

Statistics
on
Information Technology
in
New Zealand

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1. Introduction

This is a special update of the fourth annual release of the Ministry of Commerce's Information Technology Statistics paper. This update has been produced to incorporate recently released data from the 1996 Census. It includes:

- new statistics on those employed in the IT industry;
- updated figures for those employed in the IT industry by occupation, skill level, age, sex and ethnicity;
- an updated figure for the number of computers in homes;
- updated figures on the size of the Internet in New Zealand; and
- new figures on the number of World Wide Web sites.

Also included are figures previously published earlier this year as follows:

- IT hardware imports and exports figures;
- trade in software and services and the size of the New Zealand information technology (IT) market figures;
- figures for employment in segments of the IT industry;
- figures on the number of computers in New Zealand schools; and
- figures for the number of Internet connections in schools and the number of schools that intend to connect to the Internet.

This paper is also available through the Internet in a hypertext form which includes the underlying data tables as well as the graphs. The address is given on page 38.

1.1 Acknowledgements

The majority of the figures in this paper have been sourced from Statistics New Zealand. Other sources are credited specifically where they have been used. Some of the figures are taken from a survey of IT businesses conducted by Statistics New Zealand and jointly sponsored by the Ministry of Commerce, the Information Technology Association of New Zealand, Tradenz and Statistics New Zealand.

1.2 Defining Information Technology

As well as the traditional data processing industries, telecommunications and broadcasting are shown in many of the figures in this paper. This reflects the fact that these industries process information using technological means, and the increasingly blurred distinctions between these sectors.

2. Imports and Exports

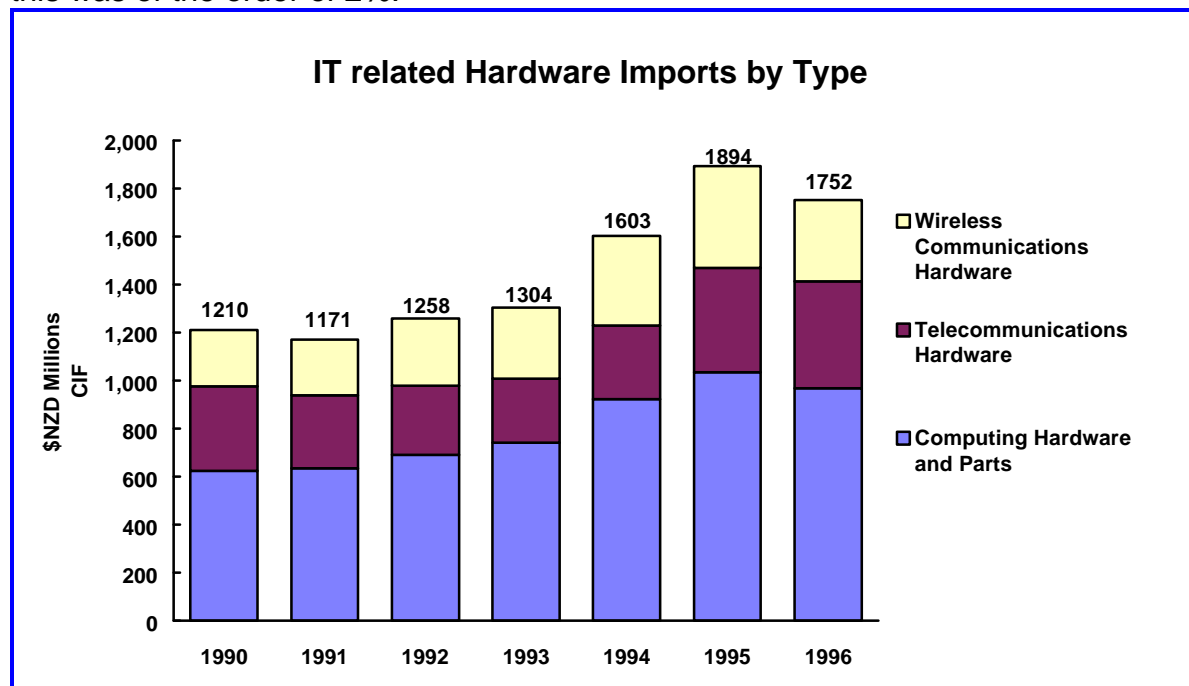
IT hardware imports and exports are given under three categories: *Computer Hardware and Parts*, *Telecommunications Hardware*, and *Wireless Communications Hardware*.

The hardware import and export figures given here are measured at the border by the Customs Department as goods leave or enter the country. Calendar years are used in these figures.

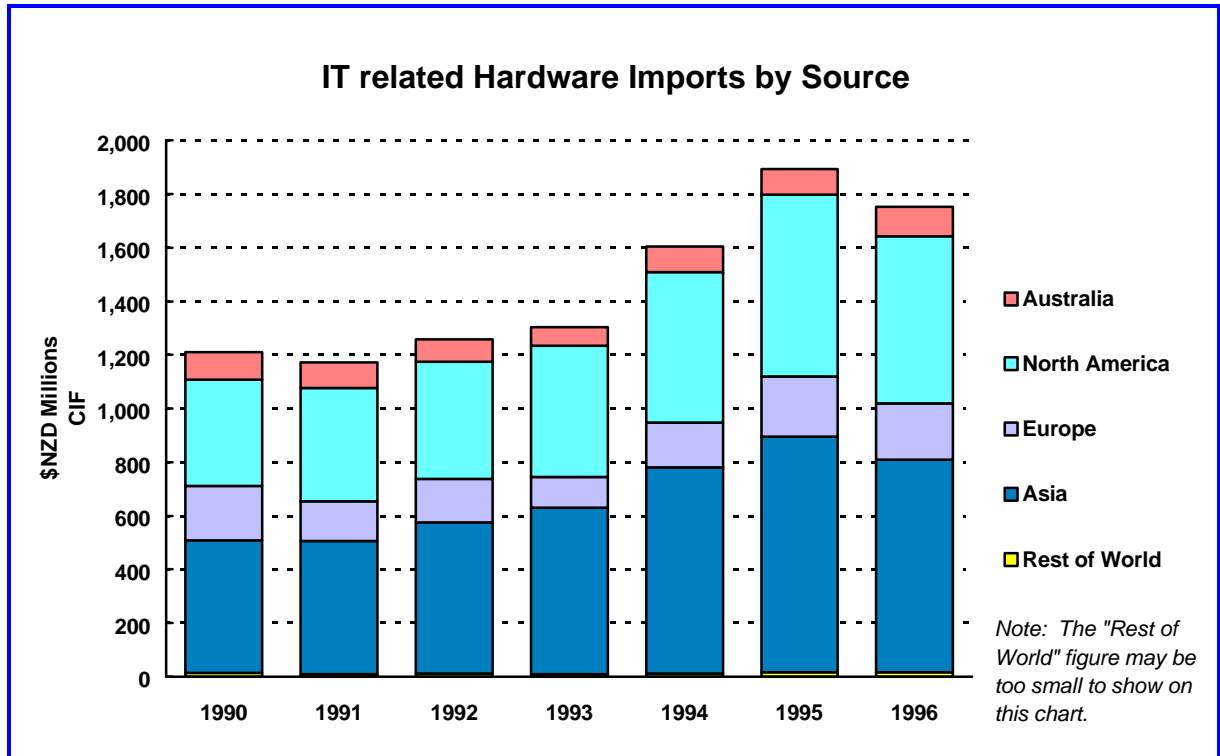
The Software and Services Export section uses a different methodology - a survey of businesses - so its results are not directly comparable with the hardware figures given below.

2.1 Hardware Imports

The following chart shows a summary of New Zealand IT hardware imports for the last seven calendar years. It is clear from the chart that following a gradual decline to 1991, there was continuing growth in IT imports until 1995. However, in 1996 there has been a decline in overall imports of 7% to \$1.7 billion, due to a fall in imports in both the *Computer Hardware and Parts* and *Wireless Communications Hardware* categories. Only in the *Telecommunications Hardware* category was there any growth in 1996 and this was of the order of 2%.

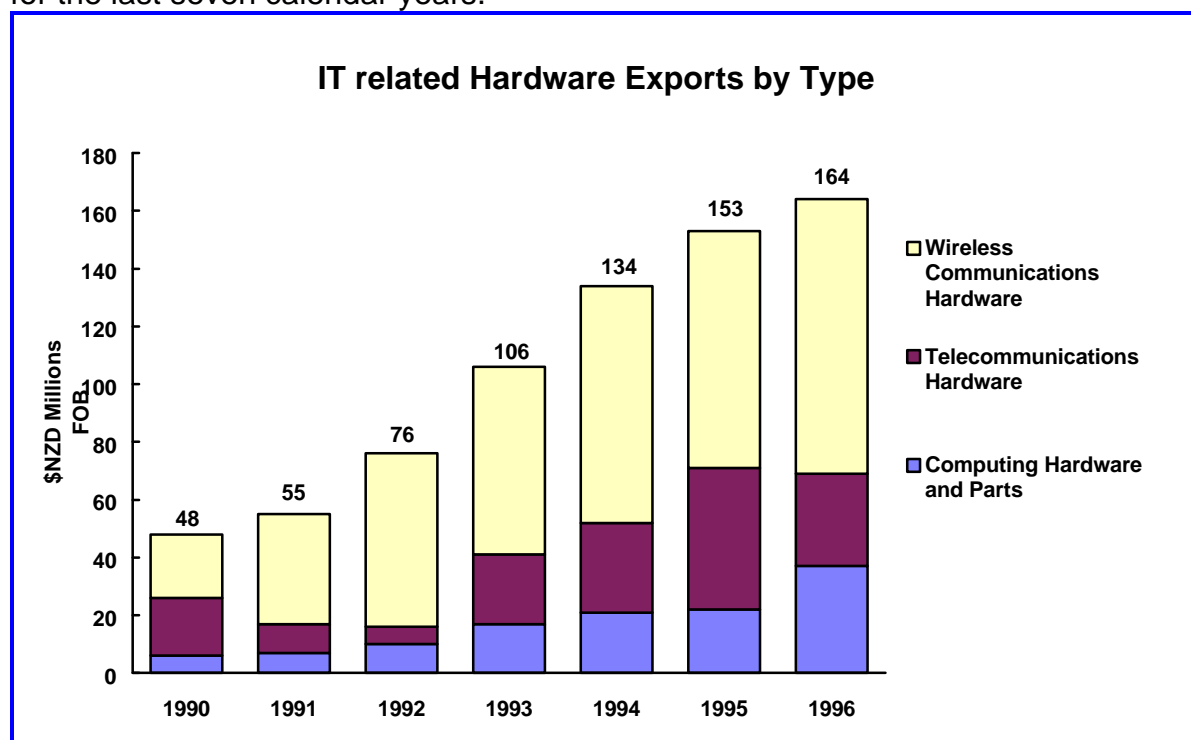


The information in the previous chart is shown below split by import source, showing that the bulk of IT hardware imports continue to come from Asia and America, despite a decline in imports from both areas in 1996. IT hardware imports from Asia fell by 10% from their 1995 level and imports from America were down 8%. Imports from Europe also declined by 7%, while imports from Australia and the rest of the world increased.



2.2 Hardware Exports

The following chart shows a summary of New Zealand IT hardware exports for the last seven calendar years.

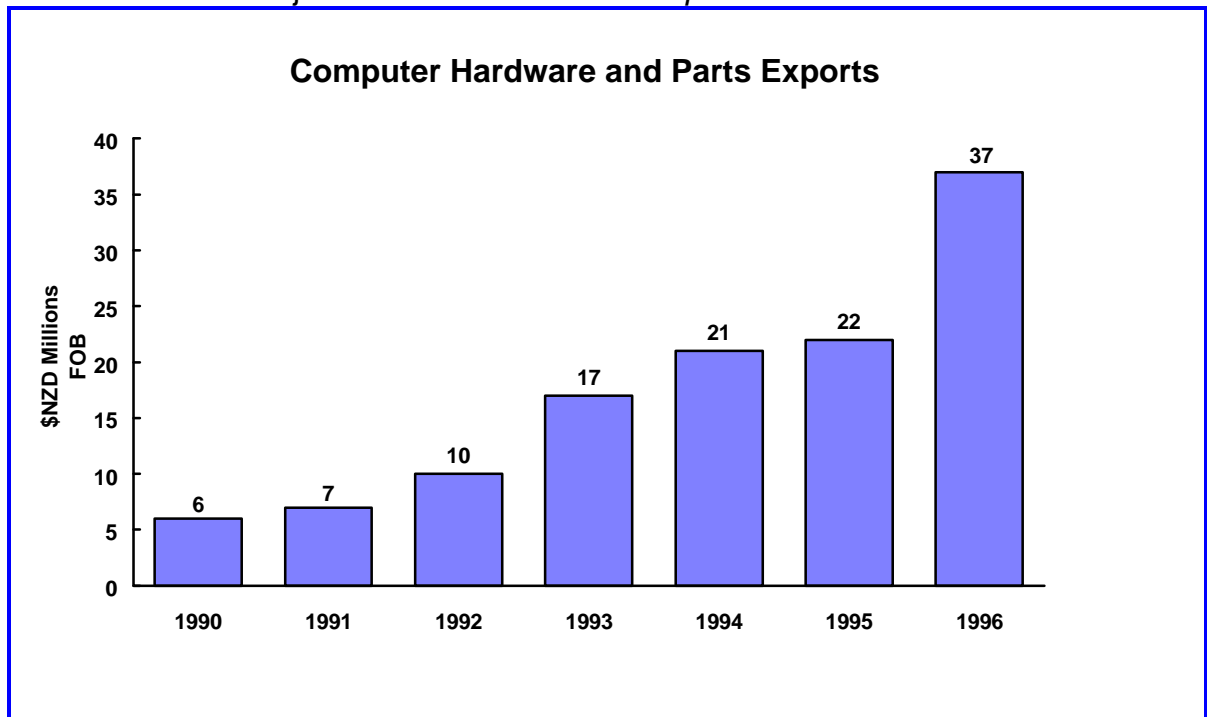


The 1996 year shows a continuation of the sustained increase in export value that has occurred over this period. The growth has come from strong rises in exports of *Wireless Communications Hardware* (a 16% increase in 1996, following no growth in 1995) and *Computer Hardware and Parts* (a 37% increase in 1996, following a 5% increase in 1995). However, the *Telecommunications Hardware* category appears quite volatile from year to year. After decreases in 1991 and 1992, exports of telecommunications equipment increased from 1993 through to 1995, before decreasing in 1996 by 35%, clearly seen in the graph above

While IT hardware exports have continued to grow over the last seven years, IT hardware imports have also grown over the same period, with just a small fall in 1996 and the total value of the imports is still larger than the value of the exports by a factor of 10.

