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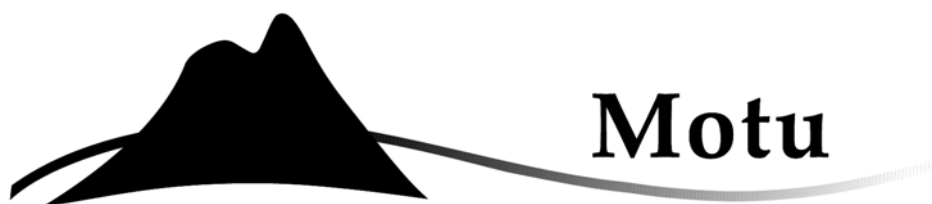
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**Motu**

**Labour Market Outcomes for  
Young Graduates**

**Part A: Main Report**

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## **Abstract**

This paper examines income and employment outcomes for 18 to 30 year old New Zealanders with post-school qualifications, using data from the 1996 and 2001 Censi. Outcomes are analysed by field of study, to highlight the variation in outcomes within the post-school graduate (PSG) population. Fields are characterised according to the specialisation of job choices made by PSGs. A preliminary investigation is undertaken of changes in supply and demand of PSGs in different fields. Part A of the report summarises patterns for all PSGs, and compares fields of study. Part B contains field profiles for each of 26 grouped fields of study that can be compared across the two years.

### **JEL classification**

J31 – Wage Level and Structure; Wage Differentials by Skill, Training, Occupation, etc.

D31 – Personal Income, Wealth, and Their Distributions

### **Keywords**

Labour Market outcomes, Tertiary Qualification, Young Graduates, New Zealand.



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# Executive Summary

## *Outline of the Study*

- This study summarises labour market outcomes for 18-30 year olds with post-school qualifications (young PSGs), using data from the 1996 and 2001 censuses. Separate analyses are presented by level of attainment and field of study. Results are presented for the two census years, and for changes between these two years.
- The study was funded by the Department of Labour's 'Future of Work' Contestable Research Fund.

## *Post-school qualifications*

- There was a generally increasing level of post-school qualifications between 1996 and 2001. Skilled and Advanced Vocational qualifications became less prevalent, and there were increases in degree-level qualifications (although also in Basic Vocational qualifications)
- The changes in qualification mix reflect significant changes within some fields of study and, to a lesser extent, different growth rates of fields. Nursing and Teaching fields shifted from Advanced Vocational Qualifications towards Degree qualifications. The 'Computer and Information Science' field grew strongly, mainly through growth of Intermediate Vocational qualifications.

## *Outcomes for PSGs*

- Improvements in real mean and median incomes for young PSGs, and declines in average employment rates both reflect changes in the composition of young PSG group, by field and by level of attainment.

## *Variation in outcomes by field of study*

- We develop and apply a new grouping of detailed fields of study into 26 aggregated fields that are broadly comparable across census years.
- Part B of the report contains field-specific profiles comparing the nature, composition, and growth of fields on a range of standardised measures.
- Fields of study vary in the degree of employment specialisation (being employed in a narrow range of industries or occupations)
- The fields with the highest median incomes were Medicine, Accounting, 'Mechanical and Industrial Engineering', and 'Law and Legal Studies'. Lowest median incomes were observed for PSGs in 'Creative Arts and Design', 'Beauty Service and Hairdressing', 'Language and Literature' and 'Computer and Information Science'.
- High-income fields tended to have relatively high employment rates. Some, though not all of this consistency is mechanical in the sense that non-employed PSGs generally have lower incomes, reducing the field median and mean.
- Income and employment rate ranking were fairly consistent across the two years.

### *Labour Market Adjustment*

- We compare changes in relative incomes and employment shares for young PSGs across fields of study to identify shifts in relative supply and demand.
- Relative demand increased for ‘Teacher Education’, ‘Pharmacy and Therapy’, ‘Creative Arts and Design’, ‘Communication and Media Studies’ ‘Business and Management’, and possibly ‘Food, Hospitality and Tourism’.
- Fields with declining demand were ‘Electrical Engineering’, Building, ‘Automotive Engineering’ and Horticulture. Fields experiencing net supply decreases were Nursing, ‘Office Studies’, Accounting, ‘Agricultural and Environmental’, and ‘Mechanical Engineering’.
- Overall, these changes represent a continued growth in service sector at the expense of primary and secondary industries. Although some of the growth fields may be placed under the heading of ‘knowledge economy’, there is no obvious emergence of greater demand from a growing science or technology sector.

# 1 Introduction

Young people who have gained a post-school qualification have incomes that are, on average, more than one and a half times the incomes of those without such a qualification.<sup>1</sup> The reality of young graduates' early labour market experiences is, however, substantially more complex than this average income difference suggests. Some graduates do not secure jobs immediately, or end up in jobs where their qualification is less relevant. Summarising the outcomes for people with post school qualifications conceals a great deal of variation within and between different qualifications. Post-school qualifications include some relatively short study courses, as well as some higher degree courses that take many years to complete. Furthermore, outcomes vary even within groups of graduates with the same qualification.

This paper starts by summarising the population of post-school graduates in New Zealand, using data from the 1996 and 2001 Population Censuses. We examine variation in the level of attainment, and in the mix of fields of study, and report on changes over time. In section 3, we summarise outcomes for post school graduates (PSGs), focusing primarily on annual incomes and employment rates for 18 to 30 year old graduates. We report on how these outcomes vary within the PSG group, paying particular attention to the variation across age groups.

Section 4 takes a closer look at outcomes separately by field of study, to highlight cross-field variation in outcomes and in growth rates. We also present measures of how specialised the industry or occupational distribution is for PSGs from each field. The accompanying report on "Field of Study Profiles" contains more detailed information on each of 26 broad fields of study.

We hypothesise that young graduate entrants to the labour market are likely to be particularly affected by changes in market conditions. New hiring rates vary across the business cycle and are likely to affect new graduates' ability to secure appropriate jobs. In section 5 we present some exploratory analysis of the sensitivity of young PSG outcomes to changes in supply of and demand for their skills. We find little evidence that young PSGs are particularly strongly affected by changes in market conditions, although our analysis may be too coarse to pin down market changes accurately.

The analysis reported in this paper was funded through the Department of Labour's 'Future of Work' contestable research fund. In this context, our motivation for examining outcomes for recent post-school graduates was two-fold. First, the changing mix of skills being acquired by young graduates today provides a window on the composition of labour market skills in years to come. It is therefore relevant for gauging the ability of New Zealand's labour force to adapt to changing demands. Second, outcomes for young PSGs may provide an early signal of what changes are occurring in the labour market.

The information that we present on the composition, change and outcomes of young PSGs will also be useful for a range of people making decisions about the New Zealand's changing skill needs:

- prospective students - to help inform their education and career decisions;
- training providers and policy advisers - to assist them to compare the outcomes of graduates from different courses, and to inform policy discussions on the level and allocation of public funding within the tertiary education sector;

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<sup>1</sup> Calculated from Table Two of Maani (1999).

- labour market analysts - to improve understanding of the dynamics of adjustment in the labour market for recent graduates.

## 1.1 Context

This study contributes to an existing New Zealand literature on the relationship between incomes and educational qualifications. In New Zealand, there is fairly good information available on relative incomes and labour market outcomes by highest qualification, aggregated according to broad levels of attainment. Such information is available from several commonly used data sources, including the quinquennial Census, the Statistics New Zealand Income Survey, and the Household Economic Survey. This information is, however, mostly in tabular form, as repeated cross-sectional estimates. Some disaggregated tables from the Census are available from the Statistics New Zealand website, separately by age and sex or by age and ethnicity.

There are relatively few studies, however, that have analysed the relationship between qualifications and income at a more detailed level. Maani (1999) uses census microdata from 1986, 1991 and 1996 to estimate private and public rates of return to different levels of attainment, controlling for a range of demographic characteristics. Maani and Maloney (2004) undertake a similar analysis using the Income Survey. They compare returns of post-school qualifications to school qualifications with respect to levels and demographic characteristics by examining the income/earnings for prime working-age PSGs. The results show the positive return rates to the human capital investments and how the returns differ for different levels.

A smaller amount of systematic analysis has been done on outcomes by field of study. The Ministry of Education publishes extensive enrolment and graduation information, including breakdowns by field of study, from a census of educational institutions.<sup>2</sup> Due to the nature of the collection, they do not, however, contain information on post-graduation outcomes. Outcomes information is collected as part of the University Graduate Destinations survey (New Zealand Vice Chancellors' Committee (2004)) but only for university students and only at a single point in time roughly six months after graduation. Analysis of the Integrated Student Loan dataset (Griffin et al (2005), Hyatt et al (2005), Statistics New Zealand (2006), Hyatt and Smyth (2006b)) has examined incomes, employment rates, and mobility of graduates with post school qualifications, for 1 to 5 years after graduation. As such, there is overlap with the patterns examined in the current study. The Student Loans data does not, however, contain as rich a set of job information as is available from the census, and has more limited coverage. The strengths and weaknesses of these datasets for our study are discussed below.

Student loan analysis focuses on how graduates' earnings change over time. For those student loan scheme borrowers, the study observed their income from employment or self-employment three years and five years after they graduated. By comparing earnings of those who completed their study with those who took the same level of qualification but did not complete, they have provided a realistic assessment of the value added by the qualification. The key finding of this study is that a post-school qualification is associated with a higher starting salary, but the advantage will be weaker as time goes on if the qualification is at the post-graduate level. (Hyatt and Smyth (2006a) )

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<sup>2</sup> Ministry of Education publishes an annual volume of Education Statistics (eg: Ministry of Education (2005) )

The current study examines the entire population of working age post-school graduates by using census information. The study particularly focuses on outcomes for those aged 18 to 30, who are mostly likely to be in their first 5 to 10 years after graduation. By using data from the 1996 and 2001 censuses, this project covers outcomes for most of the PSGs who graduated in the 1990s. By using population data and examining outcomes by age, it is able to show a more precise profile than is available from other studies.

## 2 Data

The data used in the study are from the 1996 and 2001 New Zealand censuses of Population and Dwellings<sup>3</sup> The New Zealand Census is conducted every five years and collects a range of socioeconomic data from the census night population. We use demographic, educational and labour market information for the usually resident population.<sup>4</sup>

To identify young PSGs, which are the focus of our study, we use a combination of highest qualification and age. Specifically, our main study population comprises people aged 18 to 30 years of age who hold a post-school qualification. For comparative and contextual purposes, we also include various summary measures for 18 to 65 year old PSGs, which includes the 18-30 year old sub-group. To study the early labour market experiences of PSGs, we would ideally want information on the number of years since each person had gained their qualification, so that we can trace labour market outcomes from the point of labour market entry. Unfortunately, reliable information on data of completion is not available from the Census, so we are constrained to rely on changes in outcome by age as a proxy for changes following graduation.<sup>5</sup>

Information from the 2004 Graduate Destinations Survey (New Zealand Vice Chancellors' Committee (2004)) shows that 69% of people graduating from university were aged between 18 and 30, a percentage that is presumably higher for sub-degree graduates. Our choice to focus on 18 to 30 year olds serves to reduce the influence of older graduates whose outcomes will reflect also their previous experience and provide a less relevant indicator of the relationship between the qualifications gained and the patterns of outcomes.

Information on highest qualification is incorporated at a fairly aggregated level, using the six aggregated categories shown in Table 2.1. The subject population for this question is the census usually-resident population count aged 15 years and over. In 2001, people could report only one post-school qualification as their highest educational attainment. However, in 1996, individuals could report more than one qualification. In this analysis, for 1996, we pick up the higher of the two reported levels and record it as the person's unique level of post-school qualification. Therefore, the level of post-school qualification is consistent for the two census years in this analysis.

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<sup>3</sup> Access to the necessary unit record data for the study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. Analysis was carried out in the Statistics New Zealand data laboratory and all outputs were checked and randomly rounded to base 3 prior to release.

<sup>4</sup> Missing values of demographic variables listed in the first part of the key variables might be imputed by SNZ according to other relevant information. In this analysis, we have included those who have had their age or sex imputed.

<sup>5</sup> Information on year of graduation was collected in the 1996 census but the poor quality of the coded responses precluded its use in the study.



**Table 2.1 Classification of post-school qualifications**

	Label	Examples
4	Basic vocational qualification	Pre-vocational certificates, bridging certificates, foundation certificates, national certificate
5	Skilled vocational qualification	Trade certificates, apprenticeships, national certificate
6	Intermediate vocational qualification	Technicians certificate, advanced trade certificate, national diploma
7	Advanced vocational qualification	Undergraduate diploma / certificate, New Zealand Diploma, New Zealand certificate, national diploma
8	Bachelor degree	BA, BSc, degree equivalent diplomas
9	Higher degree	PhD, MA, post graduate diploma

The Census data are not longitudinal, which means that our estimates of changes over time in PSGs' outcomes are based on indirect evidence. Specifically, we use information on cross-sectional patterns by age to approximate changes for PSGs as they age. The approximation will be inaccurate if people in consecutive age groups are very different. By focusing on changes over a relatively short period of 5 years, we believe that the bias from such cohort effects is relatively small.

We do, however, examine an alternative way of constructing estimates of longitudinal change, by using synthetic cohorts. By comparing age-specific outcomes for PSGs in 1996 with outcomes for a 5-year-older group of PSGs in 2001, we can estimate changes for graduates as they age. There are different potential biases from taking this approach. The approximation will be poor if the matched age groups contain different people *and* the different populations differ in their patterns of outcomes. The groups will differ either because people observed in 1996 are absent from the 2001 census, or because PSGs observed in 2001 were not in the 1996 sample. Hyatt et al (2005, p. 45) find that, within three years of graduation, 16.4 percent of university graduates with a student loan were no longer in New Zealand. Without knowing more about the expected outcomes of those who leave, it is not clear whether the absence of these people from the 2001 census leads to an upward or downward bias in estimated changes. People could enter our study population between 1996 and 2001 either because they entered New Zealand during that period, or because they gained their qualification after 1996. If new immigrants and more recent graduates have poorer outcomes than otherwise comparable graduates of the same age, our synthetic cohort approach will underestimate true outcome improvements between the censuses. We do not know how large this bias might be, but believe that our estimates provide a reasonable approximation.

The census records income in bands rather than as a continuous variable. In order to calculate means and percentiles of the income variable, we assign interval midpoints, and convert these midpoints to 2001 dollars. The top-coded category is assigned an income of \$120,000 (in 2001 dollars) and the bottom category is assigned \$0. Percentiles are calculated by linear interpolation within bands. We rely primarily on median rather than mean income as an indicator of relative income levels since it is less sensitive to the treatment of top-coded and bottom-coded categories.

Our analyses of outcomes by field of study are based on a customised grouping of detailed fields of study as recorded in the census. This customisation was necessary because the coding of broad fields of study is not consistent between the 1996 and 2001 censuses. We derived a classification of 6-digit fields of study using a partial concordance provided by Statistics New Zealand, supplemented by comparing the field descriptors and population counts across the two censuses. We also restricted attention to groups of fields of study that had a reasonable number of people in them. A full

concordance table is included as an Appendix to Part B of this study (Field of Study Profiles)

In total, 26 aggregated fields of study are included in this project and they account for about 75 percent of the total PSGs in each census year.<sup>6</sup> The rest of the PSGs have missing values for field of study, or are in study fields that cannot be matched properly between the two census years or that have too few people for analysis. Where we report overall PSG outcomes, we include all fields of study but where we report patterns by field, our analysis is restricted to this 75 percent sub-sample. In 1996, shares of PSGs in each field sum to more than 100% for both age groups, due to double counting of PSGs who reported two different study fields at the same level of qualification but not in the same aggregated groups. Where people report two post-school qualifications in different broad fields of study, they are counted in both field-specific analyses.<sup>7</sup> If their two qualifications are in the same broad field, we classify them according to their highest qualification.

While the census data are not ideal for our purposes, it has some key advantages compared with other potential data sources. The greatest strength of the census for research of this type is its comprehensive coverage of the total ex-student population residing in New Zealand. It measures level of qualification and subject or field of qualification in a detailed way, while also recording information on labour force status and personal income. Key disadvantages are the relatively limited range of variables collected in the census and the infrequency of collection (every five years), as well as the inconsistency of some variables across different census years.

Other data sources can provide relevant insights into patterns of outcomes for young and recent graduates, although each has its own strengths and weaknesses. The main alternative sources are the Graduate Destinations Survey (New Zealand Vice Chancellors' Committee (2004)), and the Integrated Student Loans dataset (Griffin et al (2005), Hyatt et al (2005), Statistics New Zealand (2006)).

The Graduate Destinations Survey is an annual survey of degree or diploma graduates from all New Zealand universities. A postal survey is sent about six months after graduation and the survey achieves a response rate of around 35 percent. The survey responses contain information about employment, study and salary outcomes, as well as occupational information for those who are employed. Responses can be analysed separately by aggregate field of study. The limitations of this study for our project are the focus on university graduates only, the single six-month follow-up, and the relatively low response rate. Sub-degree qualifications represent a large and growing proportion of all post-school qualifications in New Zealand, reflecting both growth in student numbers at this level and a proliferation of different types of qualification.

The Integrated Student Loans dataset contains administrative information from tertiary institutions (via Ministry of Education), and from the administration of Student Loan payments (MSD) and repayments (IRD). Data from the three administrative systems are probabilistically matched to build a picture of debt and outcomes for everyone who has received a student loan.<sup>8</sup> The dataset contains high quality data on educational and labour market outcomes, but has the disadvantage of including only individuals who have taken out loans, not the total population of

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<sup>6</sup> Refer to Table 4.1 for a summary of the fields.

<sup>7</sup> About 9% of the PSGs aged 15 and over reported two qualifications at the same level but different fields of study.

<sup>8</sup> For a detailed account of dataset construction, see Statistics New Zealand (2005).

students. Around 40 percent of enrolled students borrow from the Student Loans scheme in a given year (Griffin et al (2005, p. 20)).

Longitudinal information is available on graduate incomes, sourced from personal tax returns (Hyatt et al (2005, p. 11)). The matched dataset currently covers the period from 1997 to 2002. Hyatt et al (2005) presents two sets of analysis of outcomes for borrowers. First, information is available on starting salaries (in the 2000/2001 tax year) for students who borrowed in 1999 but did not borrow in 2000. Graduates are identified from academic information on course completion. Second, income growth following completion is analysed using earned income in 1999/00 and 2000/01 for students who last studied and borrowed in 1997/98 and 1998/99 – a maximum of three years of follow-up. Hyatt and Smyth (2006c) update these analyses and look at outcomes up to five years after graduation. The limitations of the Student Loans dataset for our project are the relatively low (40 percent) coverage, the limited time period of post-graduation outcomes (up to five years), and the lack of job information such as industry and occupation for employed graduates.

## **2.1 Sample characteristics**

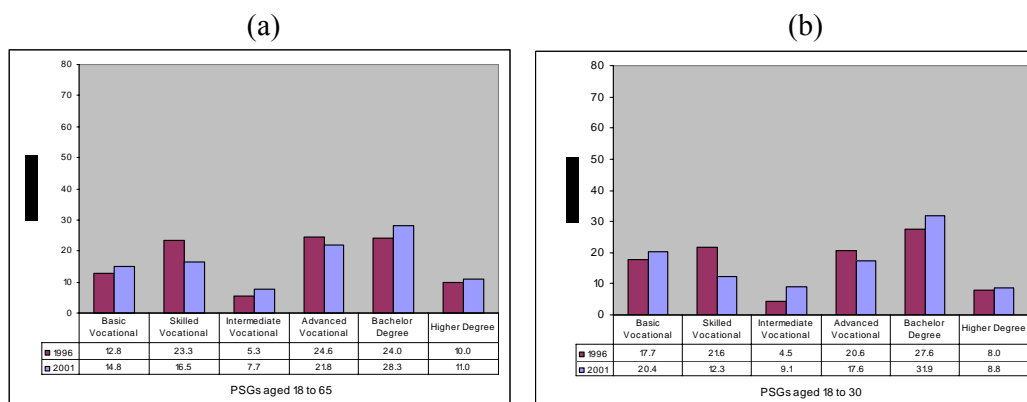
This section summarises the composition of our sample of PSGs from the Census data. The group of PSGs that we examine vary in their level of attainment, their field of study, as well as by demographic characteristics. Our aims in this section are to document the demographic mix of PSGs and the variation in levels of attainment in the PSG population, and to give an indication of the fields of study and job types associated with each level.

Specifically, it will look at the distributions of qualification levels in each census year, and within each level, the change of number of PSGs and top ten fields of study, occupations and industries from 1996 to 2001. Also, it will show the distribution of post-school qualification levels among different gender and ethnic groups in the two census years. The major age groups focused on in this section are those aged between 18 and 30.

### **2.1.1 Composition by level of attainment**

In 2001, university graduates accounted for almost 40 percent of 18 to 65 year old PSGs, with bachelors' degrees alone accounting for 28 percent. Advanced vocational qualifications, which include undergraduate diplomas and certificate, were the next most common level of attainment, accounting for 22 percent. Trade and technical qualifications are classified as skilled and intermediate vocational qualifications, which together account for a further 24 percent. Between 1996 and 2001, there was growth in the share of qualifications that were degree based, in intermediate vocational qualifications, and in basic vocational qualifications. These patterns are summarised in panel (a) of Figure 2.1. Young PSGs (aged 18 to 30) are more likely to have Bachelor's degrees or basic vocational qualifications than are PSGs generally. The relatively low proportion of higher degree holders may simply reflect that some higher degree graduates do not complete their qualifications before the age of 30. Panel (b) of Figure 2.1 summarises the composition of young PSGs by level of attainment, and shows a similar pattern of change between 1996 and 2001 as is evident for PSGs generally.

**Figure 2.1 Distribution of post-school qualification level in 1996 & 2001**



### 2.1.2 Demographic variation in post -school qualifications

Just over a third of New Zealanders aged 18 to 65 held a post-school qualification in 2001. This share was up slightly from the 30.8 percent recorded in 1996. The younger 18 to 30 year old group that is the focus of much of our study had a somewhat lower proportion of PSGs, although this reflects the fact that many people gain qualifications after the age of 30, and not a trend towards lower levels of attainment. Other evidence points to a pronounced general increase in age-specific qualification levels in New Zealand from 1986 through to 2001 (Hyslop et al (2003)), confirmed in Table 2.2 by the relatively large increase between 1996 and 2001 in the share of 18 to 30 year olds who were PSGs (from 26.7 percent to 30.9 percent).

The biggest increase in PSG penetration occurred in the two ethnic groups with smallest share in 1996, Maori and Pacific Island, each of which experienced a 4 to 5 percentage point increase. The ethnicity group “Other” had the highest proportion of PSGs in 1996, but it was the only group had their share decrease in 2001. Female PSG rates increased markedly between 1996 and 2001, especially in the 18 to 30 year old age group.

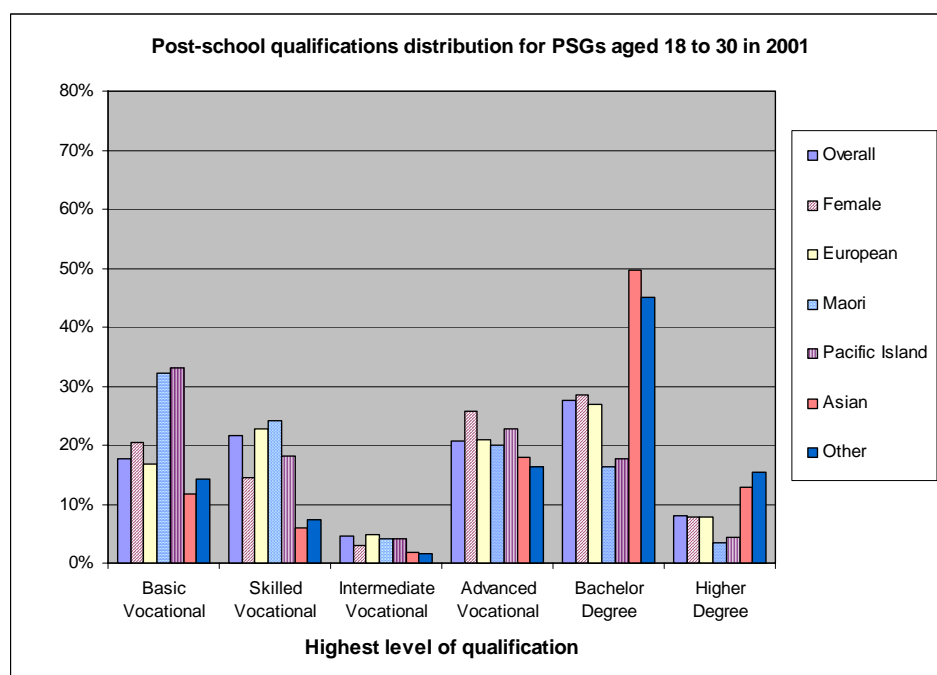
**Table 2.2 Proportion of post-school graduates in specified groups across year and different age group**

	Aged 15 and over		Aged 18 to 65		Aged 18 to 30	
	1996	2001	1996	2001	1996	2001
<b>Overall</b>	28.0%	30.7%	30.8%	33.7%	26.7%	30.9%
<b>Female</b>	26.8%	31.0%	29.3%	33.9%	27.0%	33.6%
<b>European</b>	32.1%	35.0%	35.1%	38.4%	31.0%	35.8%
<b>Māori</b>	14.8%	19.1%	16.7%	21.5%	15.3%	21.3%
<b>Pacific Island</b>	11.3%	15.8%	12.8%	17.6%	12.6%	19.0%
<b>Asian</b>	30.0%	32.0%	34.0%	35.8%	27.9%	28.9%
<b>Other</b>	36.4%	33.5%	40.3%	37.8%	30.1%	26.3%

Different demographic groups not only have different likelihoods of having a post-school qualification. They also differ in the level of qualifications that they hold. Figure 2.2 shows the mix of levels of attainment by gender and ethnicity. Among PSGs aged 18 to 30, levels of attainment for female PSGs are similar to those of the overall population, with a slight over-representation at the basic vocational level and in advanced vocational qualifications, which include both teaching and nursing, which account for a disproportionate share of female PSGs. Asian and Other had the highest overall level of qualification (more than 60% had Degrees), whereas Maori and Pacific

Island were more likely to hold a vocational qualification (only about 20% had Degrees).

**Figure 2.2 Post-school qualification distribution for PSGs aged 18 to 30 in 2001 for specified groups**



### 2.1.3 Level of attainment profiles: by field of study, industry and occupation

For much of our subsequent analysis, we combine levels of attainment, and consider outcomes for PSGs as a whole, or by field of study. The following tables (Table 2.3 to Table 2.8) provide profiles of each level of attainment, showing the most common fields of study for 18 to 30 year old PSGs, and, for those who are employed, the most common industries and occupations in which they work.

At each level, the proportion of young PSGs accounted for by the ten most common fields of study ranges from seventy to ninety percent, although the mix of fields differs by level. Some numerically large fields of study, such as ‘Food, Hospitality and Tourism’, Teaching, and ‘Computer and Information Science’ account for relatively large proportions of qualifications at more than one level.

The concentration of PSGs in particular industries and occupations often reflects the specialisation of particular fields of study, such as those with nursing qualifications working in Nursing occupations and industries, and those with teaching qualifications working in teaching occupations and education industries. Concentration across occupations is stronger than concentration across industries, as would be expected with graduate fields of study being more closely aligned to occupation-related skills, which can in many cases be used in a range of industries.

The structure of qualifications has changed for some fields of study. The most obvious examples are Teacher Education and Nursing. The number of advanced qualification graduates declined in both of these fields, with a related rise in graduates with Bachelors’ degrees. The shift between levels of attainment is also evident in the associated industries and occupations. Marked shifts are also evident for computer and information science and for engineering fields of study. There was a tenfold increase

between 1996 and 2001 in the number of 18 to 30 year old computer and information science graduates with intermediate vocational qualifications – amounting to 3,400 additional graduates. Engineering fields of study (Automotive Engineering, Mechanical & Industrial Engineering, and Electrical Engineering) all experienced declines in the number of skilled vocational graduates. The number of skilled vocational young PSGs halved in each of these fields, leading to a combined reduction in the number of skilled vocational graduates of almost 6,000.

These changes in composition by qualification level will show up as changes in outcomes by field of study. For instance, the higher proportion of computer and information science graduates with intermediate vocational qualifications will be reflected in lower average and median incomes, as intermediate vocational graduates in this field earned low incomes in 2001, relative to the average of other computer and information science graduates.

By focusing on outcomes by field of study, as we do in section 4, we are including these composition changes as part of what has changed for the field. The alternative approach of examining each field of study / level of attainment combination would greatly increase the number of distinct qualifications. Many of these combinations would contain small numbers of PSGs, and we would still need to take into account the marked changes in numbers that occurred for some combinations. For most fields of study, the composition across levels of attainment has been relatively stable, and in many cases is concentrated at only one or two levels of attainment.<sup>9</sup>

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<sup>9</sup> More detailed information on the attainment mix by field of study is included in the field of study profiles contained in Part B of this study.

**Table 2.3 Basic Vocational Qualification**

	Level of Attainment			4
	Count 96	Share 96 (%)	Count 01	Share 01 (%)
<b>Number of Graduates</b>	33231	17.7	40629	20.4
<b>Top 10 field of study</b>				
Food, Hospitality and Tourism	5922	20.5	6582	20.0
Office Studies	5127	17.8	5232	15.9
Computer and Info Science	2301	8.0	3048	9.3
Creative Arts and Design	2148	7.4	2685	8.2
Teacher Education	1539	5.3	1791	5.4
Agriculture and Environmental	1323	4.6	1677	5.1
Automotive Engineering	903	3.1	1599	4.9
Building	1224	4.2	1500	4.6
Business and Management	1062	3.7	1425	4.3
Electr Engineer/Tech	537	1.9	1239	3.8
<b>Sub total</b>	22086	76.5	26778	81.3
<b>Top 10 occupations as in 2001</b>				
Housekeeping and Restaurant Services Workers	2502	10.4	2832	9.7
Salespersons and Demonstrators	1944	8.1	2394	8.2
Specialised Managers	1083	4.5	1635	5.6
Finance and Sales Associate Professionals	1104	4.6	1470	5.0
Library, Mail and Related Clerks	1122	4.7	1398	4.8
Market Oriented Animal Producers	1143	4.8	1299	4.4
Client Information Clerks	1068	4.4	1128	3.9
Secretaries and Keyboard Operating Clerks	1074	4.5	930	3.2
Personal Care Workers	639	2.7	834	2.9
Writers, Artists, Entertainment and Sports Associate Professionals	714	3.0	714	2.4
<b>Sub total</b>	12393	51.5	14634	50.1
<b>Top 10 industries as in 2001</b>				
Cafes and Restaurants	1359	5.7	1725	5.9
Accommodation	888	3.7	876	3.0
Supermarket and Grocery Stores	582	2.4	828	2.9
Other Business Services	570	2.4	828	2.9
Motor Vehicle Services	576	2.4	780	2.7
Dairy Cattle Farming	486	2.0	696	2.4
Installation Trade Services	252	1.1	684	2.4
Marketing and Business Management Services	486	2.0	678	2.3
Community Care Services	516	2.2	633	2.2
Government Administration	573	2.4	606	2.1
<b>Sub total</b>	6288	26.4	8334	28.7

Notes: "Share" is the share of all 18 to 30 year old PSGs in the field, occupation, or industry whose highest qualification is at this level.

### Highlights

- Both the number and share at this level increased from 1996 to 2001.
- The largest increase was from the fields Electr Engineer/Tech and Computer and Info Science, followed by Automotive Engineering.
- PSGs at this level were quite concentrated in occupations with the top 10 occupations including over 50% of them. But they are fairly dispersed across industries with only about a quarter of them working in the top 10 industries.
- The top several occupations and almost all industries were highly relevant to the top 2 fields of study.

**Table 2.4 Skilled Vocational Qualification**

	Level of Attainment			5
	Count 96	Share 96 (%)	Count 01	Share 01 (%)
<b>Number of Graduates</b>	40695	21.6	24552	12.3
<b>Top 10 field of study</b>				
Building	5904	16.8	4053	20.0
Automotive Engineering	5250	14.9	2901	14.3
Food, Hospitality and Tourism	3636	10.3	2649	13.1
Teacher Education	1605	4.6	1833	9.0
Electr Engineer/Tech	3822	10.9	1734	8.6
Mechanical/Industrial Engineer	2727	7.8	1239	6.1
Sales and Marketing	627	1.8	1173	5.8
Beauty Service and Hairdressing	2568	7.3	1149	5.7
Office Studies	4026	11.5	780	3.8
Agriculture and Environmental	1527	4.3	543	2.7
<b>Sub total</b>	31692	90.2	18054	89.1
<b>Top 10 occupations as in 2001</b>				
Building Frame and Related Trades Workers	2721	7.8	2259	10.9
Machinery Mechanics and Fitters	2400	6.9	1413	6.8
Housekeeping and Restaurant Services Workers	1293	3.7	1143	5.5
Other Personal Services Workers	2085	6.0	1119	5.4
Electricians	1950	5.6	1074	5.2
Specialised Managers	1464	4.2	1023	4.9
Salespersons and Demonstrators	1242	3.6	966	4.6
Building Finishers and Related Trades Workers	1755	5.0	948	4.6
Market Oriented Animal Producers	1689	4.8	684	3.3
Finance and Sales Associate Professionals	1200	3.4	675	3.2
<b>Sub total</b>	17799	51.0	11304	54.4
<b>Top 10 industries as in 2001</b>				
Building Construction	2037	5.9	1560	7.6
Installation Trade Services	2322	6.7	1374	6.7
Motor Vehicle Services	1929	5.6	1173	5.7
Other Personal Services	1869	5.4	858	4.2
Cafes and Restaurants	753	2.2	723	3.5
Supermarket and Grocery Stores	615	1.8	579	2.8
Building Completion Services	912	2.6	531	2.6
Motor Vehicle Retailing	891	2.6	504	2.4
Industrial Machinery and Equipment Manufacturing	981	2.8	495	2.4
Dairy Cattle Farming	975	2.8	417	2.0
<b>Sub total</b>	13284	38.4	8214	39.8

Notes: "Share" is the share of all 18 to 30 year old PSGs in the field, occupation, or industry whose highest qualification is at this level.

### Highlights

- Both the number and share decreased for Skilled Vocational qualifications.
- PSGs at this level were concentrated in a few fields of study with the top 10 fields including about 90% of all PSGs at this level.
- Most of the top 10 fields had declines in the number and share of PSGs at this level. However, 'Teacher Education' and 'Sales and Marketing' increased both numbers and shares.
- The largest decrease in numbers was for 'Office Studies' and 'Automotive Engineering'.
- Although the number of Building PSGs decreased, its share at this level increased by 3 percentage points.
- The top 10 occupations and industries were almost all relevant to the first three fields, which together accounted for about half of all PSGs at this level.



**Table 2.5 Intermediate Vocational Qualification**

	Level of Attainment			6
	Count 96	Share 96 (%)	Count 01	Share 01 (%)
<b>Number of Graduates</b>	8496	4.5	18150	9.1
<b>Top 10 field of study</b>				
Computer and Info Science	303	4.8	3717	30.0
Food, Hospitality and Tourism	150	2.4	2574	20.8
Beauty Service and Hairdressing	90	1.4	1125	9.1
Automotive Engineering	792	12.4	1107	8.9
Horticulture & Viticulture	102	1.6	846	6.8
Business and Management	903	14.2	573	4.6
Law and Legal Studies	0	0.0	462	3.7
Electr Engineer/Tech	1332	20.9	369	3.0
Mechanical/Industrial Engineer	876	13.7	354	2.9
Building	663	10.4	312	2.5
<b>Sub total</b>	5211	81.7	11439	92.4
<b>Top 10 occupations as in 2001</b>				
Salespersons and Demonstrators	294	3.9	963	7.2
Other Personal Services Workers	84	1.1	846	6.3
Specialised Managers	462	6.2	837	6.2
Housekeeping and Restaurant Services Workers	147	2.0	828	6.2
Finance and Sales Associate Professionals	381	5.1	792	5.9
Machinery Mechanics and Fitters	492	6.6	699	5.2
Library, Mail and Related Clerks	222	3.0	636	4.7
Client Information Clerks	147	2.0	579	4.3
Market Oriented Animal Producers	246	3.3	438	3.3
Market Farmers and Crop Growers	84	1.1	402	3.0
<b>Sub total</b>	2559	34.2	7020	52.3
<b>Top 10 industries as in 2001</b>				
Other Personal Services	93	1.2	846	6.4
Motor Vehicle Services	285	3.8	567	4.3
Cafes and Restaurants	105	1.4	516	3.9
Other Business Services	165	2.2	459	3.5
Supermarket and Grocery Stores	75	1.0	399	3.0
Other Personal and Household Good Retailing	240	3.2	384	2.9
Other Services to Transport	96	1.3	345	2.6
Accommodation	60	0.8	321	2.4
Government Administration	177	2.4	315	2.4
Motor Vehicle Retailing	192	2.6	291	2.2
<b>Sub total</b>	1488	19.9	4443	33.4

Notes: "Share" is the share of all 18 to 30 year old PSGs in the field, occupation, or industry whose highest qualification is at this level.

### Highlights

- Both the number and share of PSGs at this level hugely increased from 1996 to 2001. The share doubled and the number of PSGs increased by about 10,000.
- The top 10 fields include more PSGs in 2001 than in 1996, although the composition changed markedly. Both shares and numbers declined for the top 5 fields in 1996, with only 'Automotive Engineering' remaining in the top-five.
- The new top 2 fields in 2001 were 'Computer and Info Science' and 'Food, Hospitality and Tourism', which included more than half of young PSGs at this level. The Number of 'Computer and Info Science' PSGs increased ten-fold and PSGs in 'Food, Hospitality and Tourism' at this level increased about 15-fold.
- Although 'Computer and Info Science' was the largest field in 2001 at this level, the top 10 occupations and industries do not seem particularly strongly related to the field.
- The share of top 10 occupations and industries increased markedly from 96 to 01.

**Table 2.6 Advanced Vocational Qualification**

	Level of Attainment			7
	Count 96	Share 96 (%)	Count 01	Share 01 (%)
<b>Number of Graduates</b>	38844	20.6	35037	17.6
<b>Top 10 field of study</b>				
Teacher Education	6546	20.8	5559	19.8
Creative Arts and Design	2655	8.4	3195	11.4
Business and Management	1215	3.9	3192	11.4
Food, Hospitality and Tourism	2031	6.5	3030	10.8
Nursing	6645	21.1	2586	9.2
Computer and Info Science	1278	4.1	1581	5.6
Architecture & Urban Environment	930	3.0	1062	3.8
Sales and Marketing	1149	3.7	930	3.3
Electr Engineer/Tech	1047	3.3	834	3.0
Communication and Media Studies	477	1.5	741	2.6
<b>Sub total</b>	23973	76.2	22710	81.0
<b>Top 10 occupations as in 2001</b>				
Primary and Early Childhood Teaching Professionals	3333	10.5	2694	9.6
Specialised Managers	1800	5.7	2154	7.7
Nursing and Midwifery Professionals	4692	14.8	1749	6.3
Finance and Sales Associate Professionals	1335	4.2	1482	5.3
Salespersons and Demonstrators	1353	4.3	1410	5.0
Writers, Artists, Entertainment and Sports Associate Professionals	1287	4.1	1383	4.9
Physical Science Technicians	1626	5.1	1197	4.3
Housekeeping and Restaurant Services Workers	954	3.0	1104	3.9
Library, Mail and Related Clerks	798	2.5	960	3.4
Business Professionals	807	2.6	903	3.2
<b>Sub total</b>	17985	56.9	15036	53.7
<b>Top 10 industries as in 2001</b>				
School Education	2775	8.8	2094	7.5
Hospitals and Nursing Homes	4050	12.9	1422	5.1
Marketing and Business Management Services	882	2.8	969	3.5
Cafes and Restaurants	648	2.1	771	2.8
Technical Services	786	2.5	747	2.7
Other Business Services	687	2.2	708	2.5
Child Care Services	552	1.8	702	2.5
Other Health Services	819	2.6	657	2.4
Government Administration	1125	3.6	654	2.4
Preschool Education	597	1.9	642	2.3
<b>Sub total</b>	12921	41.1	9366	33.7

Notes: "Share" is the share of all 18 to 30 year old PSGs in the field, occupation, or industry whose highest qualification is at this level.

### Highlights

- Both the number and share of PSGs with an Advanced Vocational qualification decreased from 1996 to 2001.
- 'Teacher Education' was the main field at this level, with about one fifth in both years although the number decreased about 1000 from 1996 to 2001.
- Nursing was the main source of the decrease at this level. The 2001 level was about 40% of the number from 1996.
- The largest increase (1,900) in numbers was from 'Business and Management'.
- The top 10 fields had only about 80% of all young PSGs at this level, which is much lower than the share of the two lower level qualifications.
- From 1996 to 2001, PSGs at this level became more concentrated in fields, but less concentrated in occupations and industries.

**Table 2.7 Bachelor Degree**

	Level of Attainment			8
	Count 96	Share 96 (%)	Count 01	Share 01 (%)
<b>Number of Graduates</b>	52011	27.6	63663	31.9
<b>Top 10 field of study</b>				
Teacher Education	936	2.4	5970	12.6
Biological Sciences	3378	8.7	3750	7.9
Social Science	3804	9.8	3339	7.1
Creative Arts and Design	1476	3.8	3258	6.9
Business and Management	2742	7.0	3162	6.7
Accounting	4881	12.5	3060	6.5
Language & Literature	3915	10.0	3054	6.5
Nursing	543	1.4	2868	6.1
Sales and Marketing	2742	7.0	2751	5.8
Law and Legal Studies	2706	6.9	2478	5.2
<b>Sub total</b>	27123	69.5	33690	71.3
<b>Top 10 occupations as in 2001</b>				
Business Professionals	4881	11.7	4998	9.5
Specialised Managers	3894	9.3	4878	9.3
Primary and Early Childhood Teaching Professionals	2469	5.9	4287	8.2
Finance and Sales Associate Professionals	2220	5.3	2565	4.9
Nursing and Midwifery Professionals	510	1.2	2382	4.5
Computing Professionals	864	2.1	2340	4.5
Salespersons and Demonstrators	1746	4.2	2208	4.2
Library, Mail and Related Clerks	1602	3.8	2184	4.2
Writers, Artists, Entertainment and Sports Associate Professionals	1329	3.2	2121	4.0
Secondary Teaching Professionals	1605	3.8	1599	3.0
<b>Sub total</b>	21120	50.6	29562	56.3
<b>Top 10 industries as in 2001</b>				
School Education	4083	9.7	5811	11.1
Hospitals and Nursing Homes	1197	2.9	3093	5.9
Legal and Accounting Services	3294	7.9	3090	5.9
Government Administration	2493	5.9	2586	5.0
Marketing and Business Management Services	1590	3.8	2451	4.7
Computer Services	939	2.2	1692	3.2
Other Business Services	1212	2.9	1584	3.0
Other Health Services	522	1.2	1461	2.8
Post School Education	1224	2.9	1443	2.8
Technical Services	1305	3.1	1305	2.5
<b>Sub total</b>	17859	42.6	24516	47.0

Notes: "Share" is the share of all 18 to 30 year old PSGs in the field, occupation, or industry whose highest qualification is at this level.

### Highlights

- This level of attainment was the single largest, with around 30 percent of PSGs.
- Both number and share of Bachelors increased markedly from 1996 to 2001.
- 'Teacher Education', 'Creative Arts and Design' and Nursing had large increases.
- Accounting and 'Language and Literature' declined most (2,700 in total).
- Compared with Vocational qualifications, Bachelor degrees cover more fields of study with the top ten fields accounting for only about 70% of the total.

**Table 2.8 Higher Degree**

	Level of Attainment			9
	Count 96	Share 96 (%)	Count 01	Share 01 (%)
<b>Number of Graduates</b>	14973	8.0	17562	8.8
<b>Top 10 field of study</b>				
Biological Sciences	1662	14.2	1872	14.3
Business and Management	783	6.7	1266	9.7
Social Science	1119	9.6	1161	8.9
Psychology	816	7.0	960	7.4
Medicine	1491	12.8	957	7.3
Physical and Natural Sciences	981	8.4	888	6.8
Teacher Education	279	2.4	876	6.7
Language & Literature	954	8.2	858	6.6
Law and Legal Studies	663	5.7	627	4.8
Computer and Info Science	456	3.9	564	4.3
<b>Sub total</b>	9204	78.7	10029	76.8
<b>Top 10 occupations as in 2001</b>				
Specialised Managers	798	6.7	1242	8.5
Business Professionals	732	6.1	1242	8.5
Library, Mail and Related Clerks	555	4.7	963	6.6
Health Professionals (Except Nursing)	1338	11.2	960	6.5
Computing Professionals	282	2.4	786	5.3
Social and Related Science Professionals	684	5.7	762	5.2
Secondary Teaching Professionals	327	2.7	600	4.1
Tertiary Teaching Professionals	639	5.4	570	3.9
Legal Professionals	438	3.7	531	3.6
Finance and Sales Associate Professionals	414	3.5	528	3.6
<b>Sub total</b>	6207	52.0	8184	55.7
<b>Top 10 industries as in 2001</b>				
Government Administration	1173	9.7	1377	9.4
Post School Education	1026	8.5	1317	9.0
School Education	567	4.7	1062	7.3
Hospitals and Nursing Homes	1164	9.6	927	6.3
Legal and Accounting Services	729	6.0	867	5.9
Marketing and Business Management Services	432	3.6	714	4.9
Computer Services	261	2.2	552	3.8
Scientific Research	468	3.9	483	3.3
Technical Services	348	2.9	459	3.1
Other Health Services	234	1.9	420	2.9
<b>Sub total</b>	6402	52.9	8178	55.9

Notes: "Share" is the share of all 18 to 30 year old PSGs in the field, occupation, or industry whose highest qualification is at this level.

### Highlights

- Both the number and share of PSGs with higher degrees increased from 1996 to 2001.
- The largest increases were 'Teacher Education' (3-fold increase since 1996) and 'Business and Management'.
- The largest decrease was from Medicine PSGs, which was the second most numerous in 1996 and only the fifth in 2001.
- Higher degree PSGs were less concentrated in fields in 2001 than in 1996, indicating a broader range of fields offering Higher Degree level qualifications.
- PSGs at this level were more concentrated in industries than other levels of qualifications. The 'Government Administration' industry had the highest share of higher degree PSGs in both years.

### **3 Summary of Outcomes for PSGs**

This section summarises labour market outcomes for young post-school graduates (aged 18 to 30 years), as a measure of the likely financial rewards associated with obtaining different qualifications. It also provides comparative information on a broader age range of post-school graduates, to be able to interpret early career outcomes against a backdrop of full-career outcomes. Estimates are provided for the census years 1996 and 2001. Specifically, we will look at employment rates and personal incomes, and at intercensal changes in these outcomes. We will also examine cross section patterns and synthetic cohorts to estimate the patterns of early career income growth.

By focusing on labour market outcomes, we abstract from the broader benefits that may be associated with holding a post-school qualification. For most students, the prospect of better labour market outcomes is not the sole, and may not even be the prime, motivation for undertaking study. Nevertheless, the ability to secure a personally and financially rewarding job once their studies are completed is certainly one important dimension of many students' study choices. We also abstract from the effort, time, and financial costs associated with obtaining a qualification, which would need to be taken into account if we were to draw any inferences about the returns to different qualifications.

#### **3.1 Summary of key changes from 1996 to 2001**

Table 3.1 summarises information on graduate outcomes from each census, the rate of change between 1996 and 2001, and the variability of outcomes. It also contains information on the prevalence of multiple-post-school qualifications, and introduces measures of labour market specialisation and of changes in labour market conditions, which will be explained below. Finally, it lists the most common occupations for post-school graduates, and provides information on the proportion of post school graduates who are working in "in-field" occupations (as defined below), showing the extent to which higher incomes are associated with in-field employment. The information in Table 3.1 provides a convenient summary of key statistics. In Part B of this report, the same information is provided, in the same format, for each of the 26 fields of study that we analyse.

From 1996 to 2001, the number of PSGs increased significantly for both working age people and young adults aged 18 to 30. The rate of increase was higher for working age graduates than for young graduates, implying a particularly strong increase in qualifications for 30 to 65 year olds. This is likely to be due to a combination of an increased rate of formal adult learning, and the impact of older cohorts of workers with relatively low levels of post-school qualifications leaving the 30 to 65 year age group.

In 2001, there were more female PSGs than male PSGs. Among 18 to 30 year olds, the proportion was 55.6 percent, up more than 4 percentage points since 1996. Although the share of PSGs that are female is lower for the working age population as a whole, that proportion also rose between 1996 and 2001, by 3 percentage points, to 52 percent.

**Table 3.1 Key changes from 1996 to 2001 for PSGs**

	Working age PSG (18-65 yrs)			Young PSG (18-30 yrs)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	471468	508146	7.8%	188253	199587	6.0%
Female Proportion	48.5%	51.9%	3.44	51.3%	55.6%	4.36
Employment rate	84.0%	82.9%	-1.1	82.1%	79.5%	-2.6
Income						
• Mean	33810	35900	6.2%	25720	26540	3.2%
• Median	29190	30130	3.2%	24350	24210	-0.6%
• P90-P50 ratio	2.24	2.28	0.05	1.92	2.03	0.10
• P50-P10 ratio	5.77	5.58	-0.19	5.49	5.77	0.27
% of people with second qualification in different field of study (6-digit level)	9.38	N/A	N/A	7.5	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	4.86	N/A	N/A	3.4	N/A	N/A
Specialisation	(Relative to working age PSGs)					
• by occupation	0.0277	0.0303	0.0026	0.93	0.97	0.03
• by industry	0.0199	0.0201	0.0002	0.86	0.90	0.04
• by industry and occupation	0.0053	0.0049	-0.0004	0.91	1.01	0.10
Supply and demand						
• Demand shock	N/A	N/A	1.5%	N/A	N/A	2.3%
• Supply shock	N/A	N/A	12.5%	N/A	N/A	10.7%
% in top 10 occupations (In descending order for working age PSGs in 2001)						
Specialised Managers	8.5%	10.1%	1.5	6.2%	7.4%	1.3
Primary and Early Childhood Teaching Professionals	4.8%	4.9%	0.2	4.1%	5.0%	0.9
Business Professionals	3.7%	4.9%	1.2	4.5%	4.9%	0.4
Nursing and Midwifery Professionals	4.5%	4.2%	-0.3	3.5%	2.7%	-0.8
Finance and Sales Associate Professionals	4.0%	3.9%	-0.1	4.3%	4.7%	0.4
Library, Mail and Related Clerks	2.6%	3.4%	0.7	3.3%	4.1%	0.8
Salespersons and Demonstrators	2.9%	3.3%	0.4	4.4%	5.2%	0.8
Market Oriented Animal Producers	3.8%	2.8%	-1.0	3.3%	2.5%	-0.8
Writers, Artists, Entertainment and Sports Associate Professionals	2.2%	2.5%	0.4	2.7%	3.2%	0.6
Housekeeping and Restaurant Services Workers	2.3%	2.5%	0.2	4.1%	4.7%	0.6
Total share of the top 10 occupations	39.3%	42.6%	3.3	40.4%	44.6%	4.2
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	57.3%	55.0%	-2.3	59.2%	55.1%	-4.0
• Median income if working in in-field occupations	32950	35040	6.3%	28770	30120	4.7%
• Median income if working in out-of-field occupations	30370	31500	3.7%	24300	25180	3.6%

It appears that outcomes for PSGs, and especially for young PSGs were poorer in 2001 than in 1996. The employment rate, measured as the proportion of the (age-restricted) population in employment, declined from 82.1 percent to 79.5 percent for 18 to 30 year old PSGs. This could reflect increased rates of ongoing study or increased difficulties in finding employment. Further analysis by level of attainment and age is presented below, which suggests that changes in the composition of qualifications by level of attainment can explain much of this apparent decline.

Income statistics are derived from categorical income, and may therefore be relatively imprecise. Although mean incomes increased by 3.2 percent, median incomes declined by 0.6 percent, suggesting that there were greater income gains for those at the upper end of the income distribution. Note that the mean and median incomes reported in Table 3.1 are calculated over employed and not employed PSGs, so some of the relatively weak income growth reflects relatively poor employment outcomes. Further analyses of these employment and income findings are presented in subsequent sections.

Table 3.1 presents 3 indices of specialisation for PSGs. These indices capture the extent to which employed PSGs are disproportionately employed in a narrow range of jobs. We use the degree of specialisation of all 18 to 65 year old PSGs as the benchmark against which we gauge the specialisation of young PSGs (and later, of PSGs by field). The measure of occupational specialisation ( $\gamma_{occ}$ ) presented in Table 3.1 (0.0277 in 1996) is the sum of squared employment shares ( $x_i$ ) by 3-digit occupation. Formally,

$$\gamma_{occ} = \sum_{i=occ} (x_i)^2 \quad \text{where } x_i = \frac{E_i}{E_{Tot}} \quad (1)$$

For young PSGs, a similar index is calculated and is expressed as a proportion of the ‘all PSG’ degree of specialisation. For instance, the 0.93 reported for the occupational specialisation of young PSGs in 1996 indicates that young PSGs were less occupationally specialised than were all working age PSGs, and that their index of specialisation was 93 percent of the index for all working age PSGs. Similar indices are calculated based on distribution across 3-digit industry, and across industry\*occupation combinations. In general, occupational specialisation is more pronounced than is specialisation across industry.

As a further indication of patterns of occupational specialisation, Table 3.1 shows the top 10 3-digit occupations held by employed PSGs, and the proportion of PSGs covered by this limited set of occupations. Around 40 to 45 percent of PSGs are found in just 10 occupations. The top ten occupations for the two age groups are different and the list changed across different census years. Apart from that, the changing trends in the ten occupations for the two age groups are similar, except for Primary and Early Childhood Teaching Professionals and Business Professionals. The proportions of young PSGs working in the top ten occupations are higher than for all working age PSGs in both years. The degree of occupational specialisation has increased between 1996 and 2001, whether measured by the index of occupational specialisation or by the simpler ‘top 10’ measure.

Of course, the occupations held by PSGs differ across fields of study. For each field of study, we compare the proportion of field-graduates in an occupation with the proportion of all post school graduates in that occupation. If field graduates are over-represented by a factor of two or more, we classify the occupation as an ‘in-field’ occupation for that field. Overall, between 55 and 60 percent of PSGs work in in-field

occupations calculated in this way. Table 3.1 shows the figures for the two census years and the two age-based PSG populations. It also documents a consistent income premium for graduates working in in-field occupations.

Finally, Table 3.1 presents information on demand and supply changes affecting PSGs between 1996 and 2001. As a measure of demand change, we derive an index for each field following the approach of Bartik (1991). Specifically, we estimate the growth in employment that would have resulted if young PSGs in each field had maintained their 1996 share of each industry by occupation cell. High demand growth is equivalent to being disproportionately employed in high-employment growth industries and occupations. Formally, we use a ‘demand shock’ index, calculated as:

$$\frac{\hat{dE}_j}{E_{j0}} = \sum_i \frac{E_{ij0}}{E_{j0}} \frac{(E_{i1} - E_{i0})}{E_{i0}} = \sum_i \lambda_{ij0} g_i, \quad (2)$$

where  $\lambda_{ij0}$  = the proportion of field- $j$  PSGs in the industry by occupation cell  $i$  and  $g_i$  is the growth rate of employment in cell  $i$ . For fields that account for a high proportion of an industry-occupation cell, the change is less clearly interpretable as demand change, since it will also reflect the impact of supply changes during the period.

As an indication of supply shifts, we report the size of PSG immigrant inflows, as a proportion of the 1996 number of PSGs. This measure is calculated and reported later also for each field of study. Table 3.1 reports that immigrants with post-school qualifications in 2001 accounted for more than 10% of 1996 employment. We use this measure in section 5 as a proxy for supply shifts, although interpretation in this way must be cautious. Immigrant supply is likely to be strongest where there have been increases in relative demand. In addition, immigrant supply is only one component of supply shifts, and it does not take into account emigration or changes in the supply of non-immigrant PSGs.

