The New Zealand ‘man drought’
Is it real, what are its causes, and what are the implications for partnering?

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The New Zealand 'man drought': Is it real, what are its causes, and what are the implications for partnering?

Abstract: The June 2011 population estimates produced by Statistics New Zealand suggest there are around 50,000 more female than male residents aged 25-49, with the greatest imbalance in the prime relationship forming and childrearing age group of 30-44. In the popular media, this has been called a 'man drought'. A range of research carried out under the 'missing men' research program is used in this paper to evaluate the overall man drought. The factors causing the overall man drought are complex. Undercounting males in census data and differences in mortality between men and women are contributing factors. But the main cause is migration, both in and out of New Zealand.

There is also an educational man drought within the overall man drought. A key driver of this particular drought is the change in educational participation and attainment within New Zealand. In the past, well educated men outnumbered well educated women. Now this imbalance has reversed. The historic tendency of women to 'marry up' to a man with a higher level of formal education than themselves has continued but now there are not enough well educated men for educated women to marry up to. However, well educated women are now adapting by starting to marry down educationally. In doing so they are competing with each other but also against women who have less education. Well educated males appear to benefit from the man drought as they have a greater choice of partners. As a result, they are increasingly partnering with well educated women. Those most likely not to be partnered are poorly educated females as well as poorly educated males.

Other behavioural changes could occur in reaction to the man droughts. We consider whether women are now partnering more with younger men and whether there could be an increase overseas partnering, including more 'mail order brides' or 'husbands'. We also consider whether women will increasingly rely on their erotic capital to attract partners in the current competitive marriage market.

Key words: 'man drought', education, partnering, gender

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1. Introduction

The June 2011 population estimates produced by Statistics New Zealand suggest there are around 50,000 more female than male residents aged 25-49, with the greatest imbalance in the prime relationship forming and childrearing age group of 30-44. This imbalance, commonly described as a 'man drought',[1] could be having a significant impact on some women's and men's partnering options, or lack thereof. There are external factors, such as migration patterns, causing the gender ratio imbalance. However, women and men's historical partnering preferences, strongly linked to education levels, also potentially further exacerbate the man drought. In simpler terms, there are two man droughts at present. There is a 'total' man drought and then, as a subset, an 'educational' man drought, which is far stronger than the total man drought.

An imbalance in sex ratios has resulted in the overall, census based, man drought.[2] This is caused by a complex combination of factors that are not straightforward and easy to measure. Higher male mortality rates and a higher undercount of men than women in census data are two such factors which can provide some explanation. In addition, there is a constant stream of New Zealand men and women migrating from New Zealand, with varying numbers returning to New Zealand. Some return alone, some with another kiwi and some with a foreign born partner. Finally, a factor identified as contributing to the man drought is the significant number of foreign female migrants who are moving to New Zealand. Again, some come to New Zealand with a partner, possibly a kiwi, but some come alone thus potentially entering the New Zealand dating market.

As noted, within the overall man drought there is what could be deemed an 'educational man drought'. In New Zealand, as well as all other industrialised countries, women have been increasingly participating in formal education, especially completing degrees and higher qualifications. The result is that now in all such countries young women are better qualified than young men. At the other end of the educational spectrum, while in the past there were more women than men with no formal qualifications, now it is young males who are over-represented in this group.[3]

Increasingly well qualified young women are competing with well qualified young men for the higher paid jobs but, if seeking heterosexual relationships, also competing with each other for highly qualified partners. For a range of reasons, women have historically had a

[1] In 2005 Australian demographer Bernard Salt coined the term 'man drought'

[2] We recognise that the concept of a 'man drought' is premised on strongly heterosexist partnering assumptions.

[3] Although not directly discussed in this paper, changes in the global market mean those with few or no formal qualifications now find it more difficult to find well paid employment. In particular, there has been a decline in inflation adjusted income for a group of New Zealand males (Callister, von Randow and Cotterell, 2011). Historically, income earning abilities of males have affected their partnering options (Callister, 2000).

tendency to 'marry up'[4] in terms of education to a man who has an equal, if not higher, education (and thus generally income) level. If women continue to seek a partner who has an equal or higher level of education there is an even smaller number of ideal men that women are competing for. Thus the educational man drought is potentially far bigger than the overall man drought.

This paper brings together a range of research developed as part of a Foundation for Research, Science and Technology funded 'missing men' project.[5] In doing so we aim to:

- develop a clear idea of the size of the man drought, including the educational man drought;
- assess the 'partnering gap' based on the overall numbers of men and women. This includes some data on the geographic dimensions of the man drought;
- determine the causes of the man drought;
- examine how men and women are reacting to the droughts based on a limited range of available data; and
- consider a range of theories as to how women and men might react to the overall and educational man droughts in future.

In undertaking much of this work, we will switch between using five yearly census data and population estimates produced yearly by Statistics New Zealand. As will be discussed, the census data potentially overstate the size of the man drought. But detailed education and partnering information can only be obtained from census data.

2. Why are odd sex ratios and partnering patterns so important

The 'man drought' can be treated in a trivial way by the media, as a 'life style' issue rather than a core economic or social concern. However, there are important economic and social concerns surrounding the 'drought' and partnering. These are outlined below.

- At a personal level the ability to find a compatible partner is important, as indicated by growth in the dating marketplace (on-line dating, 'speed dating' etc). While, love, lust, personal interests beliefs and a range of other characteristics are important in partnering choices, simple numbers matter too.
- Shortages of men or women can change partnering choices. For example, following World War II French men were in short supply and became more 'valuable'. One result was they were less likely to 'marry down' socially and the divorce rate decreased (Abramitzky, Delavande and Vasconcelos, 2011).
- A wide range of research indicates an ability to find a partner affects child bearing decisions, including choices to have children without a partner (Lichter, et al.,1992).

[4] The term 'marrying up' is used throughout this paper, however the term also includes those who have 'partnered up' and are in de facto relationships.

[5] http://ips.ac.nz/events/completed-activities/Missing%20men/Missing%20men.html

Choices to have children without partners can have flow-on effects to social policy, for example the support of sole parents through the Domestic Purposes Benefit.

- Historically, having a group of relatively young unpartnered men is seen as problematic. Single men, especially if also unemployed, are seen as creating major problems in society (Akerlof, 1998). Marriage has been seen as a way of 'taming' men and encouraging them to become socially responsible.
- If increasingly well educated people partner with each other, but poorly educated people do not partner at all, this can have a significant effect on household income. This leads to the creation of 'work-rich' and 'work-poor' households (Callister, 2000). In the United States, high earning husbands are now increasingly marrying high earning wives (Schwartz, 2010). But the poorly educated are not only unpartnered but find it difficult to participate in the labour market. This can then flow through to child poverty.
- Partnering choices in couples can have an effect on power within couples and this can flow through to issues of gender equity within the home - and may affect gender equity, such as the pay gap, outside of the home (Graf and Schwartz, 2011).

It is beyond the scope of this paper to consider all these issues, but some have been explored as part of the wider 'missing men' project. In particular, a summary of the international literature on the effects of uneven sex ratios on partnering can be found in the 2006 paper entitled *The potential effect of changes in sex ratios on the 'marriage market', fertility and employment: A review of theory and evidence* (Callister, 2006).

3. Current New Zealand sex ratios and partnering options

Historically, and cross nationally, sex ratio imbalances are not unusual. In the period immediately post colonisation in New Zealand, census data indicates that in the prime working and partnering aged groups there were significantly more males than females in both the Māori and settler populations (Callister and Rea, 2011). Currently in China and India, through selective abortion, there are significantly more young men than women (WHO, 2008). As Bedford et al (2010) note, significant gender disparities in the prime working ages can be found in nations heavily impacted by sex-selective international migration. Examples of male deficits in populations where there is extensive overseas labour migration of men include the Cook Islands and Niue in the 1970s and 1980s, or surpluses of men (or women) in the working age groups in countries receiving extensive immigrant labour (for example, several of the Middle East oil exporting countries).

As already shown by Callister, Bedford and Didham (2006), since census data has been collected in New Zealand there have been more men than women in all age groups under 20. This reflects a naturally occurring ratio by which the number of boys born is higher relative to girls (Gellatly, 2010). Aside from WWI, the 1918 influenza pandemic, and World War II, in official data collected up to the 1980s there were more men than women in the

prime working and couple-forming age groups (20-49). In the early post colonisation period, the excess of men was due to gendered migration. However, census data from the early 1980s show that among this broad age group this ratio reversed, with an apparent increasing imbalance between the numbers of women and men (Bedford et al., 2010). This is shown in table 1 which records the ratio of men to 100 women in each ten year age group. If a figure is greater than 100 this means more men, less than 100 represents a 'shortage' of males. Figure 1 summarises this as a graph for those aged 20-49.

Table 1: Sex ratios based on census data, population aged 20-49, 1901-2006 (ratio of males to 100 females, greater than 100 means more males)

		Sex ratio			
Year	20-29	30-39	40-49	20-49	All ages
1901	102.1	111.4	129.3	110.5	110.7
1906	111.7	116.1	120.9	115.0	112.7
1911	111.5	116.7	115.5	114.2	111.6
1916	***73.9***	**100.6**	**113.2**	***93.5***	**100.7**
1921	94.1	102.3	111.6	101.9	104.6
1926	102.9	95.1	107.5	101.7	104.4
1936	103.4	102.1	95.2	100.6	102.8
1945	***74.8***	***93.8***	**100.1**	***88.6***	***95.4***
1951	103.4	98.6	105.3	102.3	100.9
1956	106.2	101.0	102.7	103.3	101.2
1961	103.7	105.9	99.6	103.1	101.0
1966	103.8	106.3	100.9	103.7	100.8
1971	102.8	102.9	104.6	103.4	99.9
1976	102.4	102.4	105.6	103.2	99.7
1981	101.5	100.2	102.5	101.3	98.8
1986	**100.7**	***98.9***	**100.8**	**100.1**	***98.2***
1991	***98.1***	***97.0***	***99.9***	***98.2***	***97.1***
1996	***96.2***	***94.9***	***98.1***	***96.3***	***96.6***
2001	***94.8***	***91.1***	***95.2***	***93.5***	***95.2***
2006	***96.6***	***90.0***	***93.9***	***93.4***	***95.3***

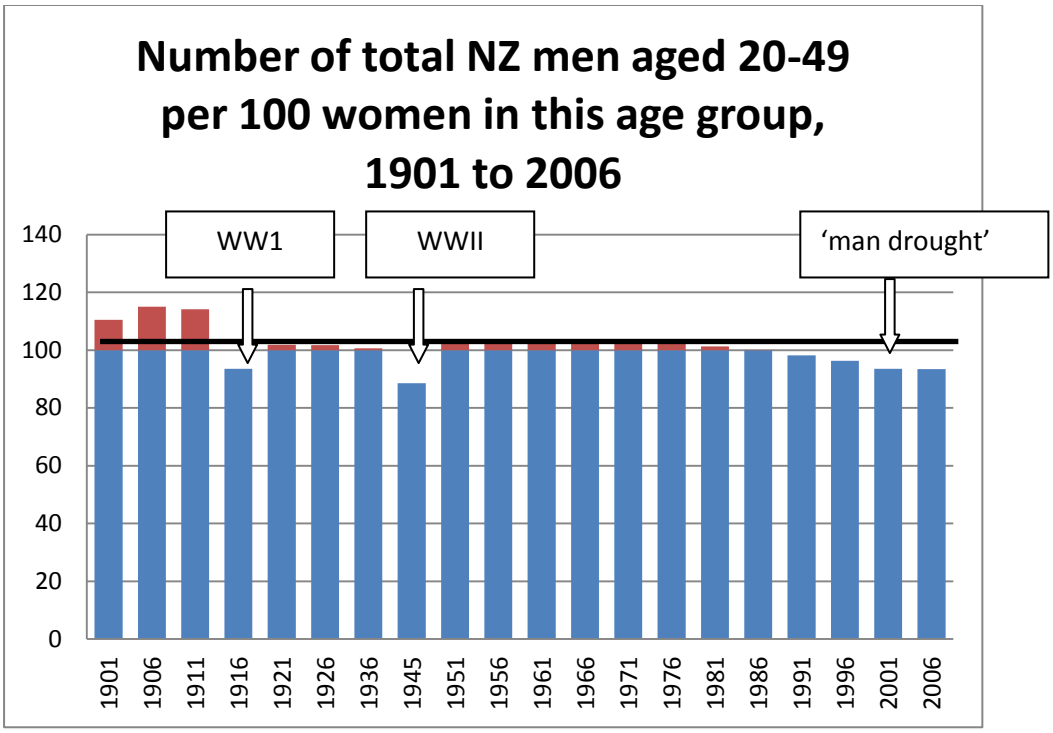
Source: Statistics New Zealand Census data, as set out in Bedford et al (2010)

Marked in bold are the years where there were more women than men. In some of these years, there was not a shortage of males in all age groups shown and where this is the

situation the figure is in bold but not in italics. During the two world wars the imbalances were in the youngest age groups.