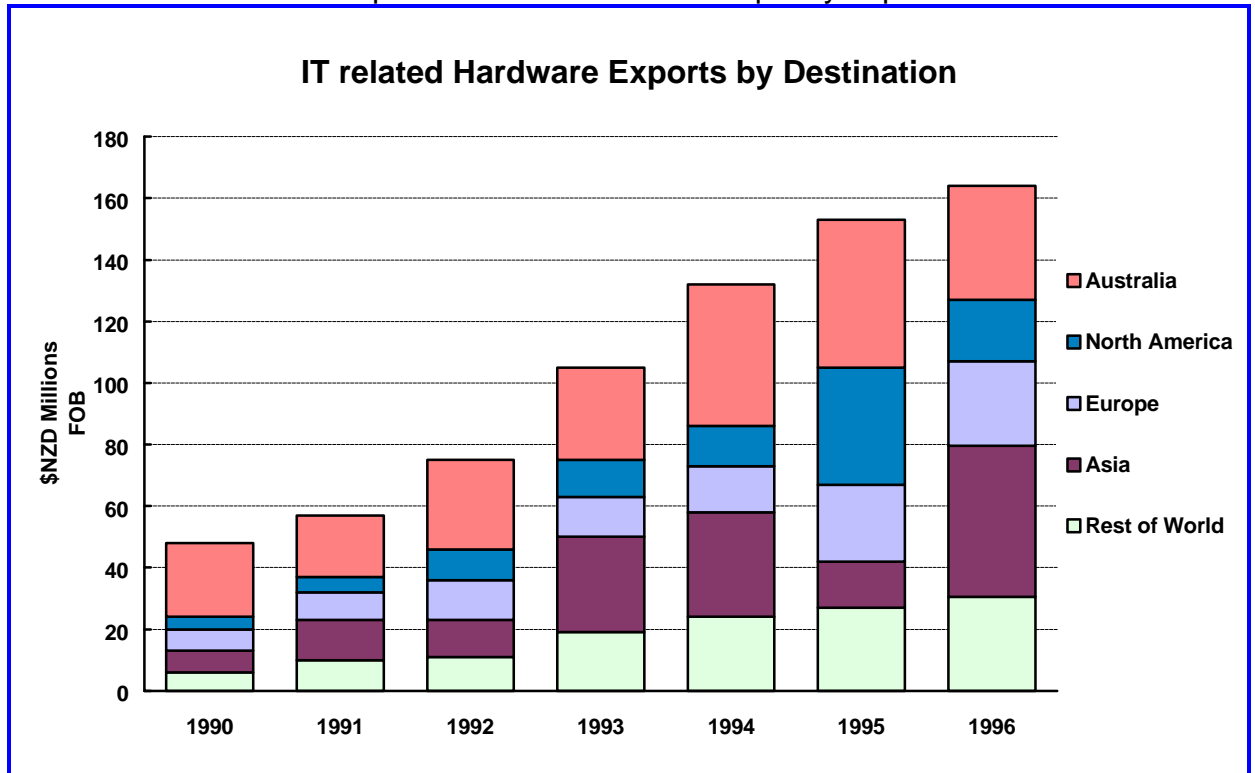
The growth of exports and decline in imports suggests the domestic IT industry is better able to meet local IT needs.

The previous chart refers to three categories of IT related hardware exports; the next one shows just the contribution of *Computer Hardware and Parts*:



The export of *Computer Hardware and Parts* increased steadily to 1992, then more than doubled from \$10 million to \$21 million in 1994. Following slow growth in 1995, 1996 was a year of strong growth of 68% to \$37 million. Exports of this category of IT hardware now make up 23% of all exports of IT hardware.

Below the IT hardware export information is shown split by export destination.



Following a re-alignment of trading partners in 1991-1993, when exports to North America and Asia gained ground, there was strong growth in 1994 across all trading partners. In 1995 exports to Asia declined sharply but bounced back in 1996 to \$49 million from \$15 million, a 227% increase. In 1996, exports to North America and Australia fell by 47% and 23% respectively, while exports to Europe and the rest of the world increased by 10% and 13% respectively.

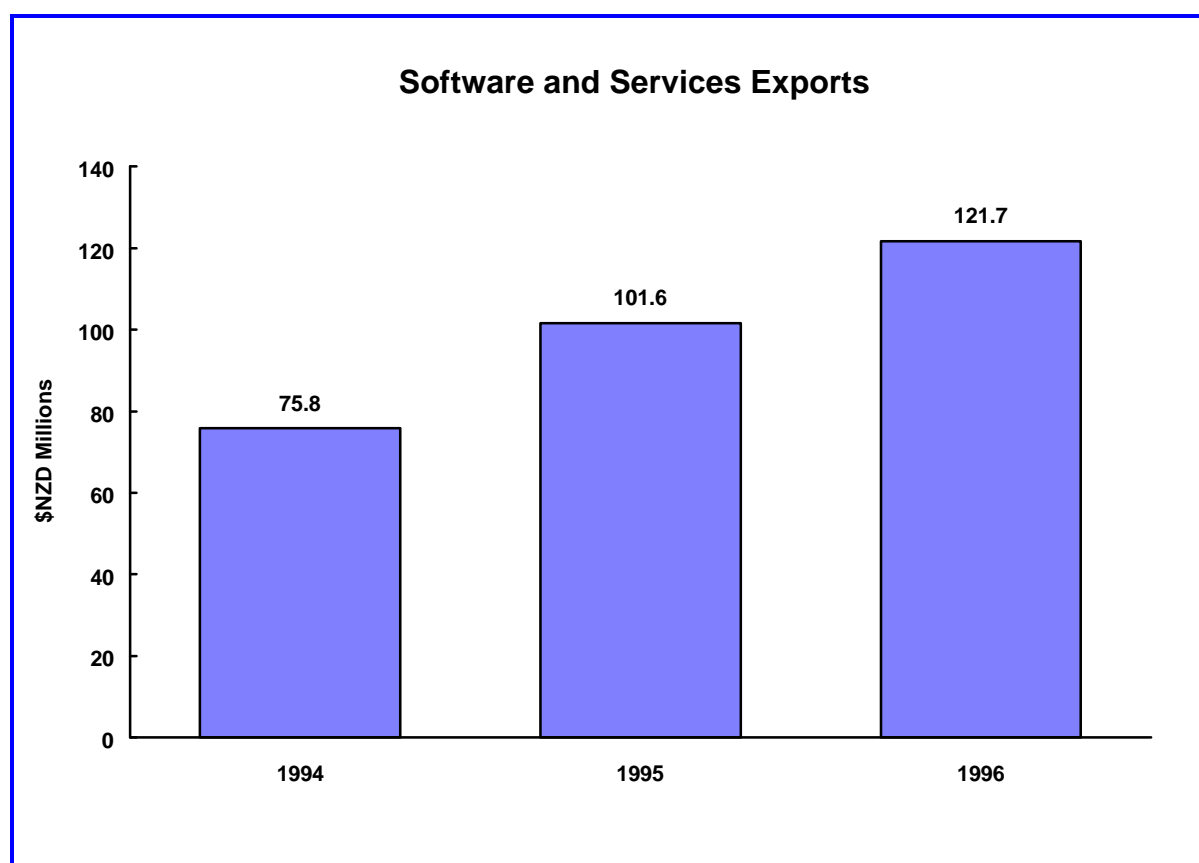
2.3 Software and Services Exports

The information in this section is taken from a survey of IT businesses conducted by Statistics New Zealand now in its third year. The survey is sponsored by the Ministry of Commerce, ITANZ, Tradenz, and Statistics New Zealand.

The survey asks all businesses for information as at their previous annual balance date, with a cut-off of 30 September each year. The average balance date in each sample might reasonably be assumed to be March.

The survey has two specific limitations. Firstly, it does not include "embedded software" - ie software which is part of a hardware product such as a communications system or a washing machine. Secondly, it does not comprehensively cover non-IT businesses or IT businesses with 2 full time equivalent staff or less. Both of these limitations tend to cause the survey to underestimate the actual export figures.

Software and services have not been separated due to the difficulty of accounting for software maintenance revenue.



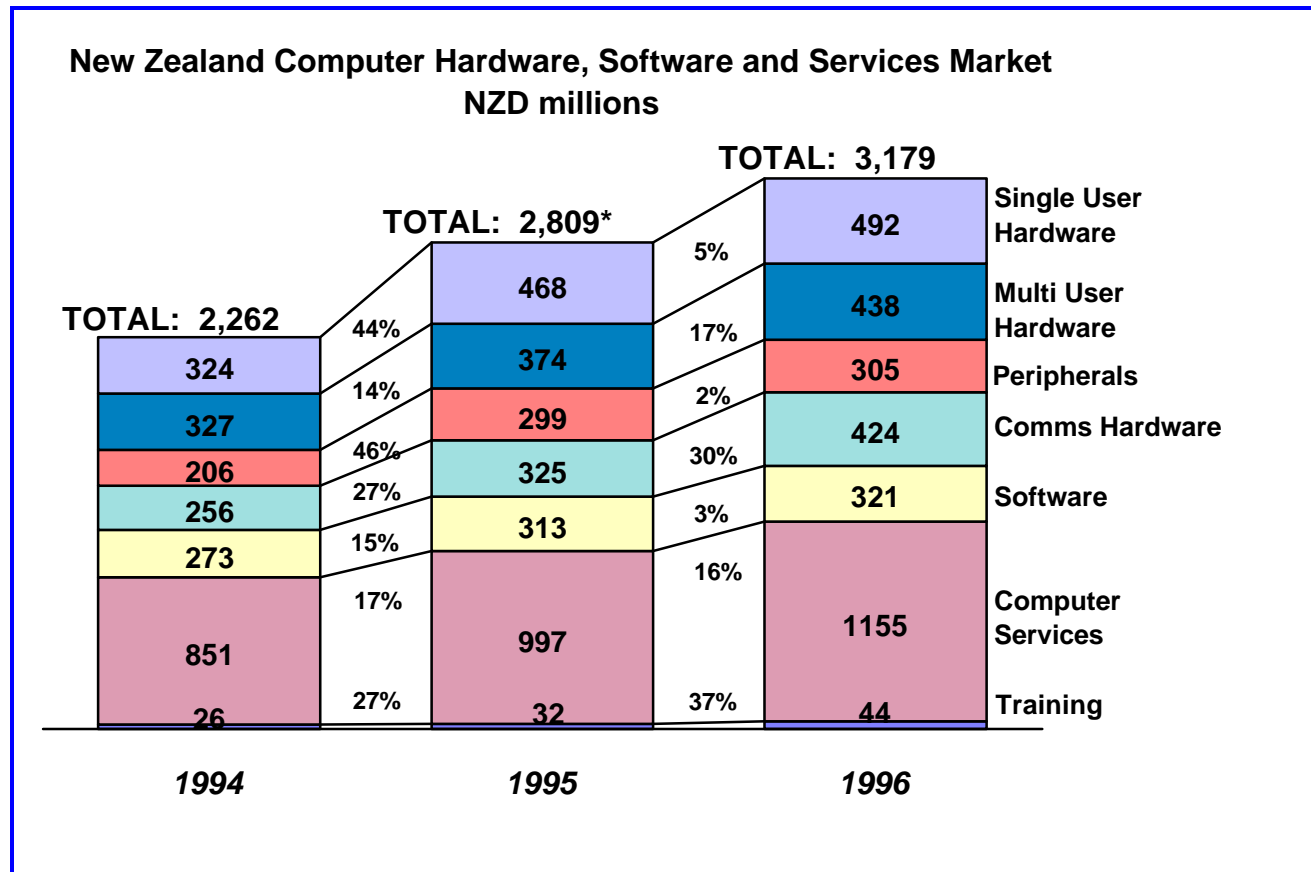
The survey valued software and computer services exports at \$121.7 million in the 1996 financial year, a 19.8% increase from the 1995 figure of \$101.6 million. The 1995 figure has been revised very slightly from last year's issue of this paper due to re-classification of income by some firms.

The survey also finds a total hardware export figure of \$170 million, down slightly from the 1995 figure of \$176 million. This is not directly comparable to the IT hardware export figures captured at the border and given earlier in this paper because of differences in the accounting year; the exclusion of export costs such as freight and insurance; and the aforementioned restriction of the survey to IT related firms with at least 2 staff members.

It should also be noted a number of revisions were made to the 1995 survey data when the 1996 data was presented due to more accurate information becoming available. In some cases, the original survey responses were inconsistent with company accounts. Additionally, improved information about non-respondent companies became available. The data for non-respondent companies is imputed based upon the experience of similar responding firms at the time of the survey. These revisions make direct comparisons between the 1995 figures used in this paper with the 1995 figures published in last year's paper not possible.

3. New Zealand IT Market

The information in this section is taken from a survey of IT businesses conducted by Statistics New Zealand. For more information about the survey see the previous section, Software and Services Exports.



* The 1995 figures include a number of revisions due to more accurate information becoming available as described in the previous section.

The figures used in the graph above represent goods and services sold to end users, and so do not double-count items which are sold by wholesalers and sold on by retailers.

