1946 Māori ratio

Ohakune

- Area units: Ohakune
- 1926 and 1936 figures pro-rated by Wanganui 1946 Māori ratio

Foxton

- Area units: Foxton
- 1926 and 1936 figures pro-rated by Palmerston North 1946 Māori ratio

Carterton

- Area units: Carterton
- 1926 and 1936 figures pro-rated by Palmerston North 1946 Māori ratio

Temuka

- Area units: Temuka
- 1926 and 1936 figures pro-rated by Timaru 1946 Māori ratio

Milton

- Area units: Milton
- 1926 and 1936 figures pro-rated by Dunedin 1946 Māori ratio

Kaitangata

- Area units: Kaitangata
- 1926 and 1936 figures pro-rated by Dunedin 1946 Māori ratio

Bluff

- Area units: Bluff
- 1926 and 1936 figures pro-rated by Invercargill 1946 Māori ratio

7. Tables and Figures

Table 1: Town eligibility for inclusion

Area	2006 Urban Area	1986 Sec. Urban Area	1956 Borough Pop>3,000	1926 Borough Pop>1,500
Whangarei	x			
Auckland	x			
Pukekohe	x			
Hamilton	x			
Tauranga	x			
Rotorua	x			
Taupo	x			
Gisborne	x			
Napier	x			
Hastings	x			
New Plymouth	x			
Wanganui	x			
Palmerston North	x			
Masterton	x			
Kapiti	x			
Wellington (incl Hutt)	x			
Nelson	x			
Blenheim	x			
Christchurch	x			
Timaru	x			
Dunedin	x			
Invercargill	x			
Levin		x		
Tokoroa		x		
Whakatane		x		
Ashburton		x		
Oamaru		x		
Feilding		x		
Hawera		x		
Greymouth		x		
Gore		x		
Dargaville			x	
Huntly			x	
Cambridge			x	
Te Awamatu			x	
Te Kuiti			x	
Taumaranui			x	
Thames			x	
Waihi			x	
Morrinsville			x	
Mt Maunganui			x	
Wairoa			x	
Taradale			x	
Dannevirke			x	
Waitara			x	
Stratford			x	
Marton			x	
Westport			x	
Hokitika			x	
Rangiora			x	
Waimate			x	
Balclutha			x	
Te Aroha				x
Paeroa				x
Waipukurau				x
Eltham				x
Ohakune				x
Foxton				x
Carterton				x
Kaiapoi				x
Temuka				x
Milton				x
Kaitangata				x
Bluff				x

