# Chapter Three

OCCUPATION AND FAMILY REPONSIBILITIES AND
THE GENDER WAGE GAP

3.1 The Position of Females in the New Zealand Labour Market

Figure 3.1.1 compares the New Zealand male and female labour force participation rates for the census years between 1971-1996. The labour force participation rate of males in New Zealand has steadily declined whilst female participation has gradually increased. There are several reasons for the increased labour force participation rate of females. Bergmann (1986) suggested declining birth rate levels, fewer children, shorter periods of non-participation after birth and increasing numbers of females who do not leave the work-force altogether. Horsfield (1988) highlighted age, family structure, benefit eligibility criteria and the unemployment rate. Brooks (1991) found that the female labour force participation rate was positively related to the proportion of female students at tertiary institutions, and to a lesser extent, the real after tax wage rate. The participation rate was negatively related to the proportion of the population under 15, income from other sources and the rate of unemployment.

Figure 3.1.1:   Labour Force Participation Rates for Males and Females in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996.
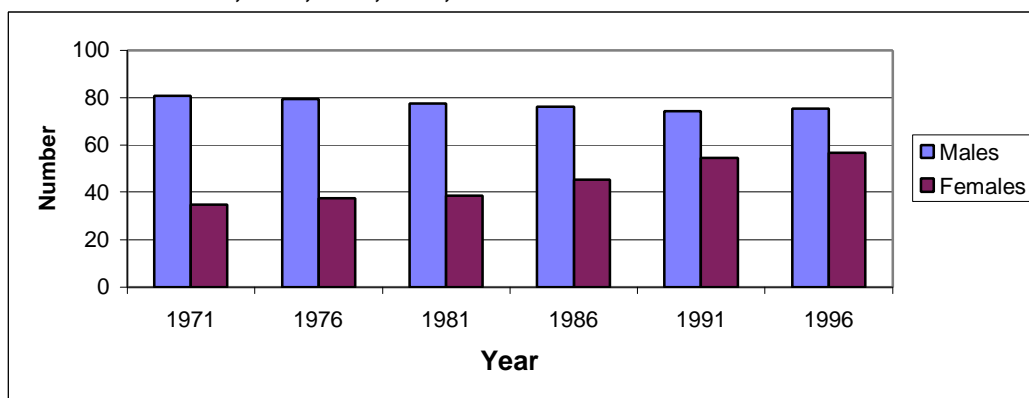
Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1971-1996.

Differentiating between full-time and part-time workers, comparisons over the last three decades are difficult due to changes in the definition of full-time and part-time employment. Up until 1981, a worker was classified as being in full-time employment if that worker was employed for 20 or more hours per week. A worker was classified

as being in part-time employment if that worker was employed for less than 20 hours per week. For the period 1986 to the present, a worker is classified as being in full-time employment if that worker is employed for 30 or more hours per week. Less than 30 hours per week counts as part-time employment. Table 3.1.1 shows the number of males and females working full-time and part-time in New Zealand for 1971, 1976, 1981, 1986, 1991 and 1996.

Table 3.1.1: Number of Male and Female Workers Employed Full-Time and Part-Time in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996

Year	Males (Full)	Females (Full)	Males (Part)	Females (Part)
1971	776.2	326.5	8.6	47.8
1976	850.7	395.3	13.3	72.3
1981	876.6	455.8	20.0	95.1
1986	841.3	397.9	49.0	172.2
1991	734.3	417.0	60.8	188.4
1996	778.3	474.5	111.7	266.4

Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1971-1996

From this table we can see that males have dominated full-time work whilst females have dominated part-time work. However, both types of employment have experienced convergence between the genders. Figure 3.1.2 displays the percentage change in numbers of males and females employed between 1971-1976 and 1976-1981. What is clearly evident during this period is that whilst there was an increase for both genders in the number involved in part-time and full-time employment over the two periods, both genders had been entering the type of employment which the other gender had tended to dominate. There was a larger percentage increase in full-time work for females than males whilst the reverse was evident concerning part-time work.

Figure 3.1.2:   Percentage Change in Number of Males and Females Employed in New Zealand, 1971-1976, 1976-1981.
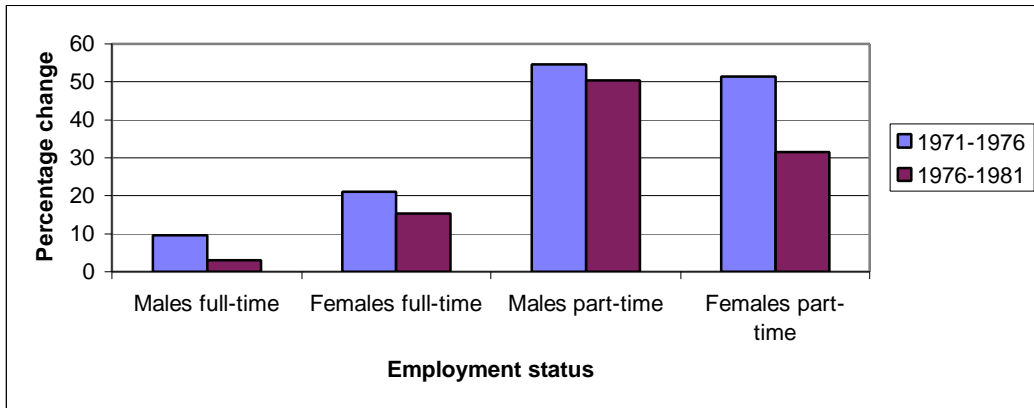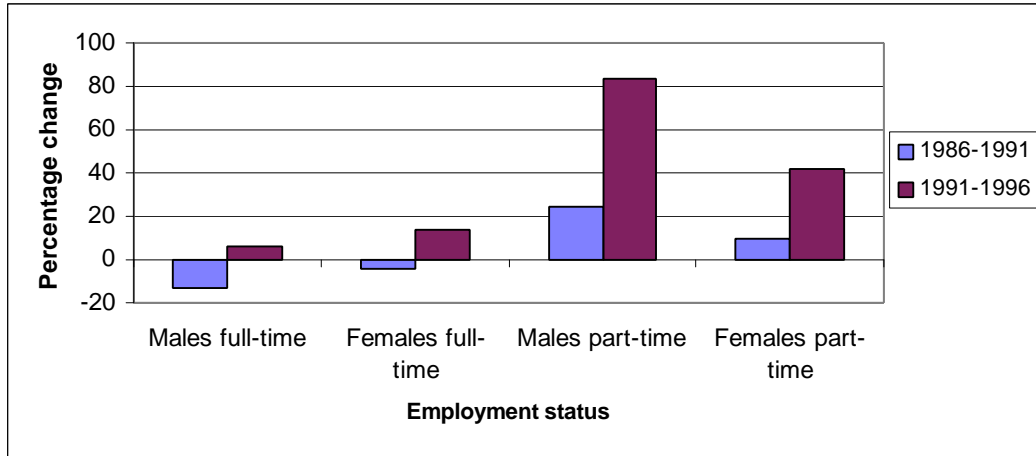

Note: Persons working 20 hours or more per week are counted as full-time workers.
Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1971-1981.

Looking at the percentage changes for 1986-1991 and 1991-1996 in Figure 3.1.3, we see that these equalising trends have continued.

Figure 3.1.3: Percentage Change in Number of Males and Females Employed in New Zealand, 1986-1991, 1991-1996

Note: Persons working 30 hours or more per week are counted as full-time workers.
Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1986-1996.

3.2 Occupations in the New Zealand Labour Market

As workers are involved in either full-time or part-time activities, measurements of males and females in occupations vary. Often, studies involving occupations that have been conducted in New Zealand such as Smith (1981 and 1983), Gwartney-Gibbs (1988), Sloan and Doust (1988) and Van Mourik *et al.* (1989) have only concentrated on full-time workers. However, as indicated above, part-time workers have made up an increasing proportion of those employed in New Zealand during the last three decades. One way in which to combine both full-time and part-time workers is to use the Equivalent Male Labour Force (EMLF) and the Equivalent Female Labour Force (EFLF). The EMLF consists of the number of males in a particular occupation plus half the number of part-time workers in that occupation. Likewise, the EFLF consists of the number of females in a particular occupation plus half the number of part-time workers in that occupation. Therefore:

$$\text{EMLF}_{\text{occupation } i} = \text{MFTW}_{\text{occupation } i} + (\text{MPTW}_{\text{occupation } i})/2 \qquad (1)$$

Where: MFTW = Male Full-Time Workers, and
          MPTW = Male Part-Time Workers.

$$\text{EFLF}_{\text{occupation } i} = \text{FFTW}_{\text{occupation } i} + (\text{FPTW}_{\text{occupation } i})/2 \qquad (2)$$

Where: FFTW = Female Full-Time Workers, and
          FPTW = Female Part-Time Workers

As equations (1) and (2) indicate that two part-time workers are considered equivalent to one full-time worker. From a rough calculation for 1996, the median numbers of hours for part-time male and female workers were between 10-14 and 15-19 hours respectively. For full-time male and female workers, they was between 45-49 and 40-44 hours respectively (Statistics New Zealand, Census of population and dwellings, 1996). As a result, one full-time male worker would represent more work hours than one full-time female worker, and the two-to-one ratio overstates the number of equivalent full-time workers for both men and women, with the degree of overstatement being greater for men.

The change in definition of full-time and part-time work, with the cut-off moving from 20 hours to 30 hours per week for 1986 onwards, would also have had an effect. Figure 3.2.1 shows that when part-time workers are broken into employment intervals of five hours, 26.02 percent of the total work-force were females who worked between 20-29 hours per week in 1996. This was a continual decrease from 32.61 percent in 1986 to 30.48 percent in 1991. In comparison, percentages for females were significantly higher than those of male workers, who accounted for only 7.74, 9.33 and 7.81 percent in 1986, 1991 and 1996 respectively (Statistics New Zealand, Census of Population and Dwellings, 1996). Therefore, the assumption of two part-time workers equalling one full-time equivalent worker from 1986 onwards has unequal impact on figures for females and males, especially since female full-time workers work fewer hours than male full-time workers as is clearly evident in Figure 3.2.2. Females are more likely to work 30-39 hours per week than males, whilst males are more likely to work 40+ hours per week than females.

Figure 3.2.1:   Breakdown of New Zealand Part-time Workers by Hours Employed Per Week, 1996
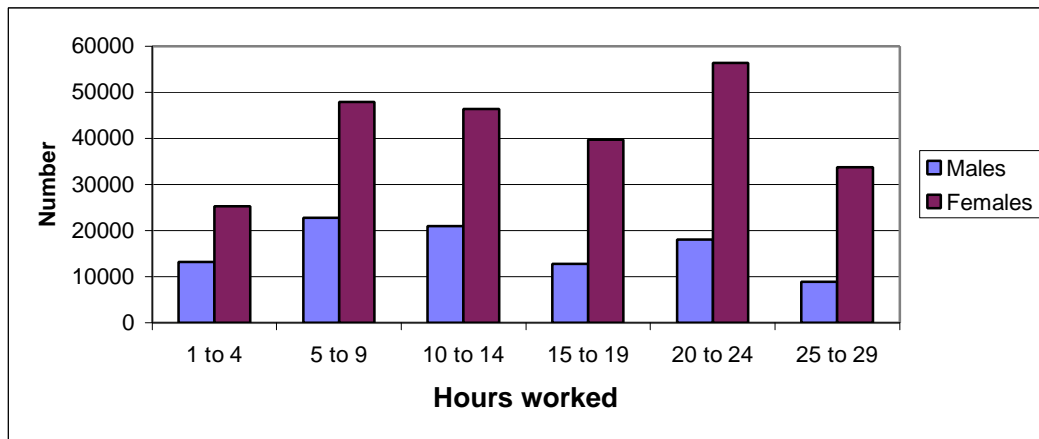
Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1996.