Figure 1 summarizes the data in Table 1 by focusing on those in the 20-49 age group. In any year where the bar is higher than 100 (above the horizontal black line), there are more men than women.

Figure 1



Source: Bedford et al 2010, based on census data

Table 2 focuses on a narrower age range. This is for two main reasons. One is that in this age group most people have completed their formal tertiary education. Second, most of the longer term couple relationships are formed over age 25. But, it needs to be noted that in the 20-24 age group, there is an excess of males, as will be shown in Table 3.

There are two sets of data in Table 2. One is the census data that underlies Table 1 and Figure 1. But also shown are population estimates produced by Statistics New Zealand. For reasons explained in a later section, population estimates are considered a more accurate count of the total resident population in New Zealand. The population estimates suggest the overall man drought is smaller than indicated by census data.

Table 2: Population estimates and census data for those age 25-49, 1991 to 2011

	Population estimates (June years)			Census data (March)		
	Males	Females	'Excess' females	Males	Females	'Excess' females
1991	626,151	637,790	11,639	614,037	626,001	11,964
1992	635,002	647,140	12,138			
1993	646,793	660,510	13,717			
1994	659,974	675,050	15,076			
1995	674,125	690,590	16,465			
1996	690,086	708,290	18,204	659,886	688,344	28,458
1997	697,707	719,780	22,073			
1998	699,718	725,590	25,872			
1999	697,039	728,180	31,141			
2000	693,640	729,060	35,420			
2001	688,711	727,390	38,679	654,915	706,134	51,219
2002	695,872	736,260	40,388			
2003	706,003	748,170	42,167			
2004	712,444	757,650	45,206			
2005	716,215	763,450	47,235			
2006	719,316	769,300	49,984	685,056	742,623	57,567
2007	720,627	771,210	50,583			
2008	720,998	771,380	50,382			
2009	722,149	771,770	49,621			
2010	720,980	772,440	51,460			
2011	**719,110**	**769,120**	**50,010**			

Source: Statistics New Zealand

What is clear from Table 2 is an increasing estimated 'excess' of women though to 2006, with little decline in this imbalance through to 2011. To give a better idea of the imbalance at each five year age group, Table 3 focuses just on the June 2011 year.

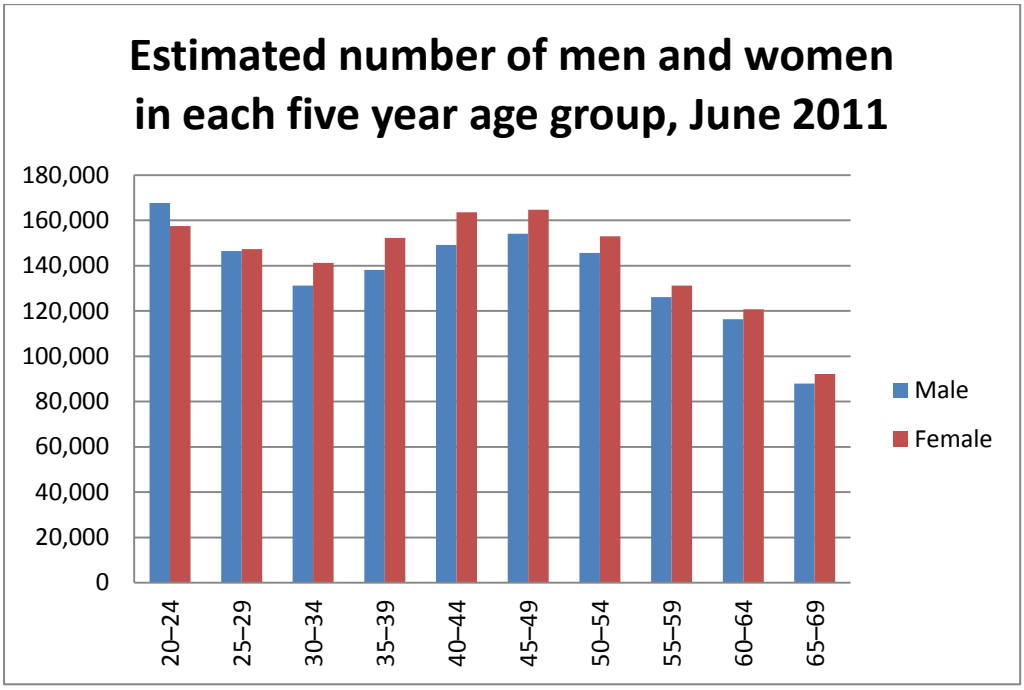
Table 3: Population estimates, June 2011

	Males	Females	'Excess' females	Number of males per 100 females
Under 5	161,370	153,070	-8300	105
5–9	146,970	140,300	-6670	105
10–14	149,900	143,010	-6890	105
15–19	163,280	154,040	-9240	106
20–24	167,650	157,460	-10,190	106
25–29	146,430	147,250	820	99
30–34	131,190	141,300	10,110	93
35–39	138,130	152,280	14,150	91
40–44	149,200	163,560	14,360	91
45–49	154,160	164,730	10,570	94
50–54	145,550	153,020	7,470	95
55–59	126,160	131,200	5,040	96
60–64	116,310	120,770	4,460	96
65–69	87,980	92,240	4,260	95
70–74	69,570	75,630	6,060	92
75–79	49,190	56,700	7,510	87
80–84	36,030	46,540	10,510	77
85–89	18,510	30,700	12,190	60
90+	7,030	16,860	9,830	42

Source: Statistics New Zealand

Figure 2 graphs the five yearly age groups using 2011 population estimates. Visually, it shows not only the different counts of men and women in each age group, but also the size of each age group. In all age groups over 25 there are more women than men. But the graph shows the effect of a higher birth rate in the early 1990 with a greater number of men and women in the 20-24 age group than the 25-29 group. There are also more people in their 40s than their 30s.

Figure 2

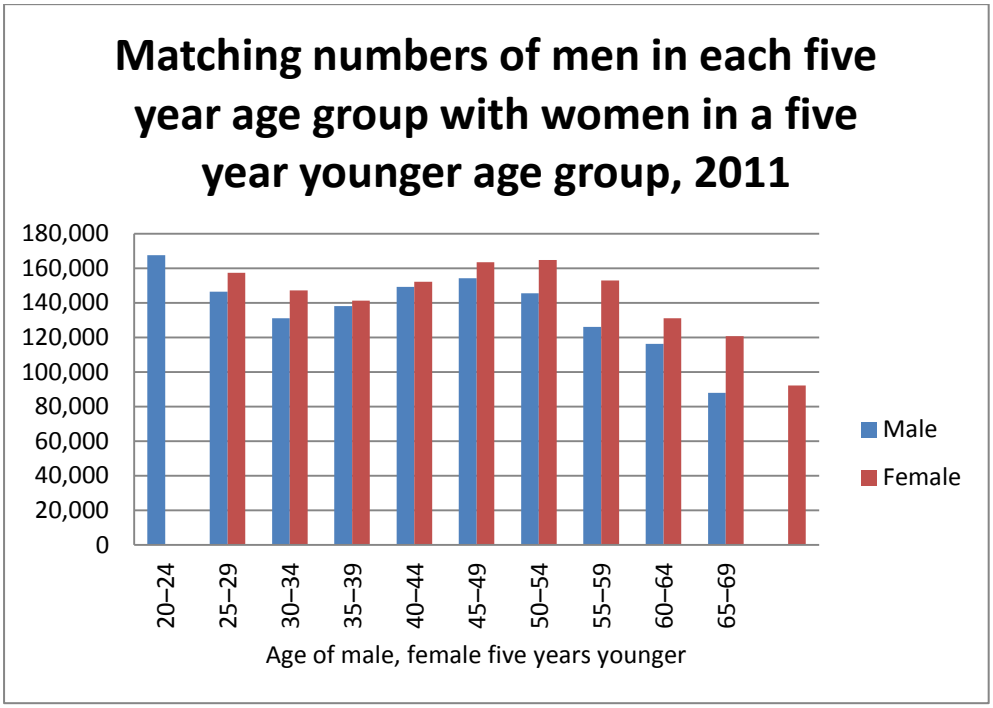


Source: Statistics New Zealand

In a review article, Bergstrom (1997) cites data from a wide range of countries showing that, during the period from 1950 to 1980, women, on average, married older men. Ryan (2004) has studied the changing age gap in marriage in New Zealand. Ryan noted that between 1963 and 2003 the median age difference at time of marriage declined from males being 2.66 years older in 1963 to 1.94 years in 2003.

Given the history of women 'marrying up' in terms of age, Figure 3 shows what the 'matching' would be like if all women in one five year age group were seeking a partner in a five year older age group. Figure 3 indicates that in each age group, from women aged 20-24 through to 60-64, there is a shortage of older males. 'Marrying up' age wise does not solve the overall man drought.

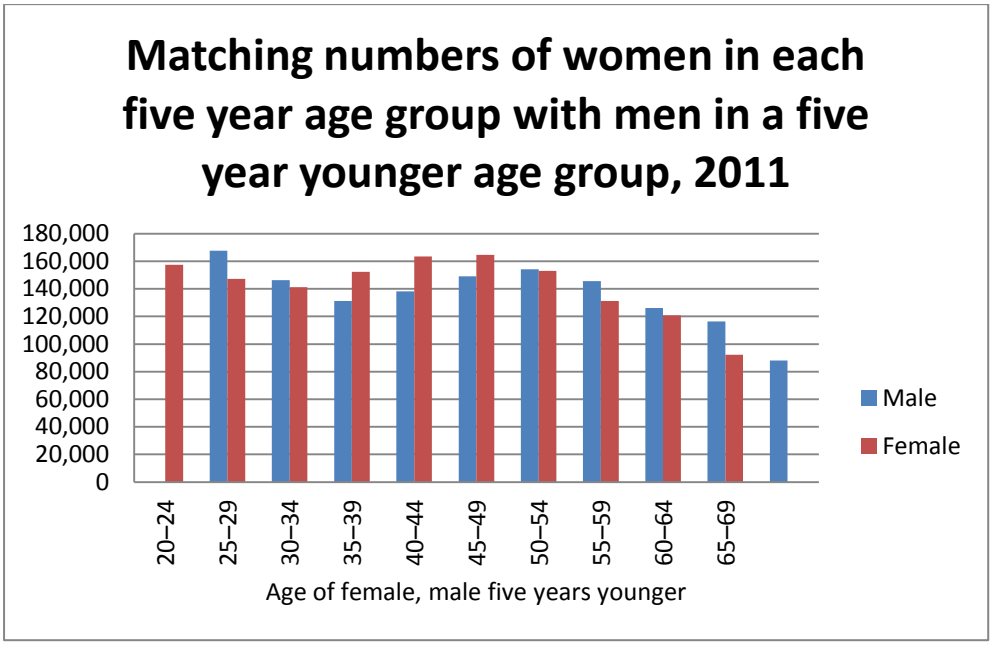
Figure 3



Source: Statistics New Zealand

Figure 4 hypothetically reverses this. So here we are considering if all females in each five year age group sought a male partner five years younger than themselves. This shows that women in the 25-29 age group have an 'excess' of males in the 20-24 age group. There is also a very small 'excess' of males in the 25-29 age group, should all females in the 30-34 age group seek partners five years younger than themselves. This raises the idea that a dramatic change in behaviour by both women and men could reduce the impact of the man drought on partnering, an idea we will return to later in the paper.

