

**Statistics  
on  
Information Technology  
in  
New Zealand  
(Updated to 2002)**

**Part 1**

**Information Technology Policy Group  
Ministry of Economic Development  
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# **Statistics on Information Technology in New Zealand [Updated to 2002] Part 1**

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# 1. Introduction

## 1.1 Information Included

This is the ninth annual release of the Ministry of Economic Development's information paper on IT Statistics in New Zealand. Not all of the information is new; some is carried over from previous versions for completeness. Sections that include new or updated information are clearly indicated. This year the statistics are being released in a number of parts. Part 2 will be released later in May and include statistics on the use of computers in the home and Internet use.

Papers published by the Ministry of Economic Development that include statistical information may be found by looking for 'Electronic Commerce' or 'Information Technology' under the 'Publications' section of the website at [www.med.govt.nz](http://www.med.govt.nz) or by looking under Statistics and Research on the ECAT website at [www.ecat.govt.nz](http://www.ecat.govt.nz). New information in this paper includes:

- figures for IT hardware imports and exports updated to December 2001; and
- figures for trade in software and services and the size of the New Zealand information technology (IT) market updated to December 2001.

Information carried over from previous reports:

- figures for employment in segments of the IT industry from the 1996 Census.

## 1.2 Acknowledgements

Information in this paper has been derived mainly from public sources, or from specially commissioned surveys by Statistics New Zealand or the Ministry of Economic Development. References and sources are highlighted (**bold**) in the text and detailed in Section 5.

## 2. Imports and Exports

Information in this section is derived from two different areas:

- IT hardware import and exports are measured at the border by the Customs Department as goods leave or enter the country for the 12 months to December 2001, provided by Statistics New Zealand (**Statistics NZ 2002a**); and
- A survey of IT businesses is conducted by Statistics New Zealand which measures both IT hardware and software exports (**Statistics NZ 2002b**).

The survey, now in its eighth year, is sponsored by the Ministry of Economic Development, the Information Technology Association of New Zealand (ITANZ), Trade New Zealand, and Statistics New Zealand.

The reference period for the survey was the 2000–2001 accounting year. For enterprises with balance dates falling between 1 January and 30 September, this is financial data for the year ending 2001. For enterprises with balance dates falling between 1 October and 31 December, this is financial data for year ending 2000.

Since 1998 the survey has attempted to provide better coverage of activity than previous surveys by including business units where IT activity is a secondary activity. The survey only covers IT businesses with more than two full time equivalent staff, which will tend to cause the survey to underestimate the actual export figures.

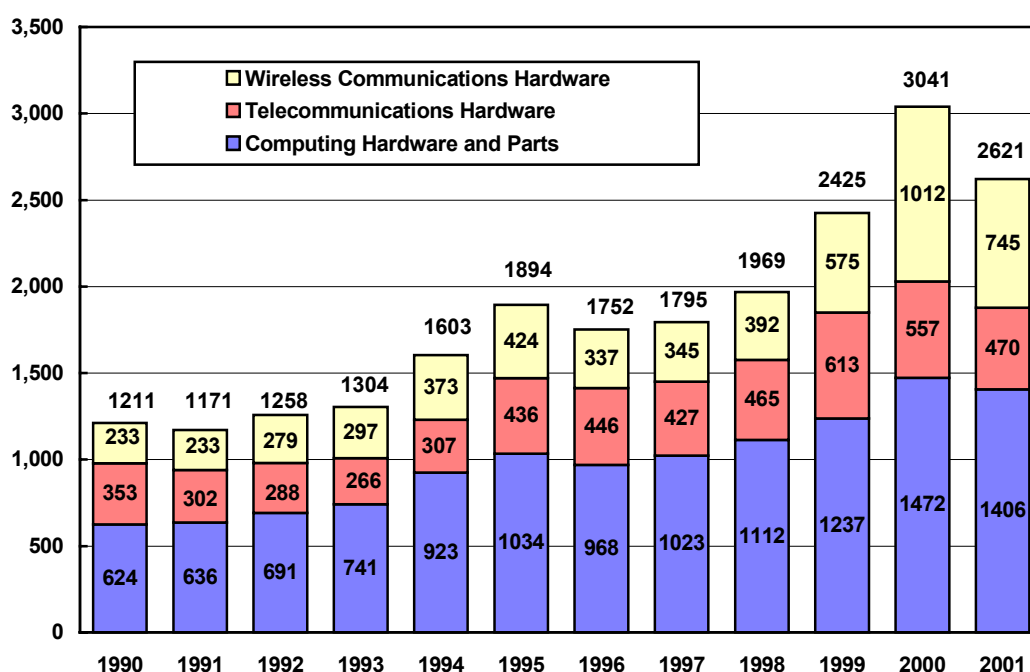
Note that information from the two sources (Customs and the Statistics New Zealand survey) cannot be directly compared because of differences in the treatment of export costs such as freight and insurance, and restrictions imposed by the sample used for the survey.

## 2.1 Hardware Imports (Updated)

Figures 2.1.1 and 2.1.2 summarise New Zealand IT hardware imports for the last decade, based on Customs figures (**Statistics NZ 2002a**). The 2001 year shows an overall 13.8% decrease in IT hardware imports from 2000 (compared with a 25.4% increase the year before), comprising 4.5% for *Computing Hardware and Parts*, 26% for *Wireless Communications Hardware* and 15.6% for *Telecommunications Hardware*. Despite this fall, imports of *Wireless Communications Hardware* were still significantly greater in 2001 than they were in 1999 or at any time during the 1990's.

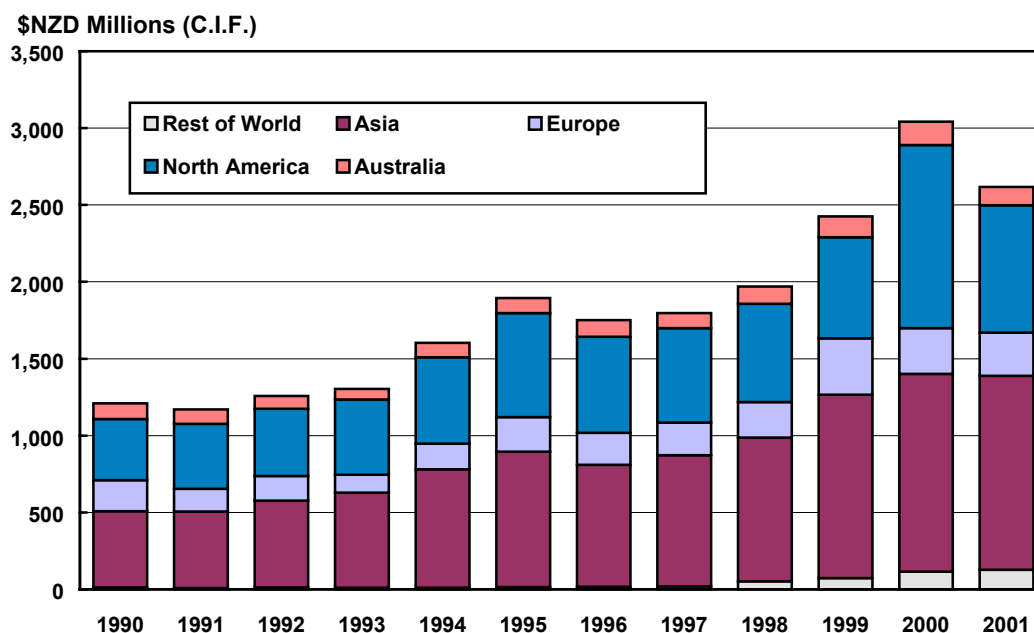
**Figure 2.1.1 IT Related Hardware Imports by Type (Statistics NZ 2002a)**

\$NZD Millions (C.I.F.)