Figure 3.2.2: **Breakdown of New Zealand Full-Time Workers by Hours Employed per Week, 1996**
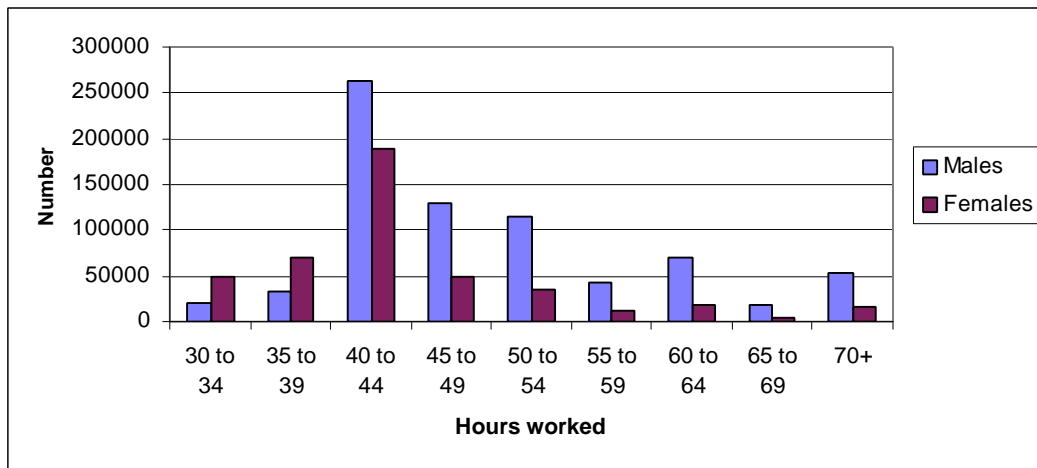
Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1996.

Occupational data has been obtained from Statistics New Zealand at a 2-digit level. Data at a 2-digit level comprises 80 occupations, which is still a broad range of occupations for analysis. There are benefits of using data at a more aggregated level. One such benefit concerns a goal of this thesis to observe the similarities and differences of female participation in various occupations from 1971-1996; and broader occupational listing makes this easier when comparing occupations over this period. This is because the classifications of various occupations change over periods. Furthermore, other studies have used 2 digit occupational data when investigating the various issues of 'male' and 'female' occupations in New Zealand (i.e. Gwartney-Gibbs, 1988, Sloan and Doust, 1988). However, we must bear in mind that aggregation of data at this level may hide some differences that would otherwise be evident in data that was disaggregated further. With the change in definition of part-time work, analysis is done for two distinct periods, 1971-81 for the old definition and 1986-96 for the new definition. Increasing data costs for higher occupational classification listing meant 2-digit data was the best option for analysis.[8]

3.3 Gender Dominated Occupations in the New Zealand Labour Market

There are various definitions of what are considered as 'male occupations' and 'female occupations'. One of the simpler approaches is to determine which occupations are deemed to be 'male' or 'female' by the percentage of males and females employed in those occupations. If occupations were perfectly integrated, all would represent the same percentage of male and female workers that make up the work force. However, this is rarely the case. Therefore, most studies in New Zealand have concentrated on high levels of occupational segregation.

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[8]   A list of the numbers of EMLF and EFLF employed in occupations at the 2-digit are included in Appendix B.

Smith (1983) classified an occupation to be 'female' if the number of females exceeded 70 percent or more. Gwartney-Gibbs (1988) identified 'female occupations' with 67 percent consisting of female workers. Van Mourik *et al.* (1989) took a slightly different approach whereby they defined an occupation to be 'female' dominated if 60 percent of the workers employed were females and 'male' dominated if 80 percent of the workers employed were males.[9] However, as Melkas and Anker (1998) pointed out, the use of a fixed numeric cut-off point can cause problems when observing changes over time. This can occur when one or more occupations are close to the cut-off point, e.g. 59.9 or 60.1 percent. Also, the use of only one numeric cut-off point does not reveal the extent of any changes that may have occurred in the gender make-up of occupations i.e. whether there has been a drop in extremely high gender-segregated occupations. Therefore, whilst aggregation of data at a 2-digit level may obscure differences to a certain extent, 4 definitions for gender dominated occupations have been used for the data set. These definitions are: occupations where 60 percent or more; 70 percent or more; 80 percent or more, and 90 percent or more of workers are female. The same threshold applies to workers in male dominated occupations. This not only partly solves the problem of a cut-off point but it also provides a more detailed analysis of the changing structure of gender dominated positions.

Unlike similar studies that have analysed occupational data (Anker, 1998, Melkas and Anker, 1998), the listing of occupations used for this thesis includes agricultural occupations. Agricultural jobs have often been excluded in previous studies involving overseas data due to the classification of agricultural occupations being inconsistent over time within family-based farms in comparison to non-agricultural occupations. These difficulties are somewhat negated in this thesis by the fact that the classifications involving occupational data in New Zealand have remained stable. Broader classifications used for agricultural occupations have meant that there is less of a difference with gender occupations on the farm when compared with non-agricultural occupations. Also, the fact that the agricultural industry remains highly important for the New Zealand economy is a further reason for inclusion.

Given the increase in the female labour force participation rate in New Zealand over recent decades, Smith (1983) suggested two hypotheses concerning its effect on the occupational distribution of the labour force. Either more females were entering 'male' dominated occupations that would result in a decrease in the level of occupational segregation; or it may be that although more females were entering the labour market, they were only obtaining employment in already female dominated occupations. Thus, this would leave little change in the level of occupational segregation (p. 39). From the data set used, it seems that it is the former hypothesis that prevailed.

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[9] Table 3.6.1 on page 69 summarises the results of these 3 studies.

Table 3.3.1: Number of Female-Dominated Occupations and Percentage of Females Employed in Them Using 60, 70, 80 and 90 Percent Definitions, in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996

Definition of female-dominated occupations	1971	1976	1981	1986	1991	1996
No. of female dominated occupations (>60%)	12	15	15	17	16	18
Percentage of female labour force employed in them	48.6%	68.4%	72.6%	68.0%	64.4%	61.7%
No. of female dominated occupations (>70%)	8	10	9	13	10	11
Percentage of female labour force employed in them	33.3%	38.3%	49.5%	55.0%	51.0%	49.1%
No. of female dominated occupations (>80%)	5	7	7	6	5	5
Percentage of female labour force employed in them	23.8%	30.9%	27.8%	20.6%	18.4%	24.4%
No. of female dominated occupations (>90%)	4	3	1	1	1	1
Percentage of female labour force employed in them	15.6%	23.2%	21.3%	19.9%	20.4%	20.9%

Table 3.3.1 presents results for the census years 1971, 1976, 1981, 1986, 1991 and 1996 for female workers in the New Zealand labour force. This table provides two sets of statistics, first the percentage of the EFLF that is working in 'female' dominated occupations, and second the number of the 80 occupations that are gender dominated at the specified level. Both sets of statistics employ the 60, 70, 80 and 90 percent definitions outlined above. From 1971-1981 the percentage of the EFLF increased markedly at all of the percentage definitions whilst the number of occupations had also increased, with the exception of the 90+ percent level. The percentage of the EFLF at the 60+ percent level increased considerably from 1971-1981. A sizeable increase in the EFLF at the 70+ percent level was also evident from the two periods. Yet, the number of occupations at this level increased only slightly. The number of occupations at the 70+ percent level saw little change from 1976 to 1981, due to the percentage of female workers in laundering, dry-cleaning and pressing falling slightly below 70 percent. During the same period, the percentage of the EFLF rose due to the increased number of female workers classified as clerical (not elsewhere classified (n.e.c)). There were only 4 and 3 occupations that had 90+ percent of female workers in 1971 and 1976 respectively. The collective occupation of stenographers, typists and card-and-tape-punching machine operators was the only occupation in 1981 that contributed 90+ percent of the female workers, and involved over one-fifth of the total EFLF.

Looking at the census years 1986, 1991 and 1996 for female workers in New Zealand, from 1986 to 1996, as for the first period, there has been only a slight change in the number of occupations at the various percentage levels. Whilst the percentage of the EFLF has dropped slightly at the 60+ and 70+ percent level, at the 80+ and 90+ percent level, percentages increased only moderately. As there were very few 'female occupations' that reached 80+ percent, numbers were also stagnant.

Table 3.3.2 presents results for the census years 1971, 1976 and 1981 for male workers in New Zealand. The table shows that a very high percentage of the EMLF worked in 'male occupations' over the three time periods. Yet, unlike the 'female occupations' during the same period, there was a clear decrease in both the number of occupations at each percentage level and the percentage of workers at each of these occupations. Interestingly, at the 70+, 80+ and 90+ percent levels, the number of 'male occupations' fell by 7 whilst at the 60+ percent level the fall was by 3. The largest drop in the percentage of workers at each 'male occupation' was at the 90+ percent level, decreasing from 52.2 percent in 1971 to 41.7 percent in 1981. Overall, this may be evidence of a decline in the demand for mainly 'male occupations' and therefore, growth in mainly 'female occupations'. Alternatively, this may be evidence of growth in female employment in 'male occupations'.

Table 3.3.2: **Number of Male-Dominated Occupations and Percentage of Males Employed in Them Using 60, 70, 80 and 90 Percent Definitions, in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996**

Definition of male-dominated occupations	1971	1976	1981	1986	1991	1996
No. of male dominated occupations (>60%)	57	54	54	51	49	49
Percentage of male labour force employed in them	81.6%	81.6%	79.9%	79.2%	76.3%	75.8%
No. of male dominated occupations (>70%)	51	50	44	42	41	38
Percentage of male labour force employed in them	79.0%	80.2%	71.9%	71.2%	66.9%	62.8%
No. of male dominated occupations (>80%)	43	41	36	30	26	25
Percentage of male labour force employed in them	71.6%	73.3%	68.4%	53.6%	41.5%	33.5%
No. of male dominated occupations (>90%)	32	29	25	20	19	15
Percentage of male labour force employed in them	55.2%	47.0%	41.7%	34.7%	30.6%	22.6%

Looking at data for 1986, 1991 and 1996, it is notable that from 1986-1996 the number of occupations at the 80+ and 90+ percent level had dropped by five in each percentage bracket. Also, the number of occupations at the 60+ and 70+ percentage level had decreased by two and four respectively. This directly reflected certain occupations that became more 'feminised', and subsequently contained a lower percentage of male workers. The percentage of workers at each 'male occupation' was still relatively high. However, they had declined at all percentage levels; especially at the 80+ and 90+ percentage levels of 'male' dominated occupations, which dropped by 20.1 and 12.1 percent respectively. Overall, this may indicate that females are moving into the majority of occupational areas, not just those where females have been previously.

In relation to studies of other industrialised countries, Melkas and Anker (1998) found that based on 75 occupations in the three Nordic countries of Norway, Sweden and Finland, 48 percent of female workers were employed in positions where they contributed at least 80 percent of the labour force during 1990 (p. 47). Despite the study concentrating only on the female non-agricultural labour force whereby figures produced in this chapter includes agricultural positions, Table 3.3.1 shows that 24.4 percent of the New Zealand EFLF were employed in positions where they contributed at least 80 percent of workers. This value was similar to the average value of 22 percent found for female workers in 14 OECD countries (ibid., p. 47).

Overall, in terms of changes in female dominated positions from 1971-1981 and 1986-1996, the period 1971-1981 showed an increase in the proportion of females in female dominated occupations. Between 1986-1996, however, numbers stayed relatively stable. This would indicate that to an extent, increasing numbers of the New Zealand female labour force over the last three decades have been absorbed into existing female dominated occupations. Yet, shifting the focus on 'male' dominated occupations indicated that females were increasingly entering 'male' dominated occupations in large numbers also. As Table 3.3.2 shows, there had been a substantial decrease, particularly between 1986-1996, in the percentage of males working in 'male' dominated occupations. This decrease was also evident between 1971-1981 but between 1986-1996 a large reduction occurred particularly for occupations incorporating 80+ percent of male workers. These falls were significant, especially considering the short-term period of the two 10-year intervals. Therefore, it is important to identify which occupations are experiencing these changes. Also, whether issues such as working conditions, and identifying better job opportunities, are causes for the overall percentage shifts between the genders.