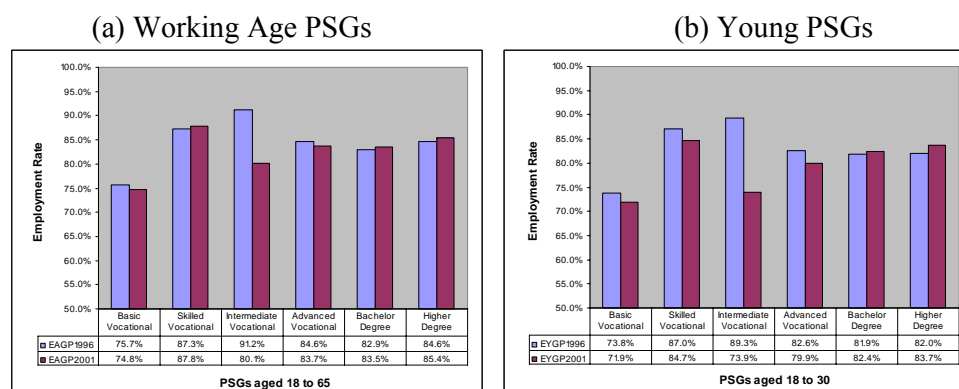
### **3.2 Income and Employment outcomes**

Table 3.1 reports a decline in the employment rate for young PSGs. Figure 3.1 shows that declines occurred for all non-degree qualifications, but were particularly pronounced for PSGs with Intermediate Vocational qualifications. The Intermediate Vocational qualifications group is a relatively small group, accounting for only 4.5 percent of young PSGs in 1996, rising to 9.1 percent in 2001. The rise in numbers was associated with a pronounced change in the composition of fields in which this level of qualification was obtained. Between 1996 and 2001, there was a large increase in ‘Computer Science’, ‘Food Hospitality And Tourism’, and ‘Beauty Service and Hairdressing’ graduates, all of which were fields with relatively low incomes and employment rates. Reinforcing this composition change was a reduction in the number of young PSGs with Intermediate Vocational qualifications in engineering fields, which offer relatively high incomes and employment rates.

It would appear that compositional change rather than any true deterioration in outcomes lies behind the poorer average outcomes in 2001, at least at the Intermediate level. More modest deterioration in employment rates was, however, evident for all sub-degree qualifications for young graduates. There was slight growth in median income, with the exception of the Intermediate Vocational Qualifications group, whose atypical pattern is clearly evident in Figure 3.2. Income growth was slightly larger for those with degree qualifications, who also had the highest median incomes, and for young PSGs.

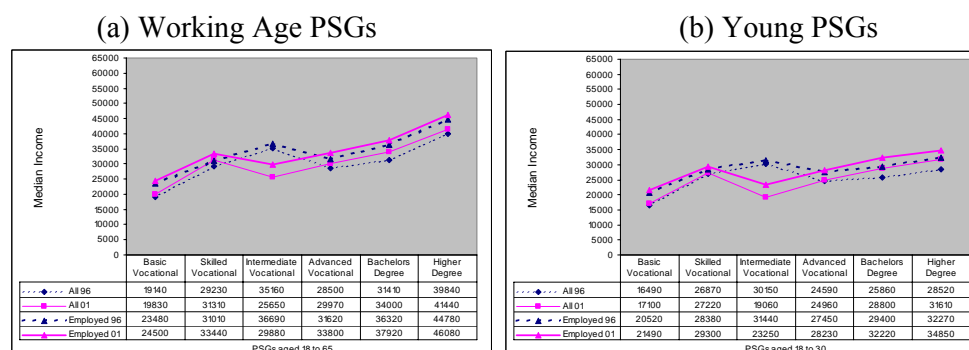


**Figure 3.1 Employment rate by highest level of attainment**



Not surprisingly, median incomes for employed PSGs are higher than those of all PSGs at each level of attainment, and for each age subpopulation. The differences are shown in Figure 3.2, for both young PSGs and working age PSGs. Apart from the obvious difference in levels, the pattern of relative incomes, and the changes over time are similar, whether or not attention is restricted to employed PSGs. In subsequent analyses, we use median incomes for all PSGs as our main indicator of income, unless otherwise stated. We examined many of our findings using incomes of employed PSGs, and found substantially similar results. Median incomes reflect expected rewards, which are a product of the probability of being employed, and the expected incomes conditional on employment.

**Figure 3.2 Median Income by highest level of attainment: All vs. Employed**



In the 1996 census, people were asked to report up to two highest qualifications. Where people reported two qualifications at different levels, we used the higher of the two to determine their post-school qualification and field of study. Table 3.1 shows that, in 1996, 7.5 percent of young PSGs and 9.38 percent of all working age PSGs had a second qualification in a different (6-digit) field of study. For almost half of these people their second qualification is in a closely related field of study – only 3.4 percent of young PSGs and 4.86 percent of all PSGs have a second qualification in a different aggregated field of study.

Table 3.2 shows incomes for people with one or two valid qualifications at the same level of attainment. Not surprisingly, people with multiple qualifications at the same level earn higher incomes than those who have only one qualification. The income difference is evident at all points in the distribution – they are less likely to be earning low incomes, and more likely to be earning high incomes. When we subsequently analyse outcomes by field of study, people with multiple fields of study at the same

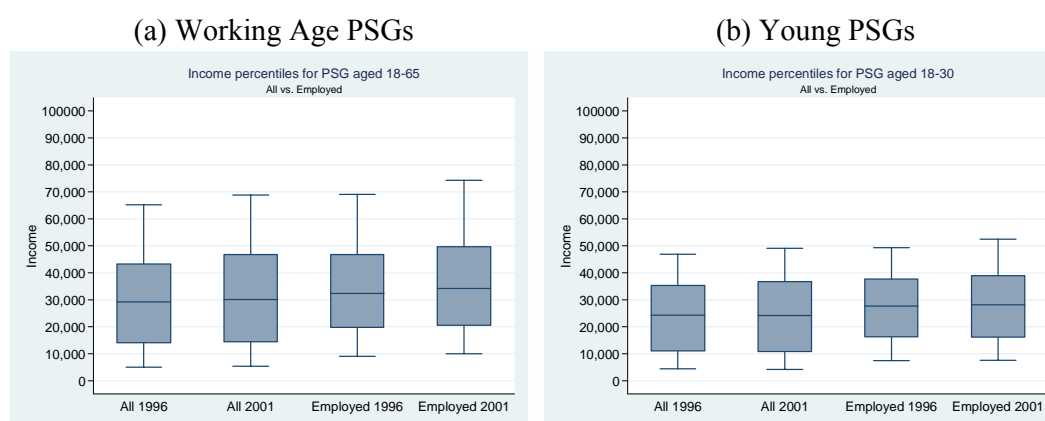
level of attainment will be counted as part of each of their fields. The prevalence of multiple-qualifications varies across fields and we report this in the field-specific profiles in Part B of the report. A prevalence of multiple qualifications could be one reason why some fields appear to have higher median incomes.

**Table 3.2 Incomes by number of highest qualifications gained in 1996**

Number of qualifications	Count	Share	Mean Income	P10	P25	P50	P75	P90	P9050	P5010
1	174183	92.5%	25550	4390	11090	24270	35160	46330	1.91	5.53
2	14067	7.5%	27830	5020	11790	25450	38290	52120	2.05	5.07

While median incomes provide a useful summary of relative incomes for different groups of PSGs, there are also differences in the degree of income dispersion. Figure 3.3 shows the distribution of incomes for working age PSGs and for young PSGs. In each case, it shows separately the income distribution of employed PSGs. Not surprisingly, employed PSGs have higher median incomes than do PSGs generally. The differences in medians is, however, small relative to the differences in the 10<sup>th</sup> and 90<sup>th</sup> percentiles, at least for all working age PSGs. Employed PSGs are less likely to have very low incomes, and are more likely to have very high incomes – 10 percent have incomes above \$69,000, compared with \$65,000 for PSGs generally. For young PSGs, employment is more strongly reflected in a higher median. Employment is associated with a 14 percent higher median, compared with only 11 percent for working age PSGs. In Figure 3.3, it appears that the dispersion of incomes is also greater for working age PSGs than for young PSGs. However, the differences are not as pronounced if we control for the different levels of income, and instead calculate the ratio of the 90<sup>th</sup> percentile to the median.

**Figure 3.3 Income percentiles: Working age vs. Employed**



Notes: The boxes show the median, 25<sup>th</sup> percentile, and 75<sup>th</sup> percentile. The ‘whiskers’ show the position of the 10<sup>th</sup> and 90<sup>th</sup> percentiles.

Table 3.3 presents similar information to that contained in Figure 3.3, but in tabular form, and for a broader range of PSG subgroups. For working age PSGs, the 90<sup>th</sup> percentile of the income distribution (P90) was a little over twice as large as the median. The ratio of the 90<sup>th</sup> percentile of the income distribution to the median was 2.24 in 1996 and had risen slightly to 2.28 in 2001. For young PSGs, the dispersion of incomes above the median was smaller in 1996 (1.92), but increased to 2.03.

**Table 3.3 Income dispersion and change**

	Working Age (18-65)					Young (18-30)				
	P10	P50	P90	P9050	P5010	P10	P50	P90	P9050	P5010
	<b>1996</b>									
All	5058	29193	65265	2.24	5.77	4432	24346	46862	1.92	5.49
Employed	9164	32395	69006	2.13	3.54	7513	27657	49257	1.78	3.68
Male	9626	36094	75410	2.09	3.75	6473	28172	51856	1.84	4.35
Female	2419	21483	47475	2.21	8.88	3052	20525	41073	2.00	6.73
European	5842	30135	66672	2.21	5.16	5367	25389	47678	1.88	4.73
Asian	5525	24172	50911	2.11	4.38	4159	18984	40729	2.15	4.56
Māori	3473	22584	46715	2.07	6.50	2552	17738	38327	2.16	6.95
Pacific	466	17745	56436	3.18	38.08	1194	12549	40388	3.22	10.51
Other	1292	15256	52610	3.45	11.81	.	12486	42527	3.41	
	<b>2001</b>									
All	5403	30130	68817	2.28	5.58	4197	24206	49045	2.03	5.77
Employed	9987	34225	74280	2.17	3.43	7556	28179	52401	1.86	3.73
Male	9170	37365	88409	2.37	4.07	5629	27479	56833	2.07	4.88
Female	3076	23410	54843	2.34	7.61	3247	21202	44991	2.12	6.53
European	6361	31701	70897	2.24	4.98	5421	25691	49863	1.94	4.74
Asian	5350	22917	53239	2.32	4.28	2086	17882	38485	2.15	8.57
Māori	3144	22579	48155	2.13	7.18	3783	17627	40300	2.29	4.66
Pacific	342	21305	60587	2.84	62.30	.	14707	46500	3.16	
Other	1565	20000	63125	3.16	12.78	994	12924	42962	3.32	13.00
	<b>Percentage change</b>									
All	7%	3%	5%	0.05	-0.20	-5%	-1%	5%	0.10	0.27
Employed	9%	6%	8%	0.04	-0.11	1%	2%	6%	0.08	0.05
Male	-5%	4%	17%	0.28	0.33	-13%	-2%	10%	0.23	0.53
Female	27%	9%	16%	0.13	-1.27	6%	3%	10%	0.12	-0.20
European	9%	5%	6%	0.02	-0.17	1%	1%	5%	0.06	0.01
Asian	-3%	-5%	5%	0.22	-0.09	-50%	-6%	-6%	0.01	4.01
Māori	-9%	0%	3%	0.06	0.68	48%	-1%	5%	0.13	-2.29
Pacific	-27%	20%	7%	-0.34			17%	15%	-0.06	
Other	21%	31%	20%	-0.29			4%	1%	-0.08	

Notes: P10, P50, and P90 are the 10<sup>th</sup> percentile, the median, and the 90<sup>th</sup> percentile of the relevant income distribution. P9050 = P90/P50. P5010 = P50/P10. Changes for the percentiles are shown as percentage changes. Changes in the ratios are shown as percentage point changes.

The second row of Table 3.3 shows higher incomes for employed PSGs than for all PSGs. The difference is most pronounced at the 10<sup>th</sup> percentile, where the 10<sup>th</sup> percentile of the employed PSG distribution is roughly twice that for all PSGs, as would be expected as a result of excluding predominantly low-income non-employed people. While working age PSGs experienced income gains across all percentiles, for young PSGs, the largest gains in income occurred at the 90<sup>th</sup> percentile. Even there, however, their income growth, at 5 percent was only the same as that for all PSGs.

Table 3.3 also shows differences in income distributions by gender and ethnicity, using incomes of all PSGs (i.e.: not restricted to those who are employed).

Females had lower incomes than males, especially at the 10<sup>th</sup> percentile, although 10<sup>th</sup> percentile incomes rose more for females, reflecting higher employment rates in 2001. Young female PSGs had higher dispersion in incomes, both above the median (P9050) and below it (P5010). The spread below the median reflects lower employment rates

Ethnic differences are shown, with the five groups shown in descending order of median income. Europeans had the highest incomes at all points in the distribution, although Pacific and ‘other’ groups experienced faster income growth. Although in most cases, the P9050 spread is smaller for young PSGs than for working age PSGs, this is not the case for young Māori PSGs, for whom the premium at the 90<sup>th</sup> percentile is particularly strong. Young Asian PSGs have higher median incomes than do other young PSG groups, but they also have a more compressed income distribution above the median.

### 3.2.1 Age profiles across year

One of the aims of this research is to provide evidence on the way in which young PSGs’ outcomes change early in their careers. Using Census data, we are constrained to use cross-sectional patterns, or changes for synthetic cohorts to build such evidence.

Using age-on-age change as a guide to income growth will be misleading if there are compositional changes by age. For instance, using the difference in income between 22 and 23 year olds as a guide to the future income growth of a 22 year old will be misleading if a large number of high-income PSGs join the ranks of PSGs at age 23.

The size and direction of bias is an empirical question. The scope for compositional change to bias results is large. The number of 20-year-old PSGs is more than double the size of the 18-year-old age group, and a further doubling occurs by about age 23. There are also pronounced compositional changes. In each year, around a third of 18 to 20 year old PSGs are accounted for by just two fields, and in each case, the fields are ones that offer relatively poor employment and income prospects. In 1996, the fields are ‘Office Studies’, and ‘Food, Hospitality and Tourism’. In 2001, they are ‘Computer and Information Science’, and ‘Food, Hospitality and Tourism’.

To examine the actual biases, we adjusted income growth for changes in composition across fields. We compared median incomes for 18 year olds with a weighted average of median incomes by field for 19 year olds, where the weights reflected the field-composition of 18 year olds.<sup>10</sup> We found that the biases were relatively small. In fact, for 18 to 20 year olds, income growth is *under*-stated by 1 to 2 percent due to compositional change, as a result of increasing numbers of relatively low-income PSGs entering. Between ages 21 to 24, the influx of high-income graduates leads to a slight overestimate of age-on-age income growth, of about 1 percent. Beyond age 24, the bias is negligible. Because of the relatively small biases, we make no adjustment for compositional change, and compare simple mean and median incomes across different ages.

Table 3.4 summarises outcomes by age in 2001, and shows changes between 1996 and 2001. The number of PSGs by age rises from around 4,600 at age 18, to over 17,000 at age 23. The growth in numbers by age slows beyond age 23. Proportionately more males join the ranks of PSGs after age 21. This, combined with a relative decline

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<sup>10</sup> There will be some compositional bias remaining in our field-composition-adjusted growth estimates. Within fields, there will be changes in the composition across levels of attainment – for example, older cohorts containing a higher proportion of degree PSGs.

in the female employment rate as PSGs age, leads to a decline in the female ratio, from 58.7 percent for 21 year olds, to 53.2 percent for 30 year olds. Between 1996 and 2001 these patterns had, however, become less strong, with faster growth in the female ratio among PSGs over the age of 21, especially over the age of 25.

**Table 3.4 Age profiles for PSGs aged 18 to 30**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers	Change in Female Ratio	Change in Median Income	Change in Emp Rate
18	4602	57.4	6290	63.1	33%	-1.1	-7%	-3.4
19	7245	56.3	8770	65.5	21%	-2.8	-8%	-6.2
20	9480	58.2	11570	70.1	19%	0.0	-7%	-5.6
21	13563	58.7	12430	73.5	6%	1.0	-7%	-3.6
22	15999	57.8	15350	76.4	-3%	2.1	-7%	-4.0
23	17379	56.9	21450	79.3	-3%	3.7	-5%	-3.7
24	17670	55.2	25570	81.5	-5%	3.8	-3%	-3.5
25	17385	55.7	28000	82.2	-3%	5.3	0%	-3.1
26	18168	55.4	29260	82.1	3%	6.6	0%	-3.0
27	18585	55.0	31000	83.2	7%	7.0	2%	-1.2
28	19299	54.7	31940	83.1	12%	7.3	2%	-0.7
29	20292	53.4	33000	82.9	17%	5.5	4%	0.4
30	19920	53.2	33690	82.5	12%	6.3	6%	0.4

Median incomes clearly increase with age. Adjusting for compositional change would give an age-income profile that rose slightly faster than the one shown in Table 3.4 and Figure 3.4 between ages 18 and 20, and more slowly between ages 20 and 24.

Consistent with the overall trends discussed earlier, median income and employment rates decreased in almost all age groups from 1996 to 2001, with the exception of a slight increase in the employment rate for 29 and 30 year olds. Between 1996 and 2001, the cross-sectional age-income profile become steeper, with stronger income growth for 27 to 30 year olds PSGs, and lower median incomes for younger age levels. As with the cross-sectional comparison of adjacent ages, the estimates of change over time are also affected by compositional change. Holding the age-specific mix of fields constant as at 1996 reduces the estimated change in median income by around half of one percent. The bias is most pronounced at ages 20 and 28, when the adjustment reduces estimated growth by 1 to 1.5 percent. Actual growth is lower than that shown in Table 3.4 because some of the measured growth is due to an increasing share of PSGs in high-income fields. The changing mix of levels of attainment within fields could further bias the estimates, although the direction of bias is not clear.

**Figure 3.4 Median income and employment rates**

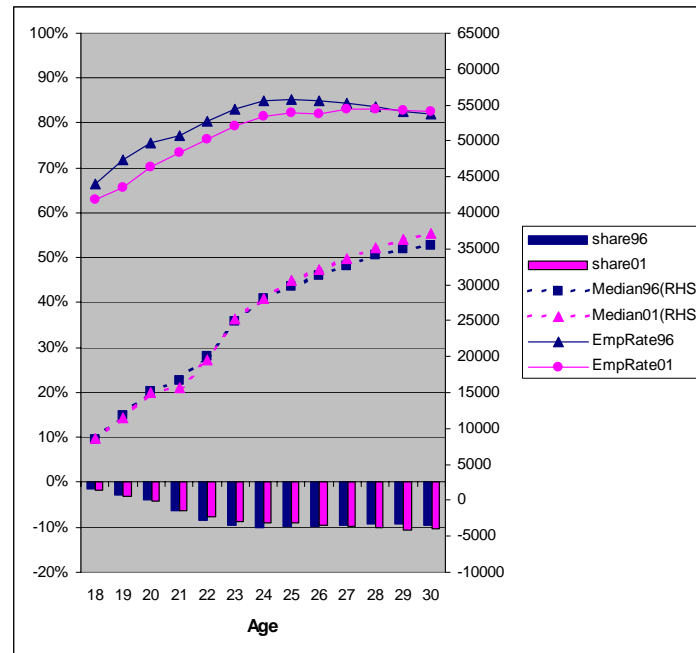
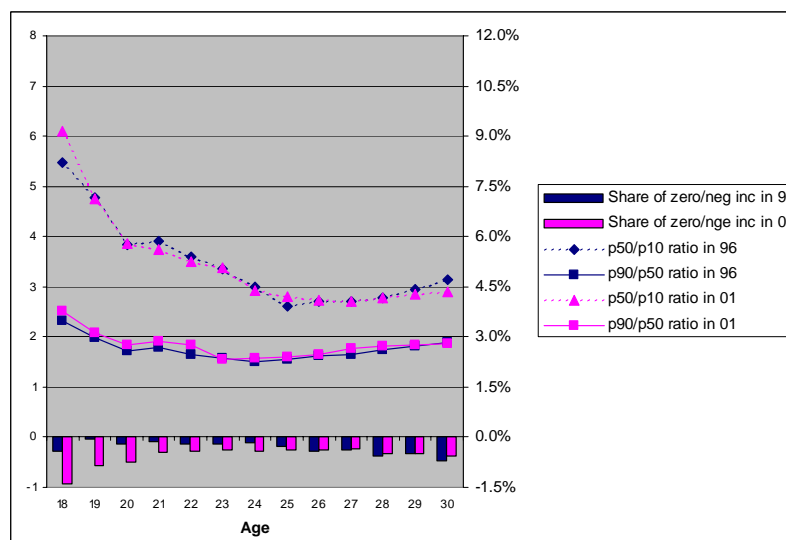


Figure 3.5 shows changes in income dispersion for different ages. Income dispersion decreased from age 18 up to the mid-twenties, and then increased slowly after the age 26. The ratio of median income to the 10<sup>th</sup> percentile is much higher than the ratio between the 90<sup>th</sup> percentile and the median income, especially for those aged 25 and under. Both ratios were higher in 2001 than in 1996. There was also an increase in the proportion of 18 to 25 year olds receiving zero incomes, consistent with higher participation in further study and reduced employment rates.

**Figure 3.5 Income comparison by year and age**

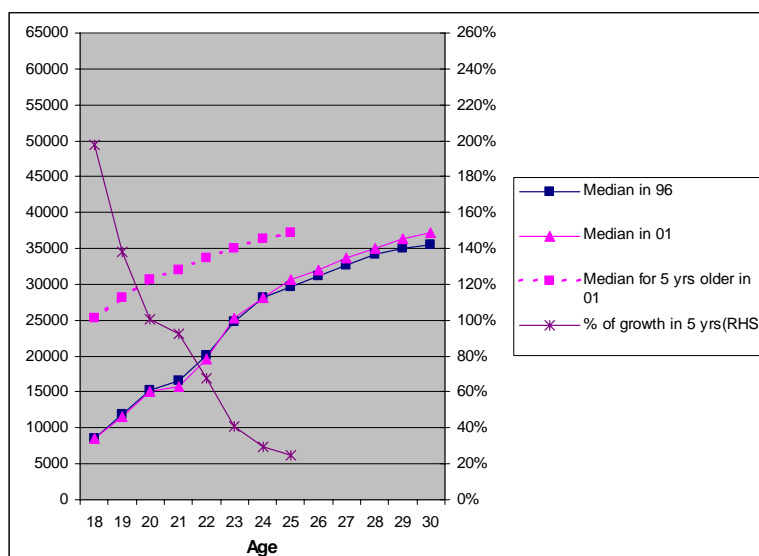


Comparing 1996 median incomes for each age-group with incomes for the corresponding (5-year older) age group from the 2001 census provides an estimate of

income growth over a five year period. Estimates for each age group are shown in Figure 3.6. The figure shows age-income profiles for 1996 and 2001. It also shows a portion of the 2001 profile shifted to the left by five years, to line up the 2001 incomes by age with the cohort's age in 1996. The downward sloping line shows the five-year rate of growth of incomes, by age. For 18 year olds, the increase is around 200 percent. While this sounds extremely large, it reflects in part the very low initial median income of around \$9,500. Five years later, the median income for this group (as 23 year olds) had risen to around \$21,500. However, even the 25-year-old group experienced income growth of more than 20 percent in the intercensal years.

The potential bias from composition change is somewhat magnified when we consider changes across both time and age. Adjusting for differences in the mix of fields between the 1996 and corresponding 2001 age groups reduces the estimated quinquennial income growth. The growth rates in Figure 3.6 are biased upwards by 15 to 70 percentage points for the groups first observed at ages 18 to 22, but by less than 5 percentage points for older ages. Even allowing for the impact of compositional change, young PSGs can expect substantial income growth over their early career.

**Figure 3.6 Income change in 5 years for Employed PSGs aged 18 to 30**



### 3.2.2 In and out-of field employment

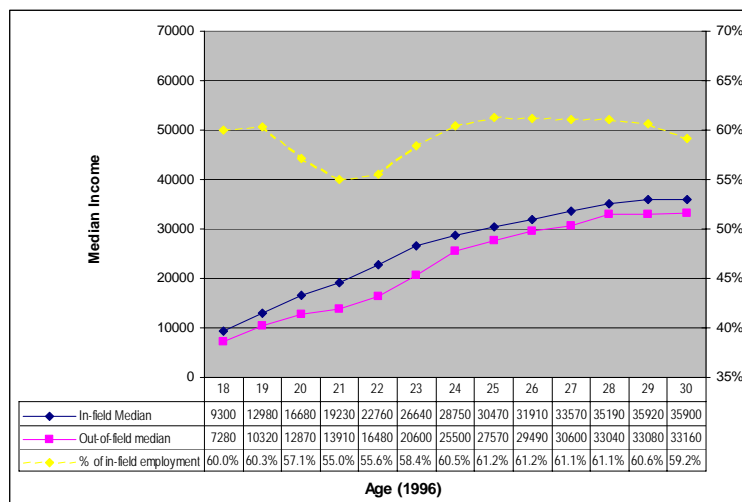
Some post-school qualifications provide skills that are generic, such as 'Office Studies', which can help graduates to gain employment in a wide range of industries and occupations. In contrast, qualifications in some fields of study prepare the student for employment in a relatively limited range of jobs (e.g.: 'Beauty Service and Hairdressing' or Medicine). As outlined in section 3.1, for each field of study, we classify occupations as either 'in-field' occupations or 'out-of-field' occupations. 'In-field' occupations are those in which graduates are over-represented by a factor of two. A summary of the varying degree of specialisation across fields is presented below, in section 4.2. In the current section, we consider whether being employed in an in-field occupation is associated with higher incomes.

Over all fields, only around 60 percent of PSGs work in in-field occupations. Figure 3.7 shows, for each age, the proportion of PSGs working in-field, and the median income by age separately for in-field and out-of-field PSGs. Between 1996 and 2001,

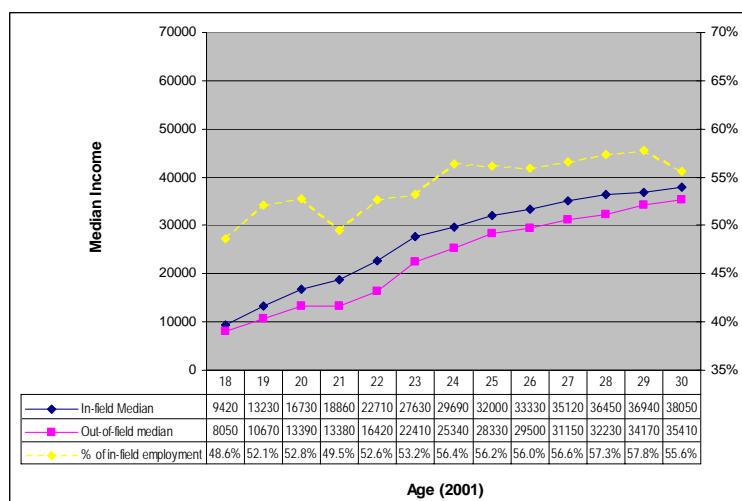
the share of in-field employment decreased for all ages except age 20, reflecting a more diverse range of job opportunities in 2001 for almost all fields.

**Figure 3.7 Median Income comparison between in-field employment and other employment for PSGs aged 18 to 30 in 1996 across age**

(a) 1996



(b) 2001



At every age, employed PSGs working in in-field occupations have higher median incomes than those working outside their fields. At young ages, some of the variation in premium reflects changes in the field-composition of PSGs, although the in-field premium is evident to varying degrees for all fields of study. There are several possible explanations for this pattern, including the selection of more able PSGs disproportionately into in-field jobs, a process of job search and matching whereby PSGs aim to find higher paying in-field jobs, or geographical mismatch of jobs and skills. Distinguishing these (and other) potential explanations would be an interesting challenge for further research, but is beyond the scope of the current paper.



## 4 Variation of outcomes across Fields of Study

This section summarises variation in outcomes across the 26 different grouped fields of study described in section 2 and shown as aggregations of detailed field of study codes in the Appendix to Part B of this study. We show which fields offer better prospects, in terms of higher employment rates and median incomes, and whether relative outcomes are maintained over time and across age groups. We also examine the relative specialisation of fields, and the potential trade-off between high starting incomes and slower income growth.

### 4.1 Size of fields and relative outcomes

The 26 fields of study that we are able to link across census years account for around three-quarters of PSGs. The largest group in each census year was ‘Teacher Education’, accounting for over 35,000 PSGs in 1996 and 40,000 in 2001. Nursing was the second largest field, although it declined from 35,000 to 30,000 between 1996 and 2001. Table 4.1 summarises the changing sizes of the different fields, for both working age and young PSG groups (in decreasing order of 2001 size for working age PSGs). It is striking that many of the fields had substantial changes in numbers. ‘Computer and Information Sciences’ and ‘Business and Management’ grew by 83 percent and 50 percent respectively – giving them each more than 20,000 PSGs in 2001, whereas other fields experienced sizeable declines that dropped their numbers below 20,000 - ‘Office Studies’ (-28%), ‘Auto Engineering’ (-18%), ‘Electrical Engineering’ (-18%), and Building (-14%).

Overall, young PSGs account for about 40 percent of working age PSGs, although this fraction varies markedly across fields. Some traditional fields of study, such as nursing, medicine, engineering, and accounting have only 20 to 30 percent of their graduates below the age of 30. Although a long period of initial study can explain some of this difference, it cannot explain it all. In contrast, some fields such as ‘Communication and Media Studies’, ‘Creative Arts and Design’, and ‘Computer and Information Sciences’ have around 60 percent of working age graduates in the 18 to 30 year old age range. For young PSGs, the most common fields of study in 2001 were Teaching (8%), ‘Food, Hospitality and Tourism’ (8%), ‘Computer and Information Science’ (6%), ‘Creative Arts and Design’ (5%), and ‘Business and Management’ (5%).

Different fields offer quite different income and employment prospects. Outcomes by field for 2001 are shown in Table 4.2, in order of median income. The highest income field, which also offers one of the highest employment rates, is Medicine. Median income for Medicine is \$48,750, more than three times the median for ‘Creative Arts and Design’. Some of the variation in income levels reflects differences in the length of training required – qualifications with longer training periods will tend to offer higher returns, to justify the investment. To provide an indication of the mix of qualifications offered within each field, Table 4.2 shows the share of PSGs with qualifications at different levels of attainment. Although higher paying fields tend to have higher levels of attainment, there are many exceptions to this pattern. Over 80 percent of PSGs in the ‘Language and Literature’ field held degrees, although the field offered among the lowest median incomes (\$18,370) and employment rates (72%). Conversely, 62 percent of ‘Mechanical and Industrial Engineering’ PSGs held a basic/ skilled vocational qualification, yet the field offered relatively high median incomes (\$33,440) and employment rates (88%).

**Table 4.1 Number of PSGs and the share to total PSGs for each aggregated field**

Group Name	PSG aged 18-65				PSG aged 18-30			
	Count in 01	Share in 01	Share in 96	Change of count	Count in 01	Share in 01	Share in 96	Change of count
Teacher Education	43812	9%	8%	23%	16110	8%	6%	45%
Nursing	30486	6%	7%	-14%	5985	3%	4%	-28%
Business and Management	24669	5%	3%	50%	9957	5%	4%	41%
Food, Hospitality and Tourism	23406	5%	4%	19%	15504	8%	7%	25%
Computer and Info Science	19890	4%	2%	83%	11478	6%	4%	73%
Building	19488	4%	5%	-14%	6330	3%	4%	-25%
Electr Engineer/Tech	19011	4%	5%	-18%	5139	3%	4%	-34%
Creative Arts and Design	17241	3%	3%	36%	10332	5%	4%	44%
Automotive Engineering	16878	3%	4%	-18%	5751	3%	4%	-19%
Office Studies	14907	3%	4%	-28%	6453	3%	5%	-37%
Accounting	14091	3%	3%	-12%	4278	2%	3%	-35%
Mechanical/Industrial Engineer	13485	3%	4%	-20%	3618	2%	3%	-40%
Sales and Marketing	12804	3%	2%	11%	6081	3%	3%	3%
Biological Sciences	12237	2%	3%	2%	6060	3%	3%	11%
Social Science	11481	2%	3%	-8%	4869	2%	3%	-2%
Language & Literature	11319	2%	3%	-14%	4746	2%	3%	-13%
Law and Legal Studies	11133	2%	2%	22%	4365	2%	2%	16%
Pharmacy, Therapy, etc.	10308	2%	2%	23%	3792	2%	2%	14%
Medicine	9057	2%	2%	10%	2271	1%	1%	-1%
Agriculture and Environmental	8895	2%	3%	-31%	3420	2%	3%	-33%
Beauty Service and Hairdressing	7869	2%	2%	0%	3834	2%	2%	-8%
Horticulture & Viticulture	7245	1%	1%	3%	2496	1%	2%	-20%
Psychology	6939	1%	1%	4%	3213	2%	2%	-2%
Physical and Natural Sciences	6819	1%	2%	-15%	2421	1%	2%	-17%
Architecture & Urban Environment	5832	1%	1%	5%	2385	1%	1%	2%
Communication and Media Studies	4950	1%	1%	54%	3051	2%	1%	66%
<b>Sub Total of the selected aggregated fields</b>	376383	74%	78%	2%	150105	75%	79%	1%
<b>Bad match or too few people in</b>	95928	19%	19%	10%	35784	18%	18%	6%
<b>Missing</b>	27966	6%	4%	68%	9861	5%	3%	71%
<b>Total PSG</b>	508146	100%	102%	8%	199590	100%	102%	6%

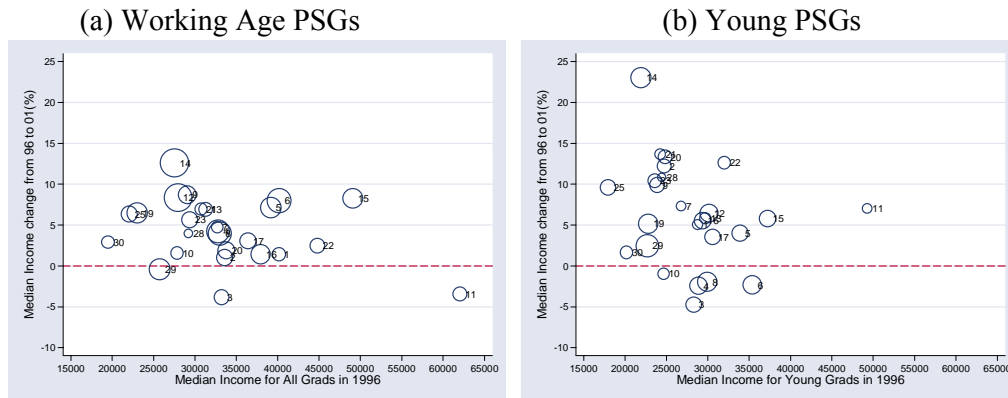
**Table 4.2 Median incomes by employment rate and qualification levels in 2001**

Group Name	Median income	Employment Rate	Share of Basic / Skilled Vocational	Share of Intermediate / Advanced Vocational	Share of Degrees
Medicine	48750	88%	9%	14%	77%
Accounting	35710	84%	3%	16%	82%
Mechanical/Industrial Engineer	33440	88%	62%	23%	15%
Law and Legal Studies	32910	86%	11%	17%	71%
Electr Engineer/Tech	32550	89%	58%	23%	19%
Nursing	30270	84%	7%	43%	49%
Building	28210	90%	88%	10%	3%
Pharmacy, Therapy, etc.	27940	81%	16%	16%	68%
Sales and Marketing	27700	81%	31%	17%	53%
Business and Management	27380	81%	18%	38%	44%
Automotive Engineering	26920	90%	78%	21%	0%
Architecture & Urban Environment	25750	82%	10%	45%	45%
Agriculture and Environmental	24620	87%	65%	19%	16%
Communication and Media Studies	23390	81%	28%	25%	47%
Teacher Education	23250	81%	22%	35%	43%
Social Science	22800	77%	4%	4%	92%
Psychology	22180	79%	1%	3%	97%
Physical and Natural Sciences	21780	76%	2%	5%	94%
Horticulture & Viticulture	21380	79%	40%	50%	10%
Food, Hospitality and Tourism	20370	79%	60%	36%	4%
Biological Sciences	20200	74%	2%	5%	93%
Office Studies	19550	70%	93%	7%	0%
Computer and Info Science	19330	70%	27%	46%	26%
Language & Literature	18370	72%	12%	6%	82%
Beauty Service and Hairdressing	17140	73%	52%	48%	0%
Creative Arts and Design	14350	71%	31%	32%	37%

To examine whether the 2001 income ranking of fields is consistent over time, we look at whether fields that had higher median incomes in 1996 had experienced slower income growth. If that were the case, the relative ranking could change, either because of transitory fluctuations, or as a result of imprecise measurement of median incomes.

Figure 4.1 plots median income growth against 1996 income, for employed PSGs. From 1996 to 2001, employed PSGs in most fields had their median income increase, except for ‘Food, Hospitality and Tourism’ (29), ‘Computer and Info Science’ (3) and Medicine (11). For young PSGs, five fields experienced declines in median income, although apart from ‘Computer and Info Science’, these were not the same fields that had declines across working age PSGs. For both young and working age PSGs, median income growth was stronger for low-income fields. The pattern was particularly strong for young PSGs. The variation in growth rates was greater, and the changes in relative incomes were more widespread – patterns that could be explained either by the sensitivity of young PSGs outcomes to changes in relative supply and demand by field, or by less reliable measurement of median incomes for the smaller young PSG group. Section 5 investigates the link between these relative changes and shifts in supply and demand.

**Figure 4.1 Growth in median income by 1996 level, for employed PSGs**



Note: The size of plotted points is proportional to the number of employed PSGs in 1996 for each field. Numbers on the graph indicate fields - 1: Physical and Natural Sciences; 2: Biological Sciences; 3: Computer and Info Science; 4: Automotive Engineering; 5: Mechanical/Industrial Engineer; 6: Electr Engineer/Tech; 7: Architecture & Urban Environment; 8: Building; 9: Agriculture and Environmental; 10: Horticulture & Viticulture; 11: Medicine; 12: Nursing; 13: Pharmacy, Therapy, etc.; 14: Teacher Education; 15: Accounting; 16: Business and Management; 17: Sales and Marketing; 19: Office Studies; 20: Social Science; 21: Psychology; 22: Law and Legal Studies; 23: Language & Literature; 25: Creative Arts and Design; 28: Communication and Media Studies; 29: Food, Hospitality and Tourism; 30: Beauty Service and Hairdressing;

Table 4.2 shows median incomes across all ages but does not show possible differences in income growth. The same median income may result from a constant income regardless of age, or from a relatively low starting salaries and the prospect of faster income growth. A pattern of ‘delayed compensation’ can be used to induce employees to exert greater effort, to help in selecting the best candidates, or to reduce turnover costs (Borjas (2000),Chapter 12). The evidence for such incentive contracts is weak in our data. There appears to be a fairly consistent ranking across fields. Fields that offer the highest median incomes for 23 year olds (Medicine, Accounting) also offer the highest incomes for 30-year-old PSGs. Similarly, low income fields such as ‘Beauty Service and Hairdressing’, ‘Creative Arts and Design’, and ‘Language and Literature’ offer relatively low incomes to both 23 and 30 year old PSGs. Furthermore, the ranking of fields by median income is also consistent across working age and young PSGs.

Possible exceptions to the generally stable income-ranking of fields are ‘Law and Legal Studies’ and Nursing. Young Law PSGs have relatively low incomes at age 23, but above average incomes at age 30, consistent with a delayed compensation model. Nurses, in contrast, receive relatively high incomes at age 23, and below average incomes at age 30.

## 4.2 Specialisation and Income

Another dimension of outcomes for PSGs is the *range* of jobs in which they commonly find employment. The concept of a career can vary markedly across fields. Some fields offer a clear progression of jobs with increasing seniority, within an industry or occupation. Qualifications in other fields open the door to many different jobs. This section investigates the importance of field specialisation in two ways. First, we describe the degree of specialisation<sup>11</sup> for each field, in order to identify which fields are most specialised. Second,

<sup>11</sup> A description and formula for the calculation of relative specialisation is presented in section 3.1.

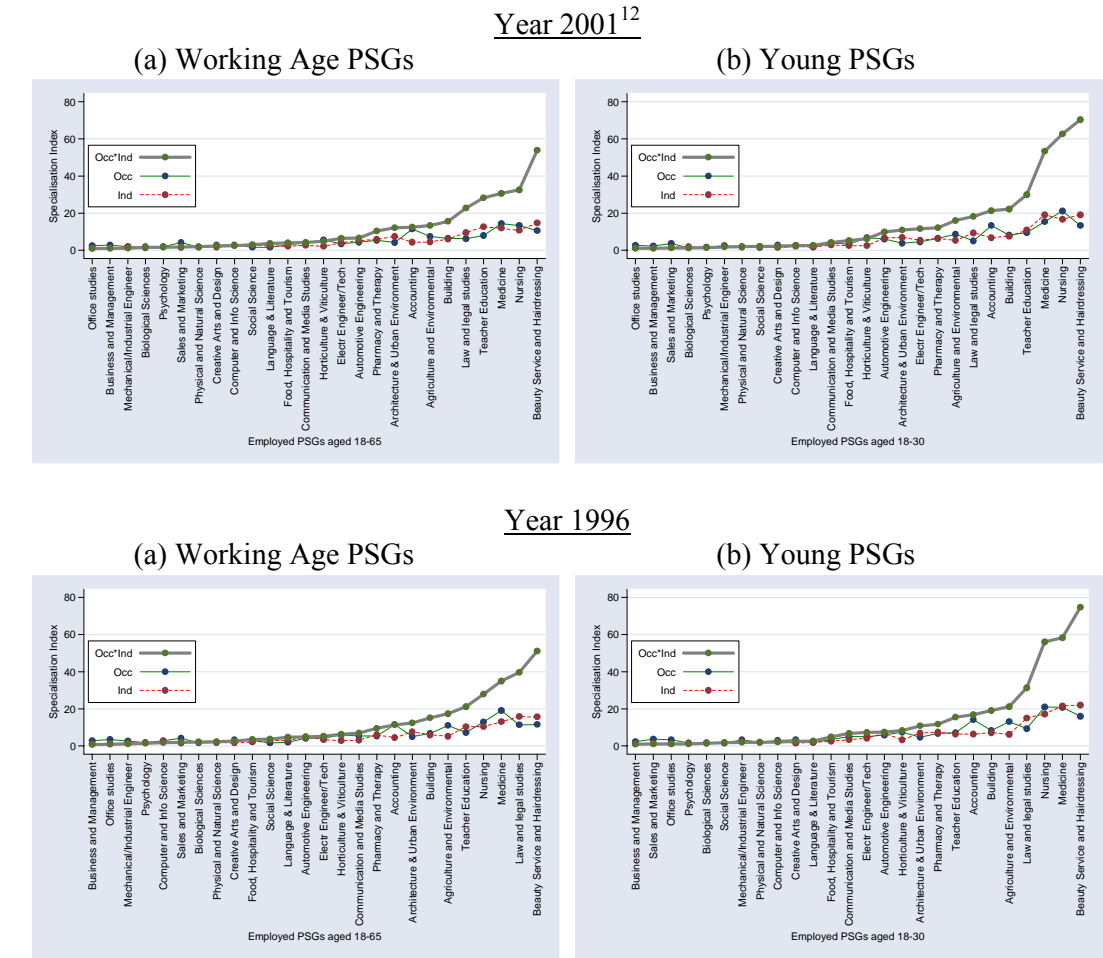
we compare the premium paid to PSGs working in occupations in which their field is over-represented ('in-field' occupations).

Figure 4.2 shows relative specialisation by field, separately for working age and young PSGs. Fields have been ordered separately for each panel from least to most specialised, based on the degree of specialisation across industry-occupation cells. There is a lot of similarity in the ordering of fields across the two years and the different age groups. In 2001, the same four fields are the most specialised for both young PSGs and working age PSGs - 'Beauty Service and Hairdressing', Nursing, Medicine, and Teaching.

In general, young PSGs are more specialised than all working age PSGs, at least among those fields that are highly specialised. This suggests either that young PSGs in these fields face less diverse careers, or more probably that PSGs disperse across a broader range of jobs as they age.

The variation in the degree of specialisation is limited among the less specialised fields, with index values ranging from 1 to 3 for the ten *least* specialised fields (compared with a range of 10 to 70 for the ten most specialised). The fields most broadly spread across industries and occupations include 'Office Studies', 'Business and Management', 'Biological Sciences' and Psychology.

**Figure 4.2 Specialisation Indices for employed PSGs in 2001 and 1996**



<sup>12</sup>

Industry-and-occupation specialisation indices are shown in Table 4.4.

There are many ways that the degree of specialisation could affect income levels. The fact that Medicine, the field with the highest median income, and 'Beauty Service and Hairdressing', with among the lowest, are both highly specialised suggests that the relationship is not simple. Explanations include 'compensating differentials', 'specific human capital', and 'occupational crowding'. The principle of compensating differentials would imply that PSGs gaining qualifications that offer employment in a narrow range of jobs are making a more risky investment, and their earnings would have to be higher to induce them to take that risk. (Rosen (1986)) A premium is also predicted if the qualification offers skills that are specific to certain jobs, although the explanation is different. In this case, the PSGs earn more because they are more productive when they are applying their skills where they are most valued. (Becker (1993)) Occupational crowding occurs where disadvantaged workers are restricted to a limited set of occupations, forcing down earnings in those occupations (Bergmann (1971)).

There may be elements of these, and potentially other, explanations in the patterns that we observe for PSGs, but there is clearly no single explanation. Figure 4.3 shows income levels and dispersion for each field, ordered as in Figure 4.2 according to the degree of industry/ occupation specialisation. It seems there is no clear relationship between specialisation and income level. However, the pattern across highly specialised fields suggests hypotheses that would be worth testing in future research. The highly specialised fields that do not offer high incomes are either female-dominated (Nursing and Teaching, 'Beauty Service and Hairdressing') or entail qualifications at low levels of attainment (Building, 'Beauty Service and Hairdressing').

Our second approach to examining the relevance of specialisation for outcomes by field is to analyse the income premium received by PSGs working in 'in-field' occupations (as defined in section 3.1). The prevalence of in-field employment for each field is shown in Table 4.4, listed in descending order of specialisation. Overall, 55 to 60 percent of PSGs work in in-field occupations, although the percentage was as high as 88 percent for young Medicine PSGs in 1996, and as low as 17 percent for young Psychology PSGs. The proportion of PSGs working in-field declined slightly between 1996 and 2001 – more strongly for working age than for young PSGs, so that both age groups had the same proportion (55%) in 2001.

The income premium associated with working in an in-field occupation is around 20 percent for young PSGs overall, and about 10 percent for working age PSGs. Again, there is substantial cross-field variation, as shown in Table 4.5. PSGs in the field of medicine who work in an in-field occupation earn more than twice what their out-of-field colleagues earn. In contrast, working age PSGs with a building qualification have incomes that are 15 percent lower if they work in an in-field occupation than if they don't.

The patterns of in-field employment and associated premia, and especially the differences between young and working age PSGs suggest a range of distinct career patterns. The groupings are indicative, and are designed to reflect broad differences. Although we describe the difference between working age PSGs and young PSGs as evidence of career change, they could equally reflect cohort changes, whereby young PSGs are not necessarily expected to have the same career experience as the non-young PSGs in our sample.

**Figure 4.3 Income percentiles by field for employed PSGs in 2001**

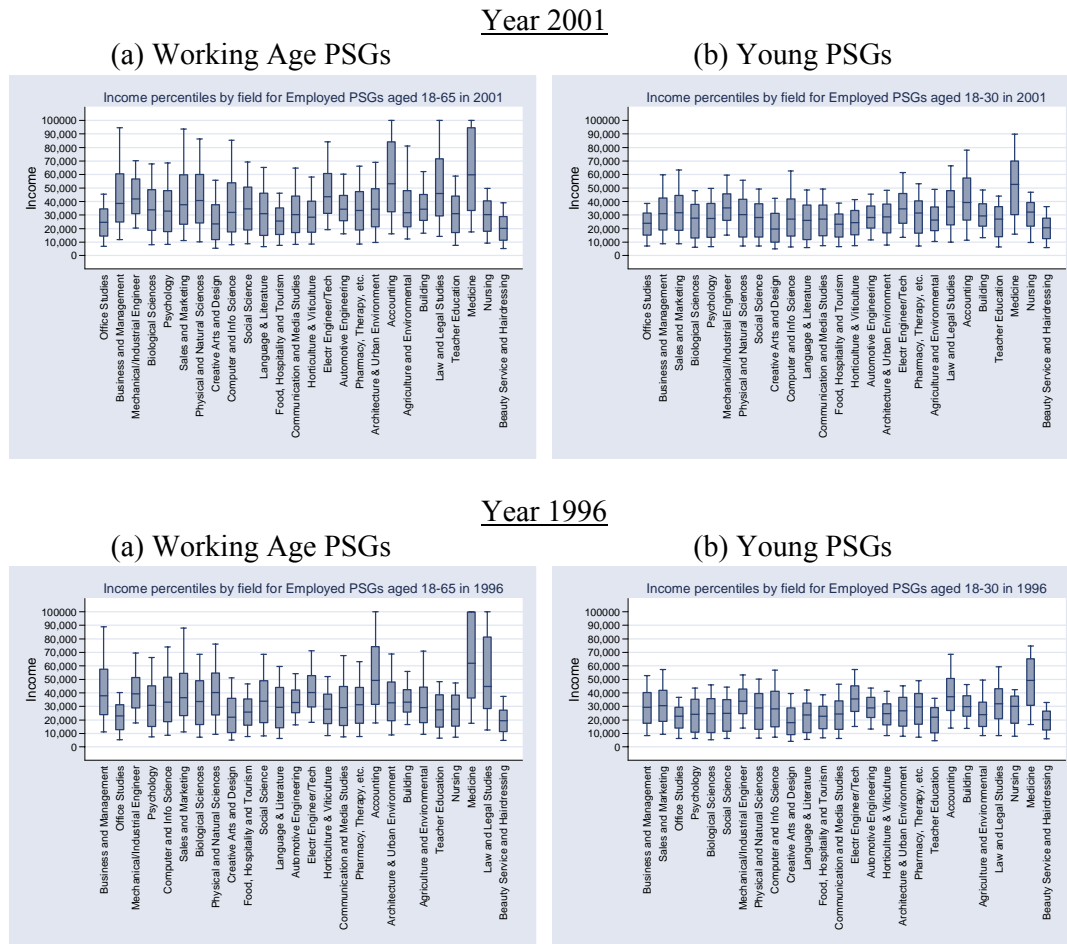


Table 4.3 summarises the range of different career patterns suggested by the data. Fields with high incomes and a high in-field premium are shown in the first two rows, labelled ‘Medical’ and ‘Competitive’. They differ in the proportion of PSGs working in-field, which is high for medical fields, and low for competitive fields. In both cases, the proportion of PSGs working in-field is higher for young PSGs than for working age PSGs generally, suggesting that PSGs move into a broader range of jobs during their career. In contrast, ‘crowded vocational’ fields, which also offer relatively high incomes, have a high proportion of PSGs working in-field, despite the absence of an income premium for doing so. Older PSGs in these fields are even more likely than young PSGs to be working in-field, in the face of *lower* incomes for in-field employment.

‘Snowball’ fields are characterised by medium to high income levels, and appear to attract and reward PSGs into in-field occupations. The propensity of PSGs to work in field, and the premium for doing so, are both higher for working age PSGs than for young PSGs. The group of fields offering ‘springboard’ careers offer medium income levels, and a relatively high in-field premium for young PSGs. However, relatively few young PSGs work in-field, and the fields do not appear to retain as many older PSGs. Both the in-field

premium, and the proportion in-field are lower for working age than for young PSGs, suggesting that these fields prepare PSGs for a broad range of non-specialised jobs..

Finally, there are some relatively low income fields that offer only moderate premia for working in-field, a premium that is lower for older PSGs. Although working age PSGs are more likely than young PSGs to work in-field, the proportion working in-field is not particularly high.

**Table 4.3 Career Patterns**

<i>Career pattern</i>	<i>Income</i>	<i>% in field (change by age)</i>	<i>In field premium (change by age)</i>	<i>Fields</i>
Medical	High	High (drop)	High (rise Med) (drop Nurs)	Medicine, Nursing
Competitive	High	Low (drop)	High (rise)	Law, Business, Marketing
Crowded	High	High (rise)	Negative (drop)	Building, Engineering (Electr, Mech/Ind, Auto)
Vocational	Med/High	High (rise)	High (drop)	Accounting, Teaching, Pharmacy, Physical Science
Snowball	Medium	Low (drop)	High (drop)	Psychology, Social Science, Literature, Architecture, Biolog. Science, Communication & Media, Computing
Other	Low	Mod (rise)	Mod (drop)	Creative & Design, Food, Office Studies, Agriculture, Horticulture, Beauty Service



**Table 4.4 Share of in-field employment for each field**

Group Name	PSG aged 18 to 65				PSG aged 18 to 30			
	Specialisation index by occupation and industry in 2001	Share of in-field employment			Specialisation index by occupation and industry in 2001	Share of in-field employment		
		1996	2001	Change		1996	2001	Change
Beauty Service and Hairdressing	53.86	57.7%	57.7%	0.0	70.44	67.5%	64.2%	-3.3
Nursing	32.61	69.0%	70.5%	1.5	62.69	82.6%	84.3%	1.7
Medicine	30.67	83.0%	75.9%	-7.1	53.36	88.4%	81.3%	-7.1
Teacher Education	28.25	62.3%	65.5%	3.1	30.03	63.1%	68.8%	5.6
Law and Legal Studies	22.69	64.4%	60.6%	-3.9	18.21	60.6%	54.7%	-5.9
Building	15.57	66.6%	65.5%	-1.1	22.30	75.1%	72.9%	-2.2
Agriculture and Environmental	13.31	65.6%	56.9%	-8.6	16.03	70.1%	61.3%	-8.8
Accounting	12.43	62.1%	62.0%	-0.1	21.32	69.2%	68.5%	-0.7
Architecture & Urban Environment	12.11	55.0%	52.6%	-2.4	10.92	54.7%	50.6%	-4.1
Pharmacy, Therapy, etc.	10.30	58.8%	61.1%	2.2	12.03	64.2%	66.2%	2.0
Automotive Engineering	6.59	52.4%	54.8%	2.4	9.85	62.9%	64.4%	1.5
Electr Engineer/Tech	6.38	62.2%	59.9%	-2.3	11.55	70.1%	68.0%	-2.2
Horticulture & Viticulture	4.91	48.0%	47.1%	-0.8	6.27	53.1%	52.1%	-1.0
Communication and Media Studies	4.22	41.7%	36.1%	-5.6	4.22	41.6%	35.3%	-6.3
Food, Hospitality and Tourism	3.99	52.2%	50.9%	-1.3	5.11	56.3%	54.5%	-1.9
Language & Literature	3.55	45.3%	40.1%	-5.2	2.58	38.7%	35.5%	-3.2
Social Science	2.98	35.6%	31.7%	-3.9	2.09	28.7%	27.9%	-0.8
Computer and Info Science	2.40	35.0%	36.4%	1.4	2.38	37.8%	36.6%	-1.2
Creative Arts and Design	2.30	55.9%	51.9%	-4.0	2.16	57.7%	53.4%	-4.3
Physical and Natural Sciences	1.95	46.2%	43.1%	-3.1	1.86	51.3%	45.6%	-5.7
Sales and Marketing	1.65	62.3%	60.1%	-2.2	1.24	55.6%	54.3%	-1.2
Psychology	1.63	25.8%	26.4%	0.6	1.39	16.7%	19.0%	2.3
Biological Sciences	1.49	41.7%	33.6%	-8.1	1.26	39.3%	31.9%	-7.4
Mechanical/Industrial Engineer	1.09	58.1%	53.7%	-4.4	1.80	66.7%	61.8%	-5.0
Business and Management	1.02	53.6%	48.4%	-5.3	1.00	48.3%	42.7%	-5.6
Office Studies	0.83	58.4%	50.3%	-8.1	0.99	60.4%	52.5%	-7.9
<b>Overall</b>	<b>0.0049<sup>13</sup></b>	<b>57.3%</b>	<b>55.0%</b>	<b>-2.3</b>	<b>1.01</b>	<b>59.2%</b>	<b>55.1%</b>	<b>-4.0</b>

<sup>13</sup> This is the specialisation measure by occupation and index. Others are all relevant indices compared to this measure. Please refer to the technical notes for detailed calculation of specialisation.