The information in the previous figure is reproduced in Figure 2.1.2 subdivided by source, showing that the bulk of IT hardware imports come from Asia and North America. In 2001, imports from North America decreased by 31.3% (after increasing by 81% the year before) and are now approximately two thirds of those from Asia, which decreased by a modest 2%. There was a decrease of 21% in imports from Australia and an increase of 11% from the 'Rest of the World' (from a rather low base). Imports from Europe fell by 5% after a decrease of 19% the year before.

**Figure 2.1.2 IT Related Hardware Imports by Source (Statistics NZ 2002a)**



## 2.2 Hardware Exports (Updated)

The following three figures show export figures based on Customs data (Statistics NZ 2002a).

Figure 2.2.1 shows a summary of New Zealand IT hardware exports since 1990. The up and down nature of IT hardware exports continued last year with a fall of 10.6% after a rise of 24% the year before. Exports of *Computing Hardware and Parts* decreased by 3%, *Wireless Communications Hardware* by 17%, whilst *Telecommunications Hardware* exports increased by 6%.

**Figure 2.2.1 IT Related Hardware Exports by Type (Statistics NZ 2002a)**

\$NZD Millions (F.O.B.)

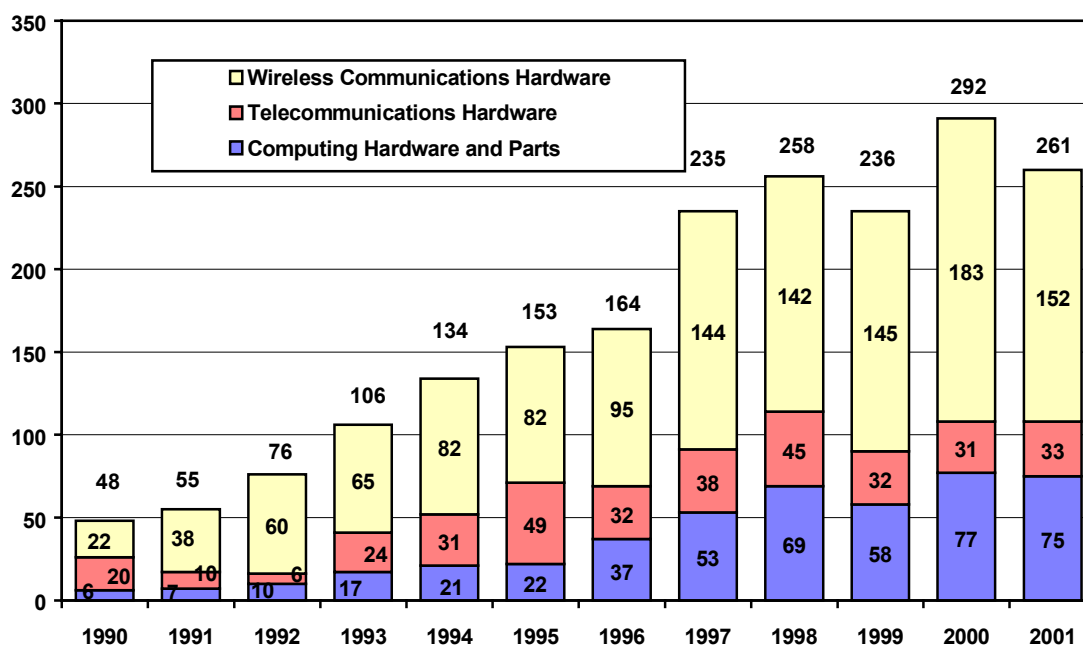
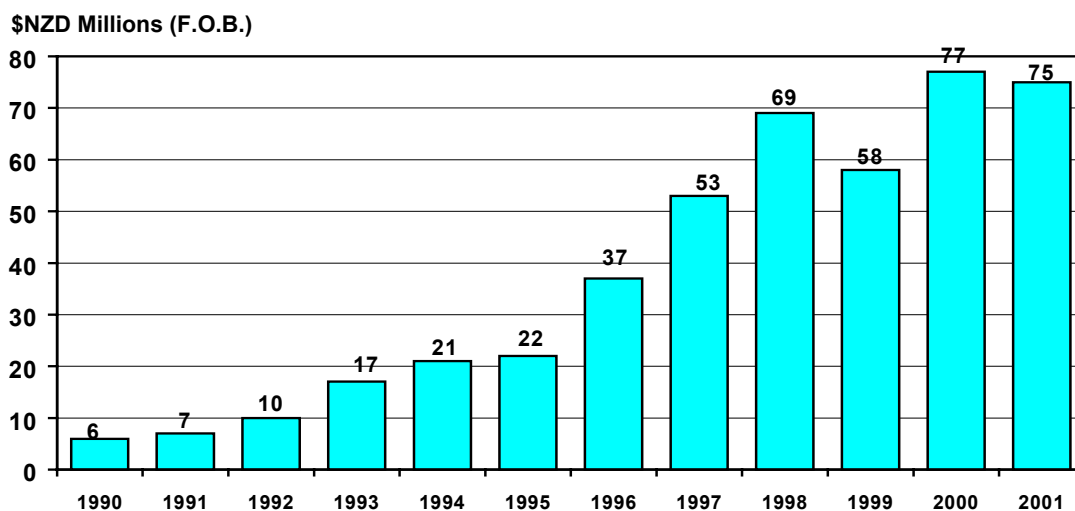


Figure 2.2.2 shows just the contribution of *Computer Hardware and Parts*. This category decreased by 2.6% in 2001. Until 1998 growth averaged approximately 30% per annum but since then growth in this area has levelled out.

**Figure 2.2.2 Computer Hardware and Parts Exports (Statistics NZ 2002a)**



In Figure 2.2.3, the total IT hardware exports are shown split by export destination. The fall in 1999 exports was due primarily to large decreases in exports to Asia and Europe, partly offset by an increase in exports to North America. In 2001, there was a 31% decrease in exports to Asia, after a 78% increase the year before. Imports to Europe increased by 5.4% whilst exports to Asia fell by 30.3% after a 78% increase the year before.