Figure 4



Source: Statistics New Zealand

Ratios can also be calculated at various geographic levels including neighbourhoods. But partnering potentially occurs on a wider geographic basis than the neighbourhood. Therefore Table 4 shows sex ratios (women relative to men) for New Zealand regions using 2006 census data. It shows there were some small differences by region but no overall region had more males than females in all of the age groups shown in 2006. As reflecting the national census data, in the 20-24 age group there were similar overall numbers of men and women, but some areas with more men than women. Only for Westland was there some other age groups where there were more men than women.

Table 4: Ratio of females to males by region, Census data, 2006[6]

Region	20-24	25-29	30-34	35-39	40-44	45-49
Northland	0.97	1.15	1.13	1.13	1.12	1.08
Auckland	1.03	1.09	1.12	1.11	1.08	1.06
Waikato	0.96	1.03	1.11	1.11	1.08	1.04
Bay of Plenty	1.01	1.10	1.16	1.17	1.11	1.08
Gisborne	1.13	1.11	1.12	1.17	1.13	1.06
Hawke's Bay	0.97	1.10	1.15	1.10	1.12	1.06
Taranaki	0.94	1.04	1.11	1.08	1.06	1.08
Manawatu-Wanganui	0.97	1.05	1.11	1.11	1.09	1.04
Wellington	1.07	1.07	1.12	1.10	1.07	1.06
Tasman	0.90	1.02	1.10	1.12	1.08	1.04
Nelson	0.95	1.03	1.07	1.11	1.11	1.09
Marlborough	0.85	1.05	1.00	1.10	1.10	0.99
West Coast	0.88	1.07	1.13	1.09	0.98	0.91
Canterbury	0.95	1.04	1.11	1.08	1.07	1.04
Otago	1.04	1.03	1.03	1.10	1.06	1.02
Southland	1.00	1.01	1.06	1.08	1.02	1.01
Total	1.01	1.07	1.11	1.11	1.08	1.05

Source: Statistics New Zealand

Table 5 uses regional population estimates to show how the ratio of females to males looks from 2006 through to 2010.[7] To simplify the analysis the broad 25-49 age group is used. In no region, and in no time period, was there more men than women in this broad age group. The period ended with Gisborne having the highest number of women relative to men, 13 percent more. The lowest ratios can be found in Malborough, the West Coast and Otago where there are only an estimated 4 percent more women than men in this age group.

[6] This ratio reverses the normal ratio demographers' use, which are males to females.
[7] At the time of writing, 2011 estimates were not available.

Table 5: Ratio of females to males by region, Population Estimates, 2006 to 2010

Region	2006	2007	2008	2009	2010
Northland	1.11	1.12	1.11	1.11	1.10
Auckland	1.07	1.07	1.08	1.07	1.07
Waikato	1.07	1.06	1.06	1.06	1.06
Bay of Plenty	1.12	1.11	1.11	1.12	1.11
Gisborne	1.11	1.12	1.12	1.13	1.13
Hawke's Bay	1.10	1.10	1.10	1.10	1.10
Taranaki	1.07	1.06	1.06	1.06	1.05
Manawatu-Wanganui	1.07	1.07	1.07	1.07	1.08
Wellington	1.07	1.07	1.08	1.08	1.08
Tasman	1.07	1.06	1.07	1.07	1.07
Nelson	1.07	1.07	1.08	1.07	1.06
Marlborough	1.04	1.04	1.05	1.05	1.04
West Coast	1.03	1.03	1.03	1.05	1.04
Canterbury	1.06	1.06	1.06	1.05	1.05
Otago	1.04	1.04	1.04	1.04	1.04
Southland	1.04	1.04	1.04	1.04	1.05
Total	1.07	1.07	1.07	1.07	1.07

Source: Statistics New Zealand

2010 data, by five yearly age group for Territorial Authorities, can be found in the Appendix. These local data also support the idea that the 'man drought' is widespread and that there are few areas where there are more males than females in the 25-49 age groups.

4. Factors causing the overall man drought

In 2005 Australian demographer Bernard Salt coined the term 'man drought'. Based on census data, he described how in Australia there was a shortage of men in the prime labour market and couple forming age groups. But at the time he noted that the man drought was more severe in New Zealand stating the reason for the imbalance being'...32-year-old men are not in New Zealand. They're in Australia, they're in the UK, they're in Europe". The article goes on to suggest '[o]r perhaps living it up on the lower east-side of Manhattan, where there is a surplus of unmarried men. The article added 'whether these chaps are the slightest bit interested in hooking up with unmarried women is another question.' [8] For quite some time, an exodus of New Zealand males was the accepted reason for the imbalance, but research undertaken in New Zealand as part of the 'missing men' project points to complex explanations.

[8] http://www.theage.com.au/news/opinion/where-have-all-the-good-men-gone/2005/07/29/1122144016220.html, Where have all the good men gone?, July 30, 2005

Four hypotheses have been explored in relation to the 'shortage' of males in recent New Zealand censuses and population estimates. These are:

- young males dying at a faster rate than young females;
- males not filling in their census forms at a higher rate than females;
- more males than females migrating out of New Zealand; and
- more females than males migrating into New Zealand.

These factors could work together, or they could cancel each other out. The very detailed analysis of mortality trends, migration patterns and an examination of the data on undercount, suggests no one explanation can be found for the odd sex ratios but instead a number of factors have worked together (Bedford et al, 2010). These factors are discussed in the following sections. This includes considering if overseas partnering by New Zealanders and subsequent choices about returning to New Zealand might affect sex ratios.

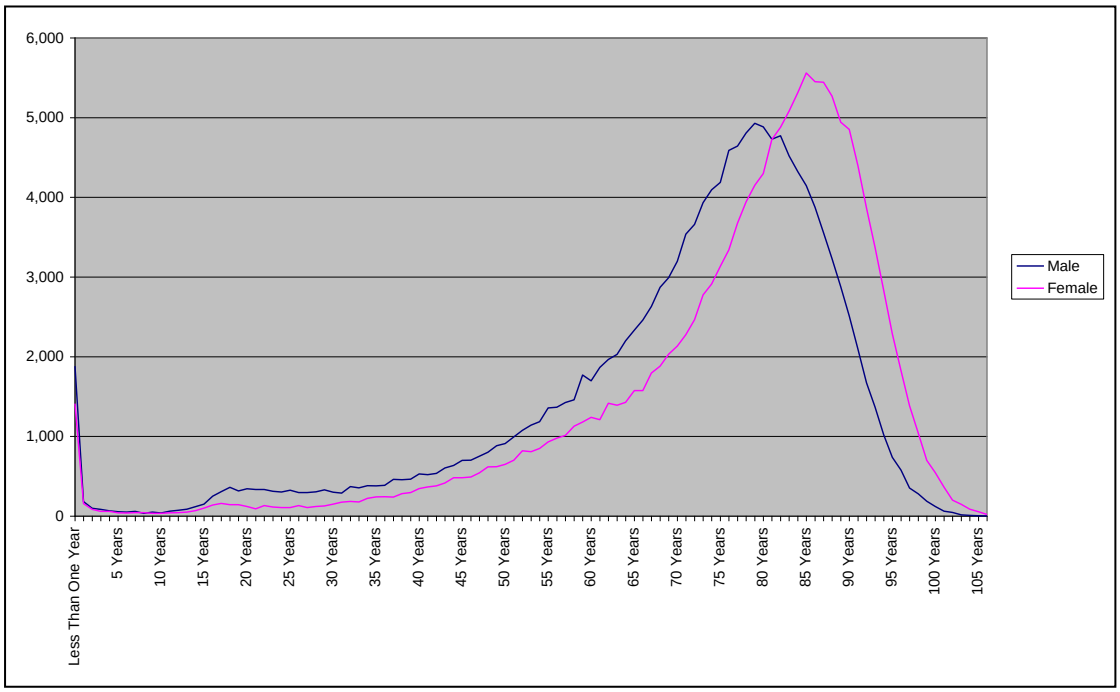
a. Dying differently? The contribution of differing levels of mortality to the man drought

Assuming no sex specific abortion, as has occurred in China and India, a natural birth rate would provide about 5 percent more boys than girls. If there were no migration, and no differences in mortality, then in all age groups there would remain more men than women. We would thus have a small 'female drought' in all age groups. But visit any retirement village and one will see considerably more women than men. Setting aside possible effects of migration, these extreme ratios amongst older people reflects that, on average, men die younger than women, although as longevity has increased the gap between male and female mortality has tended to close.

But how much does mortality affect sex ratios in the 25-49 age group? Two main New Zealand studies suggest there is some effect, that is a greater number of men than women truly are missing through death, but the effect is relatively small (Callister, Bedford and Didham, 2006; Callister and Didham, 2009).

This difference in mortality, and how it becomes more important in older age groups, can be illustrated if we look at all deaths over the period 1998-2008. Figure 5 shows that the modal age at death is 79 years for males and 85 years for females.

Figure 5: Modal age at death, deaths in New Zealand, 1998-2008



Source: Statistics New Zealand, cited in Callister and Didham (2009)

While differences in mortality add somewhat to the man drought, we need to look elsewhere to fully explain the man drought.

b. Men are undercounted in census data?

There are two primary sources for information on the man drought. One is the five yearly census of population and dwellings and the other is yearly population estimates that are produced by Statistics New Zealand. Prior to the 1996 census, population estimates were produced directly from census counts for the population and updated each year only using births, deaths and migration data. In 1996, the first Post-Enumeration Survey (PES) was carried out to measure census coverage. Since then population estimates have been adjusted for census undercount as well as for residents temporarily overseas on census night (Bycroft, 2006). With the cancellation of the 2011 census due to the Christchurch earthquake, estimates based on the 2006 census base provide our only count of the population in 2011.

The PES is run shortly after the census. This survey suggests that the census missed 1.6 percent of the New Zealand population in 1996, 2.2 percent in 2001, and 2.0 percent in 2006. In making these estimates there remains a possibility that the PES still misses some people and, more importantly, that some groups, perhaps males, are more likely to be missed than others.

However, assuming the PES to be correct, part of the census based man drought comes about through undercount issues. In each year the survey has been carried out, more males have been estimated to have been missed than females. In 1996, 1.9 percent of males and 1.3 percent of females were estimated to be missing. For 2001 it was 2.6 percent and 1.9 percent respectively while for 2006 2.1 percent and 1.8 percent. Also of some relevance, is that the group most likely to be missed are those aged 15-29 years (4.1 percent in 2006), but a much lower 1.3 percent for those aged 30-44. However, it needs to be kept in mind these estimates themselves have possible errors.

Overall, research suggests that census undercount is a contributor to the census based man drought. However, much, possibly all, of this undercount is adjusted for in the yearly population estimates. While the population estimates give a better picture of the overall level of the man drought, important information in areas such as qualifications or local area data are not available. Hence in much of our analysis we need to use census data.

c. More New Zealand males than New Zealand females migrating out of New Zealand?

As background, the analysis of migration is extremely difficult given that there are very large flows in and out of New Zealand, and these vary considerably year by year. Some of these flows relate to permanent migration, with the complication that not all those noting they are migrating permanently actually do so. Even larger are the temporary migration flows which include tourists and foreign students. Again, some temporary migrants and visitors end up becoming permanent migrants.

One can measure the total flows out of New Zealand but what really matters for the man drought is the number of people who stay long term outside New Zealand. So we could have equal numbers of men and women leaving New Zealand, but perhaps more kiwi women coming home. But whether this is a factor in creating a man drought will depend on whether they come back alone or whether they bring a partner of the opposite sex, and whether this partner is overseas born. This is a point we will return to.

Early analysis of census data suggested migration was a key cause of the man drought. For example, simply dividing the New Zealand resident population into those New Zealand born and those overseas born showed the drought was much larger for those born overseas (Callister, Bedford and Didham, 2006). And initial research on the New Zealand man drought, using both census and migration data, did identify higher apparent losses for New Zealand males

More detailed work has now been carried out by Bedford el al, (2010). The researchers calculated the annual net permanent migration gains and losses of males and females aged 20-49 years for December years between 1986 and 2005. This showed that there were two periods of high net losses for both men and women between 1986 and 1989 and between

1998 and 2000. But in both periods the net losses were higher for men than women. However, there were also major periods of net gains. These were between 1994 and 1996 and during 2002 and 2003. In these periods women tended to outnumber men in the net gains.