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 laptop PCs and Macintoshes. *Multi User Hardware* is 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*. The split between *Software* and *Computer Services* is unreliable because of the difficulty of accounting for software maintenance revenue.

Once the revisions of the 1995 figures are taken into account, the total IT market grew by 13.2% in the 1996 financial year, following 24% growth in 1995. All categories showed some growth over the year, from the 2% growth

in the *Peripheral Equipment* category to the 37% growth in the *Training and Education in IT* category.

The combined computer hardware categories grew 13.2% in the 1996 year. While there was further growth in the single user systems category, this levelled off to just 5%. This may reflect ongoing falls in PC prices. Most of the growth in hardware sales is therefore due to the 17% increase in sales of multi-user systems and 30% increase in sales of communications hardware and cables.

Sales of software and computer services continued to increase in 1996 by 12.6% to \$1.47 billion. This follows a 17% increase in 1995. The 1996 increase was largely on the back of a 16% increase in sales of computer services to end-users. Software sales, however, increased by just 2.6% over the 1995 financial year figure, suggesting software suppliers are not finding much room for software price increases. This is despite the ongoing increases in the capability of the hardware enabling more software to be loaded onto each machine.

4. IT Industry Employment

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

The table below shows the number people working in IT occupations in the IT industry and in the working population as a whole for 1991 and 1996.

The data in used in this section is taken from the 1991 and 1996 Census of Dwellings carried out by Statistics NZ.

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

This 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% (shown in the table below).

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.

The table below 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 and is due to the overall 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. Its 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.

	No. Employed		% Change of Working Pop.
	1991	1996	
Working Pop.	1,400,376	1,630,809	
IT Occ. IT Ind.	8,826 (0.6%)	10,695 (0.7%)	4.1%
IT Occ. All Ind.	27,717 (2.1%)	33,642 (2.1%)	4.2%
All Occ. IT Ind	40,200 (2.9%)	41,823 (2.6%)	-10.7%
IT Employed*	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 this 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 good and services to a larger working population.

4.1 IT Industry

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 below 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 the charts on the IT industry below is taken from the Statistics New Zealand Business Directory produced by Statistics New Zealand. Staff numbers are full time equivalents.

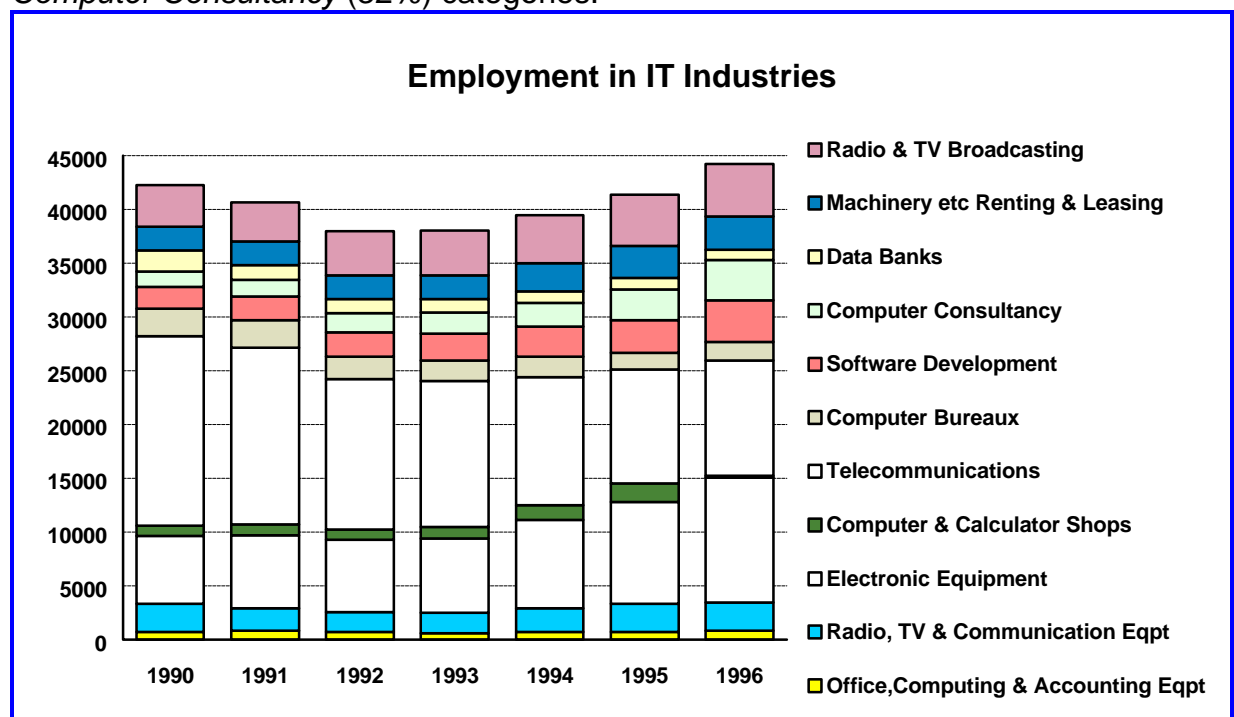
A coverage change in 1994 added businesses identified through data matching with IRD, and those which had originally voluntarily registered for GST but whose turnover subsequently grew to over \$30,000pa. It removed businesses whose turnover had dropped below \$30,000pa. The effect on the figures was neutral over the total of all categories. There was a decrease in the numbers reported to be employed in consultancy and software development, which was matched by an increase in those employed in computer shops. The 1994 figures given here are the revised ones.

A further change occurred in 1996 with the redesign of the Retail Trade Survey in 1995 to conform to the ANZSIC (Australia and New Zealand Standard Industrial Classification) classification. A problem was discovered with the classification of computer distributors. Many were incorrectly

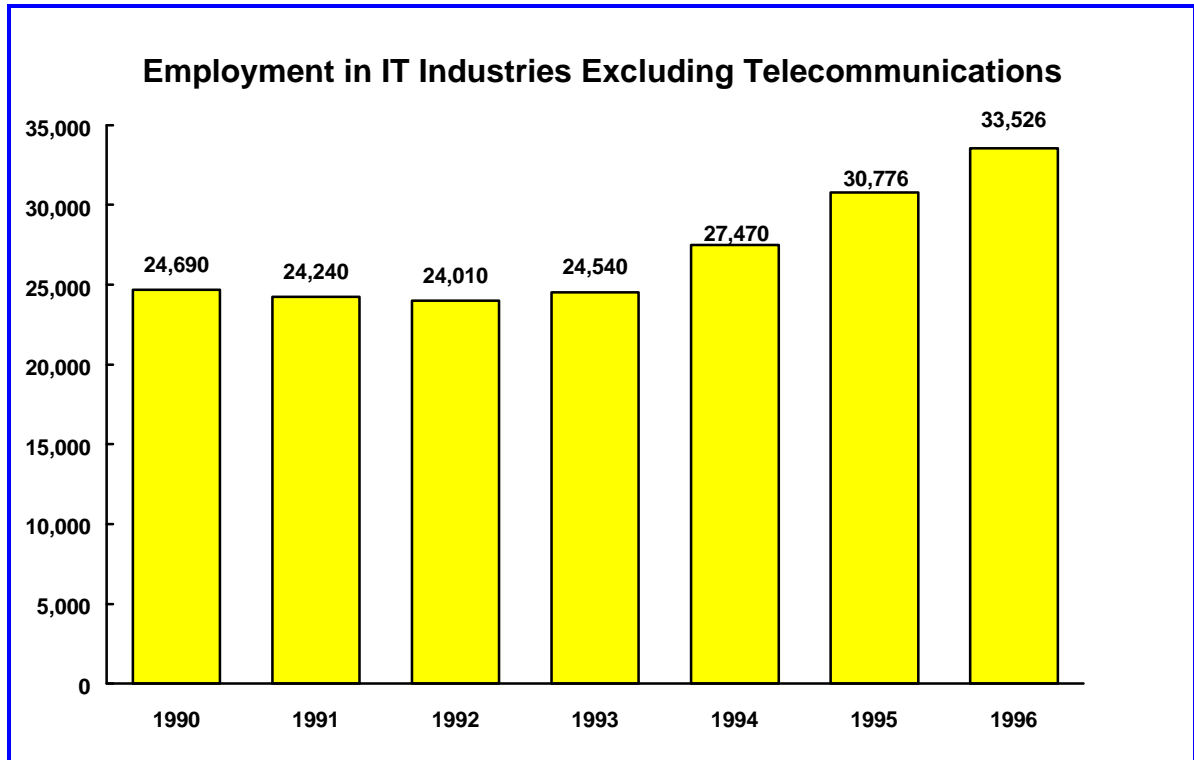
classified as 'computer retailers' when they should have had an industry classification of 'computer wholesaling' or in a few cases 'business services'. Each computer distributor was contacted directly to determine what sort of activity they actually performed so that the industry coding could be amended where necessary.

Due to this latest re-classification, there is a significant drop in numbers in the *Computer and Calculator Shops* (computer retailing) category between 1995 and 1996, while an offsetting increase has occurred in the *Electronic Equipment* (computer wholesaling) category.

The following chart shows that employment in the IT industry has risen steadily since 1992. In the 1996 calendar year, there was an increase in employment in every category, except for the *Computer and Calculator Shops* category, as described above, and the *Data Banks* category. The number employed in the Data Banks category has been falling since 1990. For the first time since 1992 there was a small increase in employment in the Telecoms sector. Categories to show significant increases in 1996 were the *Electronic Equipment* (a 22.5% increase), *Software Development* (27%) and *Computer Consultancy* (32%) categories.



The following chart also shows the same trend of a continuing rise in employment in the IT industry. It graphs the same data as the chart above with the exception of the telecommunications industry. There was a 9% increase in employment in the non-telecommunications IT industry in 1996, following a 12% increase in each of the previous two years.



4.2 IT Occupations

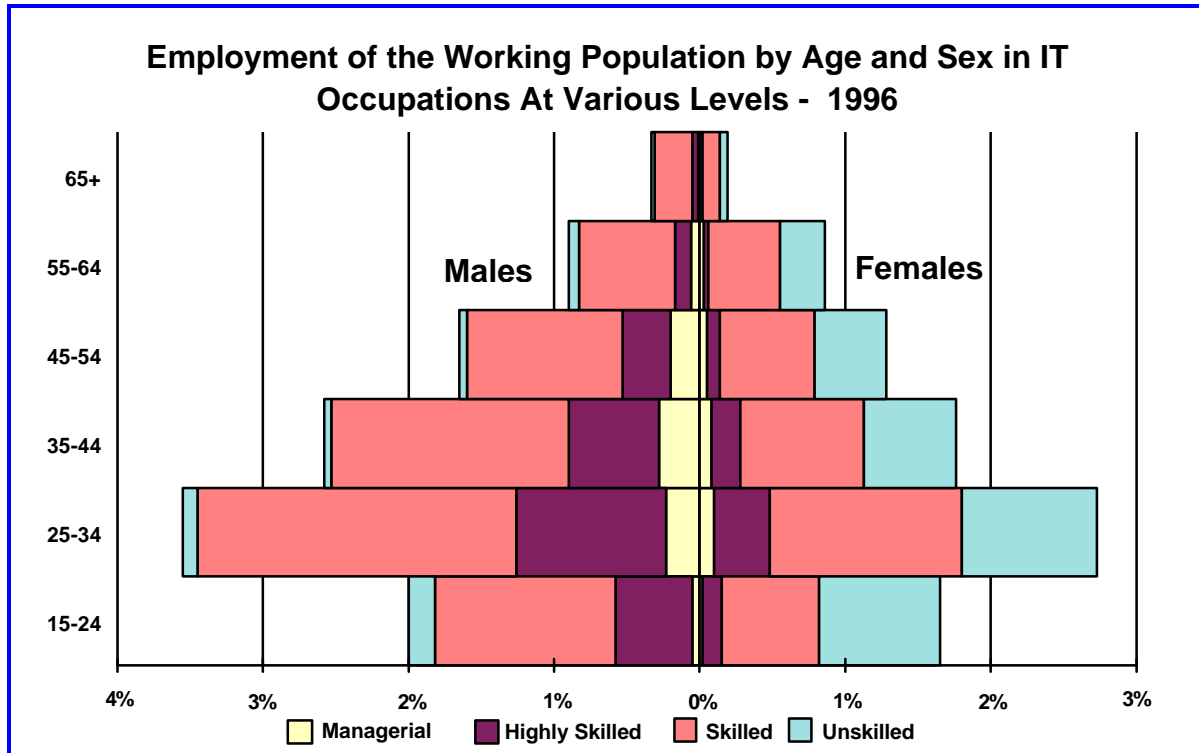
The information in this section is taken from the 1991 and 1996 Censuses.

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. Note 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.

Code	Description	Category
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 the two following charts.