**Figure 2.2.3 IT Related Exports by Destination (Statistics NZ 2002a)**

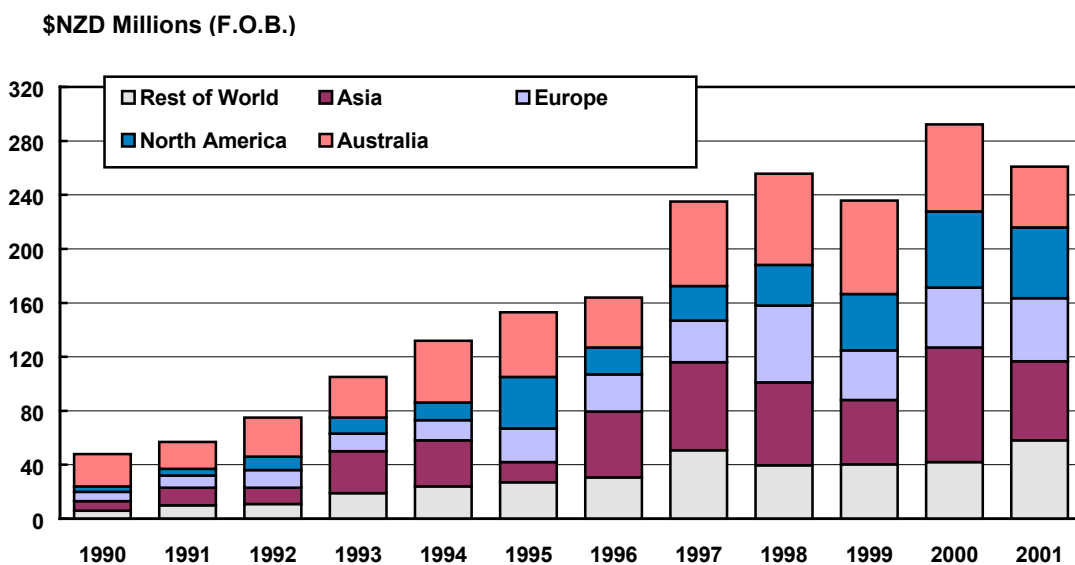
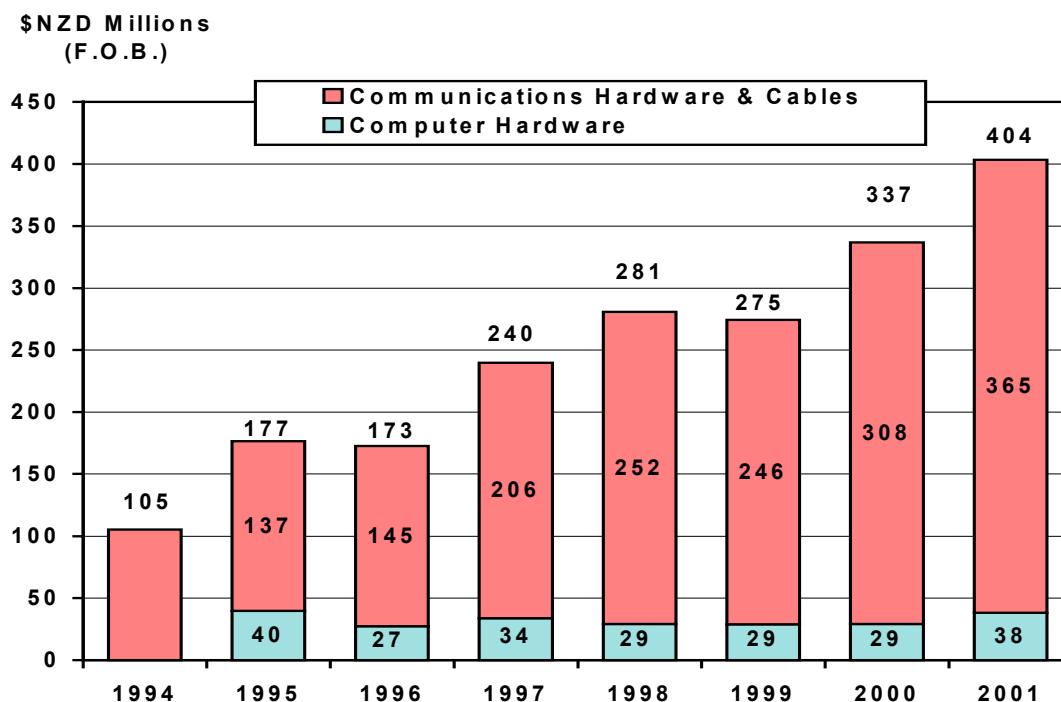


Figure 2.2.4 is based on the 2001 Statistics New Zealand survey of IT firms (**Statistics NZ 2002b**). Note that these data are not directly comparable to the IT hardware export data captured at the border, and given earlier in this paper (for example, Figures 2.2.1 and 2.2.2). The overall figures do, however, follow similar trends until 2001. In 2001 the two sets of figures have diverged sharply, the survey figures (**Statistics NZ 2002b**) showing a gain of 23% over 2000 whilst the customs figures (**Statistics NZ 2002a**) showed a fall of 10.6%.

**Figure 2.2.4 IT Hardware Exports (Statistics NZ 2002b)**



Note: Figure for 1994 combines both categories. Some totals may not add because of rounding.

### 2.3 Software and Services Exports (Updated)

The information in this section is taken from the Statistics New Zealand survey of IT firms (**Statistics NZ 2002b**). Figure 2.3.1 shows exports of Software, Communications Services and Computing & Education Services over the past four years. Note that figures for Communications Services were not available this year and were not available prior to 1997.

**Figure 2.3.1 Exports of Software, Communications Services and Computing & Education Services (Statistics NZ 2002b)**

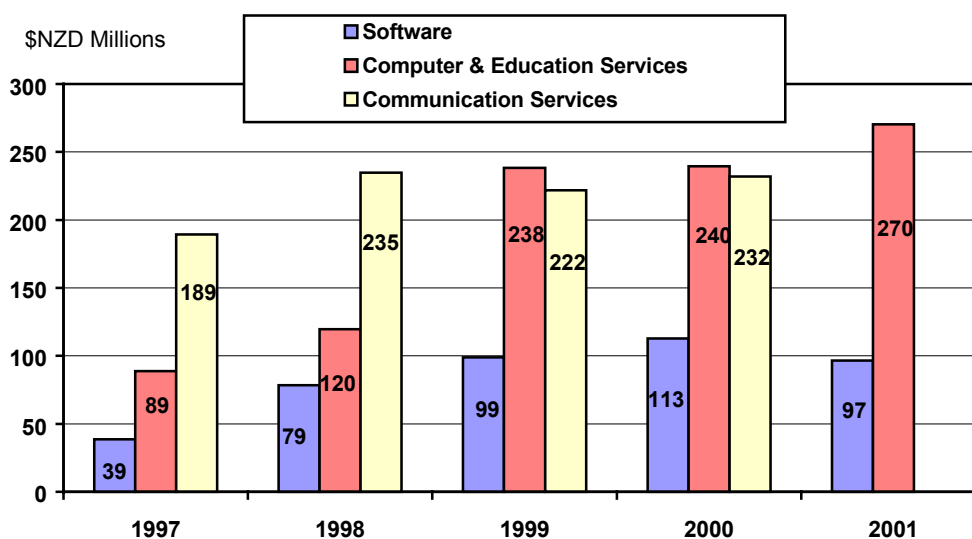
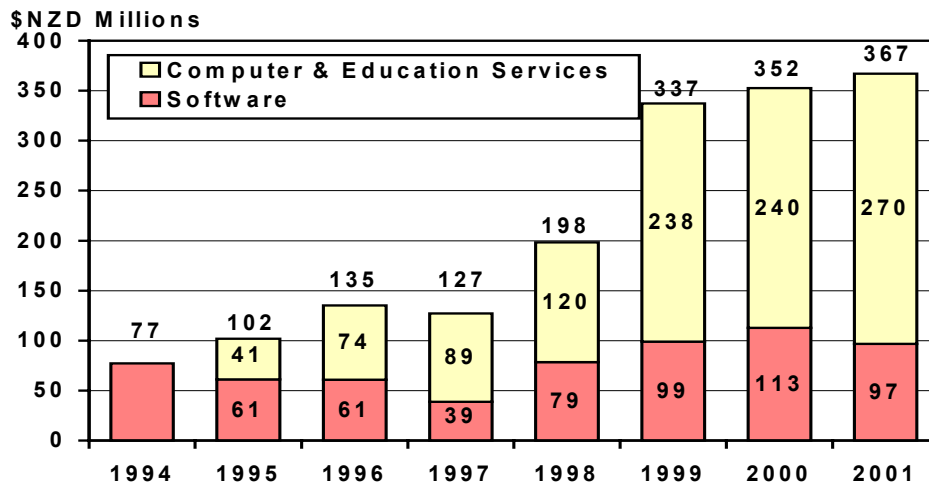


Figure 2.3.2 shows the growth in Software and non-communications Services from 1994. Except for a drop in Software exports in 1997, both software and services have increased rapidly over the period of the survey, with an increase of 56% in 1998 over 1997, followed by a further 44% increase in 1999. The growth since 1999 has slowed but still amounted to 4.7% in 2000 and 4% in 2001.