**Table 4.5 Median income for in- and out-of-field employment for each field<sup>14</sup>**

Group Name	PSGs aged 18 to 65				PSGs aged 18 to 30			
	1996		2001		1996		2001	
	Out-of-field	In-field	Out-of-field	In-field	Out-of-field	In-field	Out-of-field	In-field
Medicine	31600	68260	29200	70300	27470	52430	25960	58310
Nursing	22260	29580	26970	31360	23120	31040	25690	32720
Building	37150	31640	38840	32800	30820	29720	29930	29230
Teacher Education	25740	28430	27950	32400	17110	23550	20850	29910
Accounting	51260	48450	53910	52740	33880	38340	30820	41950
Pharmacy, Therapy, etc.	28400	33250	31220	34800	25400	31460	25480	33500
Law and Legal Studies	34950	51980	35910	50970	28010	35060	32090	40570
Sales and Marketing	28800	42110	30290	43200	26740	34370	26940	35430
Electr Engineer/Tech	40450	39980	45520	42370	33000	36120	32770	35110
Beauty Service and Hairdressing	19250	19790	20540	19820	20020	20390	20000	20520
Agriculture and Environmental	34350	27100	34000	29860	24870	23510	26840	26040
Automotive Engineering	35620	31060	37030	32600	30070	28260	28300	28140
Mechanical/Industrial Engineer	39710	38860	43390	40910	32580	34540	33370	35980
Architecture & Urban Environment	26380	36800	30530	37220	21020	30530	24270	31540
Creative Arts and Design	22910	21650	25020	22380	18180	17960	21210	18510
Food, Hospitality and Tourism	26120	25540	26490	25050	22770	22600	23850	22850
Office Studies	20560	24170	24110	24960	19690	23960	22560	24930
Business and Management	30110	45360	31730	47920	24240	33910	26710	36820
Horticulture & Viticulture	28720	27350	29540	27500	25590	24360	24790	24290
Physical and Natural Sciences	39090	40650	38770	42770	25430	30060	24040	33520
Language & Literature	26380	33370	28980	34350	21730	27010	23970	30560
Computer and Info Science	28330	40510	25330	45360	22950	36700	21370	39290
Communication and Media Studies	26290	33230	28630	33600	20370	28210	25370	29810
Biological Sciences	30050	36950	32020	36760	20530	28420	25730	30820
Social Science	31440	38490	33110	37430	23000	28040	27260	30640
Psychology	28890	36700	31790	36850	23440	29500	26850	31250
<b>Overall</b>	30370	32950	31500	35040	24300	28770	25180	30120

Note: Shaded cells indicate fields in which incomes are higher for PSGs working in 'out-of-field' occupations than for those working 'in-field'.

<sup>14</sup>

Sorted by share of in-field employment for all PSGs in each field in 2001.

## 5 Labour market adjustment

This section examines whether young PSGs are particularly strongly affected by fluctuations in labour market conditions. It is well established in the literature that young people have higher elasticities of labour supply (Killingsworth (1983)), face more elastic labour demand (Hamermesh (1993)), and have higher rates of job turnover (Topel and Ward (1992)). Furthermore, the pattern of job changes is more complex for young workers, in the sense of more often involving a change of industry or occupation (Neal (1999)). All of these factors imply that when there are changes in relative demand, there are likely to be greater changes in outcomes for young workers than for older workers. Changes in relative outcomes for young PSGs by field of study could thus provide valuable insights into changing patterns of demand for different skills.

We take two approaches to analysing changing demands for different fields of study. First, we use observed changes in incomes and employment shares to indicate which fields have experienced shifts in relative supply or demand. Second, we examine whether the variation in incomes by field is correlated with proxy measures of demand and supply shifts.

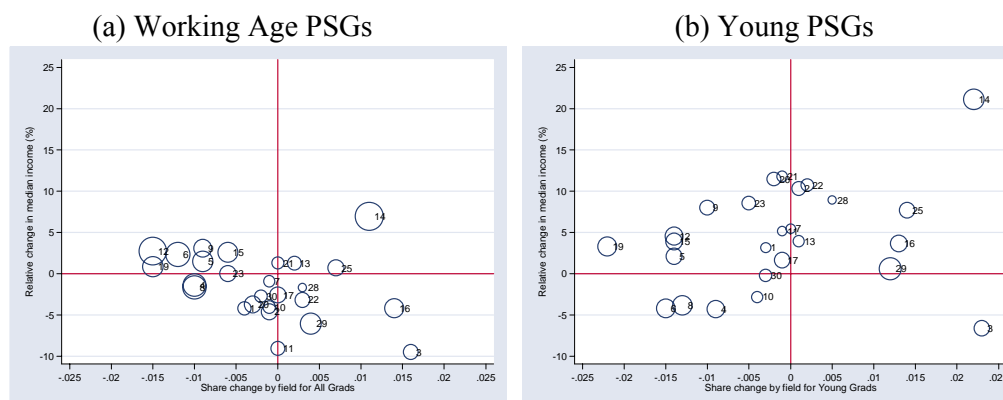
### 5.1 Changes in incomes and employment shares

An initial indication of changes in relative supply and demand can be gained by comparing changes in relative incomes and changes in relative shares. The basic intuition is that a pure increase in supply of PSGs in a field would be expected to ‘bid down’ the level of income in that field. If we see both an increase in relative income and an increase in relative numbers (share of PSGs), there must have been some increase in demand for the field (See Katz and Murphy (1992) or Hyslop et al (2003) for a more formal discussion).

The relationship between income growth (relative to the mean growth rate) and changes in shares is shown in Figure 5.1. For all working age PSGs, there are three fields that experienced a rise in both shares and relative incomes – ‘Teacher Education’ (14), ‘Pharmacy and Therapy’ (13) and ‘Creative Arts and Design’ (25). Increased demand for Teaching graduates is even more strongly evident for young PSGs, with income growth 20 percent higher than average, and an increase in the share of young PSGs of over 2 percentage points. Other fields in which the relative demand for young PSGs increased were ‘Communication and Media Studies’ (28), and ‘Business and Management’ (16). Young PSGs in ‘Food, Hospitality and Tourism’ (29) constituted a larger share of young PSGs in 2001 than in 1996, with a slight rise in relative income, consistent with a demand increase and elastic labour supply. Conversely, the fields of ‘Biological Sciences’ (2), ‘Pharmacy/ Therapy’ (13), and ‘Law & Legal Studies’ (22) experienced growth in incomes with only slight increases in shares.

Fields appearing in the bottom left quadrant of Figure 5.1, with declining relative incomes and shares, experienced declines in relative demand. Five fields appear in this quadrant for both young and working age PSGs – ‘Electrical Engineering’ (6), Building (8), ‘Automotive Engineering’ (4), and Horticulture (10). The declines are relatively strong for young PSGs.

**Figure 5.1 Difference of change in median income between each field and overall level for employed PSGs by change of share<sup>15</sup>**



Note: Numbers on the graph indicate fields. See note to Figure 4.1.

Continuing to interpret the patterns in Figure 5.1 in terms of supply and demand shifts, fields appearing in the top left (bottom right) quadrant are ones that experienced declines (increases) in relative supply. Five fields show declines in supply in both panels - Nursing (12), ‘Office Studies’ (19), Accounting (15), ‘Agricultural and Environmental’ (9), and ‘Mechanical Engineering’ (5).

Of the fields where relative demand increased for young PSGs, there were four in which working age PSGs increased their shares (partly reflecting the increase in young PSGs) but without an associated increase in relative incomes. For these fields, it appears that young PSGs have benefited more from increases in demand than have working age PSGs generally. The fields are ‘Communication and Media studies’ (28), ‘Business and Management’ (16), ‘Food, Hospitality and Tourism’ (29), and ‘Law and Legal Studies’ (22).

## 5.2 Relationship of income changes to supply and demand shifts

An alternative approach to studying the links between changing labour market conditions and outcomes for young PSGs is to consider whether the size and direction of changes in relative incomes by field are related to measures of shifts in labour demand or labour supply.

The main challenge in performing this analysis is to find credible proxies for supply and demand shifts. Ideally, we want to find measures of labour demand change for each field that are unrelated to changes in the supply of young PSGs into those fields. To capture changes in relative demand by field, we use a ‘demand shock’ index as defined in section 3.1, which reflects the growth in employment that would have resulted if young PSGs in each field had maintained their 1996 share of each industry by occupation cell. This measure is unrelated to changing skill composition within each cell, but does reflect changes in the growth rates of different industry by occupation combinations. It will thus be a poor measure of changing relative demand when a field’s PSGs dominate particular industry by occupation cells. In that case, changes in the supply of PSGs could have a

<sup>15</sup> Share change is calculated by  $\text{PSGs in 2001 in the field} / \text{Total PSGs in 2001} - \text{PSGs in 1996 in the field} / \text{Total PSGs in 1996}$ , for young and all PSGs respectively. Median incomes here are for employed PSGs only, and the weight for each symbol is number of employed PSGs in 1996 for each field.

significant influence on the national rate of growth by cell. For highly specialised fields, therefore, our index of demand shifts will be a less reliable proxy for actual shifts.

It is even more difficult to derive a credible proxy for changes in labour supply. In this case, we want a measure that is related to shifts in supply but unrelated to changing demand by field. We use a measure of the change in labour supply by field resulting from the inflow of new immigrants between 1996 and 2001. Specifically, we calculate a 'supply shock' index for each field as the ratio of recent PSG immigrants (5 years or less in NZ) by field to 1996 PSG employment by field. The measure thus represents the penetration rate of recent immigrants in each field. To the extent that immigration flows are stronger for people whose qualifications face growing demand in New Zealand, our supply proxy will reflect both demand and supply shifts. It will therefore not be able to uncover the underlying relationship between PSG incomes and supply shifts. This problem is almost certainly present to some degree in our supply proxy. Immigration policy between 1996 and 2001 was targeted towards skilled migrants, although it was not as deliberately linked to current skill shortages as it currently is. A further concern in the interpretation of this measure as a supply proxy is that recent immigrants tend to have lower incomes (Winkelmann and Winkelmann (1998)). Composition alone would thus bias us towards finding a negative relationship between supply shifts and income growth. Finally, the index is a gross measure and thus does not take into account the impact of migration outflows on supply by field.

To test the relationship between labour market conditions and PSG outcomes, we graph the median income change for PSGs in the two age ranges against the demand and supply shocks for each field, weighted by the total employment in 2001 for each field. Table 5.1 contains the data that are used in the graphs and regressions. Overall, our indices suggest that demand for young PSGs increased between 1996 and 2001 by 2.3 percent, and for working age PSGs by 1.5 percent. Demand increases were particularly strong for the fields of 'Computer and Info Science', Accounting, Medicine, 'Pharmacy & Therapy', and Psychology. Declining demand was most evident for 'Mechanical & Industrial Engineering', 'Automotive Engineering', and 'Agricultural and Environmental' fields.

Supply increases arising from immigration were stronger for working age PSGs (12.5%) than for young PSGs (10.7%). Supply increases were particularly strong in the fields of 'Computer and Info Science', Medicine, 'Business and Management', 'Language and Literature', and 'Physical and Natural Sciences'.

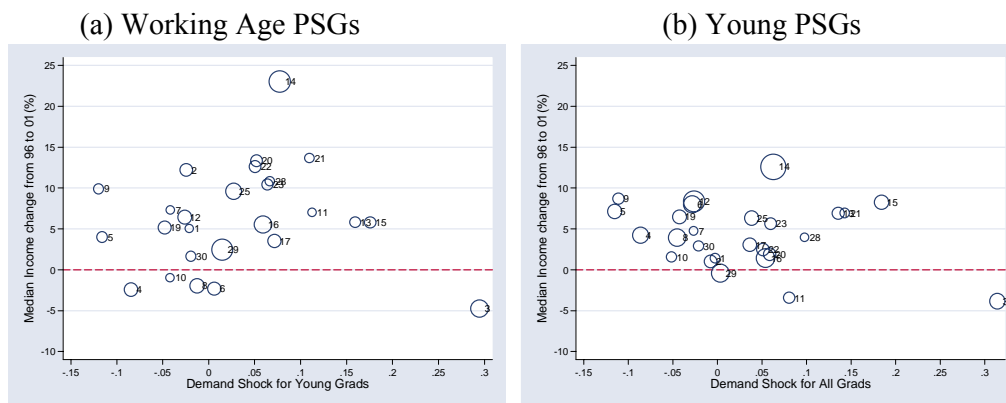
The relationship between changes in median income by field and demand shocks is shown in Figure 5.2. The corresponding figure for supply shocks is shown in Figure 5.3. We would expect that larger increases in demand would be associated with higher incomes, and that increased supply would tend to reduce incomes in a field. It is clear from the graphs that the relationships are not particularly strong, and there is limited evidence that the incomes of young PSGs are more strongly related to demand and supply shifts than are incomes for all working age PSGs.

**Table 5.1 Median income change by demand and supply shocks for each field**

Group Name	PSGs aged 18 to 65				PSGs aged 18 to 30			
	Median income change	Demand shock	Supply shock	Employed 2001	Median income change	Demand shock	Supply shock	Employed 2001
Physical and Natural Sciences	1.4%	-0.3%	19.5%	5565	5.0%	-2.1%	14.7%	1848
Biological Sciences	1.0%	-0.8%	15.9%	9663	12.2%	-2.5%	14.3%	4506
Computer and Info Science	-3.9%	31.4%	31.2%	14514	-4.8%	29.5%	24.2%	8082
Automotive Engineering	4.2%	-8.6%	3.1%	15570	-2.4%	-8.4%	2.8%	5163
Mechanical/Industrial Engineer	7.1%	-11.5%	7.4%	12309	4.0%	-11.6%	4.2%	3195
Electr Engineer/Tech	8.0%	-2.8%	8.7%	17517	-2.3%	0.6%	6.5%	4551
Architecture & Urban Environment	4.7%	-2.7%	10.9%	4890	7.3%	-4.2%	9.4%	1947
Building	3.9%	-4.5%	2.5%	17910	-2.0%	-1.3%	2.0%	5676
Agriculture and Environmental	8.7%	-11.1%	4.5%	7971	9.9%	-12.0%	3.4%	2961
Horticulture & Viticulture	1.6%	-5.2%	3.4%	5940	-0.9%	-4.2%	2.0%	1962
Medicine	-3.4%	8.0%	30.9%	7836	7.0%	11.2%	24.1%	1992
Nursing	8.4%	-2.6%	8.9%	25605	6.5%	-2.6%	10.5%	5037
Pharmacy, Therapy, etc.	6.9%	13.6%	15.2%	8565	5.8%	15.9%	14.4%	3075
Teacher Education	12.6%	6.3%	10.8%	36351	23.0%	7.7%	10.6%	12993
Accounting	8.3%	18.4%	13.2%	12285	5.8%	17.6%	12.1%	3600
Business and Management	1.4%	5.4%	19.7%	20877	5.5%	5.9%	18.8%	8061
Sales and Marketing	3.1%	3.7%	7.6%	10761	3.5%	7.1%	7.7%	4926
Office Studies	6.5%	-4.3%	5.3%	10752	5.2%	-4.8%	4.2%	4530
Social Science	1.9%	5.9%	8.9%	9147	13.3%	5.2%	7.7%	3765
Psychology	7.0%	14.3%	12.7%	5541	13.7%	11.0%	8.9%	2544
Law and Legal Studies	2.5%	5.1%	8.9%	9696	12.6%	5.1%	7.5%	3756
Language & Literature	5.6%	6.0%	20.7%	8268	10.4%	6.4%	18.8%	3411
Creative Arts and Design	6.3%	3.8%	16.6%	12624	9.6%	2.7%	13.0%	7368
Communication and Media Studies	4.0%	9.8%	14.6%	3984	10.8%	6.7%	12.5%	2460
Food, Hospitality and Tourism	-0.4%	0.3%	8.7%	18744	2.5%	1.5%	8.1%	12240
Beauty Service and Hairdressing	2.9%	-2.1%	4.5%	5805	1.7%	-1.9%	4.3%	2808
<b>Overall</b>	<b>3.2%</b>	<b>1.5%</b>	<b>12.5%</b>	<b>508146</b>	<b>-0.6%</b>	<b>2.3%</b>	<b>10.7%</b>	<b>199587</b>

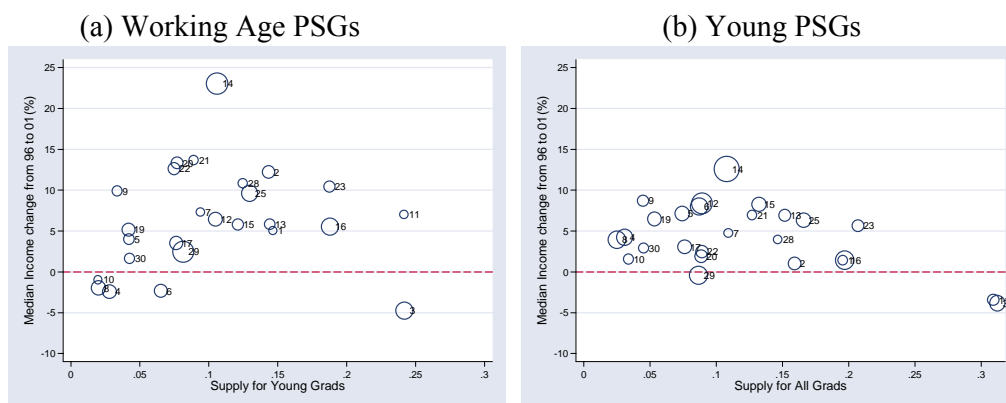
There are also obvious outliers in each graph. ‘Computer and Information Science’ (3) has the strongest supply or demand shocks in each graph, and had the strongest decline in median incomes. As noted earlier, it is likely that composition change (growth in the proportion of qualifications at a low level of attainment) within this field is largely responsible for the apparent income decline. Similarly, Teaching has the highest income growth in each case. It too experienced a substantial change in the composition of qualifications, which means that the change in median income may give a misleading indication of income growth. Even disregarding these outliers, the patterns are not strong. A slight positive slope is evident in the demand graphs, as expected. However, it appears that our supply shock index is weakly positively related to income growth, contrary to expectations.

**Figure 5.2 Change in median income by demand shock**



Note: Numbers on the graph indicate fields. See note to Figure 4.1.

**Figure 5.3 Change in median income by supply shock**



Note: Numbers on the graph indicate fields. See note to Figure 4.1.

In an attempt to further separate the influence of supply and demand changes, we regress the growth in median income by field on the supply and demand indices. The results are shown in Table 5.2 for each age group. We present unweighted estimates, as well as estimates weighted by 2001 employment, to reflect the relative importance of different fields for average PSG outcomes.

**Table 5.2 Regression of Median income change on demand and supply shock**

Dependent variable is Median income growth	PSGs aged 18-65		PSGs aged 18-30	
	No weight	Weighted by 2001 Employment	No weight	Weighted by 2001 Employment
<b>Demand Shock</b>	0.05	0.08	-0.07	-0.09
	(0.10)	(0.13)	(0.19)	(0.25)
<b>Supply Shock</b>	-0.28*	-0.35*	0.21	0.13
	(0.13)	(0.17)	(0.28)	(0.39)
<b>R-squared</b>	0.24	0.21	0.03	0.01

Note: \* denotes significance at 5% level.

For working age PSGs, the estimates suggest that higher demand increases incomes and higher supply reduces incomes. Only the supply effect, however, is significant and, as noted above, may be overstated due to the contribution of recent immigrants, who tend to have lower incomes. For young PSGs, the coefficients are not significant, and do not have the expected sign.<sup>16</sup>

Overall, our analysis of supply and demand shifts proves to be of limited value, due to problems with the credibility of the demand and supply measures we use, and the possible confounding role played by composition effects.

## 6 Concluding comments

We started with the observation that young people with post-school qualification will, on average, have higher incomes. Our study has investigated a few key dimensions of outcomes for young graduates, and has revealed a great deal of heterogeneity.

The first obvious dimension of heterogeneity is level of attainment. Qualifications at different levels of attainment offer different employment and income prospects, and different age profiles, largely as a consequence of different lengths of study. The changing composition of qualifications at different ages was found to lead to some biases when using cross-sectional data to approximate longitudinal patterns. The composition of the population of young PSGs changed in terms of qualification levels between 1996 and 2001, with increases in the proportion of PSGs accounted for by both the lowest and the highest levels. Skilled and Advanced Vocational qualifications became less prevalent, and there were increases in Basic Vocational qualifications and in degree-level qualifications.

One of the main contributions of this study is in providing analyses of outcomes by field of study, which is an obvious and important, though often overlooked, source of heterogeneity amongst young PSG outcomes. Some of the change in levels of attainment is linked to developments in particular fields of study. Nursing and Teaching have both transformed from offering predominantly Advanced Vocational Qualifications to having a much higher proportion of degree qualifications. Changes in the 'Computer and Information Science' field have involved a large increase in numbers, concentrated primarily at the Intermediate Vocational level.

We have analysed variation across fields in a range of ways, paying particular attention to the variety of industries and occupations in which PSGs from different fields find employment. We characterise fields in terms of job specialisation, and have linked each field

<sup>16</sup> Excluding the outlier observations reverses the signs for young PSGs, but the coefficients are still not significant.



to occupations in which PSGs are disproportionately employed. We find a general income premium associated with working in 'in-field' occupations. Differences in the size of this premium, and in the significance of a well-defined field serve to differentiate fields, and differences between young PSGs and older PSGs are suggestive of a range of distinct career patterns (section 4.2).

Analysing levels of attainment and field of study certainly helps to build a fuller understanding of outcomes for young PSGs. In many instances, the more detailed findings draw attention to idiosyncrasies that account for a significant portion of overall change. Coarse indicators such as median income and employment rate nevertheless provide useful summary indicators of difference.

Comparing changes in these broad indicators provides insights into changing demand and supply pressures for different fields (section 5.1). For young PSGs, fields with increases in relative demand were 'Teacher Education', 'Pharmacy and Therapy', 'Creative Arts and Design', 'Communication and Media Studies' 'Business and Management', and possibly 'Food, Hospitality and Tourism'. Fields with declining demand for young PSGs were 'Electrical Engineering', Building, 'Automotive Engineering' and Horticulture. Fields experiencing net supply decreases were Nursing, 'Office Studies', Accounting, 'Agricultural and Environmental', and 'Mechanical Engineering'.

Overall, these changes represent a continued growth in the service sector at the expense of primary and secondary industries. Although some of the growth fields may be placed under the heading of 'knowledge economy', there is no obvious emergence of greater demand from a growing science or technology sector.

More generally, this study has not uncovered many great surprises or revelations. It has, however, presented new ways of summarising and analysing variation between fields of study and changing skill demands. As such, it provides a valuable point of reference for other analysts, advisers and researchers monitoring developments in these areas. The individual field profiles in Part B of this study contain a wealth of information that sheds light on the widely varying nature and prospects for qualifications in different fields.

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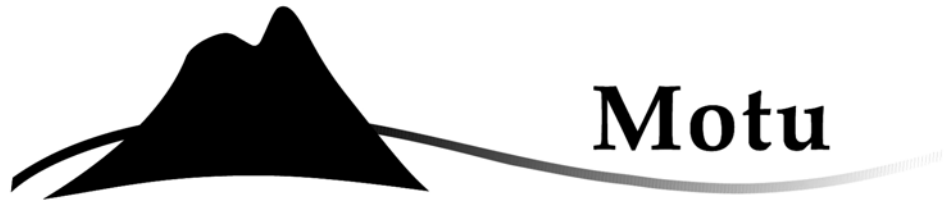
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**Part B: Field Of Study Profiles**

**David C Maré & Yun Liang**

**Motu Working Paper 06–06  
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**June 2006**



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# **1 Introduction**

This is Part B of a two-part report. The first part summarises labour market outcomes for young graduates at an aggregated level, discusses variation in outcomes, size, and specialisation across different fields of study, and examines evidence on the influence of changes in labour market conditions.

This (Part B) report provides summarised profiles for each of 26 aggregated fields of study. These aggregated fields are formed by combining detailed fields of study, as described in Part A, and as summarised in the Appendix to this report.

## **2 Profiles for each aggregated field**

Each field profile is six pages long, and is presented in a standardised format. A textual commentary is followed by a standard set of figures and tables. The main summary table follows the same layout as Table 3.1 in Part A, which summarises findings for Post-School Graduates (PSGs) as a whole. Section 3.1 of Part A presents definitions and details of derivations of the statistics reported in the summary tables.

Statistics are presented for working age PSGs (18-65 years old), which are referred to as “all PSGs” in this report, and for ‘young PSGs (18-30 years old). Changes between 1996 and 2001 are presented as percentages for changes in counts or indices, and as ‘percentage point changes’ (ppts) for percentage measures.



## 2.1 **Physical and Natural Science**

### 2.1.1 **Commentary**

#### *Number*

- The number of graduates decreased by 14.5% between 1996 and 2001. The number of young PSGs decreased by 17%.

#### *Qualification structure:*

- Bachelor Degree was the most common qualification for both years. The proportion with Higher Degrees increased from 33.7% to 36.6% over the two years.
- Median income by highest level of attainment increased for all qualifications. The largest increase was for graduates with a Higher Degree.
- The ratio of graduates with multiple qualifications (18.2% for all PSGs) is much higher than for aggregate fields (9.38%). Approximately one third of these multiple qualifications are in a similar field of study.

#### *Gender:*

- The proportion of females (less than 40%) is considerably lower than the proportion of females in aggregate fields (just over 50%). However, the share of females increased from 1996 to 2001, especially for young PSGs, going from 34.6% to 38.1%
- Females are unlikely to be in a high-income band with this major (Figure 2.1-2-b). The gap between male and female median income widened in 2001.

#### *Income:*

- Mean income increased by 5.3% for all PSGs and by 7.8% for young PSGs. Median income increased by 1.8% for all PSGs and 3.6% for young PSGs.
- Mean income for all PSGs is higher than mean income for aggregate fields in both 1996 and 2001. However, mean income for young PSGs is slightly less than mean income for aggregate fields for both years.
- Although both groups of PSGs (young and all) have a higher increase in mean income than median income, the increase is stronger in high-income groups than other groups.
- P90 to P50 increased and P50 to P10 decreased for both groups of PSGs, which means that there are fewer low-income people and more high-income people in 2001 compared to 1996.

#### *Age profiles:*

- Very few people in this field are aged less than 21 years old. This concords with the qualification structure, as the two most common qualifications are Bachelor Degree and Higher Degree.
- The employment rate is higher amongst older graduates. For graduates 27 years old and over, the employment rate is around 80%.
- The number of young PSGs has decreased. This could be for two reasons: either fewer people entered this field, or more young people are gaining higher qualifications. Some of the decrease in the number of all PSGs may also be explained by these reasons.
- The median income for employed PSGs in this field aged less than 27 years old was lower than the median income for the same age group for aggregated fields. Median income after age 27 was higher than median income across all fields

- (Figure 2.1-3b). This may also be explained by the structure of the qualification level in this field.

***Specialisation:***

- The specialisation index is higher than the aggregate field index, but generally lower than most other fields.
- The specialisation indices decreased slightly between 1996 and 2001. The exception to this was a very small increase in the industry index for young PSGs.
- The total share of the top 10 occupations remained relatively constant over the two years. This indicates that the spread in occupations (which caused the occupation specialisation index to decrease) occurred in smaller occupations.

***In and out of field employment:***

- Less than half of the PSGs worked in in-field occupations.
- The median income for those working in in-field occupations increased 5.2% for all PSGs and 11.5% for young PSGs. However, median income for those working in out-of-field occupations decreased by 0.8% (all PSGs) and 5.5% (young PSGs)
- The small increase in the overall median income for the field is probably due to the decrease in median income for out-of-field employment.
- The age profile shows a different story (graphs 2.1-3e, 2.1-3f). The decrease in out-of-field income did not occur for all age groups. Out-of-field income increased more than in-field income for ages 29 and 30. A possible explanation for this could be that the top occupation for this field is specialised manager, an out-of-field occupation. Specialised managers may be more likely to be older employees, and since the share of this occupation increased by 2.2 pts between 1996 and 2001, this could drive the increase in income observed for the 29 and 30 year olds.

***Demand and supply:***

- The demand index shows a decrease in demand 1996 to 2001 by 0.3% for all PSGs.
- The change in supply is higher than for aggregate fields, indicating that the immigrant effect is quite large for this field.
- The employment rate still increased although demand declined and the supply shock increased. This may be caused by the decrease in the numbers of PSGs in this field, which is likely to decrease the number of local students.

## 2.1.2 Tables and Figures

**Table 2.1-1 Key changes for Physical and Natural Science PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	7977	6819	-14.5%	2916	2421	-17.0%
Female Proportion	30.2%	35.2%	5.0	34.6%	38.1%	3.5
Employment rate	81.6%	81.6%	0.0	75.7%	76.3%	0.6
Income						
• Mean	38180	40190	5.3%	24410	26320	7.8%
• Median	34520	35140	1.8%	21030	21780	3.6%
• P90-P50 ratio	2.11	2.28	0.17	2.25	2.29	0.05
• P50-P10 ratio	7.59	6.70	-0.89	6.23	5.61	-0.62
• Median as percentage of PSGs' median	118.3%	116.6%	-1.63	86.4%	90.0%	3.60
% of people with second qualification in different field of study (6-digit level)	18.2	N/A	N/A	11.8	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	5.9	N/A	N/A	3.3	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	1.80	1.54	-0.27	1.97	1.47	-0.50
• by industry	1.85	1.79	-0.06	1.90	1.91	0.01
• by industry and occupation	2.18	1.95	-0.23	1.93	1.86	-0.07
Supply and demand indices						
• Demand shock	N/A	N/A	-0.3%	N/A	N/A	-2.1%
• Supply shock	N/A	N/A	19.5%	N/A	N/A	14.7%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Specialised Managers	9.7%	11.9%	2.2	4.7%	7.0%	2.2
• Physicists, Chemists and Related Professionals	10.5%	7.8%	-2.7	10.7%	8.3%	-2.4
• Secondary Teaching Professionals	7.9%	7.1%	-0.8	5.3%	5.8%	0.6
• Physical Science Technicians	9.2%	6.8%	-2.3	15.1%	9.6%	-5.5
• Computing Professionals	2.7%	6.5%	3.7	1.9%	6.8%	4.9
• Library, Mail and Related Clerks	2.7%	4.9%	2.2	4.5%	7.1%	2.7
• Tertiary Teaching Professionals	5.1%	3.9%	-1.2	6.2%	4.1%	-2.2
• Finance and Sales Associate Professionals	4.1%	3.6%	-0.5	3.5%	2.9%	-0.6
• Business Professionals	1.9%	3.1%	1.2	1.5%	2.6%	1.1
• Architects, Engineers and Related Professionals	3.6%	3.1%	-0.5	3.8%	2.9%	-0.9
• Total share of the top 10 occupations	57.5%	58.7%	1.2	57.3%	57.1%	-0.1
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	46.2%	43.1%	-3.1	51.3%	45.6%	-5.7
• Median income if working in in-field occupations	40650	42770	5.2%	30060	33520	11.5%
• Median income if working in out-of-field occupations	39090	38770	-0.8%	25430	24040	-5.5%

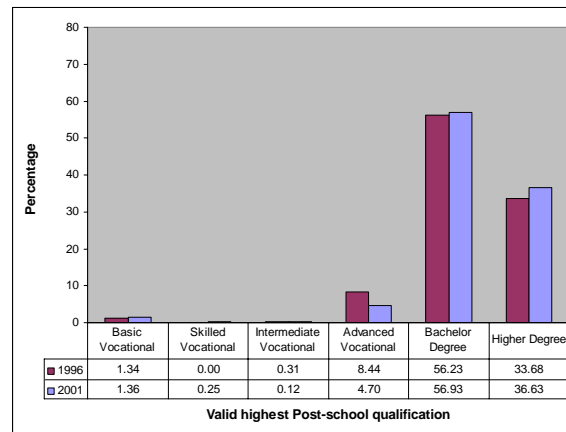
**Table 2.1-2: Age profiles for Physical and Natural Science PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	6							
19	9							
20	30	45.5	6670	50.0	-23%	-8.4	6%	-25.0
21	129	41.9	7060	65.1	-19%	7.9	14%	6.6
22	195	40.0	9520	68.8	-26%	8.2	3%	-1.4
23	237	40.0	12750	71.3	-26%	6.4	-10%	-2.1
24	234	41.8	15000	74.4	-29%	8.7	-4%	4.0
25	246	38.8	24500	74.4	-18%	2.1	-8%	-7.2
26	246	34.9	22500	77.1	-23%	2.9	-18%	-5.0
27	255	40.0	31740	82.6	-14%	6.7	2%	0.6
28	252	33.3	32780	81.4	-8%	-6.2	-3%	3.4
29	285	36.5	37940	83.0	4%	2.4	7%	5.0
30	288	34.4	36430	81.4	-14%	-1.3	11%	4.3

**Table 2.1-3 In-field occupations for Physical and Natural Science**

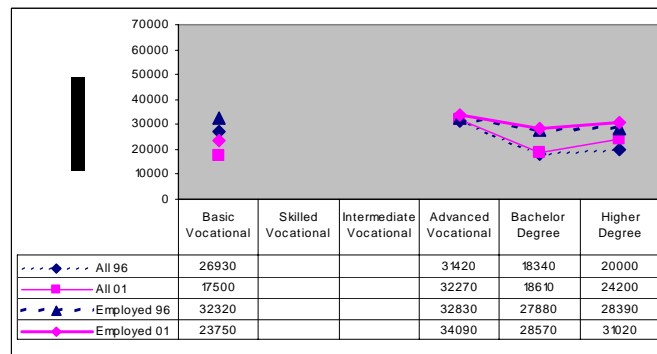
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field index	Weighted share	In-field index
Physicists, Chemists and Related Professionals	0.26%	9.61%	36.46	10.02%	43.82
Life Science Professionals	0.61%	3.06%	5.01	2.60%	4.80
Life Science Technicians and Related Workers	0.58%	2.40%	4.11	3.38%	5.50
Physical Science Technicians	2.34%	8.42%	3.60	13.20%	5.34
Secondary Teaching Professionals	2.30%	7.80%	3.39	5.70%	3.76
Glass Cutters and Related Workers	0.01%	0.03%	3.31	0.00%	0.00
Chemical Products Machine Operators	0.06%	0.19%	3.01	0.14%	1.46
Computer Equipment Controllers	0.93%	2.76%	2.98	2.56%	2.19
Tertiary Teaching Professionals	1.59%	4.72%	2.97	5.51%	6.07
Chemical Processing Plant Operators	0.07%	0.20%	2.91	0.32%	5.89
Computing Professionals	1.70%	4.42%	2.60	4.06%	2.06
Safety and Health Inspectors	0.37%	0.95%	2.53	1.10%	4.12
Mathematicians, Statisticians and Related Professionals	0.08%	0.18%	2.21	0.22%	2.17
Paper Products Machine Operators	0.03%	0.05%	2.17	0.00%	0.00
Non-Ordained Religious Associate Professionals	0.05%	0.10%	2.14	0.15%	5.89

**Figure 2.1-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Physical and Natural Science**

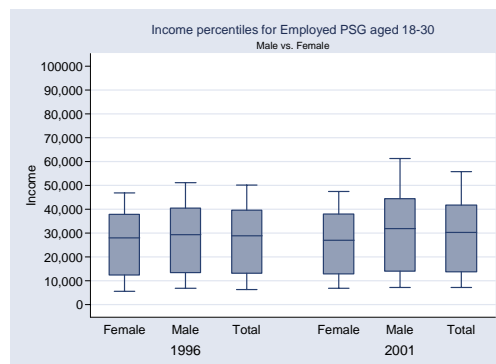


**Figure 2.1-2 Income level and dispersion for Physical and Natural Science aged 18-30**

a) Median income by highest level of attainment: All vs. Employed

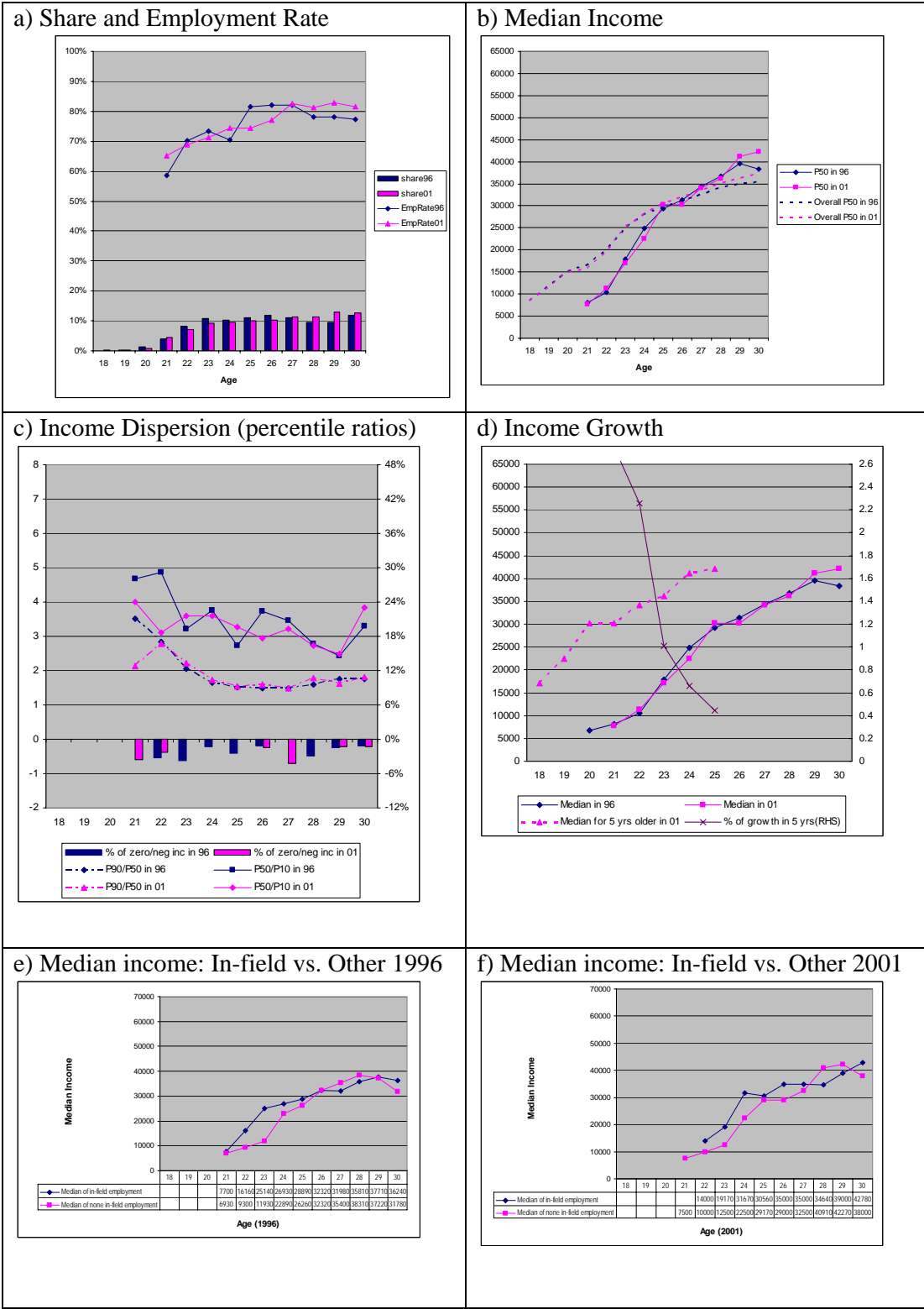


b) Income percentiles: Male vs. Female vs. All





**Figure 2.1-3 Age profiles for employed PSGs aged 18 to 30 - Physical and Natural Science**



## **2.2 Biological Sciences**

### **2.2.1 Commentary**

#### ***Number***

- The number of PSGs increased, especially for young PSGs (10.6% increase between the two years). The number of PSGs aged 31-65 decreased.

#### ***Qualification structure***

- Graduates predominantly hold either Bachelor or Higher Degrees. Approximately 30% of young PSGs hold a Higher Degree in this field.
- The median income by highest level of attainment increased for all qualification. The largest increase was for those holding a Bachelor degree.
- Given that most of the graduates have a university degree, the fact that many have studied in multiple areas may cause a higher proportion of them to graduate relatively later and hence enter the labour force later. This may explain why younger graduates in this field (especially less than 23) earn less than similar-aged graduates in the aggregate fields.
- 17.9% of all PSGs hold multiple qualifications. This is much higher than the rate of all fields (9.4%). Only 4.8% of these multiple qualifications are in the same aggregated field.

#### ***Gender***

- The proportion of female students is more than 50% for both groups of PSGs (all and young). Both groups had an increase of over 2 ppts in the proportion of females between the two years.
- The median income for males and females were very similar for both years. In 1996, males had a higher P90 than females, but this difference had almost disappeared by 2001.

#### ***Income***

- The mean income is lower than the mean income for aggregate fields, especially for young PSGs.
- Both mean and median income increased between 1996 and 2001 for both sets of PSGs.
- The median income for young PSGs increased by 27%, much more than the increase in the mean income of 12.3%. This may be a result of the large increase in the employment rate for young PSGs.
- The P90 to P50 ratio and the P50 to P10 decreased slightly for all PSGs. The P90 to P50 decreased for young PSGs, but the P50 to P10 for young PSGs increased slightly.

#### ***Employment Rate***

- The employment rate decreased slightly for the all PSG group (0.4 ppts) but increased for the young PSGs (1.8 ppts).
- The employment rate, at less than 80%, is lower than the employment rate for aggregated fields.

#### ***Age profile***

- The employment rate for younger PSGs (less than 23 years) is very low – for example, 20 year olds have an employment rate of around 50%. This may be due to the higher level of qualifications in the field.

- The number of PSGs in younger age groups decreased between 1996 and 2001. This is probably also explained by the qualification structure, as most people study at university level they are unlikely to graduate before age 20.
- The median income of employed graduates between the ages of 18 to 30 is relatively low for ages less than 25. From age 25 the median incomes for employed PSGs in this field is very close to aggregated fields (Figure 2.2-3 b).
- In 1996 the median income for young PSGs in this field was only 65% of the level for aggregated fields. It increased by more than 10% in 2001, but it was still about 15% lower than the 2001 level for aggregated fields.
- The median income by age was almost unchanged between 1996 and 2001 (graph 2.2-3d). The 5-year growth (graph 2.2-3d) is huge in the early years.

### ***Specialisation***

- The level of specialisation is lower than most other fields. The specialisation indices decreased between 1996 and 2001 for all groups except the index for industry for young PSGs, which increased by 0.15.
- Approximately 50% of the graduates in this field worked in the top 10 occupations. This is higher than the level for all fields (approximately 40%).

### ***In and out-of field employment***

- 41.7% of all PSGs work in in-field occupations in 1996. This decreased to 33.6% in 2001.
- The median income for in-field employment is higher than not in-field employment. The median income for in-field occupations for young PSGs increased by 8.4% between 1996 and 2001. However, the median income for in-field occupations for all PSGs decreased between 1996 and 2001. This means that the decrease in median income for in-field occupations for graduates aged 31-65 was quite large.
- The median income for out-of-field occupations increased 6.6% for all PSGs, and by 25.3% for young PSGs.

### ***Demand and supply***

- Demand change is negative (-0.8%). The supply shock is 15.9%, higher than the level for aggregate fields of 12.5%.

## 2.2.2 Tables and Figures

Table 2.2-1 Key Changes for Biological Science from 1996 to 2001

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	11940	12237	2.5%	5478	6060	10.6%
Female Proportion	53.4%	56.1%	2.7	56.9%	59.2%	2.3
Employment rate	79.3%	78.9%	-0.4	72.6%	74.3%	1.8
Income						
• Mean	31730	32350	2.0%	20930	23290	11.3%
• Median	27700	28340	2.3%	15900	20200	27.0%
• P90-P50 ratio	2.31	2.28	-0.03	2.65	2.27	-0.38
• P50-P10 ratio	8.24	7.32	-0.92	6.18	6.46	0.28
• Median as percentage of PSGs' median	94.9%	94.1%	-0.84	65.3%	83.4%	18.14
% of people with second qualification in different field of study (6-digit level)	17.9	N/A	N/A	13.1	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	4.8	N/A	N/A	3.1	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	1.49	1.23	-0.25	1.46	1.17	-0.29
• by industry	2.09	1.96	-0.13	1.80	1.96	0.15
• by industry and occupation	2.14	1.49	-0.65	1.45	1.26	-0.18
Supply and demand indices						
• Demand shock	N/A	N/A	-0.8%	N/A	N/A	-2.5%
• Supply shock	N/A	N/A	15.9%	N/A	N/A	14.3%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Specialised Managers	7.1%	9.9%	2.8	4.1%	7.5%	3.4
• Life Science Professionals	9.2%	7.5%	-1.7	7.9%	6.5%	-1.5
• Library, Mail and Related Clerks	3.5%	6.5%	3.0	4.8%	7.7%	3.0
• Secondary Teaching Professionals	7.3%	5.2%	-2.2	3.4%	3.4%	0.0
• Life Science Technicians and Related Workers	8.0%	4.9%	-3.1	9.7%	5.3%	-4.3
• Physical Science Technicians	5.5%	4.3%	-1.2	7.7%	5.0%	-2.7
• Architects, Engineers and Related Professionals	2.3%	3.4%	1.1	3.0%	4.3%	1.3
• Tertiary Teaching Professionals	4.2%	3.4%	-0.8	3.3%	2.9%	-0.4
• Salespersons and Demonstrators	2.5%	3.1%	0.6	4.8%	5.0%	0.2
• Finance and Sales Associate Professionals	3.3%	3.0%	-0.3	3.2%	3.4%	0.2
• Total share of the top 10 occupations	53.0%	51.2%	-1.8	51.8%	51.0%	-0.8
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	41.7%	33.6%	-8.1	39.3%	31.9%	-7.4
• Median income if working in in-field occupations	36950	36760	-0.5%	28420	30820	8.4%
• Median income if working in out-of-field occupations	30050	32020	6.6%	20530	25730	25.3%

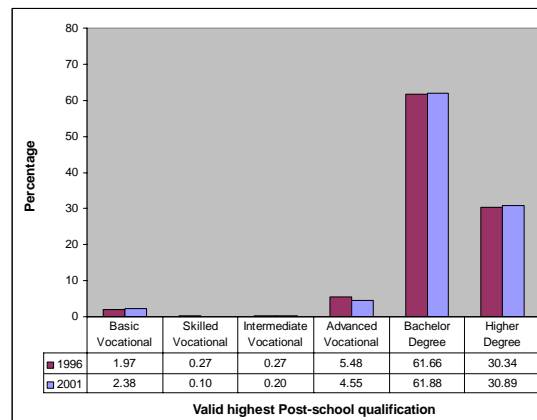
**Table 2.2-2 Age profiles for Biological Science PSGs aged 18 to 30**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	12							
19	36	50.0	6000	40.0	-20%	-7.1	N/A	-17.1
20	129	58.1	6180	46.5	8%	-3.4	-1%	-4.7
21	432	56.6	6580	54.5	-20%	-3.7	-1%	-2.8
22	609	58.9	8710	64.5	-11%	5.6	4%	-0.2
23	681	62.1	13430	74.3	-3%	4.8	16%	4.6
24	696	59.1	19320	73.2	12%	-0.3	13%	-1.8
25	597	61.3	26100	78.3	12%	3.1	12%	0.2
26	630	61.9	27100	77.3	38%	11.2	-2%	-1.6
27	600	52.7	28690	80.1	29%	-2.1	3%	2.7
28	567	60.8	31630	81.5	31%	-0.5	6%	1.6
29	585	56.4	32660	81.4	32%	-0.3	3%	3.1
30	486	61.7	33050	83.2	13%	5.5	1%	2.7

**Table 2.2-3 In-field occupations for Biological Science**

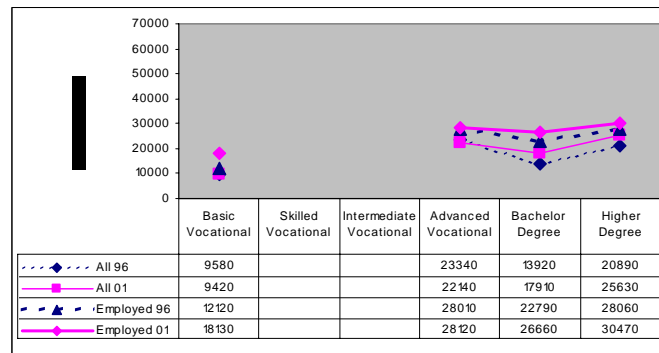
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Environmental Protection Associate Professionals	0.02%	0.42%	19.04	0.53%	21.29
Life Science Professionals	0.61%	8.57%	14.15	7.32%	13.64
Life Science Technicians and Related Workers	0.58%	6.61%	11.35	7.45%	12.43
Government Associate Professionals	0.09%	0.55%	6.10	0.94%	8.49
Physicists, Chemists and Related Professionals	0.26%	1.50%	5.76	1.16%	5.16
Safety and Health Inspectors	0.37%	1.32%	3.54	1.26%	4.93
Fishery Workers, Hunters and Trappers	0.19%	0.57%	2.93	0.85%	4.07
Secondary Teaching Professionals	2.29%	6.41%	2.80	3.50%	2.30
Senior Government Administrators	0.08%	0.21%	2.56	0.07%	1.43
Tertiary Teaching Professionals	1.57%	3.90%	2.48	3.19%	3.59
Social and Related Science Professionals	1.06%	2.45%	2.31	2.53%	2.76
Physical Science Technicians	2.31%	5.04%	2.18	6.37%	2.66

**Figure 2.2-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Biological Science**

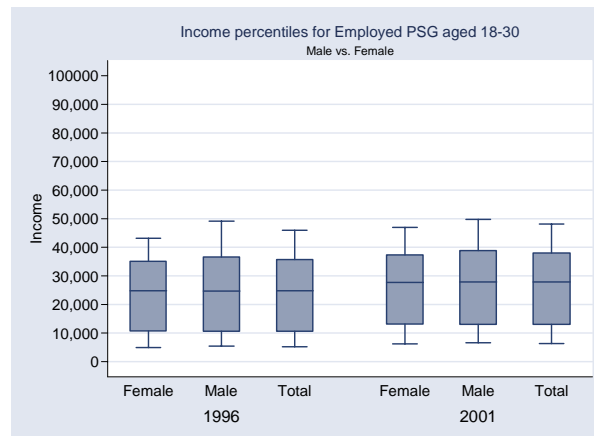


**Figure 2.2-2 Income level and dispersion for PSGs - Biological Science aged 18-30**

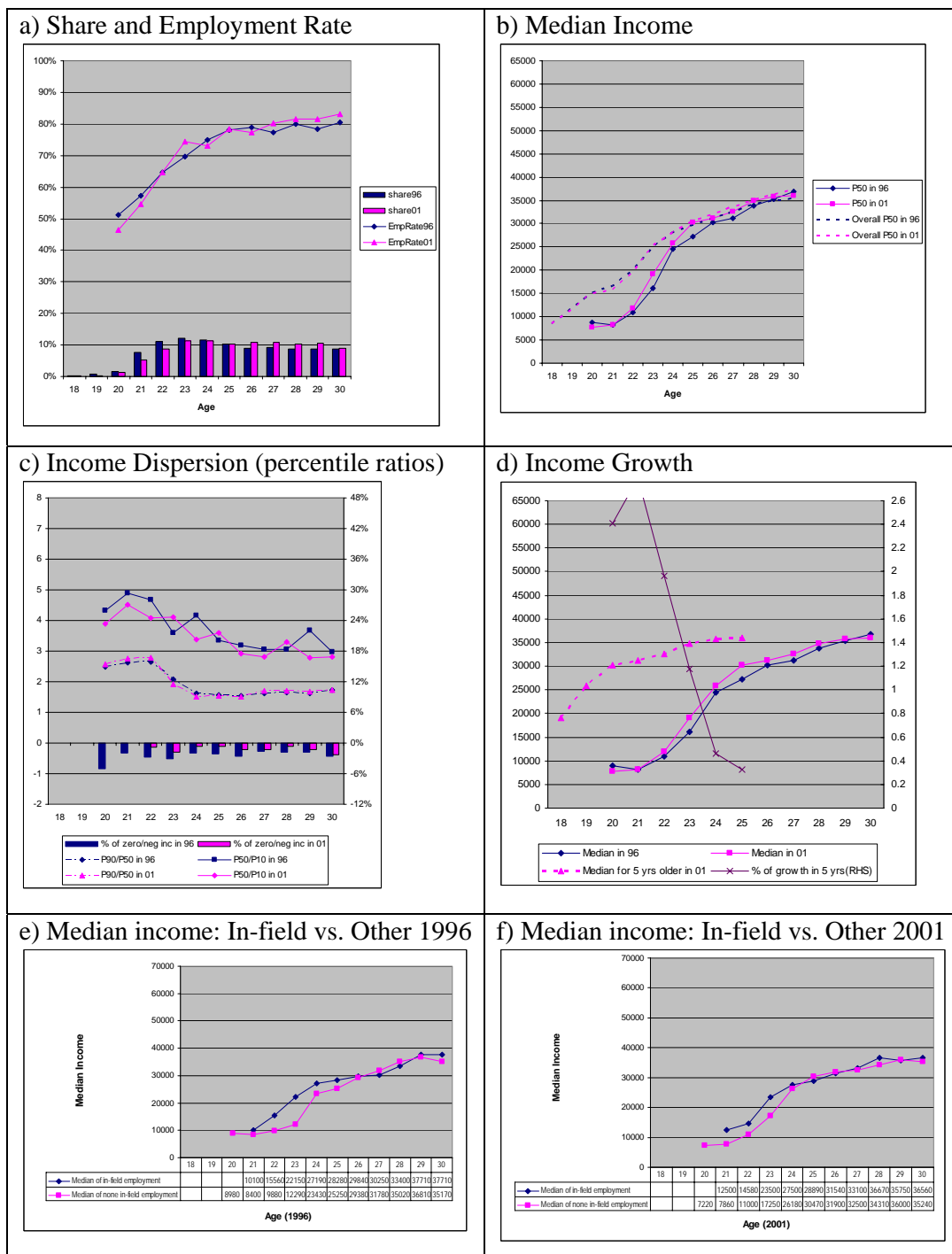
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.2-3 Age profiles for employed PSGs aged 18 to 30 - Biological Science**



## 2.3 **Computer and Info Science**

### 2.3.1 **Commentary**

#### *Number*

- There was a very large increase in the number of graduates: all PSGs increased by 83.0%, young PSGs by 72.8%.

#### *Qualification structure*

- The distribution of qualification levels for this field changed considerably from 1996 to 2001. A large increase occurred in intermediate vocational level, leading to a drop in the share accounted for by all other levels. The two most common levels of qualification in 1996 were Basic Vocational and Bachelor Degree. In 2001 Intermediate Vocational replaced Basic Vocational as the most common qualification, and Basic Vocational was the second most common qualification.
- Income across qualification level pattern (Figure 2.3-2a) is similar to the pattern over aggregated fields. Income for all qualification levels increased between 1996 and 2001 except for Intermediate Vocational Qualification. This was the most popular qualification in 2001. This decrease made the total mean and median income decrease noticeably.
- 12.8% of graduates have multiple qualifications, higher than aggregated fields (9.4%). However, very few of these are within the same field.

#### *Gender*

- The proportion of female PSGs was lower than for aggregate fields, but increased to nearly 50% in 2001.
- Female income is much lower than male income. This is especially true for the high- income band. The difference is greater in 2001 than 1996.
- In 2001 there was an increase of 7.1 ppts in the female graduate share.

#### *Employment*

- The employment rate was lower than the employment rate for aggregated fields. There was a 5.4 ppt decrease in the employment rate between 1996 and 2001 for all PSGs, greater than the decrease of 1.1 ppts for aggregated fields.

#### *Income:*

- The mean and median incomes are both below the levels for aggregated fields.
- The median income decreased by more than 10% between 1996 and 2001 for all PSGs and young PSGs. The mean income decreased by 0.2% for all PSGs, and by 2.2% for young PSGs.

#### *Age profile*

- The largest increase in numbers occurred for ages 18 and 19 (both more than 100%). This is consistent with the increased proportion of graduates holding an Intermediate Vocational Qualification.
- Employment rate and median income both dropped in most of the ages groups, which supports the view that the decrease in income could be caused by the decline in employment rate.
- The median income for employed PSGs within the field is higher than the median income for aggregated fields after the age of 21. This suggests that



the relatively low median income (\$19330 in 2001) for young PSGs in this field is mainly driven by those not employed (Figure 2.3-3b).

### ***Specialisation***

- This field is more specialised than the aggregated fields. Specialisation indices for occupation and industry decreased slightly between 1996 and 2001. The combined index increased by 0.60 for all PSGs, 0.39 for young PSGs.
- The proportion of PSGs working in top 10 occupations is close to 70%, much higher than the aggregated fields (approximately 40%). The share working in top 10 occupations increased between 1996 and 2001.
- The two most field-relevant occupations, Computer Equipment Controllers and Computing Professionals, were the top 2 occupations.
- The large increase in the number of graduates would increase competition for jobs, and hence may also explain the observed decrease in income.

### ***In and out of field employment***

- Less than 40% of people are working in in-field occupations. The proportion decreased by 1.2 ppts for young PSGs between 1996 and 2001.
- The median income is much higher for in-field employment than out-of-field employment. The median income increased between the two years for the former, but decreased for the latter.
- PSGs working in in-field occupations start with a higher income than out-of-field occupations, and the income increases more rapidly. This means that the decrease in aggregate income for the field is not due to a decrease for those working in computer and info science based jobs, but due to the lower chances for PSGs to work in these relevant positions.