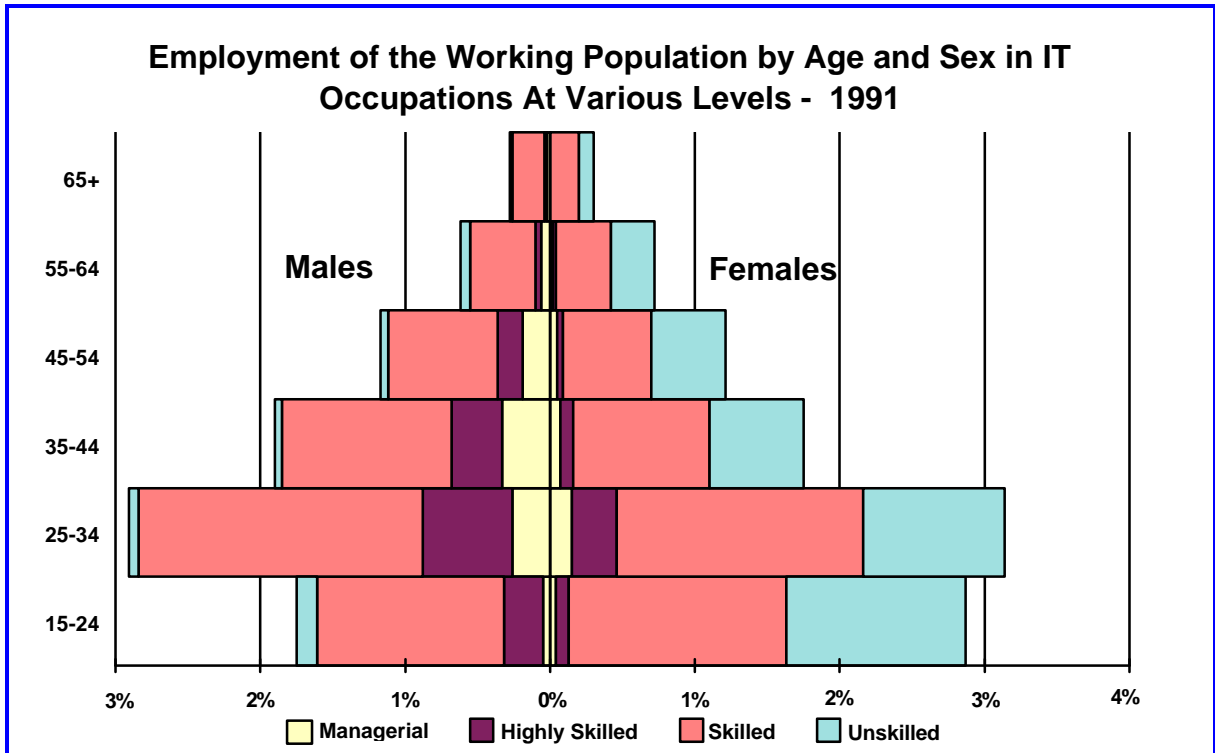


Each bar in this chart represents the numbers employed in IT occupations as a percentage of the numbers working in all occupations for a given age/sex group. These percentages are known as participation rates.

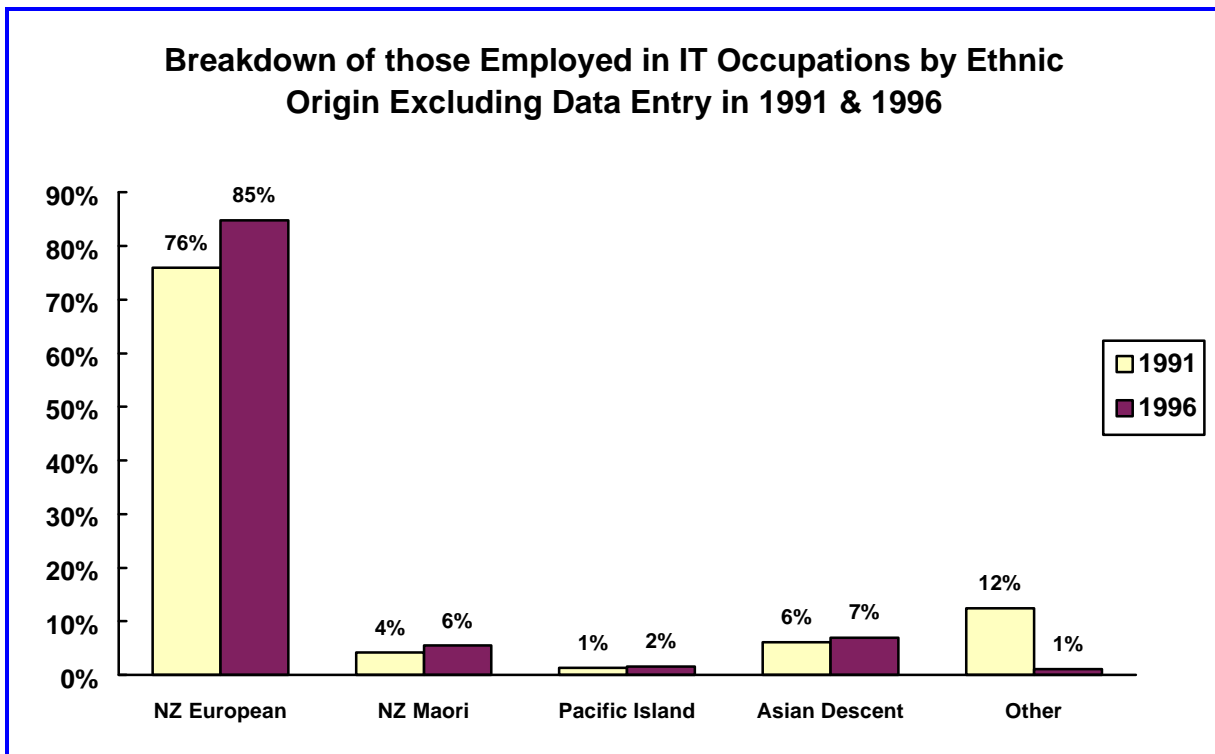
The chart indicates the IT industry remains a youthful industry, with 81.4% of men working in IT occupations being in the 35-44 or younger age groups and 80.9% of female IT workers in the 35-44 or younger age groups. It also shows that men had higher participation rates than women in IT occupations in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

Men also had higher participation rates than women in managerial IT positions. Men tend also to be more likely to be represented in the more highly skilled non-managerial occupations such as Systems Analysis and Computer Applications Engineer. Women in contrast, 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 below, shows a relatively similar pattern to the 1996 chart. 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.

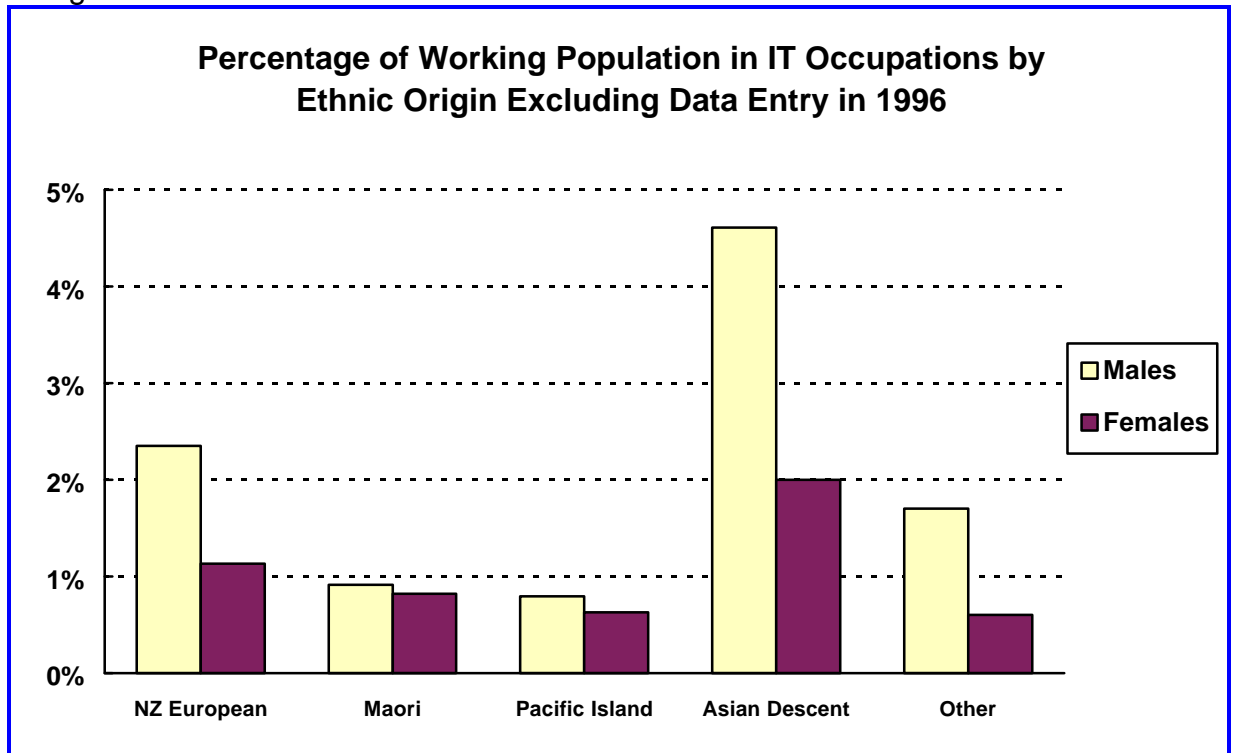


The following chart shows the breakdown by ethnic origin of those in IT occupations for 1991 and 1996, excluding data entry operators. The only changes of note between the two surveys is a large decrease in the proportion of people classifying themselves as Other and an increase in the NZ European category.



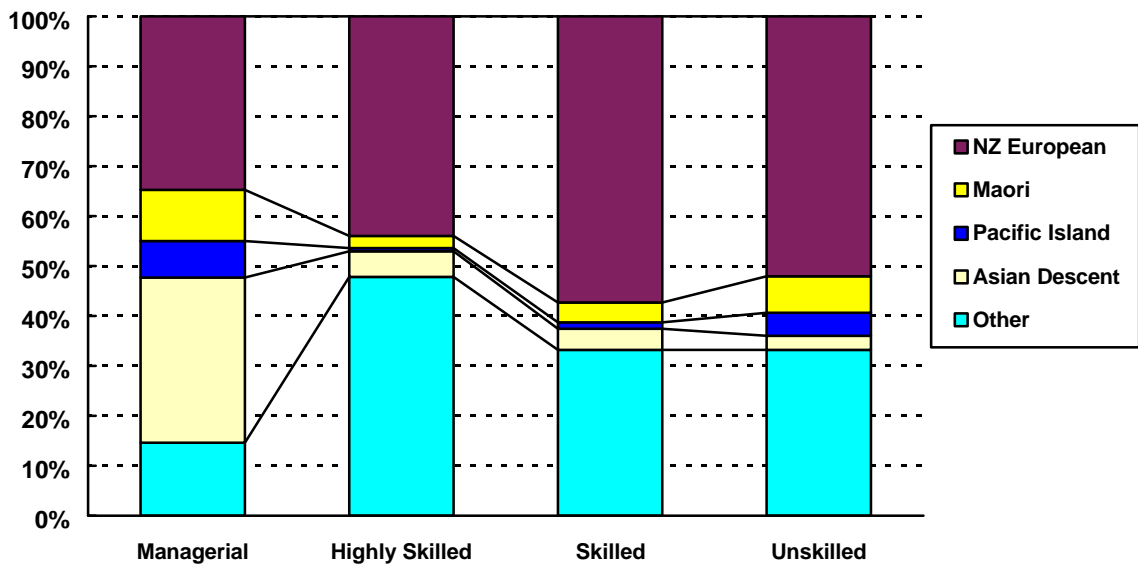
The following chart shows the numbers working in skilled IT occupations as a percentage of the working population in each ethnic group. While the participation of men and women identifying themselves as NZ European is higher than those of Maori and Pacific Islanders, the outstanding feature of the chart 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.



The chart below 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.

IT Occupations at Various Levels as a Percentage of Total Numbers in IT Occupations for each Ethnic Group - 1996

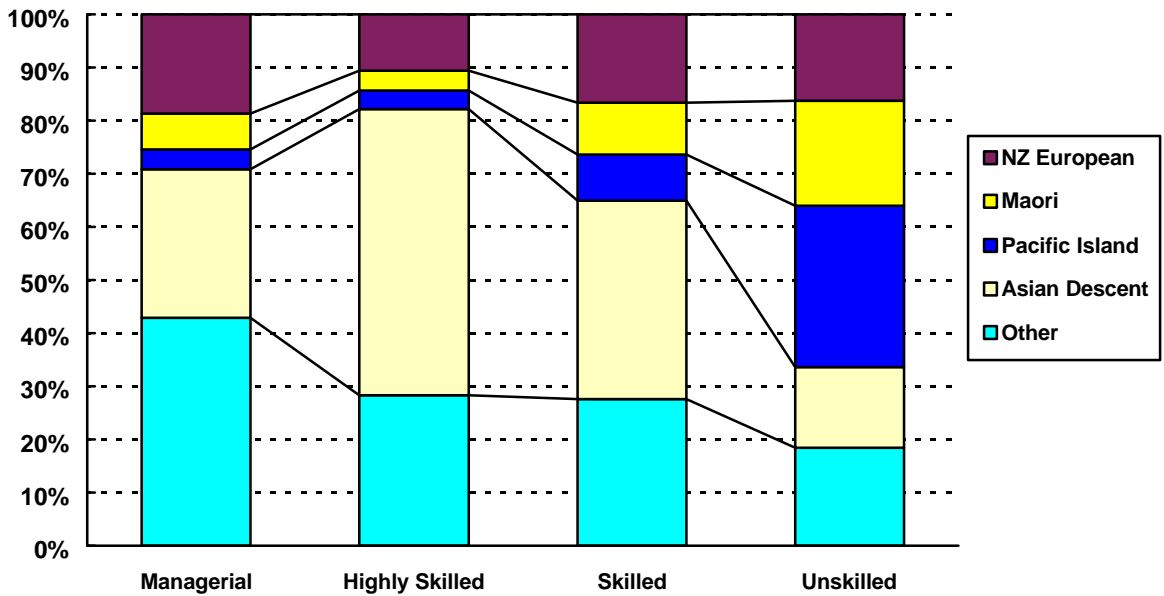


People categorising themselves as NZ European have high participation rates across all four levels of IT occupations. The Other group also shows relatively high participation rates, except at the managerial level. This is reflected by the significantly higher participation rate of people of Asian descent 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 above with the same data from 1991 below, 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%.