Lending a little support to the Salt hypothesis of New Zealand males migrating to Australia, migration data show there has been some male dominated migration to Australia (Bedford el al, 2011). But these gendered flows have not shown up strongly in the Australian census data that considers New Zealanders living in Australia (Callister, Bedford and Didham, 2006). In addition, any analysis needs to go further than Australia. Migration in and out of other countries is important and gendered migration out of New Zealand to other countries is not so evident (ibid).

Overall, an explanation for the great majority of the deficit in males in recent censuses can be found in the international migration data. Intuitively the answer for the man drought seemed to lie in sex-selective emigration of New Zealand men to Australia, and analysis of the flows of New Zealand citizens across the Tasman does provide support for this argument. Bedford el al have shown that in recent decades there have been heavier net losses of men than women aged 20-49 years to Australia. Countering this, however, the research has demonstrated a tendency for women to dominate in the net gains of citizens of other countries into New Zealand, and over the period 1986-2006 these net gains have been larger than the net losses to Australia. Rather than 'missing men' it has been gains of women that appear to have contributed most to New Zealand's man drought.

d. More foreign females migrating to New Zealand than men?

A closer analysis of both census and migration data indicates that an important contributor to the man drought has been a shift from male to female dominated migration into New Zealand. At various times in New Zealand history, there have been strongly gendered flows of migrants and this has affected partnering. Census data from the mid 1880s to the early 20th century show male-dominated migration from key European countries. Early Chinese migration was particularly male dominated due to government-imposed migration restrictions. A number of factors -- most not unique to New Zealand -- drove this strongly male migration. Migration policy had an effect on some of these flows, but the nature of the economy has always been a strong driver (Ip 2007, Fraser and Pickles 2002). Initially, most of the jobs were in the primary sector, with gold mining, timber extraction and farming being key employers. Later the manufacturing sector emerged, but again primarily attracted skilled males in areas such as the trades. In these early periods, the women who migrated to New Zealand came either as wives of migrants, as potential wives, or as a source of domestic labour (Fraser and Pickles 2002; Hastings 2006). Thus marriage markets and labour markets have long been a driver of female migration.

Although there has always been some female component to migration flows, over the last 20 years the gender balance of international migration flows has changed considerably in response to a number of factors, including gender-selective demand for foreign labour, economic development, and subsequent changes in gender relations in countries of origin and countries of destination. According to the 2003 International Labour Organization report, female migrants constitute nearly 51% of all migrants into developed countries and about 46% of all migrants into developing countries. In most developing regions females are increasingly migrating independently, not just as dependants or family members (Sorensen 2004). Castles and Miller (2003) have described the consequences of all these trends as an "increasing feminisation of migration at a global level".

In the late 1990s an estimated one million women from the Philippines, 500,000 Indonesian women and 40,000 Thai women were working outside their countries (International Organization for Migration 2005). The Philippines is the largest exporter of migrant labour throughout the world (Jolly and Reeves 2005). In the Philippines, Indonesia and Sri Lanka, female migrants account for 60--80% of their labour migrants (Jolly and Reeves 2005).

The cause of some of these flows was identified in American sociologist Arlie Hochschild's 1983 book *The Managed Heart: The Commercialization of Human Feeling* and a decade later in a book she co-edited with Barbara Ehrenreich, the *Global Woman: Nannies, Maids and Sex Workers in the New Economy*. In *The Managed Heart,* Hochschild introduced the idea of emotional labour where workers are expected to display certain emotions as part of their job. While either men or women could be required to undertake emotional labour, Hochschild demonstrated that, through the growth of the service sector, it was women who were more likely to be in jobs that relied on such labour. The book *Global Woman* extended this idea and showed how the migration of low paid women was increasing based around caring skills and emotional labour.

But it is not just low paid 'emotional' work that is attracting female migrants. Women, including women in Asia, are increasingly moving into a range of professional jobs including working as doctors. Such professional women are also migrating to fill labour shortages (Callister, Badkar and Didham, 2008).

In addition, internationally there is an increasing flow of migrants, but especially women, in relation to partnering. Some of these may be 'mail order brides an issue we will return to.

Early work as part of the 'missing men' project identified especially extreme sex ratios in the Asian ethnic group, and particularly in the 35-39 age group (Badkar et al, 2007). (Table 6)

Table 6: Ratio of Women to Men in Each Age and Ethnic Group, and Total Ethnic Counts, 2006

	Ethnic Group						
Age	**European**	**Māori**	**Pasifika**	**Asian**	**MELAA**	**Other**	**Total[2]**
			Ratio				
20--24	1.05	1.10	1.07	1.01	0.91	0.84	1.01
25--29	1.11	1.17	1.12	1.10	1.03	0.89	1.07
30--34	1.16	1.18	1.09	1.29	0.98	0.89	1.11
35--39	1.14	1.17	1.11	1.37	0.83	0.89	1.11
40--44	1.11	1.15	1.08	1.25	0.89	0.93	1.08
45--49	1.07	1.13	1.07	1.19	0.87	0.92	1.05
			Number				
20--24	154,194	42,771	20,721	45,621	3,372	20,388	270,978
25--29	140,481	38,106	18,918	32,232	3,258	23,079	242,442
30--34	169,521	39,459	18,129	27,882	3,309	31,680	276,561
35--39	186,630	38,598	18,075	29,160	3,192	36,060	301,554
40--44	195,753	37,272	16,089	30,744	2,700	38,742	313,698
45--49	188,004	31,908	12,687	24,870	2,055	38,664	293,421

[1] Middle Eastern, Latin American and African ethnic groups.

[2] Includes those whose ethnicity is not stated.

Source: Badkar et al, 2007, based on Census data

The research by Badkar et al identified that the extreme ratios for Asians seen in the 30-34 and 35-39 age groups was primarily driven by overseas-born Asians. For example, in the 35-39 age group, the data show that 92% of Asians living in New Zealand were born overseas. Of the relatively small numbers born in New Zealand in this age group, the data showed there were 11% more Asian women than men in 2006, but for those born overseas and in New Zealand less than five years there were 29% more Asian women, rising to 50% more women for those Asians born overseas but living in New Zealand more than five years.

Badkar et al identified complex migration flows from Asia with some countries contributing more male than female migrants (for example India) but many others strongly favouring female migration into New Zealand (examples include Thailand, Japan and the Philippines). Given that New Zealand's migration policies favoured well educated migrants, an excess of female over male migrants will tend to add to, rather than reduce, the educational man drought.

e. Partnering overseas by New Zealanders and decisions to return to New Zealand

It has been theorised that if New Zealanders partner with non-New Zealanders overseas, then gendered decisions to come 'home' might influence sex ratios. If, for example gendered decision making means that overseas born women tend to want to live near their families and, equally, New Zealand women want to return home to their New Zealand based families, then more couples with a New Zealand male partner will stay overseas and more couples with a foreign born male and New Zealand born female will return to New Zealand. But assuming there are equal numbers of New Zealand males and females overseas, and they are equally likely to partner with foreign born partners, then such gendered behaviour will have no effect on sex ratios in New Zealand. It will simply mean that New Zealand born males will be replaced with foreign born males. Partnering overseas will only make a difference if there are differences in patterns of partnering by New Zealand women and men overseas and/or if there are differences in migration back to New Zealand in terms of coming back single versus partnered. There is no available data that could be used to directly test these ideas.

Using earlier 2001 census data, Callister, Bedford and Didham (2006) examined partnering patterns for New Zealand born males and females. For those who had partnered, and this includes legal marriage and defacto relationships, rates of partnering with New Zealand born partners was identical for men and women. While it is not known whether these people partnered in New Zealand or overseas, the data does not suggest major differences in behaviour by men and women

Table 7: Partnering choices by New Zealand born males and females, 2001

	25-29	30-34	35-39	40-44	45-49
% of partnered New Zealand born males with a New Zealand born female	90	88	88	88	88
% of partnered New Zealand born females with a New Zealand born male	89	87	87	88	89

Source: Callister, Bedford and Didham (2006), based on census data

Overall, the research on the cause of the total man drought indicated no one simple cause of it. Instead a number of complex factors have worked together.

5. The 'educational man drought' within the overall 'man drought'

As discussed there are several factors that are causing the overall man drought. These could be regarded as completely out of the control of women and men aged 25-49 who are looking for a partner. Within the overall man drought there is also an educational man

drought. This is not caused solely by uncontrollable factors but instead by a combination of one uncontrollable factor and one controllable factor. The uncontrollable factor that is at play is the overall rise in tertiary education levels amongst women. In all industrialised countries, including New Zealand, young women are now better qualified than young men. This transition from males dominating higher education has been quite complex in its timing. Summers and Birks (2000) examined total attendance of all males and females studying at all New Zealand universities from 1965-1997. They show that during the 1960s male attendance was around double that of female students. But by 1986 females enrolments overtook males. Other data show that in the mid 1990s there were more women than men graduating with bachelor degrees but there were still more men gaining honours, masters and doctorates (Callister and Newell, 2008). By 1997 more women than men were gaining honours degrees, for masters it was 1999 and for doctorates it took until 2006 for women to overtake men. Given gendered patterns of educational attainment at school and current enrolments in tertiary study, this pattern of more women than men graduating is likely to continue for quite some time.

The controllable factor at play is the historic pattern of women 'marrying up' educationally. In other words, in the past women have had a strong tendency to marry men who are more educated (and subsequently higher income earners) than themselves. This was because overall women were less educated (and subsequently lower income earners) than men so they needed to marry a man to financially support them. Now women have the choice whether to marry up or marry down because many are well educated and some are high income earners themselves.

This section of the paper will explore the size of the educational man drought by comparing figures on the education levels of men and women. Then theories on why education is important in partnering choices.

a. The size of the educational man drought

To establish the potential size of the 'educational man drought' Table 8 uses 2006 census data as education levels are not available in population estimates. In all age groups shown, there are more males than females with no formal qualifications. In the older age groups, more men than women have doctorates, but this has a small reversal in younger age groups. Given that women are more likely to be qualified than males and there are more women than men in most of these age groups, it is not surprising that in most qualifications there are significantly more women than men.

Table 8: Highest level of education, men and women aged 20-49, 2006 Census data

Male	20-24	25-29	30-34	35-39	40-44	45-49
No Qualification	20,898	17,553	18,759	25,743	28,947	29,193
Level 1 Certificate	15,273	11,484	13,314	15,141	16,155	14,745
Level 2 Certificate	14,979	11,211	13,287	13,107	13,806	12,138
Level 3 Certificate	28,794	13,167	11,877	7,836	7,164	6,411
Level 4 Certificate	10,869	13,935	18,570	23,430	24,828	24,447
Level 5 Diploma	4,491	4,635	5,238	6,312	7,572	7,605
Level 6 Diploma	3,072	3,597	4,773	5,364	5,958	6,114
Bachelor Degree and Level 7 Qualification	13,272	18,780	19,569	17,823	16,941	15,240
Post-graduate and Honours Degrees	1,440	2,952	3,366	3,279	2,973	2,769
Masters Degree	423	2,448	3,750	4,212	4,608	4,242
Doctorate Degree	-	231	759	1,257	1,539	1,527
Overseas Secondary School Qualification	7,224	5,541	5,997	7,308	7,770	6,927
Not Elsewhere Included	14,331	11,676	11,622	12,186	12,636	11,697
Total	135,087	117,216	130,884	143,001	150,900	143,052

Source: Statistics New Zealand

Female	20-24	25-29	30-34	35-39	40-44	45-49
No Qualification	14,391	13,698	16,044	23,052	25,974	27,819
Level 1 Certificate	12,867	11,076	15,324	23,211	24,414	23,043
Level 2 Certificate	14,394	13,113	18,330	20,730	21,375	16,236
Level 3 Certificate	33,036	15,537	14,193	9,312	8,376	6,480
Level 4 Certificate	7,011	7,311	9,615	10,935	11,904	11,586
Level 5 Diploma	7,197	7,263	7,119	6,621	6,153	5,175
Level 6 Diploma	3,222	4,380	7,821	9,789	11,421	13,389
Bachelor Degree and Level 7 Qualification	21,513	28,110	28,380	23,337	21,117	17,421
Post-graduate and Honours Degrees	2,130	4,620	5,241	4,623	4,290	3,777
Masters Degree	630	3,156	4,593	4,383	3,876	3,579
Doctorate Degree	-	204	699	843	900	789
Overseas Secondary School Qualification	7,485	6,606	8,208	10,311	11,259	9,642
Not Elsewhere Included	12,015	10,152	10,110	11,400	11,736	11,433
Total	135,891	125,226	145,677	158,553	162,798	150,369

Source: Statistics New Zealand

The male and female imbalances for degree level qualifications are summarised in Figure 7.