Table 2: Town populations

Town	1926	1936	1946*	1956	1966	1976	1986	1996	2006
Whangarei	6385	7288	9289	13363	29503	39069	44043	45785	49080
Auckland	196637	216184	263370	381063	548293	742786	820754	997940	1208094
Pukekohe	3458	3801	4867	6897	9630	12899	13823	16267	22518
Hamilton	23174	28220	36938	56204	87750	127307	138645	159234	184908
Tauranga	2685	3617	4945	10045	33167	50531	62370	82832	108882
Rotorua	4212	6646	7512	12302	33229	46650	52001	52956	53766
Taupo				3133	8041	14186	17458	21044	21291
Gisborne	15638	16746	16984	22622	27804	31790	32238	32653	32529
Napier	18364	19138	20297	27507	38309	50164	52151	55044	56286
Hastings	15571	19106	21000	28702	38700	52488	56718	58675	62118
New Plymouth	16263	18898	20642	28292	35280	43914	47384	49306	49281
Wanganui	26835	26491	26462	32100	38174	39679	40758	41320	38988
Palmerston North	19902	24247	27294	37775	49140	63873	67405	73862	76032
Masterton	8188	9164	9535	13000	17596	21001	19353	19686	19497
Kapiti						14973	23203	30004	37347
Wellington	122169	151015	173520	224350	282487	327414	325697	335468	360624
Nelson	11829	13661	16577	22503	27615	42433	44593	50691	56367
Blenheim	6212	6274	7161	11421	16405	21254	22681	25875	28527
Christchurch	118786	132982	150047	193367	247248	295296	299373	331443	360768
Timaru	16840	18840	19596	24694	27946	29958	28621	27521	26886
Dunedin	85267	82119	83351	99370	108734	113222	108864	112279	110997
Invercargill	21957	25884	27583	35107	46016	53762	52807	49306	46773
Levin	2936	3304	4021	8005	14069	18211	18962	19358	19172
Tokoroa						19232	18193	15110	12356
Whakatane	1343	1763	2806	5445	8637	11542	15954	16945	17554
Ashburton	5523	6177	8195	11046	13755	15441	15229	15244	16240
Oamaru	7892	8447	8424	11037	14848	15179	14247	13465	12384
Fielding	4533	4844	5284	7168	9542	11510	12802	13758	13389
Hawera	4593	4758	4840	5620	8142	8506	11375	10984	9978
Greymouth	8350	12055	12370	13217	12782	12233	11261	10652	9995
Gore	5147	6093	6545	8596	10608	12015	11249	10546	9623
Dargaville	1958	2217	2370	3306	3902	4559	4859	4470	4228
Huntly	1745	1976	2870	4187	5401	5559	6750	6063	5651
Cambridge	2057	2242	2567	3408	5962	7841	10145	11418	12547
Te Awamutu	1658	2263	3017	4614	6719	7619	8096	8767	9229
Te Kuiti	2363	2543	2720	3781	4825	4840	4521	4299	3885
Taumaranui	2334	2694	2706	3344	5864	6479	6387	5613	4574
Waihi	3782	3985	3756	3075	3169	3415	3679	4178	3896
Morrinsville	1555	1828	2175	3552	4497	4783	5281	5667	6083
Wairoa	2285	2661	2857	3796	5100	5466	5094	4758	3940
Dannevirke	4276	4418	4334	5294	5728	5638	5873	5344	5124
Waitara	1750	2011	2295	3675	4790	6036	6482	5941	5652
Stratford	3400	3832	3854	4811	5441	5444	5528	5319	4865
Marton	2783	2811	2915	4001	4731	4910	5059	4847	4226
Westport	3888	4265	4686	5522	5271	4988	4660	4441	4053
Hokitika	2403	2704	2742	3032	3258	3530	3427	3321	3070
Rangiora	2093	2246	2385	3150	4117	5991	6674	7798	9218
Waimate	2206	2318	2351	3107	3300	3378	3250	2961	2750
Balclutha	1545	1549	1692	3323	4419	4740	4227	3808	3644
Te Aroha	2314	2408	2426	2854	3212	3202	3510	3472	3372
Paeroa	1763	2187	2253	2871	3129	3796	3661	3621	3356
Waipukurau	1798	2111	2095	2886	3569	3632	3855	3687	3618
Eltham	2080	1938	1855	2192	2319	2334	2288	1851	1678
Ohakune	1560	1432	1411	1626	1458	1399	1496	1403	1117
Foxton	1709	1617	1651	2525	2819	2789	2729	2663	2464
Carterton	1758	1935	1918	2590	3536	3985	3902	3968	3877
Temuka	1852	1914	2081	2254	2703	3711	3919	3879	3919
Milton	1506	1426	1472	1904	1861	2218	2154	1940	1760
Kaitangata	1550	1378	1351	1286	1208	1120	972	872	794
Bluff	1580	2047	2059	2693	3279	3016	2537	2011	1644

* 1946 population refers to the 1945 census.