**Figure 2.3.2 Software and Computer & Education Services Exports (Statistics NZ 2002b)**



Note: The 1994 figure combines both categories. Some totals may not add because of rounding.

### 3. New Zealand IT Market

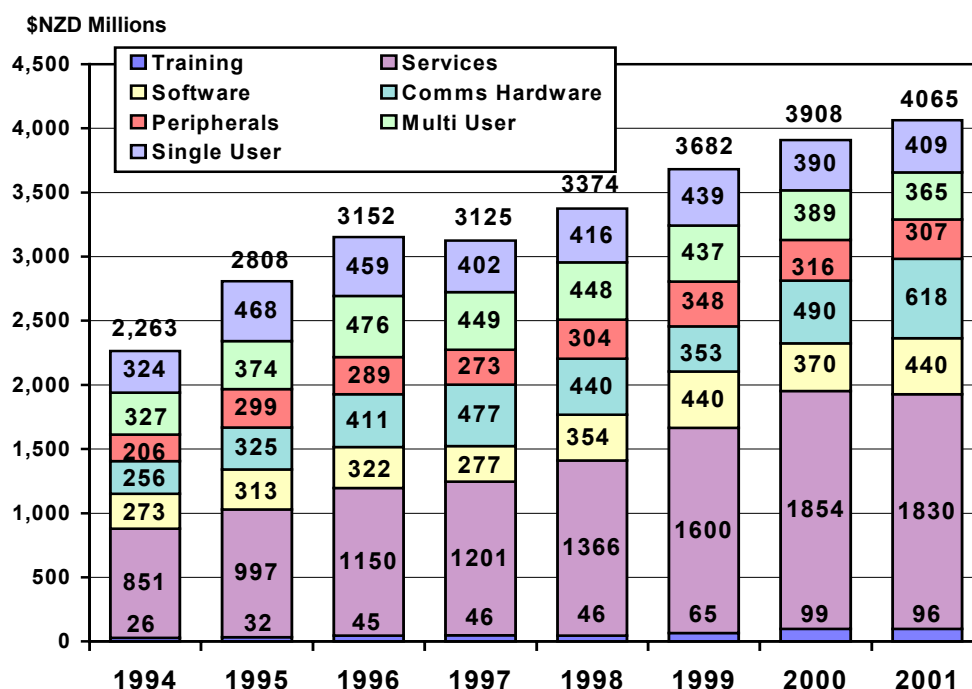
#### 3.1 Sales Activity (Updated)

The information in this section is taken from a 2001 survey of IT firms conducted by Statistics New Zealand (**Statistics NZ 2002b**) and applies to the financial year to March 2001. For more information about the survey see Section 2 above. Data for 2000 has been revised since the previous report, as more accurate information has become available (similar revisions were also made in previous years).

The total value of the New Zealand IT industry, excluding telecommunications, in the March 2001 financial year was \$6,823.6 million, up 3.3% from the previous year. This year figures for telecommunications were not available.

These gross figures include an unknown level of double counting of retail and wholesale sales. Consequently, the data used in Figure 3.1.1 represents goods and services sold to end users only and, in 2001, excludes \$1,989 million reported in the survey as 'other customer sales' and \$770.2 million reported as "export sales."

**Figure 3.1.1 New Zealand End User Computer Hardware, Software and Services Market, Excluding Telecommunications Services (\$NZD Millions)(Statistics NZ 2002b)**



\* The 2000 figures include a number of revisions due to more accurate information becoming available since the 2001 report.

The *Single User Hardware* category refers to complete computers intended for use by only one person at any one time and so mainly comprises desktop and personal computers. *Multi-User Hardware* refers to computers intended for use by many people at the same time and includes file servers, midrange systems and mainframes. Parts of computer systems (other than the CPU) when sold separately appear under *Peripherals*.

**Table 3.1.1 Changes in End User Sales Since 1996 (percent)**

	1997	1998	1999	2000	2001
Computer h/w: single user systems	-12.4	3.5	5.4	-11.2	5.0
Computer h/w: multi-user systems	-5.8	-0.2	-2.5	-10.9	-6.3
Peripheral computer equipment	-5.7	11.6	14.3	-9.3	-2.8
Communications hardware and cables	15.9	-7.8	-19.8	39.1	25.9
Software sales	-13.9	27.7	24.3	-15.9	19.0
Computer services	4.5	13.7	17.2	15.9	-1.3
Training and education in IT	2.4	-1.3	41.1	53.5	-2.8
Communication services	13.5	12.2	-4.6	4.2	
Total New Zealand end-user sales	6.2	10.2	1.8	5.3	4.0

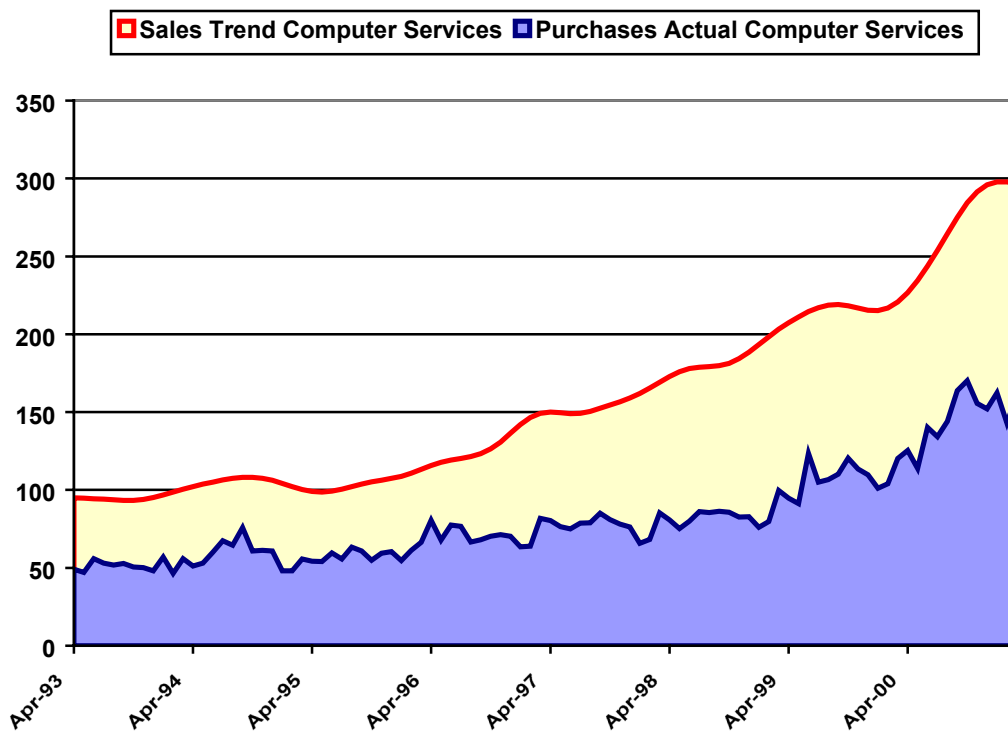
Total end user sales growth over the past five years has varied between 10.2% (1998) and 1.8% (1999). The last two years (5.3% and 4.0% respectively) are typical, but there has been wide fluctuation in various types of end user sales, with communications equipment and cables increasing by 39% in 2000 and 26% in 2001. Most other areas declined slightly in 2001, except for software (up 19%) which has fluctuated widely over the past five years (max 28% growth in 1998 and min -16% last year).