3.4 Largest Female and Male Occupations

Tables 3.4.1 and 3.4.2 display the percentages of the EMLF and EFLF respectively that were employed in the 7 main occupational classifications for 1971, 1976, 1981, 1986, 1991 and 1996. Table 3.4.1 shows percentages of the EMLF for the 6 time periods. During the entire time, by far the largest group of the EMLF was involved in production and related work. This was followed by agricultural and horticultural based workers and professional and technical employees. During 1986, 1991 and 1996 the EMLF was again heavily involved in production occupations, though the percentage

share in these occupations dropped from approximately 43.7 percent in 1986 to 36.2 percent in 1996. Agricultural workers and clerical workers were the only other 2 occupations that experienced a decrease in their percentage share. Table 3.4.2 shows that females tended to be more evenly spread throughout the 7 main occupational classifications than males. However, more detailed classifications of occupations may result in a slightly different outcome. Still, during 1971, 1976 and 1981, around one-third were classed as clerical workers and one-fifth were employed in some type of professional or technical occupation. Concerning the EFLF during 1986, 1991 and 1996, the main occupation of clerical workers experienced a decline from 33.3 percent in 1986 to 28.4 in 1996. The only other main occupational categories that showed a decline in female numbers were agricultural workers and production workers.

Table 3.4.1: **Percentage of the EMLF Employed in the Seven Main Occupational Classifications in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996**

Males	1971	1976	1981	1986	1991	1996
Professional and Technical	10.5%	12.3%	12.2%	13.2%	15.9%	16.8%
Administrators and managerial workers	3.5%	4.5%	5.0%	7.1%	8.4%	9.9%
Clerical workers	9.0%	8.3%	7.9%	7.7%	7.2%	6.9%
Sales workers	9.9%	9.2%	9.1%	9.0%	10.7%	10.5%
Service workers	5.5%	5.5%	6.1%	6.1%	7.0%	7.2%
Agricultural, animal husbandry, and forestry workers, fishermen, and hunters	14.5%	12.8%	13.7%	13.2%	12.7%	12.5%
Production and related workers, transport equipment operators, and labourers	47.0%	47.3%	46.0%	43.7%	38.0%	36.2%

Table 3.4.2: **Percentage of the EFLF Employed in the Seven Main Occupational Classifications in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996**

Females	1971	1976	1981	1986	1991	1996
Professional and Technical	17.1%	18.8%	18.7%	18.2%	22.1%	22.9%
Administrators and managerial workers	0.3%	0.7%	0.8%	2.3%	3.4%	4.6%
Clerical workers	32.5%	33.8%	32.8%	33.3%	32.6%	28.4%
Sales workers	11.7%	10.9%	12.4%	11.4%	12.2%	12.3%
Service workers	14.2%	14.0%	13.7%	14.0%	13.9%	15.5%
Agricultural, animal husbandry, and forestry workers, fishermen, and hunters	5.3%	5.7%	6.9%	7.3%	6.6%	6.5%
Production and related workers, transport equipment operators, and labourers	18.9%	16.1%	14.7%	13.4%	9.3%	9.8%

As far as the 2-digit classification of 80 occupations for males and females is concerned, Tables 3.4.3 and 3.4.4 list the ten occupations with the highest percentage of males and females respectively during 1971, 1976 and 1981. These tables also list

the occupations that had dropped out of the top ten. What is clearly evident during these periods is that there has been little change in the make-up of the highest percentage of 'male' and 'female' occupations. The 'female occupations' comprised jobs that were similar to studies in other countries, e.g. Melkas and Anker (1998). It is very clear that the top 'female' dominated jobs were associated with: (i) caring, e.g. Housekeeping and related service supervisors; and medical, dental and veterinary workers; (ii) manual and finger dexterity, e.g. Stenographers, typists and card-and-tape-punching machine operators; tailors, dressmakers, sewers and upholsterers; telephone and telegraph operators; and tobacco preparers and tobacco product makers; and (iii) typical household-related work, e.g. house-staff and related housekeeping service workers n.e.c.; hairdressers, barbers and beauticians; cooks, waitresses and bartenders; and launderers, drycleaners and pressers. The majority of the work that is entailed with these occupations involves indoor activities. This is contrary to the majority of the predominantly 'male' dominated occupations that typically involved outdoor activities. Most 'male' dominated occupations were involved with: (i) labour intensive work, e.g. bricklayers, carpenters and other construction workers; miners, quarrymen and well-drillers; stone-cutters and carvers; forestry workers; painters; fishermen and hunters; plumbers, welders; and sheet-metal and structural metal preparers and erectors; (ii) technical maintenance, e.g. machinery fitters, machine assemblers and precision instrument makers; and stationary engine and related equipment operators n.e.c.; and (iii) supervisory positions, e.g. aircraft and ships officers; transport conductors; farm managers and supervisors; and jurists.

Table 3.4.3:   **The Highest Male-Dominated Occupations (Based on Percentage Male in Each Occupation) in New Zealand, 1971, 1976 and 1981**

Occupation	1971	1976	1981
Bricklayers, carpenters, and other construction workers	99.9 (1)	99.7 (2)	99.5 (2)
Miners, quarrymen, and well-drillers	99.9 (2)	99.9 (1)	99.5 (1)
Stationary engine and related equipment operators n.e.c.	99.9 (3)	99.6 (3)	99.5 (3)
Aircraft and ships officers	99.9 (4)	99.3 (4)	98.4 (4)
Transport conductors	99.7 (5)	99.1 (5)	94.4 (14)
Stone cutters and carvers	99.2 (6)	95.9 (13)	95.5 (10)
Forestry workers	99.2 (7)	98.3 (6)	96.2 (9)
Farm managers and supervisors	98.8 (8)	96.6 (11)	96.4 (8)
Painters	98.7 (9)	98.2 (7)	97.0 (6)
Fishermen and hunters	98.7 (10)	97.6 (9)	95.3 (11)
Jurists	98.1 (12)	98.0 (8)	90.6 (22)
Plumbers, welders, sheet-metal and structural metal preparers and erectors	96.6 (14)	97.2 (10)	97.8 (5)
Machinery fitters, machine assemblers, and precision instrument makers (except electrical)	97.8 (13)	96.3 (12)	97.0 (7)

Table 3.4.4: **The Highest Female-Dominated Occupations (Based on Percentage Female in Each Occupation) in New Zealand, 1971, 1976 and 1981**

Occupation	1971	1976	1981
Stenographers, typists and card-and-tape-punching machine operators	98.5 (1)	98.8 (1)	98.2 (1)
Housekeeping and related service supervisors	92.3 (2)	91.1 (3)	88.2 (3)
Computing machine operators	91.9 (3)	88.4 (4)	83.0 (4)
Housestaff and related housekeeping service workers n.e.c.	91.0 (4)	93.4 (2)	89.1 (2)
Tailors, dressmakers, sewers, and upholsterers	86.0 (5)	81.1 (7)	80.4 (7)
Telephone and telegraph operators	78.5 (6)	82.2 (5)	82.9 (5)
Hairdressers, barbers, beauticians	75.9 (7)	81.9 (6)	82.3 (6)
Medical, dental and veterinary workers	71.3 (8)	72.6 (8)	73.8 (8)
Tobacco preparers and tobacco product makers	69.0 (9)	69.4 (21)	66.8 (24)
Cooks, waiters/Waitresses, bartenders	68.7 (10)	70.1 (10)	72.5 (9)
Launderers, drycleaners, and pressers	23.8 (34)	71.2 (9)	69.8 (10)

Tables 3.4.5 and 3.4.6 list the highest percentage of male and female dominated occupations respectively in 1986, 1991 and 1996. All of the top 10 occupations for each gender can be explained by 12 occupations for each of the 3 time periods observed. During this 16 year period females have become more prominent in professional and clerical occupations, which have risen to join the top 'female' occupations, e.g. bookkeepers and cashiers; clerical n.e.c.; and clerical supervisors. Also, there was a rise in the number of service workers n.e.c. in 1991 that continued through to 1996. During the same time period there was a tendency for 'male occupations' to be more labour intensive, e.g. wood preparation workers and paper makers; and cabinet makers and related woodworkers.

Table 3.4.5: **The Highest Male-Dominated Occupations (Based on Percentage Male in Each Occupation) in New Zealand, 1986, 1991 and 1996**

Occupation	1986	1991	1996
Bricklayers, carpenters, and other construction workers	99.2 (1)	99.1 (1)	98.9 (1)
Stationary engine and related equipment operators n.e.c.	99.0 (2)	98.4 (4)	98.7 (2)
Transport conductors	98.9 (3)	94.9 (10)	87.5 (20)
Miners, quarrymen, and well-drillers	98.6 (4)	98.5 (3)	97.8 (4)
Stone cutters and carvers	98.5 (5)	98.9 (2)	96.9 (6)
Aircraft and ships officers	97.5 (6)	95.7 (8)	96.6 (7)
Plumbers, welders, sheet-metal and structural metal preparers and erectors	96.8 (7)	96.7 (6)	98.1 (3)
Forestry workers	96.6 (8)	96.1 (7)	94.8 (9)
Machinery fitters, machine assemblers, and precision instrument makers (except electrical)	96.5 (9)	97.5 (5)	97.5 (5)
Painters	96.1 (10)	94.7 (12)	94.8 (10)
Wood preparation workers and paper makers	94.2 (13)	94.9 (9)	93.4 (13)
Cabinet makers and related woodworkers	92.2 (18)	91.8 (17)	95.8 (8)

Table 3.4.6:   The Highest Female-Dominated Occupations (Based on Percentage Female in Each Occupation) in New Zealand, 1986, 1991 and 1996

Occupation	1986	1991	1996
Stenographers, typists and card-and-tape-punching machine operators	98.3 (1)	96.3 (1)	96.0 (1)
Housestaff and related housekeeping service workers n.e.c.	86.0 (2)	82.4 (4)	80.7 (4)
Telephone and telegraph operators	85.6 (3)	82.7 (5)	79.6 (6)
Housekeeping and related service supervisors	85.4 (4)	86.9 (2)	86.1 (3)
Hairdressers, barbers, beauticians	85.1 (5)	86.8 (3)	87.3 (2)
Computing machine operators	84.3 (6)	69.5 (11)	68.1 (14)
Tailors, dressmakers, sewers, and upholsterers	78.9 (7)	72.7 (10)	69.4 (12)
Bookkeepers, cashiers	75.4 (8)	78.8 (6)	80.0 (5)
Clerical n.e.c.	73.1 (9)	77.2 (7)	73.6 (10)
Medical, dental and veterinary workers	72.4 (10)	73.1 (9)	74.0 (9)
Service workers n.e.c.	54.2 (20)	75.0 (8)	77.8 (7)
Clerical supervisors	70.9 (12)	60.7 (16)	76.9 (8)

Alternative methods in which to measure the overall occupational segregation of males and females is the use of indices that encompass all occupations. Typically, such indices either measure horizontal occupational segregation (males and females employed in various types of occupations), or vertical occupational segregation (the level of seniority for males and females in various occupations). As no one index can cover both horizontal and vertical segregation, it is important to identify and apply a variety of indices that have been commonly used at both the horizontal and vertical level.