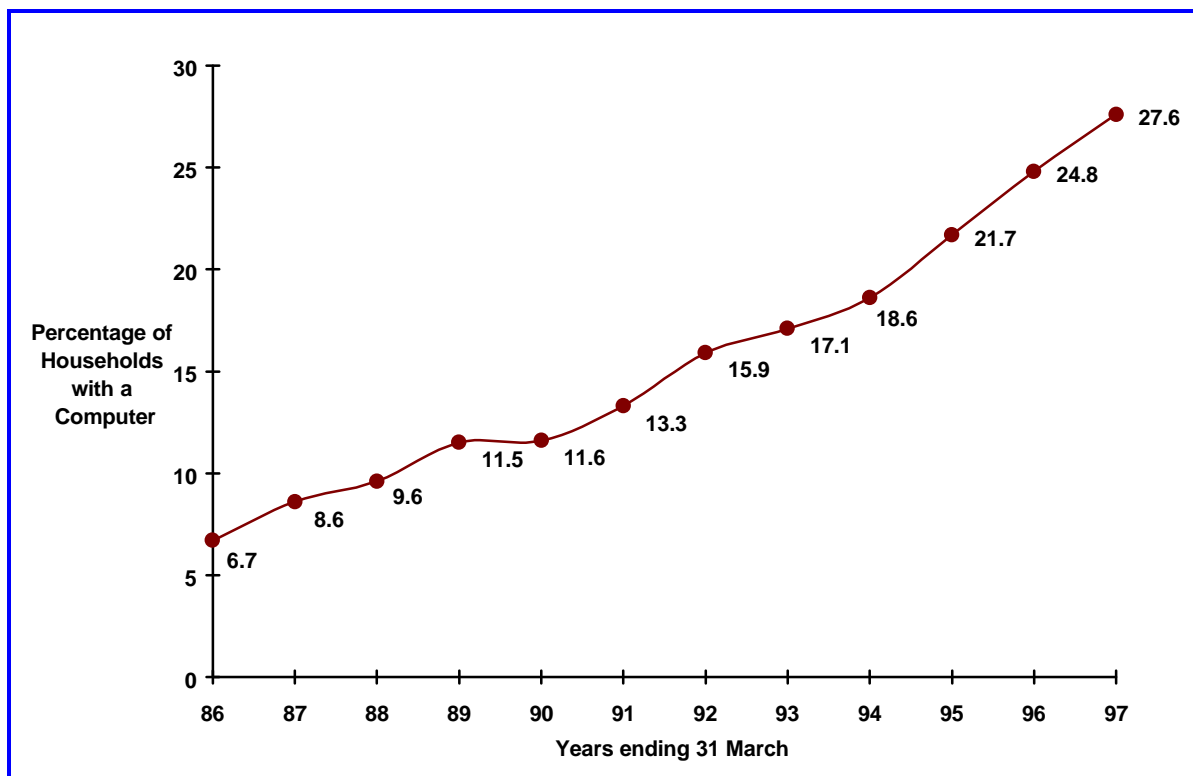
IT Occupations at Various Levels as a Percentage of Total Numbers in IT Occupations for each Ethnic Group - 1991



5. Computers in Homes

The figures used in this section are taken from the annual Household Economics Survey conducted by Statistics New Zealand. This survey assesses each household in a sample of 3000 over a 12 month period ending in March. It is therefore reasonable to attach the figures to a March year end.

The following chart shows the percentage of homes with a computer (mains operated with keyboard):



The chart shows that in March 1997, 27.6% of New Zealand homes had a mains operated computer. The percentage of households with a computer has continued to rise since the question was first asked in the survey in 1985-86. The last three years show relatively larger increases, however, as shown by the steeper curve of the graph over the latter part. The survey does not distinguish between households with only one computer and those with more than one.

The survey also recorded that 18.0% of households had a cellular phone available, 15.6% had a subscriber TV decoder, 79.8% owned a video recorder and 31.8% a dishwasher.

6. Computers on the Internet

The data presented in this section covers the number of hosts (computers) permanently connected to the Internet in New Zealand, and the size of the New Zealand domain which is a measure of the number of organisations connected.

6.1 Structure of the New Zealand Internet

The Internet in New Zealand has essentially a two-tier structure. The first tier is wholesalers, ie those who operate offshore links and bring overseas Internet traffic to New Zealand. The second comprises retailers, known as Internet Service Providers (ISPs). Internet users are customers of ISPs, who are in turn customers of the wholesalers.

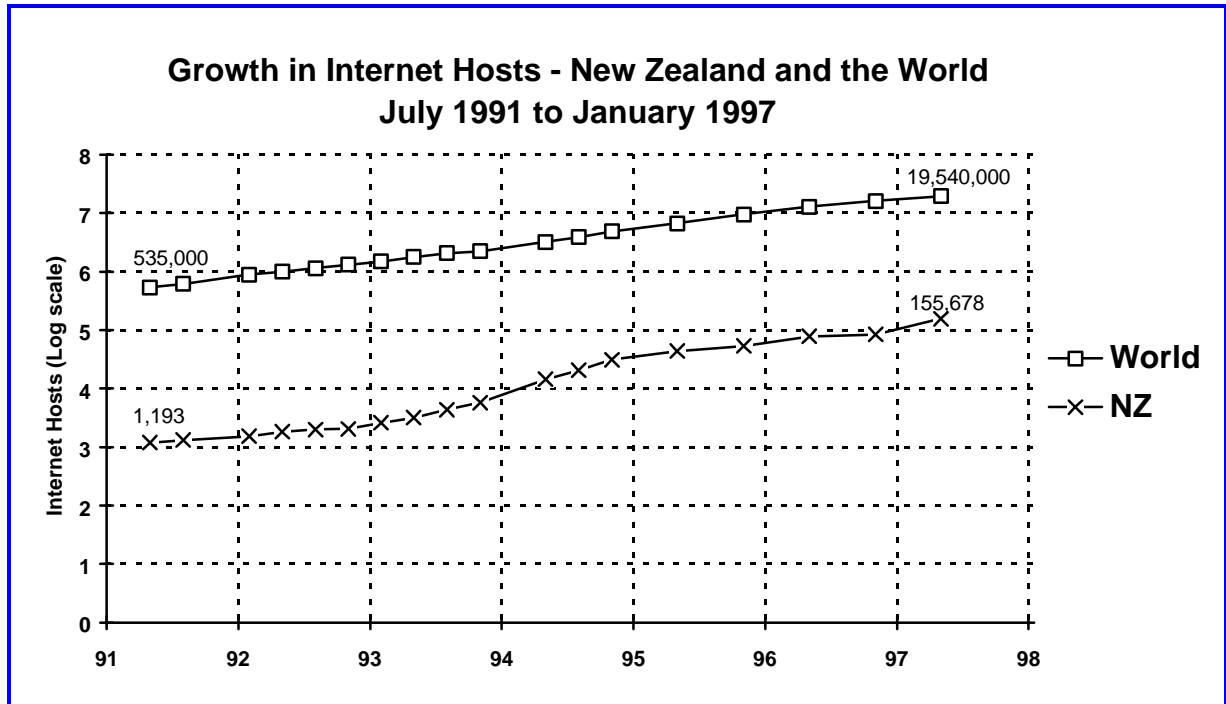
6.2 Number of Computers on the Internet

The data for this section is derived from the results of a survey undertaken every six months by Network Wizards. The full survey results are available on that company's web server at <www.nw.com>.

The number of "hosts" (computers) on the Internet is often regarded as a measure of the number of people with access to the Internet.

To be counted as a host, a computer must have its own Internet address and be permanently and directly connected to the Internet. Home or small business computers which connect by dialling up to a service provider are therefore not counted. Consequently, it is reasonable to assume that there are more users than hosts, possibly by a factor of two or more. To stress this point: the information in this paper refers to the number of computers permanently wired into the Internet in New Zealand, it does not purport to describe directly the number of individuals using the Internet. Figures relating to Internet users and usage should be treated with caution due to the evolving nature of the Internet, the variety of ways it can be accessed and the difficulty in gathering reliable data.

The following graph shows the growth in the number of hosts connected to the Internet in New Zealand, as well as the number connected worldwide, from July 1991 through to July 1997.



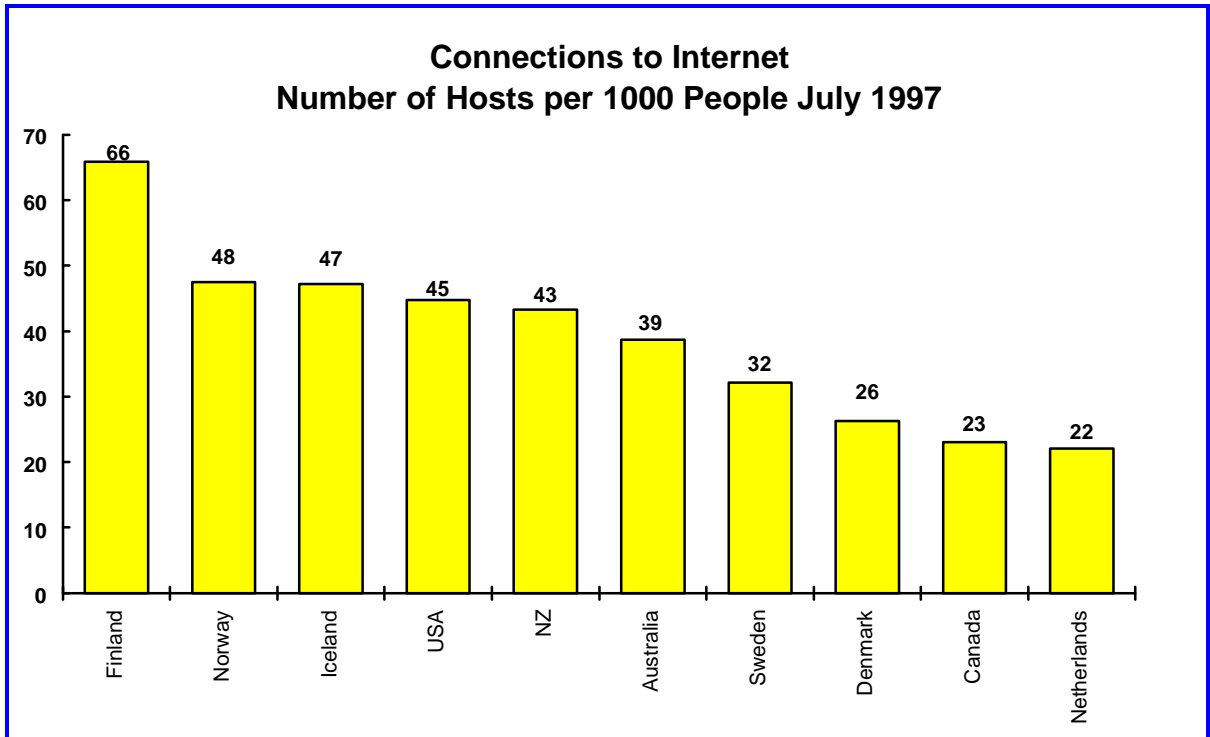
The straight rising lines on this logarithmic graph tell the same story as the exponential curve usually seen on graphs of growth of the Internet. By using the logarithmic scale, both curves can be plotted on the same graph, despite the substantial difference.

The graph shows a significant jump in the number of Internet hosts in New Zealand over the last six months, indicated by the steeper slope over the last section of the lower line. The number has increased from 84,532 recorded in January to 155,678 recorded in July 1997, an increase of 84.2%. The annual rate of increase to July 1997 was 99.9%.

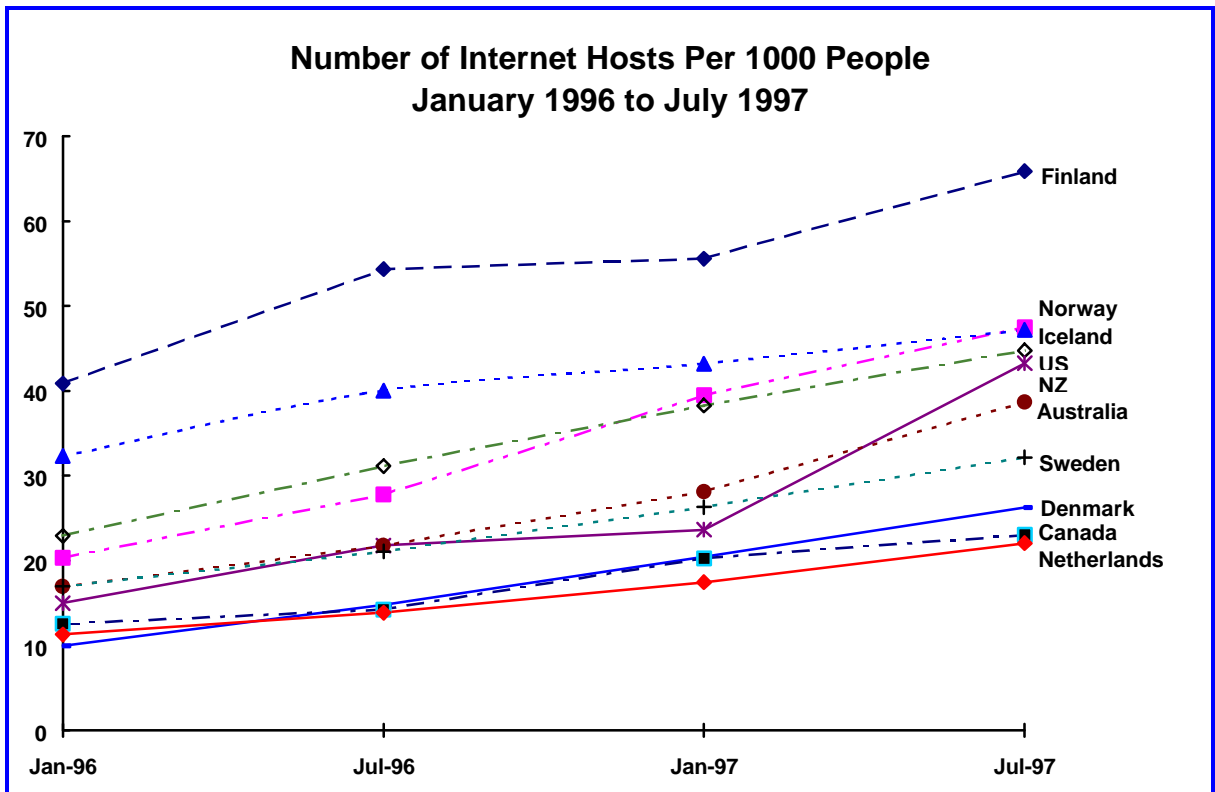
The increase over the last six months follows a period of slower growth over the period up to January 1997, shown by the levelling off of the line. New Zealand's Internet had been growing much faster than much of the rest of the world up to 1995, but this extreme rate of growth levelled off in 1995 and 1996 to a more normal rate, where "normal" in the context of the Internet currently means an annual rate of somewhere between 60% and 80%.