### 2.3.2 Tables and Figures

**Table 2.3-1 Key changes for Computer and Info Science PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	10869	19890	83.0%	6642	11478	72.8%
Female Proportion	38.1%	45.2%	7.1	37.5%	46.0%	8.5
Employment rate	78.4%	73.0%	-5.4	76.7%	70.4%	-6.4
Income						
• Mean	33500	33420	-0.2%	26300	25730	-2.2%
• Median	27160	23650	-12.9%	22230	19330	-13.0%
• P90-P50 ratio	2.58	3.14	0.56	2.35	2.90	0.55
• P50-P10 ratio	6.01	6.05	0.04	6.02	7.05	1.03
• Median as percentage of PSGs' median	93.0%	78.5%	-14.55	91.3%	79.8%	-11.45
% of people with second qualification in different field of study (6-digit level)	12.8	N/A	N/A	12.1	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	2.9	N/A	N/A	3.2	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	2.76	2.73	-0.03	2.89	2.65	-0.23
• by industry	2.39	2.37	-0.01	2.33	2.12	-0.21
• by industry and occupation	1.80	2.40	0.60	1.99	2.38	0.39
Supply and demand indices						
• Demand shock	N/A	N/A	31.4%	N/A	N/A	29.5%
• Supply shock	N/A	N/A	31.2%	N/A	N/A	24.2%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Computing Professionals	15.9%	21.7%	5.9	15.7%	21.2%	5.5
• Computer Equipment Controllers	15.7%	11.0%	-4.7	17.8%	10.9%	-6.9
• Specialised Managers	8.0%	8.1%	0.1	5.2%	5.8%	0.6
• Library, Mail and Related Clerks	3.9%	6.1%	2.2	4.4%	6.6%	2.2
• Finance and Sales Associate Professionals	10.2%	6.0%	-4.2	9.2%	5.4%	-3.8
• Salespersons and Demonstrators	4.1%	5.1%	0.9	5.5%	7.0%	1.5
• Business Professionals	1.4%	3.6%	2.2	1.1%	2.9%	1.7
• Client Information Clerks	2.5%	3.0%	0.5	3.2%	3.9%	0.7
• Secretaries and Keyboard Operating Clerks	2.5%	2.9%	0.4	2.9%	3.3%	0.4
• Housekeeping and Restaurant Services Workers	1.9%	2.8%	0.9	2.7%	4.0%	1.3
• Total share of the top 10 occupations	66.1%	70.4%	4.2	67.8%	70.9%	3.1
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	35.0%	36.4%	1.4	37.8%	36.6%	-1.2
• Median income if working in in-field occupations	40510	45360	12.0%	36700	39290	7.1%
• Median income if working in out-of-field occupations	28330	25330	-10.6%	22950	21370	-6.9%

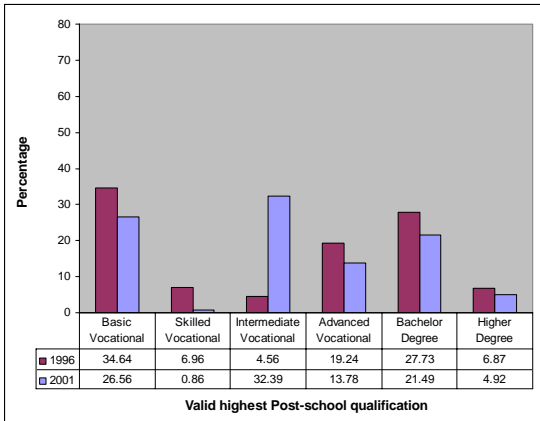
**Table 2.3-2 Age profiles for Computer and Info Science PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	603	60.2	4590	52.7	224%	2.1	-10%	5.9
19	756	51.4	7800	55.9	100%	1.4	-5%	-10.0
20	870	58.5	10570	58.6	82%	11.0	5%	-9.5
21	1038	51.6	12940	66.8	88%	8.4	-5%	-5.5
22	1080	43.1	16320	69.3	53%	4.3	-11%	-8.6
23	1017	45.1	20520	71.1	51%	12.7	-13%	-9.7
24	984	41.0	24550	75.7	45%	6.2	-11%	-3.9
25	927	45.5	27730	76.7	47%	11.2	-7%	-5.2
26	870	40.7	27930	72.9	66%	8.7	-14%	-11.1
27	894	40.1	31150	76.9	86%	8.3	-6%	-0.6
28	813	42.6	31220	77.7	79%	10.6	-3%	0.2
29	834	39.6	32340	75.5	97%	2.9	-9%	-3.3
30	795	43.6	31560	78.9	68%	9.4	-14%	-2.2

**Table 2.3-3 In-field occupations for Computer and Info Science**

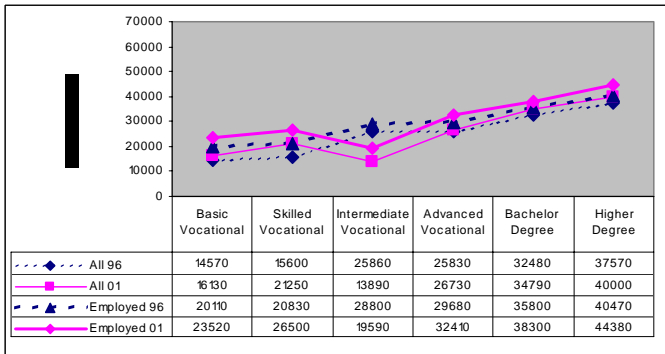
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Computer Equipment Controllers	0.89%	12.44%	13.91	13.13%	11.72
Computing Professionals	1.82%	20.68%	11.37	20.05%	9.38
Client Information Clerks	1.45%	2.96%	2.05	3.79%	1.65

**Figure 2.3-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Computer and Info Science**

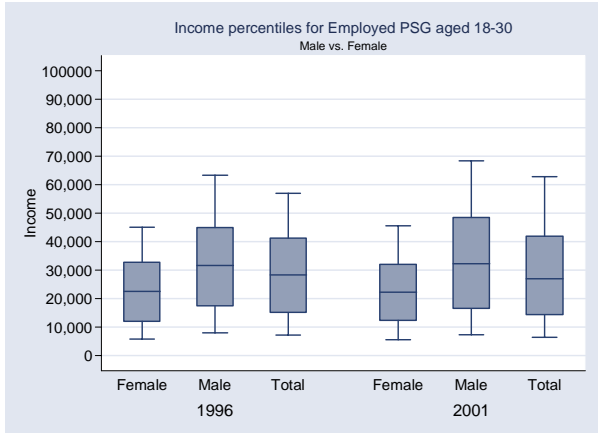


**Figure 2.3-2 Income level and dispersion for Computer and Info Science aged 18-30**

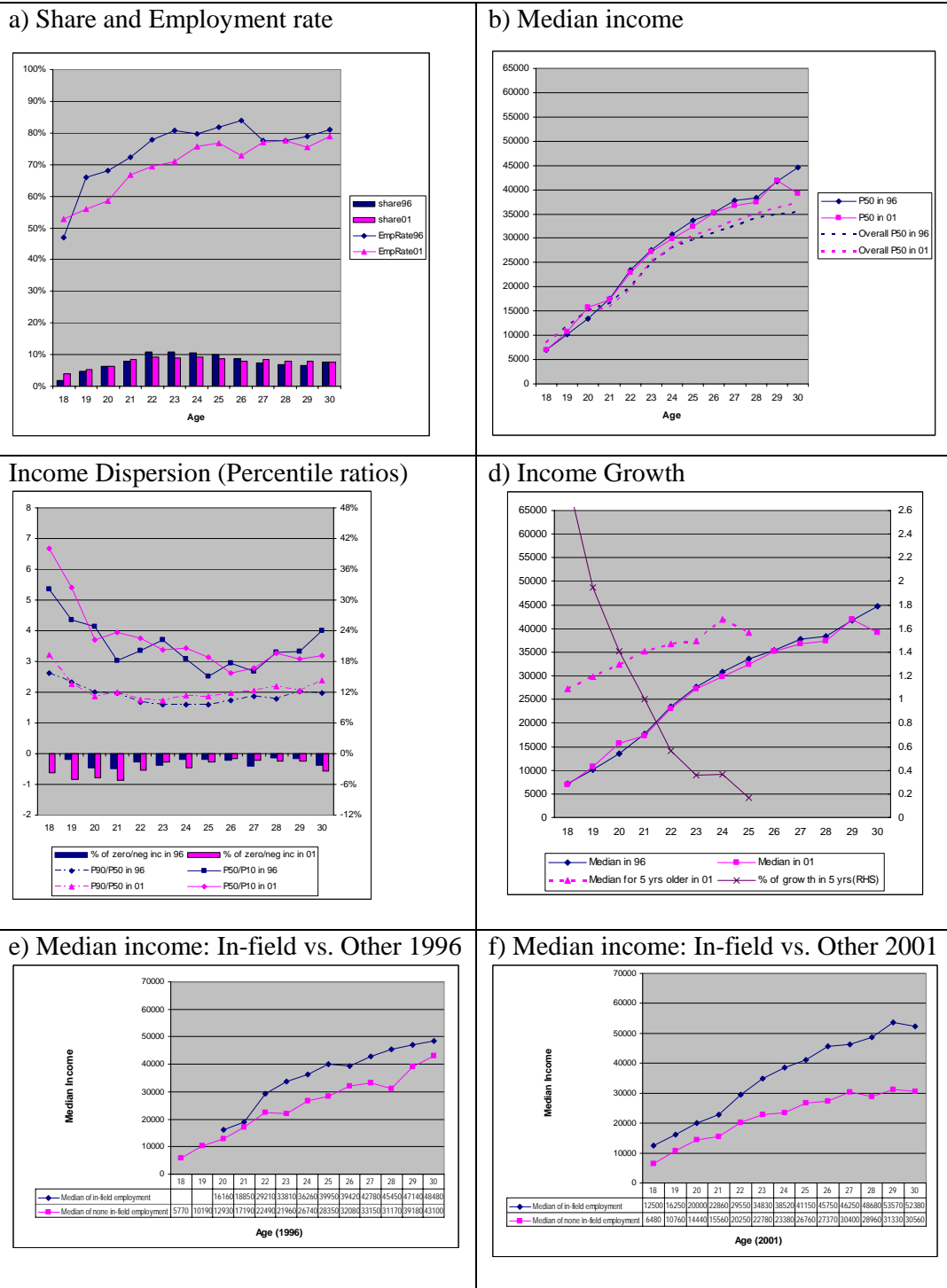
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.3-3 Age profiles for employed PSGs aged 18 to 30 - Computer and Info Science**



## **2.4 Automotive Engineering**

### **2.4.1 Commentary**

#### ***Number***

- The number of graduates decreased by 17.6% between 1996 and 2001.

#### ***Qualification Structure***

- The majority of the qualifications are Vocational Qualifications. Basic and Skilled are the most common levels. Very few people hold degree level qualifications.
- The proportion with Skilled Vocational reduced considerably between 1996 and 2001. The number with Basic and Intermediate Vocational Qualifications both almost doubled.
- Mean income for all qualification levels bar Intermediate Vocational increased between 1996 and 2001.
- The relatively low level of qualification means graduates in this field will enter the labour force earlier than other fields, which is consistent with the higher employment rate in the earlier age groups.
- Fewer people in this field gained multiple qualifications than for aggregated fields. More than half of those with multiple qualifications have them in similar areas.

#### ***Gender***

- The female proportion is extremely low. There was an increase in the proportion of females between 1996 and 2001 – from 1.1% to 1.8%.
- Females have very low income, even when they are employed.

#### ***Income***

- The median income for young PSGs is slightly higher than the median income for young PSGs over aggregated fields for both 1996 and 2001. Median income for all PSGs is slightly less than income over aggregated fields.
- For employed young PSGs, P25 and P50 decreased slightly between 1996 and 2001, and P90 rose. (Figure 2.4-2b):

#### ***Employment***

- The employment rate, over 90%, is very high. The employment rate decreased by 0.7 ppts for all PSGs and by 2.6 ppts for young PSGs between 1996 and 2001.

#### ***Age profiles***

- The employment rate decreased for most of the age brackets between 1996 and 2001.
- Median income for employed PSGs in this field is higher than median income for aggregated fields for PSGs aged less than 24 years, but lower after that. This is due to the rather lower level of qualification for this field (Figure 2.4-3b).
- The income growth between 1996 and 2001 was much lower than most of the fields, and less than the level for aggregated fields.

#### ***Specialisation***

- The specialisation index is higher than the specialisation index for aggregated fields. Young PSGs were more specialised than all PSGs. The

only index to decrease between the two years was the industry index for young PSGs.

- More than 70% of graduates worked in the top 10 occupations. Over 30% of graduates worked in the most common occupation, Machinery Mechanics and Fitters (nearly 40% for young PSGs).

***In and out-of field employment***

- Over 50% of all PSGs, and 60% of young PSGS, are working in in-field occupations. This proportion increased slightly for both groups between 1996 and 2001.
- For all PSGs, median income for in-field employment was much lower than out-of-field employment for both years. In 2001, in-field median income for young PSGs was similar to out-of-field median income.
- Median income increased for all PSGs for both in-field and out-of-field employment. However, median income for young PSGs decreased for both types of employment. The decrease was larger for out-of-field employment, leading to a rise in the in-field premium.
- There are 20 in-field occupations. Most of them are fairly small and only employ a small proportion of PSGs.

## 2.4.2 Tables and Figures

**Table 2.4-1 Key changes for Automotive Engineering PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	20484	16878	-17.6%	7062	5751	-18.6%
Female Proportion	1.1%	1.8%	0.7	2.3%	3.2%	1.0
Employment rate	92.9%	92.3%	-0.7	92.4%	89.7%	-2.6
Income						
• Mean	34670	35640	2.8%	28560	27370	-4.2%
• Median	31890	33100	3.8%	28140	26920	-4.3%
• P90-P50 ratio	1.68	1.78	0.11	1.53	1.65	0.13
• P50-P10 ratio	2.41	2.70	0.29	2.53	3.28	0.75
• Median as percentage of PSGs' median	109.2%	109.9%	0.61	115.6%	111.2%	-4.37
% of people with second qualification in different field of study (6-digit level)	5.3	N/A	N/A	4.2	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	2.7	N/A	N/A	2.3	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	4.23	4.30	0.07	5.85	6.06	0.21
• by industry	4.87	5.17	0.31	6.78	6.61	-0.16
• by industry and occupation	4.75	6.59	1.84	7.48	9.85	2.37
Supply and demand indices						
• Demand shock	N/A	N/A	-8.6%	N/A	N/A	-8.4%
• Supply shock	N/A	N/A	3.1%	N/A	N/A	2.8%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Machinery Mechanics and Fitters	30.5%	33.0%	2.5	37.5%	40.8%	3.3
• Specialised Managers	7.6%	7.4%	-0.1	3.6%	3.1%	-0.5
• Metal Moulders, Sheet-Metal and Related Workers	7.0%	7.0%	0.0	9.1%	8.0%	-1.1
• Finance and Sales Associate Professionals	5.1%	4.2%	-0.9	3.5%	2.7%	-0.8
• Building Finishers and Related Trades Workers	3.3%	3.5%	0.1	4.9%	4.4%	-0.5
• Market Oriented Animal Producers	3.7%	3.5%	-0.3	3.0%	3.0%	0.0
• Salespersons and Demonstrators	3.1%	3.4%	0.3	3.0%	4.5%	1.4
• General Managers	4.4%	3.4%	-1.0	1.4%	0.9%	-0.5
• Architects, Engineers and Related Professionals	3.6%	2.9%	-0.7	3.7%	2.7%	-1.1
• Electricians	2.7%	2.8%	0.1	3.3%	3.3%	0.0
• Total share of the top 10 occupations	71.0%	71.1%	0.1	73.1%	73.3%	0.2
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	52.4%	54.8%	2.4	62.9%	64.4%	1.5
• Median income if working in in-field occupations	31060	32600	5.0%	28260	28140	-0.4%
• Median income if working in out-of-field occupations	35620	37030	4.0%	30070	28300	-5.9%



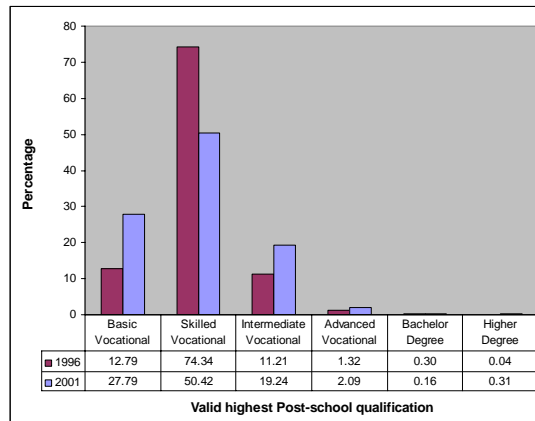
**Table 2.4-2 Age profiles for Automotive Engineering PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	252	3.6	9880	79.5	47%	0.1	17%	1.9
19	357	5.0	12420	83.2	31%	0.6	-12%	-6.8
20	360	5.0	16880	85.1	22%	0.9	1%	-7.7
21	375	2.4	20580	84.1	-11%	-1.1	-1%	-6.7
22	378	5.6	22500	87.3	-30%	2.8	-10%	-6.6
23	354	5.0	25000	88.9	-39%	1.4	-5%	-3.8
24	459	3.3	27930	90.8	-25%	0.8	-3%	-3.3
25	420	2.1	28880	92.2	-34%	0.7	-3%	0.3
26	480	3.1	29310	89.3	-26%	1.7	-2%	-4.7
27	507	3.6	31910	95.8	-34%	1.6	2%	4.1
28	543	2.8	32110	91.2	-23%	1.1	1%	-1.1
29	618	2.0	34190	93.2	-9%	1.1	7%	-1.4
30	648	1.9	34550	93.5	-12%	0.2	6%	1.6

**Table 2.4-3 In-field occupations for Automotive Engineering**

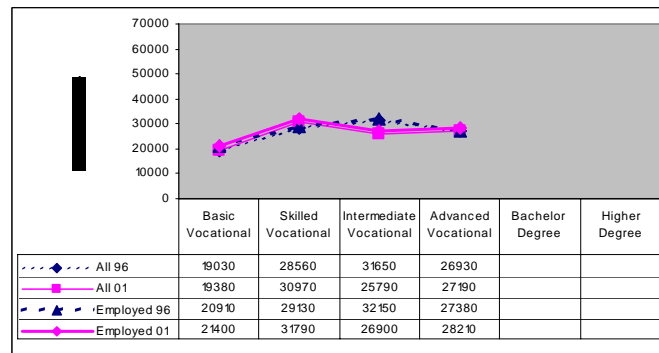
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Machinery Mechanics and Fitters	1.99%	32.00%	16.06	39.34%	19.68
Metal Moulders, Sheet-Metal and Related Workers	0.94%	7.12%	7.55	8.77%	8.85
Motor Vehicle Drivers	0.62%	3.10%	5.00	2.81%	5.24
Agricultural, Earthmoving and Other Materials-Handling Equipment Operators	0.27%	1.23%	4.52	0.95%	3.58
Mining and Mineral Processing Plant Operators	0.04%	0.18%	4.21	0.14%	4.53
Rubber and Plastics Products Machine Operators	0.06%	0.26%	4.14	0.43%	4.97
Tailors and Dressmakers	0.24%	0.77%	3.16	0.93%	3.59
Refuse Collectors and Related Labourers	0.02%	0.07%	3.10	0.02%	1.36
Metal-Processing Plant Operators	0.14%	0.39%	2.76	0.40%	2.81
Assemblers	0.36%	0.94%	2.63	0.75%	2.24
Building Finishers and Related Trades Workers	1.33%	3.45%	2.60	4.80%	3.48
Chemical Processing Plant Operators	0.07%	0.18%	2.51	0.09%	1.51
Messengers and Doorkeepers	0.24%	0.55%	2.30	0.60%	1.88
Metal and Mineral Products Processing Machine Operators	0.23%	0.53%	2.29	0.58%	2.42
Wood-Processing and Papermaking Plant Operators	0.10%	0.22%	2.27	0.13%	1.48
Forestry and Related Workers	0.24%	0.54%	2.24	0.65%	2.13
Power Generating and Related Plant Operators	0.08%	0.18%	2.23	0.08%	2.15
Street Vendors	0.05%	0.10%	2.20	0.05%	1.36
Labourers	0.72%	1.50%	2.09	1.93%	1.98
Railway Engine Drivers and Related Workers	0.02%	0.04%	2.00	0.00%	0.00

**Figure 2.4-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Automotive Engineering**



**Figure 2.4-2 Income level and dispersion for Automotive Engineering aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All

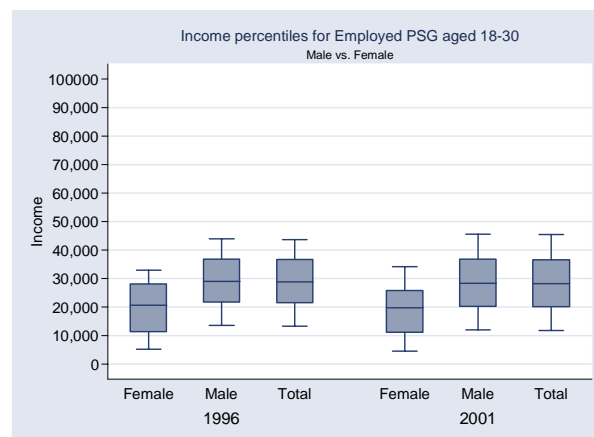
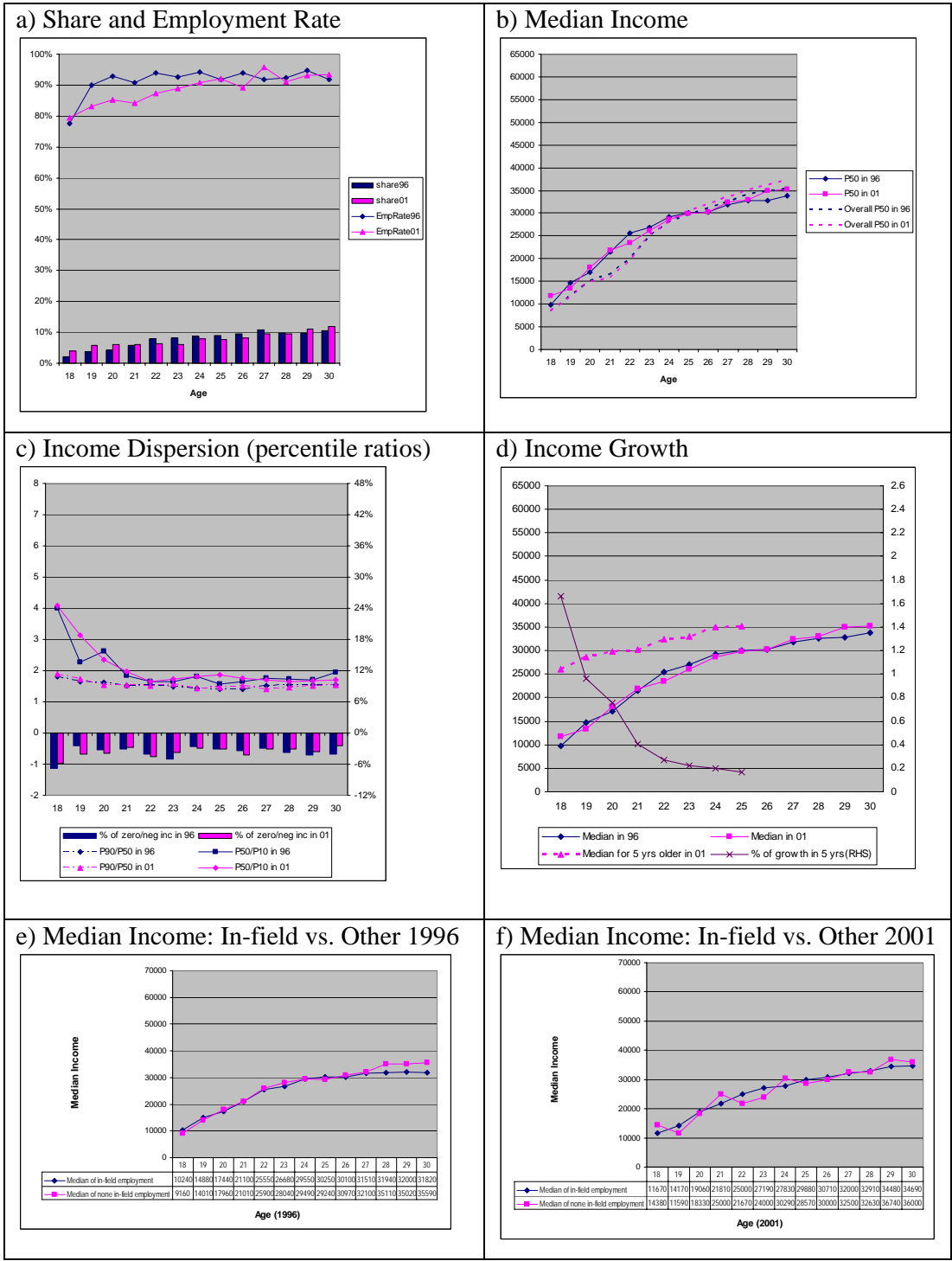


Figure 2.4-3 Age profiles for employed PSGs aged 18 to 30 - Automotive Engineering



## **2.5 Mechanical/Industrial Engineer**

### **2.5.1 Commentary**

#### ***Number***

- The number of graduates dropped dramatically between 1996 and 2001. There was a decrease of 20.1% for all PSGs, and a decrease of 39.9% for young PSGs. The number of graduates in each age group between 18 and 30 also decreased between the two years.

#### ***Qualification Structure***

- The most common qualifications are Skilled and Basic Vocational Qualifications. Approximately 15% have either a Bachelor or Higher Degree.
- The level of qualification generally increased between 1996 and 2001. Advanced Vocational Qualifications doubled and there was an increase in Bachelor and Higher Degrees. There were fewer people in skilled and Vocational Qualification. However, the proportion with Basic Vocational Qualifications increased.
- Income level increased for all level of qualifications, especially for the two highest qualifications (Bachelor and Higher Degree).
- 6.3% of graduates have multiple qualifications, less than for aggregated fields (9.38%). Very few of these are second qualifications within the field.

#### ***Gender***

- The field had a very low female ratio (3.2% in 2001). The ratio increased slightly between 1996 and 2001, more noticeably for young PSGs.
- Females earned less than males. The female income distribution is skewed to the left.
- For employed female PSGs 18 to 30, P10 moved up a lot (much faster than males), but P90 moved up much less.

#### ***Income***

- Median and Mean income are higher than income for aggregated fields. Both mean and median income increased between 1996 and 2001, with a larger increase for all PSGs than young PSGs.
- P90/P50 and P50/P10 both decreased for all PSGs, but increased for young PSGs. This indicates a more centred income distribution for older PSGs (i.e. aged 31-65).

#### ***Age profiles***

- The number of PSGs in every age bracket between 19 and 30 decreased between 1996 and 2001.
- The larger decreases in the employment rate occurred in young groups, suggesting that lower qualified PSGs were less likely to find a job in 2001 than 1996.
- The change in median income was similar to the change in the employment rate for graduates aged 21 and younger. The median income may have been driven by the employment rate.
- Employed PSGs in this field had a higher median income than for aggregated fields for every age group between 18 and 30 (Figure 2.5-3b).

### ***Specialisation***

- This field is less specialised than most other individual fields.
- The occupation specialisation decreased for both all PSGs and young PSGs between 1996 and 2001.
- Young PSGs are more specialised than all PSGs.
- The share of the top 10 occupations was close to 70% in 1996 and 65% in 2001. The numbers working in each occupation are spread fairly evenly over the top 10 occupations.

### ***In-field employment***

- There are 18 in-field occupations, consistent with the low specialisation indices for this field.
- Median income for in-field occupations was lower than median income for out-of-field employment for all PSGs. The median income for out-of-field income increased more between 1996 and 2001 than in-field income.
- The total share of graduates working in in-field occupations decreased for both age groups between 1996 and 2001.
- For young PSGs, median in-field income was higher than out-of-field income until approximately the age of 26 years, after which there was little difference between in-field and out-of-field income (Figure 2.5-3e,f). This shows that in-field income grows more slowly than out-of-field income.

### ***Demand and supply:***

- The demand shock is strongly negative (-11.5%). The supply shock (7.4%) is less than supply shock for aggregated fields.

## 2.5.2 Tables and Figures

**Table 2.5-1 Key changes for Mechanical/Industrial Engineer PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	16878	13485	-20.1%	6021	3618	-39.9%
Female Proportion	2.4%	3.2%	0.8	3.3%	4.2%	0.9
Employment rate	90.9%	91.3%	0.4	89.6%	88.3%	-1.3
Income						
• Mean	40440	43470	7.5%	32940	34190	3.8%
• Median	37600	40190	6.9%	32280	33440	3.6%
• P90-P50 ratio	1.82	1.73	-0.09	1.63	1.73	0.10
• P50-P10 ratio	3.09	2.98	-0.11	3.46	3.60	0.13
• Median as percentage of PSGs' median	128.8%	133.4%	4.58	132.6%	138.1%	5.56
% of people with second qualification in different field of study (6-digit level)	6.3	N/A	N/A	5.0	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	1.7	N/A	N/A	1.5	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	2.58	1.96	-0.62	3.30	2.36	-0.94
• by industry	1.67	1.76	0.09	2.28	2.30	0.02
• by industry and occupation	1.12	1.09	-0.03	1.88	1.80	-0.09
Supply and demand indices						
• Demand shock	N/A	N/A	-11.5%	N/A	N/A	-11.6%
• Supply shock	N/A	N/A	7.4%	N/A	N/A	4.2%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Metal Moulders, Sheet-Metal and Related Workers	12.8%	12.3%	-0.5	17.0%	15.5%	-1.5
• Blacksmiths, Toolmakers and Related Workers	14.0%	10.6%	-3.4	18.3%	13.1%	-5.2
• Architects, Engineers and Related Professionals	11.5%	10.3%	-1.3	12.6%	12.6%	0.0
• Specialised Managers	7.9%	9.5%	1.6	4.1%	5.0%	0.9
• Machinery Mechanics and Fitters	9.3%	8.1%	-1.1	7.8%	7.3%	-0.5
• Physical Science Technicians	3.6%	3.7%	0.1	3.8%	4.3%	0.5
• General Managers	4.6%	3.2%	-1.4	1.3%	1.0%	-0.3
• Finance and Sales Associate Professionals	2.6%	2.1%	-0.5	1.4%	1.6%	0.2
• Market Oriented Animal Producers	2.4%	2.1%	-0.3	2.1%	2.0%	-0.1
• Metal and Mineral Products Processing Machine Operators	1.1%	2.1%	0.9	1.5%	2.5%	1.0
• Total share of the top 10 occupations	69.9%	64.0%	-5.9	70.1%	65.0%	-5.1
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	58.1%	53.7%	-4.4	66.7%	61.8%	-5.0
• Median income if working in in-field occupations	38860	40910	5.3%	34540	35980	4.2%
• Median income if working in out-of-field occupations	39710	43390	9.3%	32580	33370	2.4%

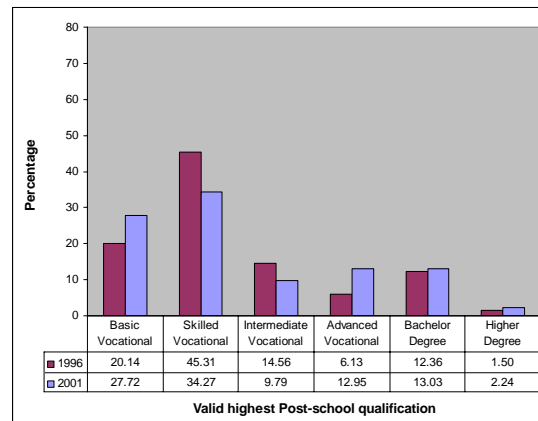
**Table 2.5-2 Age profiles for Mechanical/Industrial Engineer PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	57	11.1	9170	68.4	-55%	8.8	-15%	-14.9
19	93	6.7	10830	74.2	-44%	3.0	-34%	-9.7
20	123	4.9	17500	73.8	-41%	0.6	-10%	-13.1
21	168	3.5	22500	87.5	-44%	0.5	-2%	-3.5
22	222	4.1	25580	81.1	-45%	0.3	1%	-4.8
23	297	9.1	31000	88.8	-32%	4.3	4%	-1.0
24	294	2.1	32270	88.8	-38%	-1.8	1%	0.2
25	327	4.5	34310	90.8	-37%	1.7	1%	-1.1
26	372	4.0	35260	88.1	-39%	1.0	4%	-1.1
27	363	4.9	35810	87.7	-42%	1.1	2%	-0.3
28	417	4.3	38640	90.6	-36%	1.6	3%	-0.6
29	423	4.3	40150	91.4	-41%	1.3	9%	-0.6
30	462	1.3	41620	93.5	-42%	-1.7	7%	2.2

**Table 2.5-3 In-field occupations for Mechanical/Industrial Engineer**

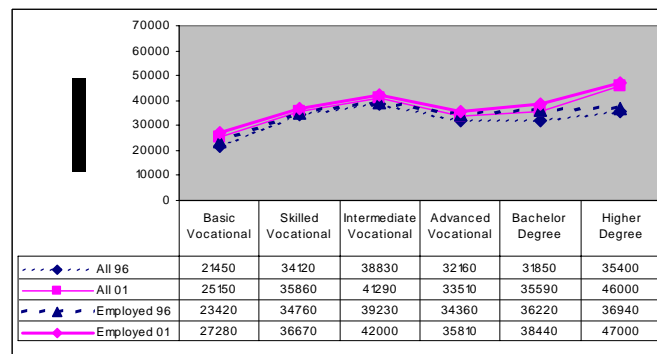
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Blacksmiths, Toolmakers and Related Workers	0.62%	13.12%	21.05	17.56%	27.07
Metal Moulders, Sheet-Metal and Related Workers	0.94%	13.09%	13.86	17.20%	17.34
Metal-Processing Plant Operators	0.14%	1.86%	13.24	2.35%	16.94
Power Generating and Related Plant Operators	0.08%	0.99%	11.66	0.50%	12.93
Railway Engine Drivers and Related Workers	0.02%	0.22%	11.50	0.13%	12.60
Metal and Mineral Products Processing Machine Operators	0.23%	1.55%	6.75	1.83%	7.91
Chemical Processing Plant Operators	0.07%	0.43%	5.94	0.20%	3.50
Precision Instrument Makers and Related Workers	0.13%	0.73%	5.42	0.84%	6.79
Machinery Mechanics and Fitters	2.01%	9.13%	4.53	7.93%	3.93
Architects, Engineers and Related Professionals	2.75%	11.45%	4.16	13.04%	5.17
Rubber and Plastics Products Machine Operators	0.07%	0.25%	3.88	0.33%	3.66
Wood-Processing and Papermaking Plant Operators	0.10%	0.31%	3.14	0.42%	4.52
Mining and Mineral Processing Plant Operators	0.04%	0.12%	2.96	0.04%	1.26
Glass Cutters and Related Workers	0.01%	0.02%	2.92	0.00%	0.00
Paper Products Machine Operators	0.02%	0.07%	2.87	0.04%	1.72
Agricultural, Earthmoving and Other Materials-Handling Equipment Operators	0.27%	0.73%	2.72	0.92%	3.50
Motor Vehicle Drivers	0.60%	1.59%	2.67	1.40%	2.79
Assemblers	0.36%	0.77%	2.15	0.76%	2.26

**Figure 2.5-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Mechanical/Industrial Engineer**

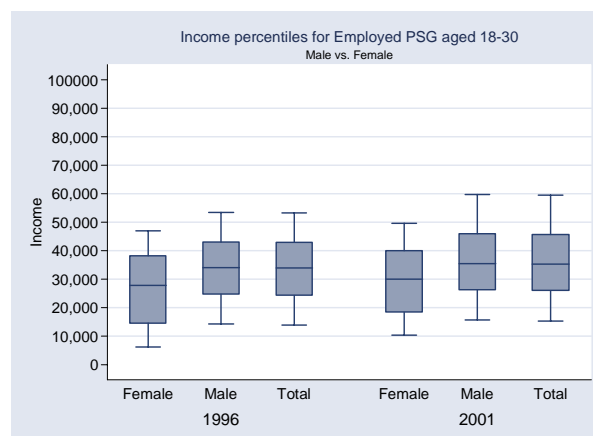


**Figure 2.5-2 Income level and dispersion for PSGs aged 18-30 - Mechanical/Industrial Engineer**

a) Median Income by highest level of attainment: All vs. Employed

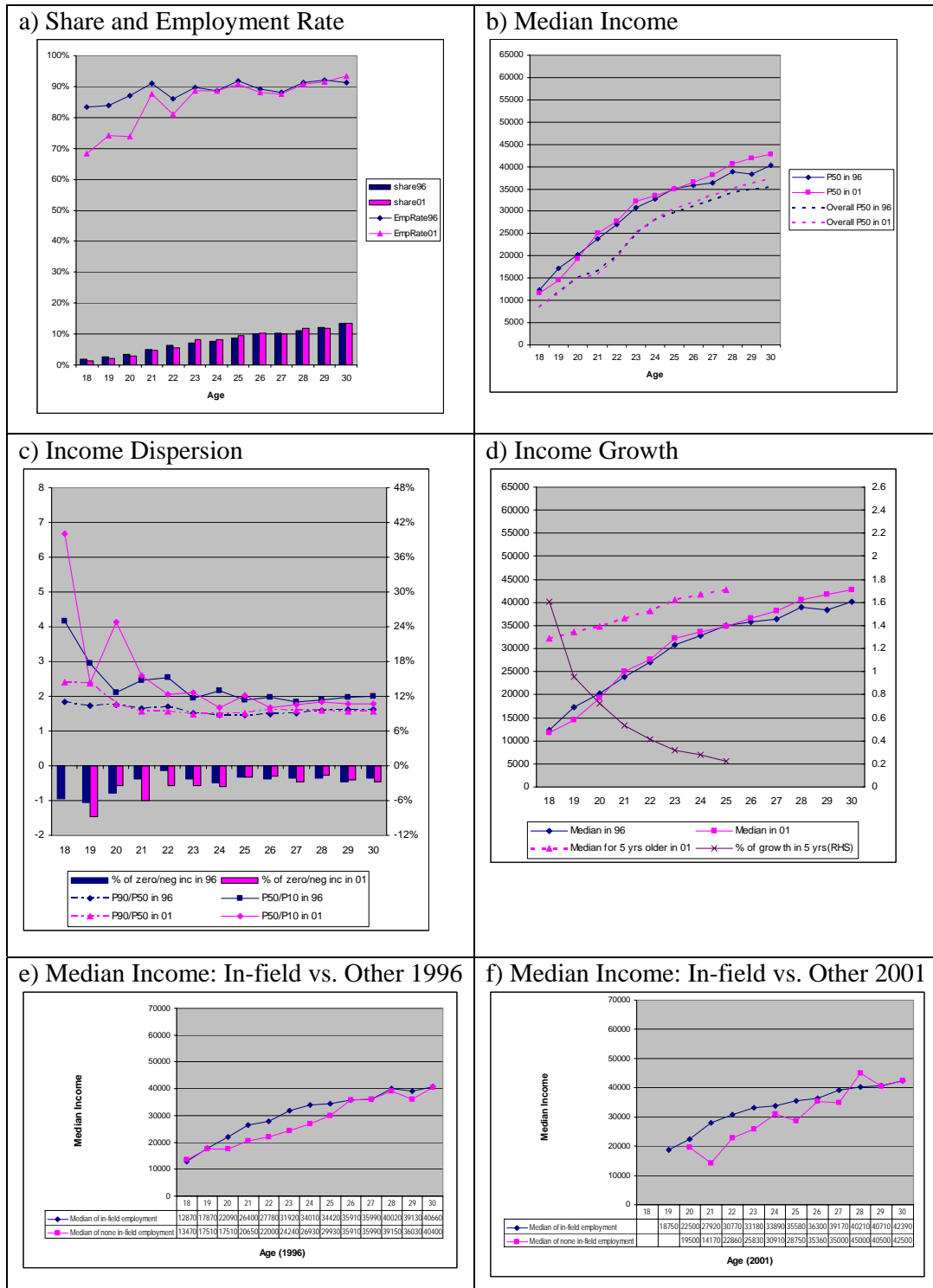


b) Income percentiles: Male vs. Female vs. All





**Figure 2.5-3 Age profiles for employed PSGs - Mechanical/Industrial Engineer aged 18 to 30**



## **2.6      Electr Engineer/Tech**

### **2.6.1      Commentary**

The patterns for this field were very similar to those for Mechanical/Industrial Engineering, with the following exceptions:

1. There were close to 50% more PSGs in this field.
2. Income for Electrical Engineering is higher for all PSGs, but very similar to Mechanical/ Industrial Engineering for young PSGs.
3. Electrical Engineering is more specialised than Mechanical/Industrial Engineering, with a greater proportion working in in-field occupations. There are only 8 in-field occupations for Mechanical/Industrial, compared with 18 for Mechanical/Industrial Engineer PSGs.

## 2.6.2 Tables and Figures

**Table 2.6-1 Key changes for Electr Engineer/Tech PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	23148	19011	-17.9%	7758	5139	-33.8%
Female Proportion	3.5%	5.3%	1.8	4.9%	6.7%	1.8
Employment rate	92.1%	92.1%	0.1	90.5%	88.6%	-1.9
Income						
• Mean	42010	46480	10.6%	34490	34220	-0.8%
• Median	38810	41680	7.4%	33860	32550	-3.9%
• P90-P50 ratio	1.81	1.97	0.16	1.63	1.85	0.21
• P50-P10 ratio	2.97	3.08	0.11	3.41	4.01	0.60
• Median as percentage of PSGs' median	133.0%	138.3%	5.38	139.1%	134.4%	-4.61
% of people with second qualification in different field of study (6-digit level)	8.8	N/A	N/A	6.1	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	5.1	N/A	N/A	3.4	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	4.10	3.51	-0.59	4.94	4.55	-0.40
• by industry	3.38	4.00	0.62	4.13	5.30	1.17
• by industry and occupation	5.15	6.38	1.23	7.28	11.55	4.26
Supply and demand indices						
• Demand shock	N/A	N/A	-2.8%	N/A	N/A	0.6%
• Supply shock	N/A	N/A	8.7%	N/A	N/A	6.5%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Electricians	26.3%	26.0%	-0.3	29.9%	32.4%	2.4
• Physical Science Technicians	15.1%	11.7%	-3.4	16.7%	10.5%	-6.2
• Architects, Engineers and Related Professionals	9.0%	8.6%	-0.3	10.1%	10.1%	0.0
• Specialised Managers	6.6%	8.4%	1.8	3.4%	4.1%	0.7
• Computing Professionals	3.0%	6.7%	3.7	4.1%	7.5%	3.4
• General Managers	5.0%	3.4%	-1.6	1.7%	0.8%	-0.9
• Finance and Sales Associate Professionals	4.0%	3.3%	-0.7	3.6%	2.4%	-1.1
• Electrical and Electronic Instrument Mechanics and Fitters	4.0%	3.1%	-0.9	4.5%	3.4%	-1.1
• Salespersons and Demonstrators	1.7%	2.0%	0.3	2.0%	2.1%	0.1
• Protective Services Workers	1.9%	1.9%	0.0	2.4%	2.1%	-0.3
• Total share of the top 10 occupations	76.5%	75.1%	-1.3	78.4%	75.3%	-3.1
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	62.2%	59.9%	-2.3	70.1%	68.0%	-2.2
• Median income if working in an in-field occupations	39980	42370	6.0%	36120	35110	-2.8%
• Median income if working out-of-field occupations	40450	45520	12.5%	33000	32770	-0.7%

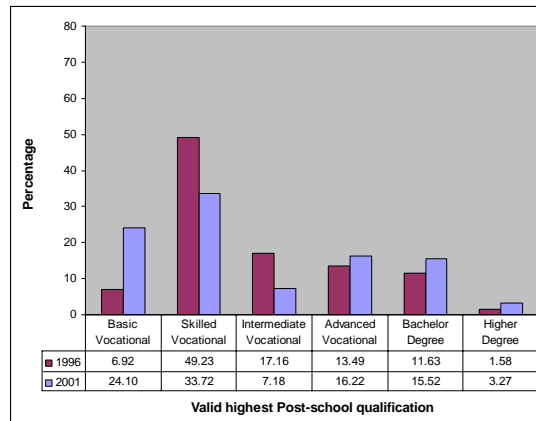
**Table 2.6-2 Age profiles for Electrical/Electronic Engineer/Tech PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	96	6.3	10750	80.6	45%	1.7	50%	3.4
19	192	9.4	13500	79.7	52%	4.6	20%	-4.0
20	231	7.7	17890	85.9	38%	4.2	3%	-0.1
21	288	7.3	19260	85.4	-9%	2.6	-3%	-0.3
22	354	7.7	23970	88.9	-18%	2.9	-5%	2.0
23	393	6.9	27350	83.8	-27%	1.3	-4%	-3.4
24	354	7.6	31030	87.3	-42%	3.7	0%	-3.3
25	408	8.8	34420	89.0	-42%	4.5	4%	-2.5
26	441	6.2	36100	87.9	-48%	1.2	-1%	-4.2
27	495	6.1	37440	91.5	-53%	0.4	3%	0.0
28	585	6.2	39680	90.8	-40%	1.5	3%	-1.8
29	636	5.7	39520	91.9	-31%	-0.5	3%	0.8
30	669	5.0	41790	90.6	-34%	0.5	4%	-2.0

**Table 2.6-3 In-field occupations for Electr Engineer/Tech**

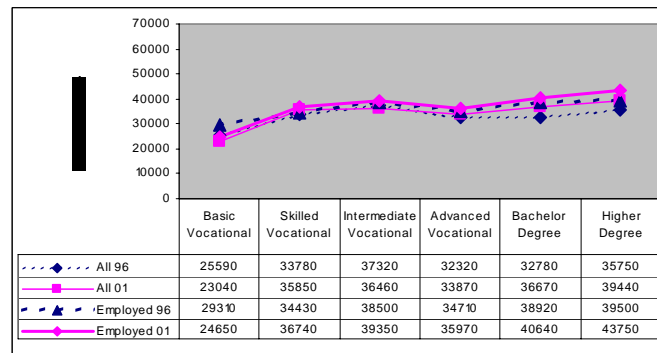
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Electricians	1.50%	26.76%	17.89	31.29%	22.61
Electrical and Electronic Instrument Mechanics and Fitters	0.27%	3.72%	13.98	4.24%	17.59
Assemblers	0.37%	2.48%	6.71	2.72%	7.77
Physical Science Technicians	2.34%	14.07%	6.01	15.15%	5.99
Power Generating and Related Plant Operators	0.08%	0.37%	4.38	0.20%	5.09
Architects, Engineers and Related Professionals	2.74%	9.03%	3.30	10.32%	4.08
Computing Professionals	1.69%	4.56%	2.69	5.21%	2.68
Precision Instrument Makers and Related Workers	0.13%	0.27%	2.08	0.38%	3.02

**Figure 2.6-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Electr Engineer/Tech**

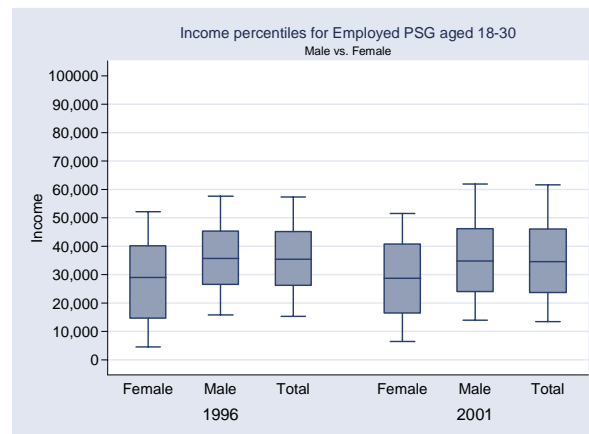


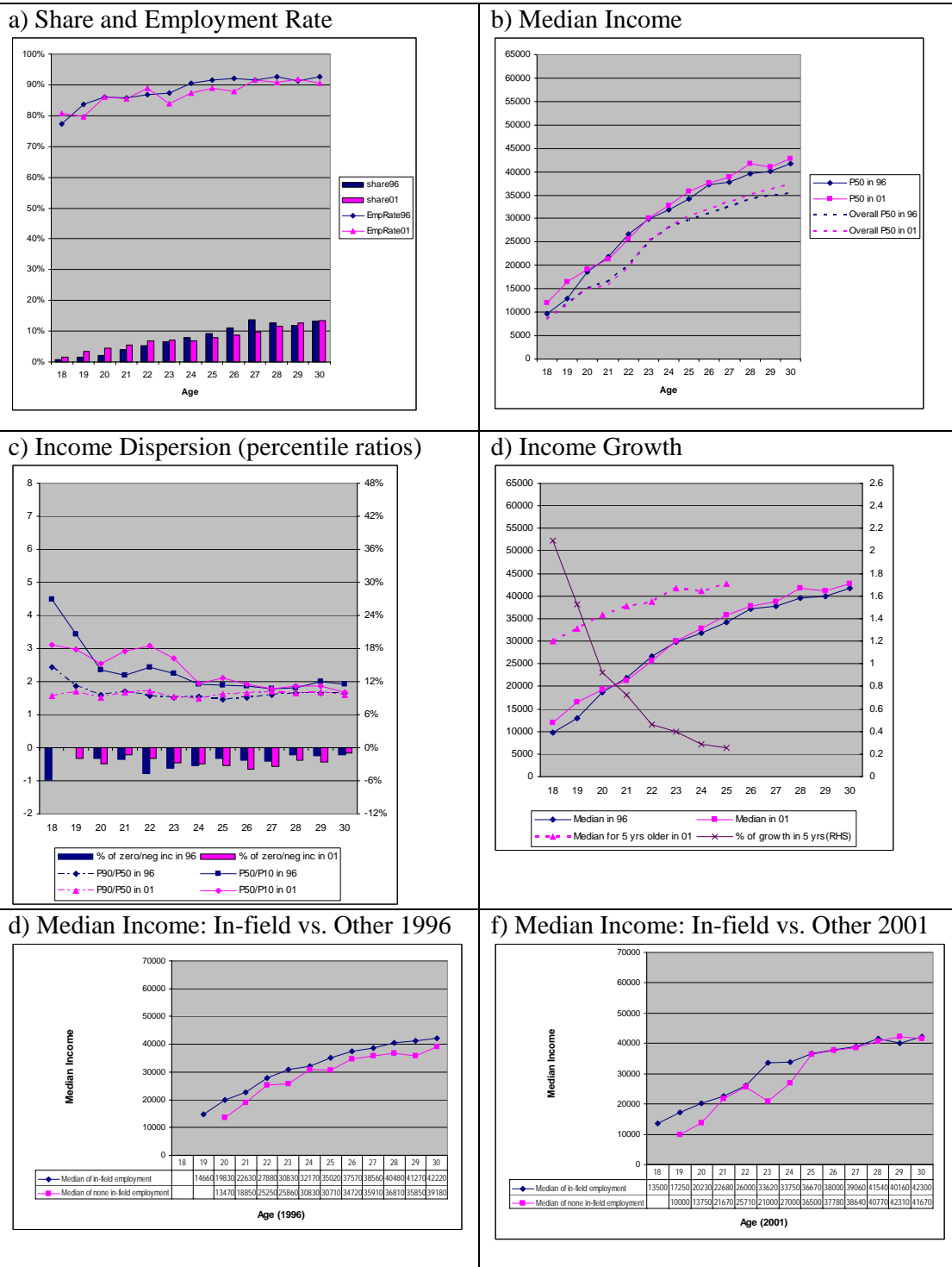
**Figure 2.6-2 Income level and dispersion for Electr Engineer/Tech aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.6-3 Age profiles for employed PSGs - Electr Engineer/Tech aged 18 to 30**



## **2.7 Architecture & Urban Environment**

### **2.7.1 Commentary**

#### ***Number***

- The number of PSGs increased by over 5.5% for all PSGs and 2.1% for young PSGs. However, there are relatively few graduates in total (around 5500) so the percentage increase was not a large increase in actual numbers.

#### ***Qualification Structure***

- The level of qualification is quite high, with few people in Basic, Skilled, or Intermediate Vocational Qualifications.
- Between 1996 and 2001 there was an increase in the level of qualification, with increases in Advanced Vocational qualifications, Bachelor degrees and higher degrees.
- Median income increased for Intermediate and Advanced Vocational Qualifications between 1996 and 2001 and stayed almost constant for Bachelor and Higher Degrees.
- 17% of PSGs had multiple qualifications, considerably higher than aggregated fields. Only a few of these (1.8%) were in similar fields.

#### ***Gender***

- Close to half of the PSGs are female.
- Females had lower income than males. However, the difference is not as great as for aggregated fields.

#### ***Income***

- Mean income for this field was slightly less than mean income for aggregated fields for both 1996 and 2001. As the qualification levels for this field are relatively high, and most graduates work in relevant jobs, this suggests that the income for this field is low compared with aggregated fields.
- The growth rate of median income was higher than the growth rate for aggregated fields (4.4% compared to 3.2%). It is likely that this is due to the very large increase in median incomes for young PSGs (8.5% compared to -0.6%).

#### ***Specialisation***

- This field is highly specialised, especially according to the 'industry and occupation' index (12.45 in 1996).
- Nearly 75% of PSGs work in the top 10 occupations, with 25% to 30% working in the most common occupation, Architects, Engineers and Related Professionals. However, the proportion working in this occupation decreased by 3.4 pts between 1996 and 2001.

#### ***In- and out-of-field employment***

- About half of the PSGs work in the 6 in-field occupations. Almost all of these are in top two in-field occupations.
- Median income for in-field employment is much higher than other employment. However, median income for out-of-field employment increased by 15% between 1996 and 2001, while median income for in-field employment only increased by 1.1% so the gap decreased. At the same time there was a decrease of 2.4 pts of people working in in-field occupations.