3.5 Occupational Segregation in the New Zealand Labour Market - Horizontal Segregation

Whilst there are a variety of indices for measuring the extent of horizontal occupational gender segregation, Siltanen *et al.* (1995) noted that *"on closer inspection many of these indices turn out to be variations of a basic index, or simply different ways of expressing the same index"* (p. 87). In particular, Siltanen *et al.* identified five main horizontal segregation indices that were repeatedly used in various studies: The Index of Dissimilarity (ID); the Sex Ratio (SR); the Women and Employment index (WE); the Gini index (G) and the Marginal Matching Index (MM).[10]

The ID has been the most widely used measure of occupational segregation and has been applied to data in countries such as the U.S. (Jacobs, 1989), the U.K. (Tarling, 1988) and in New Zealand by Van Mourik *et al.* (1989). ID is expressed as the proportion of all females who are in 'female occupations' minus the proportion of all males in 'female occupations'. For the ID index, along with the SR and G indices, 'female occupations' are regarded as those where females are over-represented relative to their share of the labour force. Similarly, 'male occupations' are those in which

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[10]   More details of the ID, SR, WE, G and MM indices can be found in Siltanen *et al.,* 1995, pp. 90-5.

males are over-represented relative to their share of the labour force as a whole (Siltanen *et al.*, p. 90).

$$ID \quad = \quad F_f/F - M_f/M \tag{1}$$

Where: F_f = Number of females in 'female occupations';
F = Number of females in the labour force;
M_f = Number of males in 'female occupations', and
M = Number of males in the labour force.

The SR index has been used by the Department of Employment in the U.K. (Harkin, 1981, 1992). The index is the actual number of females in 'female occupations'; divided by the number of females there would be in these occupations if no segregation existed, minus the equivalent ratio of females in 'male occupations'. This is all divided by the total number of workers in the labour force divided by the number of females in the labour force (Siltanen *et al.*, 1995, p. 91).

$$SR = \quad N/F(F_f/N_f - F_m/N_m) \tag{2}$$

Where: N = Total number of workers in the labour force;
N_f = Total number of workers in 'female occupations';
F_m = Number of females in 'male occupations', and
N_m = Total number of workers in 'male occupations'.

Alternatively a standardised version can be used that provides a constant upper limit so that comparisons can be made with other indices utilised.

$$SR^* = \quad F_f/N_f - F_m/N_m \tag{3}$$

The WE index was introduced in an OECD report in 1980. It is simply defined as absolute sum of the differences between the observed and expected proportions of females in each occupation. (Siltanen *et al.*, 1995, p. 91)

$$WE = \quad \sum |F_i/F - N_i/N| \tag{4}$$

Where: F_i = Number of females in occupation$_{(i)}$, and
N_i = Total number of workers in occupation$_{(i)}$.

Or: $\quad WE = ID[2M/N] \tag{5}$

The G index differs from most indices of inequality as it takes direct account the way occupations are distributed throughout the possible levels of female to male concentration. For the G index, occupations are ordered by the ratio of females to

males in each occupation, therefore running between the extremes of complete 'femaleness' and complete 'maleness' (ibid., p. 92). Despite several formulas available for the G index, Siltanen et al. simplified it as:

$$G \;=\; 1/FM \sum_{i=2}^{n} \{M_i \sum_{1}^{i-1} F_t \;-\; F_i \sum_{1}^{i-1} M_t\} \tag{6}$$

Where: i = ith occupation, and
            t = an occupation included in the cumulative total.

The MM index was developed by Siltanen et al. and used for reports on occupational gender segregation in the European Community (p. 15). The index differs from the others discussed above in its definition as it measures the strength of relationship between gendered occupations and the gender of incumbents. For this index 'female occupations' are defined as those with the highest concentration of females that together have the same absolute number of workers, male and female, as there are females in employment. 'Male occupations' are defined as those with the highest concentration of males which together have the same number of workers, male and female, as there are males in employment (ibid., p. 15). Hence, the MM index is the number of females in 'female occupations' multiplied by the number of males in 'male occupations', minus the number of females in 'male occupations' multiplied by the number of males in 'female occupations'. This is collectively divided by the total number of male workers in the labour force multiplied by the total number of female workers in the labour force.

$$MM = (F_f M_m - F_m M_f)/FM \tag{7}$$

Where: M_m = Number of males in 'male occupations'.

Siltanen et al. noted that results of these indices would depend on the definition of 'male occupations' and 'female occupations'. The definitions chosen above for the ID, SR, WE and G indices would involve choosing a cut-off point for occupations ordered by the female to male ratio. However, the cutting point for the MM index is selected to *"provide a consistent measurement of the segregation relationship, by adjusting to changes in the number of persons employed"* (p. 15).

Furthermore, Siltanen et al. identified that direct comparisons of the 5 indices cannot be achieved due to the similarity of 2 of the indices with a third. The WE and G indices are strongly related to the ID measurement of segregation. As equation (5) shows, the WE is equal to the ID multiplied by twice the male share of the labour force. Therefore, comparisons involving the two indices would show conflicting results as the difference between the two indices lies in the gender composition of the labour forces and not with the issue of segregation. Regarding the G index, once occupations are sorted into the two gendered sections, the G and ID index become the same. Because of the relationship between the ID index and the WE and G indices, only the ID, SR

and MM indices have been applied to the New Zealand data in this thesis. Any conflicting results between the ID and WE is explained by labour force composition. Also, whilst the ID index is a version of the G index, the ID has been calculated due to its wide use and comparability with other studies (Siltanen *et al.*, 1995, p. 94).

As far as the results of the ID, SR* and MM indices applied to New Zealand occupational data is concerned, Table 3.5.1 displays the results for 6 time periods: 1971, 1976 and 1981; and 1986, 1991 and 1996. From these results, 2 issues arise. Firstly, as each index varies in its construction, inevitable differences arise in the values of one index compared to another. Between 1971-1981 the MM index decreased by 0.9 percent but between 1986-1996 the decrease was more substantial at 9.9 percent. Similarly, whilst there was a small percentage decrease of 3 percent between 1971-1981 for the SR* index, the percentage change between 1986-1996 was 8.5 percent. Yet, percentage changes for the ID index during the 2 time periods displayed the same trend but at a different magnitude. Between 1971-1981, the ID index decreased by 8.3 percent. However, for 1986-1996, the decrease was slightly larger at 11.3 percent. In an attempt to identify an appropriate measure of horizontal gender segregation from the various indices available, Siltanen *et al.* listed and applied 7 criteria to the indices observed. From these 7 criteria, the SR* index failed on 4 counts, the ID index on 2 and the MM index met all criteria outlined.[11]

Table 3.5.1: The MM, ID and SR* Indices of Horizontal Occupational Segregation in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996

Year	MM	ID	SR*
1971	.563	.63	.564
1976	.572	.616	.574
1981	.558	.578	.547
1986	.537	.548	.527
1991	.516	.525	.509
1996	.484	.486	.482

Although it is difficult to determine the level of significance for such changes, the last 3 decades have shown an improvement in New Zealand females entering 'male occupations'. However, the largest improvements have come about from 1986 onwards for all 3 indices used.

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[11] The 7 criteria involved (1) Symmetry regarding males and females (2) A constant upper limit (3) A constant lower limit (4) Size invariance (5) Occupation equivalence (6) Sex composition invariance (7) Gendered occupations invariance. Siltanen *et al.* found that the ID measurement failed on the sixth and seventh account and the SR measurement failed on the first, second, sixth and seventh account. Of the other 2 indices that were applied by Siltanen et al., the WE index failed on the same accounts as the SR index whilst the G index failed on the same accounts as the ID index.

3.6 Occupational Segregation in the New Zealand Labour Market - Vertical Segregation

Smith (1983) ascertained that concerning analysis of horizontal gender segregation, *"although they* [horizontal gender segregation] *take account of the degree to which men and women are differentially distributed between occupations, they fail to consider the level of seniority within an occupation"* (p. 42). Therefore, vertical gender segregation also requires analysis. In terms of a total analysis of vertical gender segregation, like horizontal gender segregation, there is no clear way in which to provide information on occupations that show the level of vertical gender segregation. Census data, although limited in its usefulness, provides the only real option as far as an overall comparison is concerned. Schemes for grouping data to highlight vertical gender segregation have varied across studies. Smith (1981 and 1983) grouped occupations that were similar in the use of skills, materials and techniques in the same type of environment. This involved sorting workers into 3 occupational groups of employers and self-employed, white-collar workers and manual workers. White-collar workers were further classified as higher professionals, lower professionals, administrators and managers, clerical workers, sales-workers, and foremen and supervisors. Other studies by Moir (1977), Brosnan (1987), Gwartney-Gibbs (1988) and Van Mourik *et al.* (1989) used various levels of the New Zealand Standard Classification of Occupations to test for such segregation. The actual tests employed for vertical gender segregation were generally similar across most studies. Whilst the studies by Smith (1983) concentrated on white-collar workers only, the work by Moir (1977), Brosnan (1987), Gwartney-Gibbs (1988) and Van Mourik *et al.*(1989) looked at all workers. Three measurements of vertical gender segregation have been put forward by studies concentrating on New Zealand data.

The Crude Measure of Differentiation (CMD) employed by Moir (1977), Smith (1983), Brosnan (1987) and Gwartney-Gibbs (1988) measured the percentage of females who would have to change occupations for their occupational composition to be identical to that of males.

$$CMD \quad = \quad \tfrac{1}{2}(\sum | (X_a/\sum X_a) - (Y_b/\sum Y_b) |)100 \qquad\qquad (8)$$

Where: X_a =   Number of males in occupational category$_{(a)}$;

$\sum X_a$ =   Total number of males in all occupational categories;

Y_b =   Number of females in occupational category$_{(b)}$, and

$\sum Y_b$ =   Total number of females in all occupational categories.

Problems of the occupational grouping selected arise when such measures are used. Smith (1983) noted that *"the size of each occupational category in relation to the total (the occupational structure) may operate to distort the amount of occupational differentiation"* (p. 45). Furthermore, Van Mourik (1989) determined that *'it was not meaningful to look at a redistribution of females across occupations required to reduce occupational segregation without taking into account that this may have an unrealistic effect on the occupational distribution of the labour force'* (p. 34). Therefore, to rectify

this problem, Moir (1977) and Smith (1983) also implemented a Standardised Measure of Differentiation (SMD). The measure assigned 1,000 people to each occupational category with the same gender ratio for each category as actually existed in the raw occupational data.

$$\text{SMD} = \frac{1}{2}(\sum | (X_c/\sum X_c) - (Y_c/\sum Y_c) |)100 \tag{9}$$

Where: X_c = $X_a/Z_a)1000$;
Z_a = Total number of males and females in occupational category$_{(a)}$;
$\sum X_c$ = $\sum(X_a/Z_a)1000$;
Y_c = $(Y_a/Z_a)1000$;
Y_a = Number of females in occupational category$_{(a)}$, and
$\sum Y_c$ = $\sum(Y_a/Z_a)1000$.

However, such an index is vulnerable to distortion, i.e. if there was an occupation with only one worker. As Van Mourik *et al.* (1989) pointed out, *"it has no sensible interpretation because it is unduly sensitive to fluctuations in the sex ratio in occupations which account for only a very small number of workers"* (p. 34). Hence, Van Mourik *et al.* presented a further index, S_t. This measured the minimum proportion of males and females who would have needed to change their occupations to make the occupational distributions of both genders the same. This was under the condition that the total number of jobs for each occupation remained unaffected.

$$S_t = 2(X_a/Z_a)(1 - X_a/Z_a)\text{CMD} \tag{10}$$

Table 3.6.1 shows the results of recent studies conducted for the New Zealand labour market using CMD, SMD and S_t indices. The study of only white-collar workers by Smith (1983) using both the CMD and SMD measures found that the level of vertical gender segregation increased from 1956-1981. Other studies that included all workers had slightly differing results. Moir (1977) found that for all workers the CMD and SMD measures both decreased slightly between 1956-1971. However, this was calculated using data only at a 1-digit level.[12] Gwartney-Gibbs (1988) noted a small reduction at both the 1 and 2-digit level, using the CMD measure between 1971-1981. By using CMD and S_t measurements, Van Mourik *et al.* (1989) found that vertical gender segregation slowly decreased for most indices used between 1971-1986. Van Mourik *et al.* decomposed changes in the CMD and S_t measurements from 1 period to another. For the CMD measurement, it was the contribution of the change in the demand for occupations, in the sex ratio within each occupation and interaction effects. The authors found the contribution of the change in the demand for occupations and the gender ratio within each occupation collectively caused a lowering of the CMD index. For the S_t measurement, it was the contribution of the change in the CMD, in female

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[12]   1-digit data involves listing occupations into 7 main areas.

labour force participation and interaction effects. Van Mourik *et al.* found increased female labour force participation counteracted the decline.