### 3.2 Business Activity (GST) Indicator

The Business Activity Indicator uses GST data from the Inland Revenue Department matched to the Statistics New Zealand Business Frame. Figure 3.2.1 represents sales and purchases for the computer services industry (ANZSIC L783, **Statistics NZ 1996**) measured quarterly since early 1993. Following relatively little growth through 1995, sales grew steadily except for a pronounced dip over the Y2K transition period between October 1999 and February 2000. Sales increased again throughout 2000 but since early 2001 they have flattened out.

The gap between 'purchases' and 'sales' can be regarded as a measure of 'added value.'

**Figure 3.2.1 Business Activity (GST) Indicator for the Computer Services Industry from April 1993 to March 2001**



## 4. IT Industry Employment

### 4.1 People Working in IT Occupations

The data used in this section is taken from the 1991 and 1996 Censuses of Dwellings carried out by Statistics NZ (**Statistics NZ 1997**).

The IT Industry comprises those industry sectors whose business is IT related such as software companies. IT occupations are defined here as those jobs whose focus is on IT, for example, a programmer. However, there are non-IT occupations within the IT industry (an accountant in a computer company), and IT occupations in non-IT industries (a programmer in a bank).

Table 4.1.1 shows the number of people working in IT occupations in the IT industry and in the working population as a whole for 1991 and 1996. The table shows the number of people working in an IT occupation in the IT industry increased from 8,826 in 1991 to 10,695 in 1996. The number of people working in the IT industry has also increased by 4% to 41,823. However, as a proportion of the working population, the percentage of people working in the IT industry decreased to 2.6% (as shown in Table 4.1.2).

**Table 4.1.1 Numbers Working in IT Occupations**

No. Employed	IT Occupations		All Occupations	
	1991	1996	1991	1996
IT Industry	8,826	10,695	40,200	41,823
All Industry	27,717	33,642	1,400,376	1,630,809

In addition to those in the IT industry, there are also people working in IT occupations outside of the IT industry. Combining those in IT occupations in the IT industry and in other industries gives the number of people in IT occupations as 33,642 in 1996, a 21% increase between the two Censuses.

Table 4.1.2 shows that at the 1996 Census, 4% of the working population in New Zealand was in an IT occupation and/or working for an IT industry company. This is the virtually the same proportion as at the 1991 Census, despite an increase of 9.6% from 59,091 to 64,770 in the number of people employed in IT occupations and IT companies. The proportion has remained the same due to the increase in the working population over the same period.

The right hand column of the table shows the change in each category adjusted for the change in the working population. It shows the overall proportion of people in an IT occupation and/or working for an IT company (IT Employed) fell by 5.9% between the two Censuses, despite the rise in people working in an IT occupation. This indicates that the number of people supporting the work of each person employed in an IT occupation has fallen.

**Table 4.1.2 Proportion of Workforce in IT Occupations**

	No. Employed		% Change of Working Pop.
	1991	1996	
<b>Working Pop.</b>	1,400,376	1,630,809	
<b>IT Occ. IT Ind.</b>	8,826 (0.6%)	10,695 (0.7%)	4.1%
<b>IT Occ. All Ind.</b>	27,717 (2.1%)	33,642 (2.1%)	4.2%
<b>All Occ. IT Ind</b>	40,200 (2.9%)	41,823 (2.6%)	-10.7%
<b>IT Employed*</b>	59,091 (4.2%)	64,770 (4%)	-5.9%

\* The *IT Employed* category is the number of people working in an IT occupation and/or in the IT industry and is derived as the sum of IT occupations in all industry and all occupations in the IT industry minus the IT occupations in the IT industry (already counted in the all occupations in the IT Industry category).

While there has been a decline in the proportion of people in the IT Employed category - those people in actual IT jobs and/or working in the IT industry - there appears to be no fewer computers in use in the economy. This suggests that the IT industry is becoming more efficient as fewer people in relative terms provide IT goods and services to a larger working population.

## **4.2 IT Industry (Updated)**

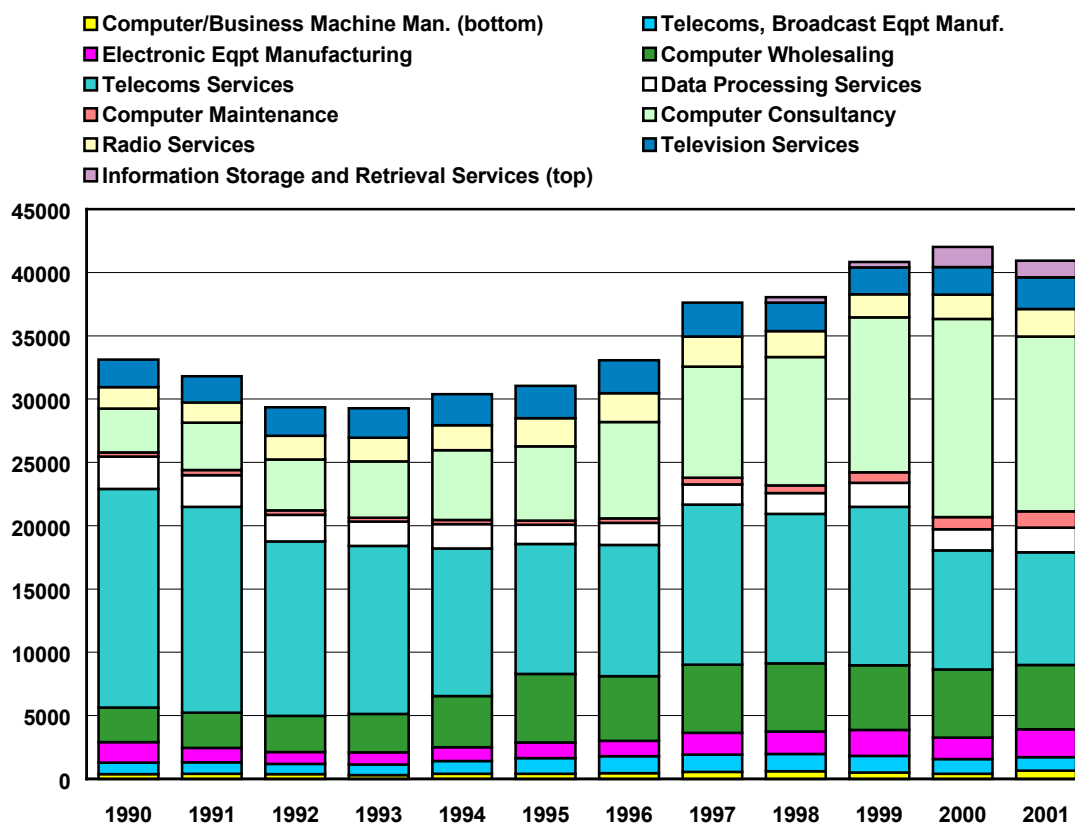
Digital convergence is increasingly tying computer technology to telecommunications and broadcasting. For this reason the definition of IT industry used in this paper is broad, encompassing telecommunications and electronic media. It could be argued that some of the industry sectors chosen do not deal exclusively with IT even under this broad definition. However, these figures are based on the standard industrial codes in use in New Zealand at the time this data was collected.