Figure 7

Source: Statistics New Zealand

As shown in figure 7, if a female with a degree or higher qualification in the 25-29 age group is looking for a similarly qualified male in the same age group, then there is likely be intense competition. The 'shortage' of degree or higher qualified males continues in all age groups.

b. Why education is important in partnering choices

Most of the partnering theories bring education into the analysis, either as a signal of a person's likely interests or as an indicator of their earning potential. But theories are changing as society itself evolves. The potential for change is something we will return to later in the paper. The extensive literature on partner selection theories is outlined below. [9]

- The notion of personal choice and 'romantic love' in couple formation is relatively new. In much of human history, resource considerations were of major importance (Murstein, 1974).
- When men were the main breadwinners and women were more likely to specialise in unpaid work, there was a strong incentive for women to seek partners with good income earning potential (Becker, 1981). In the recent past, level of education has been seen as good signal of future earning potential.

[9] Important contributions to this literature include England and Farkas (1986), DiMaggio and Mohr (1985), Kalmijn (1991a&b, 1994), Mare (1991), Oppenheimer (1988), Davis (1984) and Schoen and Wooldredge (1989).

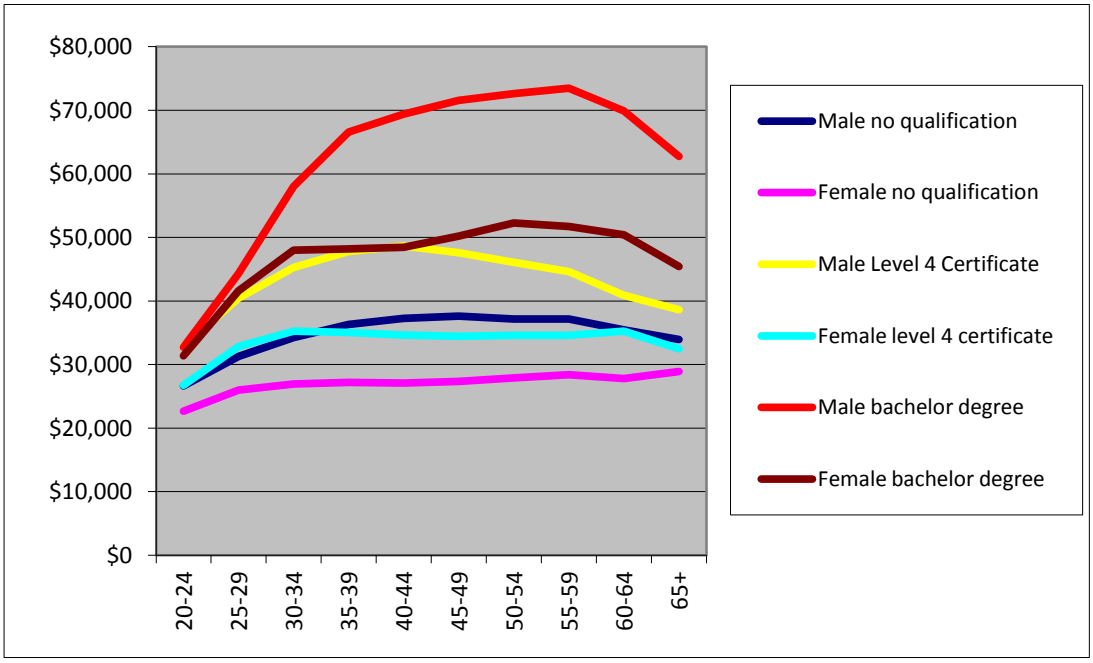
- When women had restricted access to higher education, more men than women were well educated. It was therefore inevitable that most women partnered with someone with a higher level of education than themselves (marrying up).
- With changes in economic conditions, social norms and perhaps ratios of men and women, partnering choices may start to change.
- One set of theories suggests that people seek partners who have similar interests. Linked to this, people often meet while attending educational institutions.
- But other theories suggest that women continue to seek economic resources and thus seek out males with good earning potential. In these theories, education signals future earning potential.
- However, increasingly, it is also suggested that males are now also seeking partners with good income earning potential. Again, education is seen as indicating this earning potential.

Many of these theories are based on an idea that education is a clear signal of earning potential. But is this true in New Zealand?

c. The link between education and income in New Zealand

There has been considerable research on this issue, with much of this historic research summarised in Mahoney (2011). While there is considerable complexity when gender, age, occupation and hours of work are considered, overall these studies support the idea that higher incomes are earned by those with higher-level qualifications. As an example, 2006 census data published by Newell (2009) shows that the lowest earnings were for those with no formal qualifications, while the highest was for small numbers of people with doctorates (see Tables A2-A5 in the appendix). Part of this pattern can be illustrated by the following graph (Figure 6) which considers three levels of qualifications for men and women who work full time (30 or more hours per week). In this graph, the highest earnings are for males with degrees. This does not mean that all males with degrees will earn more than say trades people. There will be some high earning trades people and some low earning men with degrees. But overall, across a life time of earnings, higher education generally equates to higher incomes.

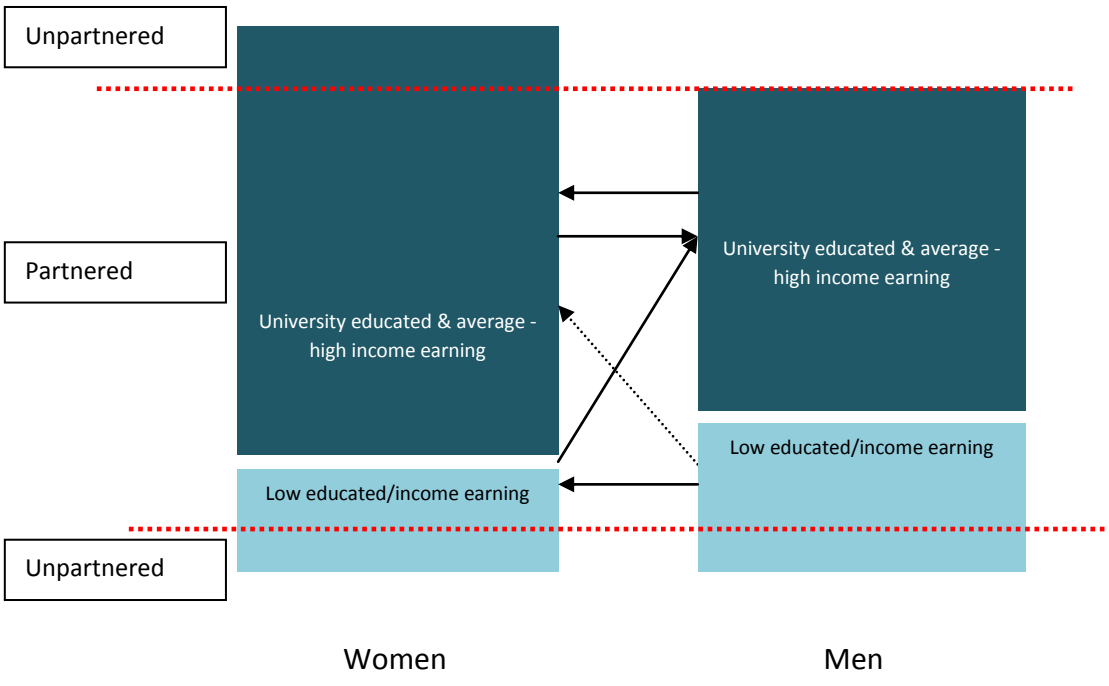
Figure 6: Median yearly personal income, full time workers, 2006



Source: Newell (2009) based on census data

Diagram 1 below provides a theoretical guide as to how the tendency of women to marry up could be contributing to the educational man drought. It is based on the age group 25-49 for men and women and the current situation of an overall 'excess' of women and there being more well educated women than men.

Diagram 1



The diagram demonstrates the tendency for women to marry up, so essentially all women are competing for the educated men and not marrying poorly educated men. This potentially results in a surplus of well educated women who have no one to partner with. Based on historical patterns, men marry down educationally and will also marry across in terms of education level, but do not have a strong tendency to marry up. Poorly educated men cannot marry down educationally and poorly educated women may regard them as unattractive partners. Poorly educated women may endeavour to marry up with educated men or perhaps not partner, even if having children. Given the link between education and employment, poorly educated women raising children on their own are more likely to be supported by the state. This results in a 'surplus' of poorly educated men and women who are not partnered. Overall, this diagram indicates the groups in theory most likely to be unpartnered in the New Zealand man drought are poorly educated men and women, but also a group of highly educated women. Also, in theory, educated men have the most partnering options and benefit the most from the man drought.

This is a simple model. Behaviour of both men and women might change in terms of educational 'matching' and the age range partners might be sought from. In addition, New Zealand is not a closed economy so partners outside the country can be sought by both men and women.

6. What we know about changing partnering choices

We have identified both an overall man drought and a subset educational man drought. So have partnering patterns changed? Again, we need to turn to census data to test this.

Table 9 identifies the number of men and women in New Zealand who noted they were unpartnered in the 2006 census. This covers formal marriage, defacto couples and same sex relationships. Some will be living alone, some will be living in a wider family setting, perhaps with their parents, and others will be raising children as sole parents. Some will have made active and positive choices to be unpartnered.

In the younger age group, as expected, significant numbers are unpartnered in each census. In addition, for a variety of reasons, there are more unpartnered males than females in the younger age groups. Overall, in the 1996 census, in the broad 25-49 age group we have focused on in this paper, there were slightly more unpartnered males than females. This reversed in 2001 and the 'surplus' of unpartnered women becomes larger in 2006, over 20,000 unpartnered women.