Table 3.6.1: **Summary of Results for CMD, SMD and S_t Indices for New Zealand Studies, 1956, 1961, 1966, 1971, 1976, 1981 and 1986**

Author	Index	Digit Level	1956	1961	1966	1971	1976	1981	1986
Moir (1977)	CMD	1	44.5	48.2	46.1	42.8	-	-	
	SMD	1	47.2	51.1	50.2	44.1	-	-	
Smith (1983)[1]	CMD	1	33.1	32.9	33.3	39.7	40.9	41.2	
	SMD	1	47.2	49.4	49.7	53.3	51.9	48.6	
Gwartney-Gibbs (1988)	CMD	2	-	-	-	62.5	60.5	57.6	
	CMD	1	-	-	-	42.8	42.4	41.9	
Van Mourik *et al.* (1989)	CMD	1	-	-	-	43.5	42.13	41.47	40.05
	CMD	4	-	-	-	74.15	71.82	67.84	65.28
	St	1	-	-	-	17.16	17.21	17.58	18.03
	St	4	-	-	-	32.13	32.29	31.33	30.51

[1]   Smith's study involved white-collar workers only.
Source: Moir (1977), Smith (1983), Gwartney-Gibbs (1988), and Van Mourik *et al.* (1989).

Despite a number of studies conducted using data from the previous 2 decades, there has been little analysis of the issue of vertical gender segregation in New Zealand beyond the work by Van Mourik *et al.* in 1989. Therefore, this thesis analyses the CMD, SMD and S_t indices for 1971, 1976, 1981; and 1986, 1991 and 1996 for both white-collar workers in Table 3.6.2 and white-collar and manual workers in Table 3.6.3. However, there are a number of factors that need explaining when constructing such indices. The data set used by studies investigating the level of vertical gender segregation in New Zealand has generally consisted of numbers of full-time salary and wage earners. Part-time workers, employers, the self-employed and unpaid workers in family businesses were not considered as Van Mourik *et al.* (1989) noted that consistent data for such groups were not available at a higher occupational digit classification (p. 36). The level of aggregation for the data set used here somewhat overcomes this problem as all but unpaid workers in family businesses are included in the data set. We must be mindful though that the large proportion of part-time workers, especially female, may have an influential effect on the outcome.

Table 3.6.2: The CMD, SMD and S_t Measurement of Vertical Gender Segregation For White-Collar Workers in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996

Year	CMD	SMD	St
1971	31.5	46.4	15.5
1976	34.0	43.4	16.9
1981	32.9	42.2	16.4
1986	33.6	33.6	16.8
1991	30.4	26.2	15.2
1996	25.6	22.4	12.7

Table 3.6.3: The CMD, SMD and S_t Measurement of Vertical Gender Segregation for All Workers in New Zealand, 1971, 1976, 1981, 1986, 1991 and 1996

Year	CMD	SMD	St
1971	34.3	48.1	14.8
1976	35.4	42.4	15.7
1981	35.8	41.6	16.5
1986	33.0	34.3	15.5
1991	32.6	27.5	15.6
1996	28.9	24.6	14.1

The 2-digit occupational classification has meant that the data set in this thesis can only distinguish between those involved in white-collar activities and those in manual activities. White-collar occupational classifications are defined as professional and technical activities, administrative and managerial activities, clerical activities, sales activities, foremen, inspectors and supervisory activities. This differs slightly from studies by Smith (1981 and 1983) that defined professional workers as either higher professional or lower professional employees.[13]

Regarding Table 3.6.2 which shows the results for white collar workers, for 1971-1981, both the CMD and S_t indices showed a slight increase whilst the SMD index displayed a slight decrease. Yet, between 1986-1996, all 3 indices decreased by a considerable amount. The CMD dropped by 8, the SMD by 11.2 and the S_t by 4.1. Despite vertical gender segregation worsening between 1971-1981, there has been a significant improvement for females employed in white-collar activities between 1986-1996. When all workers were included in the 3 indices analysed, Table 3.6.3 shows that overall, results do not depart greatly from the findings of white-collar workers. Again,

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[13] A full classification of occupations into either white-collar or manual groups is included in the Appendix A.

only the SMD index decreased between 1971-1981 whilst all 3 indices declined between 1986-1996. Nevertheless, the reduction between 1986-1996 was not as pronounced as for white-collar workers only, during this period.

3.7 Effects of Occupational Segregation on the Work Force

Previous studies into occupational differences in New Zealand, and the results presented above, have shown that there is still a fair degree of occupational segregation at both the horizontal and vertical level. To what extent, if any, would occupational segregation disadvantage females in the work force? Van Mourik *et al.* (1988) indicated a variety of reasons why such segregation in New Zealand was unacceptable. Studies by Smith (1981, 1983) found that females were not evenly spread throughout occupations. Females made up a small proportion of the higher paid white-collar occupations and a far larger proportion of lower paid professional and clerical occupations. Werneke (1978) believed that because of this, females were in a more vulnerable situation than males during times of economic downturn or recession. Furthermore, Van Mourik *et al.* (1989) claimed that as a large number of females in the work-force were involved in part-time activities, such jobs carried less job security and were again prone to redundancies when the economy experienced a downturn (p. 31). Yet, these authors are incorrect on both counts. The economic restructuring and recession that occurred during the late 1980s and early 1990s in New Zealand impacted far more negatively on males than females. Between 1986-1991 the total number employed in New Zealand decreased by around 100,000 but of these only around 3,750 were females (Statistics New Zealand, 1999, p. 87). There are two reasons for this. Firstly, the restructuring of the New Zealand economy impacted heavily on industries and occupations such as the manufacturing sector that employed a large percentage of males. Females were instead concentrated in service-based industries and occupations that experienced an increase in demand, thus insulating to a certain extent the employment changes that occurred during this time. Secondly, as a large proportion of females were concentrated in part-time positions, this also meant that females became somewhat immune from the economic changes during this period whilst males experienced a large decrease in full-time positions available to them. Between 1986-1991, females employed in full-time positions decreased 4.5 percent, compared with a decrease of 12.7 percent for males (ibid., p. 87).

Van Mourik *et al.* (1989) stated that *"occupational segregation resulting from labour market imperfections such as discriminatory attitudes hinders the optimal allocation of human resources"* (p. 31). Such impediments to occupational mobility in response to supply factors such as education and training and demand factors through economic restructuring, decreases the potential growth in society's productive capacity. This in turn puts upward pressure on the unemployment rate. However, as Chapter 2 has illustrated, recent findings have shown that females are now out-achieving males in enrolments and qualifications. Furthermore, though Van Mourik *et al.* asserted that the female labour force was concentrated in relatively few occupations during employment growth, in New Zealand's case, the restructuring of the economy which began in the mid-1980s had caused a shift towards growth in service sector industries, which females predominantly entered.

Van Mourik *et al.* highlighted a social motive for aiming towards a decrease in occupational segregation. They contended that a division of labour existed because *"Discriminatory practices in hiring and career advancement and educational stimuli based on traditional norms and practices tend to generate a division of labour which may not necessarily match individuals' natural abilities, aptitudes and interests to the jobs available"* (p. 33). The fact that females do not have the opportunity to enter occupations of their choice and are unable to reach their full potential is to say the least questionable. When considering training and initial entrance into the work force, there appears to be no observable impediment that hinders females entering an occupation that they wish to be part of. Legislation has meant that all vacancies carry an equal employment opportunity for all prospective employees. Further, campaigns in New Zealand over the last three decades have emphasised and encouraged females into entering otherwise 'male' occupations, e.g. the "girls can do anything" campaign of the 1970s onwards.

Van Mourik *et al.* also highlighted a danger in the reduction in horizontal segregation that may correspond with an increase in vertical segregation. Males and females would make up a more even proportion of those entered in occupations. However, males would take up more senior positions in 'female occupations' than would females in 'male occupations'. Whilst Van Mourik *et al.* conceded that at that stage this was not the case in New Zealand, data concerning horizontal and vertical segregation between 1986-1996 has found that both forms of segregation have decreased.

Though the overall extent of occupational segregation has been mixed in terms of the position of females, such indices mask the fact that during the last 10 years occupational segregation has been to the advantage of females, and to the detriment of males. This is because males have been employed in occupations that have been dented during an economic recession. However, like similar enrolments in education at various levels, the end goal, which many view as a necessity, equal proportions of both genders in most occupations, is questionable and probably unachievable.

Probably, the biggest concern made by those who have decried the fact that females are concentrated in few positions is its relation to the issue of earnings. Gwartney-Gibbs (1988) stated that *"the best documented penalty associated with working in female typed occupations is lower earnings, both for men and women"* (p. 264). Therefore, it is the issue of pay differentials in New Zealand that we turn to next.

3.8 Pay Differentials in the New Zealand Labour Market

Given that differences still persist in terms of the occupation males and females have entered into; there has been a high level of attention towards pay differentials by researchers. During recent decades many researchers found that occupations that have a high percentage of female workers generally paid less than occupations with a low percentage of female workers. Also, there is often a difference between earnings of males and females within the same occupation. Analysis of pay differentials provides various political and special interest groups with a larger variety of options in which to press their views on pay differences. It is also possible to arrive at a range of different

estimates of the earnings gap depending on what is included as a measure and which types of workers are involved.

3.8.1 General Comparisons of Wages

Generally, discussion of pay equity is couched in terms of wages. Much has been made of the average yearly wage rate received by all males and females, working or otherwise. The New Zealand Alliance Party (1997) noted that if one was to include all persons, the female median annual income was 57 percent of what all males earned. For only those in the work force the female median income was $19,200 and the male median income was $28,800, indicating that working females earned 66 percent of what males earned (p. 1).

Often, comparisons of earnings between the genders involve analysis of weekly and hourly earnings, which provides another angle from which to view earnings differences that may exist. In a press release by the New Zealand Labour Party (1998), it was mentioned that the household economic survey found that if all males and females were included, females earned on average $380 a week compared with $617 a week for males. This is a wage gap of 38 percent (p. 1). This did not mention what groups of males and females were included, i.e. whether they were referring to all males and females or just those currently working.

The New Zealand government (1998) noted that working females earned 75 percent of the total weekly earnings of males. This gap was smaller than for Australia and Canada that was 66 percent and 73 percent respectively of total weekly earnings of males (p. 1). If data is classified further into year groups, and whether females had any offspring, differences in wages between genders reduce even more. Data in the U.S. provides a striking example of wage parity. The NLS of Youth found that among workers with no offspring, who were aged 27-33, female earnings were close to 98.0 percent of males' (Furchtgott-Roth and Stolba, 1998). At an hourly rate, the government outlined that in 1997 females earned 80.5 percent of males' total hourly earnings (New Zealand Government, 1997, p. 1). Indeed, Figure 3.8.1 shows that the ratio of female total hourly and weekly earnings to males has not changed significantly over the last decade.

Hyman (1994) stated that *"There is no 'right answer' on average earnings or the female-male ratio. Each measures something slightly different and is relevant to different questions"* (p. 90). However, Hyman noted that *"to access the extent of discrimination, ordinary-time hourly earnings … are often used, since working fewer hours and less over-time may be regarded as a non-discriminatory reason for women's lower average pay"* (p. 90). A breakdown of ordinary hourly and weekly earnings is illustrated in Figure 3.8.2. Both ratios have increased moderately over the time period. Figure 3.8.3 displays the average overtime hourly and weekly ratios for the last 10 years. During the same time period as Figure 3.8.2, the ratios for overtime work stagnated somewhat. Also, overtime-weekly earnings actually decreased from 1988-1998.[14]

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[14]   The definitions for average hourly ordinary time earnings; average weekly ordinary time earnings and average weekly earnings are included in Appendix C.