As a result of the earlier exponential rates of growth and the spurt of growth in hosts over the last six months, New Zealand now has the fifth highest number in the world of Internet hosts per thousand people behind Finland, Norway, Iceland and the US.

The following graph shows the ten countries with the highest Internet host counts by population. Interestingly, six out of the ten countries are countries where English is not the first language. Note the numbers are rounded.

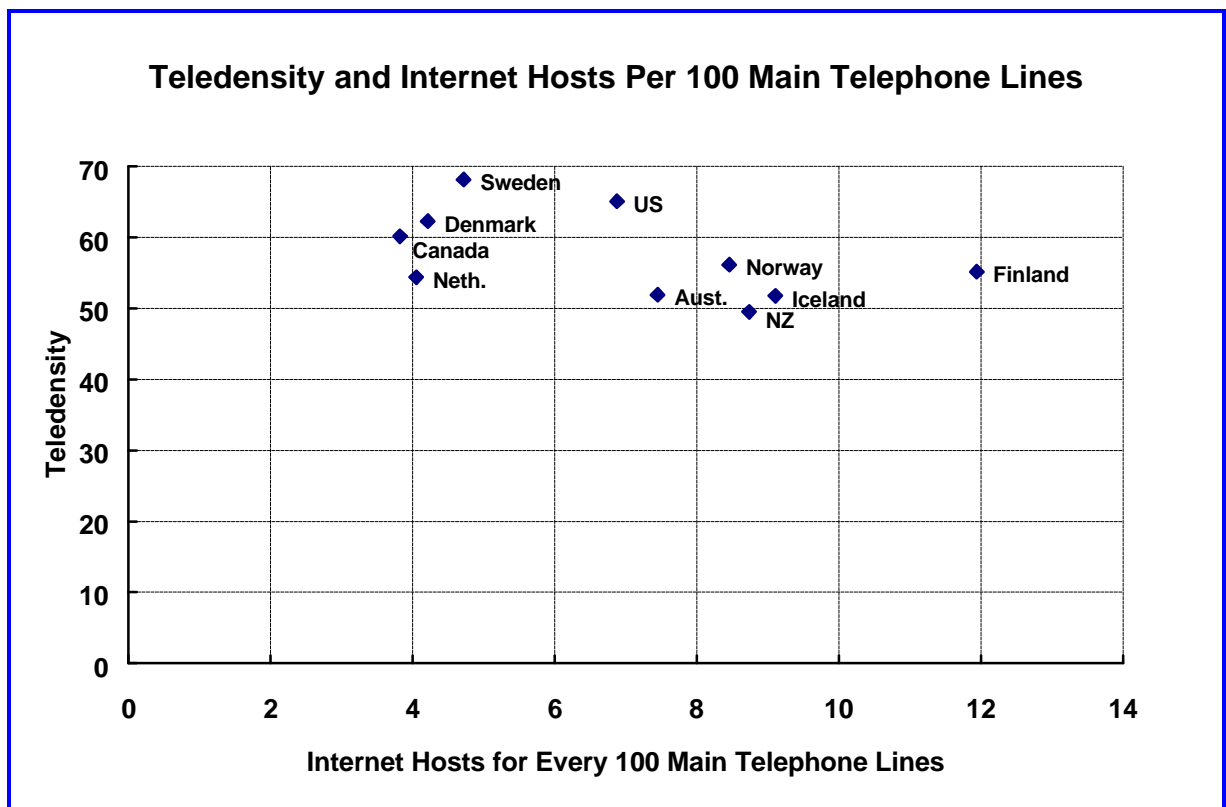


To show how the numbers of hosts in each of the countries above has been changing over time, the chart below reproduces the data from the chart above and back dates it to January 1996.



The following chart plots two variables - the number of Internet hosts for every 100 main telephone lines in the same ten countries as above is plotted against the number of people for every 100 main telephone lines in each country. The latter variable is known as the *teledensity* of the country. A relatively higher teledensity indicates that there are more main telephone lines for every member of the population. The number of telephone lines in each country is taken from data from the International Telecommunications Union and is for the end of 1996.

Surprisingly, the chart shows that relatively higher teledensities are not a necessary requirement for higher ratios of Internet hosts to main telephone lines, although there is not a huge variance in teledensity for the ten countries. New Zealand has the lowest teledensity of the ten countries, but has the third highest number of Internet hosts by main telephone lines.



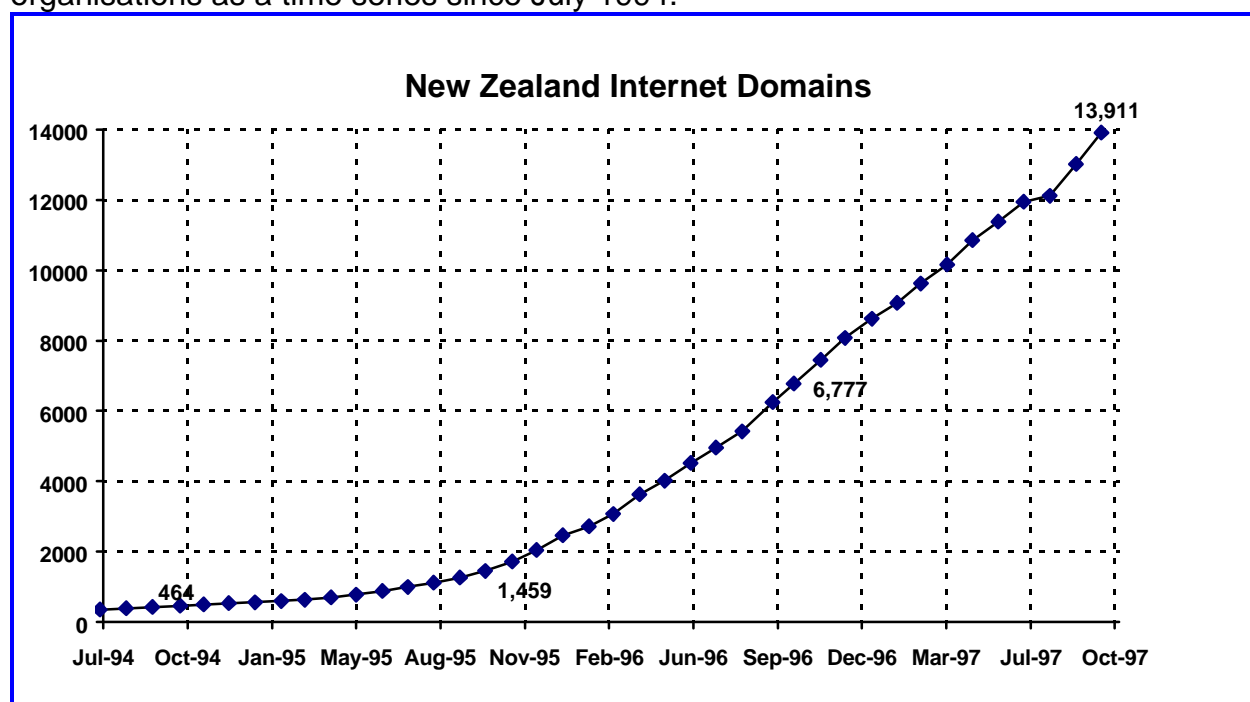
7. Organisations on the Internet

The data in this section is derived from figures compiled by Mark Davies of Victoria University of Wellington.

When an organisation connects to the Internet, it typically registers a “domain name”. In this section we attempt to estimate the numbers of New Zealand organisations connected by counting the registered domain names.

Each third level New Zealand domain, eg name.co.nz, that has been registered is assumed to belong to a separate organisation. Sub-domains are not counted, thus moc.govt.nz is counted but comms.moc.govt.nz is not. In general each third level domain is given to a different organisation, be it a company, school, government department etc, so domains are a good measure of the number of organisations connected.

The following graph shows the total number of network connected organisations as a time series since July 1994.



It is clear that there is strong ongoing growth in the registering of domains in New Zealand, particularly over the last two to three years. At October 1 1997, there were 13,911 registered domain names, which means there are at least 13,911 New Zealand organisations with some form of Internet connection.

Over the year to October 1997, registrations grew at 105%, although in the year to October 1996, they had been growing more quickly at 364%. The slower rates of growth now being recorded probably reflect that there is now an established base of organisations with a registered domain name and an Internet connection in the country.

7.1 Types of Organisation

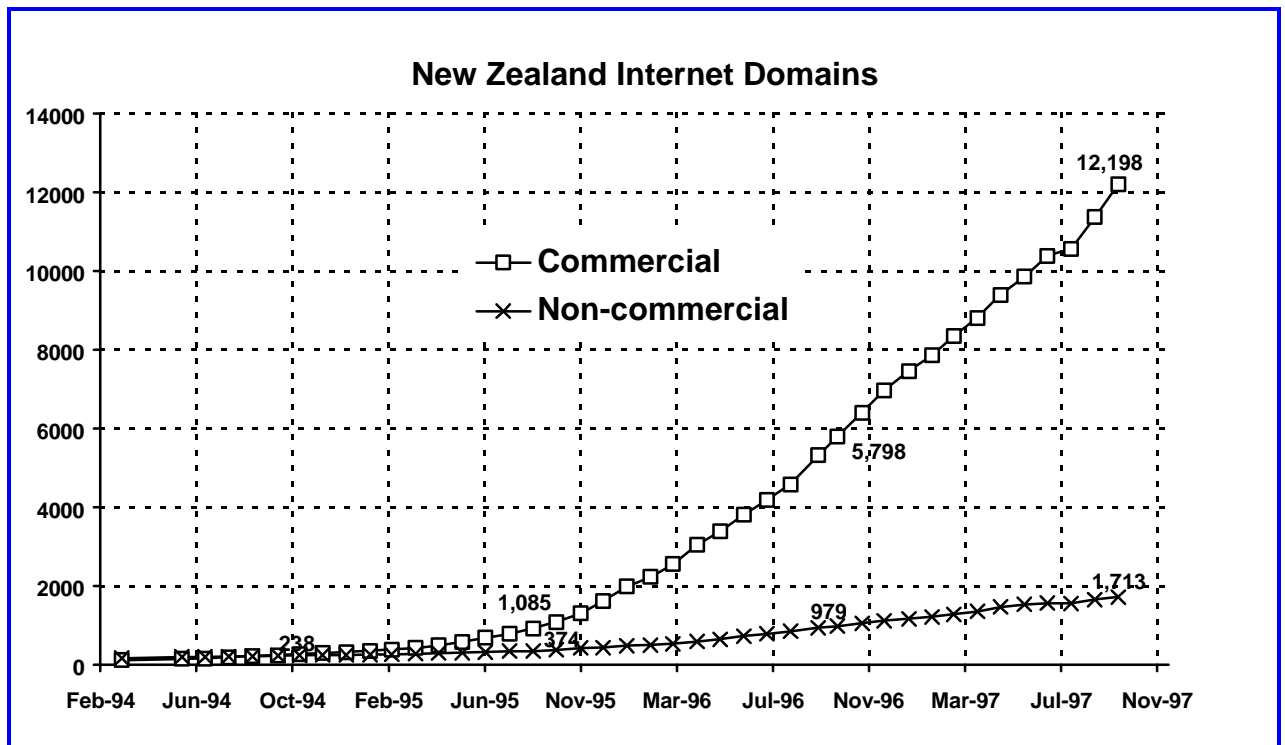
Organisations are allocated domain names according to organisation type. The penultimate part of a name, such as the “co” in <name.co.nz> is used to categorise domains. This part of the name is often called a second level domain. In New Zealand the following second level domains are used:

ac.nz	Tertiary educational institutions
co.nz	Companies
cri.nz	Crown Research Institutes
gen.nz	Individuals and organisations which do not fit the other categories
govt.nz	Central government agencies and local and regional councils
iwi.nz	Iwi organisations
mil.nz	Military organisations
net.nz	Internet Service Providers
org.nz	Non-profit organisations and incorporated societies
school.nz	Schools

This table represents the policy for allocating names now, and does not cover a number of historical anomalies. In particular, ISPs have been registered in ac.nz, gen.nz and co.nz as well as net.nz.

While there is provision for individuals to have domain names of their own in the gen.nz domain, most do not. Therefore numbers of domains registered is not a good indicator of individuals using the Internet.