The information for Figures 4.2.1 and 4.2.2 on employment in the IT industry is based on a target population of all 'activity units' with more than two full-time equivalents (FTEs) engaged in IT activity in New Zealand. Industries in the designated categories are chosen as shown in Table 4.2.1.

**Table 4.2.1 Industry ANZSIC Classifications (Statistics NZ 1996)**

ANZSIC Code	Industry Group
C284100	Computer and Business Machine Manufacturing
C284200	Telecommunication, Broadcasting and Transceiving Equipment Manufacturing
C284900	Electronic Equipment Manufacturing
F461300	Computer Wholesaling
J712000	Telecommunication Services
L783100	Data Processing Services
L783200	Information Storage and Retrieval Services
L783300	Computer Maintenance Services
L783400	Computer Consultancy Services
P912100	Radio Services
P912200	Television Services

**Figure 4.2.1 Employment in IT industries 1990-2001 by ANZSIC Classification**



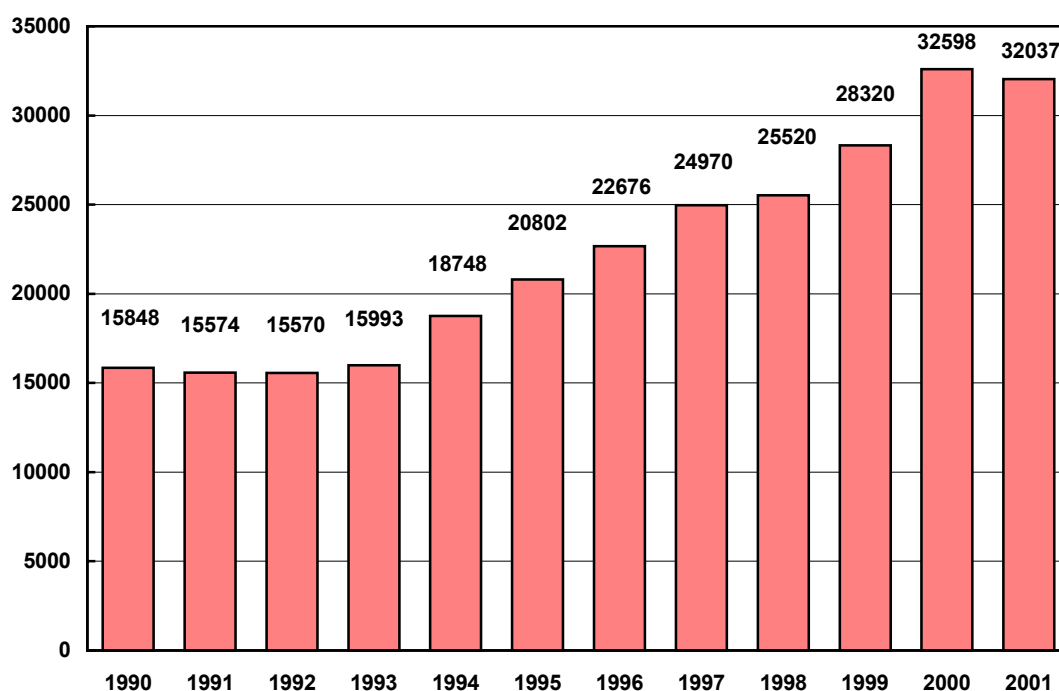
Following a slump in employment in 1993 to 29,282, employment in all the IT occupations grew steadily to reach 42,011 in 2000, and then fell to 40,935 in 2001. Note that the *Information Storage and Retrieval Services* category is not

included prior to 1998. Overall, there has been an increase in employment in this area of 7,820 since 1990.

Most categories have expanded steadily over the period with *Computer Consultancy Services* now the single largest employment area, having risen from 4,457 in 1993 to 13,815 in 2001. On the other hand, the period since 1990 has seen a steady decline in numbers employed in *Telecommunication Services* from 17,267 in 1990 to 8,898 in 2001 (a decrease of 48.5%).

Figure 4.2.2 shows the same data as Figure 4.2.1 but excludes those employed in *Telecommunications Services*. It follows much the same trend as Figure 4.2.1. Flat or very limited growth through the 1990-93 period is followed by substantial increases from 1994 to 2000. Despite the small decrease in 2001, employment in IT industries (excluding *Telecommunications Services*) has more than doubled since 1990.

**Figure 4.2.2 Employment in IT Industries 1990-2001 by ANZSIC Classification (excluding telecommunications services)**



### 4.3 IT Occupations

The information in this section is taken from the 1991 and 1996 Censuses (**Statistics NZ 1997**).

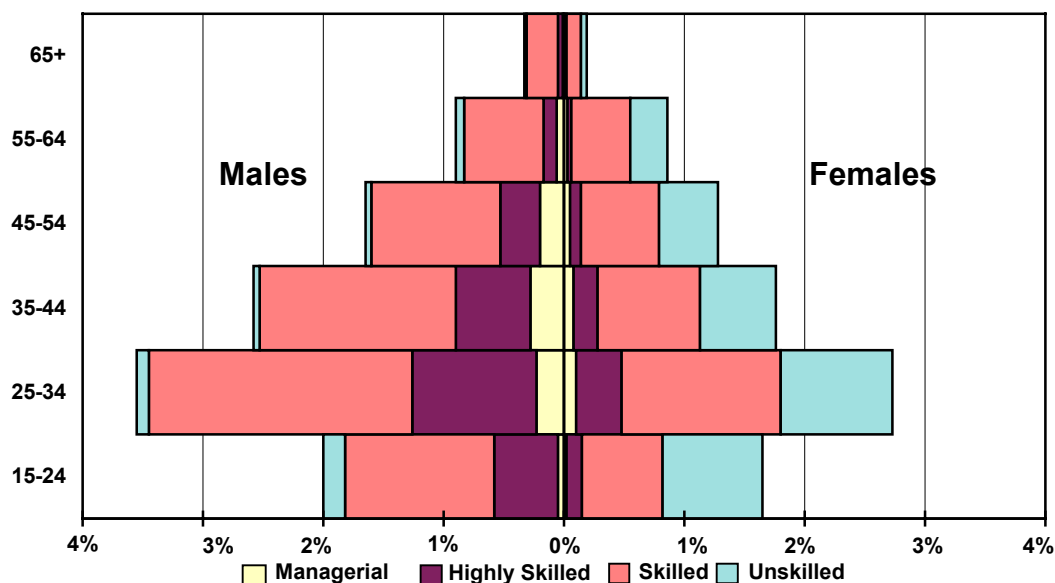
Occupations are categorised according to the occupation classification codes used by Statistics New Zealand. For the purpose of this paper, the following codes are deemed to be IT occupations. The only change to these classifications in 1996 was a change to the occupation previously classified as Computer Systems Engineer (code 21312) to a new classification of Computer Application Engineer.

<b>Code</b>	<b>Description</b>	<b>Category</b>
12271	Computing Services Manager	Managerial
21311	Systems Analyst	Highly Skilled
21312	Computer Application Engineer	Highly Skilled
31142	Computer Systems Technician	Skilled
31211	Computer Programmer	Skilled
31212	Computer Operator	Skilled
33152	Technical Representative	Skilled
41121	Data Entry Operator	Unskilled

The category column is used as an indication of skill level.

The age and sex breakdown for those working at various skill levels in IT occupations for 1991 and 1996 is shown in Figures 4.3.1 and 4.3.2.