Figure 3.8.1: **Total Earnings for the Female/Male Ratio of Average Hourly Earnings (1988-1998) and Average Weekly Earnings (1977-1998) in New Zealand**
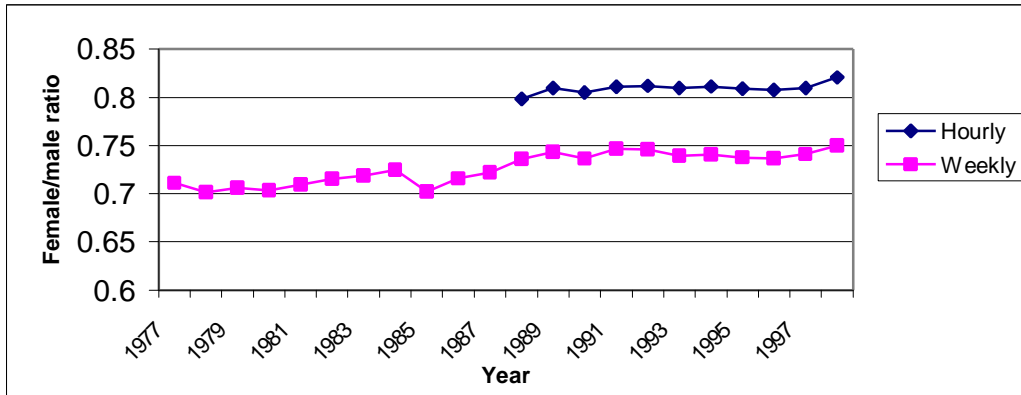
Sources: Department of Labour, 1977-1987; Statistics New Zealand, *Key Statistics*, 1988-1997.

Figure 3.8.2: **Total Earnings for the Female/Male Ratio of Average Hourly and Weekly Ordinary Time in New Zealand, 1973-1998**
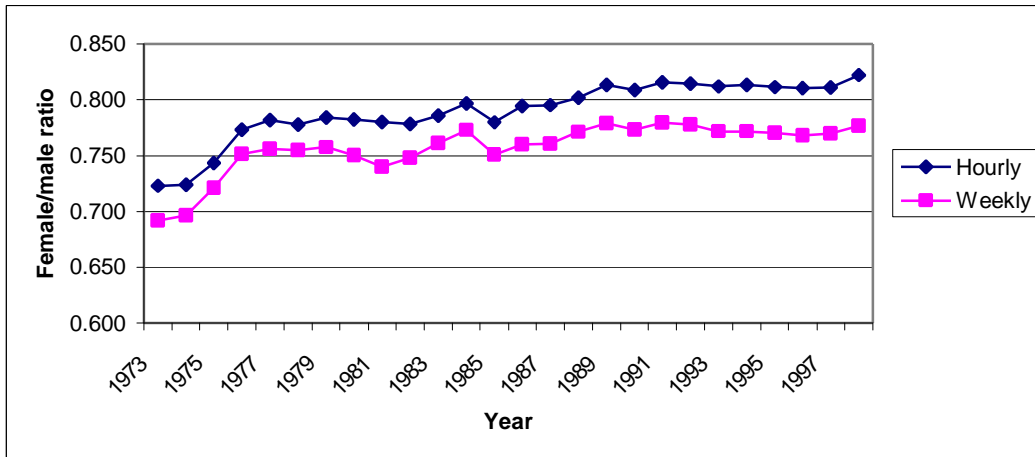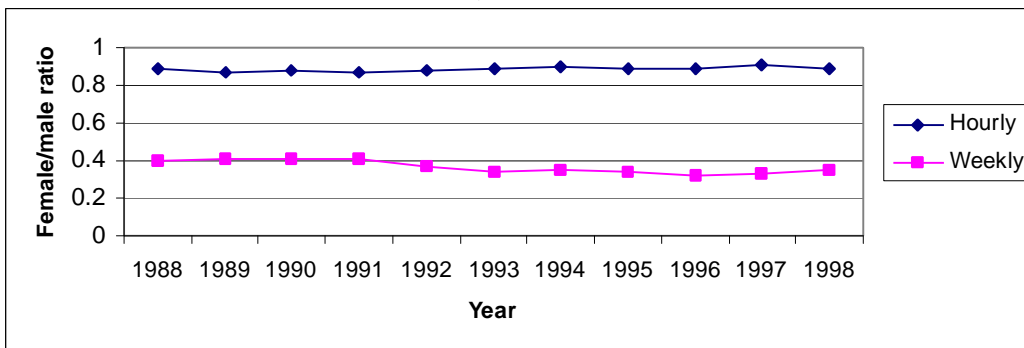

Source: Department of Labour, 1973-1987; Statistics New Zealand, *Key Statistics*, 1988-1997.

Figure 3.8.3: **Total Earnings for the Female/Male Ratio of Average Hourly and Weekly Overtime in New Zealand, 1973-1998**

Source: Statistics New Zealand, *Key Statistics*, 1988-1998.

Hyman (1981), reviewing a book pertaining to the earnings of females in Great Britain[15], related the book's findings to the New Zealand situation. Hyman claimed that if females worked the same amount of average hours as males in both ordinary and over-time by working an extra 1.1 and 2.1 more hours in ordinary and over-time respectively, the $79.82 difference in gross weekly earnings in February 1980 would narrow by $16.72, or 20.9 percent. Even though Hyman distinguished between ordinary and over-time earnings, this was still a rather simplistic approach in attempting to find out reasons for differences in earnings. More specifically, it did not indicate the type of employment that has contributed to the increasing participation of females, i.e. the distinction between full-time and part-time work.

3.8.2 Full-Time and Part-Time Workers

As was shown in Table 3.1.1, numbers of females in full-time and part-time work have continued to grow. Actual numbers of female full-time workers grew at a faster rate than numbers of male full-time workers for 1971-1976, 1976-1981 and 1991-1996. Numbers of males working part-time grew at a faster rate than female numbers working part-time over all time periods observed. Nevertheless, as there is still a larger number of females in part-time employment than males, many have seen this heavy concentration of females in part-time work as a disadvantage. Comparatively low rates of pay, unsuitable employment conditions and little employment security has been listed as possible disadvantages (Statistics New Zealand, 1999, p. 89). The fact that females are more prevalent in part-time employment is reiterated when a difference in the number of hours worked per week between the genders is broken down. In 1996, females were more likely to work up to 39 hours per week, whilst more males were likely to work 40 or more hours per week. Among full time workers, males and female percentages working 40 to 49 hours were fairly similar (52.7 percent compared with 53.3 percent respectively). Females were more likely to have worked between 30-39 hours (26.8 percent compared with 7.1 percent for males) whilst males had the highest probability of working 60 or more hours (18.8 percent for males compared with 8.9 percent for females) (ibid., p. 119).

One has to ask whether the instance of workers wanting more hours of work would fall more heavily on part-time workers than full-time workers? Since there are more females than males working part-time, would females also experience a higher instance of under-employment? Up until recently, this appeared to be the case. In a media release on the behalf of the New Zealand Council of Trade Unions (1998), Secretary Angela Foulkes noted that many females wanted to work longer hours but many had no choice but to work part-time. Foulkes also pointed out that New Zealand had the third highest rate of involuntary part-time employment among females within the developed OECD countries. Whilst the percentage of females wanting more hours of employment has risen, it was not mentioned in the article that, among part-time workers in 1997 more males than females wanted more hours of work. Davidson and Bray (1994) examined the level of underemployment among part-time workers between 1987 and 1993. During this time, there were a considerably higher percentage of females

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[15]   Sloane, P.J., (1980), *Women and Low Pay*.

wanting more hours of employment. However, recent data concerning under-employment portrays a different scenario. In 1997, 27 percent of females working part-time preferred more hours of work (Statistics New Zealand, 1997). This was a slight decrease from 28 percent in 1993 (Davidson and Bray, 1994, p. 31). However, the percentage of male part-time workers wanting more hours in 1997 was higher than for females at 35 percent (Statistics New Zealand, 1997). Therefore, unlike results of previous years, it is now males who have become the gender to be considered under-employed. A reason for this sudden change most probably revolves around the ECA. This led to a severe drop in the number of male full-time workers, along with a sharp increase in male part-time workers during the 1990s.

3.8.3 Wages and Family Responsibilities

For many part-time workers, especially females, participation in part-time employment is often a conscious choice and not an alternative for failing to obtain a full-time occupation. Bate *et al.* (1998) noted that the choice of part-time employment often revolves around the issue of family and child-care responsibilities, whereby it becomes a point for females to often return to the work force while continuing to maintain unpaid family responsibilities (p. 9). However, Bate *et al* also found a big increase in part-time work activity by females past their main child care years (pp. 16-21).

Figure 3.8.4: Full-Time Workers by Age Bracket in New Zealand, 1996
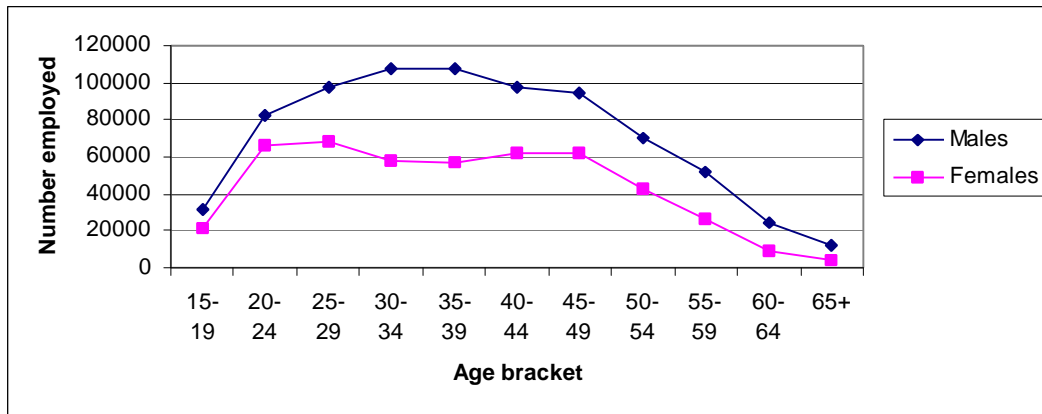
Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1996.

Figure 3.8.4 illustrates that females participation in full-time work drops for those aged in their late-20s and during their 30s. This reduction represents a bi-modal pattern, more commonly referred to as an M-shaped curve. This pattern in the female labour market is due to the early years of raising a family and childcare which causes a dip in the participation rates of full-time work. Afterwards, females often re-enter the work force, leading to rising participation rates. However, increases in fertility and the rising age of females starting families has caused this trend to stagnate over recent years. Figure 3.8.5 shows the age breakdown of part-time workers in 1996. When examined by age group, there is a clear increase in the number of females participating in part-time employment during the ages of 30-40.

Figure 3.8.5: Part-Time Workers by Age Bracket in New Zealand, 1996
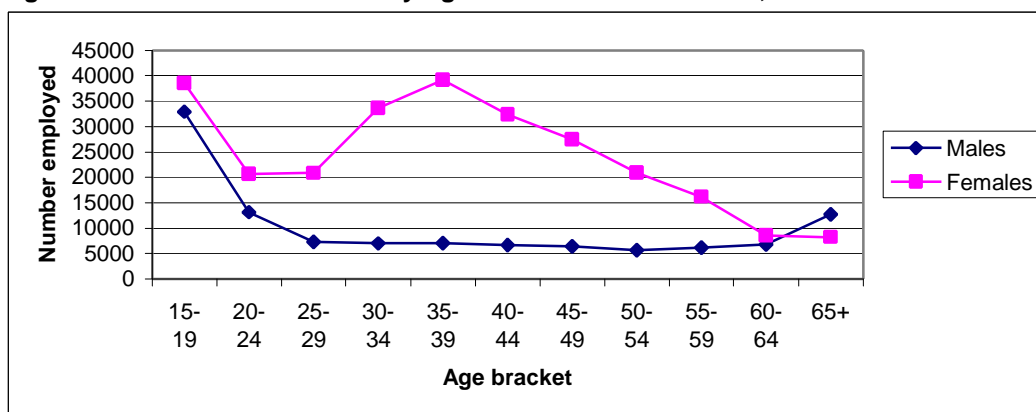
Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1996.