## 2.7.2 Tables and Figures

**Table 2.7-1 Key changes for Architecture & Urban Environment PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	5529	5832	5.5%	2337	2385	2.1%
Female Proportion	41.5%	44.4%	2.9	43.6%	43.6%	-0.1
Employment rate	84.6%	83.9%	-0.6	83.5%	81.6%	-1.9
Income						
• Mean	33570	35030	4.3%	24430	25810	5.6%
• Median	29090	30370	4.4%	23740	25750	8.5%
• P90-P50 ratio	2.25	2.20	-0.05	1.81	1.81	0.00
• P50-P10 ratio	5.39	6.49	1.10	4.66	7.04	2.37
• Median as percentage of PSGs' median	99.7%	100.8%	1.14	97.5%	106.4%	8.87
% of people with second qualification in different field of study (6-digit level)	17.0	N/A	N/A	14.5	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	1.8	N/A	N/A	1.7	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	5.05	4.16	-0.90	4.71	3.72	-1.00
• by industry	7.62	7.43	-0.18	6.92	6.95	0.04
• by industry and occupation	12.45	12.11	-0.34	10.84	10.92	0.08
Supply and demand indices						
• Demand shock	N/A	N/A	-2.7%	N/A	N/A	-4.2%
• Supply shock	N/A	N/A	10.9%	N/A	N/A	9.4%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Architects, Engineers and Related Professionals	31.7%	28.2%	-3.4	26.6%	20.3%	-6.3
• Physical Science Technicians	16.7%	17.6%	0.9	21.4%	23.4%	2.0
• Specialised Managers	5.3%	7.8%	2.5	4.0%	6.3%	2.3
• Writers, Artists, Entertainment and Sports Associate Professionals	4.9%	5.8%	0.9	5.2%	6.3%	1.1
• Salespersons and Demonstrators	4.3%	3.9%	-0.4	7.1%	5.7%	-1.4
• Market Farmers and Crop Growers	2.8%	2.9%	0.1	3.4%	3.5%	0.2
• Library, Mail and Related Clerks	1.8%	2.3%	0.5	2.0%	2.3%	0.3
• Finance and Sales Associate Professionals	2.3%	2.1%	-0.2	1.8%	2.0%	0.2
• General Managers	2.8%	1.8%	-1.0	1.1%	0.9%	-0.2
• Computing Professionals	0.3%	1.7%	1.4	0.2%	1.8%	1.7
• Total share of the top 10 occupations	72.9%	74.2%	1.2	72.8%	72.7%	0.0
In- and out-of-field employment						
• Total share of PSGs working in -field occupations	55.0%	52.6%	-2.4	54.7%	50.6%	-4.1

• Median income if working in an in-field occupations	36800	37220	1.1%	30530	31540	3.3%
• Median income if working in out-of-field occupations	26380	30530	15.7%	21020	24270	15.5%

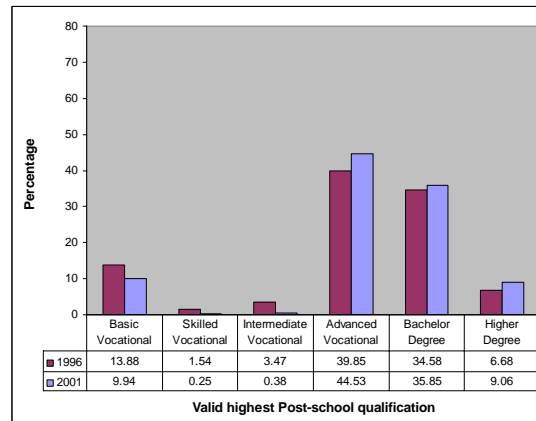
**Table 2.7-2 Age profiles for Architecture & Urban Environment PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	6							
19	24							
20	90	43.3	10000	75.9	-6%	1.4	-12%	4.9
21	120	52.5	9380	68.3	-11%	5.8	-36%	-16.2
22	177	46.7	11560	73.3	-9%	-2.6	-22%	-9.5
23	243	43.2	19500	76.3	21%	-3.8	21%	-5.8
24	261	47.1	22810	81.6	7%	3.4	2%	-2.3
25	213	38.0	28390	85.7	-14%	-1.7	3%	-3.3
26	225	41.3	29750	84.2	-18%	-3.8	7%	2.5
27	258	44.2	30000	83.7	10%	5.7	-1%	-2.2
28	252	43.4	29620	84.5	12%	2.0	-1%	-2.0
29	267	43.2	31430	82.2	24%	0.9	-5%	-1.1
30	252	40.5	35950	90.4	14%	-4.9	15%	6.4

**Table 2.7-3 In-field occupations for Architecture & Urban Environment**

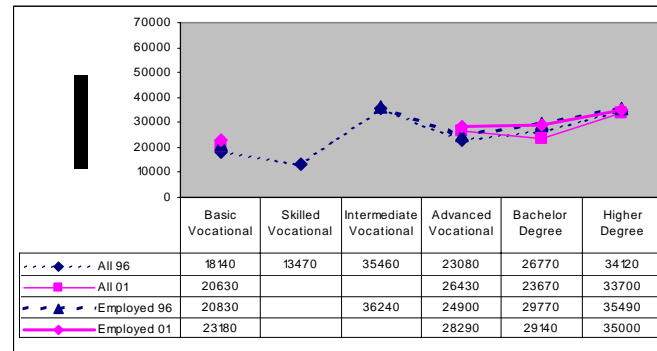
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Architects, Engineers and Related Professionals	2.73%	30.38%	11.13	23.85%	9.43
Physical Science Technicians	2.31%	17.49%	7.56	22.77%	9.38
Senior Government Administrators	0.08%	0.35%	4.29	0.16%	3.08
Legislators	0.02%	0.06%	3.22	0.00%	0.00
Writers, Artists, Entertainment and Sports Associate Professionals	2.38%	5.43%	2.28	5.87%	2.00

**Figure 2.7-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Architecture & Urban Environment**

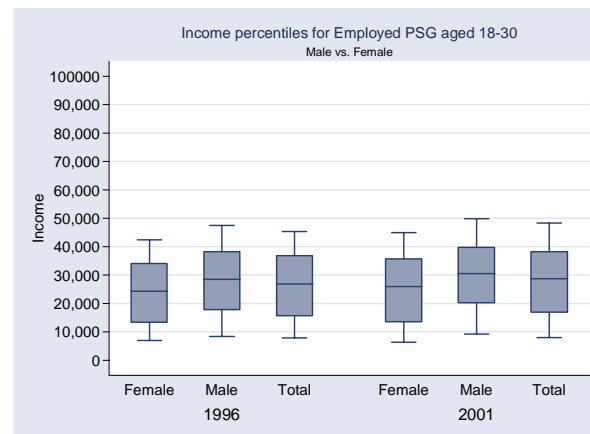


**Figure 2.7-2 Income level and dispersion for Architecture & Urban Environment aged 18-30**

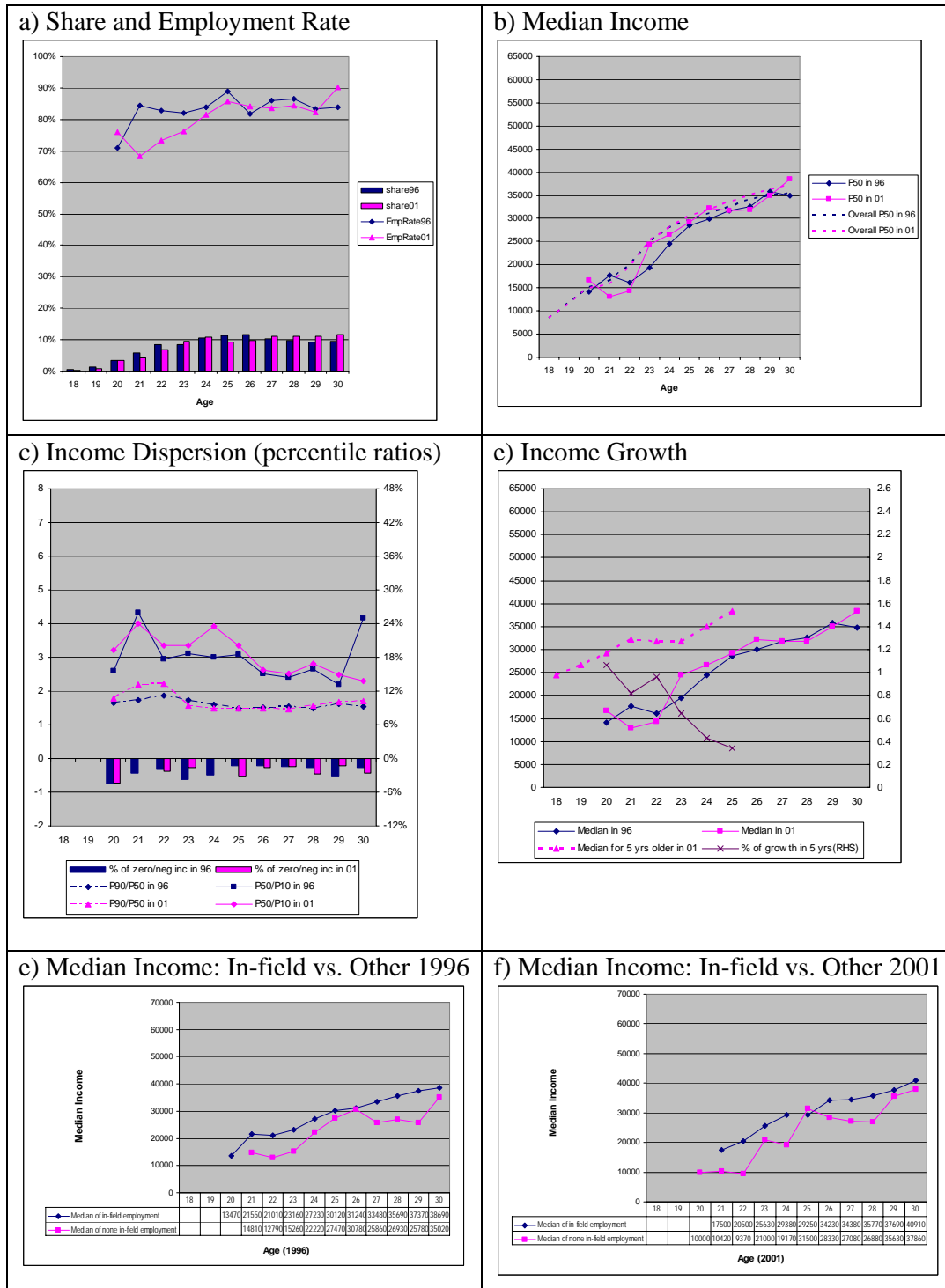
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.7-3 Age profiles for employed PSGs - Architecture & Urban Environment aged 18 to 30**



## **2.8 Building**

### **2.8.1 Commentary**

#### ***Number***

- The number of PSGs decreased by 13.8% between 1996 and 2001.

#### ***Qualification Structure***

- The level of qualifications is low compared to aggregated fields. The level was lower in 2001, with a large increase in the proportion of PSGs with a Basic Vocational Qualification.
- The highest median income by qualification was for Advanced Vocational Qualification. There was an upward trend in income for the classes of Vocational Qualification (Basic to Advanced), but median income with a Bachelor Degree was close to Intermediate Vocational in 2001 and close to Skilled Vocational in 1996.
- The proportion of PSGs with multiple qualifications is 7.6%, less than for aggregated fields. However, the proportion of these in similar field (4.2%) close to that for aggregated fields (4.86%).

#### ***Gender***

- There was a very low proportion of females for all PSGs (2.3% in 2001). The proportion of females in the 18-30 year bracket decreased between 1996 and 2001, which means fewer females entered this field.
- The income difference between females and males was smaller in 2001 than 1996 (Figure 2.8-2b).

#### ***Income***

- Median income is higher than median income for aggregated fields, especially for young PSGs.
- Mean income increased by 3.8% for all PSGS from 1996 to 2001, whereas the median decreased for young PSGs. This could be due to a decrease in income for low-income groups and the decrease in the employment rate for young PSGs.

#### ***Age profiles***

- The employment rate for young PSGs was higher than young PSGs in aggregated fields. There was a decrease in the employment rate between 1996 and 2001 for almost all age groups between 18 and 30.
- The number of PSGs in each age group between 20 and 30 decreased over the period 1996 to 2001.
- Like other low-qualified fields, employed PSGs in this field have higher income than aggregated field PSGs in their early years, but this stops after a certain age, around 25 years old in this case (Figure 2.8-3 b).
- The graph for the percentage of growth in 5 years is flatter than for aggregated fields.

#### ***Specialisation***

- The field is highly specialised, especially using the 'industry and occupation' index (15.57 in 2001). Young PSGs are more specialised than older ones.
- Around 80% of the PSGs work in the top 10 occupations, with more than 50% in the top two, which were also the top two in-field occupations.

***In- and out-of field employment***

- Approximately 65% of all PSGs worked in in-field occupations. Young PSGs has a slightly higher proportion (over 70%). The proportion of both groups of PSGs decreased between 1996 and 2001, but not by as much as the decrease for aggregated fields.
- Median income for in-field employment was lower than median income for out-of-field employment. This could be one reason for the decrease in in-field employment.
- The graph for in-field income over 18-30 years is flatter than the graph of out-of-field income, especially after the age of 25 (Figure 2.8-3e, f).

***Demand and supply***

- There was a negative demand shock (-4.5%), and a relatively small positive supply shock (2.5%), suggesting little change in the labour market for builders.

## 2.8.2 Tables and Figures

**Table 2.8-1 Key changes for Building PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	22611	19488	-13.8%	8424	6330	-24.9%
Female Proportion	2.2%	2.3%	0.1	3.6%	3.0%	-0.6
Employment rate	91.4%	91.9%	0.5	90.6%	89.7%	-0.9
Income						
• Mean	35060	36390	3.8%	29470	29510	0.1%
• Median	31890	33150	4.0%	29060	28210	-2.9%
• P90-P50 ratio	1.69	1.83	0.15	1.55	1.69	0.14
• P50-P10 ratio	2.49	2.62	0.13	2.73	3.02	0.29
• Median as percentage of PSGs' median	109.2%	110.0%	0.77	119.3%	116.5%	-2.82
% of people with second qualification in different field of study (6-digit level)	7.6	N/A	N/A	6.4	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	4.2	N/A	N/A	3.4	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	6.72	6.33	-0.39	8.21	8.09	-0.13
• by industry	5.94	5.98	0.04	7.15	7.59	0.44
• by industry and occupation	15.11	15.57	0.46	19.18	22.30	3.12
Supply and demand indices						
• Demand shock	N/A	N/A	-4.5%	N/A	N/A	-1.3%
• Supply shock	N/A	N/A	2.5%	N/A	N/A	2.0%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Building Frame and Related Trades Workers	37.4%	39.1%	1.6	41.5%	46.0%	4.5
• Building Finishers and Related Trades Workers	19.4%	17.4%	-2.0	22.4%	16.5%	-5.8
• Specialised Managers	5.0%	6.1%	1.1	2.8%	3.2%	0.4
• Physical Science Technicians	2.6%	3.2%	0.6	3.1%	3.5%	0.4
• Building and Related Workers	2.7%	2.9%	0.2	2.5%	2.8%	0.3
• General Managers	3.9%	2.7%	-1.1	1.3%	0.8%	-0.5
• Market Oriented Animal Producers	2.3%	1.9%	-0.4	1.5%	1.3%	-0.2
• Protective Services Workers	1.8%	1.7%	-0.1	1.6%	1.4%	-0.2
• Labourers	2.0%	1.5%	-0.4	2.8%	2.7%	0.0
• Finance and Sales Associate Professionals	1.9%	1.5%	-0.4	1.7%	1.0%	-0.7
• Total share of the top 10 occupations	79.1%	78.1%	-1.0	81.1%	79.2%	-1.9
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	66.6%	65.5%	-1.1	75.1%	72.9%	-2.2
• Median income if working in in-field occupations	31640	32800	3.7%	29720	29230	-1.6%
• Median income if working in out-of-field occupations	37150	38840	4.5%	30820	29930	-2.9%

**Table 2.8-2 Age profiles for Building PSGs**

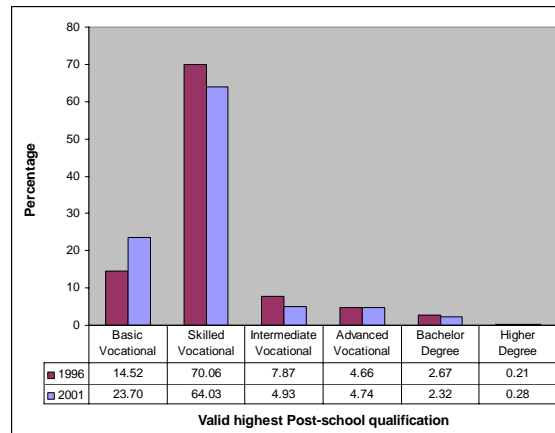
Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	180	3.3	8670	76.7	7%	-3.8	-5%	-1.9
19	270	2.2	13890	82.4	11%	-2.7	6%	2.4
20	327	1.9	18150	89.1	-4%	-2.7	1%	0.6
21	402	3.7	22060	89.6	-5%	-1.3	5%	-0.4
22	444	2.7	24720	87.2	-16%	-1.8	1%	-3.7
23	483	3.7	27210	88.3	-29%	-0.7	-2%	-2.5
24	531	3.4	28110	87.1	-29%	-0.2	-4%	-3.8
25	507	4.1	29670	91.2	-35%	-0.1	-2%	-0.7
26	510	4.7	30490	89.4	-38%	1.4	-1%	-2.1
27	525	2.9	31940	92.6	-45%	-0.3	0%	0.4
28	630	2.9	32830	91.9	-33%	0.6	3%	0.5
29	729	2.5	34410	91.8	-18%	-0.6	6%	-0.2
30	789	2.7	35190	92.0	-12%	0.0	8%	1.0

**Table 2.8-3 In-field occupations for Building**

In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Building Frame and Related Trades Workers	2.40%	38.74%	16.15	43.71%	18.67
Building Finishers and Related Trades Workers	1.33%	18.81%	14.11	20.56%	14.69
Glass Cutters and Related Workers	0.01%	0.10%	13.31	0.21%	23.83
Building and Related Workers	0.27%	2.86%	10.69	2.65%	10.72
Wood Products Machine Operators	0.11%	0.72%	6.39	0.84%	6.86
Tailors and Dressmakers	0.24%	1.22%	5.01	1.54%	6.03
Cabinet Makers and Related Workers	0.28%	0.91%	3.26	1.14%	3.61
Labourers	0.72%	1.82%	2.52	2.81%	2.88
Agricultural, Earthmoving and Other Materials-Handling Equipment Operators	0.27%	0.62%	2.28	0.56%	2.04
Mining and Mineral Processing Plant Operators	0.04%	0.09%	2.26	0.04%	1.59
Refuse Collectors and Related Labourers	0.02%	0.05%	2.08	0.05%	2.38
Wood-Processing and Papermaking Plant Operators	0.10%	0.20%	2.04	0.18%	2.07

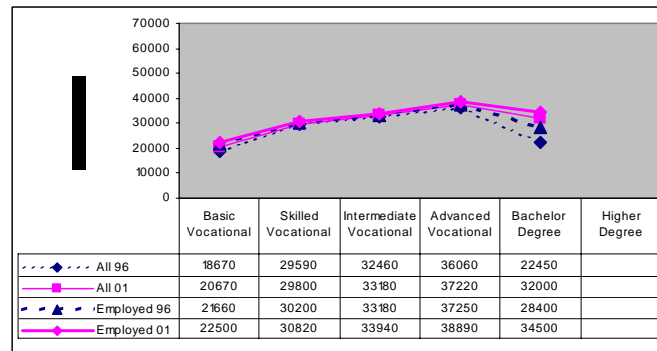


**Figure 2.8-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Building**

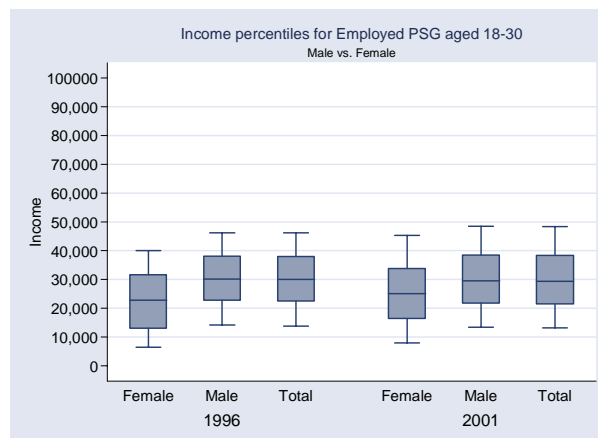


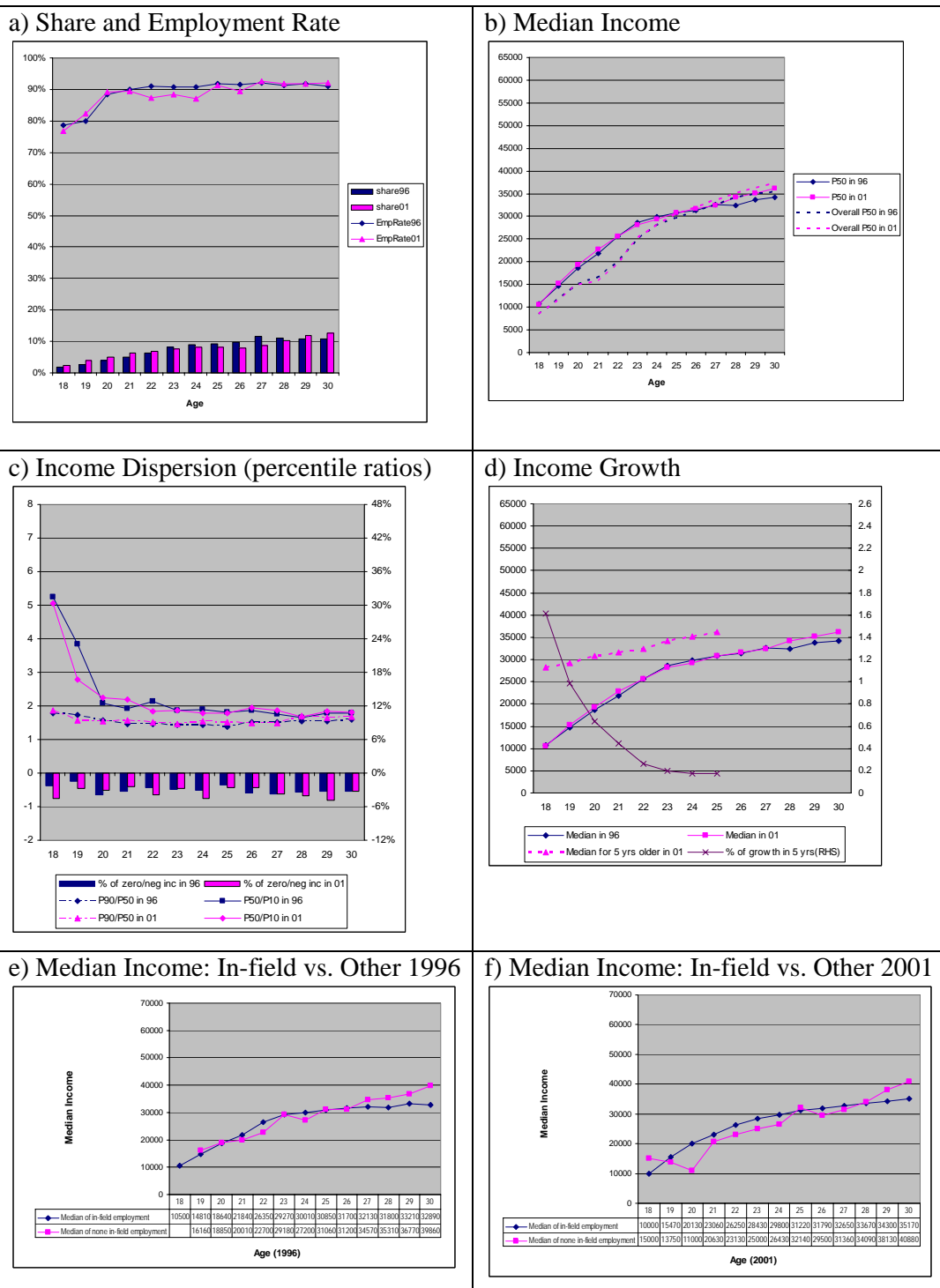
**Figure 2.8-2 Income level and dispersion for Building aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.8-3 Age profiles for employed PSGs aged 18 to 30 - Building**



## **2.9 Agriculture and Environmental**

### **2.9.1 Commentary**

#### ***Number***

- The number of PSGs dropped over 30% for both young and all PSGs (over 3000 in total, and 1800 for young PSGs).

#### ***Qualification Structure***

- The level of qualifications was quite low for this field, with more than 80% of graduates holding Vocational Qualifications, and smaller proportions in higher qualifications than lower qualifications.
- The share of Basic Vocational Qualifications, which is the lowest post-school qualification, increased from approximately 25% in 1996 to close to 50% in 2001. The share of all other qualifications decreased, except a very small increase in the proportion with a Higher Degree.
- In 1996, Intermediate Vocational PSGs in this field had the highest median income across all PSGs. However, for employed PSGs, Bachelor and Higher Degree had the highest median income. Intermediate Vocational level was the only level that had a decrease in median income between 1996 and 2001.

#### ***Gender***

- Female ratios were low in both years (approximately 20%), but increased from 1996 to 2001. However, the increase in the proportion is not because the numbers of females increased, but due to a smaller decrease in the number of females than number of males.
- Incomes for employed females were lower than male incomes for both years. The gap was not as large in 2001.

#### ***Age profiles***

- Graduates are evenly spread across all age groups.
- Both the numbers and the employment rate decreased between 1996 and 2001 for all age groups except for 18 year olds, who had a slight improvement in employment rate.
- Median income increased for all age groups between 1996 and 2001. 18 and 19 year olds had the largest increase in income (41% and 30% respectively).
- Like other low-qualified fields, PSGs in this field had higher income than aggregated fields when young, then increased more slowly, and became lower than income for aggregated field (Figure 2.9-3 b). For this field the expected income growth for the first 5 years was extremely small (Figure 2.9-3 d).

#### ***Specialisation***

- This field is approximately in the middle for specialisation compared to other individual fields. The specialisation indices decreased between 1996 and 2001.
- Over 70% of PSGs were employed in the top 10 occupations. More than half of these were working in the top occupation (Market Oriented Animal Producers).
- The share of employment in the top occupation decreased almost 9 ppts between 1996 and 2001.

### ***In-field employment***

- There are 9 in-field occupations. The top occupation (Market Orientated Animal Producers) is the most relevant occupation to this study field. However, the in-field index (15.87) is not as large as for more specialised fields. The share of in-field employment exceeds 60% in 1996 for all PSGs and in both 1996 and 2001 for young PSGs.
- The median income for in-field employment was lower than out-of-field employment. This difference is greater for all PSGs than young PSGs. The gap is narrower in 2001, as median income for in-field employment increased more than median income for out-of-field employment.
- In 1996 median income for in-field employment is higher than out-of-field employment until age 24. The relationship is not as clear for 2001. This could be because of the relatively low level of qualifications in this field (Figure 2.9-3 e, f).

### ***Demand and supply***

- There was a large negative demand shock of –11.1%. The supply shock was 4.5%, less than the supply shock for the aggregated fields (12.5%).

## 2.9.2 Tables and Figures

**Table 2.9-1 Key changes for Agriculture and Environmental PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	12933	8895	-31.2%	5130	3420	-33.3%
Female Proportion	17.8%	22.8%	5.1	22.3%	25.9%	3.6
Employment rate	91.2%	89.6%	-1.6	88.8%	86.6%	-2.2
Income						
• Mean	35040	38250	9.2%	26830	27750	3.4%
• Median	27420	29480	7.5%	22320	24620	10.3%
• P90-P50 ratio	2.51	2.56	0.05	2.12	1.92	-0.20
• P50-P10 ratio	3.92	3.38	-0.54	3.61	3.53	-0.08
• Median as percentage of PSGs' median	93.9%	97.8%	3.91	91.7%	101.7%	10.03
% of people with second qualification in different field of study (6-digit level)	10.8	N/A	N/A	7.3	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	5.4	N/A	N/A	4.0	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	11.04	7.47	-3.58	13.09	8.64	-4.45
• by industry	5.23	4.44	-0.79	6.21	5.27	-0.94
• by industry and occupation	17.35	13.31	-4.04	21.18	16.03	-5.14
Supply and demand indices						
• Demand shock	N/A	N/A	-11.1%	N/A	N/A	-12.0%
• Supply shock	N/A	N/A	4.5%	N/A	N/A	3.4%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Market Oriented Animal Producers	54.5%	45.8%	-8.7	59.7%	50.1%	-9.7
• Specialised Managers	5.5%	10.3%	4.8	3.1%	7.7%	4.6
• Finance and Sales Associate Professionals	4.0%	3.3%	-0.7	3.0%	2.8%	-0.2
• Market Farmers and Crop Growers	3.6%	2.9%	-0.7	2.8%	2.0%	-0.8
• Salespersons and Demonstrators	1.5%	2.1%	0.6	2.2%	2.6%	0.5
• Life Science Professionals	2.4%	2.1%	-0.3	1.9%	2.0%	0.1
• General Managers	2.4%	2.0%	-0.4	0.9%	1.0%	0.2
• Agricultural, Earthmoving and Other Materials-Handling Equipment Operators	1.3%	1.8%	0.6	1.6%	2.2%	0.6
• Motor Vehicle Drivers	1.8%	1.8%	0.1	2.0%	2.2%	0.3
• Food and Related Products Processing Machine Operators	1.0%	1.4%	0.4	1.1%	1.7%	0.6
• Total share of the top 10 occupations	77.9%	73.6%	-4.3	78.4%	74.5%	-3.9
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	65.6%	56.9%	-8.6	70.1%	61.3%	-8.8
• Median income if working in in-field occupations	27100	29860	10.2%	23510	26040	10.8%
• Median income if working in out-of-field occupations	34350	34000	-1.0%	24870	26840	7.9%

**Table 2.9-2 Age profiles for Agriculture and Environmental PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	168	21.4	15420	84.2	-15%	-0.1	41%	3.6
19	201	25.8	17500	83.3	-40%	0.8	30%	-2.3
20	228	23.7	18500	81.8	-34%	-0.9	16%	-5.1
21	249	27.7	20780	82.1	-37%	5.0	14%	-3.5
22	273	33.0	22860	84.6	-35%	8.1	24%	-2.5
23	285	26.0	22810	85.3	-30%	0.1	2%	-2.9
24	342	24.6	25330	89.5	-12%	0.7	4%	-0.5
25	285	24.2	28030	89.4	-23%	-1.6	9%	-1.0
26	279	23.7	29670	88.0	-26%	0.8	13%	-0.1
27	312	21.2	29710	88.5	-7%	-1.2	12%	-1.7
28	276	26.1	30530	87.9	-41%	8.8	3%	-3.8
29	258	27.1	30450	87.4	-51%	6.7	0%	-3.6
30	270	31.1	30260	88.0	-51%	13.8	2%	-3.4

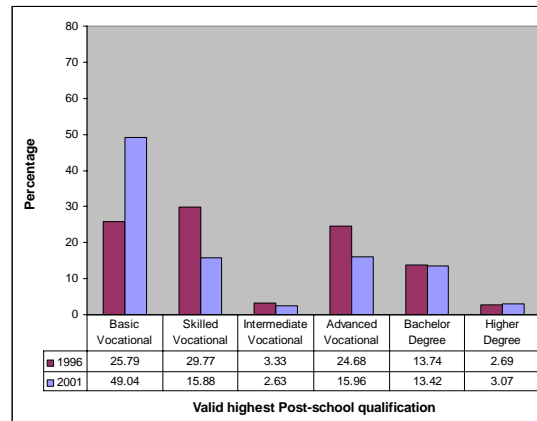
**Table 2.9-3 In-field occupations for Agriculture and Environmental**

In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Market Oriented Animal Producers	3.31%	52.56%	15.87	57.60%	19.76
Agricultural, Earthmoving and Other Materials-Handling Equipment Operators	0.26%	1.47%	5.59	1.84%	7.06
Life Science Professionals	0.61%	2.34%	3.81	1.97%	3.67
Government Associate Professionals	0.08%	0.25%	3.08	0.20%	2.26
Motor Vehicle Drivers	0.61%	1.80%	2.93	2.08%	3.95
Fishery Workers, Hunters and Trappers	0.19%	0.45%	2.32	0.43%	2.16
Leather and Related Products Processors	0.03%	0.07%	2.18	0.08%	2.56
Forestry and Related Workers	0.24%	0.50%	2.12	0.64%	2.12
Market Farmers and Crop Growers	1.64%	3.43%	2.09	2.63%	1.60



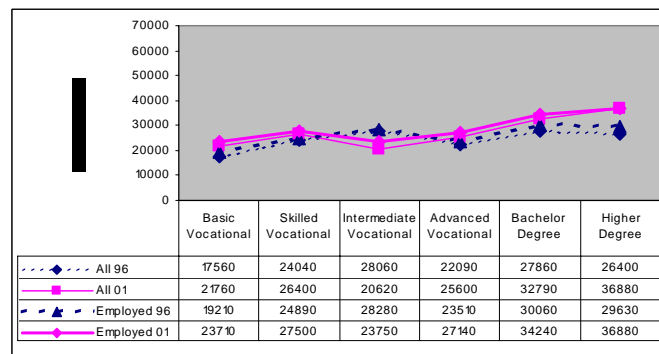


**Figure 2.9-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Agriculture and Environmental**

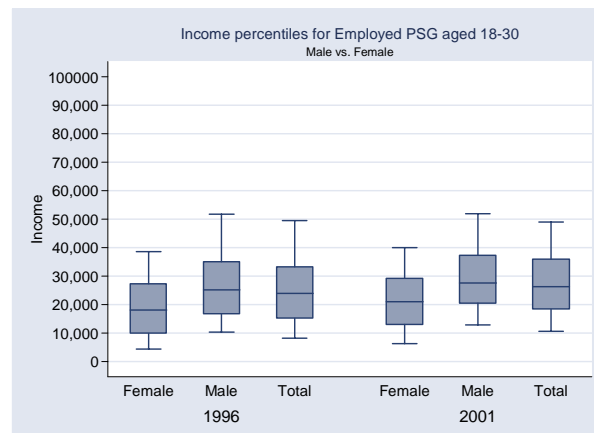


**Figure 2.9-2 Income level and dispersion for Agriculture and Environmental aged 18-30**

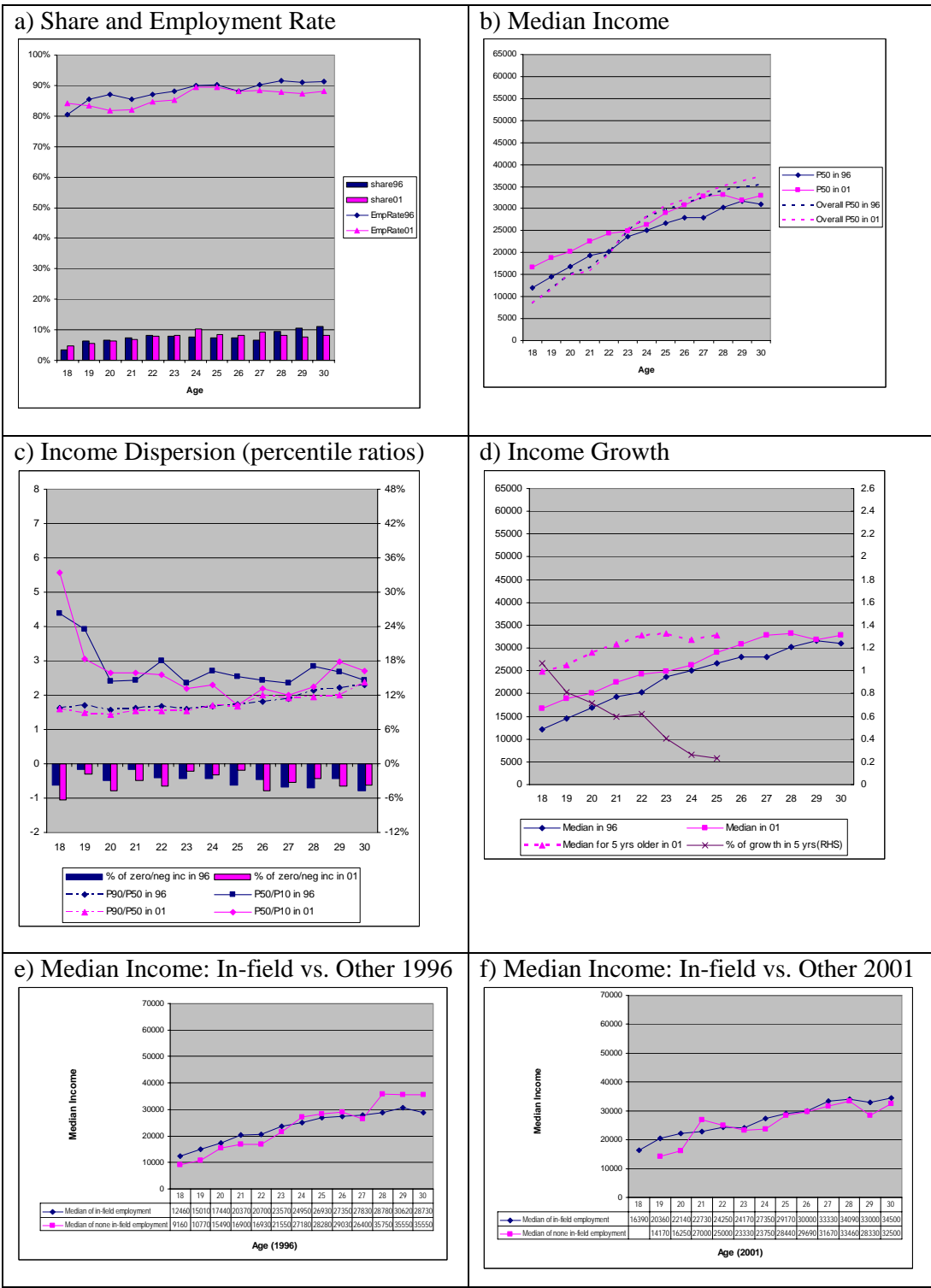
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.9-3 Age profiles for employed PSGs aged 18 to 30 - Agriculture and Environmental**





## **2.10 Horticulture & Viticulture**

### **2.10.1 Commentary**

#### ***Numbers***

- The number of graduates increased by about 200 between 1996 and 2001. However, the number of young PSGs decreased by almost 20% over the same period.

#### ***Qualification Structure***

- The qualification structure is slightly skewed towards the lower qualification levels.
- The largest change between 1996 and 2001 occurred in Intermediate Vocational Qualification. It increased from 3%, which was the lowest share in all levels, to 34%, which was the highest.
- The highest median income for young PSGs in this field was for Bachelor Degree.

#### ***Gender***

- Close to 40% of the PSGs were females. The proportion of females displayed similar characteristics to the change in PSG numbers: the proportion increased for all PSGs, but decreased for young PSGs.
- Incomes between the two genders were quite similar. However, males had a larger increase in incomes from 1996 to 2001 than females, which resulted in a larger difference in all percentiles except P10 in 2001 (Figure 2.10-2 b).

#### ***Income***

- Mean income increased for both all PSGs and young PSGs between 1996 and 2001. However, the increase was larger for all PSGs. The median income for both groups decreased over the two years. This shows a large decrease in the low-income population in this field, which might be related to the decrease in employment rate.

#### ***Age profiles***

- The only increase in numbers of PSGs between 1996 and 2001 occurred for 19 and 20 year olds, who are unlikely to hold high-level qualifications.
- Young PSGs aged less than 21 years had a low employment rate (approximately 70%), which could be caused by the low level of qualification this age group is likely to possess.
- Median income decreased between 1996 and 2001 for almost all the ages except 23 and 27. The biggest decrease was 18 year olds (-32%).
- Employed PSGs in this field started with the similar income as the income for aggregated fields, but increased much less in their following years of employment. After age 23, median income for employed PSGs in this field was relatively low (Figure 2.10-3 b). The expected income growth in the first five years for these PSGs is not high, which is shown in Figure 2.10-3d.

#### ***Specialisation***

- This field is moderately specialised. However, all specialisation indices decreased between 1996 and 2001. The occupation specialisation index is higher than the industry specialisation industry. Young PSGs were more specialised than all PSGs, but also had a larger decrease between the two years.

- About 70% of the PSGs were employed in the top ten occupations, where more than half of them worked as Market Farmers and Crop Growers, which is also the most 'relevant' occupation for this field.

#### ***In-field employment***

- Only about half of the PSGs worked in in-field occupations. Other than the most 'relevant' occupation mentioned above, the other in-field occupations are relatively small occupations.
- The share of young PSGs working in in-field occupations is higher than for all PSGs. However, the share of PSGs working in in-field occupations decreased between 1996 and 2001 for both groups.
- The median income for in-field occupations was lower than median income for out-of-field employment for both years. The median income for in-field income was more stable than out-of-field income between the two years.
- By age, there was not a clear difference between the two types of employment. However in 2001 in-field employment had higher median income than other employment before the age 25, and was lower afterwards (Figure 2.10-3 e, f).

## 2.10.2 Tables and Figures

Table 2.10-1 Key changes for Horticulture &amp; Viticulture PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	7059	7245	2.6%	3108	2496	-19.7%
Female Proportion	35.5%	37.1%	1.6	34.4%	33.0%	-1.4
Employment rate	84.1%	82.0%	-2.2	83.1%	78.7%	-4.4
Income						
• Mean	27750	28940	4.3%	22710	22850	0.6%
• Median	25010	24820	-0.8%	22250	21380	-3.9%
• P90-P50 ratio	2.01	2.18	0.17	1.79	1.86	0.07
• P50-P10 ratio	4.68	4.48	-0.20	4.07	4.22	0.15
• Median as percentage of PSGs' median	85.7%	82.4%	-3.30	91.4%	88.3%	-3.07
% of people with second qualification in different field of study (6-digit level)	12.6	N/A	N/A	10.5	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	4.9	N/A	N/A	4.6	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	5.90	5.50	-0.40	7.47	6.70	-0.78
• by industry	2.75	2.11	-0.64	3.27	2.37	-0.90
• by industry and occupation	6.13	4.91	-1.22	8.29	6.27	-2.02
Supply and demand indices						
• Demand shock	N/A	N/A	-5.2%	N/A	N/A	-4.2%
• Supply shock	N/A	N/A	3.4%	N/A	N/A	2.0%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Market Farmers and Crop Growers	38.6%	38.9%	0.4	44.0%	43.6%	-0.4
• Specialised Managers	6.3%	7.9%	1.6	4.4%	5.0%	0.6
• Salespersons and Demonstrators	4.1%	4.4%	0.3	6.3%	6.4%	0.2
• Market Oriented Animal Producers	5.3%	4.1%	-1.2	5.3%	4.1%	-1.2
• Finance and Sales Associate Professionals	3.2%	3.0%	-0.3	3.4%	3.1%	-0.3
• General Managers	3.4%	2.7%	-0.8	1.5%	0.8%	-0.7
• Library, Mail and Related Clerks	1.9%	2.4%	0.5	1.6%	1.5%	-0.1
• Life Science Professionals	2.6%	1.9%	-0.7	1.5%	0.8%	-0.7
• Labourers	2.0%	1.9%	-0.2	2.9%	2.6%	-0.3
• Housekeeping and Restaurant Services Workers	1.8%	1.8%	0.0	2.4%	3.2%	0.8
• Total share of the top 10 occupations	69.2%	69.0%	-0.2	73.3%	71.1%	-2.2
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	48.0%	47.1%	-0.8	53.1%	52.1%	-1.0
• Median income if working in in-field occupations	27350	27500	0.5%	24360	24290	-0.3%
• Median income if working in out-of-field occupations	28720	29540	2.9%	25590	24790	-3.1%

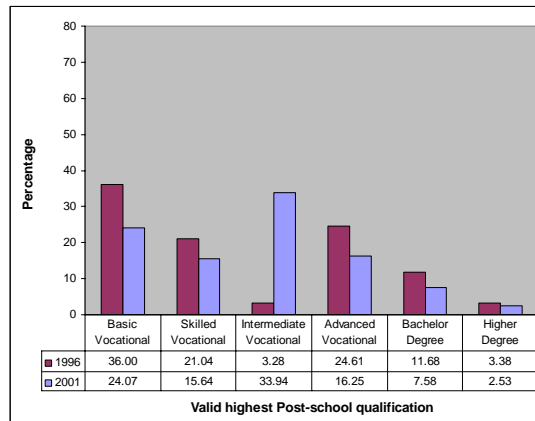
**Table 2.10-2 Age profiles for Horticulture & Viticulture PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	45	13.3	5000	68.8	-38%	-10.7	-32%	2.1
19	105	22.9	8750	64.7	6%	-3.6	-8%	-6.7
20	126	34.1	10000	71.4	11%	3.4	-7%	1.2
21	156	21.6	14770	80.4	-13%	-7.2	-15%	4.1
22	150	26.5	17500	79.6	-32%	-7.7	-5%	-3.5
23	180	38.3	20000	75.0	-30%	5.8	4%	-6.2
24	171	35.1	21390	78.6	-35%	4.4	-8%	-7.6
25	192	29.7	24170	79.7	-35%	-4.3	-3%	-9.2
26	231	35.9	23930	77.9	-27%	1.9	-5%	-8.9
27	267	33.0	25770	81.1	-3%	0.7	3%	-1.7
28	261	39.1	24770	81.8	-16%	-1.9	-10%	-2.8
29	303	33.7	26040	82.2	-5%	-7.8	-7%	1.8
30	306	37.3	25330	82.0	-20%	-1.0	-4%	-7.8

**Table 2.10-3 In-field occupations for Horticulture & Viticulture**

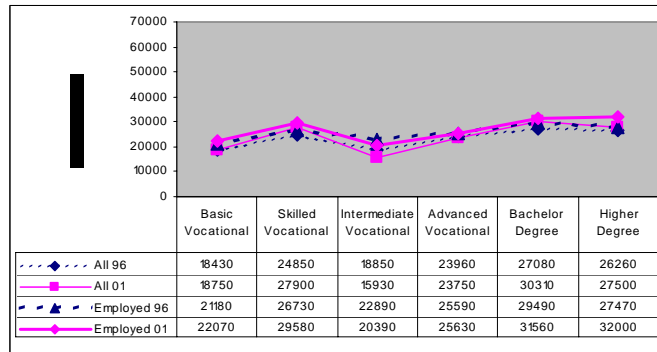
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Market Farmers and Crop Growers	1.62%	39.56%	24.48	44.72%	28.12
Refuse Collectors and Related Labourers	0.02%	0.21%	9.07	0.26%	14.07
Government Associate Professionals	0.09%	0.77%	8.60	0.55%	5.03
Environmental Protection Associate Professionals	0.02%	0.13%	5.85	0.21%	8.44
Life Science Professionals	0.61%	2.30%	3.78	1.27%	2.25
Fashion and Other Models	0.01%	0.03%	2.93	0.06%	4.69
Labourers	0.71%	1.99%	2.78	2.85%	2.90
Leather and Related Products Processors	0.03%	0.08%	2.74	0.13%	4.27
Agricultural, Earthmoving and Other Materials-Handling Equipment Operators	0.27%	0.70%	2.55	0.98%	3.51
Forestry and Related Workers	0.24%	0.57%	2.36	0.81%	2.65
Life Science Technicians and Related Workers	0.58%	1.24%	2.12	0.91%	1.44

**Figure 2.10-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Horticulture & Viticulture**



**Figure 2.10-2 Income level and dispersion for Horticulture & Viticulture aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All

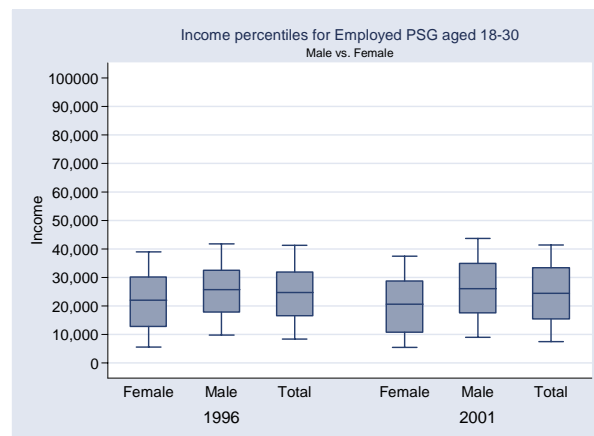
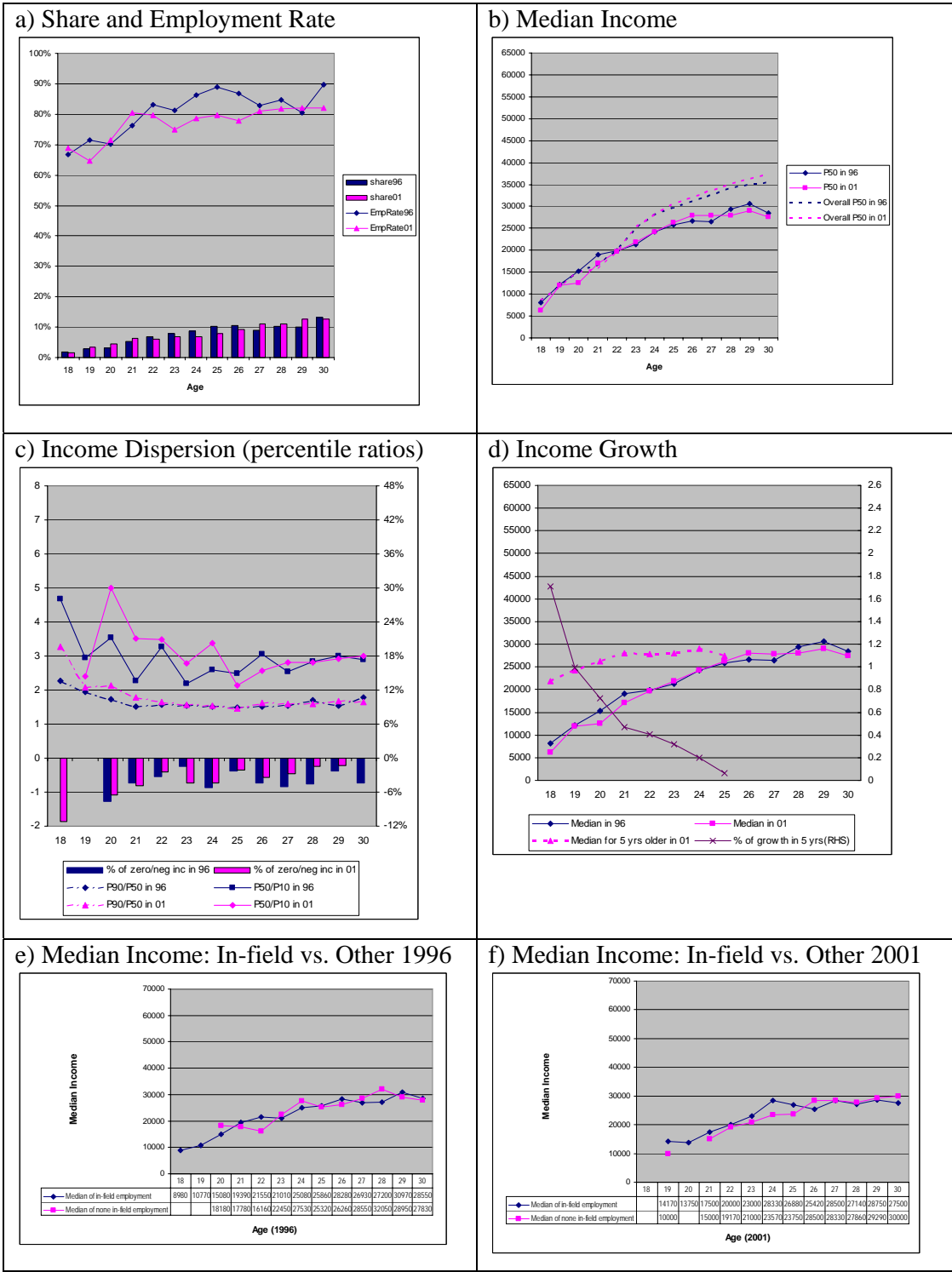




Figure 2.10-3 Age profiles for employed PSGs aged 18 to 30 - Horticulture & Viticulture



## 2.11 **Medicine**

### 2.11.1 **Commentary**

#### *Number*

- The number of PSGs increased by about 10% in total, but young PSGs had a 1% decline between 1996 and 2001.

#### *Qualification structure*

- The qualification structure is very high compared to structure across aggregated fields. Very few people had qualifications under Advanced Vocational level. In 1996, 64.9% of graduates held a higher degree. This decreased to 42.1% in 2001. To compensate there was a noticeable increase in the proportion holding a Bachelor degree, from 18.4% to 35.4%.
- Income by qualification also changed from 1996 to 2001. There was an increase in median income at all levels of qualification, but Bachelor level income increased by close to 60% in general, and there was a large increase in median income for those employed. In 2001 there was very little difference in median income between all PSGs holding a Bachelor degree and employed PSGs holding a Bachelor degree. However, there was a substantial difference between the two groups in 1996, reflecting an increased employment rate for those holding Bachelor degrees.
- There was a high proportion of multiple qualifications (30.1%), with more than half of these gaining the second qualification in a similar field.

#### *Gender*

- The proportion of females was slightly below the aggregated field level in 1996 but higher than aggregated field level in 2001. For young PSGs, the proportion of female graduates was higher than aggregated fields for both years.
- The pay difference between the two genders was similar to the normal level among young PSGs, but the trend was a bit different. The income range for females expanded from 1996 to 2001 and P50 slightly decreased, whereas all of the five percentile divisions for males increased over the same period.

#### *Income*

- This field had the highest median income of any field. However, income change between 1996 and 2001 was different for the two groups of PSGs. Mean income of young PSGs increased by 11.3%, while mean income for all PSGs decreased by 1.5%. Median income for young PSGs increased by 9.2%, while median income for all PSGs increased by 1.0%.
- For young PSGs, the median income for medicine PSGs (above \$50,000) exceeded the P90 for 16 other fields (about 18 in 1996) and almost all P75 except Accounting PSGs.
- For all PSGs, more than 5 fields had their P90 lower than Medicine PSGs' median, and only Accounting and Law & Legal studies PSGs had their P75 higher than medicine PSGs' P50. Moreover, the P90 for medical PSGs in 1996 exceeded \$100,000, indicating that more than 10% of PSGs had income greater than \$100,000.

#### *Age profile*

- Very few graduates were under 22, and for those aged 22 and under, the employment rate is relatively low. This is most likely due to the qualification structure of the field.

- The female ratio was higher in younger groups, but it decreased substantially in 2001. In 1996 there was a very high proportion of females at age 21 (81.3%). However there were only 48 graduates of this age.
- The expected income growth by age was extremely high before the age 25 (Figure 2.11-3 d), largely reflecting compositional change.
- Unlike other high-qualified fields, which normally have median income lower than the aggregated field level in earlier ages, this field has hardly any teenagers. The median income for employed PSGs over 21 in this field is much higher than comparable median incomes for aggregated fields (Figure 2.11-3 b).

### ***Specialisation***

- The field was very highly specialised, especially using the ‘industry by occupation’ index (with a value over 30).
- Over 85% of PSGs worked in the top 10 occupations, and almost all were in the top 2 occupations.
- The share of the top 10 occupations employment decreased from 1996 to 2001 for both young PSGs and all PSGs (-0.9 ppts and -2.3 ppts respectively), reflecting the reduction employed in the top profession, Health Professionals, which decreased by 6.9 ppts between 1996 and 2001.

### ***In-field employment***

- There are only two in-field occupations, Health Professionals and Optical and Electronic Equipment Operators. These two in-field occupations were the two most popular occupations for the field.
- The share of in-field employment dropped by 7.1 ppts between 1996 and 2001, which was due to the drop in Health professionals.
- The median income for in-field employment increased between the two years. For young PSGS, in-field median income increased by 11.2%. Median income for out-of-field employment decreased as the share of PSGs working in out-of-field employment increased.
- The graphs of median income by age (Figure 2.11-3 e, f) show 3 facts: median income increases rapidly with age, and this increase was greater in 2001 than 1996. Secondly, very few people were aged less than 22. Thirdly, the median income for out-of-field employment was considerably lower than for in-field employment.