**Figure 4.3.1 Employment of the Working Population by Age and Sex in IT Occupations at Various Levels (1996)**



Each bar in Figure 4.3.1 represents the numbers employed in IT occupations as a percentage of the numbers working in all occupations for a given age/sex group. These percentages are known as participation rates.

The figure indicates the IT industry remains a youthful industry, with 81.4% of men working in IT occupations being in the 35-44 or younger age groups and 80.9% of female IT workers in the 35-44 or younger age groups. It also shows that men had higher participation rates than women in IT occupations in all age groups in 1996.

Men also had higher participation rates than women in managerial IT positions and in the more highly skilled non-managerial occupations such as Systems Analysis and Computer Applications Engineer. By contrast, women still dominate the Data Entry occupation with significantly higher participation in this occupation than men.

A comparison with the same data from the 1991 Census in Figure 4.3.2, shows a relatively similar pattern to that in 1996. However, it also reveals a slight 'maturing' of the industry between 1991 and 1996. In 1991 85.2% of men in IT occupations were 44 or younger, while 86.4% of women in IT occupations were 44 or younger.

**Figure 4.3.2 Employment of the Working Population by Age and Sex in IT Occupations at Various Levels (1991)**

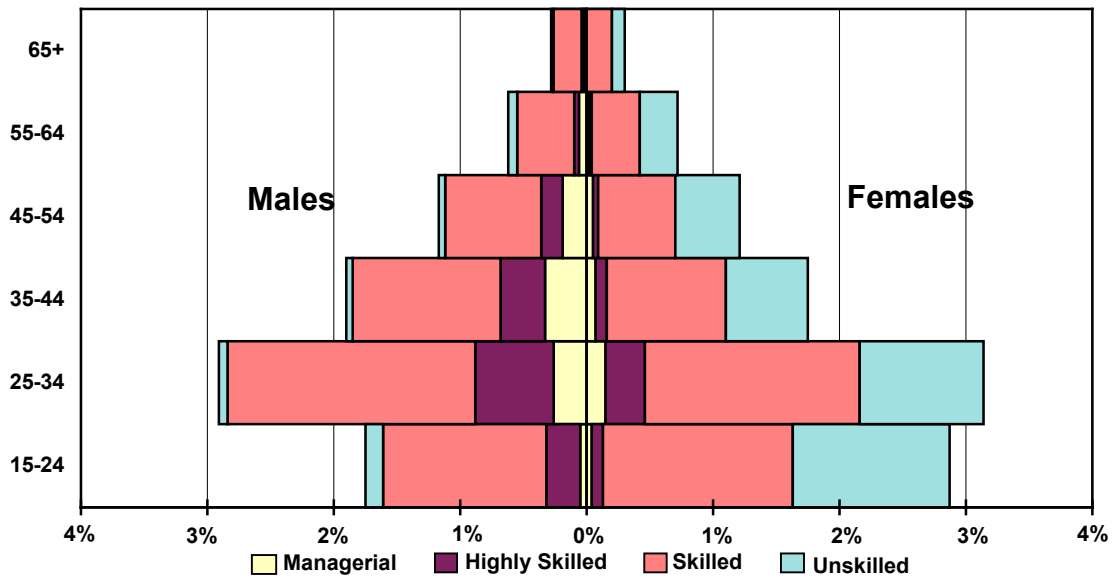


Figure 4.3.3 shows the breakdown by ethnic origin of those in IT occupations for 1991 and 1996, excluding data entry operators. The only changes of note between the two surveys is a large decrease in the proportion of people classifying themselves as Other and an increase in the NZ European category.

**Figure 4.3.3 Breakdown of Those Employed in IT Occupations by Ethnic Origin Excluding Data Entry (1991 & 1996)**

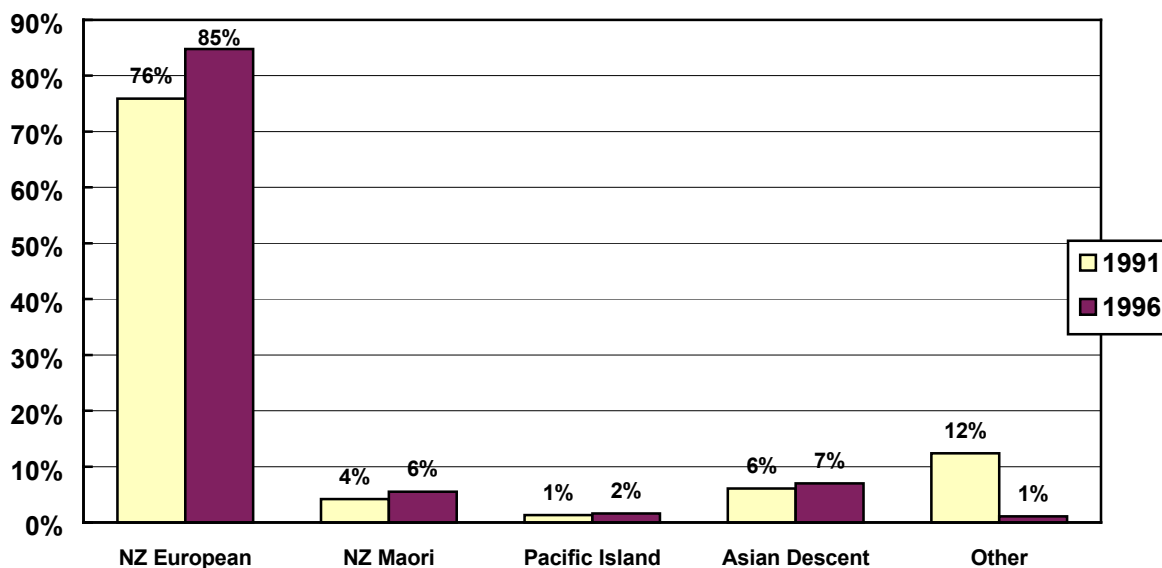


Figure 4.3.4 shows the numbers working in skilled IT occupations as a percentage of the working population in each ethnic group. While the participation of men and women identifying themselves as NZ European is higher than those of Maori and Pacific Islanders, the outstanding feature of the chart is the very high rates of participation among those of Asian descent. Men have higher participation rates than women in all of the ethnic origin categories considered.