When looking at the breakdown of the age of children and hours worked by their mothers, the younger the child, the less hours are worked by their mother. In 1996, 61 percent of those employed females with children under one year of age worked less than 30 hours per week. When the youngest child was aged between 5-7, numbers of females employed in full and part-time occupations were fairly equal. For females with children aged between 13-17, the proportion of females in part-time employment was only 32.9 percent (Statistics New Zealand, 1999, p. 90).

Given the strong relationship between part-time work and child-care responsibilities, there is a clear distinction between males and females in terms of the earnings of couples. In 1996, the median income for males in couple-only families was $22,600 and $14,200 for females. Interestingly, in comparison with couple-only families, for two-parent families the median income for males jumped to $31,900 but decreased for females to $11,900 (Statistics New Zealand, 1998, p. 34 and p. 37). As discussed above, the probable reason for the differences is that females contribute more time looking after their offspring, whilst males may seek a higher paying job, work longer hours or take on a second job. This may be due to a loss of income as the female partner exits the labour force or shifts from a full-time to a part-time position, or compensating for extra expenses involving parenthood.

Various studies have shown that the effects of parenting on earnings have generally been to the detriment of females. Neumark and Korenman (1994) and Wood *et al.* (1993) pointed to findings in the U.S. of a perceived penalty to motherhood in terms of the earnings gap. However, this does not take into account the penalty upon others, such as the fathers who may find themselves working harder to meet financial demands that having offspring incurs. Waldfogel (1997) compared the wages of males and females at age 30 in the U.S. during 1980 and 1991 and found interesting results between mothers and non-mothers. Whilst the overall female/male wage ratio was 64 percent in 1980 and rose considerably to 84 percent in 1991, the disparity between mothers and non-mothers regarding the female/male wage ratio increased over the observed time period. In 1980, non-mothers earned 72 percent of the male wage,

compared with 60 percent for mothers. By 1991, non-mothers almost reached parity with male earnings at 95 percent (an increase of 23 percent), whilst the wage ratio for mothers only improved 15 percent to 75 percent in 1991 (p. 97). This issulstrates the danger of giving broad data, masking the fact that groups within such data may have made strong progress in terms of wages in comparison with males.

The coefficients involving family status used in the regression model by Waldfogel showed that males received a positive return for being married, and also a positive return through higher earnings for being previously married and having children. Yet, the author found females received negative returns through earning less during marriage and being a parent, even after human capital characteristics such as age, experience and education were controlled for in the regression model.

Therefore, to condense an earnings gap down to one number is fraught with misleading outcomes as it often hides any progress that have been made by females, particularly in various occupations. It should be noted that comparisons of pay differentials not only rely on what statistical analysis is used, such as hourly, weekly and median earnings, but it will also depend on the variables involved, including full-time work, part-time work, ordinary-time and over-time.

When discussing incomes for males and females, it is important to observe the current situation concerning income brackets those males and females have the greatest probability of being in. The most common income bracket for females in 1996 was the $10,001-$15,000 bracket with 20.04 percent of females aged 15 and over. The $5,001-$10,000 and $1-$5,000 brackets were second and third with 13.4 percent and 18.9 percent respectively. For males in 1996, the most common income bracket was between $30,001-$40,000, involving 13.77 percent of males aged 15 and over. The second highest income bracket of $5,001-$10,000 for males was only slightly behind at 13.74 percent whilst the third highest was $10,001-$15,000 inclusive of 12.25 percent of males aged 15 and over (Statistics New Zealand, Census of Population and Dwellings: Incomes, 1996,). It is important to note that the lower income brackets for both genders outlined above would involve many persons not in the labour force who would receive income from various sources such as student allowances, superannuation and benefit allowances.

In 1986, 4 percent of males and 0.2 percent of females aged 15 and over earned $40,001 or more. By 1996, these percentages had increased to 20.45 percent for males and 5.74 percent for females. This represented an overall increase for males by 356 percent, and a 2,870 percent increase for females (ibid., 1996).[16] Indeed, by 1999, a strong indication of the progress that females have made in attaining a higher share
of the higher income bracket included a doubling of the percentage of females in the top 10 percent of income earners compared with 1984. There was also a decline in the proportion of females in the bottom 20 percent of earners from around 75 percent in 1984 to 66 percent in 1984 (Nelson Mail, 1999, p. 1).

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[16]   The inflation rates for the 1986, 1991 and 1996 calender years were 17.2 percent, 1.0 percent and 2.1 percent respectively (Statistics New Zealand, *Key Statistics*, 1991-1996).

Figure 3.8.6: Ratio of the Percentage of the Female/Male Ratio of Incomes for those Earning $40,000+ in 1986, 1991 and 1996
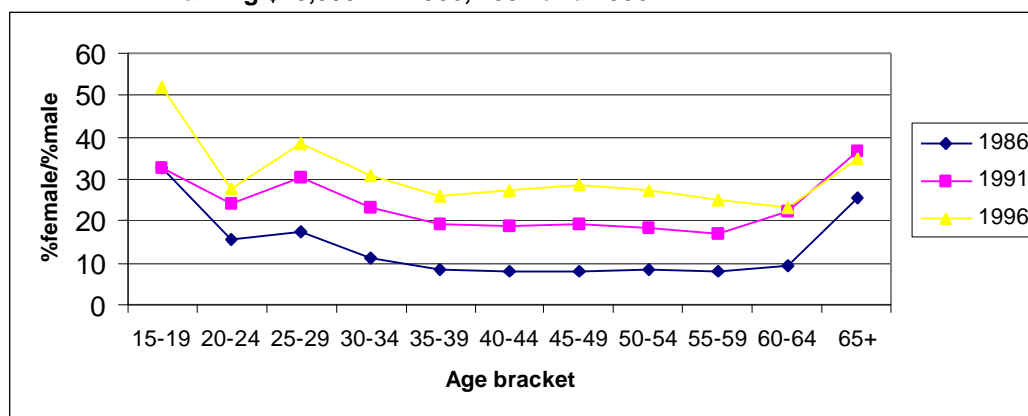
Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1996.

Whilst both genders have experienced an improvement in receiving higher earnings, overall, the increase has been faster for females than males. Figure 3.8.6 shows the ratio (times 100) of female percentage versus male percentage incomes greater than $40,001 for numerous age groups in 1986, 1991 and 1996. The only instance when the ratio decreased was for the 15-19 year old age group, which declined slightly between 1986-1991, and the 65+ age group which fell moderately from 36.5 percent to 34.8 percent between 1991-1996. Excluding these exceptions, improvements in the ratios have been evident at all age brackets. The income distribution of females versus males is far closer at the younger age brackets, i.e. those aged 19-34; and those aged 65 and over. At the other end of the scale, 20.6 percent of females earned less than $5,000 in 1996 compared with 28.9 percent in 1986. For males there was a slight increase in the percentage earning $5,001 or less. This rose from 11 percent to 11.5 percent in 1986 and 1996 respectively.

Table 3.8.1: Percentage of Female Workers in the 20-24 and 25-29 Age Bracket in New Zealand, 1986, 1991 and 1996

Income Bracket	20-24 (1986)	20-24 (1991)	20-24 (1996)	25-29 (1986)	25-29 (1991)	25-29 (1996)
1-5000	19.47	9.27	15.51	32.1	16.01	11.13
5001-10000	22.94	24.4	19.81	19.33	15.87	12.5
10001-15000	31.27	19.23	17.27	17.99	17.79	15.18
15001-20000	19.43	17.31	13.85	16.55	11.85	10.54
20001-30000	4.15	24.24	24.59	10.66	22.72	24.25
30001-40000	0.19	3	4.72	0.86	9.99	14.06
40001-50000	0.03	0.32	0.58	0.15	2.18	3.7
50000+	0.04	0.14	0.26	0.18	1.17	2.36

Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1986-1996.

Table 3.8.2: Percentage of Male Workers in the 20-24 and 25-29 Age Bracket in New Zealand, 1986, 1991 and 1996

Income Bracket	20-24 (1986)	20-24 (1991)	20-24 (1996)	25-29 (1986)	25-29 (1991)	25-29 (1996)
1-5000	8.9	5.48	12.4	3.86	2.86	4.32
5001-10000	17.19	25.74	18.22	10.04	14.82	10.03
10001-15000	32.63	13.29	13.25	21.36	8.85	8.52
15001-20000	25.38	19.40	14.7	26.56	13.10	9.16
20001-30000	12.42	26.48	27.93	29.62	30.54	30.16
30001-40000	1.11	6.17	8.32	3.68	17.42	20.85
40001-50000	0.22	1.28	1.88	1	6.69	8.83
50000+	0.21	0.63	1.17	0.9	4.27	6.81

Source: Statistics New Zealand, *New Zealand Census of Population and Dwellings*, 1986-1996.

For many, the ages of 20-29 are the development years for workers in terms of their proposed career choice. Tables 3.8.1 and 3.8.2 highlight the percentage of individuals in the 20-24 and 25-29 age brackets including all income sources in 1986, 1991 and 1996 for males and females respectively. For the 20-24 age bracket, there has been some similarity in terms of changes over the income levels for both males and females. The largest growth was for the $20,000-$30,000 income bracket for both genders, whilst the largest decrease for both genders has been the $10,000-$15,000 income bracket. However, for the 25-29 year age group the largest percentage increase for females has been the $20,000-$30,000 income bracket whilst for males it has been $30,000-$40,000. The largest reductions have been the $1-$5,000 income bracket for females and $15,000-$20,000 for males. What is noteworthy is that comparing 1986 to 1996, there has been a general decrease in the percentages of males in 2 of the 4 lower income brackets. The percentage of males in most of the higher income brackets for both age brackets has increased. For females however, there has been a larger percentage increase in most cases.

3.8.4 Surveys of New Zealand Graduates

In most instances, graduates are in their twenties by the time they obtain some type of tertiary qualification, particularly a university degree. As there are few opportunities to analyse the earnings of workers with similar qualifications who enter the work force around the same time period, analysis of recent university graduates provides an opportunity to determine the extent of any differences in earnings that may occur between the genders. However, such studies often mask or simply do not acknowledge the recent achievements of females in terms of earnings in relation to males in the work force. Karen Burge (1997), reviewing a follow up survey of New Zealand graduates by Cox and Pollock (1997) that began in 1991 and was revisited in 1996 noted that female graduates were taking home smaller pay packets than their male colleagues in most areas of the work-force. The study showed that females earned on average 15 percent less than males and were out earned by males in 73 percent of subject areas (p. A3). Overall the study found that for those persons who attained a diploma or degree from

university in 1990, the average wage for the males surveyed in 1991 was $29,006, whilst females were closely behind earning $27,883. The report found that by 1996, the gap for these same people had widened significantly whereby the average salary for males was $48,244 and $41,918 for females. Table 3.8.3 summarises these results.