Figure 1: Town populations. Ten smallest towns in 1926

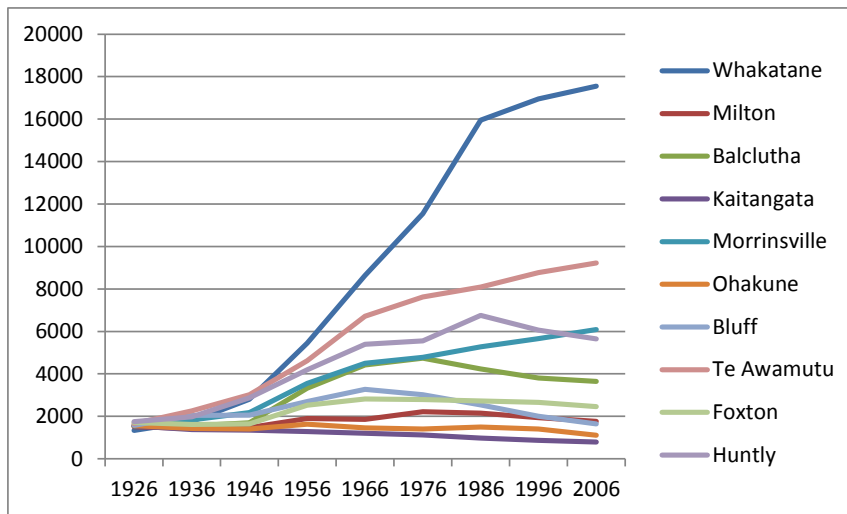


Figure 2: Town populations. Towns ranked 11–20 in 1926

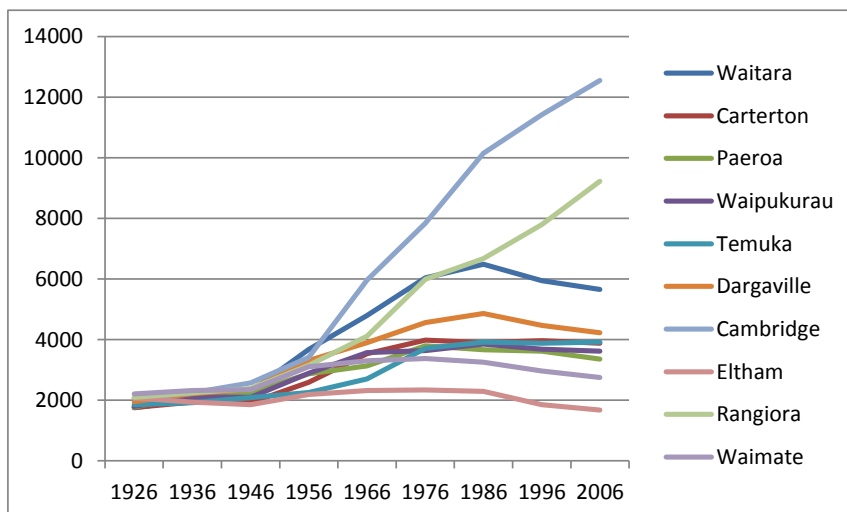


Figure 3: Town populations. Towns ranked 21–30 in 1926

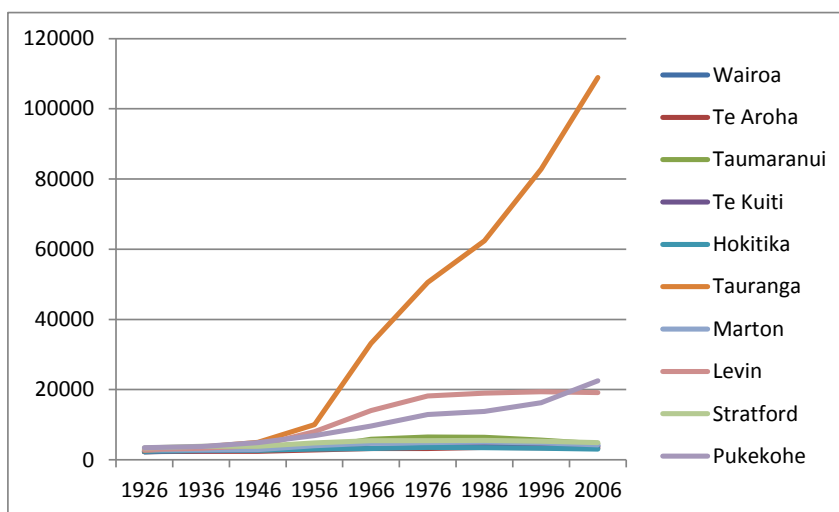