## 2.11.2 Tables and Figures

Table 2.11-1 Key changes for Medicine PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	8256	9057	9.7%	2295	2271	-1.0%
Female Proportion	48.2%	54.3%	6.1	55.0%	59.8%	4.7
Employment rate	82.9%	86.5%	3.6	84.3%	87.7%	3.4
Income						
• Mean	62930	62010	-1.5%	43830	48800	11.3%
• Median	52570	53120	1.0%	44660	48750	9.2%
• P90-P50 ratio	1.90	1.88	-0.02	1.65	1.82	0.17
• P50-P10 ratio	8.05	6.22	-1.83	6.40	5.11	-1.29
• Median as percentage of PSGs' median	180.1%	176.3%	-3.79	183.4%	201.4%	17.95
% of people with second qualification in different field of study (6-digit level)	30.1	N/A	N/A	15.9	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	21.6	N/A	N/A	8.4	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	19.11	14.36	-4.75	20.78	15.31	-5.47
• by industry	13.08	11.81	-1.27	21.56	19.12	-2.45
• by industry and occupation	35.02	30.67	-4.35	58.29	53.36	-4.93
Supply and demand indices						
• Demand shock	N/A	N/A	8.0%	N/A	N/A	11.2%
• Supply shock	N/A	N/A	30.9%	N/A	N/A	24.1%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Health Professionals (Except Nursing)	71.9%	65.0%	-6.9	74.6%	66.6%	-8.0
• Optical and Electronic Equipment Controllers	10.4%	10.1%	-0.3	13.6%	13.9%	0.2
• Nursing and Midwifery Professionals	1.3%	2.0%	0.7	0.8%	1.7%	0.9
• Other Personal Services Workers	0.2%	2.0%	1.7	0.2%	2.1%	2.0
• Specialised Managers	1.5%	1.9%	0.4	0.3%	0.9%	0.6
• Social Work Associate Professionals	0.3%	1.6%	1.3	0.2%	1.1%	0.9
• Personal Care Workers	0.5%	1.3%	0.8	0.6%	0.8%	0.1
• Health Associate Professionals	0.5%	1.2%	0.7	0.2%	0.6%	0.4
• Library, Mail and Related Clerks	0.6%	1.1%	0.5	0.2%	1.1%	0.9
• Life Science Technicians and Related Workers	1.1%	1.1%	0.1	0.9%	0.6%	-0.3
• Total share of the top 10 occupations	88.3%	87.4%	-0.9	91.5%	89.2%	-2.3
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	83.0%	75.9%	-7.1	88.4%	81.3%	-7.1
• Median income if working in in-field occupations	68260	70300	3.0%	52430	58310	11.2%
• Median income if working in in-field occupations	31600	29200	-7.6%	27470	25960	-5.5%

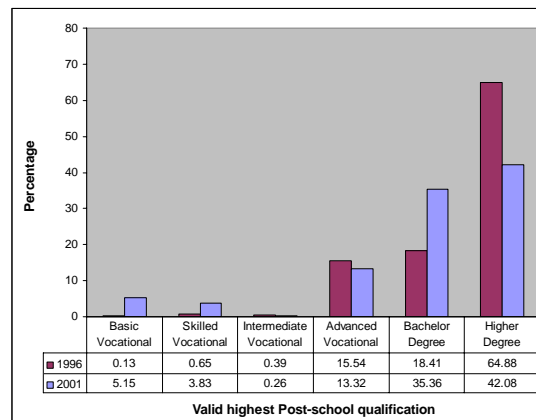
**Table 2.11-2 Age profiles for Medicine PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	9							
19	12							
20	18							
21	48	81.3	12500	76.5	45%	-18.8	24%	-6.9
22	54	72.2	14380	76.5	20%	-2.8	-33%	-17.3
23	120	65.0	26000	82.5	38%	-0.5	-7%	-4.6
24	240	61.3	30360	91.4	29%	7.2	-1%	-0.7
25	249	63.9	49440	90.5	-1%	8.6	3%	-4.8
26	255	56.5	56220	91.8	2%	2.3	12%	-2.2
27	279	56.5	55710	88.2	-10%	-0.8	12%	3.7
28	330	58.2	57140	88.3	-9%	4.0	16%	6.6
29	330	54.5	55790	88.2	-13%	6.1	19%	12.0
30	330	60.9	59130	87.4	-13%	8.2	21%	12.8

**Table 2.11-3 In-field occupations for Medicine**

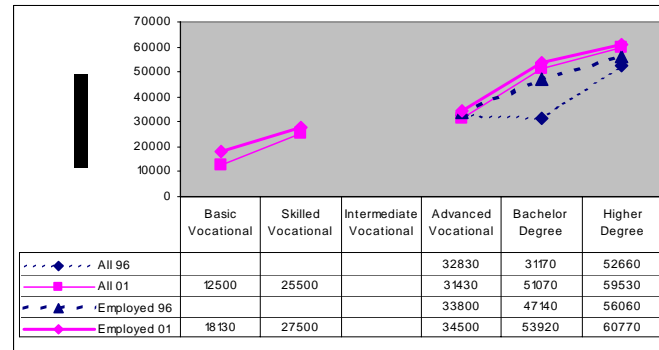
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Health Professionals (Except Nursing)	2.14%	68.64%	32.09	70.93%	41.15
Optical and Electronic Equipment Controllers	0.52%	10.30%	19.97	13.83%	23.73

**Figure 2.11-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Medicine**

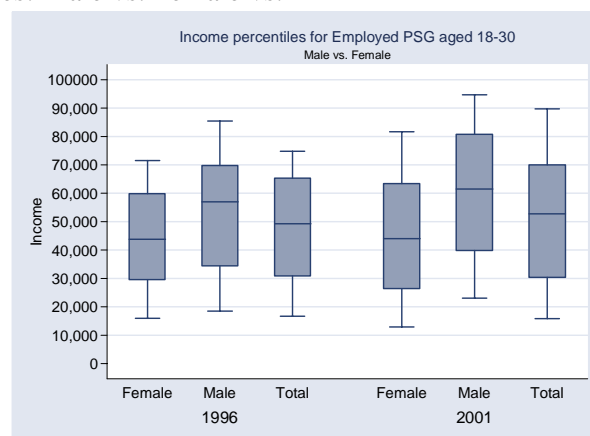


**Figure 2.11-2 Income level and dispersion for Medicine aged 18-30**

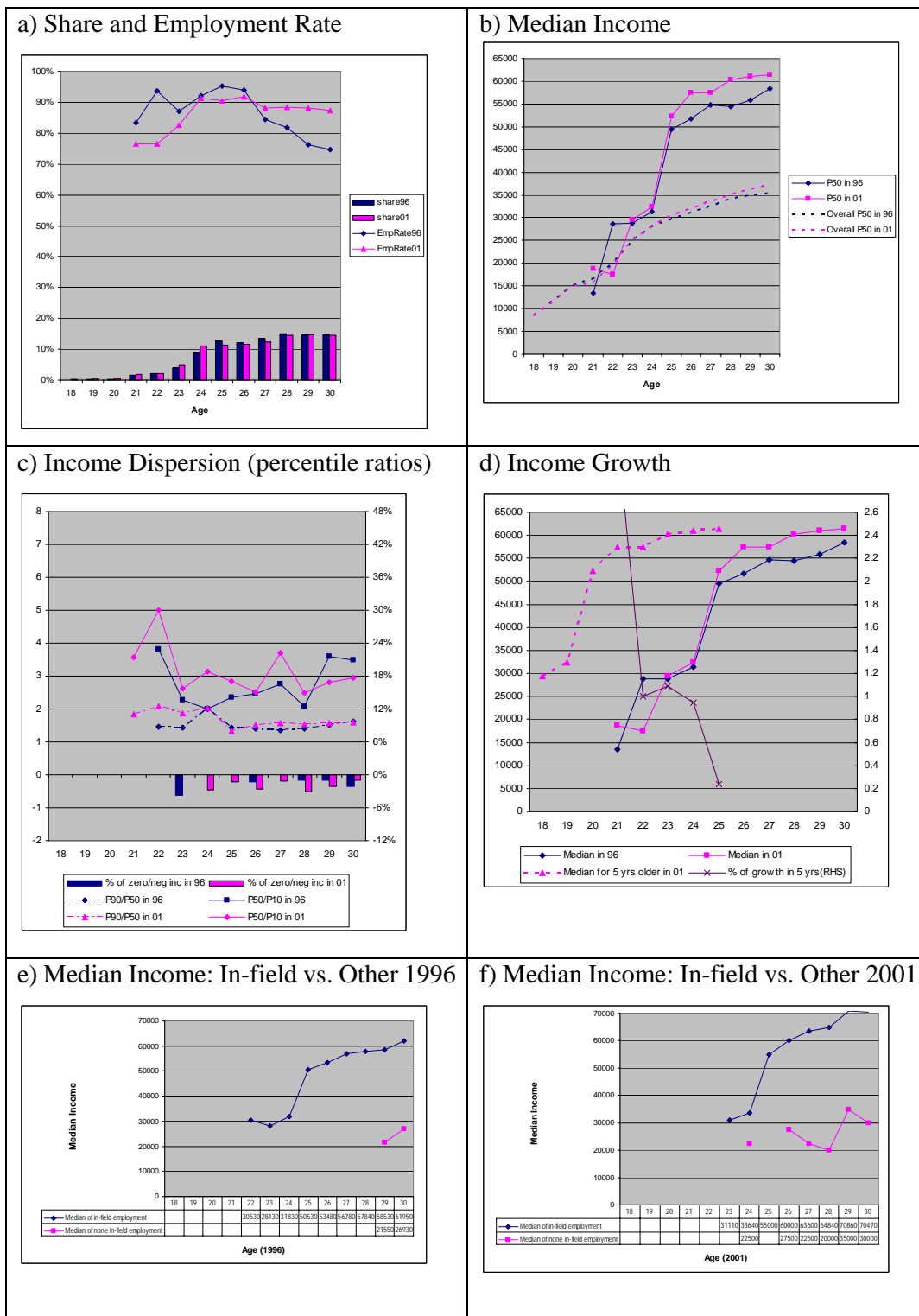
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.11-3 Age profiles for employed PSGs aged 18 to 30 - Medicine**



## 2.12 **Nursing**

### 2.12.1 **Commentary**

#### *Number*

- The number of PSGs decreased by over 13% between 1996 and 2001.

#### *Qualification Structure*

- Nursing was historically offered as a diploma (or certificate) level qualification. In the early 1990s, students were offered the opportunity to complete a degree in nursing. Over time we would expect to see a continuing shift away from the older diploma qualifications, and toward the degree level qualification. The trends in the census data are also seen in Ministry of Education figures on graduates by field of study, where there has been a decrease in the number of graduates in Medical and Health subjects at diploma level, and an increase at degree (and higher degree) level over the same period.
- In 1996, most of the PSGs in this field had an Advanced Vocational Qualification, which includes Undergraduate diploma/certificate, NZ diploma, NZ certificate and National diploma. In 2001 there was a huge increase (from 6.6% to 47.9%) in the percentage of young PSGs with a Bachelor degree.
- Median income for Advanced Vocational Qualifications was higher than Bachelor Degree for both 1996 and 2001. This is probably explained the change to the qualification structure mentioned above. In 2001, those who held Advanced Vocational Qualifications were likely to have had more work history and hence likely to have a higher income. Therefore, the median income of Advanced Vocational was still higher in 2001. However, the income difference between the two qualifications reduced significantly.
- 10.8% of PSGs held multiple qualifications, slightly higher than the level for aggregated fields (9.4%). 7.8% held their second qualification in a similar field, a lot higher than for aggregated fields (4.9%). Young PSGs had a similar distribution of multiple qualifications as for young PSGs in aggregated fields.

#### *Gender*

- The field had a very high female ratio, over 90% in both 1991 and 1996 and for both all PSGs and young PSGs. The proportion of females decreased slightly (0.4 pts) between 1996 and 2001.
- The income of females was still lower than males in all 5 percentiles.

#### *Income*

- Median income for employed Nursing PSGs aged between 21 and 28 is higher than for employed PSGs from aggregated fields (Figure 2.12-3b). Overall, young PSGs had median and mean income higher than young PSGs for aggregated fields.
- Interestingly, young PSGs had a higher median income than all PSGs.
- Young PSGs in this field had median incomes higher than the mean incomes in both years. Median incomes were lower than mean incomes for all PSGs for both years.

#### *Age profiles*

- A low percentage of Nursing PSGs were aged 20 and under.



- Number of PSGs in each age bracket between 18 and 30 decreased over the two years, except those aged 19 (however, this was a very small group).
- Employment rates decreased for age 22 to 25, but increased in all other ages.
- Median income is fairly constant between ages 23-30. After age 22, median income is higher than median income for the same age bracket for aggregated fields. (Figure 2.12.3-b)
- The % of income growth in 5 years was large for those aged 21 and under, but almost zero for those aged 22 and over (Figure 2.12-3d). This indicates a stable income for those PSGs for most of their career.

### ***Specialisation***

- This field is highly specialised. All the indices except for industry specialisation for young PSGs increased slightly between 1996 and 2001.
- Over 80% of all PSGs, and close to 90% of young PSGs, worked in the top 10 occupations. Nursing and Midwifery Professional was the most common occupation, employing approximately 60% of all PSGs and 80% of young PSGs. The proportion employed in this occupation increased by 4.2% for both groups between 1996 and 2001.

### ***In and out-of field employment***

- Although this field is highly specialised, only 70% of PSGs work in in-field occupations. This is approximately 15 ppts more than for aggregated fields. The reason could be that the second most common occupation, Specialised Managers, employing close to 5% of PSGs, is not an in-field occupation.
- The median income of in-field employment was higher than median income for out-of-field employment. However, the out-of-field median income increased by much more (21.2% compared to 6.0%) between 1996 and 2001, leading to a narrowing gap, especially for older PSGs.

### ***Demand and supply***

- Demand for Nursing PSGs decreased by 2.6% from 1996 to 2001 and there was a supply shock of 8.9%. However, the number of graduates reduced by much more (approximately 14%). The employment rate slightly increased between 1996 and 2001.

## 2.12.2 Tables and Figures

Table 2.12-1 Key changes for Nursing PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	35250	30486	-13.5%	8268	5985	-27.6%
Female Proportion	95.1%	94.6%	-0.4	95.2%	93.8%	-1.4
Employment rate	81.3%	84.0%	2.7	82.7%	84.2%	1.5
Income						
• Mean	25300	28460	12.5%	25540	28290	10.8%
• Median	24210	27400	13.2%	27900	30270	8.5%
• P90-P50 ratio	1.87	1.79	-0.08	1.50	1.53	0.03
• P50-P10 ratio	7.84	5.92	-1.92	5.88	5.14	-0.74
• Median as percentage of PSGs' median	82.9%	90.9%	8.00	114.6%	125.0%	10.45
% of people with second qualification in different field of study (6-digit level)	10.8	N/A	N/A	6.9	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	7.8	N/A	N/A	4.2	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	12.85	13.31	0.47	20.93	21.23	0.30
• by industry	10.42	10.69	0.27	17.26	16.71	-0.55
• by industry and occupation	27.93	32.61	4.68	56.18	62.69	6.51
Supply and demand indices						
• Demand shock	N/A	N/A	-2.6%	N/A	N/A	-2.6%
• Supply shock	N/A	N/A	8.9%	N/A	N/A	10.5%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Nursing and Midwifery Professionals	58.8%	63.0%	4.2	75.9%	80.1%	4.2
• Specialised Managers	4.1%	4.3%	0.3	1.7%	1.4%	-0.3
• Nursing Associate Professionals	6.4%	3.6%	-2.8	3.5%	0.8%	-2.7
• Personal Care Workers	2.9%	3.2%	0.2	2.5%	2.6%	0.1
• Market Oriented Animal Producers	3.9%	2.5%	-1.4	1.8%	1.0%	-0.8
• Social Work Associate Professionals	1.6%	2.1%	0.5	0.8%	0.8%	0.0
• Library, Mail and Related Clerks	2.0%	1.9%	-0.1	0.9%	0.7%	-0.2
• Finance and Sales Associate Professionals	1.3%	1.3%	0.0	1.4%	1.0%	-0.3
• Salespersons and Demonstrators	1.5%	1.2%	-0.3	1.0%	0.8%	-0.1
• Health Associate Professionals	0.7%	1.1%	0.5	0.4%	1.3%	0.9
• Total share of the top 10 occupations	83.2%	84.2%	1.0	89.9%	90.5%	0.6
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	69.0%	70.5%	1.5	82.6%	84.3%	1.7
• Median income if working in in-field occupations	29580	31360	6.0%	31040	32720	5.4%
• Median income if working in out-of-field occupations	22260	26970	21.2%	23120	25690	11.1%

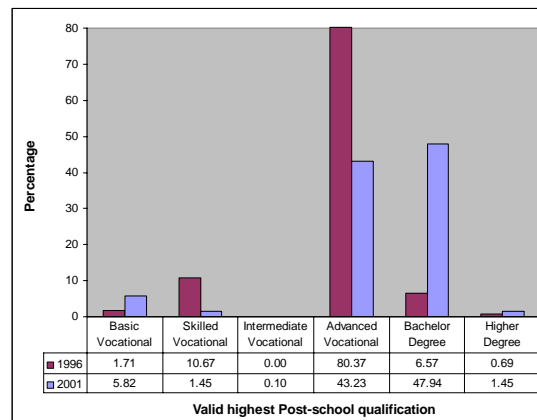
**Table 2.12-2 Age profiles for Nursing PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	18							
19	39	92.3	7500	69.2	117%	-7.7	-7%	9.2
20	96	96.9	9370	81.8	-29%	1.3	4%	3.6
21	231	97.4	13130	86.8	-49%	2.7	26%	0.8
22	297	96.0	26040	87.1	-51%	1.4	-3%	-3.8
23	357	95.8	29420	89.3	-48%	1.1	-1%	-0.2
24	372	94.4	30820	87.8	-46%	-1.7	1%	-0.4
25	417	92.9	30800	85.5	-42%	-2.1	-1%	-1.0
26	588	93.4	31550	86.3	-30%	-2.0	7%	4.7
27	756	94.0	32350	83.4	-18%	-1.4	10%	1.3
28	867	92.0	32470	84.7	-7%	-3.8	12%	3.7
29	951	93.4	32730	83.6	-12%	-1.3	18%	5.9
30	984	93.6	30130	79.3	-18%	-1.1	22%	3.9

**Table 2.12-3 In-field occupations for Nursing**

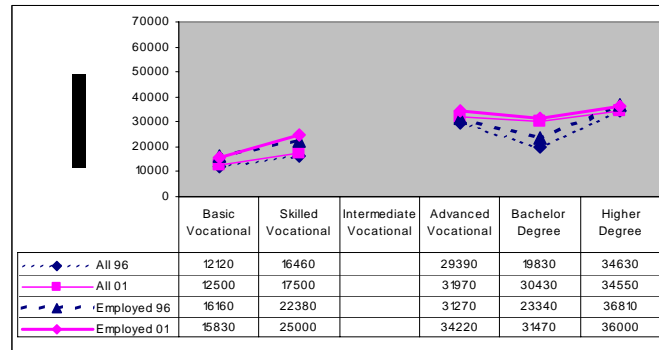
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Nursing and Midwifery Professionals	4.34%	61.44%	14.17	78.05%	25.11
Nursing Associate Professionals	0.37%	5.20%	14.03	2.57%	22.08
Personal Care Workers	1.12%	3.06%	2.72	2.59%	2.49

**Figure 2.12-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Nursing**

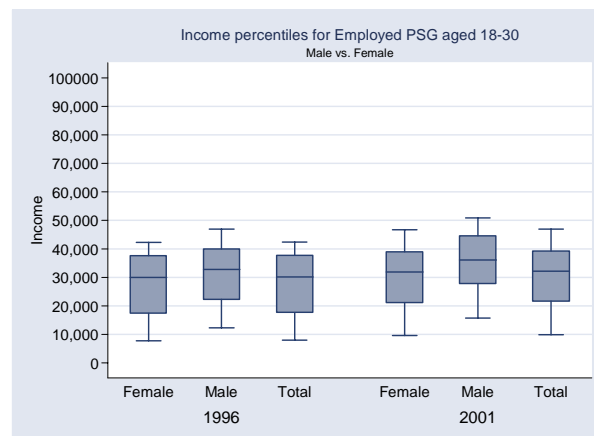


**Figure 2.12-2 Income level and dispersion for Nursing aged 18-30**

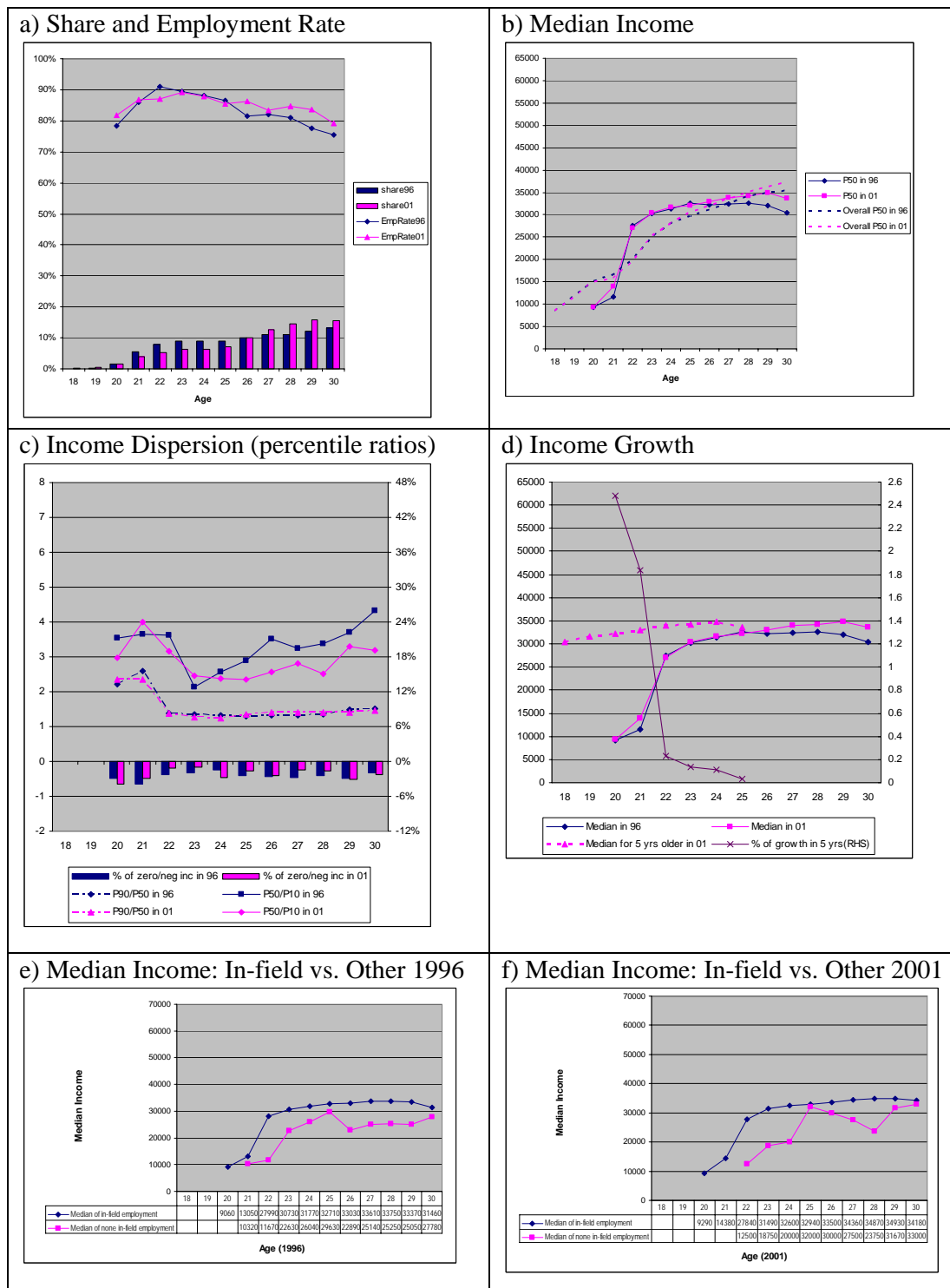
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.12-3 Age profiles for employed PSGs aged 18 to 30 - Nursing**



## **2.13 Pharmacy, Therapy and Related**

### **2.13.1 Commentary**

#### ***Number***

- The total number of PSGs increased 22.8% between 1996 and 2001. The number of young PSGs increased by 14.0%.

#### ***Qualification Structure***

- There was a shift in the qualification structure between 1996 and 2001. The shift was from Intermediate and Advanced Vocational Qualifications to Bachelor Degree. The proportion of PSGs holding a Bachelor Degree increased from 31.5% to 55.4% over the two years. The other changes were an increase in the proportion holding a Basic Vocational Qualification, which doubled to 11.5% between the two years, and those holding a Skilled Vocational Qualification, which increased from less than 1% to 4.4%.
- Median incomes were similar for the different qualification levels, except that Higher Degree PSGs earned much more and Basic Vocational much less than others.
- A slightly higher proportion (10.8%) had multiple qualifications than for aggregated fields (9.4%). Few graduates in this field had their second qualification in a similar field (1.8%, compared with 4.9% for aggregated fields).

#### ***Gender***

- Approximately 80% of the PSGs were female. The proportion of females decreased slightly (2.1%) between 1996 and 2001, but the decrease was larger for young PSGs (3.2%).
- In 1996, females had lower incomes than males and this difference widened at the higher percentiles. In 2001, female income increased slightly, with the same general pattern as 1996. Males had P10 up to P50 decrease. Therefore, females ended up having higher P10, P25 than males. However, the top 2 percentiles for males increased a lot more than females, which made the share of high-income of females much less than in 1996. Basically between 1996 and 2001 the box plot expanded for males and shrank for females (Figure 2.13-2b).

#### ***Income***

- Median income was less than median income for aggregated fields for all PSGs both 1996 and 2001. However, young PSGs had a higher median income than young PSGs for aggregated fields for both years.
- The mean and median income for young PSGs was quite similar, indicating a more symmetrical income distribution. For all PSGs, mean income was higher than median income.

#### ***Age profiles***

- There were very few PSGs aged under 20. The number of PSGs aged 23 to 30 was roughly constant.
- The number of PSGs in each age group increased between 1996 and 2001 for most of the ages, especially the younger ages.
- The female ratio and employment rates dropped for most of the ages 18-30 between 1996 and 2001.
- Median income decreased for younger groups, but increased for those aged 23 and above.

- Employed young PSGs in this field had lower median income than median income for the same age in aggregated fields before age 23 (Figure 2.13-3 b). In 2001, the income growth was stable up to age 30, whereas a downturn appeared in 1996 for those aged 29 and 30.
- Overall, young PSGs could not expect a large increase in their income in their first 5 years of employment.

### ***Specialisation***

- This field is highly specialised. However, both the occupation and industry indices decreased slightly between 1996 and 2001, for both all PSGs and young PSGs.
- Over 70% worked in the top 10 occupations with the share of young PSGs in the top 10 occupations higher (approximately 80%). There was an increase in the share working in top 10 occupations for both groups of PSGs between 1996 and 2001.
- Most of those in the top 10 occupations were employed in the top 2 occupations (more than 50% for each age groups in both years). The share of the top occupation (Health Associate Professionals) increased slightly between 1996 and 2001, while the share of the second occupation (Health Professionals except Nursing) decreased slightly.

### ***In-field employment***

- About 60% of PSGs worked in in-field occupations. This increased by approximately 2 pts between 1996 and 2001.
- There are seven in-field occupations. The first occupation, Health Associate Professionals, is much more relevant to this field than the other in-field occupations. This occupation accounted for approximately half of the in-field employment.
- Median incomes for in-field employment were higher, but more noticeably for young PSGs, for both age groups in both years.
- For young PSGs in-field income increased more (6.5%) than out-of-field income (1.2%). However, this was not as large as the increase in out-of-field income (9.9%) for all PSGs in this field.
- By age cohort, out-of-field income was higher than in-field income for those under 22 years in 1996, but lower after. In 2001, in-field income was higher than out-of-field income for all age brackets.

## 2.13.2 Tables and Figures

Table 2.13-1 Key changes for Pharmacy, Therapy and Related PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	8394	10308	22.8%	3327	3792	14.0%
Female Proportion	81.7%	79.6%	-2.1	84.1%	80.9%	-3.2
Employment rate	83.3%	83.1%	-0.2	84.9%	81.0%	-3.9
Income						
• Mean	31490	33280	5.7%	27080	27690	2.3%
• Median	28020	29780	6.3%	27600	27940	1.2%
• P90-P50 ratio	2.08	2.14	0.06	1.73	1.78	0.05
• P50-P10 ratio	7.79	6.95	-0.84	6.48	7.05	0.57
• Median as percentage of PSGs' median	96.0%	98.8%	2.85	113.3%	115.4%	2.06
% of people with second qualification in different field of study (6-digit level)	10.8	N/A	N/A	9.1	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	1.8	N/A	N/A	1.5	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	5.38	5.26	-0.12	6.71	6.44	-0.27
• by industry	5.96	5.80	-0.16	7.34	6.33	-1.02
• by industry and occupation	9.42	10.30	0.88	11.79	12.03	0.24
Supply and demand indices						
• Demand shock	N/A	N/A	13.6%	N/A	N/A	15.9%
• Supply shock	N/A	N/A	15.2%	N/A	N/A	14.4%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Health Associate Professionals	32.6%	34.7%	2.1	36.6%	39.6%	3.0
• Health Professionals (Except Nursing)	17.9%	16.9%	-1.0	20.7%	17.2%	-3.5
• Specialised Managers	6.0%	5.3%	-0.7	3.8%	2.9%	-0.9
• Personal Care Workers	1.3%	4.4%	3.1	1.1%	3.4%	2.4
• Nursing and Midwifery Professionals	2.0%	3.3%	1.4	2.5%	2.7%	0.2
• Salespersons and Demonstrators	4.4%	2.8%	-1.6	5.6%	4.4%	-1.2
• Special Education Teaching Professionals	2.0%	2.7%	0.6	2.5%	3.8%	1.3
• Library, Mail and Related Clerks	2.1%	2.3%	0.3	1.6%	2.3%	0.7
• Social Work Associate Professionals	1.2%	2.2%	0.9	0.8%	1.8%	0.9
• Finance and Sales Associate Professionals	2.2%	1.6%	-0.5	2.1%	1.9%	-0.3
• Total share of the top 10 occupations	71.8%	76.4%	4.6	77.5%	80.0%	2.5
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	58.8%	61.1%	2.2	64.2%	66.2%	2.0
• Median income if working in in-field occupations	33250	34800	4.7%	31460	33500	6.5%
• Median income if working in out-of-field occupations	28400	31220	9.9%	25400	25480	0.3%



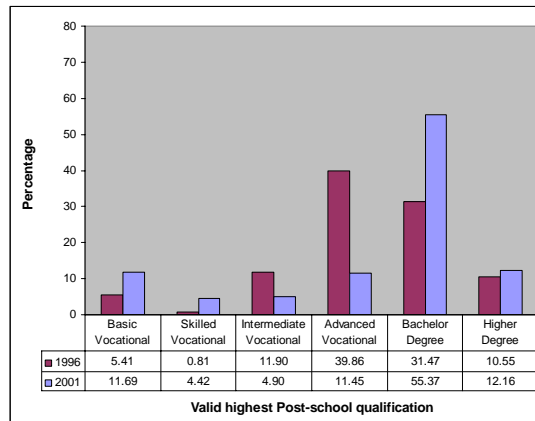
**Table 2.13-2 Age profiles for Pharmacy, Therapy and Related PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	42	71.4	3930	53.8	100%	-28.6	-51%	3.8
19	57	84.2	6880	60.0	58%	0.9	2%	-12.7
20	102	82.4	8640	66.7	62%	2.4	-36%	-14.3
21	195	80.0	8610	66.7	44%	-4.1	-20%	-11.1
22	384	82.8	10630	77.5	45%	-0.1	-25%	-14.6
23	375	80.0	27390	84.8	28%	-6.7	3%	-5.1
24	396	75.8	30530	81.7	18%	-5.5	4%	-5.9
25	348	78.4	31810	83.6	-1%	-1.0	2%	-3.7
26	345	80.9	33750	87.8	-7%	-6.0	8%	1.8
27	357	82.4	32420	82.5	2%	-4.0	5%	-2.1
28	354	84.6	33280	82.2	1%	0.9	0%	-1.4
29	399	83.3	34830	83.5	6%	-2.3	10%	0.1
30	438	81.0	35380	83.1	13%	-3.5	19%	3.3

**Table 2.13-3 In-field occupations for Pharmacy, Therapy and Related**

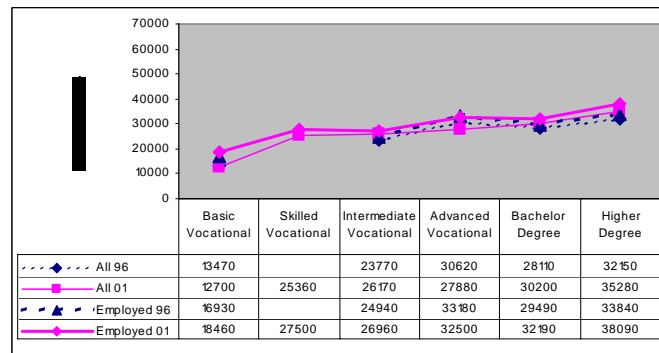
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Health Associate Professionals	1.18%	34.32%	28.98	38.64%	32.36
Health Professionals (Except Nursing)	2.14%	17.56%	8.21	18.99%	11.05
Special Education Teaching Professionals	0.41%	2.44%	6.01	3.26%	10.62
Life Science Technicians and Related Workers	0.55%	1.74%	3.15	1.21%	2.02
Physicists, Chemists and Related Professionals	0.25%	0.76%	3.00	0.71%	3.18
Personal Care Workers	1.18%	3.23%	2.73	2.36%	2.21
Chemical Products Machine Operators	0.07%	0.14%	2.02	0.10%	0.98

**Figure 2.13-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Pharmacy, Therapy and Related**



**Figure 2.13-2 Income level and dispersion for Pharmacy, Therapy and Related aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All

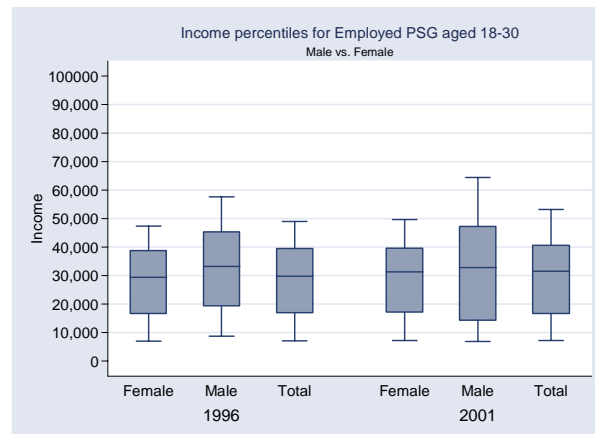
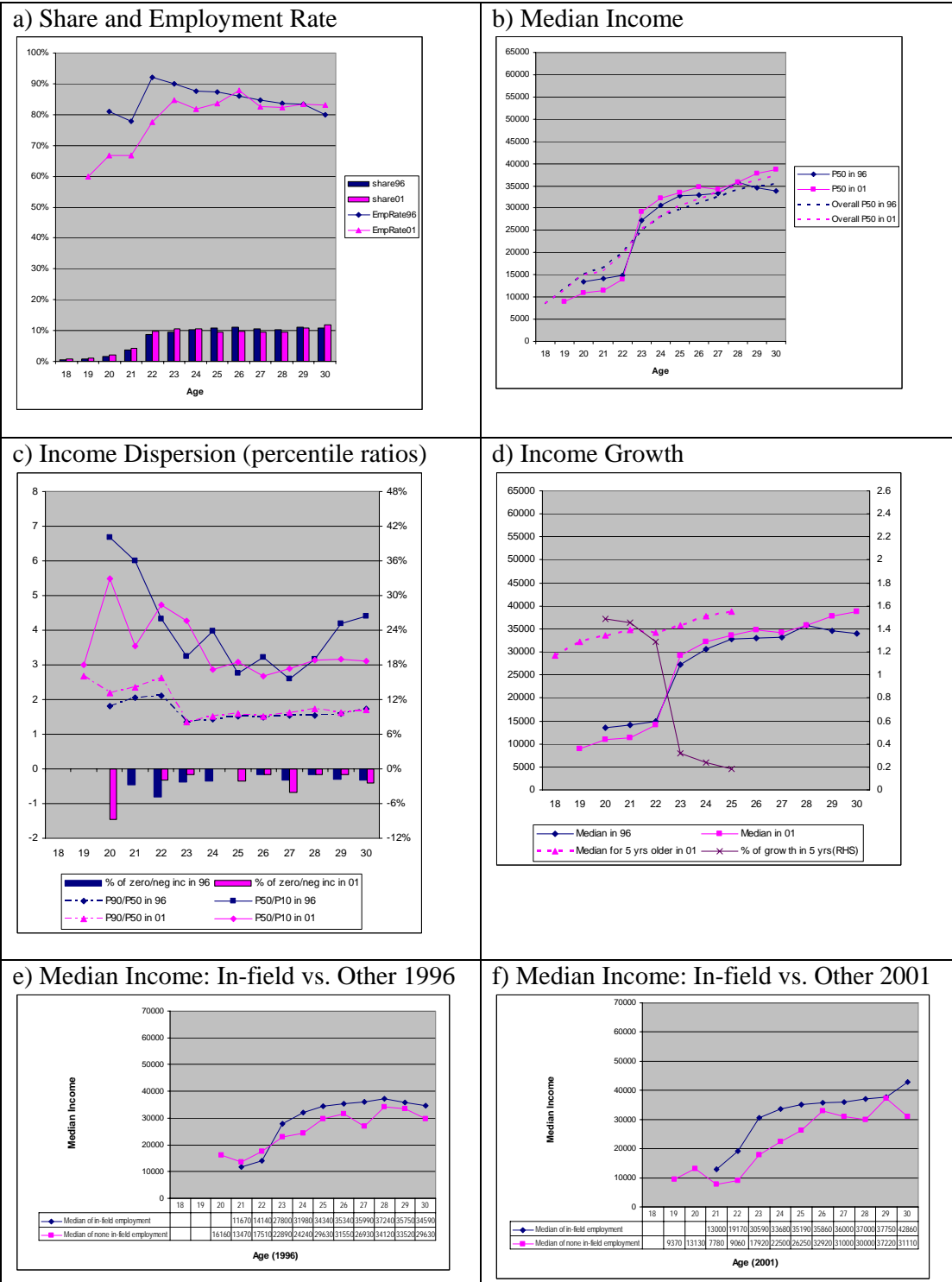


Figure 2.13-3 Age profiles for employed PSGs aged 18 to 30 - Pharmacy, Therapy and Related



## 2.14 **Teacher Education**

### 2.14.1 **Commentary**

#### *Number*

- The number of young PSGs in the Teacher Education field increased by 45.3% between 1996 and 2001. This was the third highest increase in young PSGs of all fields (the other two were 'Computer Science' and 'Communication and Media Studies'). For all PSGs, the field had the second highest number increase and the fourth highest percentage increase.

#### *Qualification Structure*

- The most common qualification has changed from Advanced Vocational (AV) qualification in 1996 to Bachelor Degree (BD) in 2001. This trend is similar to Nursing, and reflects a similar change from AV to degree qualifications. Figure 2.14-1 shows that AV was the most common qualification in 1996 (59%), with only 8% holding a BD. In 2001, the percentage holding a BD increased dramatically to over 37%, and the percentage holding AV decreased to only 35%. Basic, Skilled, and Intermediate Vocational Qualifications decreased slightly between 1996 and 2001. The percentage holding a Higher Degree increased from 2.5% to 5.4%.
- The median income in 1996 for those above Intermediate Vocational level qualification varies little.
- In 1996, the median income for employed Higher Degree Teacher Education PSGs was the highest for all the qualifications. However, in 2001, BD PSGs had the highest median incomes of all qualifications.
- The proportion of graduates with multiple qualifications in this field is higher than in all aggregate fields. For all PSGs, there is a greater percentage of multiple qualifications with similar major compared to the total level, whereas young PSGs had a similar level to the total.

#### *Gender*

- There was a high proportion of females (approximately 85%), but not as high as Nursing (over 90%). The female proportion increased by 1.7 ppts between 1996 and 2001.
- Females had lower income than males in both years. The median female income in 2001 was the level of median male income in 1996. 2001 female income was more evenly distributed than 1996 female income.
- The general increase in income from 1996 to 2001 for the two genders was similar, with females having a bigger increase in P75 and P90 and males having a bigger increase in median income.

#### *Income*

- Like most other fields, median incomes were lower than mean incomes. Within the field, mean incomes for young PSGs increased less than their median incomes. The opposite for true for PSGs aged 18 to 65.

#### *Age profiles*

- There was a decrease in the number of graduates aged 22 or under between 1996 and 2001. However, the number of graduates aged 23 or over increased at each age bracket. The number of graduates in each age bracket over 26 increased by almost 100% between 1996 and 2001.

- The large increase in graduates in their mid-to-late twenties explains the large increase in total number of young PSGs (45.3%).
- The growth rate of median income was similar to that of the aggregate level. With a lower starting salary, PSGs in this field normally had lower income than the total level. However, as the change in median income from 1996 to 2001 was greater than the total level, they might expect to have higher median income than the total level in later years.
- Graph 2.14-3d plots the change in income over a 5 year age difference. The income change over five years is highest for those under 20 years old, and steadily decreases. This is explained by the qualification structure – for example, an individual aged 23 in 2001 is more likely to hold a higher qualification than an employed 18 year old in 1996, hence have a higher median income, causing a high 5-year difference. The difference between income of a 23 year old in 1996 and a 28 year old in 2001 is not likely to be as great, as both may hold advanced qualifications.

### ***Specialisation***

- This field is highly specialised. The specialisation indices increased dramatically from 96 to 01, especially for young PSGs,
- Approximately 3% more PSGs worked in the top 10 occupations in 2001 than in 1996, with the greatest growth in the most popular occupation, Primary and Early Childhood Teaching Professionals (5 ppt increase for all PSGs, and 11.2 ppt for young PSGs). Primary and Early Childhood Teaching was also the most relevant job for this field (as measured by the In-field Index, Table 2.14-3).
- Several other top 10 occupations, such as Secondary Teaching Professionals, decreased between 1996 and 2001. This reflects the large demand for Primary and Early Childhood Teaching Professionals.

### ***In and out of field employment***

- There are six in-field occupations, with the most relevant profession (Primary and Early Childhood Teaching Professionals) employing almost 50% of the PSGs.
- Median income for in-field employment was much higher than for out-of-field employment and increased faster from 1996 to 2001.
- In 2001, there is a sharp increase in median income for both in-field and out-of-field income after age 21. This is most likely because graduates complete their studies after this age. In 1996, this increase after age 21 was not as steep.
- In 1996, median income of out-of-field income was close to the in-field employment, but dropped a lot from age 29 to 30. However, median income in 2001 was much lower than in-field employment for ages 22 to 29.

### ***Supply and demand***

- The demand shock for this field is greater than the demand shock over all aggregate fields, but the supply shock is slightly less than the aggregate. The employment rate for all PSGs decreased slightly (0.7%) over the period (although young PSGs had a 1.1% increase in their employment rate).
- The income level, on the other hand, seems to agree with the supply and demand indices. Both mean and median income increased by more than 10% for PSGs as a whole, with young PSGs having an increase of approximately 30% in mean and median incomes.

## 2.14.2 Tables and Figures

Table 2.14-1 Key changes for Teacher Education PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	35595	43812	23.1%	11088	16110	45.3%
Female Proportion	84.2%	85.9%	1.7	86.6%	88.9%	2.4
Employment rate	83.7%	83.0%	-0.7	79.6%	80.7%	1.1
Income						
• Mean	25600	29360	14.7%	18650	23510	26.1%
• Median	24180	27310	12.9%	17860	23250	30.2%
• P90-P50 ratio	1.93	2.06	0.13	1.90	1.82	-0.08
• P50-P10 ratio	7.10	6.40	-0.70	6.29	6.36	0.06
• Median as percentage of PSGs' median	82.8%	90.6%	7.80	73.3%	96.0%	22.69
% of people with second qualification in different field of study (6-digit level)	15.2	N/A	N/A	9.5	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	8.3	N/A	N/A	3.7	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	7.25	8.01	0.77	7.05	9.42	2.37
• by industry	10.27	12.53	2.25	6.45	10.80	4.35
• by industry and occupation	21.18	28.25	7.07	15.44	30.03	14.60
Supply and demand indices						
• Demand shock	N/A	N/A	6.3%	N/A	N/A	7.7%
• Supply shock	N/A	N/A	10.8%	N/A	N/A	10.6%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Primary and Early Childhood Teaching Professionals	42.7%	47.7%	5.0	41.0%	52.2%	11.2
• Secondary Teaching Professionals	8.1%	7.5%	-0.6	4.9%	5.8%	1.0
• Specialised Managers	6.1%	6.0%	-0.1	2.7%	3.1%	0.4
• Other Personal Services Workers	5.7%	3.4%	-2.3	13.0%	6.6%	-6.4
• Social Work Associate Professionals	2.4%	3.3%	0.9	2.1%	2.0%	-0.1
• Library, Mail and Related Clerks	2.0%	2.6%	0.6	2.0%	2.4%	0.4
• Tertiary Teaching Professionals	2.3%	2.5%	0.2	0.9%	0.9%	-0.1
• Salespersons and Demonstrators	2.2%	2.0%	-0.1	4.1%	3.3%	-0.8
• Special Education Teaching Professionals	1.9%	2.0%	0.1	1.1%	1.0%	-0.1
• Writers, Artists, Entertainment and Sports Associate Professionals	2.5%	1.6%	-0.9	3.4%	1.3%	-2.2
• Total share of the top 10 occupations	75.8%	78.6%	2.8	75.3%	78.7%	3.3
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	62.3%	65.5%	3.1	63.1%	68.8%	5.6
• Median income if working in in-field occupations	28430	32400	14.0%	23550	29910	27.0%
• Median income if working in out-of-field occupations	25740	27950	8.6%	17110	20850	21.9%

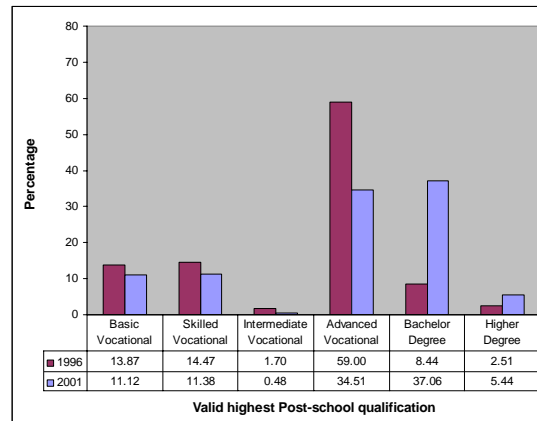
**Table 2.14-2 Age profiles for Teacher Education PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	207	95.7	4910	64.3	-22%	0.2	4%	4.1
19	375	98.4	6800	61.0	-36%	2.5	-1%	-10.0
20	579	95.9	9230	70.6	-20%	0.9	-10%	-7.0
21	990	92.1	9340	80.6	-4%	0.5	-10%	3.8
22	1179	92.3	14130	81.0	-2%	3.3	0%	0.2
23	1347	89.5	22140	84.0	17%	5.9	10%	1.2
24	1419	88.2	25980	84.0	32%	5.5	12%	-1.5
25	1518	88.1	26590	82.6	56%	3.9	14%	0.6
26	1656	88.4	27460	82.4	90%	3.9	12%	0.3
27	1716	88.3	28970	83.9	96%	4.4	12%	1.8
28	1803	86.4	29870	81.0	135%	6.7	16%	0.1
29	1692	87.1	28940	78.8	129%	2.1	19%	3.6
30	1632	86.0	28440	79.4	96%	1.1	20%	2.2

**Table 2.14-3 In-field occupations for Teacher Education**

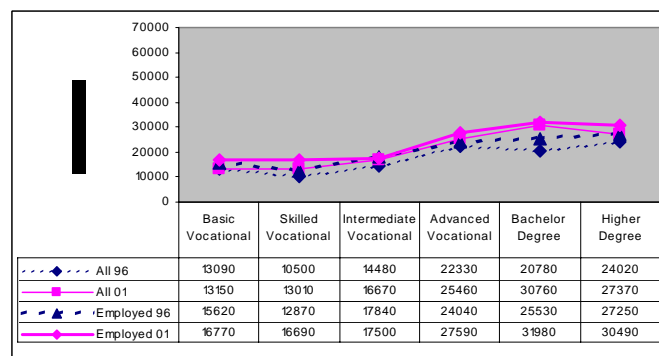
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Primary and Early Childhood Teaching Professionals	4.89%	46.34%	9.47	49.29%	10.52
Special Education Teaching Professionals	0.40%	2.00%	4.98	1.08%	3.57
Other Teaching Professionals	0.12%	0.55%	4.68	0.18%	2.96
Secondary Teaching Professionals	2.28%	7.86%	3.45	5.61%	3.63
Other Personal Services Workers	1.60%	4.43%	2.77	8.76%	3.78
Social Work Associate Professionals	1.37%	3.01%	2.19	2.09%	2.09

**Figure 2.14-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Teacher Education**



**Figure 2.14-2 Income level and dispersion for PSGs - Teacher Education aged 18-30: All vs. Employed**

a) Median income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All

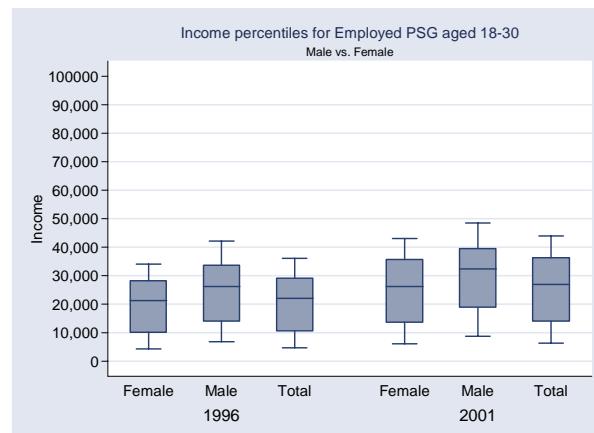
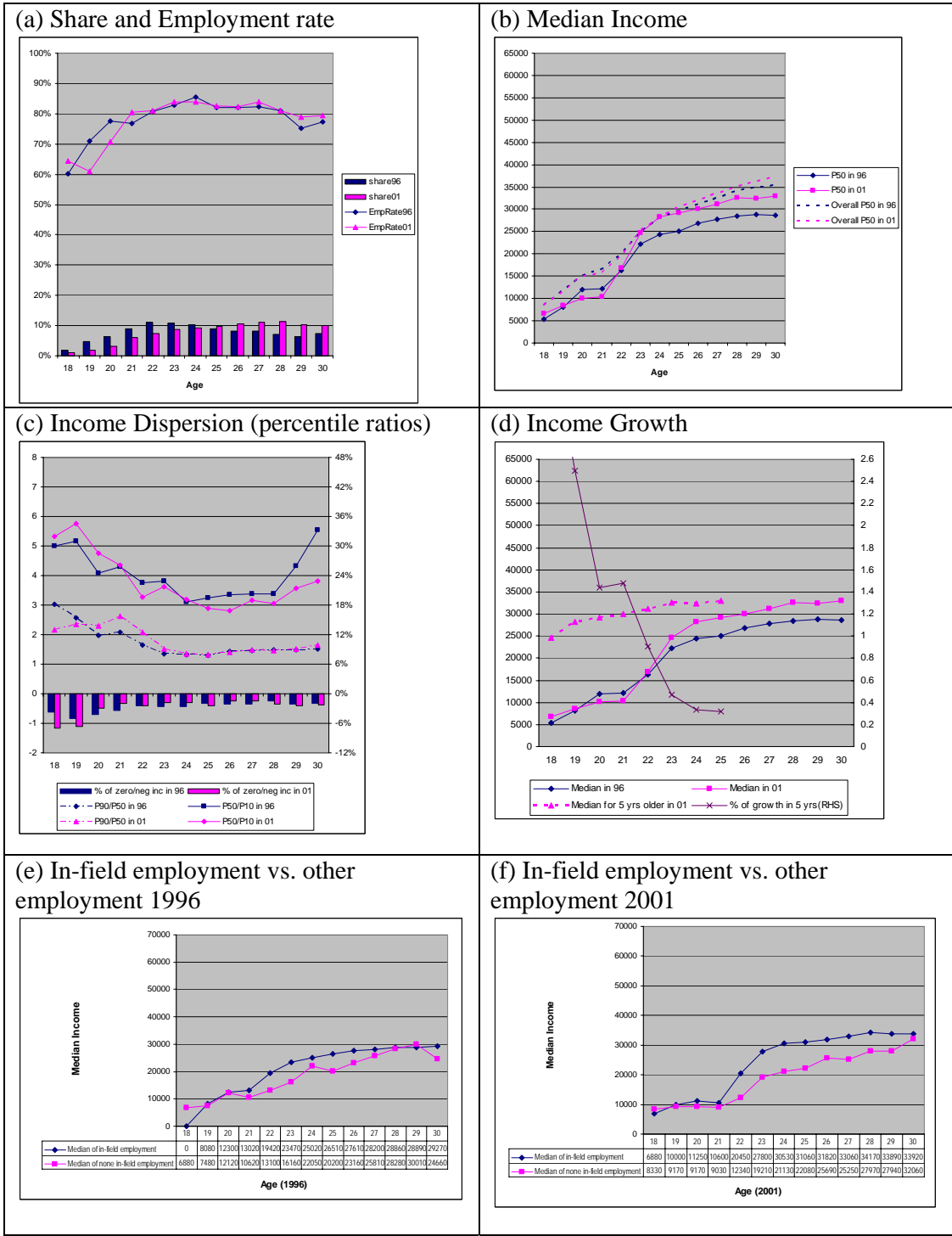




Figure 2.14-3 Age profiles for employed PSGs aged 18 to 30 - Teacher Education



## **2.15     Accounting**

### **2.15.1    Commentary**

#### ***Number***

- The total number of PSGs decreased by more than 11% between 1996 and 2001. However, the number of young PSGs decreased by 35% between the two years.

#### ***Qualification Structure***

- Over 70% of PSGs hold a Bachelor degree, giving this field a higher level of qualification. Less than 5% hold a qualification below Advanced Vocation. From 1996 to 2001 there was a small shift from other levels to Higher Degree.
- Bachelor Degree had the highest median income by qualification. Median income for Higher Degree was only slightly lower than for Bachelor Degree.
- For all levels of qualifications the median income for employed PSGs and all PSGs were very different. The increase in income occurred only for employed PSGs.
- The share of multiple qualifications was extremely high in this field (22.6%). Approximately half of these had the second degree in a similar field.

#### ***Gender***

- The proportion of females increased from close to 40% in 1996 to close to 50% in 2001. The proportion of females for young PSGs was higher (57% in 2001).
- Female income was lower than males in both census years. The big difference between the genders is in the top income levels, P90 for males was considerably higher than P90 for females.

#### ***Age profiles***

- Few people under 21 had qualifications in this field, which is consistent with the qualification structure.
- Numbers dropped for all the age groups between 1996 and 2001, especially for those aged 23 to 26.
- The female ratio amongst all the age groups 18 to 30 was more than 50%. The female ratio increased for all age groups between 1996 and 2001.
- Employment rates dropped for most of the ages between 1996 and 2001. The employment rate was less than 80% for those aged 23 and under, but increased to around 85% for the rest of the age groups 24-30.
- Median income continuously increased as age increased. In 1996, PSGs started to have higher income than for aggregated fields from the age of 22. The turning point in 2001 was age 23.

#### ***Specialisation***

- This is a highly specialised field. The high specialisation index by occupation and industry seems to be driven by the high specialisation by occupations, although the index for young PSGs dropped a little in 2001.
- Over 85% PSGs worked in the top 10 occupations, with the share of the top occupation, Business Professionals, accounting for 55% of all PSGs and over 60% of young PSGs.

### ***In-field employment***

- There are only three in-field occupations, consistent with the high specialisation index by occupations. The top 2 were large occupations and accounted for most of the employment in this field.
- In total over 60% PSGs worked in in-field occupations in the two census years. The share of young PSGs working in in-field occupations was nearly 70%. The share dropped slightly from 1996 to 2001 for both groups.
- Surprisingly, the median income for in-field employment was not higher than median income for out-of-field employment in the two census years for all PSGs in this field. This was not the case for young PSGs, whose in-field income was considerably higher than out-of-field income.

### ***Demand and supply***

- There was a Positive demand shock (18.4%) and moderate supply shock (13.2%). However, the employment rate decreased from 1996 to 2001, even though the total number of PSGs decreased between the two years. The employment rate remained higher than the employment rate for aggregated fields.