**Figure 4.3.4 Percentage of Working Population in IT Occupations by Ethnic Origin Excluding Data Entry (1996)**

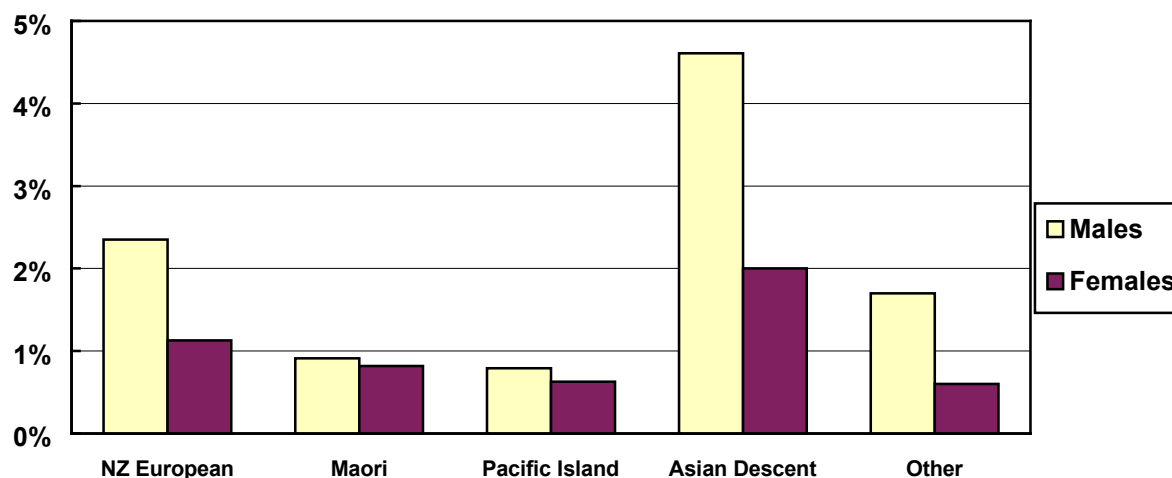
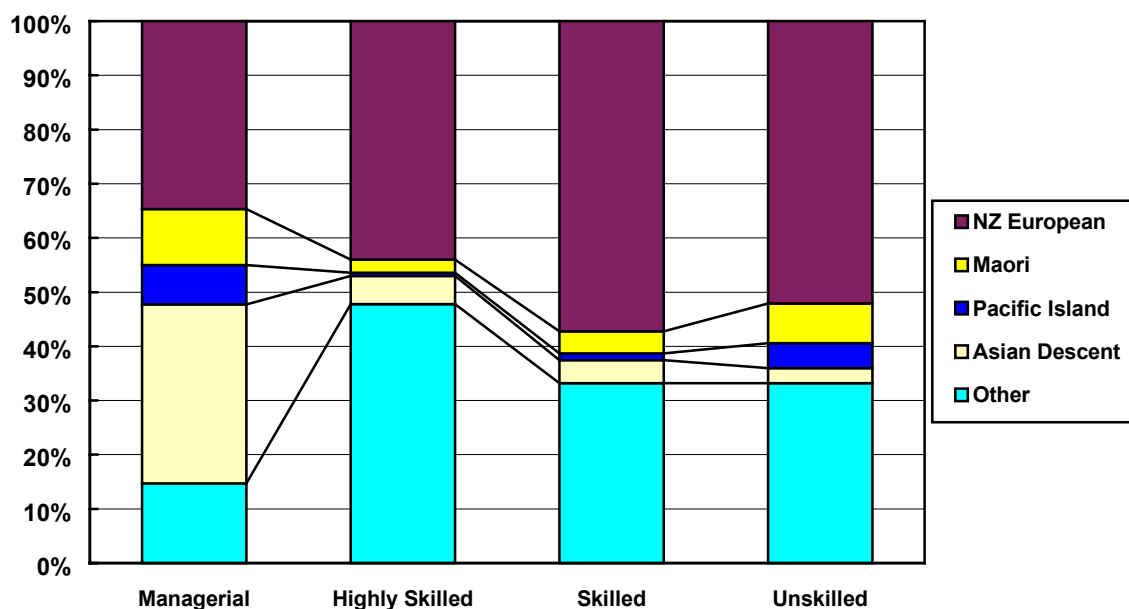


Figure 4.3.5 shows the participation rate of each ethnic group in IT occupations at each level of skill. The graph answers the question: what would be the ethnic breakdown of each level of IT occupation if the working populations of each ethnic group were the same.

**Figure 4.3.5 IT Occupations at Various Levels as a Percentage of Total Numbers in IT Occupations for Each Ethnic Group (1996)**



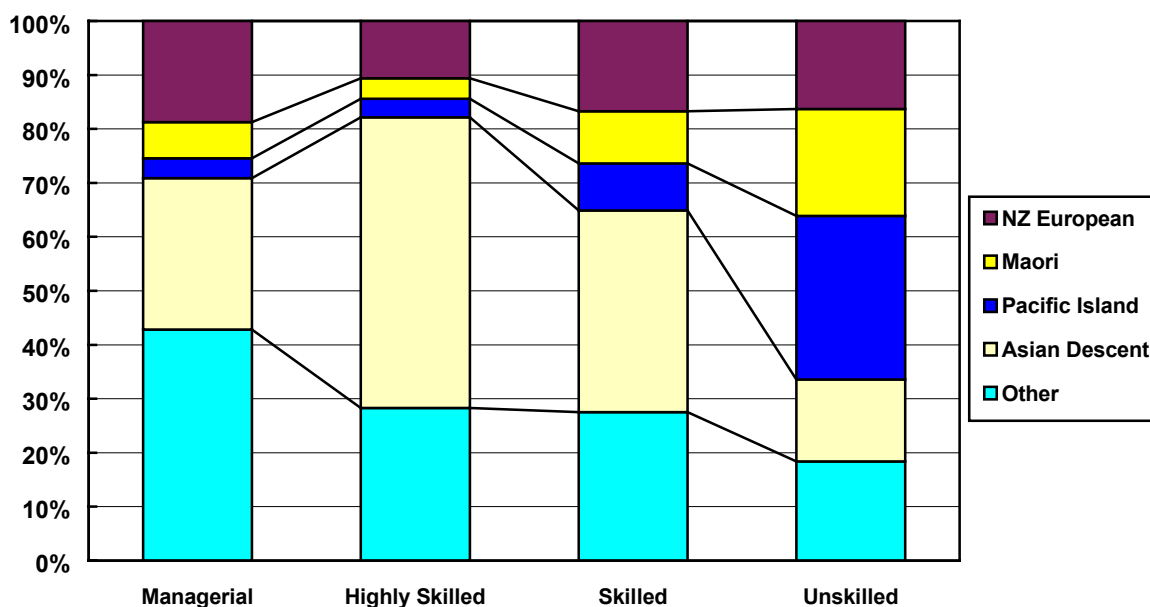
People categorising themselves as NZ European have high participation rates across all four levels of IT occupations. The Other group also shows relatively high participation rates, except at the managerial level. This is reflected in the

significantly higher participation rate of people of Asian descent at the managerial level than at other levels. What is also clear from the graph is that Maori and Pacific Islanders have low participation rates across all IT occupations.

Comparing the 1996 data in Figure 4.3.5 with the same data from 1991 in Figure 4.3.6. gives a quite different picture. In 1991, those classifying themselves as NZ European had much lower participation rates across all IT occupations, while people of Asian descent had much higher participation rates at the highly skilled and skilled levels. There was also a much more even distribution of people at the unskilled level in 1991 and a higher participation rate by people in the Other category at the managerial level.

Although it is not clear why this change has occurred, there was at the same time a significant change in numbers of people in each ethnic group in the working population, which is likely to have at least partly affected the ethnic composition of those in IT occupations. Overall the working population grew by 16% between 1991 and 1996. However, the number of people classified in the Other grouping fell during this time by 75%, being compensated by rises in the working population of Maori by 52%, Pacific Islanders by 40%, Asians by 65% and NZ Europeans by 18%.

**Figure 4.3.6 IT Occupations at Various Levels as a Percentage of Total Numbers in IT Occupations for Each Ethnic Group (1991)**



## 5. References and Sources

<b>Statistics NZ 1996</b>	<i>Australian and New Zealand Standard Industrial Classification (ANZSIC) NZ Version.</i>
<b>Statistics NZ 1997</b>	Data from the 1991 and 1996 Censuses of Dwellings.
<b>Statistics NZ 2002a</b>	<i>Overseas Merchandise Trade for the Calendar Year to Date Ended December 2001.</i>
<b>Statistics NZ 2002b</b>	Survey of IT businesses jointly sponsored by the Ministry of Economic Development, the Information Technology Association of New Zealand, Trade New Zealand and Statistics New Zealand.