Figure 4: Town populations. Towns ranked 31–40 in 1926

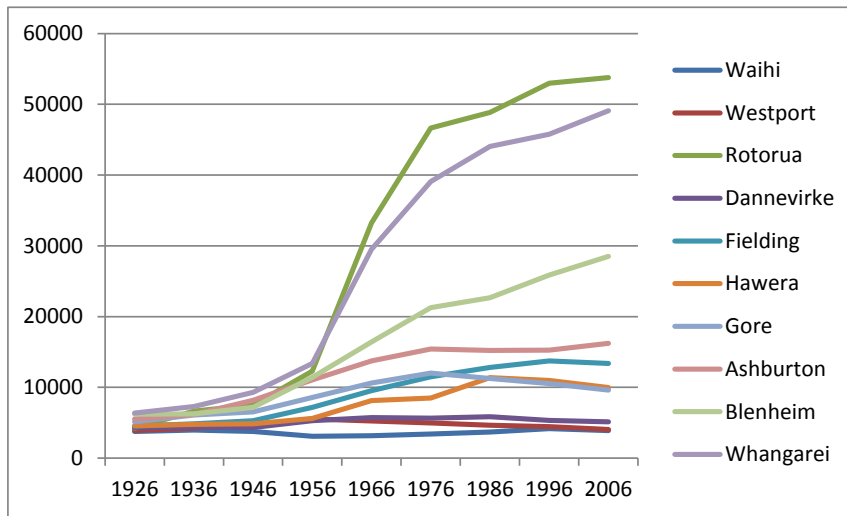


Figure 5: Town populations. Towns ranked 41–50 in 1926

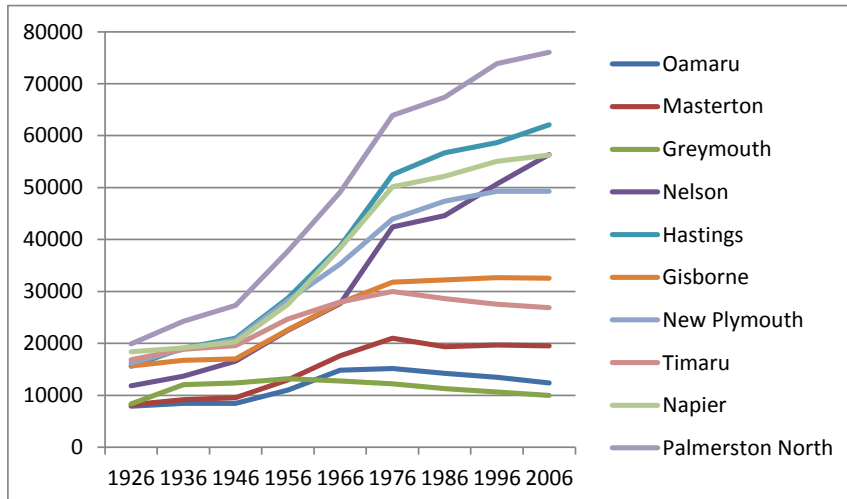
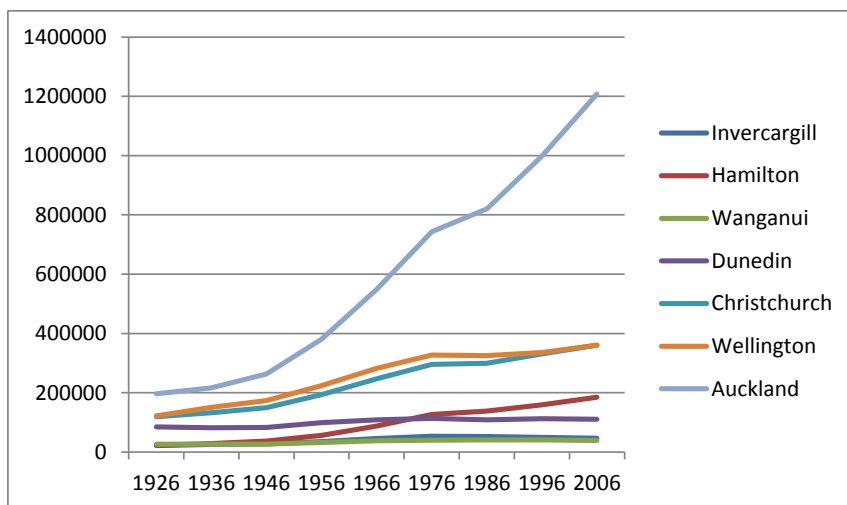


Figure 6: Town populations. Towns ranked 51–57 in 1926



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