Table 3.8.3: Average Salary Comparisons for Diploma/Bachelor Graduates in New Zealand, 1991 and 1996

Field of Study	No M or F	Gender	Salary 1991$	Female % of Male	Salary 1996$	Female % of Male	% increase 91-96	Overall % increase
Ag/Hort	12	F	20846	80.5	27767	70.7	133.2	143.4
	31	M	25906		39254		151.5	
Archi/Plan/Survey	13	F	26392	84.7	36883	96.3	139.8	130.7
	15	M	31166		38319		123	
Biological Sciences	31	F	24690	100.8	32627	100.3	132.1	132.5
	30	M	24505		32540		132.8	
Commerce	149	F	26601	93.5	47897	87.9	180.1	186
	259	M	28449		54504		191.6	
Comp Studies/Inf. Sci	7	F	26911	97.8	41591	80.6	154.6	171.3
	34	M	27517		51627		187.6	
Cons and Applied Sci	13	F	26636	91.8	34715	103.6	130.3	122.6
	1	M	29000		33500		115.5	
Dentistry	3	F	35000	108.2	60784	88.8	173.7	191.8
	5	M	32360		68419		211.4	
Education	115	F	28448	92.7	37986	95.1	133.5	131.8
	22	M	30681		39929		130.1	
Engineering	3	F	29000	95.8	39916	86	137.6	145.7
	63	M	30285		46437		153.3	
Fine Arts/Music/Drama	8	F	30250	125.5	44312	128.1	146.5	145.1
	6	M	24109		34582		143.4	
Forestry	0	F	0		0		n.a	136.8
	3	M	31000		42396		136.8	
Humanities	135	F	26933	103.2	38622	96.8	143.4	148
	48	M	26107		39894		152.8	
Law	43	F	25962	97.4	49630	99.9	191.2	188.7
	30	M	26662		49696		186.4	
Maths/Stats/Ops. Res	13	F	27108	99.2	37958	84	140	152.7
	19	M	27334		45162		165.2	
Med/Human Bio	35	F	39268	94.2	57002	89.8	145.2	148.8
	42	M	41705		63490		152.2	
Paramedical	5	F	23090	81.9	49840	103.2	215.9	191.4
	5	M	28180		48280		171.3	
P.E./Parks, Rec.	13	F	27249	110.6	36153	86.4	132.7	150.4
	11	M	24627		41863		170	
Physical Sciences	21	F	27379	92.5	38374	94.5	140.2	138.6
	39	M	29612		40608		137.1	
Social Sciences	127	F	29367	110.6	40257	106.8	137.1	139.4
	43	M	26563		37708		142	
Technology	9	F	24000	75.5	45250	81.8	188.5	180.3
	10	M	31779		55306		174	
Theology and Divinity	1	F	21000	61.8	32000	93.2	152.4	120.6
	3	M	34000		34333		101	
Veterinary Science	8	F	35325	100.9	47000	72.3	133.1	159.3
	1	M	35000		65000		185.7	
Total graduates:	782	F	27883	96.1	41918	86.9	150.3	158.5
(1520)	738	M	29006		48244		166.3	

Source: Adapted from Figure 5.1.1 (Cox and Pollock, 1997).

However, Table 3.8.3 highlights a number of factors that need to be explored. Firstly, of approximately 12,000 survey forms sent out in 1996, 2,756 were used but only 1,520 stated their salary in 1991 and 1996 so comparisons could be made. When graduates are categorised into the 22 graduate degrees, the problems of a small sample number become apparent. Out of the 782 females who were included, 526 graduated in only 4 diploma or degree programmes (commerce, education, humanities and social sciences). Out of the remaining 18 programmes 10 had less than 10 females in its sample, along with 7 with males in the same situation. This represents a minuscule sample size for some occupations. The use of averages to show any differences in overall wages between the genders was chosen over the use of a median value. However, a median value is not susceptible to outlier values, especially if more females are working part-time. Thus, the accuracy of these comparisons of overall gender earnings may be in doubt.

Cox and Pollock pointed out that *"Female graduates will also be disappointed to observe that after five years, in 16 of the 22 subject groups, they can anticipate lower salaries than their male classmates"* (p. 19). Yet, this statement ignores the fact that in many areas, females have improved their position in terms of earnings. Out of 21 categories where comparisons of male and female earnings can be made, females from 1991-1996 had either earned more on average than males or had closed the earnings gap in 11 categories.[17]

Table 3.8.4 shows that there is a larger discrepancy in wages from 1991-1996 for those with postgraduate degrees. In 1991 the earnings gap was $878. By 1996 the gap had risen considerably to $9,359. Given that only 138 people were used to obtain these comparisons, and there were 3086 people who obtained some type of postgraduate qualification in 1990, this means that 4.4 percent of the total postgraduate graduate population for that year was surveyed. Cox and Pollack conceded that *"samples here are very small and should be treated with caution"* (p. 18). Also, Table 2.8.1 showed that whilst males and females are reasonably similar in terms of numbers who enrolled in postgraduate diplomas, Bachelors (Honours) and Bachelors Honours programmes; Masters and especially doctorate degrees were dominated by males. Of 138 people surveyed, a higher average wage level achieved by males could be explained by a higher fraction of the same leaving university with higher level postgraduate degrees. This is due to the fact that people with higher level graduate degrees would have a higher likelihood of increasing their wage increment over a shorter time period. This would affect the level of wage difference between the genders. However, the survey does not supply enough detailed information to determine whether this may be a contributing factor for the difference in wages between the genders.

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[17] The occupation of forestry has been excluded as no females were surveyed in this occupation, thus making comparisons impossible.

Table 3.8.4: **Average Salary Comparisons for Postgraduates in New Zealand, 1991 and 1996**

	No. M or F	Gender	Salary 1991$	Female % of Male	Salary 1996$	Female % of Male	% increase 91-96	Overall % increase
Bio Sciences	6	F	26666	82.7	39346	79.9	147.6	150.4
	10	M	32258		49270		152.7	
Commerce	11	F	44807	100.7	67041	82.8	149.6	165.7
	23	M	44513		80995		182	
Education	9	F	36000	80.3	42344	69.8	117.6	127.4
	7	M	44857		60644		135.2	
Engineering	1	F	40000	95.6	48000	92.7	120	121.9
	8	M	41862		51774		123.7	
Humanities	4	F	30925	120.7	43125	105.2	139.5	148.8
	9	M	25611		41000		160.1	
Phys Sciences	7	F	34326	110.4	45200	91.3	131.7	144.8
	8	M	31101		49513		159.2	
Social Sciences	23	F	31449	104.4	40046	69.7	127.3	158.3
	12	M	30116		57415		190.6	
Total graduates	61	F	34882	97.5	46443	83.2	133.1	144.7
(138)	77	M	35760		55802		156	

Source: Adapted from Figure 5.1.3 (Cox and Pollock, 1997).

The median age of the people surveyed was 28 along with many older respondents in their thirties and forties (ibid., p. 6). As stated above, considering that the median age of all mothers giving birth was 28.8 in 1996, for some of the people surveyed, participation in the work force would no doubt be interrupted by the responsibilities of parenthood. Indeed, of the 15.9 percent of those surveyed who became parents, 69 percent of females took parental leave whilst only 18 percent of males took leave for parental duties. The amount of actual time taken as parental leave by the genders contrasted sharply. The survey found nearly 83 percent of females took parental leave of at least 3 months, yet just over 86 percent of males took 2 or less months off for such duties (ibid., p. 33). As Cox and Pollack concede *"Such consequent gender differences in employment presence will go a long way to explain the equally vivid salary differentials"* (p. 33). Further, the comments regarding how children affected careers that were stated in the appendix centred on the choice between family and work. Also, those that did continue to work often only participated at a part-time level, or had to reduce the number of hours worked. The few male comments did stress the hardship in returning to work but some also noted the need to find adequate employment that meant a focus on pay so that it was possible to financially support additions to the family.

A more comprehensive study into the earnings of new graduates is the annual university graduate destination report. This compares the earnings of graduates approximately 6 months after completion of their degree. As participation for the

report was compulsory up until 1994, it provides a more extensive and realistic account of earnings soon after graduates have entered the work force. Given the wide and changing nature of university courses available, Table 3.8.5 displays the female/male ratio of earnings for 8 courses that students had predominantly entered into during 1975, 1980, 1985, 1990 and 1993. Although most of the earnings ratios over the 18-year period show no consistent upward trend, overall, female earnings in comparison to male earnings have made good progress between 1975-1993. The exceptions being BBS, BSc and BVSc degrees which dropped considerably from 1975 to 1993. However, whilst the earnings ratio of 0.56 for the BTech degree was the lowest in 1975, this improved greatly to 0.84 by 1993. Also, whilst the BA (social science) degree had the second lowest ratio of 0.66 in 1975, it became the highest ratio in 1993 at 1.14.

Table 3.8.5: Female/Male Earnings Ratio for Recent Graduates in New Zealand, 1975, 1990 and 1993

Degree Course	1975	1980	1985	1990	1993
BagrSci	n.a	0.97	0.95	n.a	0.93
BBS	1.014	0.86	0.88	0.88	0.87
Bed	0.71	0.85	0.93	0.89	0.84
Btech	0.79	0.94	0.91	0.99	1.04
BA (Humanities)	0.56	n.a	1.14	0.88	0.84
BSc	0.87	0.84	0.83	0.79	0.74
BA (Social Sciences)	0.66	1.11	0.85	0.88	1.14
BVSc	1.15	0.84	0.94	0.87	0.96

Source: New Zealand Vice Chancellors Committee, 1975-1993.

In 1996, the annual university graduate destination report changed its classification of courses. Table 3.8.6 shows the average and median female/male earnings ratio for 1996 and 1997. What is interesting to note is that in 1997, the earnings ratio for mathematics and information sciences is exactly 1.0 which puts into question the concerns of females not entering mathematics and science based programs that was highlighted in Section 2.3.1 in Chapter 2. Also, in most instances, if the mean value were used for either 1996 or 1997, females would be seen to be worse off as the median ratio seems to be higher than for the mean ratio. The higher median values could be attributable to a larger number of males in the very high income brackets and/or a larger number of females in the very low income brackets. Again, caution has to be taken when deciding on statistics to use when comparing gender performance.

Table 3.8.6: Female/Male Earnings Ratio for Recent Graduates in New Zealand, 1996 and 1997

Aggregate Field of Study	1996 Average	1997 Average	1996 Median	1997 Median
Architecture/Building/Planning/Surveying	0.89	0.91	0.93	1.03
Biological Sciences	0.94	0.89	1.00	0.90
Commerce/Business	0.74	0.82	0.80	0.80
Health	0.72	0.76	0.76	0.80
Humanities	0.90	0.89	0.98	0.92
Mathematics and Information Sciences	1.02	1.00	0.96	0.92
Physical Sciences	0.95	0.81	0.95	0.87
Social and Behavioural Sciences	0.91	0.94	0.92	0.97
Technology and Engineering	0.93	0.92	0.96	0.96
Visual and Performing Arts	1.23	0.83	1.10	1.03

Source: New Zealand Vice Chancellors Committee, 1996 and 1997.

3.9 Some Conclusions

The first part of this chapter looked at the participation of the genders in various occupations. At an aggregated level, data concerning occupations show that females have made strong inroads into 'male occupations' whilst 'female occupations' have generally remained female dominated. Also, the changing face of the New Zealand labour market has seen a greater demand for predominantly 'female occupations', whilst 'male occupations' have been less in demand. When indices were employed for both horizontal and vertical segregation, the last 10-15 years have seen a strong improvement for females. We have to reiterate though that a fair level of segregation at both levels does exist. However, it would be incorrect to assume that all occupations should generally comprise of an equal share of both genders due to the inherent differences and tastes of males and females. As long as females have a preference for such areas as clerical work, nursing and teaching, in which they are over-represented, they will inevitably be under-represented in other areas.

The second part of this chapter looked at pay differentials between the genders. Here, we can see that simple indicators of any pay differences do not provide sufficient information to determine that females are in some way being discriminated against. At a more detailed level, we have seen that females have made great progress in comparison to males through narrowing differences in the level of wages. However, like the issue of occupations, we have to be mindful over whether we would expect overall parity in wages between the genders. The issue of family responsibilities, which was touched upon in this chapter, was one solid reason why this would be unlikely to occur. Obvious differences in wages between those once involved in motherhood and those who were not clearly showed. Furthermore, along with family responsibilities, other explanations have been outlined by various studies that help refute the belief that the introduction of various policies is the answer to any closing of differences in wages between the genders. Therefore, issues of theory and policy regarding the gender wage gap are discussed in the next chapter.