Table 9: Total numbered of unpartnered men and women, 1996, 2001 and 2006

1996

	Male	Female	excess unpartnered females
20-24	92,682	80,751	-11,931
25-29	57,402	48,843	-8,559
30-34	39,183	37,152	-2,031
35-39	29,022	31,098	2,076
40-44	22,035	25,473	3,438
45-49	19,401	23,289	3,888
25-49	167,043	165,855	-1,188

2001

	Male	Female	excess unpartnered females
20-24	83,409	75,513	-7,896
25-29	53,493	50,343	-3,150
30-34	40,809	42,234	1,425
35-39	34,428	39,420	4,992
40-44	29,745	35,745	6,000
45-49	24,222	29,946	5,724
25-49	182,697	197,688	14,991

2006

	Male	Female	excess unpartnered females
20-24	90,396	80,574	-9,822
25-29	50,919	47,481	-3,438
30-34	37,440	40,437	2,997
35-39	33,345	39,237	5,892
40-44	32,364	40,317	7,953
45-49	29,658	36,936	7,278
25-49	183,726	204,408	20,682

Source: Statistics New Zealand

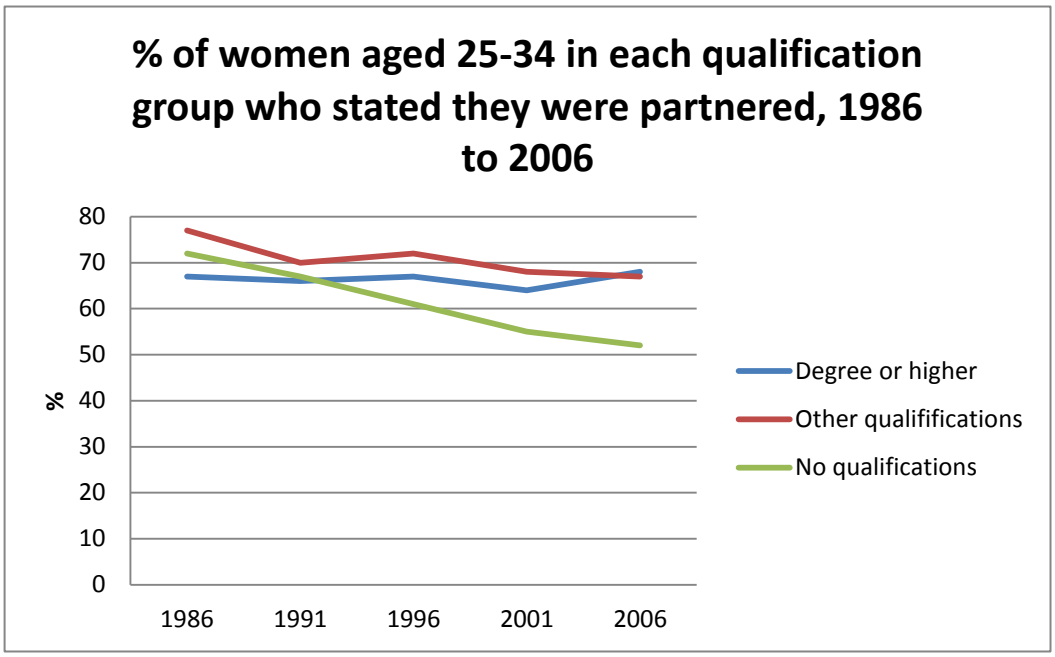
Given that these are simply total numbers, these data do not indicate whether partnering has become less popular. However, other census based research for those aged 30-44 do show some decline in partnering for women and men, as measured by whether someone is

actually living with someone in the same household, between 1986 and 2006 (Callister & Rea, 2010). For men in this age group, the drop was from 67% partnered in 1986 down to 62% by 2006. For women the decline was from 74% to 66%. The major decline was between 1986 and 1991.

So who is not partnered? Research has tracked the partnering patterns of men and women aged 25-34 in relation to their highest educational attainment. Again, this is based on whether people live in the same household. It misses people who are partnered but live in separate households.

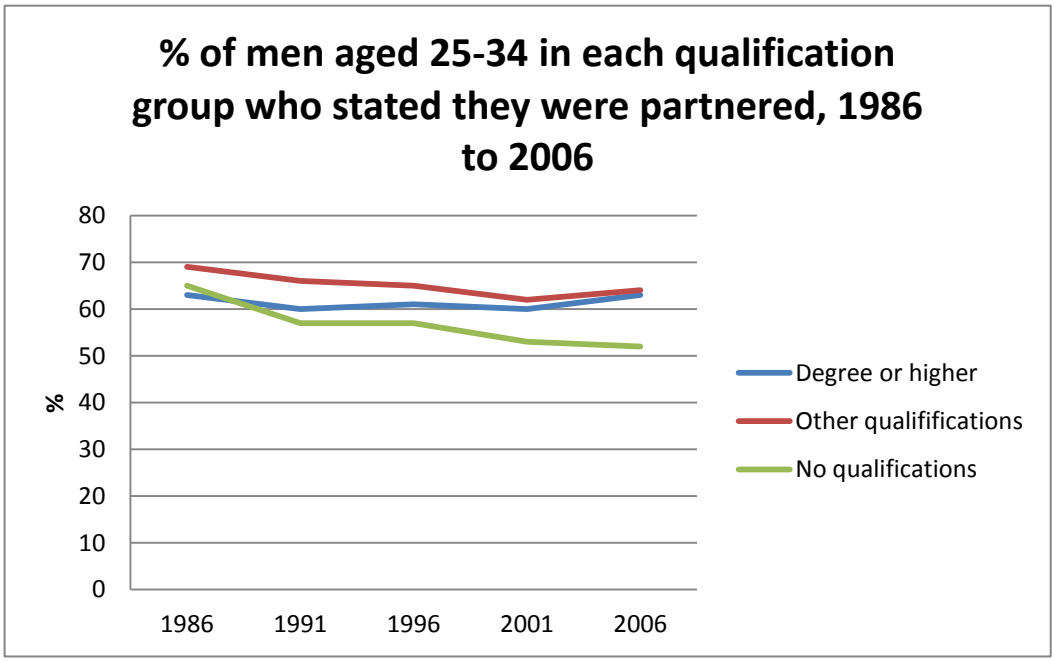
Figures 8 and 9 show the proportion of men and women in this age group with a degree or higher qualification who were partnered has hardly changed. The major change has been in those with no formal qualifications. By 2006 just over half of men and women with no formal qualifications were partnered (Callister and Didham, 2010). So, based on historical behaviour, if well educated women potentially face a man drought why is it their partnering rates have not declined. It is simply because their behaviour, and that of males has changed. In contrast, it is the poorly qualified who face both a 'man' and 'women' drought. Their potential partners have declined.

Figure 8



Source: Callister and Didham (2010) based on Census of Population and Dwellings data, Statistics New Zealand.

Figure 9



Source: Callister and Didham (2010) based on Census of Population and Dwellings data, Statistics New Zealand.

As already noted, in the past with men being more likely to hold formal educational qualifications than women there was more likelihood of women 'marrying up' educationally. In 1986, when there were far fewer women with degrees or higher qualifications just over 60% had a similarly qualified partner. But this percentage declined to just over half by 2006. So women are 'partnering down' educationally. However, few partner with men with no formal qualification, less than 3 percent (Callister and Didham, 2010).

Table 10: Partners of men and women in couples aged 25-34 with degrees or higher qualification - % with degrees or higher qualifications and % with no qualifications

	% of partners in qualification group	
	Degree	No qualification
Women with degrees or higher		
1986	60.6	3.1
1991	58.0	2.9
1996	57.3	3.2
2001	51.6	3.0
2006	51.7	2.9
Men with degrees or higher		
1986	38.0	3.8
1991	43.9	2.1
1996	51.3	2.2
2001	59.9	1.1
2006	69.4	0.9

Source: Callister and Didham (2010) based on Census of Population and Dwellings data, Statistics New Zealand.

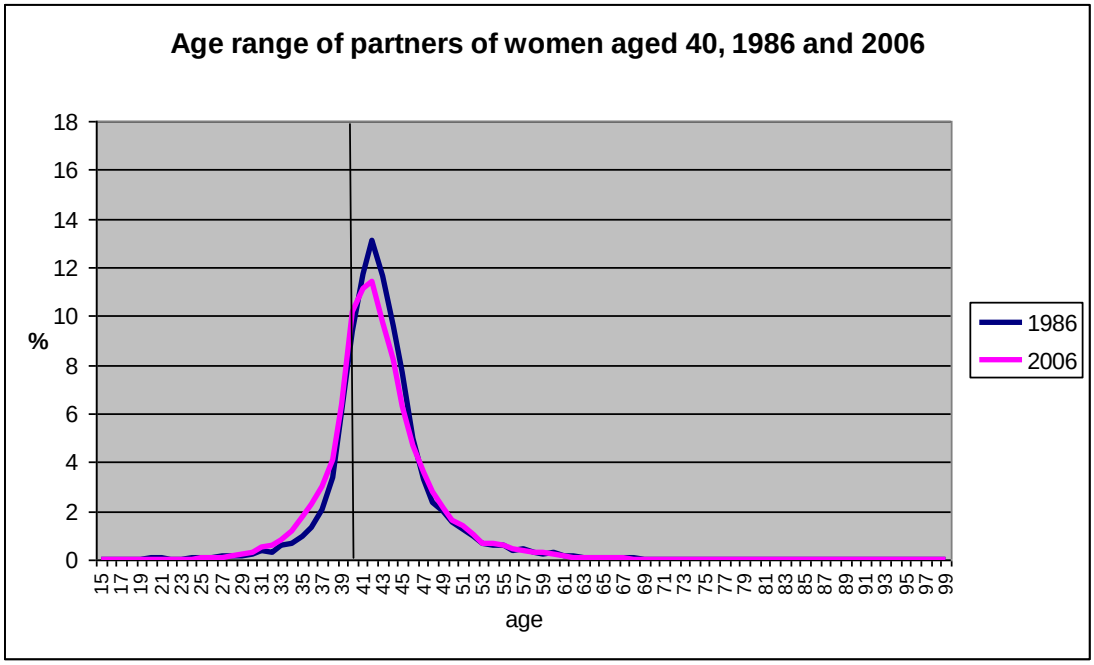
Given the significant increase in the supply of well educated women, the change for men has been more dramatic. In 1986, just 38 percent of males with a degree or higher in this age group had a similarly educated partner in 1986. By 2006 this had risen to nearly 70 percent. In a similar pattern to women, very few well educated males partner with women with no formal qualifications (Callister and Didham, 2010).

So have there been any other behavioural changes? What about more women partnering with younger men? Or maybe given the greater supply of young well educated women, maybe more such young women are partnering with older males.

Drawing on the census based research of Lawton and Callister (2010), we can assess changes over the same time period of 1986 to 2006. Given that we are considering the 25-49 age group the only data we report on here is for men and women aged 40.

In 2006 just under 1 percent of women aged 40 had a partner who was aged 30 years or younger, that is 10 or more years younger than themselves (Figure 10). This is little change from 1986. However there has been a greater shift in the percentage of partners 5 or more years younger. In 1986 3.8 percent of women aged 40 had a partner who was 35 years of age or younger. By 2006 this had risen to 5.8 percent.

Figure 10

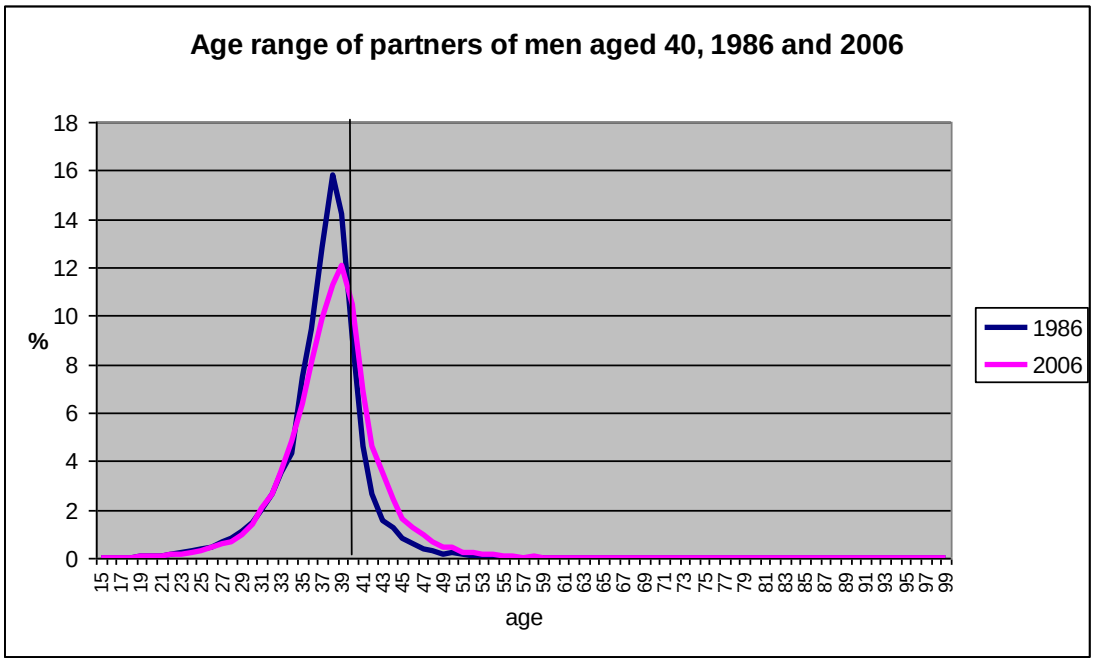


Source: Lawton and Callister (2010), based on census data

Despite ideas that older men often partner with much younger women, relatively few men aged 40 had a partner 10 or more years younger, just 5 percent in 2006 (Figure 11). But a much higher proportion, 24 percent, had a partner 5 or more years younger. The figure

shows that there was also an increase in partnering with older women between 1986 and 2006.