## 2.15.2 Tables and Figures

Table 2.15-1 Key changes for Accounting PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	15954	14091	-11.7%	6588	4278	-35.1%
Female Proportion	39.8%	49.5%	9.7	47.2%	56.6%	9.4
Employment rate	89.6%	87.2%	-2.4	87.9%	84.1%	-3.8
Income						
• Mean	54910	57220	4.2%	37340	39060	4.6%
• Median	45500	48020	5.5%	34840	35710	2.5%
• P90-P50 ratio	2.20	2.08	-0.12	1.92	2.07	0.15
• P50-P10 ratio	4.98	6.26	1.28	4.97	6.83	1.86
• Median as percentage of PSGs' median	155.9%	159.4%	3.50	143.1%	147.5%	4.42
% of people with second qualification in different field of study (6-digit level)	22.6	N/A	N/A	17.5	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	10.5	N/A	N/A	6.6	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	11.47	11.44	-0.03	14.07	13.28	-0.79
• by industry	4.48	4.25	-0.23	6.31	6.76	0.45
• by industry and occupation	11.30	12.43	1.13	16.89	21.32	4.43
Supply and demand indices						
• Demand shock	N/A	N/A	18.4%	N/A	N/A	17.6%
• Supply shock	N/A	N/A	13.2%	N/A	N/A	12.1%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Business Professionals	54.2%	56.4%	2.2	61.4%	62.4%	1.0
• Specialised Managers	11.7%	15.6%	3.8	7.1%	8.5%	1.4
• Numerical Clerks	7.1%	4.0%	-3.1	7.3%	5.4%	-1.9
• General Managers	5.6%	3.7%	-1.9	2.1%	1.6%	-0.5
• Finance and Sales Associate Professionals	2.5%	2.2%	-0.4	2.2%	2.2%	0.0
• Library, Mail and Related Clerks	1.3%	1.9%	0.5	1.6%	2.3%	0.7
• Computing Professionals	0.6%	1.6%	1.0	0.7%	1.8%	1.2
• Cashiers, Tellers and Related Clerks	1.0%	1.2%	0.2	1.6%	1.6%	0.0
• Salespersons and Demonstrators	0.9%	1.2%	0.2	1.4%	1.8%	0.4
• Senior Business Administrators	0.3%	1.0%	0.8	0.0%	0.2%	0.2
• Total share of the top 10 occupations	85.2%	88.6%	3.4	85.3%	87.8%	2.5
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	62.1%	62.0%	-0.1	69.2%	68.5%	-0.7
• Median income if working in in-field occupations	48450	52740	8.9%	38340	41950	9.4%
• Median income if working in out-of-field occupations	51260	53910	5.2%	33880	30820	-9.0%

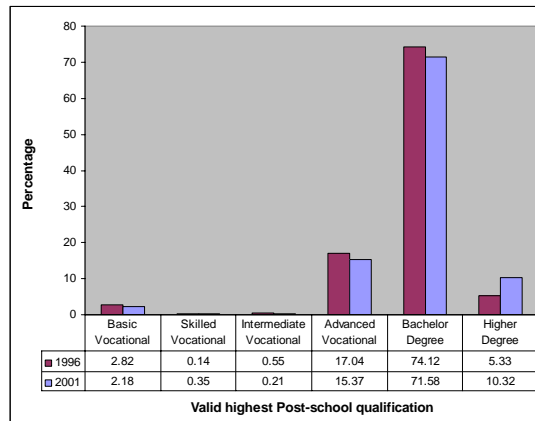
**Table 2.15-2 Age profiles for Accounting PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	6							
19	18							
20	66	65.2	8210	54.5	-33%	7.6	6%	-3.0
21	210	61.4	9710	67.6	-25%	6.0	-3%	0.6
22	351	60.7	14340	78.0	-30%	10.1	-23%	0.7
23	360	54.2	27790	84.7	-43%	8.7	0%	-3.8
24	360	56.3	34190	87.4	-53%	9.1	7%	-3.1
25	348	53.9	36430	85.2	-53%	7.2	1%	-7.0
26	381	57.5	37760	87.4	-50%	11.6	-4%	-4.8
27	435	56.6	43930	87.7	-37%	10.9	2%	-1.9
28	483	57.4	44550	86.4	-32%	11.2	-1%	-5.6
29	594	55.3	47830	85.3	-16%	11.9	0%	-5.0
30	669	55.2	50780	87.3	-1%	5.2	6%	0.1

**Table 2.15-3 In-field occupations for Accounting**

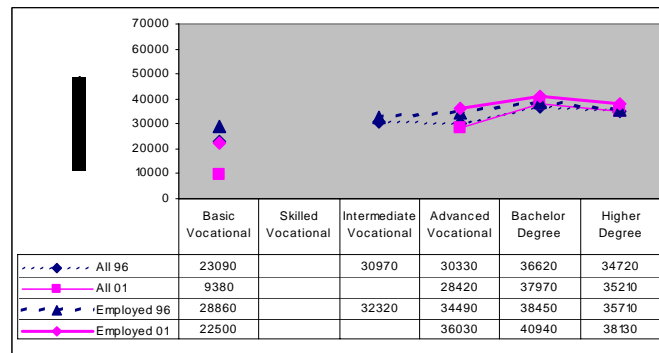
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Business Professionals	4.32%	55.67%	12.90	62.09%	13.33
Numerical Clerks	1.45%	5.83%	4.03	6.83%	4.01
Senior Business Administrators	0.29%	0.59%	2.02	0.05%	0.92

**Figure 2.15-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Accounting**

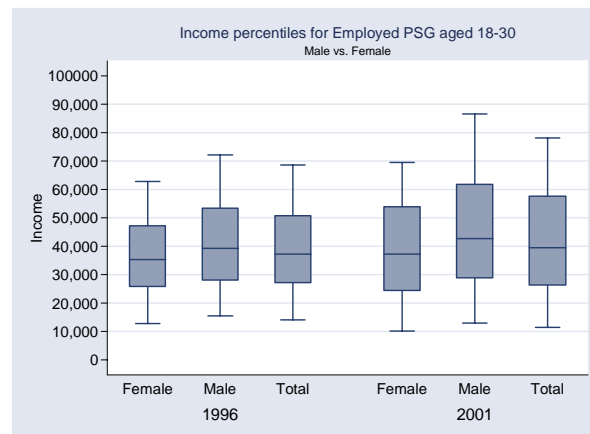


**Figure 2.15-2 Income level and dispersion for PSGs - Accounting aged 18-30**

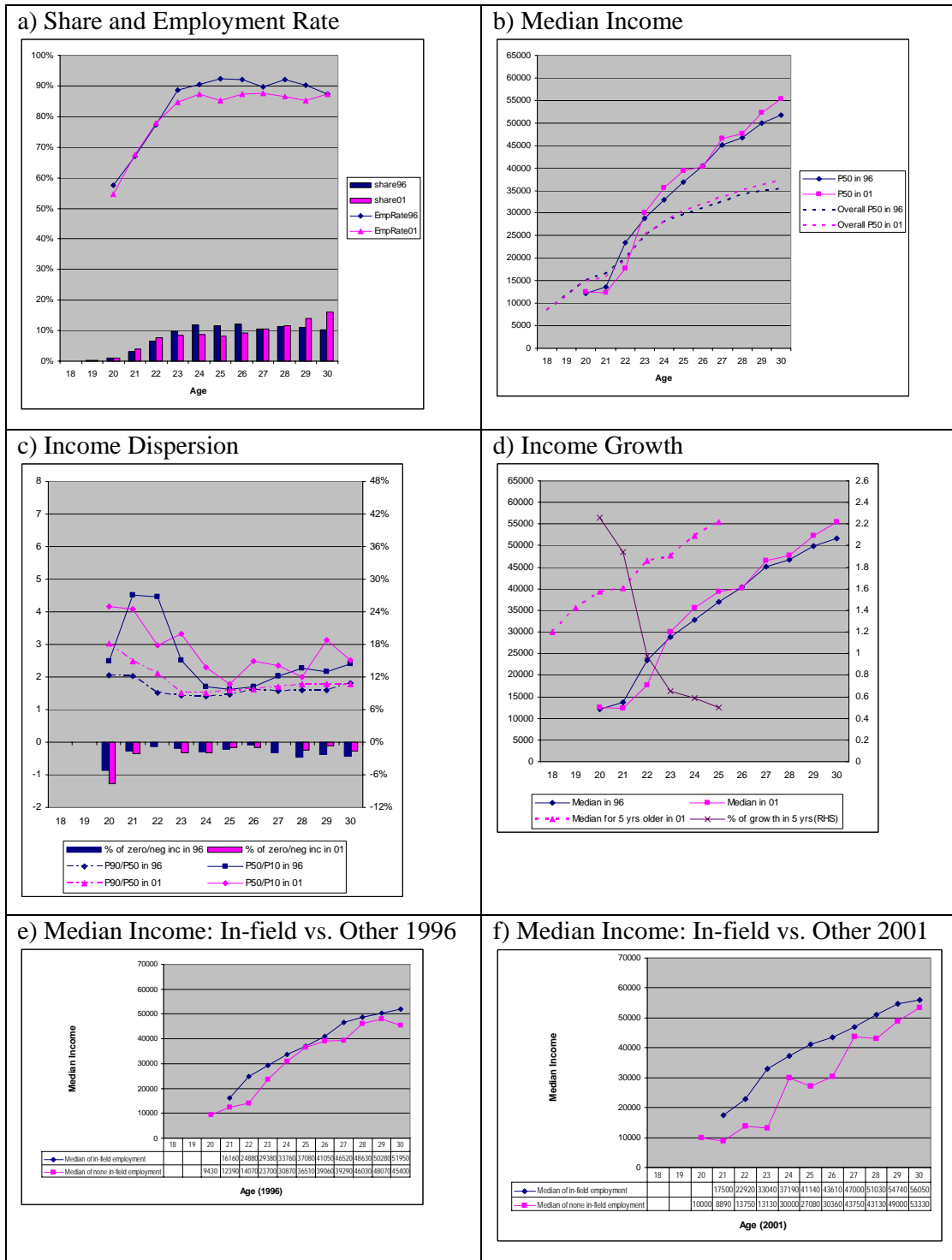
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.15-3 Age profiles for employed PSGs - Accounting aged 18 to 30**



## **2.16 Business and Management**

### **2.16.1 Commentary**

#### ***Number***

- There was a very large increase in the number of PSGs between 1996 and 2001, with an increase of 50% for all PSGs (8000), and 41% for young PSGs (3000). The larger increase for those aged 31 to 65 could mean that people tend to gain qualifications in this field after several years of work, or may reflect immigration flows of older PSGs.

#### ***Qualification Structure***

- There is a wide spread of qualification levels. There was a large increase (close to double) for Advanced Vocational Qualification between 1996 and 2001. Combined with the large increase in the number of PSGs, this means a huge increase for this level. The share of all other levels except Higher Degree decreased, with the biggest drop (by proportion) for Bachelor Degree and Intermediate Vocational. In fact, the only qualification to decrease in terms of numbers of PSGs was Intermediate Vocational.
- Median incomes for Vocational Qualifications were quite similar in the two census years, with small increases for Skilled and Advanced Vocational and small decreases for Basic and Intermediate vocational. There was a large increase in income for Bachelor or Higher Degree qualifications.
- There was a relatively high proportion of multiple qualifications in this field (14.9%), but few of them had the two qualifications in similar areas (only 1.9%). This could suggest that this field is a common second qualification, or one that is taken after working for a period.

#### ***Gender***

- Female proportion increased from 46.2% in 1996 and 49.1% in 2001. The proportion of females among young PSGs is slightly higher.
- Income differences between the two genders were relatively small, however there was a large difference for high-income bands.

#### ***Age profiles***

- There are relatively few graduates aged 21 and under. The number of PSGs in each age bracket from 22 to 30 is relatively constant (between 900 and 1000).
- Employment rates decreased between 1996 and 2001 for all PSGs aged 28 and under, but increased for ages 29 and 30.
- Median income increased with age over the age brackets 18 to 30.
- The expected income growth is quite large especially for those aged 22 and under (Figure 2.16-3 d).

#### ***Specialisation***

- This was the least specialised field in 1996, and the second least specialised in 2001.
- The share of PSGs working in the top 10 occupations increased from 63.1% in 1996 to 68.8% in 2001. The share for young PSGs was slightly lower. However, the top 2 occupations in this field, Specialised Managers and Business Professionals, are large occupations (both are in the top 3 for aggregated fields), suggesting that they are the most common occupations for this field because of the size of the occupation rather than because of field-relevance.



### ***In-field employment***

- There were 12 in-field occupations, none of which are specifically relevant for the field (all had in-field index under 3).
- Median income is higher for in-field than out-of-field employment. The graph by age group shows that the two lines are almost parallel to each other (Figure 2.16-3 e,f).
- Close to 50% of PSGs work in in-field employment. This proportion decreased between 1996 and 2001 by close to 5 ppts. The share of young PSGs working in in-field employment was close to 5 ppts lower than for all PSGs for both years.

### ***Demand and supply***

- There was a positive demand shock (5.4%), higher than the shock for aggregated fields (1.5%). The supply shock was much higher than for aggregated fields (19.7% compared to 12.5%).

## 2.16.2 Tables and Figures

Table 2.16-1 Key changes for Business and Management PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	16404	24669	50.4%	7044	9957	41.4%
Female Proportion	46.2%	49.1%	2.9	51.9%	54.9%	3.0
Employment rate	85.4%	84.6%	-0.8	83.6%	81.0%	-2.6
Income						
• Mean	41210	42780	3.8%	28140	29690	5.5%
• Median	34000	34730	2.1%	26640	27380	2.8%
• P90-P50 ratio	2.44	2.59	0.15	1.91	2.05	0.15
• P50-P10 ratio	5.36	5.43	0.07	5.18	6.32	1.14
• Median as percentage of PSGs' median	116.5%	115.3%	-1.21	109.4%	113.1%	3.69
% of people with second qualification in different field of study (6-digit level)	14.9	N/A	N/A	12.5	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	1.5	N/A	N/A	1.5	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	2.74	2.71	-0.04	2.29	2.30	0.00
• by industry	1.10	1.07	-0.03	1.14	1.08	-0.05
• by industry and occupation	0.72	1.02	0.30	0.95	1.00	0.05
Supply and demand indices						
• Demand shock	N/A	N/A	5.4%	N/A	N/A	5.9%
• Supply shock	N/A	N/A	19.7%	N/A	N/A	18.8%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Specialised Managers	21.3%	22.0%	0.7	15.7%	16.6%	0.9
• Business Professionals	9.0%	11.0%	2.0	11.4%	12.1%	0.7
• Market Oriented Animal Producers	2.7%	7.7%	5.0	2.4%	6.1%	3.6
• Finance and Sales Associate Professionals	6.9%	6.4%	-0.5	8.4%	8.2%	-0.2
• Library, Mail and Related Clerks	4.2%	5.0%	0.8	5.1%	6.3%	1.2
• General Managers	7.7%	4.5%	-3.1	3.1%	1.9%	-1.2
• Salespersons and Demonstrators	3.5%	3.9%	0.4	5.5%	6.6%	1.1
• Numerical Clerks	4.0%	3.1%	-0.9	5.1%	3.9%	-1.3
• Computing Professionals	1.1%	2.8%	1.7	1.5%	3.3%	1.8
• Secretaries and Keyboard Operating Clerks	2.8%	2.4%	-0.3	3.1%	2.8%	-0.3
• Total share of the top 10 occupations	63.1%	68.8%	5.7	61.4%	67.7%	6.3
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	53.6%	48.4%	-5.3	48.3%	42.7%	-5.6
• Median income if working in in-field occupations	45360	47920	5.6%	33910	36820	8.6%
• Median income if working in out-of-field occupations	30110	31730	5.4%	24240	26710	10.2%

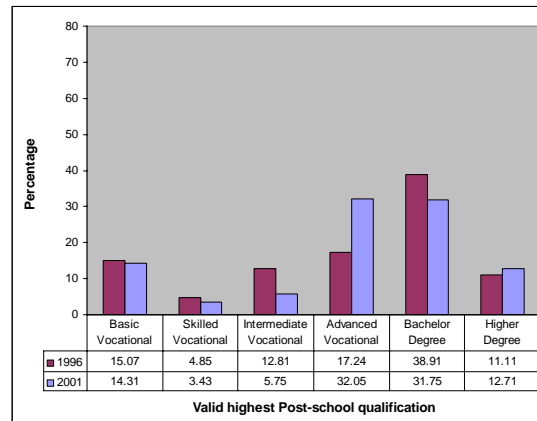
**Table 2.16-2 Age profiles for Business and Management PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	138	67.4	6000	63.0	59%	5.3	-3%	-12.0
19	246	61.4	6960	57.3	52%	0.3	-17%	-1.9
20	432	58.3	9390	67.8	95%	-4.3	-28%	-1.5
21	687	59.6	12990	72.4	37%	2.2	-1%	-7.3
22	876	57.2	15420	77.8	24%	4.2	-3%	-4.4
23	927	56.6	25490	80.8	24%	6.6	5%	-3.6
24	924	53.7	28210	82.1	16%	5.0	1%	-5.7
25	858	52.1	31490	84.3	19%	0.6	5%	-2.0
26	951	53.3	32180	84.6	42%	5.3	4%	-3.4
27	951	52.7	34440	84.8	59%	2.4	2%	-0.2
28	972	53.5	36130	84.9	55%	1.9	3%	-2.2
29	1017	51.8	35900	85.5	70%	1.5	1%	4.1
30	969	54.3	37080	84.6	60%	1.8	-2%	1.4

**Table 2.16-3 In-field occupations for Business and Management**

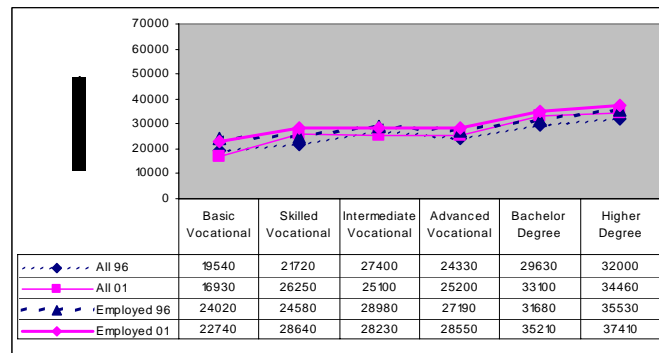
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Senior Government Administrators	0.07%	0.19%	2.57	0.12%	2.59
Senior Business Administrators	0.33%	0.84%	2.53	0.17%	2.19
Cashiers, Tellers and Related Clerks	1.06%	2.67%	2.52	4.11%	2.43
Numerical Clerks	1.38%	3.44%	2.49	4.39%	2.71
Business Professionals	4.40%	10.55%	2.40	12.05%	2.57
Specialised Managers	9.34%	22.22%	2.38	16.61%	2.44
Administrative Associate Professionals	1.20%	2.68%	2.23	2.47%	2.06
Legislators	0.02%	0.05%	2.21	0.02%	4.57
Material Recording and Transport Clerks	0.65%	1.39%	2.13	1.98%	2.38
Careers and Employment Advisors	0.07%	0.16%	2.11	0.11%	2.49
General Managers	2.74%	5.62%	2.05	2.33%	2.12
Government Associate Professionals	0.09%	0.18%	2.05	0.25%	2.24

**Figure 2.16-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Business and Management**



**Figure 2.16-2 Income level and dispersion for Business and Management aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All

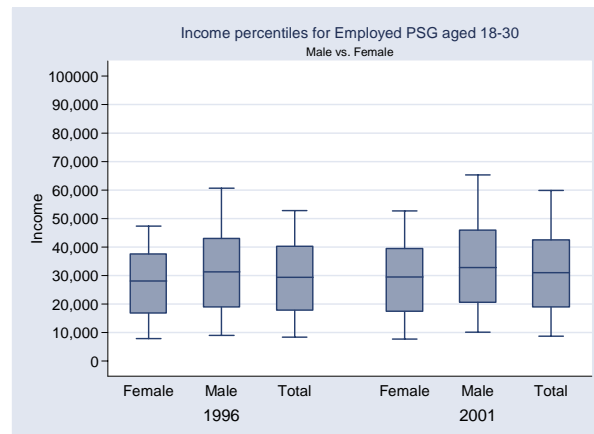
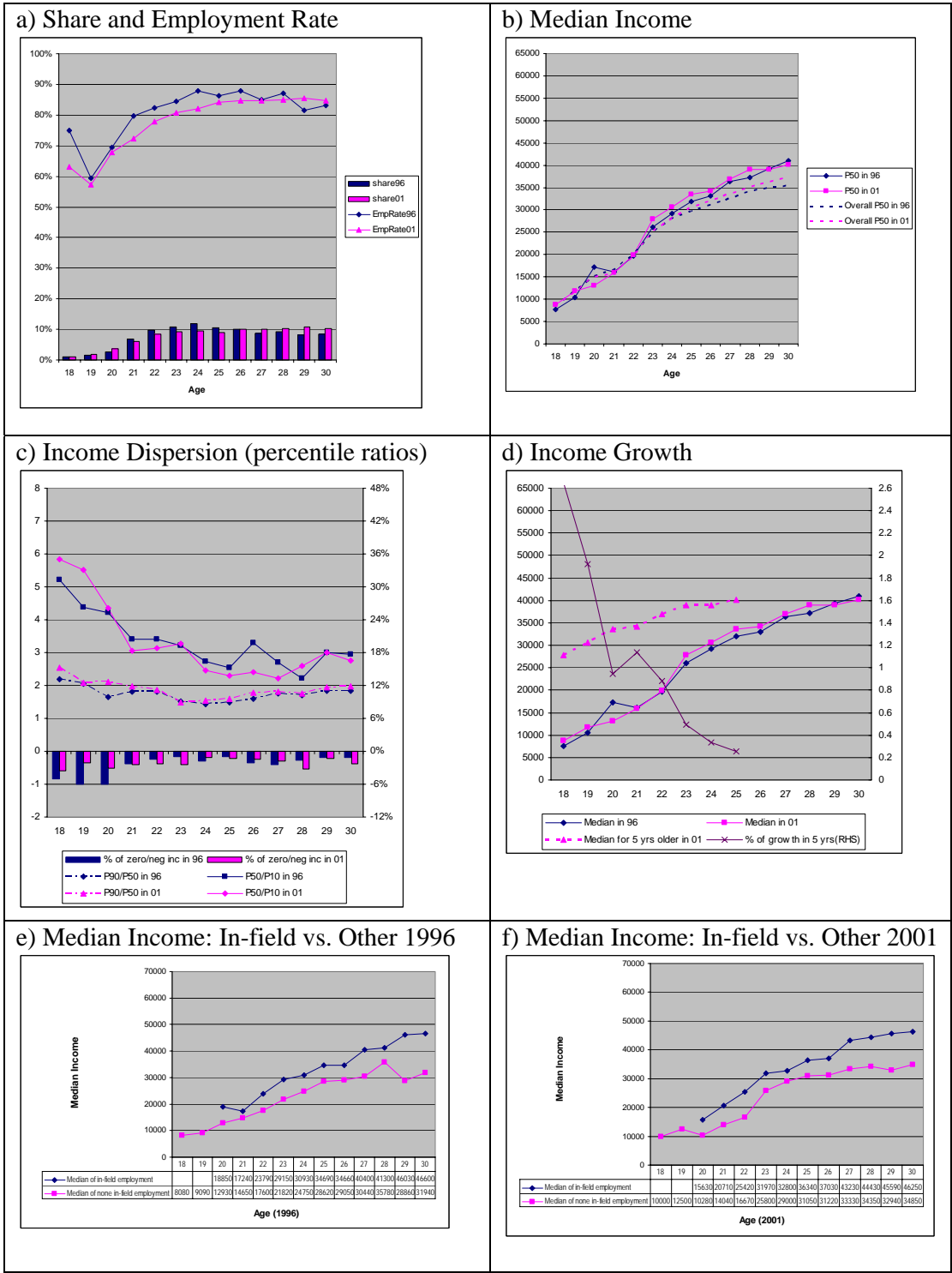


Figure 2.16-3 Age profiles for employed PSGs aged 18 to 30 - Business and Management



## **2.17     Sales and Marketing**

### **2.17.1    Commentary**

#### ***Number***

- There was a 10.8% increase in the number of PSGs between 1996 and 2001 (about 1300). The number of young PSGs increased by only 2.9%.

#### ***Qualification Structure***

- Around a half of PSGs were holding some form of Vocational Qualification for both 1996 and 2001.
- Between 1996 and 2001 the share of Skilled Vocational Qualifications increased (from 10.6% to 19.3%) and the other Vocational Qualifications decreased. The share of Bachelor decreased slightly (from 46.4% to 45.3%), which was approximately offset by the increase in Higher Degrees (6.1% to 7.5%). Overall the pattern of qualification levels did not change much between the two years.
- Median income by qualification increased slightly for Basic Vocational, Advanced Vocational, Bachelor and Higher Degree between 1996 and 2001. Median income decreased considerably for Skilled Vocational Qualifications between the two years. Median income for Intermediate Vocational increased between 1996 and 2001, overtaking Advanced Vocational and becoming very close to the median income of those holding a Bachelor Degree.
- 12.9% of PSGs in this field have a second qualification, higher than for aggregated fields (9.4%). However, a very low proportion of these have the second qualification in a similar field (1.9%). This may be quite reasonable for this field since sales/marketing people may be required to have specific knowledge about the products they deal with.

#### ***Gender***

- There was close to a 10 ppt increase in the proportion of females for both groups of PSGs (all PSGs and young PSGs) between 1996 and 2001, bringing the total proportion to 51.6% for all PSGs and 56.8% for young PSGs.
- Females had lower income than males, but the difference between the two was not large, and primarily in the high-income groups. The difference in income between males and females stayed relatively constant between 1996 and 2001.

#### ***Age profiles***

- The number of PSGs in each age group between 18 and 30 was relatively constant from age 22. There was an increase in numbers for almost all the age groups between 1996 and 2001.
- The proportion of females decreases as the age increases over the range 18 to 30.
- Employment rates were over 80% after the age 23, but extremely low for the age 18 (52.4%). The rates decreased for almost all age groups between 1996 and 2001. This is compatible with the overall decrease in employment rate for young PSGs observed for this field.
- Median income for employed young PSGs in this field started at a similar level as aggregated fields, but generally increased a lot faster than for

aggregated fields. PSGs after the age of 23 had a higher median income than for aggregated fields (Figure 2.17-3 b).

### ***Specialisation***

- Sales and Marketing was amongst the three least-specialised fields for young PSGs in both 1996 and 2001, but most the only the sixth least-specialised field for all PSGs over both years.
- Despite the small specialisation indices, the top 10 occupations still accounted for about 76% of the employment in this field. This is mostly due to the most common in-field occupation, Specialised Managers, being a large occupation.

### ***In-field employment***

- Approximately 60% of all PSGs and 55% of young PSGs were employed in in-field occupations. There was a slight decrease for both groups between 1996 and 2001.
- The median income for in-field employment was much higher than other employment in both years for both age groups (more than \$13 000 difference for all PSGs for both years). Median incomes increased for both in-field and out-of-field employment between 1996 and 2001, with in-field incomes increasing more for young PSGs (3.1% compared with 2.6%) and out-of-field income increasing more for all PSGs (5.2% compared with 0.7%).

### ***Demand and supply***

- There was a weak demand shock (3.7%) and supply shock (7.6%). The demand change for young PSGs is almost double the demand change for all PSGs.

## 2.17.2 Tables and Figures

Table 2.17-1 Key changes for Sales and Marketing PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	11556	12804	10.8%	5907	6081	2.9%
Female Proportion	42.3%	51.6%	9.3	48.5%	56.8%	8.4
Employment rate	86.9%	84.0%	-2.9	85.5%	81.0%	-4.5
Income						
• Mean	40780	41750	2.4%	30260	30810	1.8%
• Median	33050	33600	1.7%	28090	27700	-1.4%
• P90-P50 ratio	2.47	2.64	0.17	1.91	2.18	0.27
• P50-P10 ratio	4.61	5.38	0.77	4.55	5.31	0.75
• Median as percentage of PSGs' median	113.2%	111.5%	-1.71	115.4%	114.4%	-0.94
% of people with second qualification in different field of study (6-digit level)	12.9	N/A	N/A	12.4	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	1.9	N/A	N/A	2.0	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	4.17	4.13	-0.05	3.68	3.68	0.00
• by industry	1.43	1.40	-0.03	1.15	1.33	0.18
• by industry and occupation	1.88	1.65	-0.23	1.04	1.24	0.20
Supply and demand indices						
• Demand shock	N/A	N/A	3.7%	N/A	N/A	7.1%
• Supply shock	N/A	N/A	7.6%	N/A	N/A	7.7%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Specialised Managers	24.8%	28.6%	3.8	22.7%	25.9%	3.2
• Finance and Sales Associate Professionals	18.0%	15.6%	-2.4	14.5%	13.5%	-1.0
• Salespersons and Demonstrators	9.0%	9.1%	0.0	11.5%	10.8%	-0.7
• Business Professionals	6.4%	6.3%	-0.1	9.5%	7.9%	-1.7
• General Managers	7.4%	4.5%	-2.9	3.8%	2.1%	-1.7
• Library, Mail and Related Clerks	2.4%	4.1%	1.7	3.0%	5.6%	2.6
• Housekeeping and Restaurant Services Workers	1.8%	2.1%	0.3	2.7%	3.4%	0.7
• Client Information Clerks	1.3%	1.8%	0.5	1.7%	2.7%	1.0
• Writers, Artists, Entertainment and Sports Associate Professionals	1.8%	1.8%	-0.1	1.9%	1.5%	-0.4
• Cashiers, Tellers and Related Clerks	1.8%	1.8%	-0.1	2.6%	2.6%	0.0
• Total share of the top 10 occupations	74.7%	75.6%	0.8	74.0%	75.9%	1.9
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	62.3%	60.1%	-2.2	55.6%	54.3%	-1.2
• Median income if working in in-field occupations	42110	43200	2.6%	34370	35430	3.1%
• Median income if working in out-of-field occupations	28800	30290	5.2%	26740	26940	0.7%



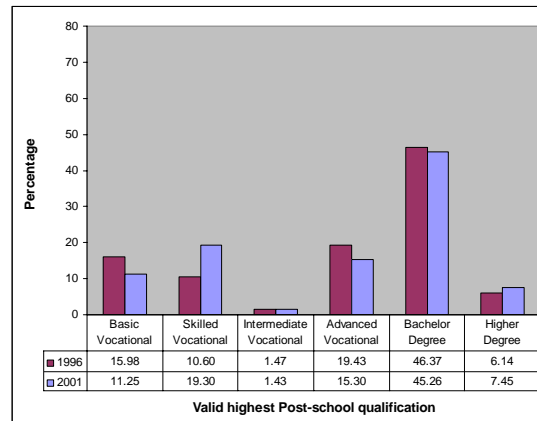
**Table 2.17-2 Age profiles for Sales and Marketing PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	123	68.3	6110	52.4	21%	11.1	-13%	-0.6
19	174	65.5	9560	69.0	9%	3.3	-11%	2.3
20	231	63.6	10280	68.8	18%	5.2	-8%	-8.1
21	456	64.7	11700	72.8	26%	8.5	-8%	-6.3
22	561	61.0	17600	77.7	-3%	9.9	12%	-4.1
23	597	58.1	25770	82.3	-9%	9.0	8%	-4.4
24	558	52.9	28300	83.3	-16%	0.9	-4%	-7.6
25	543	57.2	32360	84.0	-13%	12.3	5%	-4.4
26	582	54.4	34180	85.5	0%	9.0	-1%	-2.7
27	576	53.9	36360	83.9	12%	8.8	-3%	-5.0
28	576	53.6	38470	85.9	14%	9.9	5%	-2.2
29	558	54.8	39810	85.4	16%	12.0	0%	-3.4
30	552	51.4	38620	83.2	13%	4.7	-5%	-4.0

**Table 2.17-3 In-field occupations for Sales and Marketing**

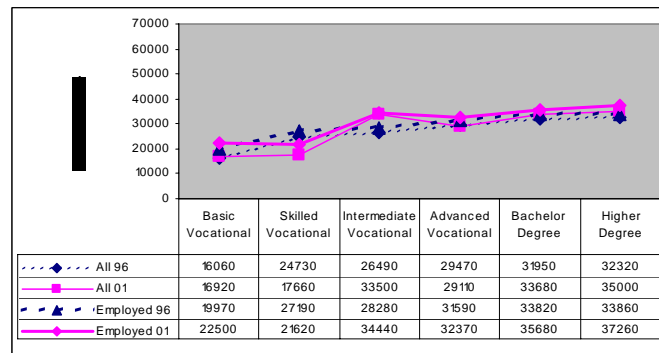
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Finance and Sales Associate Professionals	3.94%	16.92%	4.29	14.24%	3.15
Salespersons and Demonstrators	3.13%	9.20%	2.94	11.31%	2.34
Specialised Managers	9.34%	27.21%	2.91	24.61%	3.63
Material Recording and Transport Clerks	0.66%	1.86%	2.84	1.77%	2.08
General Managers	2.86%	5.94%	2.08	3.03%	2.63

**Figure 2.17-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Sales and Marketing**

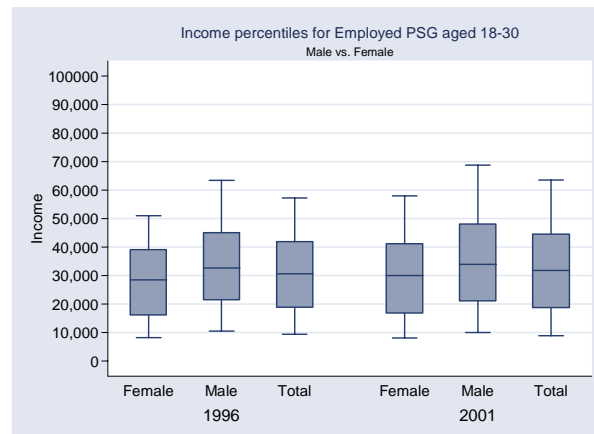


**Figure 2.17-2 Income level and Dispersion for Sales and Marketing aged 18-30**

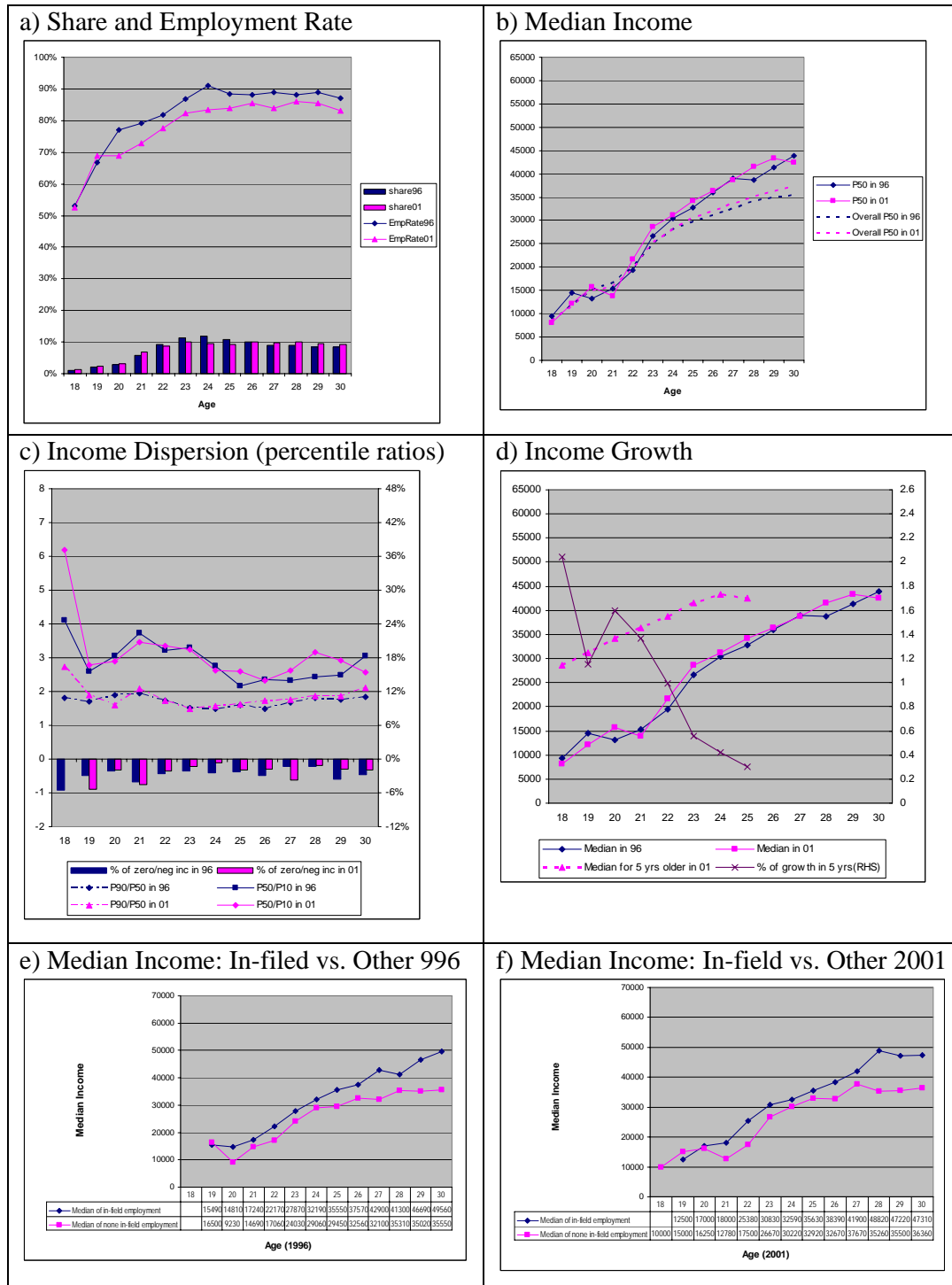
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.17-3 Age profiles for employed PSGs aged 18 to 30 - Sales and Marketing**



## **2.18     Office Studies**

### **2.18.1    Commentary**

#### ***Number***

- There was a substantial decrease in the number of PSGs in this field between 1996 and 2001 (28.3% for all PSGs; 36.7% for young PSGs). The decrease in this field was the largest decrease in terms of numbers amongst all the fields and the second largest in percentage terms.

#### ***Qualification Structure***

- The qualification level is very low, with almost no graduates holding a Degree level qualification. The share of the lowest qualification, Basic Vocational, increased from 50.3% in 1996 to 81.1% in 2001. The share of Vocational Qualifications decreased considerably - the total number of Skilled Vocational graduates reduced from about 3900 in 1996 to 750 in 2001, and Advanced Vocational graduates from 860 to 140.
- Median income increased for all levels of qualification between 1996 and 2001. The median income increased most for those holding an Advanced Vocational Qualification.
- There was a higher proportion of multiple qualifications than for aggregated fields (14.7% compared with 9.4%). Approximately half hold a second qualification within this field.

#### ***Gender***

- There was a very high female proportion (over 90% for all PSGs). The proportion of females decreased between 1996 and 2001 for both age groups.
- Females in this field had higher median income than males in both years. Between 1996 and 2001 female income increased at all five percentiles illustrated in the box graph (Figure 2.18-1 b). Male income was more widely distributed than female income, with a heavier right tail (high income) than the female distribution for both years. Overall, males had higher 75 and 90 percentiles than females, but lower P50, P25 and P10.

#### ***Age profiles***

- Like other low-qualified fields, employed PSGs in this field started with a relatively higher income than employed PSGs in aggregated fields, but had smaller increases in income. After the age of 23, median income for aggregated fields was higher (Figure 2.18-3 b). The expected income growth in 5 years for PSGs aged 23 and over was almost zero.

#### ***Specialisation***

- Very unspecialised, especially the cross-specialisation index (value of 0.83 in 2001). The specialisation index for young PSGs was slightly higher than the index for all PSGs. The indices decreased from 1996 to 2001, causing this field to become the least specialised field among all the individual fields in this report.
- The share of top 10 occupations was over 70% for both groups of PSGs and for both years. This is mainly because the most common occupations were large occupations.

#### ***In-field employment***

- There were 7 in-field occupations, not many considering the low specialisation index for this field. This seems to be the result of the relatively large size of these occupations.

- The share of PSGs working in in-field occupations decreased from close to 60% to close to 50% between 1996 and 2001 for both groups of PSGs. The 2001 value was lower than the value for aggregated fields in 2001 (55.0%).
- The median income for in-field employment was higher than out-of-field employment for both years, but the gap narrowed considerably in 2001, especially for all PSGs.
- The graphs of median income by age (Figure 2.18-3 e,f) show the narrowing of the gap between in-field and out-of-field income over the two years. The graph also shows that the income difference decreased with age. This is compatible with the observed difference between in-field and out-of-field income being smaller for all PSGs than young PSGs.

#### ***Demand and supply***

- There was a negative demand change (-4.3%) and a weak supply shock (5.3%). Along with the large drop in numbers this indicates a decline in the attractiveness of this field of study. One explanation may be the low income for this field: median incomes were just over 60% of the median income for aggregated fields.

## 2.18.2 Tables and Figures

**Table 2.18-1 Key changes for Office Studies PSGs**

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	20802	14907	-28.3%	10197	6453	-36.7%
Female Proportion	95.6%	92.9%	-2.8	94.3%	91.7%	-2.6
Employment rate	73.1%	72.1%	-1.0	73.8%	70.2%	-3.5
Income						
• Mean	20060	22690	13.1%	19260	20420	6.0%
• Median	18330	19640	7.1%	18980	19550	3.0%
• P90-P50 ratio	2.09	2.08	0.00	1.80	1.90	0.10
• P50-P10 ratio	10.35	7.82	-2.52	6.58	6.37	-0.21
• Median as percentage of PSGs' median	62.8%	65.2%	2.39	77.9%	80.8%	2.81
% of people with second qualification in different field of study (6-digit level)	14.7	N/A	N/A	14.3	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	8.2	N/A	N/A	7.0	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	3.40	2.46	-0.95	3.36	2.56	-0.79
• by industry	0.99	1.00	0.01	1.03	1.10	0.07
• by industry and occupation	0.94	0.83	-0.11	1.05	0.99	-0.06
Supply and demand indices						
• Demand shock	N/A	N/A	-4.3%	N/A	N/A	-4.8%
• Supply shock	N/A	N/A	5.3%	N/A	N/A	4.2%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Secretaries and Keyboard Operating Clerks	23.3%	16.8%	-6.6	21.3%	15.0%	-6.3
• Library, Mail and Related Clerks	12.0%	13.6%	1.6	12.6%	14.8%	2.2
• Specialised Managers	6.9%	8.6%	1.7	5.0%	6.6%	1.5
• Client Information Clerks	9.2%	8.0%	-1.2	12.2%	10.3%	-1.8
• Salespersons and Demonstrators	5.4%	5.8%	0.4	6.3%	7.7%	1.4
• Finance and Sales Associate Professionals	3.7%	5.2%	1.5	4.1%	6.0%	1.9
• Numerical Clerks	4.8%	4.3%	-0.4	5.1%	4.6%	-0.4
• Housekeeping and Restaurant Services Workers	3.0%	3.0%	0.1	3.7%	4.5%	0.8
• Cashiers, Tellers and Related Clerks	3.6%	3.0%	-0.6	4.3%	3.5%	-0.8
• Computing Professionals	0.6%	2.3%	1.7	0.6%	2.3%	1.6
• Total share of the top 10 occupations	72.5%	70.7%	-1.8	75.3%	75.4%	0.2
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	58.4%	50.3%	-8.1	60.4%	52.5%	-7.9
• Median income if working in in-field occupations	24170	24960	3.3%	23960	24930	4.0%
• Median income if working in out-of-field occupations	20560	24110	17.3%	19690	22560	14.6%

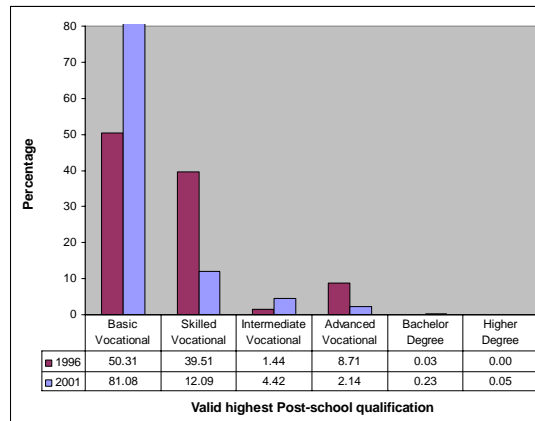
**Table 2.18-2 Age profiles for Office Studies PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	252	84.5	5830	61.4	-54%	-11.1	-11%	-5.6
19	318	86.7	12060	65.1	-56%	-7.2	5%	-6.4
20	468	86.5	14890	69.2	-44%	-4.9	-11%	-10.4
21	447	87.2	18020	70.7	-52%	-4.4	-6%	-7.7
22	474	90.5	20080	69.6	-46%	-2.3	0%	-7.2
23	495	93.4	20380	67.7	-38%	-0.6	-8%	-9.8
24	537	94.4	22240	74.4	-35%	0.9	-3%	-1.2
25	606	92.6	24500	74.1	-24%	-2.2	5%	-2.4
26	639	91.5	24440	72.9	-19%	-3.5	4%	-0.1
27	540	95.0	23820	70.2	-32%	0.3	4%	-3.6
28	540	93.3	21000	70.0	-22%	-2.8	4%	1.9
29	576	93.2	21410	68.6	-30%	-3.2	3%	-1.4
30	564	94.7	22650	69.0	-25%	-2.9	14%	2.8

**Table 2.18-3 In-field occupations for Office Studies**

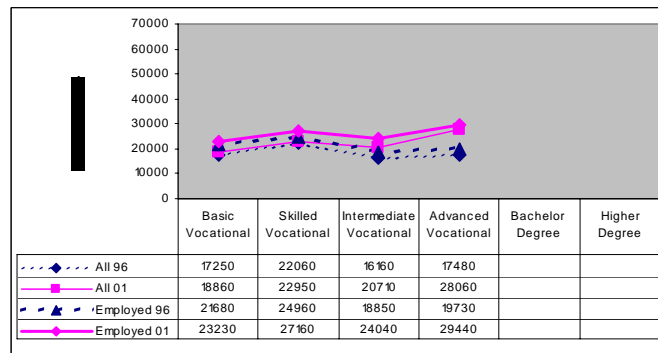
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Secretaries and Keyboard Operating Clerks	1.91%	21.45%	11.25	19.88%	9.32
Client Information Clerks	1.43%	8.93%	6.24	11.81%	5.16
Library, Mail and Related Clerks	2.97%	12.71%	4.28	13.38%	3.67
Numerical Clerks	1.43%	4.68%	3.28	5.01%	3.00
Cashiers, Tellers and Related Clerks	1.10%	3.44%	3.12	4.14%	2.32
Building Caretakers and Cleaners	0.67%	1.50%	2.23	1.21%	1.70
Administrative Associate Professionals	1.37%	2.96%	2.16	2.86%	2.19

**Figure 2.18-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Office Studies**

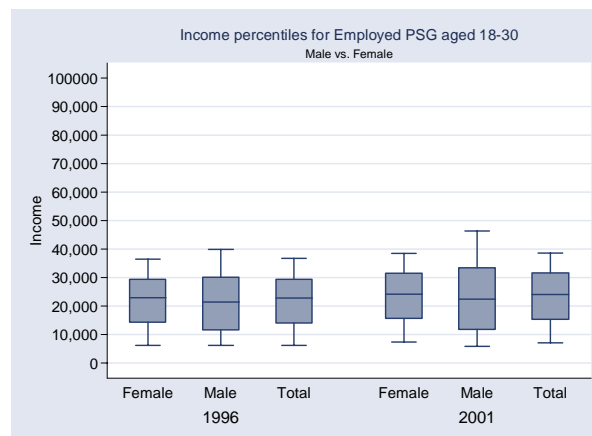


**Figure 2.18-2 Income level and dispersion for Office Studies aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed

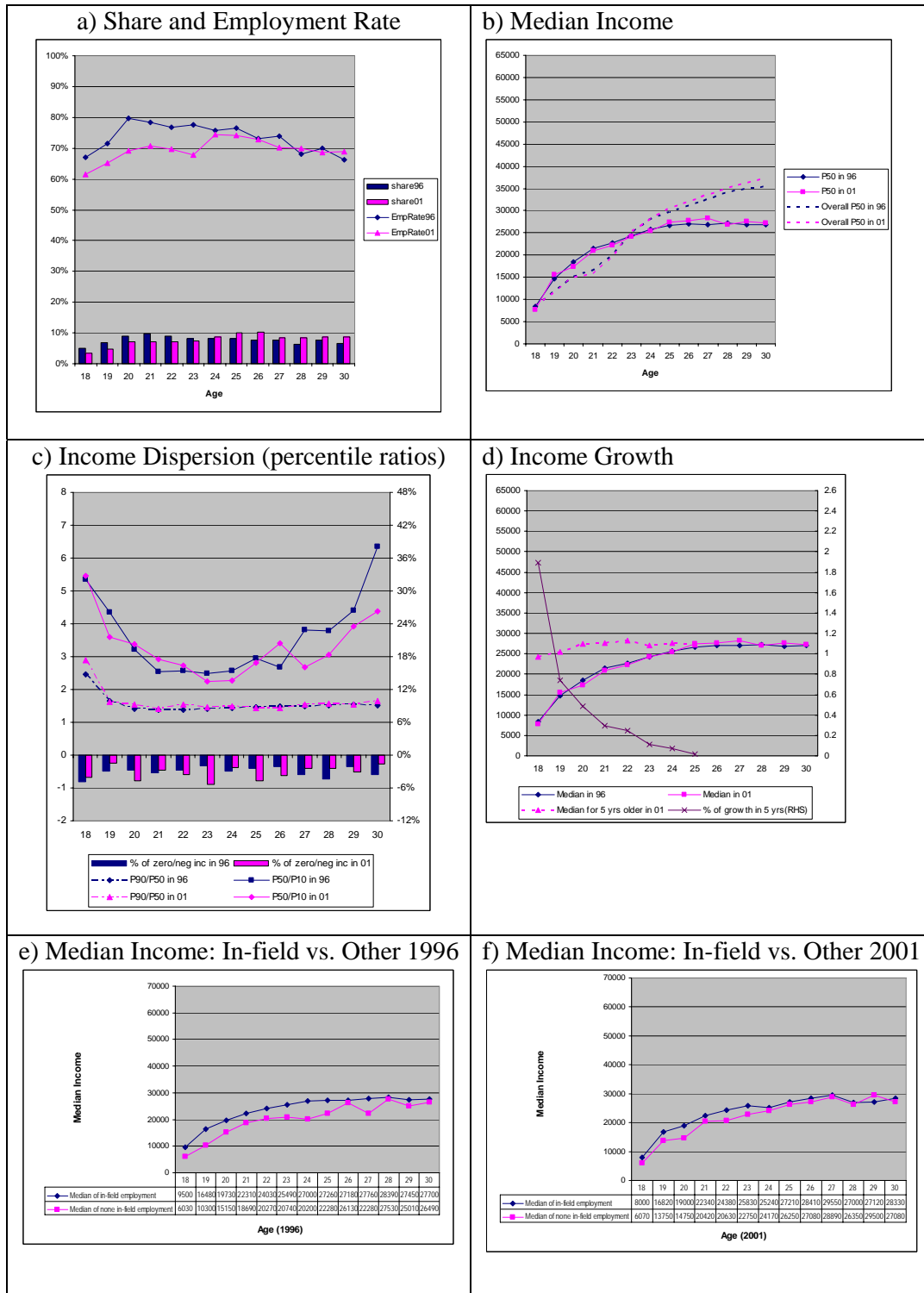


b) Income percentiles: Male vs. Female vs. All





**Figure 2.18-3 Age profiles for employed PSGs aged 18 to 30 - Office Studies**



## **2.19     Social Science**

### **2.19.1    Commentary**

#### *Number*

- The number of PSGs decreased by about 1000 in total (8%) between 1996 and 2001. The number of young PSGs decreased by only 1.6% between the two years.

#### *Qualification Structure*

- This is a highly qualified field. The majority of PSGs in this field have Bachelor Degree or over and the share of all Vocational Qualifications was only about 0.5% in 1996. Although there was a proportional shift from Bachelor Degree to Basic and Advanced Vocational Qualifications between 1996 and 2001, the total share of Vocational Qualifications was still less than 10% in 2001.
- PSGs with Vocational Qualifications had lower income than those with university qualifications. The large difference between median income for all PSGs and employed PSGs reflects a relatively low employment rate of PSGs at these levels.
- 14.6% of PSGs had a second qualification, a higher proportion than for aggregated fields. Few of these (2.2% total) had the second qualification in a similar field.

#### *Gender*

- Over 55% of PSGs were female in 1996 and the ratio increased to more than 60% in 2001.
- The income difference between the two genders was not obvious, especially in 1996, only P90 had a clear difference between males and females (male higher). However, male income increased more than female income between 1996 and 2001, resulting in males having higher income than females at all 5 percentiles in 2001, with P90 much higher.

#### *Age profiles*

- Like other highly qualified fields, there were very few PSGs under 21 years old, and the employment rate was very low for these PSGs. However, because of the increased share of two lower levels of qualifications between 1996 and 2001 the number of PSGs aged 18 and 19 increased a lot in 2001.
- The employment rate for most age groups decreased between 1996 and 2001. The median income, on the other hand, increased for almost all age groups over the same period.
- Overall, young PSGs had lower median income than for median income for young PSGs in aggregated fields. This is clear in Figure 2.19-3 b, where median income is substantially lower until the age of 26, where the two curves converge.
- The graph of 5-year growth in income (Figure 2.19-3) was steeper than the same graph for aggregated fields.

#### *Specialisation*

- This field is less specialised than most of the individual fields in our study.
- Unlike most other fields, the specialisation indices by industry were higher than those by occupation.

- Young PSGs were less specialised than all PSGs. However, all three specialisation indices increased between 1996 and 2001 for young PSGs, but decreased for all PSGs.
- The top 10 occupations accounted for just over 50% of all employment in this field. No one major occupation can be identified.

#### ***In-field employment***

- There were 15 in-field occupations. No occupation had an in-field index above 10.
- Only approximately 30% of all PSGs worked in in-field occupations. The proportion is slightly lower for young PSGs than all PSGs.
- Despite the low proportion of in-field employment, the median income shows a clear advantage of working in in-field occupation. However, the advantage was weaker in 2001 than in 1996 as the median for out-of-field employment had a higher growth rate than in-field employment.
- There is no clear pattern to median income for in-field employment and out-of-field employment by age group. The graphs by age (Figure 2.19-3 e, f) intersect numerous times.