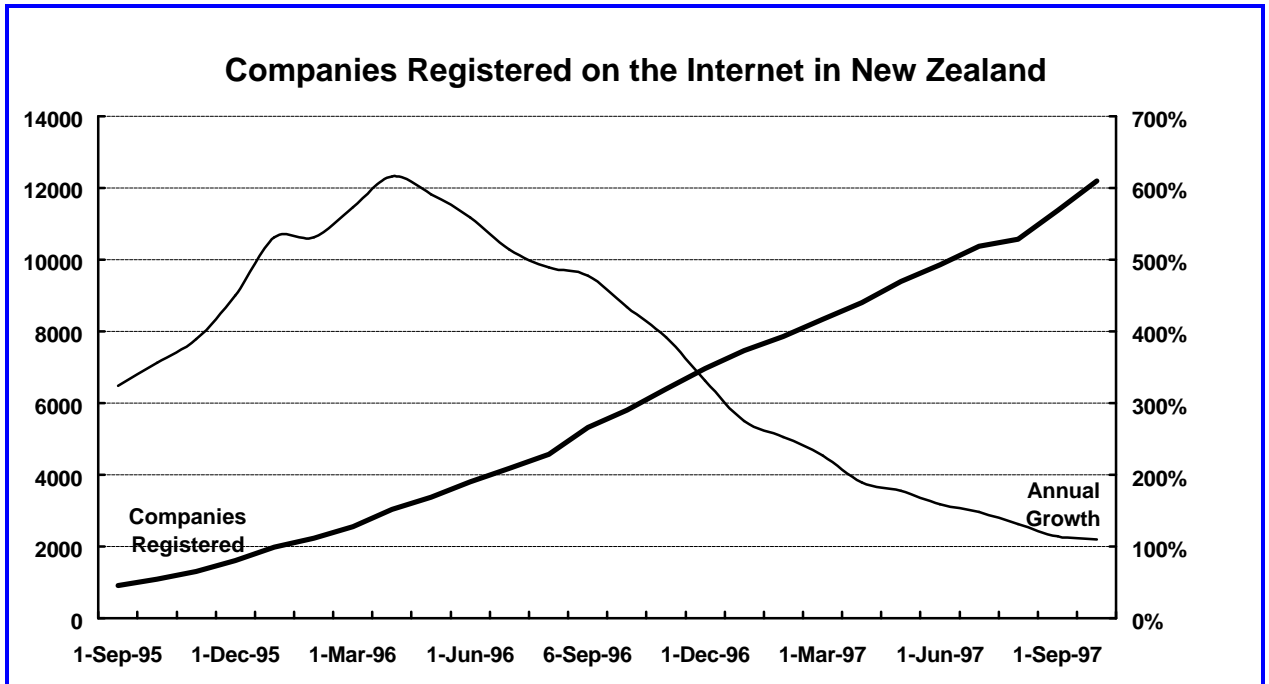
The following graph shows the split of commercial (co.nz) to non-commercial organisations (all other second level domain names registered).



This graph shows that much of the increase in registered domain names is due to the registration of commercial domain registrations, which has grown over the last year from 5,798 to 12,198, an annual growth rate of 110%. Again this annual rate of growth is slowing. In the year to October 1996, the annual growth rate was 434%, but each month since, the rate of growth has been falling, again a reflection of the numbers already registered.

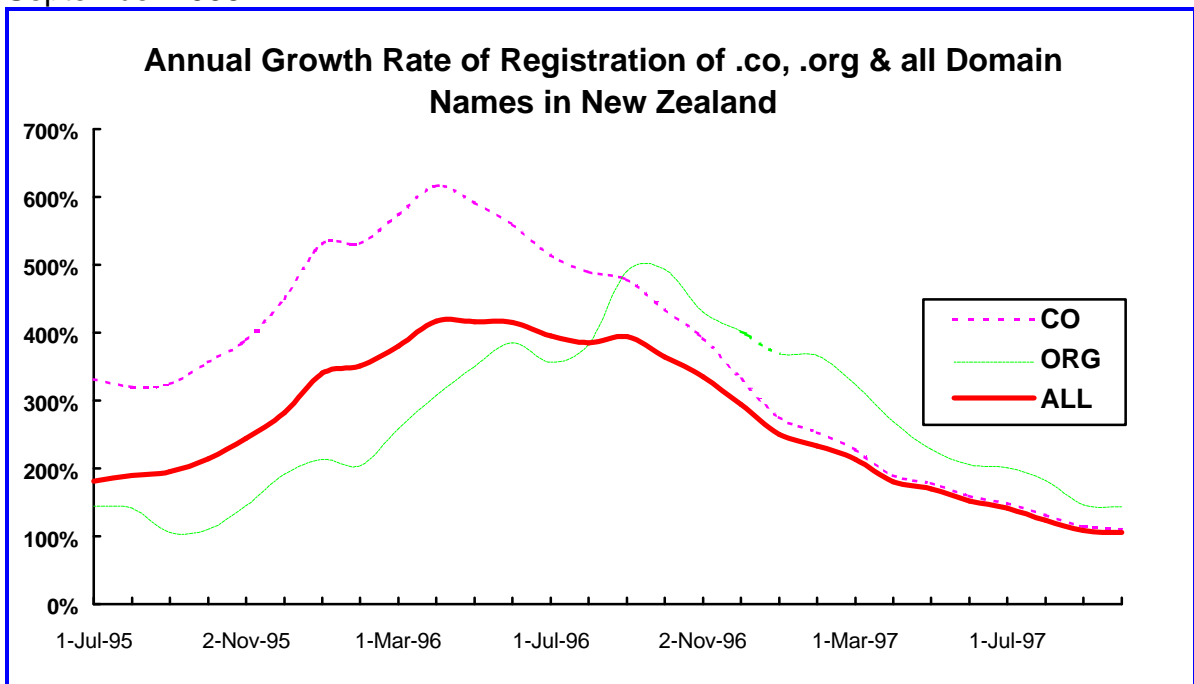
Over the last year growth in the registrations of non-commercial domains has also been increasing from 979 to 1,713, a 75% increase, although this continues to be overshadowed by the growth in commercial domain registration.

The following graph charts the commercial domain information as in the graph above, however, a line mapping the annual growth rate is added.



This graph also shows the substantial growth in New Zealand companies registering a domain name on the Internet. The line plotting the annual growth rate shows that it peaked in April 1996 at 616%, and has been falling steadily since to its current rate of 110%. This is still strong annual growth, however.

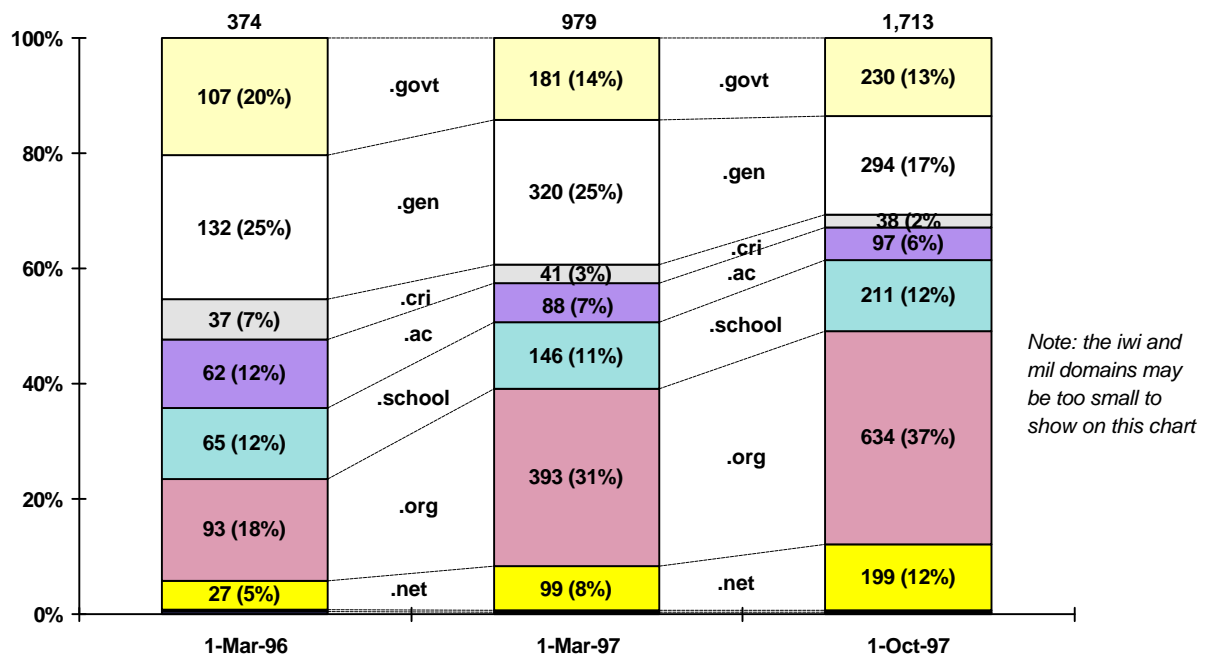
The following chart shows the company domain growth rate plotted against the total growth rate and the .org domain name growth rate, which now is the second most popular domain name and has been clearly growing at a faster rate than the registration of commercial domains and all domains since September 1996.



The following graph shows how the non commercial domain registrations are split for March 1996 and 1997, and October 1997. The graph clearly shows the significant growth in the number of organisations registering under the .org. domain over past 18 months. This domain now comprises 37% of all non-commercial domains, up from 18% in March 1996. The .net domain is also showing ongoing growth over and above the other domains and now represents 12% of non-commercial domains, while the number of schools registering under the .school domain also continues to grow, although at a more modest rate.

The one domain to show a significant decrease is the .gen domain, which has decreased overall and as a proportion of all domains to 17%.

New Zealand Non-commercial Internet Domains

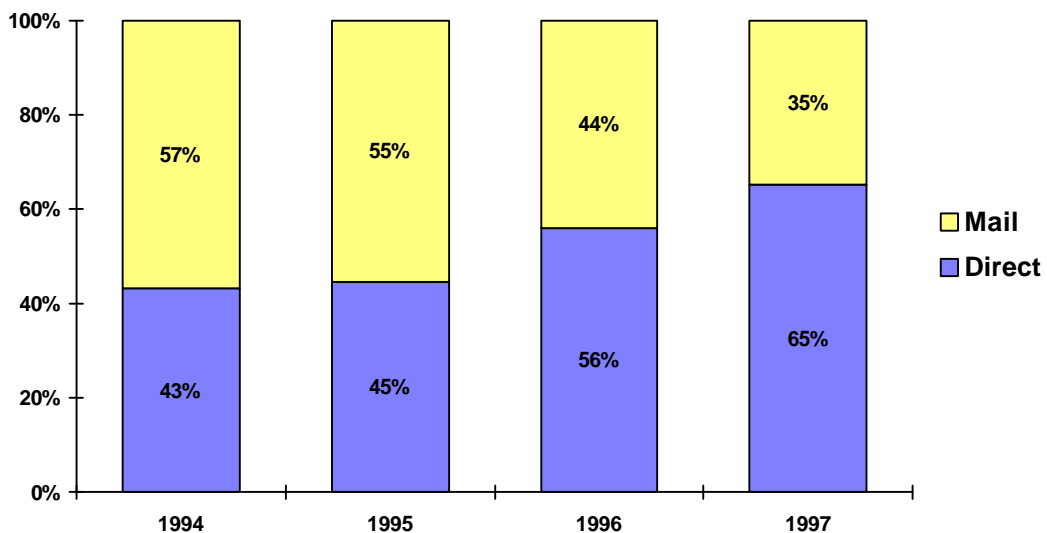


7.2 Direct Connection Versus Mail-Only Connection

There are two ways in which an organisation can connect to the Internet: a direct connection allowing full access, or a mail only connection. The latter type of connection would typically be used to enable the users of a corporate mail system to send and receive Internet mail messages, without providing them full Internet access.

The following graph shows the ratio of directly connected organisations to mail connected organisations in New Zealand for the October 1994-97 years. It indicates the proportion of organisations connecting directly to the Internet is growing far more rapidly than the proportion choosing mail only connections. By October 1997, 65% of connected organisations were directly connected, up from 43% in 1994.

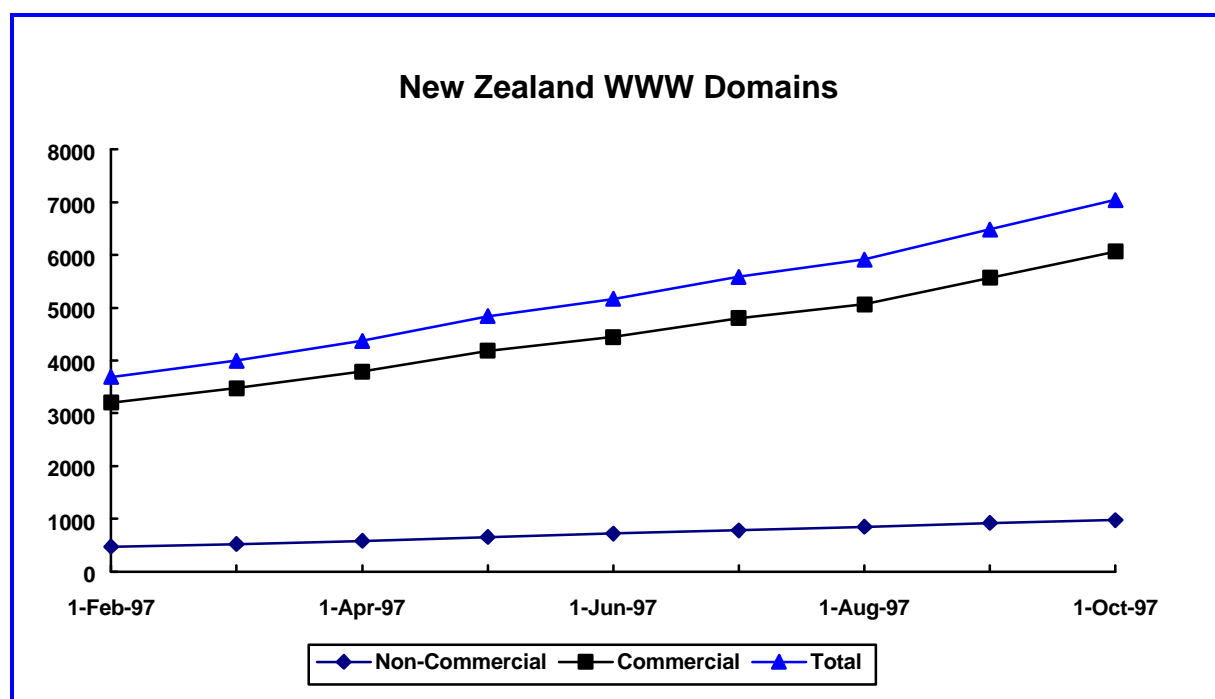
Split Between Directly Connected and Mail-Only Connected Organisations



7.3 New Zealand World Wide Web Sites

The number of organisations with an Internet registered domain provides no indication of how many New Zealand organisations have now established Internet Web sites. To do so, each world wide web domain name that has been registered is counted ie all the domain names of the format: www.name.domain.nz are counted. This only gives an estimate of the number of web sites, as it double counts organisations using different formats eg tvone.co.nz, and does not take into account non-active web sites.