Figure 11



Source: Lawton and Callister (2010), based on census data

Overall, these data confirm that most people partner with someone in their broad age range and that there has not been a major behavioural shift by women and men for women to partner with significantly younger men.

So are men and women increasingly seeking overseas partners, including mail order brides or husbands? Our available data does not allow us to test this. We cannot easily assess in cross country partnering how the partnership formed. But just based on the 2001 data already shown in Table 6, overall the rates of partnering of NZ born males and females with overseas born partners seems very similar.

In summary, the three main behaviour shifts that have occurred as the two man droughts became stronger are:

1. Well educated women are increasingly partnering down educationally
2. Well educated males have more choice in partners and increasingly are partnering with well educated women
3. The largest decline in partnering has been by poorly educated men and women.

The second main finding suggests that competition for well educated males has increased. It is unclear and essentially impossible to measure if and how women are 'competing' for these men. However several theories will be explored in the following section. Finally, how

much of these changes have been directly influenced by the two man droughts is unclear as other major social and economic changes have occurred over this period as well.

7. How the man droughts might continue to change behaviour

The concept of a man drought is, of course, premised on strongly heterosexist assumptions. It is also based on the idea that men and women are seeking to cohabit. A range of rapidly changing social and economic factors mean that both men and women can live alone, including while raising children. Household 'services' that were once generally provided within marriage can be legally purchased in the marketplace. This includes food preparation, caring for children, cleaning and sex. Women can now find it easier to support themselves in the labour market, while it is also possible for both men and women to be supported by the state while living alone or raising children. In addition, same sex couples are much more widely accepted and such partnerships have increasing legal recognition.

If equal numbers of men and women seek to live alone, or in same sex partnerships, then this will not affect the magnitude of a man drought. But if more women make active and positive choices to live alone or in same sex couples this could reduce or even remove the 'excess' of women. But assuming that equal proportions of women and men want to partner, and they want to partner with someone in a similar age group, and the size of the available male population and the available female population differs, then the overall man drought remains a reality. As already noted, the man drought is especially strong if women generally wish to partner with a higher educated male or at least a male with similar levels of education.

The previous section discussed the behaviour shifts that have occurred as the two man droughts became stronger. It provided a snapshot of some of the current partnering trends based on available data. This section aims to explore some of the partnering options currently open to men and women and theorises as to whether some of these options will become increasingly popular (or necessary) due to man drought.

Men have a range of partnering options. Based on past trends, it may be regarded as more socially acceptable and common for men to partner with younger, and sometimes even considerably younger, women. If this continues, and is sufficiently widespread, the man drought could become worse in certain age brackets. In addition to partnering with resident New Zealand based women, New Zealand men may partner with non-resident women based overseas via the international marriage market. One aspect of such partnering is the mail order bride 'marriage market' of women from developing countries who wish to marry Western men. Research indicates that an increasing number of New Zealand men may be marrying mail order brides (Lawton and Callister 2011). Finally, as previously discussed, men have a tendency to marry down as well as across in terms of education level, and historically have not had a tendency to marry up educationally.

Theoretically, similar partnering options outlined above are also available to women. One such option for educated women is to 'marry down' in terms of education and, subsequently, generally income level. The 'educational man drought' can be resolved for well educated women if they make an active choice to marry down and men make an active choice to marry up. As shown, this is already happening to some degree in New Zealand. But will it continue to increase? One possible reason why women may not want to marry down is because it could put extra strain on their relationship and finances if they want to have children and wish to take time out of paid work to care for them or work part time. In a couple in which the female partner is logically the breadwinner through her higher education and wishes to leave paid employment to give birth and raise the children, the couple's overall income may decline significantly. However, if there was gender equality in paid parental leave policy and increased acceptance of male care-givers, the male partner in the relationship could stay at home and be a stay at home dad while the female partner returns to work (Fursman and Callister, 2009). Another possible reason women may not want to marry down educationally is because they want a breadwinner husband to provide a high joint income.

There are also potential reasons why men do not want to marry up educationally. Some men may feel uncomfortable about earning less than their partners or not want to be a stay at home dad, or part time worker, with a 'breadwinner' wife who continues working. Men may also experience more social stigma if married to a female breadwinner than a woman married to a male breadwinner. The ideal of the male partner being the breadwinner may be particularly engrained in low educated men who may have more traditional ideals of marriage. This limits their partnering options even further. Overall, it is difficult to work out whether it is women men, or both, who continue to drive the trend of marrying up.

Another option for women is to seek partners outside traditional partnering age groups and partner with a male from a younger age bracket. However, there are several factors which indicate why partnering with a younger man may not work in the long term and this may be why the data does not indicate much growth in this arrangement (Lawton and Callister 2010). The older woman may not want to financially support a younger partner and education, status levels, and different interests may become problems within the relationship. Some of these women may be concerned that if they stay with their partner for more than three years and then separate he will be able to claim half her assets. Finally, younger males may themselves prefer to partner up with someone younger or have children, which may not be possible with an older woman (for physical reasons or because she chooses not to have (more) children). In addition, younger men may not want to become a stepfather to existing children.

Ultimately, research has shown that childbearing is the main barrier in this kind of relationship (Proulx, Caron and Logue, 2006). This overall unsuitability may also be exacerbated by continuing social stigma around this type of relationship, especially once they become formalised. In addition, with the surplus of women at all age groups 30+, men

may not choose the option to date an older woman when there is an excess of available women who are their age or younger. Partnering with a female of similar age may be a more appealing option for men for a number of reasons, but primarily because issues relating to childbearing may not be so prominent in the relationship. Many of the above considerations also apply to older men and younger women considering partnerships with a significant age difference, although childbearing is likely to be an issue as men can conceive children at an older age than women.

In addition to partnering with younger men, women could also choose to partner with a male from abroad. While the 'mail order bride' phenomenon is well known and well documented, research has shown that there appears to be a very small emerging 'mail order groom' phenomenon (Lawton and Callister, 2011). There are a handful of websites which cater for women who are seeking a foreign husband from various countries in the former Soviet Union. In addition, there is a growing sex tourism industry for women seeking sex tourism holidays which could also result in relationships between Western women and men from developing countries. However it is highly questionable whether New Zealand women will seek male partners from developing countries in increasing numbers causing the mail order groom industry to grow as large as the mail order bride industry.

While there will most likely always be a group of women who for a variety of reasons will struggle to attract a local partner and may therefore look overseas, there is one major reason why New Zealand women may not look abroad for a mail order groom. Again a wish by New Zealand women to 'marry up' in terms of education, income level and to some extent age may come into play. Many potential mail order grooms from developing countries may have a lower education level and income than New Zealand men. Like relationships between older women and younger men, New Zealand, along with other western societies, is still struggling to come to terms with some of the new relationships women are pursuing as they perhaps confuse traditional gender, religious or ethnic roles and go against common relationship conventions. This social stigma as well as the potential drawback of having to financially support a mail order groom may deter women from seeking such partnerships.

While partnering with men from developing countries may not be seen as an option, educated and low educated women in New Zealand could seek 'mail order grooms' from other western countries such as the United States, England and those in Scandinavia marketing themselves as 'mail order brides' to these western males. Such partnerships may be a more popular option for educated women as they will not have to marry down and there could be fewer cultural barriers and confusion in gender roles that may exist, or be perceived to exist, between New Zealand women and mail order grooms from developing countries. However, it is questionable whether there would be enough of a demand for educated (as well as low educated) New Zealand women by men from other western countries when they could just partner with women in their own countries. There would seem to be even less reason why the males from these countries might want to move to live

in NZ given their vastly superior earning power and career opportunities in their home country. The option of relocating overseas to partner may also be unappealing option for New Zealand women who have an established or not easily transferable career in New Zealand and who have their close and extended family in New Zealand.

More speculative theory is that the man drought could also result in more active competition amongst females for males. This could include women competing for already partnered males. In historic times of 'man droughts' polygamy may have been an option although nowadays in many countries, including New Zealand, it is illegal. However, informal polygamy may still be an option for some women, that is being a non-cohabiting partner (such as a 'mistress'). While it is arguably not as appealing as having a monogamous partner, some women may increasingly choose to be a short, or long term mistress to an already partnered man as opposed to being alone for a long period of time or the rest of their lives. In addition, if the particular type of man they regard as their ideal partner is typically already partnered, women may choose to be a mistress with an ideal partner as opposed to being in a partnership with a less appealing partner. This option may be more 'appealing' for divorced women in their 40s and 50s who have already raised a family and therefore do not need a 'full time' partner to have children with.

The overall imbalance in the number of men and women could result in more competition amongst women for men and if women wish to continue to marry up, competition for the pool of well educated men amongst well educated women is going to be intense. This leads to the question of how educated women will differentiate themselves from each other and to put it somewhat crudely, increase their 'market value' in the marriage market. Furthermore, if well educated women expand their pool of possible partners to include lower educated men this may have the flow on affect of increasing the level of competition with low educated women who have been traditionally partnering with low educated men. How will low educated females compete with educated females?

One theory is that women will have to increasingly rely on or will choose to rely on their erotic capital, in addition to the three other recognised forms of human capital, namely educational, cultural and social capital, to boost their 'market value' in the marriage market. The concept of erotic capital was recently introduced to the academic community by London School of Economics sociologist Catherine Hakim (Hakim, 2010) and expanded in her subsequent book on the topic (Hakim, 2011). She states that '[e]rotic capital combines beauty, sex appeal, liveliness, a talent for dressing well, charm and social skills, and sexual competence It is a mixture of physical and social attractiveness' (Hakim, 2011, p10). Hakim argues 'women generally have more erotic capital than men because they work harder at it' (Hakim, 2010, p1). Furthermore, she argues that erotic capital is a major asset in 'mating and marriage markets' (as well as in the labour market) and that women should 'exploit their erotic capital, because they are well placed to do so due to the large imbalance between men and women in sexual interest over the life course' (ibid).

Whether well educated women are now having to increasingly rely on their erotic capital to differentiate themselves from other educated women, and to ultimately be more competitive in the marriage market of educated men, has yet to be tested as there is currently no research to prove or disprove this theory. In addition it is unclear whether poorly educated women have to increasingly rely on their erotic capital in order to compete for educated men with educated women who also have educational capital. Erotic capital may be a valuable tool or necessity for well educated and poorly educated women wishing to marry up, but it may also be a valuable tool or necessity for women wishing or needing to marry down or across, simply because of the overall imbalance in the number of men and women. While there is a lack of research into the use of erotic capital, it is likely that research will eventuate as there is growing interest, both sceptical and positive, in Hakim's theory. Finally, instead of relying on their erotic capital, educated women may increasingly use their educational capital, essentially their high income, to attract partners, the same way men have in the past, especially if they need to compensate for their appearance or seek a younger partner.

8. How the two man droughts might change in the future

Looking ahead to the mid-21st century, projections prepared just before the 2006 census by Statistics New Zealand suggest that the current overall man drought will begin to disappear (Bedford et al, 2010). However, this is assuming there are no major wars, marked shifts in patterns of mortality or that gendered patterns of migration do not become stronger. It may well be that strongly gendered migration does continue.

Predicting the medium terms patterns of education attainment is easier. Current patterns of education enrolment and completions indicate that the educational man drought will continue for quite some time.

9. Conclusion

A range of research carried out under the 'missing men' research program confirms that there are odd sex ratios in the 25-49 age group. Research from different areas of this project have been used in this paper to evaluate the man drought. Overall, population estimates indicate the 'shortage' of men grew in the 1990s through to around the time of the last census, 2006, but then has stabilised.

The factors leading to overall man drought are complex. Undercount issues and differences in mortality play their part. But the main cause is migration, both in and out of New Zealand. An unexpected finding of the research program was the contribution inward migration of women has made. While this is particularly evident amongst Asian women it is not confined to this ethnic group. A key driver of this migration seems to be changes in

New Zealand labour market, including a growth in occupations that tend to be female dominated.

The educational man drought is the shortage of well educated males for well educated females to partner with. This second drought is mainly caused by changes in educational participation and attainment within New Zealand and would be occurring even without the overall drought. It is also caused by the historic tendency of women to marry up educationally. But well educated women are now adapting to the drought by starting to marry down educationally. In doing so they are competing with each other but also against women who have less education. Well educated males appear to benefit from the man drought as they have a greater choice of partners. One result is that they are increasingly partnering with well educated women. Those least likely to be partnered are poorly educated females as well as poorly educated males.

Other behavioural changes could occur in reaction to the man droughts. We considered whether women are now partnering more with younger men. We found that there has been some small growth in such relationships but such partnering is still uncommon. Larger numbers of men continue to partner with younger partners, but contrary to popular opinion not many older men have substantially younger partners. We also consider whether there could be an increase overseas partnering, including more 'mail order brides/husbands'. For a variety of reasons we do not foresee significant growth in such partnering by women but there may be more by men. In addition, we consider the idea of Hakims theory of erotic capital being used by women in order to attract partners. If women are facing more competition for partners it may be that they use such capital to attract partners. It is a theory that needs further research.

Finally, much of what we know about the two man droughts comes from the 2006 census data. It had been hoped that we would now have similar data from the 2011 census. Due to its cancellation we will have to wait until after the 2013 before we can fully understand the on-going impact of these 'droughts'.

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Appendix

Table A1: Statistics New Zealand estimated resident population 30 June 2010, number of 'excess' women (negative data indicates an 'excess' of males) by Territorial Authority Area (boundaries at 30 June 2010)

	20–24	25–29	30–34	35–39	40–44	45–49
Far North District	-60	70	160	140	190	270
Whangarei District	-170	90	320	350	270	330
Kaipara District	-50	-10	90	20	20	0
Rodney District	-240	50	160	440	260	260
North Shore City	-770	-660	290	870	920	850
Waitakere City	-100	430	850	670	630	480
Auckland City	-140	820	1,120	1,300	910	510
Manukau City	-300	670	1,730	1,600	1,510	990
Papakura District	-30	70	150	190	180	150
Franklin District	-90	90	250	410	170	60
Thames-Coromandel District	-230	-30	50	70	100	140
Hauraki District	-60	-50	40	30	80	40
Waikato District	-120	-70	80	150	90	40
Matamata-Piako District	-180	-30	50	120	50	80
Hamilton City	180	-150	190	540	540	550
Waipa District	-130	110	140	160	240	80
Otorohanga District	-180	-120	-100	-50	-10	-50
South Waikato District	-50	30	70	100	60	10
Waitomo District	-30	10	30	10	0	0
Taupo District	-110	-70	90	90	40	50
Western Bay of Plenty District	-160	-10	40	190	210	60
Tauranga City	-40	210	130	520	470	380
Rotorua District	140	150	350	190	370	320
Whakatane District	-70	50	110	130	250	80
Kawerau District	-10	20	40	70	30	20
Opotiki District	-20	10	30	60	40	60
Gisborne District	0	190	130	150	230	210
Wairoa District	-40	-20	30	-20	50	10
Hastings District	-90	-10	160	340	150	310
Napier City	-30	130	230	300	170	280
Central Hawke's Bay District	-20	0	10	50	60	20
New Plymouth District	-240	-80	110	360	280	190
Stratford District	-20	-10	30	20	0	50
South Taranaki District	-100	-10	20	20	40	-100
Ruapehu District	-140	-30	-10	-10	-10	-30
Wanganui District	-110	-50	180	140	150	150
Rangitikei District	-10	-20	20	10	90	10
Manawatu District	-130	60	110	40	150	70

Palmerston North City	-190	0	160	330	200	270
Tararua District	-80	-20	10	30	100	-10
Horowhenua District	-20	120	100	160	70	160
Kapiti Coast District	-90	150	180	240	340	230
Porirua City	10	40	220	310	150	150
Upper Hutt City	-320	-100	60	30	20	10
Lower Hutt City	-130	490	190	470	300	250
Wellington City	770	150	440	920	470	300
Masterton District	-40	-20	40	90	60	70
Carterton District	-10	0	50	40	10	0
South Wairarapa District	-40	20	20	0	40	-30
Tasman District	-110	-10	90	150	130	150
Nelson City	-40	-60	50	150	180	110
Marlborough District	-240	-80	20	70	120	170
Kaikoura District	10	0	20	10	0	20
Buller District	-40	10	30	40	0	-20
Grey District	-50	-50	60	20	20	20
Westland District	0	10	-10	50	10	30
Hurunui District	-90	0	0	60	50	-30
Waimakariri District	-210	50	200	310	160	60
Christchurch City	-1,200	-460	950	1,230	790	920
Selwyn District	-500	-50	30	210	-30	-10
Ashburton District	-240	-50	-50	40	-30	10
Timaru District	-150	50	60	120	100	200
Mackenzie District	-20	-20	10	-20	0	20
Waimate District	-30	20	0	20	40	-20
Chatham Islands Territory	-10	0	-5	-5	-5	-5
Waitaki District	-130	0	30	10	80	0
Central Otago District	-140	-40	0	30	50	50
Queenstown-Lakes District	-110	-100	-90	-140	10	-90
Dunedin City	340	70	270	370	440	410
Clutha District	-200	20	0	0	-40	-30
Southland District	-140	-60	0	-20	60	-50
Gore District	-40	30	0	70	10	-10
Invercargill City	-100	150	80	130	200	170
Total, New Zealand	-7,540	2,050	10,660	15,290	13,070	10,390

Source: Statistics New Zealand

Table A2: Male median personal yearly income ($), all labour force statuses, 2006

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
No Qualification	2,088	21,894	26,596	28,858	31,310	32,291	32,859	32,421	32,019	26,799	14,764	22,231
Level 1 Certificate	3,053	26,126	32,769	36,759	39,006	39,749	40,352	40,383	39,363	33,998	18,301	28,836
Level 2 Certificate	4,060	25,807	34,537	39,505	45,083	46,423	46,533	45,455	43,100	35,428	19,185	31,015
Level 3 Certificate	4,793	12,632	33,346	40,792	44,675	47,569	46,092	45,182	42,726	35,152	19,208	25,096
Level 4 Certificate	15,124	30,592	39,067	43,800	46,205	46,812	45,508	43,651	40,813	34,730	16,152	38,703
Level 5 Diploma	8,458	19,167	34,485	44,684	53,317	53,417	52,584	50,721	48,087	39,464	21,896	42,111
Level 6 Diploma	-	21,522	36,380	48,616	56,024	57,872	58,063	56,263	55,197	43,015	24,828	45,355
Bachelor Degree and Level 7	-	20,325	40,134	54,285	62,554	64,618	66,156	66,018	64,357	54,655	31,315	49,685
Post-graduate and Honours	-	22,742	43,532	59,028	66,196	72,971	74,629	73,909	68,760	60,134	31,991	58,291
Masters Degree	-	-	-	53,496	64,122	66,379	70,918	69,832	69,423	57,097	34,808	58,071
Doctorate Degree	-	-	-	61,859	73,942	83,077	90,650	90,977	94,405	85,278	46,622	77,177

- indicates small numbers so the earnings are not shown
Source: Statistics New Zealand

Table A3: Female median personal yearly income ($), all labour force statuses, 2006

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
No Qualification	989	14,874	16,062	16,350	17,273	18,387	19,520	19,256	16,994	13,291	14,098	14,305
Level 1 Certificate	2,302	19,769	22,015	21,576	23,024	24,801	26,874	27,447	25,638	18,244	15,647	18,881
Level 2 Certificate	3,460	21,201	25,936	25,187	24,939	27,171	28,859	29,147	26,053	19,322	16,430	20,126
Level 3 Certificate	4,416	11,685	26,312	26,071	23,870	25,293	25,855	25,720	24,240	18,918	16,251	15,621
Level 4 Certificate	9,056	20,847	25,805	24,281	23,166	24,884	26,459	26,886	25,219	19,634	16,741	23,166
Level 5 Diploma	7,565	19,663	27,150	27,560	28,129	29,037	31,899	33,248	32,398	24,167	18,551	26,043
Level 6 Diploma	-	21,400	29,241	29,917	28,847	32,279	36,143	37,887	34,983	25,659	18,046	27,784
Bachelor Degree and Level 7	-	20,458	36,890	37,378	34,594	37,351	40,996	43,047	39,277	30,107	20,195	34,777
Post-graduate and Honours	-	22,597	39,510	43,170	39,167	42,797	49,841	51,260	48,704	36,251	23,111	40,830
Masters Degree	-	-	-	38,750	38,079	44,417	50,998	55,391	54,193	41,618	25,958	41,128
Doctorate Degree	-	-	-	53,933	57,842	62,958	68,475	71,173	67,941	65,000	31,945	59,866

- indicates small numbers so the earnings are not shown
Source: Statistics New Zealand

Table A4: Male median personal yearly income ($), full time workers, 2006

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
No Qualification	18,412	26,645	31,288	34,246	36,306	37,252	37,617	37,159	37,156	35,457	33,943	34,094
Level 1 Certificate	19,239	28,310	35,140	38,891	41,823	43,002	43,697	43,965	43,547	40,805	37,337	37,286
Level 2 Certificate	18,259	28,782	36,672	42,023	47,913	49,467	49,863	49,283	48,455	44,198	37,878	39,396
Level 3 Certificate	15,122	27,456	36,784	44,205	48,574	52,443	51,179	49,914	48,793	45,895	39,634	38,237
Level 4 Certificate	20,433	32,875	40,443	45,253	47,814	48,665	47,609	46,081	44,617	40,880	38,643	44,432
Level 5 Diploma	19,231	28,236	38,026	48,063	55,954	55,810	55,196	54,048	52,088	46,175	40,779	48,996
Level 6 Diploma	-	29,248	39,870	51,589	58,648	60,839	60,804	60,040	59,974	54,467	44,566	54,654
Bachelor Degree and Level 7	-	32,731	44,318	57,995	66,576	69,377	71,552	72,607	73,476	69,921	62,770	59,099
Post-graduate and Honours	-	33,661	48,036	62,518	69,758	78,583	80,857	80,523	77,036	70,919	64,000	65,846
Masters Degree	-	-	-	59,101	69,549	73,128	79,124	76,963	78,326	69,063	60,870	67,407
Doctorate Degree	-	-	-	62,679	76,466	85,691	93,557	95,205	99,262	96,613	92,500	87,197

- indicates small numbers so the earnings are not shown
Source: Statistics New Zealand

Table A5: Female median personal yearly income ($), full time workers, 2006

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
No Qualification	14,157	22,656	25,972	26,922	27,198	27,074	27,350	27,912	28,413	27,790	28,926	26,768
Level 1 Certificate	16,204	25,471	30,997	33,151	34,577	33,390	33,972	34,332	34,831	33,417	33,824	32,098
Level 2 Certificate	16,366	27,142	34,017	36,796	38,298	37,418	37,014	36,599	36,552	35,215	35,201	33,724
Level 3 Certificate	12,293	26,149	33,762	37,404	36,771	36,191	34,887	35,205	34,688	33,530	34,000	30,891
Level 4 Certificate	17,251	26,723	32,849	35,230	35,047	34,674	34,442	34,619	34,583	35,260	32,501	33,128
Level 5 Diploma	16,024	27,008	33,802	37,963	39,777	39,583	39,671	41,352	42,501	40,770	37,251	35,794
Level 6 Diploma	-	28,239	35,282	41,987	42,728	43,898	44,518	45,243	44,755	42,473	37,785	42,377
Bachelor Degree and Level 7	-	31,375	41,605	47,983	48,172	48,451	50,212	52,287	51,722	50,387	45,417	44,119
Post-graduate and Honours	-	32,206	44,252	53,152	55,155	56,016	58,567	58,534	56,745	54,491	50,334	51,430
Masters Degree	-	-	-	49,645	52,921	57,540	59,965	62,711	62,365	59,741	53,126	54,429
Doctorate Degree	-	-	-	59,398	65,190	71,792	78,572	77,985	78,805	81,592	85,001	68,725

- indicates small numbers so the earnings are not shown

Source: Statistics New Zealand