The chart below shows the total number of web sites, the number of company web sites and the number of non-commercial web sites estimated in this way for February to October 1997. The chart shows that commercial organisations make up the vast majority (86%) of organisations with a web site in New Zealand. It also shows steady growth in all three categories at an average of about 10% a month for each.



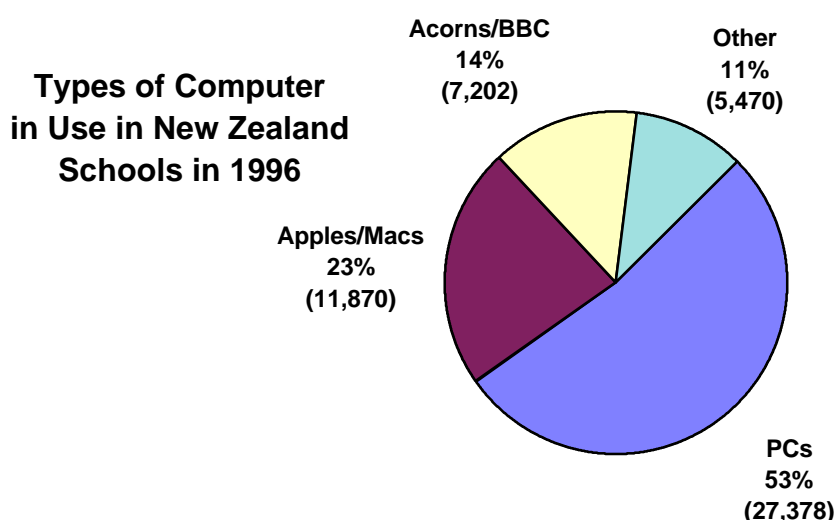
8. Computers in New Zealand Schools

The information in this section was provided by the Ministry of Education and is taken from a survey of New Zealand schools. The survey was compiled by J Larry Owens for the Ministry of Education and the results were originally published in the Ministry of Education Research Bulletin for November 1996¹. This survey aimed to determine the numbers and types of computers in New Zealand schools and the extent to which schools are, or intend to be connected to the Internet.

A total of 2,736 schools were sent forms to complete. 2,673 schools responded, a 98% response rate. However, further information received from schools following the survey indicated that a number treated the survey as relating to only those computers used for administration and did not include those used in classrooms. Additionally a number of schools did not include those computers considered to be 'useless' or obsolete. These two factors suggest the numbers used here tend to underestimate the actual numbers of computers in New Zealand schools.

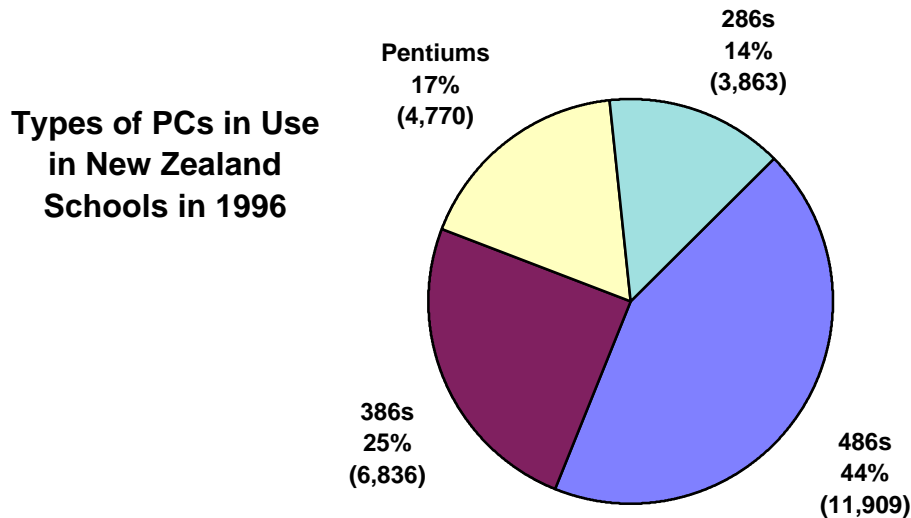
Almost all New Zealand schools have computer equipment of some kind available. The survey found a total of 51,920 computers available for staff or student use among the responding schools, or on average 19.4 computers per school. As can be seen from the chart, the majority of these were IBM compatible PCs. Computers in the 'other' category cover a diverse range, including models that may be considered outdated.

The chart below shows what type of computers were found to be available for staff and student use in the responding schools.



¹ J Larry Owens: *A Survey of Computer Use in New Zealand Schools*; Ministry of Education, Wellington, November 1996.

A breakdown of the IBM compatible PCs category by model of computer is shown below. The most common type is the PC based on the 486 chip - there were 11,909 of these in use, or 44% of all PC type computers. This type is also the most common overall, representing 23% of all the computers available in schools.



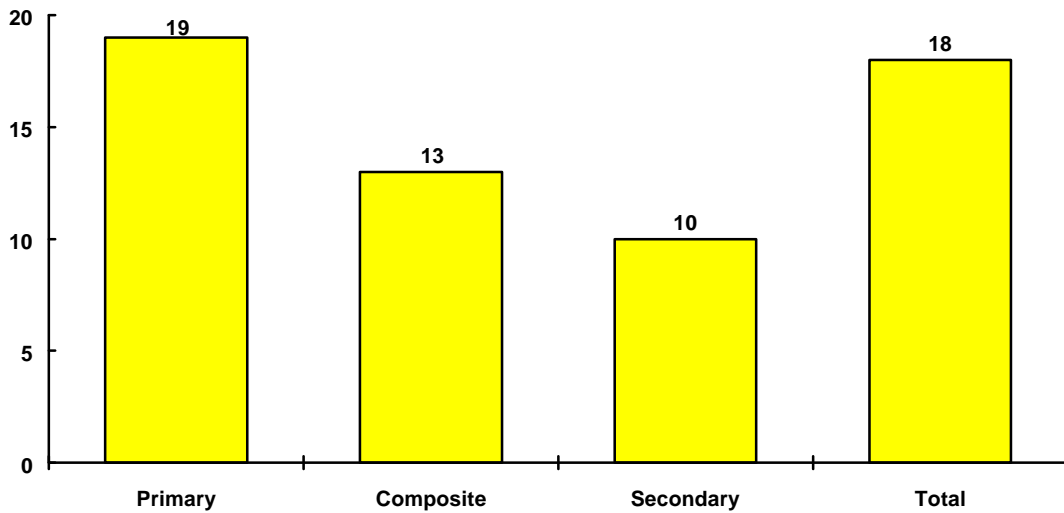
8.1 Student-Computer Ratios

The number of computers per student across all schools and by school type is described in this section. As the survey did not discriminate between computers used by teachers and those used by students, the number of computers used is the total number of computers reported. Schools were only included if information was available on both the number of computers and the student roll as at July 1995.

The following chart shows the mean student-computer ratio for each school type - primary (including intermediate), composite (including area) and secondary - and the overall mean student-computer ratio. The latter was taken as the mean of all the student-computer ratios calculated for each school. Each school's student-computer ratio was calculated by dividing the school's roll as at July 1995 by the total number of computers available for student and staff use at the school.

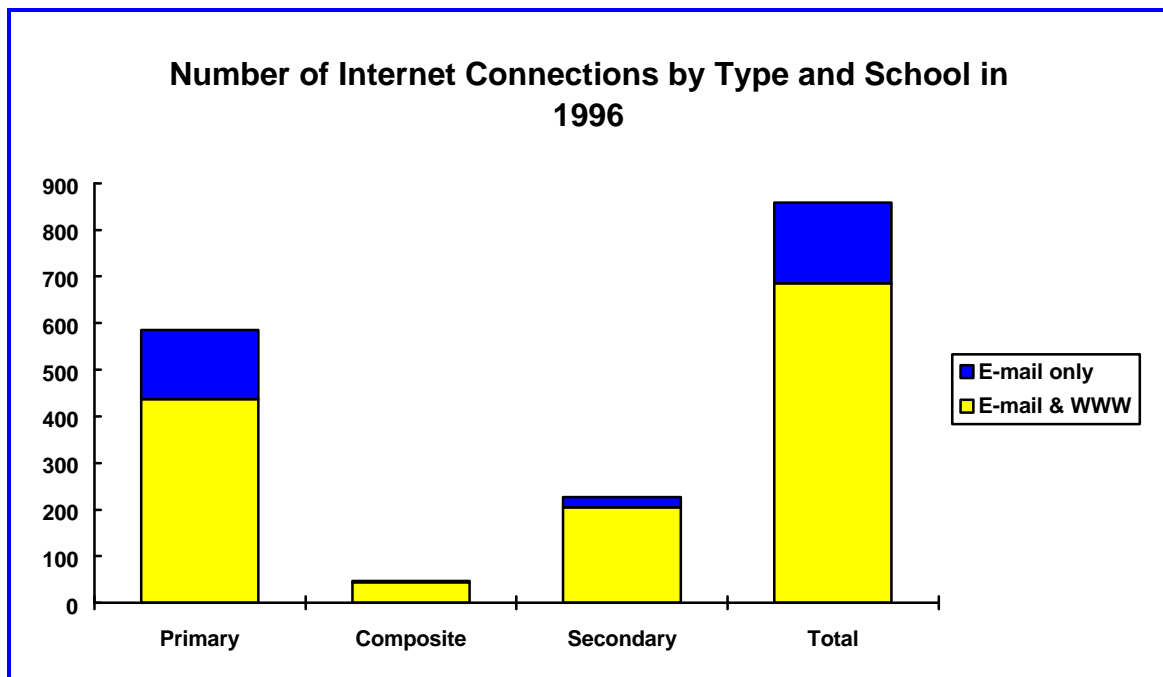
As can be clearly seen, secondary schools had a higher number of computers available per student than primary and composite schools.

Mean Student-Computer Ratio by School Type



8.2 Internet Connections in Schools

The survey also asked respondents several questions about the Internet. Each school was asked if they had any computers connected to the Internet, and if so, how many were e-mail connected only and how many were connected for both e-mail and world wide web access.

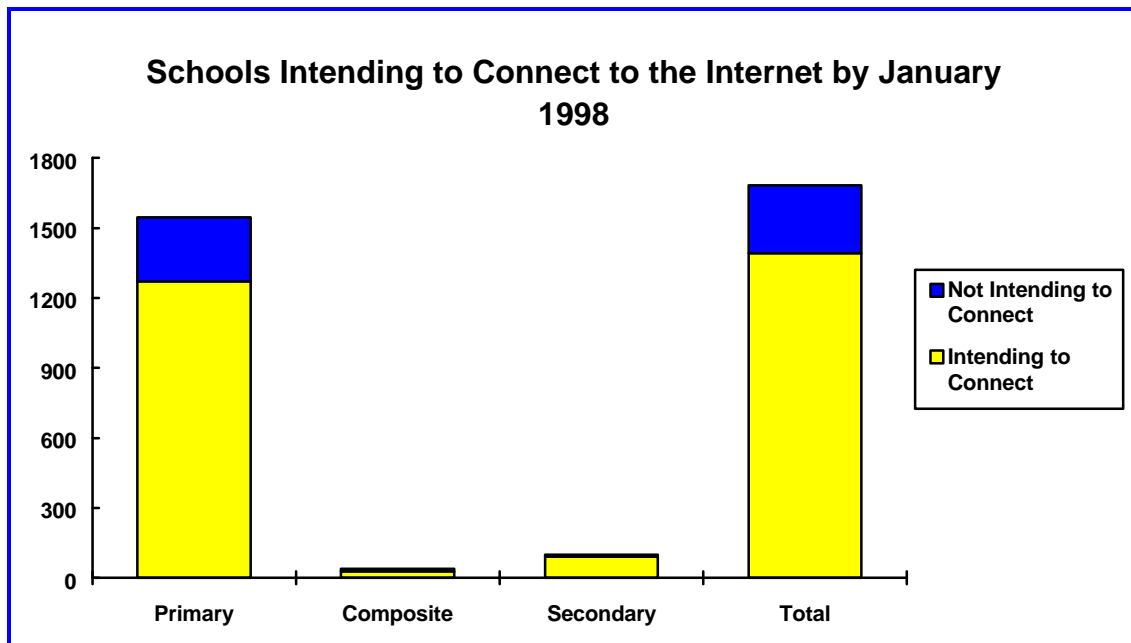


The chart above shows that 859 or 32% of the responding schools had at least one computer connected to the Internet and the majority of Internet connections are 'full' connections ie both e-mail and the world wide web. Only 173 or 20% of the connected schools had an e-mail only connection.

While the absolute numbers of primary schools with a connection is higher than the number of secondary and composite schools, just 585 or 26% of primary schools had a connection, while 47 (54%) of the composite schools and 227 (68%) of the secondary schools had an Internet connection.

8.3 Intention to Connect

To gauge the future growth of Internet connections in schools, those schools not yet connected to the Internet were asked whether they intended to connect to the Internet by January 1998. The following chart indicates that a majority (83%) of the schools without an Internet connection were intending to connect by January 1998. Almost all (93%) of the unconnected secondary schools were intending to connect and 82% of the unconnected primary schools also intended to get connected by January 1998.



9. Enquiries

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