## 2.19.2 Tables and Figures

Table 2.19-1 Key changes for Social Science PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	12483	11481	-8.0%	4947	4869	-1.6%
Female Proportion	56.9%	60.4%	3.5	56.0%	61.7%	5.8
Employment rate	82.1%	79.6%	-2.5	79.6%	77.3%	-2.2
Income						
• Mean	33330	34120	2.4%	22590	25160	11.4%
• Median	29140	29280	0.5%	19830	22800	15.0%
• P90-P50 ratio	2.22	2.28	0.06	2.14	2.08	-0.06
• P50-P10 ratio	6.41	5.92	-0.49	4.97	4.91	-0.06
• Median as percentage of PSGs' median	99.8%	97.2%	-2.65	81.4%	94.2%	12.74
% of people with second qualification in different field of study (6-digit level)	14.6	N/A	N/A	13.6	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	2.2	N/A	N/A	1.6	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	1.61	1.51	-0.10	1.37	1.46	0.09
• by industry	2.90	2.63	-0.27	1.77	1.94	0.18
• by industry and occupation	3.60	2.98	-0.62	1.75	2.09	0.34
Supply and demand indices						
• Demand shock	N/A	N/A	5.9%	N/A	N/A	5.2%
• Supply shock	N/A	N/A	8.9%	N/A	N/A	7.7%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Specialised Managers	10.1%	11.7%	1.6	7.6%	9.4%	1.8
• Secondary Teaching Professionals	11.6%	9.2%	-2.5	6.3%	6.2%	-0.1
• Library, Mail and Related Clerks	5.6%	7.4%	1.7	8.5%	10.1%	1.6
• Primary and Early Childhood Teaching Professionals	4.6%	5.7%	1.1	3.0%	5.2%	2.2
• Business Professionals	3.2%	4.7%	1.5	3.7%	4.5%	0.9
• Finance and Sales Associate Professionals	3.7%	4.3%	0.6	4.9%	5.9%	1.0
• Writers, Artists, Entertainment and Sports Associate Professionals	4.0%	3.8%	-0.2	4.5%	3.6%	-0.9
• Social and Related Science Professionals	3.9%	3.8%	-0.2	3.8%	2.9%	-0.9
• Salespersons and Demonstrators	3.0%	3.4%	0.4	5.9%	5.9%	-0.1
• Tertiary Teaching Professionals	4.0%	3.3%	-0.7	2.1%	1.9%	-0.1
• Total share of the top 10 occupations	53.9%	57.4%	3.5	50.3%	55.6%	5.3
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	35.6%	31.7%	-3.9	28.7%	27.9%	-0.8
• Median income if working in in-field occupations	38490	37430	-2.8%	28040	30640	9.3%
• Median income if working in out-of-field occupations	31440	33110	5.3%	23000	27260	18.5%

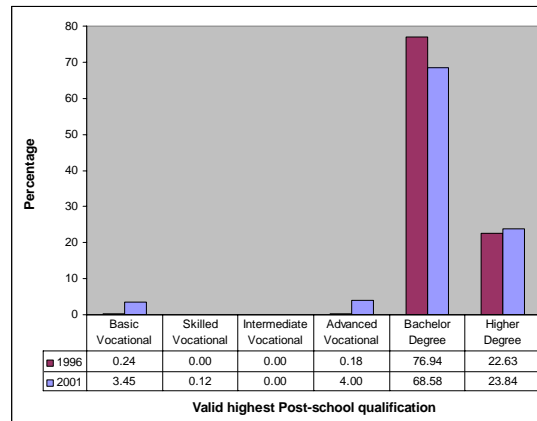
**Table 2.19-2 Age profiles for Social Science PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	24							
19	39	83.3	5830	33.3	550%	33.3	N/A	-66.7
20	69	77.3	8000	65.2	21%	5.1	3%	4.1
21	306	66.0	8090	65.4	-6%	0.3	3%	-2.8
22	435	64.8	9670	70.3	-15%	4.8	3%	-2.6
23	486	64.2	15180	76.5	-16%	7.4	16%	0.5
24	471	62.8	20190	81.4	-20%	9.3	6%	1.4
25	474	60.8	26200	79.1	-21%	8.3	11%	-4.0
26	531	60.8	26930	80.2	2%	6.2	-1%	-0.1
27	480	58.8	30560	80.5	10%	3.3	7%	-3.7
28	492	63.0	30410	78.8	10%	6.7	0%	-6.3
29	546	57.7	33110	81.9	21%	4.0	12%	-0.8
30	519	57.2	35420	80.9	24%	4.7	15%	-1.2

**Table 2.19-3 In-field occupations for Social Science**

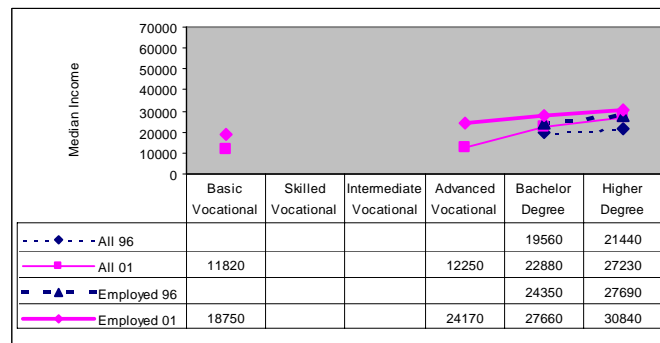
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Archivists, Librarians and Related Information Professionals	0.45%	2.96%	6.56	1.89%	5.92
Legislators	0.02%	0.10%	4.80	0.00%	0.00
Secondary Teaching Professionals	2.31%	10.82%	4.69	6.46%	4.25
Senior Government Administrators	0.08%	0.37%	4.46	0.20%	3.95
Social and Related Science Professionals	1.06%	3.97%	3.73	3.46%	3.78
Other Teaching Professionals	0.12%	0.40%	3.42	0.20%	3.55
Careers and Employment Advisors	0.08%	0.21%	2.75	0.12%	2.28
Special-Interest Organisation Administrators	0.10%	0.29%	2.74	0.24%	2.79
Non-Ordained Religious Associate Professionals	0.05%	0.13%	2.66	0.08%	3.10
Tertiary Teaching Professionals	1.58%	3.83%	2.42	2.05%	2.29
Government Associate Professionals	0.09%	0.21%	2.29	0.28%	2.62
Library, Mail and Related Clerks	2.98%	6.58%	2.21	9.57%	2.58
Legal Professionals	1.24%	2.72%	2.19	3.01%	2.59
Religious Professionals	0.24%	0.50%	2.10	0.08%	1.21
Special Education Teaching Professionals	0.39%	0.81%	2.06	0.68%	2.24

**Figure 2.19-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Social Science**

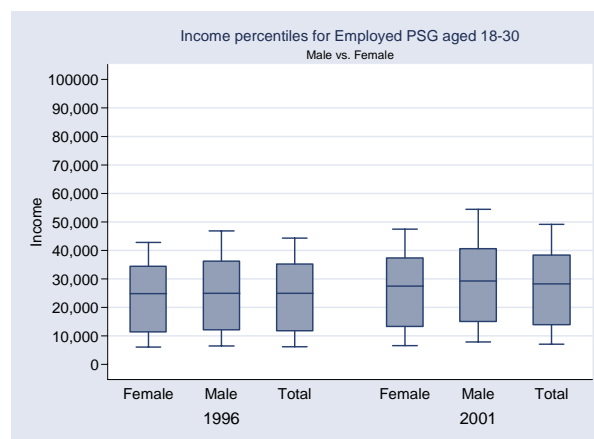


**Figure 2.19-2 Income level and dispersion for Social Science aged 18-30**

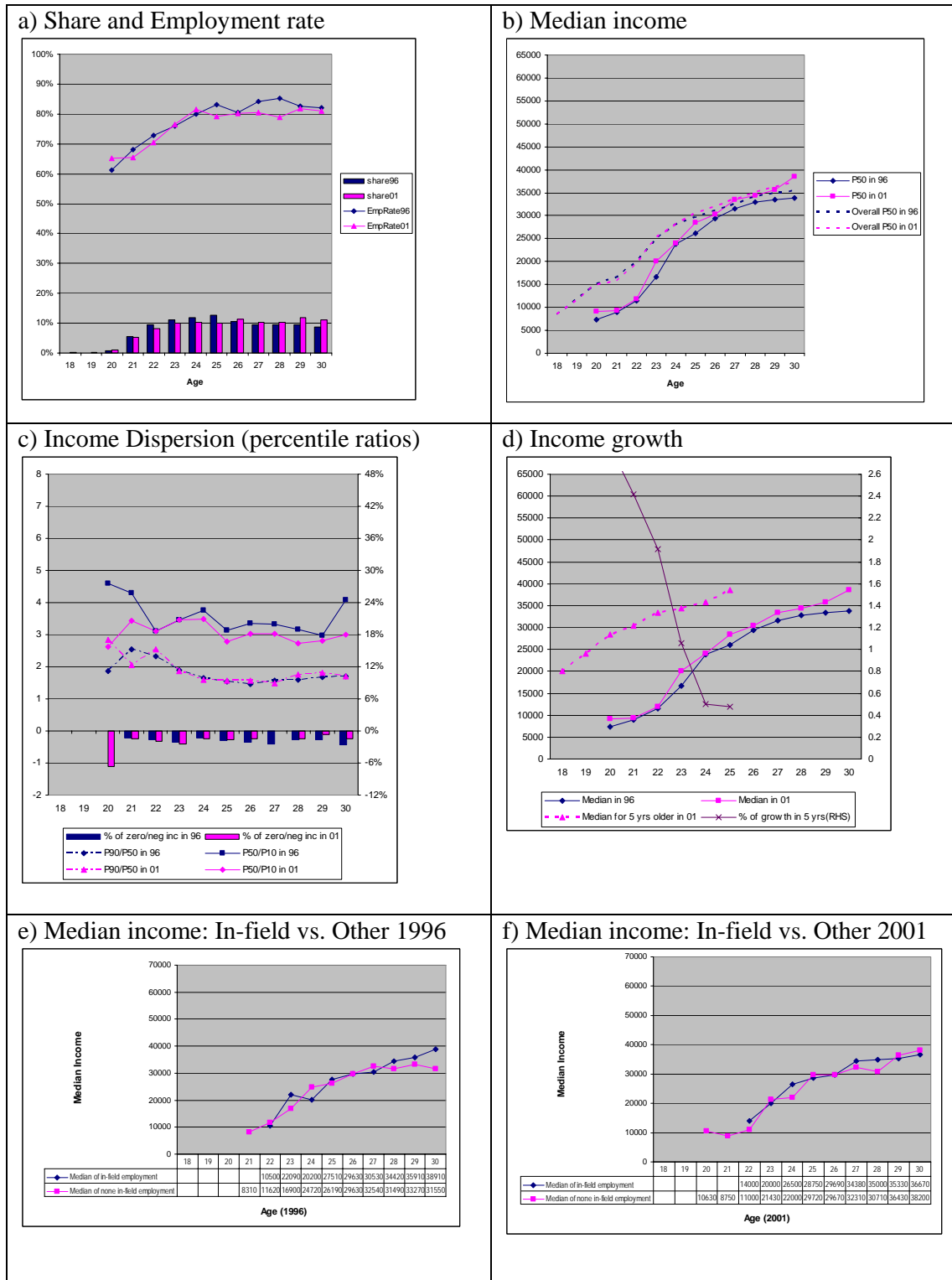
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.19-3 Age profiles for employed PSGs aged 18 to 30 - Social Science**



## **2.20 Psychology**

### **2.20.1 Commentary**

#### ***Number***

- The number of PSGs in this field increased by 3.8% between 1996 and 2001. There was a small decrease of 2.2% in the number of young PSGs (about 70 PSGs).

#### ***Qualification Structure***

- This field had a very high level of qualifications, with almost no PSGs holding Vocational Qualifications. The most common qualification was Bachelor Degree. Between 1996 and 2001 the proportion holding a Bachelor degree decreased from 73.6% to 66.7%. The proportion holding a Higher Degree absorbed most of these PSGs (from 24.8% to 29.9%), with a small increase in the proportion of PSGs holding an Advanced Vocational Qualification (1.1% to 2.5%).
- Although a Bachelor Degree was the most common qualification in this field, those PSGs had their median income lower than their neighbouring qualifications (both Advanced Vocational and Higher Degree) in 1996. In 2001, their median income was slightly higher than at the Advanced Vocational level. However, this is because relatively more PSGs with Bachelor degrees were employed than those with Advanced Vocational Qualifications - amongst employed PSGs, Advanced Vocational still had a higher median income than Bachelor degree.
- 15.9% of PSGs in this field held multiple qualifications, with only about one third of these in the same field.

#### ***Gender***

- Approximately 75% of the PSGs were female. This ratio increased between 1996 and 2001. Unlike most other fields, the increase in the female ratio was greater for all PSGs than for young PSGs, indicating older females entered this field.
- Income levels for the two genders were similar, except that males had a higher 90<sup>th</sup> percentile value than females. Male income increased more than female income between 1996 and 2001.

#### ***Income***

- This field had relatively low income levels, especially given the high qualification structure.
- Median income was less than mean income for all PSGs and for young PSGs. The increase in median income between 1996 and 2001 was larger than the increase in mean income, especially for young PSGs.

#### ***Age profiles***

- The number of PSGs in each age group decreased between 1996 and 2001 for ages 20-25. There was an increase in each age group between 25 and 30, with the largest increase occurring at age 30 (65%). This trend could be explained by the move from Bachelor Degree to Higher Degree.
- Median income generally increased for each age group between 1996 and 2001, except age 20. However, there were very few PSGs in this age group (57), and they also had a lower employment rate in 2001 than 1996.
- Overall, median income for young PSGs in this field is below the median income for young PSGs in aggregated fields. Figure 2.20-3 shows how the gap between median incomes for employed PSGs is large at age 18 and narrows until the two curves converge at around age 26.



- The 5-year income growth is quite steep before the age 24, but then sharply decreases. A possible explanation for this is the large increase in the early 20s is due to the qualification level changes, as PSGs in their early 20s are likely to only hold low-level qualifications. Note that although there is an apparent peak at age 21, this is because this age group had a relatively lower level of income in 1996.

### ***Specialisation***

- This field has a low level of specialisation. It was the fourth least specialised field in 1996 and the fifth least specialised field in 2001.
- The top ten occupations only accounted for about 60% of the total employment in this field.

### ***In-field employment***

- Only about a quarter of PSGs in this field worked in in-field occupations, and the share of young PSGs working in in-field occupations was less than 20% in both census years.
- There were nine in-field occupations. The in-field indices for young and all PSGs were quite different, with 'Social and Related Science Professionals' having the largest in-field index for all PSGs, but 'Careers and Employment Advisors' having the highest in-field index for young PSGs. Most of the in-field occupations were small occupations, which made the share of in-field employment quite small.
- Despite the low share of in-field employment, the median income for those working in in-field occupations was much higher than out-of-field occupations. However, the gap decreased between 1996 and 2001 as median income increase more rapidly for out-of-field employment.
- The graphs of median income by age group show that there is no clear pattern between in-field and out-of-field employment for young PSGs (Figure 2.20-3 e, f). In 1996, median income of in-field employment was higher than out-of-field employment for all the ages after 23 except 26, and the largest difference occurred at age 29. In 2001, in-field income was higher in the 26 to 28 year age range, and less in all other ages. The largest difference occurred in the age 24, where median income of in-field employment was about \$10,000 less than other employment.

## 2.20.2 Tables and Figures

Table 2.20-1 Key changes for Psychology PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	6684	6939	3.8%	3285	3213	-2.2%
Female Proportion	71.0%	75.0%	4.0	74.2%	76.6%	2.3
Employment rate	79.8%	79.9%	0.1	77.9%	79.2%	1.3
Income						
• Mean	30510	32670	7.1%	21700	25180	16.0%
• Median	25490	27570	8.2%	17780	22180	24.7%
• P90-P50 ratio	2.38	2.37	-0.01	2.36	2.16	-0.20
• P50-P10 ratio	6.09	5.94	-0.14	4.90	4.87	-0.03
• Median as percentage of PSGs' median	87.3%	91.5%	4.18	73.0%	91.6%	18.60
% of people with second qualification in different field of study (6-digit level)	15.9	N/A	N/A	11.7	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	4.6	N/A	N/A	2.0	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	1.73	1.90	0.18	1.54	1.64	0.10
• by industry	1.77	1.80	0.03	1.41	1.55	0.14
• by industry and occupation	1.33	1.63	0.29	1.10	1.39	0.29
Supply and demand indices						
• Demand shock	N/A	N/A	14.3%	N/A	N/A	11.0%
• Supply shock	N/A	N/A	12.7%	N/A	N/A	8.9%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Social and Related Science Professionals	13.1%	14.2%	1.1	6.7%	8.4%	1.7
• Specialised Managers	9.7%	10.7%	0.9	9.3%	8.4%	-0.9
• Business Professionals	4.8%	8.4%	3.6	6.1%	9.4%	3.3
• Library, Mail and Related Clerks	5.1%	6.4%	1.3	7.0%	8.6%	1.6
• Social Work Associate Professionals	4.9%	5.9%	1.0	5.0%	6.1%	1.1
• Finance and Sales Associate Professionals	4.1%	4.4%	0.3	4.8%	5.9%	1.1
• Primary and Early Childhood Teaching Professionals	3.8%	4.2%	0.5	3.0%	3.7%	0.6
• Tertiary Teaching Professionals	4.6%	4.0%	-0.7	2.3%	2.7%	0.4
• Salespersons and Demonstrators	4.0%	3.2%	-0.8	7.3%	5.1%	-2.2
• Writers, Artists, Entertainment and Sports Associate Professionals	2.7%	2.5%	-0.2	3.0%	2.7%	-0.3
• Total share of the top 10 occupations	56.9%	63.9%	7.0	54.6%	61.0%	6.3
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	25.8%	26.4%	0.6	16.7%	19.0%	2.3
• Median income if working in in-field occupations	36700	36850	0.4%	29500	31250	5.9%
• Median income if working in out-of-field occupations	28890	31790	10.0%	23440	26850	14.5%

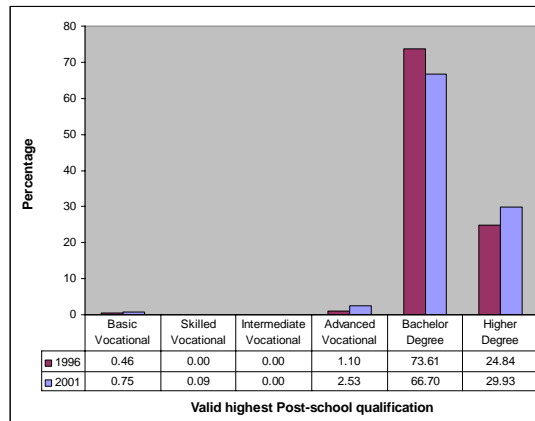
**Table 2.20-2 Age profiles for Psychology PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	3							
19	6							
20	57	83.3	6670	68.4	0%	3.3	-14%	-1.6
21	210	87.1	8260	75.4	-15%	9.1	5%	4.6
22	291	79.2	9470	73.2	-18%	2.7	4%	0.7
23	360	78.2	15420	76.5	-15%	4.4	16%	-1.0
24	315	69.8	19750	77.4	-24%	-1.9	0%	-3.7
25	339	72.8	25630	78.8	-19%	-2.6	19%	-2.0
26	297	76.8	26880	80.8	2%	4.6	1%	2.7
27	339	76.1	31550	82.5	7%	2.5	13%	4.4
28	330	75.5	32400	81.8	15%	1.8	4%	0.6
29	315	74.0	32500	86.4	27%	5.0	11%	8.1
30	357	79.0	34380	80.0	65%	-1.3	14%	-0.6

**Table 2.20-3 In-field occupations for Psychology**

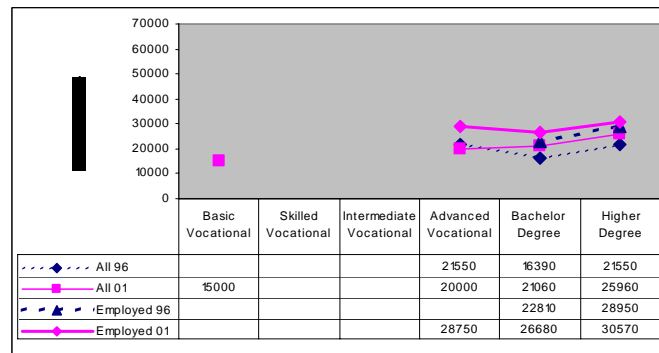
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Social and Related Science Professionals	1.06%	13.95%	13.12	7.69%	8.44
Careers and Employment Advisors	0.07%	0.51%	6.77	0.48%	9.12
Social Work Associate Professionals	1.36%	5.53%	4.08	5.71%	5.67
Tertiary Teaching Professionals	1.57%	4.36%	2.77	2.58%	2.90
Other Teaching Professionals	0.12%	0.28%	2.43	0.24%	4.25
Special Education Teaching Professionals	0.40%	0.93%	2.32	0.72%	2.37
Special-Interest Organisation Administrators	0.10%	0.22%	2.16	0.18%	2.09
Mathematicians, Statisticians and Related Professionals	0.08%	0.17%	2.09	0.06%	0.57
Senior Government Administrators	0.08%	0.17%	2.06	0.18%	3.55

**Figure 2.20-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Psychology**

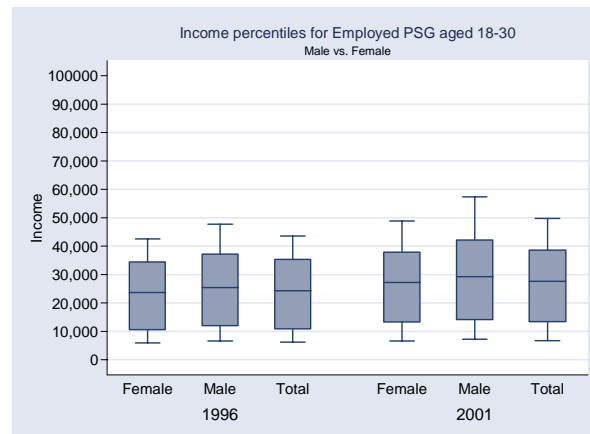


**Figure 2.20-2 Income level and dispersion for Psychology aged 18-30**

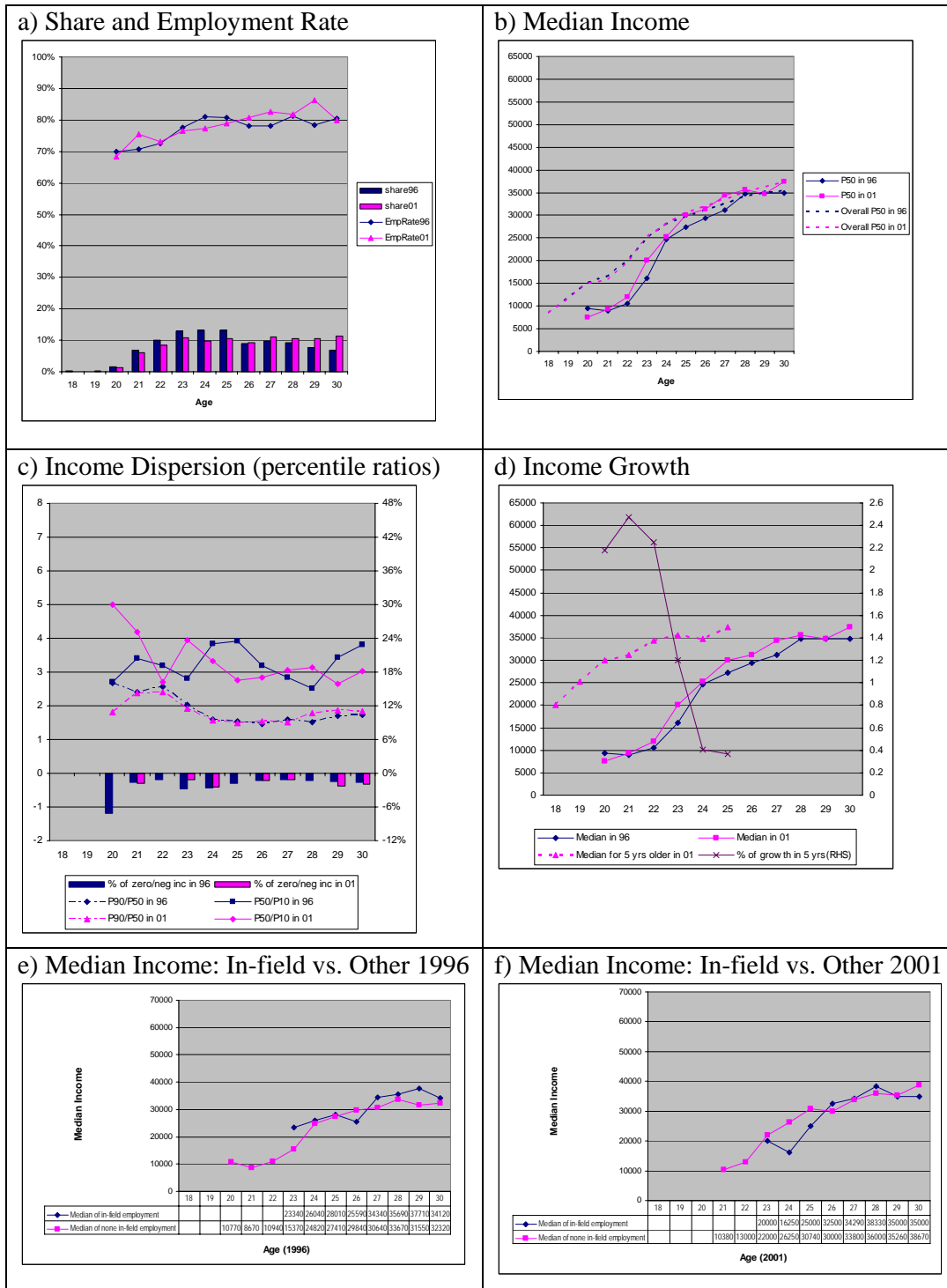
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.20-3 Age profiles for employed PSGs aged 18 to 30 - Psychology**



## **2.21     Law and legal studies**

### **2.21.1     Commentary**

#### ***Number***

- There was a 22% increase in the number of PSGs in this field between 1996 and 2001. The number of young PSGs increased by 15.8%.

#### ***Qualification Structure***

- Over 30% of PSGs in this field had a second qualification. Only very few of them (1.9% total) had the second qualification within this aggregated field. This will likely lead to a later entry into the labour market. The proportion of people with a second qualification was higher amongst young PSGs (36.4%).
- The field has a high level of qualifications. The overall level decreased in 2001, with a decrease in the share of Bachelor and Higher Degrees, and a substantial increase in the share of Intermediate and Advanced Vocational Qualifications.
- The lowest income level in 2001 was for the Intermediate Vocational Qualifications. The largest increase between 1996 and 2001 occurred for Advanced Vocational Qualification.

#### ***Gender***

- The proportion of females increased slightly, to just over 50% in 2001. However, the proportion amongst young PSGs fell from 58.4% to 56.2% over the same period.
- Females had lower income than males in both years. However, their income increased much more than males. In 1996, female had all five percentiles lower than males, especially the 90<sup>th</sup> percentile, indicating fewer females in those high-income groups. In 2001, females had 10<sup>th</sup> and 25<sup>th</sup> percentiles of income higher than males, and the difference between other three percentiles was negligible. The difference between male and female 90<sup>th</sup> income percentiles reduced from over \$13,000 to approximately \$3,000.

#### ***Income***

- The income distributions for both years for young PSGs were more symmetric than the income distributions for all PSGs, with a small difference between mean and median income.
- The mean income for all PSGs decreased between 1996 and 2001, but the median income increased. This shows a larger increase in income for low-income groups than high-income groups, and possibly a higher share of low-income people as well. Both mean and median income increased for young PSGs, indicating a higher income increase than for all PSGs.

#### ***Age profile***

- There are few PSGs in this field aged less than 23 years. This is to be expected from the level of qualifications in this field.
- There was a decrease in the number of PSGs aged between 23-26 between 1996 and 2001. The employment rate also decreased for this age group.
- Median income for employed PSGs in this field was generally lower than the median income for employed PSGs in aggregated fields before the age 24, but overtook aggregated fields after this age (Figure 2.21-3 b).
- The five-year income growth was very large for younger PSGs in this field, with a steady decrease (Figure 2.21-3 d).

### ***Specialisation***

- This field is highly specialised. The specialisation indices were lower for young PSGs than for all PSGs, and the indices for groups decreased substantially between 1996 and 2001. For young PSGs, the specialisation index by industry and occupation decreased from being the fourth most specialised field to being the 7<sup>th</sup> most specialised field. For all PSGs, it changed from being the second most to the fifth. This seems to be caused by the decreased share of the most popular occupation, Legal Professionals, and the dramatically increased share of Protective Service Workers (including police, fire service, and prison officers). The latter occupation counted less than 1% of the total employment in 1996, whereas the share of it in 2001 was about 13% for both age groups. The in-field index table shows Protective Service Workers is a much less relevant occupation than Legal Professionals.
- This trend may help to explain the increased share of Vocational level qualifications since Protective Service Worker might have much lower levels of qualifications than Legal Professionals.

### ***In-field employment***

- Approximately 60% of PSGs worked in in-field occupations. The shares of in-field employment decreased from 1996 to 2001 for both groups of PSGs.
- Median incomes for in-field employment were higher than the median income for out-of-field employment in both census years for both age groups.
- For all PSGs in this field, the median income of in-field employment decreased whereas the median for out-of-field employment increased from 1996 to 2001. However, for young PSGs, median incomes for both in- and out-of field employment increased, with in-field employment increasing slightly more.
- The graph of median income by age (Figure 2.21-3 e,f) shows that median income for in-field employment was higher than out-of-field employment for ages 23 to 30. In 2001, there is only a clear difference between in-field and out-of-field employment between the ages 25-30.

## 2.21.2 Tables and Figures

Table 2.21-1 Key changes for Law and legal studies PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	9129	11133	22.0%	3768	4365	15.8%
Female Proportion	48.7%	50.3%	1.6	58.4%	56.2%	-2.2
Employment rate	88.4%	87.1%	-1.3	87.3%	86.1%	-1.2
Income						
• Mean	55260	52620	-4.8%	31420	35150	11.9%
• Median	40580	42520	4.8%	30060	32910	9.5%
• P90-P50 ratio	2.46	2.35	-0.11	1.87	1.96	0.09
• P50-P10 ratio	5.73	5.23	-0.51	5.39	4.92	-0.48
• Median as percentage of PSGs' median	139.0%	141.1%	2.10	123.4%	135.9%	12.49
% of people with second qualification in different field of study (6-digit level)	30.2	N/A	N/A	36.4	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	1.9	N/A	N/A	1.2	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	11.33	6.13	-5.21	9.27	4.98	-4.29
• by industry	15.86	9.52	-6.34	15.05	9.30	-5.75
• by industry and occupation	39.53	22.69	-16.85	31.38	18.21	-13.17
Supply and demand indices						
• Demand shock	N/A	N/A	5.1%	N/A	N/A	5.1%
• Supply shock	N/A	N/A	8.9%	N/A	N/A	7.5%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Legal Professionals	54.7%	39.0%	-15.7	48.4%	33.5%	-14.9
• Protective Services Workers	0.7%	13.6%	12.9	0.6%	12.9%	12.2
• Administrative Associate Professionals	8.0%	6.9%	-1.1	10.8%	7.3%	-3.4
• Business Professionals	4.2%	6.3%	2.1	6.4%	9.6%	3.2
• Specialised Managers	5.3%	5.8%	0.5	4.4%	4.6%	0.2
• Secretaries and Keyboard Operating Clerks	2.8%	2.7%	0.0	3.3%	3.3%	0.0
• Library, Mail and Related Clerks	1.9%	2.6%	0.7	3.0%	3.5%	0.5
• Finance and Sales Associate Professionals	1.9%	2.0%	0.2	1.9%	2.6%	0.6
• General Managers	3.0%	1.8%	-1.2	1.2%	0.6%	-0.6
• Social and Related Science Professionals	1.6%	1.5%	-0.1	2.6%	2.2%	-0.3
• Total share of the top 10 occupations	84.0%	82.1%	-1.8	82.6%	80.1%	-2.4
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	64.4%	60.6%	-3.9	60.6%	54.7%	-5.9
• Median income if working in in-field occupations	51980	50970	-1.9%	35060	40570	15.7%
• Median income if working in out-of-field occupations	34950	35910	2.7%	28010	32090	14.6%



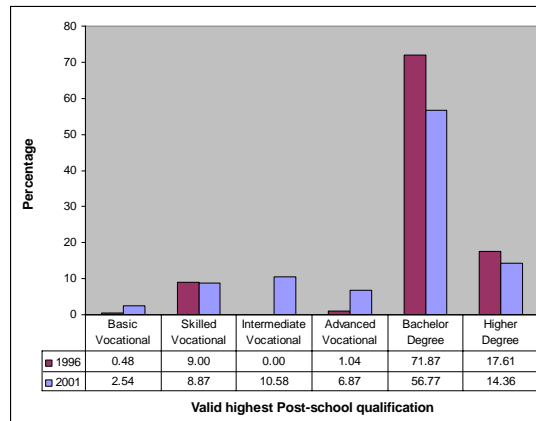
**Table 2.21-2 Age profiles Law and legal studies PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	24							
19	60	31.6	9170	70.0	900%	-68.4	70%	20.0
20	81	33.3	12500	66.7	575%	-41.7	132%	6.7
21	153	51.0	13330	80.0	183%	-21.2	35%	6.3
22	264	53.9	12630	71.9	21%	-13.2	30%	-0.7
23	435	58.6	18090	81.4	-9%	-1.1	33%	-0.9
24	489	58.0	28460	87.0	-19%	-4.0	5%	-4.0
25	477	53.8	35000	89.4	-1%	-1.9	12%	-1.3
26	468	58.3	37950	92.3	1%	2.8	6%	1.3
27	477	56.3	40000	88.2	30%	1.8	6%	-1.1
28	471	56.7	42670	90.5	25%	-0.5	9%	0.8
29	516	60.5	44720	88.4	46%	4.9	9%	0.4
30	447	56.8	44390	85.9	30%	-1.1	9%	0.7

**Table 2.21-3 In-field occupations for Law and legal studies**

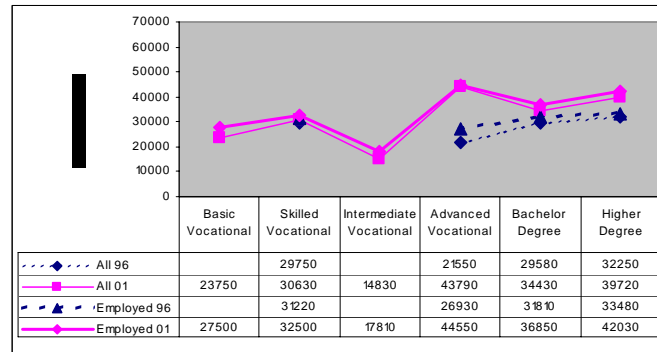
In-field Occupation	PSGs aged 18-65				PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index		Weighted share	In-field Index
Legal Professionals	1.21%	46.02%	37.94		40.50%	35.35
Protective Services Workers	1.36%	8.43%	6.21		7.65%	5.73
Administrative Associate Professionals	1.33%	7.42%	5.60		8.95%	7.10
Legislators	0.02%	0.07%	3.46		0.00%	0.00
Senior Government Administrators	0.08%	0.23%	2.72		0.13%	2.55

**Figure 2.21-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Law and legal studies**

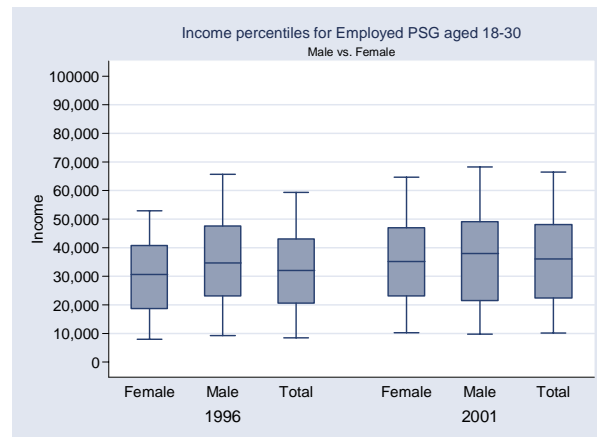


**Figure 2.21-2 Income level and dispersion for Law and legal studies aged 18-30**

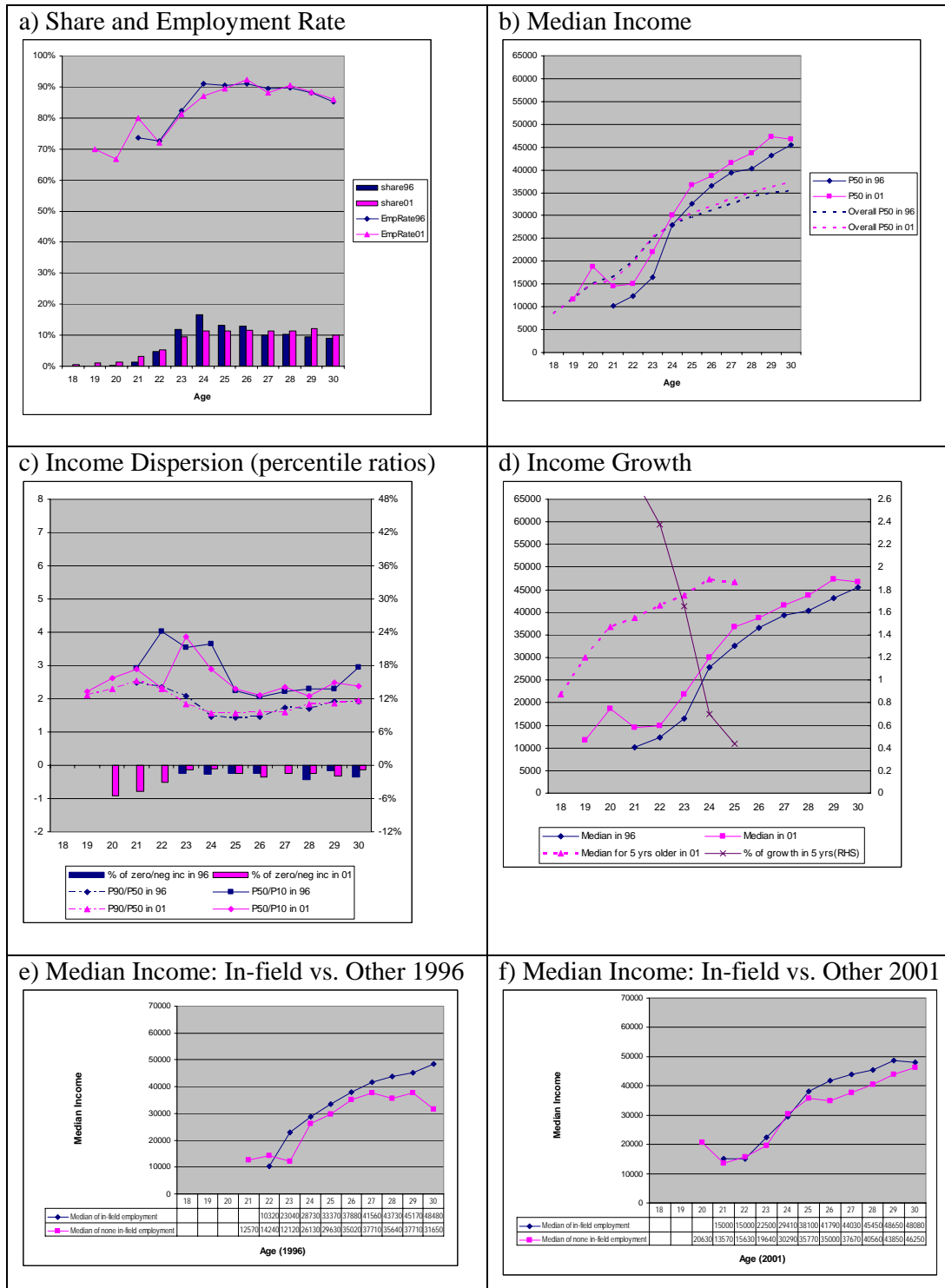
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.21-3 Age profiles for employed PSGs aged 18 to 30 - Law and legal studies**



## **2.22 Language & Literature**

### **2.22.1 Commentary**

#### ***Number***

- The total number of PSGs decreased by 13.9% between 1996 and 2001. The number of young PSGs decreased by 12.8% over the same period.

#### ***Qualification Structure***

- The field is highly qualified, with nearly 90% of PSGs holding Degree qualifications. In 2001, the share of Bachelor Degree decreased from 71.9% to 64.3%, causing slight increases in the proportion of PSGs holding Higher Degrees, Basic Vocational, and Advanced Vocational Qualifications.
- In 1996 the highest median income for all young PSGs in this field was for those holding a Higher Degree, but amongst employed young PSGs it was for those holding a Bachelor Degree. Median income for those holding a Higher Degree increased considerably between 1996 and 2001, overtaking median income for employed Bachelor PSGs.
- Median income for those holding a Basic Vocational Qualification decreased between 1996 and 2001. Median income for those with an Advanced Vocational Qualification increased slightly over the same period.
- There was a higher proportion of multiple qualifications than for aggregated fields (14.7% compared with 9.4%). Only a small proportion had a second qualification in the same field (2.8%).

#### ***Gender***

- Close to 75% of all PSGs were female, with the proportion amongst young PSGs the same. The ratio increased slightly between 1996 and 2001.
- Income distributions for employed young PSGs were similar for males and females for both years. Female median income was higher than male median income for both years, with a larger difference in 2001. This indicates that females had a larger income increase than males over the two years.

#### ***Income***

- Mean income increased for both young and all PSGs in this field. Median income decreased for all PSGs but increased substantially for young PSGs
- Both median and mean incomes were lower than for aggregated fields for both groups of PSGs. The gap between this field and aggregated fields was less for young PSGs.

#### ***Age profiles***

- Between 1996 and 2001, the number of PSGs decreased for ages 21-26 decreased, but increased for all other ages.
- Median income for employed PSGs was lower the median income for employed aggregated fields for each age group in the range 18-30 years old (Figure 2.22-3b).
- Expected 5-year income growth is not very high (Figure 2.22-3 d).

#### ***Specialisation***

- The field is moderately specialised, but became less specialised in 2001 for both young and all PSGs.
- The specialisation indices for young PSGs were lower than for all PSGs in this field.

- The share of employment in the top 10 occupations increased approximately 3 ppts from 1996 to 2001, to a total of 60.7%. This increase was mainly due to the increased shares of Specialised Managers and Business Professionals, large occupations not in the in-field occupations list. As a result, there was a 5 ppt drop in in-field employment between 1996 and 2001.

#### ***In- and out-of-field employment***

- In-field employment had higher median income than out-of-field employment. However, for all PSGs there was a larger increase in out-of-field median income between the two years (9.9% compared with 2.9%). For young PSGs the largest increase in median income was for in-field occupations (13.1% compared with 10.3%).
- In 1996, the median incomes for in- and out-of-field employment for PSGs aged 18 to 30 were fairly close to each other. However, in 2001 there was in-field income was clearly higher than out-of-field income after the age of 22, with the exception of age 29 (Figure 2.22-3 e,f).

#### ***Demand and supply***

- This field had a higher demand shock (6%) than for aggregated fields (1.5%). Immigrants in this field in 2001 accounted about 20% of the total employment in 1996, more than for aggregated fields (12.5%). This may have contributed to the decrease in the employment rate for PSGs in this field (Decreased 3.2% between 1996 and 2001).

## 2.22.2 Tables and Figures

Table 2.22-1 Key changes for Language &amp; Literature PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	13152	11319	-13.9%	5445	4746	-12.8%
Female Proportion	75.1%	76.1%	1.0	75.1%	75.8%	0.7
Employment rate	76.3%	73.0%	-3.2	75.2%	71.9%	-3.3
Income						
• Mean	27850	28660	2.9%	20410	22610	10.8%
• Median	23280	22890	-1.7%	17000	18370	8.1%
• P90-P50 ratio	2.30	2.66	0.36	2.37	2.49	0.12
• P50-P10 ratio	9.84	11.22	1.39	6.97	8.35	1.39
• Median as percentage of PSGs' median	79.8%	76.0%	-3.78	69.8%	75.9%	6.06
% of people with second qualification in different field of study (6-digit level)	14.7	N/A	N/A	14.8	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	2.6	N/A	N/A	2.0	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	1.82	1.61	-0.21	1.66	1.55	-0.11
• by industry	3.03	2.44	-0.59	1.89	1.74	-0.15
• by industry and occupation	4.68	3.55	-1.12	2.63	2.58	-0.06
Supply and demand indices						
• Demand shock	N/A	N/A	6.0%	N/A	N/A	6.4%
• Supply shock	N/A	N/A	20.7%	N/A	N/A	18.8%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Secondary Teaching Professionals	13.6%	10.7%	-3.0	8.6%	8.1%	-0.5
• Specialised Managers	8.8%	10.6%	1.8	7.3%	9.1%	1.9
• Writers, Artists, Entertainment and Sports Associate Professionals	6.9%	7.4%	0.5	7.2%	7.1%	-0.1
• Library, Mail and Related Clerks	5.7%	6.1%	0.4	8.1%	7.0%	-1.0
• Primary and Early Childhood Teaching Professionals	5.0%	5.3%	0.3	3.9%	3.3%	-0.5
• Business Professionals	2.8%	4.8%	1.9	3.4%	4.0%	0.6
• Salespersons and Demonstrators	4.3%	4.6%	0.3	8.1%	7.6%	-0.6
• Finance and Sales Associate Professionals	3.4%	4.5%	1.1	4.2%	6.1%	1.8
• Tertiary Teaching Professionals	4.9%	3.7%	-1.2	1.9%	1.8%	-0.1
• Special Education Teaching Professionals	2.2%	3.1%	0.9	2.0%	2.8%	0.8
• Total share of the top 10 occupations	57.7%	60.7%	3.0	54.7%	57.1%	2.4
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	45.3%	40.1%	-5.2	38.7%	35.5%	-3.2
• Median income if working in in-field occupations	33370	34350	2.9%	27010	30560	13.1%
• Median income if working in out-of-field occupations	26380	28980	9.9%	21730	23970	10.3%

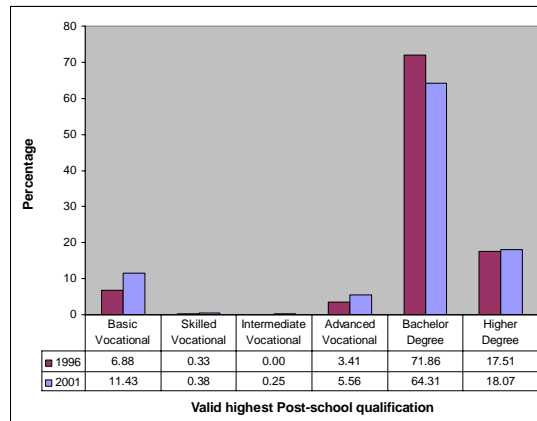
**Table 2.22-2 Age profiles for Language & Literature PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	66	63.6	2140	36.4	120%	3.6	32%	11.4
19	63	61.9	3570	42.9	50%	-7.3	33%	7.1
20	132	75.0	5560	51.2	5%	-3.6	-8%	-4.9
21	327	78.0	7380	63.0	-13%	0.4	2%	-5.0
22	372	74.4	8540	66.1	-31%	0.4	-8%	-7.2
23	426	77.5	13410	70.4	-34%	1.9	6%	-4.6
24	423	75.2	19340	75.7	-36%	-1.6	0%	-3.5
25	465	76.0	22950	74.0	-25%	0.4	-6%	-5.0
26	468	75.6	23540	73.5	-11%	0.6	-6%	-4.4
27	468	75.0	28550	78.8	4%	1.2	7%	1.4
28	483	76.4	27650	77.0	1%	0.3	2%	0.9
29	531	77.4	30000	76.8	11%	1.8	11%	-3.4
30	528	76.7	28540	74.0	15%	6.6	9%	2.1

**Table 2.22-3 In-field occupations for Language & Literature**

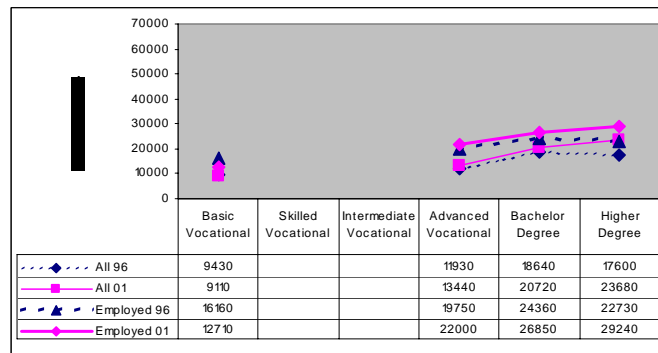
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Special Education Teaching Professionals	0.39%	2.59%	6.58	2.37%	7.89
Secondary Teaching Professionals	2.32%	12.74%	5.50	8.54%	5.60
Archivists, Librarians and Related Information Professionals	0.46%	2.48%	5.41	1.76%	5.38
Travel Attendants and Guides	0.37%	1.35%	3.60	2.04%	4.02
Other Teaching Professionals	0.12%	0.39%	3.33	0.21%	3.60
Writers, Artists, Entertainment and Sports Associate Professionals	2.37%	7.27%	3.07	7.30%	2.48
Tertiary Teaching Professionals	1.59%	4.56%	2.86	1.92%	2.15
Senior Government Administrators	0.08%	0.22%	2.67	0.12%	2.41
Legislators	0.02%	0.05%	2.54	0.00%	0.00
Non-Ordained Religious Associate Professionals	0.05%	0.12%	2.46	0.08%	3.15
Social and Related Science Professionals	1.06%	2.52%	2.37	2.12%	2.33
Legal Professionals	1.25%	2.70%	2.15	3.06%	2.64
Careers and Employment Advisors	0.08%	0.15%	2.02	0.09%	1.55
Library, Mail and Related Clerks	2.99%	6.01%	2.01	7.79%	2.09

**Figure 2.22-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Language & Literature**

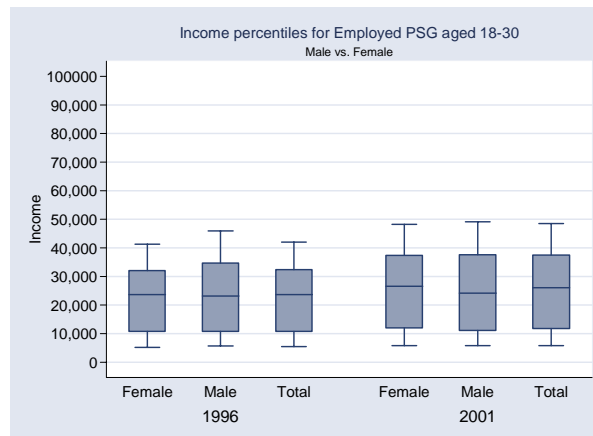


**Figure 2.22-2 Income level and dispersion for Language & Literature aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed

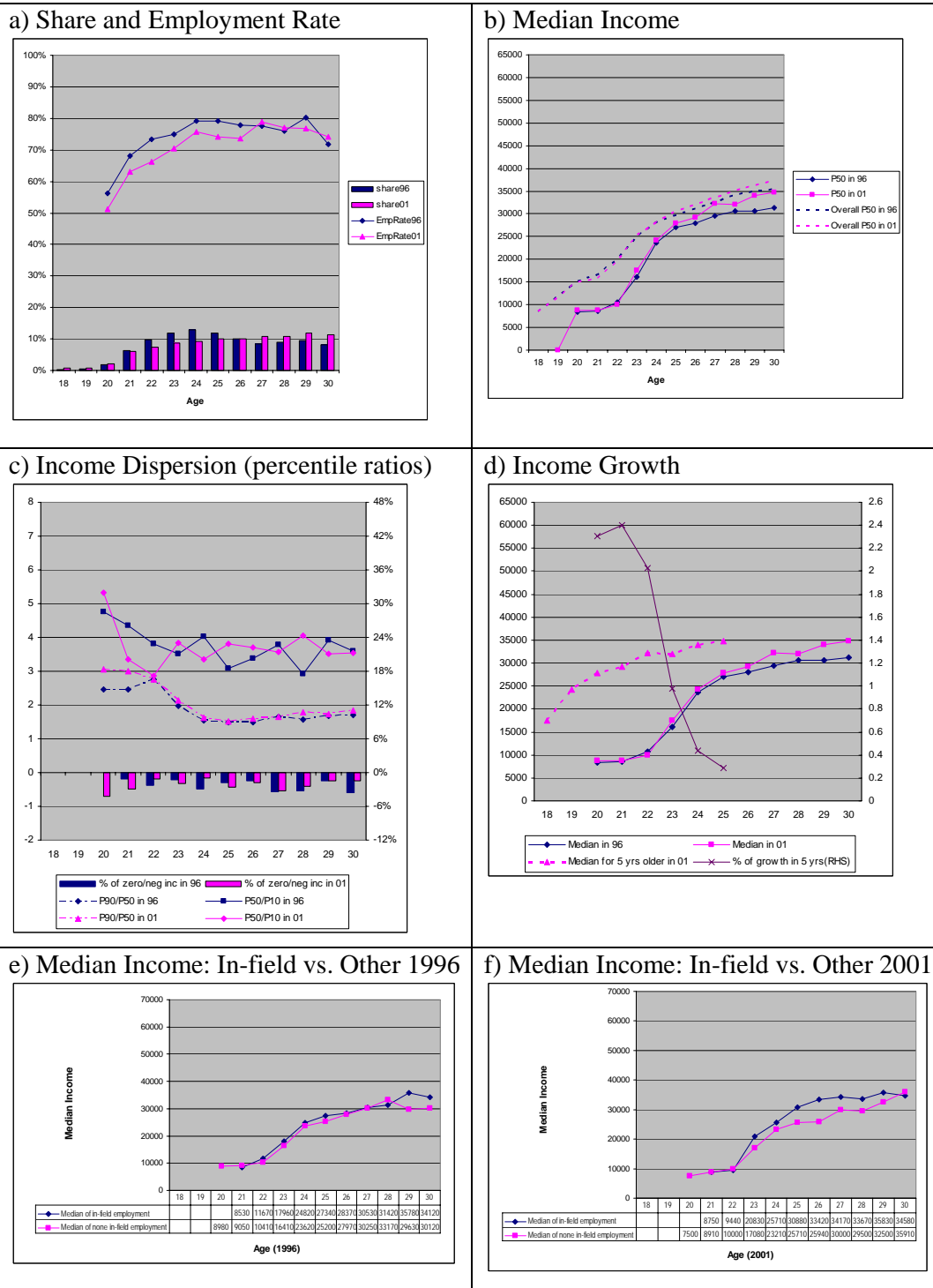


b) Income percentiles: Male vs. Female vs. All





**Figure 2.22-3 Age profiles for employed PSGs aged 18 to 30 - Language & Literature**



## **2.23 Creative Arts and Design**

### **2.23.1 Commentary**

#### ***Number***

- There was a very large increase in the number of PSGs in this field, over 36% for all PSGs and 44% for young PSGs.

#### ***Qualification Structure***

- Basic Vocational and Advanced Vocational together accounted for close to 60% of the field, with Bachelor Degrees the third most popular qualification. Between 1996 and 2001, the qualification levels increased, with a large increase in Bachelor Degrees (from 20.6% to 31.5%) and a decrease in Vocational Qualifications.
- Median incomes were very similar for all qualifications in the field.
- There was a relatively high proportion of multiple qualifications (11.5%), with only about a third of these having the second qualification in a similar field.

#### ***Gender***

- The female ratio was around 63% for both years, for young PSGs and for all PSGs.
- Males generally had slightly higher income than females. The income gap between genders decreased in 2001 (Figure 2.23-1 b).

#### ***Income***

- This field had a fairly low income level. Median income for this field was only about 55% of median income for aggregated fields.
- Median incomes for this field increased 8.1% between 1996 and 2001, more than the increase for aggregated fields (3.2%), narrowing the gap between the median incomes for 2001.
- However, the income was still low. The 90<sup>th</sup> percentile for this field was less than \$50,000 for both census years.

#### ***Age profiles***

- Median income generally increased between 1996 and 2001 for PSGs aged 18-30, with a few exceptions (ages 18, 22, 25). The employment rate fluctuated for this age group between the two years.
- Change in median income by age for this field had a similar trend to the change in median income for age for aggregated fields, but at a lower level (Figure 2.23-3b).

#### ***Specialisation***

- This was a moderately specialised field. All three specialisation indices decreased between 1996 and 2001.
- The share of PSGs working in the top 10 occupations increased slightly (2.4 ppts) between 1996 and 2001. However, this was caused by a decrease in the share working in 'relevant' occupations and an increase working in 'general' occupations, such as Computing Professionals.

#### ***In-field employment***

- Less than 60% of the PSGs worked in in-field occupations. The share decreased by 4.0 ppts between 1996 and 2001.
- The median income for in-field employment was lower than for out-of-field employment for both 1996 and 2001, for both age groups. Further, out-of-field income had a larger increase between the two years (3.4% compared with 9.2%), widening the gap between in-field and out-of-field income.

- There was very little difference between in-field and out-of-field median income for each age group between 18 and 30 in 1996. In 2001, in-field employment showed an obvious disadvantage in income for most age groups (Figure 2.23-3 e,f).

## 2.23.2 Tables and Figures

Table 2.23-1 Key changes for Creative Arts and Design PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	12669	17241	36.1%	7170	10332	44.1%
Female Proportion	63.2%	63.3%	0.0	64.1%	63.1%	-1.0
Employment rate	74.1%	73.2%	-0.9	71.9%	71.3%	-0.5
Income						
• Mean	22380	23580	5.4%	17210	18800	9.2%
• Median	16210	17520	8.1%	12970	14350	10.6%
• P90-P50 ratio	2.91	2.82	-0.09	2.79	2.71	-0.08
• P50-P10 ratio	7.10	6.79	-0.31	5.85	6.29	0.44
• Median as percentage of PSGs' median	55.5%	58.1%	2.62	53.3%	59.3%	6.01
% of people with second qualification in different field of study (6-digit level)	11.5	N/A	N/A	9.6	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	3.0	N/A	N/A	3.3	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	3.29	2.75	-0.54	3.29	2.74	-0.55
• by industry	1.55	1.50	-0.06	1.42	1.36	-0.06
• by industry and occupation	2.56	2.30	-0.26	2.38	2.16	-0.22
Supply and demand indices						
• Demand shock	N/A	N/A	3.8%	N/A	N/A	2.7%
• Supply shock	N/A	N/A	16.6%	N/A	N/A	13.0%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Writers, Artists, Entertainment and Sports Associate Professionals	26.3%	24.2%	-2.1	25.0%	22.2%	-2.8
• Salespersons and Demonstrators	8.3%	9.2%	0.9	11.6%	12.6%	1.0
• Specialised Managers	5.7%	6.7%	1.1	4.4%	6.1%	1.7
• Housekeeping and Restaurant Services Workers	4.8%	5.3%	0.4	7.6%	7.7%	0.2
• Secondary Teaching Professionals	5.7%	4.8%	-0.9	3.4%	3.1%	-0.3
• Library, Mail and Related Clerks	3.0%	3.5%	0.5	3.9%	3.7%	-0.2
• Tertiary Teaching Professionals	2.9%	3.0%	0.1	1.1%	1.4%	0.3
• Optical and Electronic Equipment Controllers	2.5%	2.6%	0.1	2.4%	2.5%	0.1
• Computing Professionals	0.3%	2.4%	2.0	0.2%	2.7%	2.5
• Finance and Sales Associate Professionals	1.9%	2.3%	0.4	2.0%	2.6%	0.7
• Total share of the top 10 occupations	61.3%	63.7%	2.4	61.5%	64.7%	3.1
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	55.9%	51.9%	-4.0	57.7%	53.4%	-4.3
• Median income if working in in-field occupations	21650	22380	3.4%	17960	18510	3.1%
• Median income if working in out-of-field occupations	22910	25020	9.2%	18180	21210	16.7%

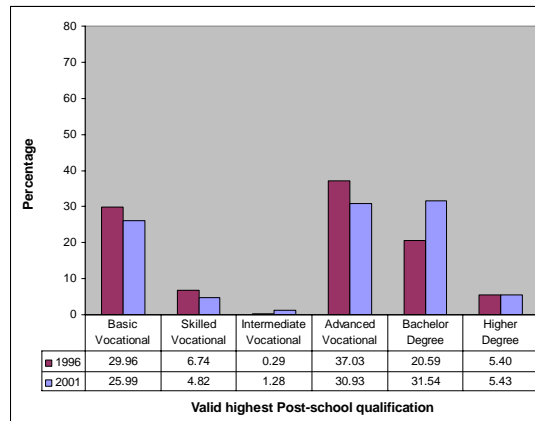
**Table 2.23-2 Age profiles for Creative Arts and Design PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	255	68.2	3750	46.5	49%	3.9	-16%	-4.4
19	558	64.0	5880	56.8	33%	0.4	12%	3.5
20	789	64.0	7500	62.5	41%	-0.7	12%	4.2
21	903	63.8	8640	63.3	36%	-1.5	3%	-0.2
22	1062	64.6	10770	70.3	40%	-1.8	-1%	-3.1
23	1047	63.6	14660	72.9	24%	-0.1	4%	-0.9
24	933	60.5	17360	76.6	32%	-4.2	2%	-2.6
25	861	60.3	18560	77.1	29%	-4.1	-8%	-1.1
26	870	61.4	21830	75.2	44%	-1.3	13%	-5.3
27	816	64.9	21760	76.6	67%	-2.1	11%	-2.7
28	819	63.2	24060	76.2	84%	4.5	17%	1.2
29	771	63.0	22740	76.7	77%	1.7	22%	3.6
30	648	62.2	24810	74.5	60%	-0.8	11%	-1.0

**Table 2.23-3 In-field occupations for Creative Arts and Design**

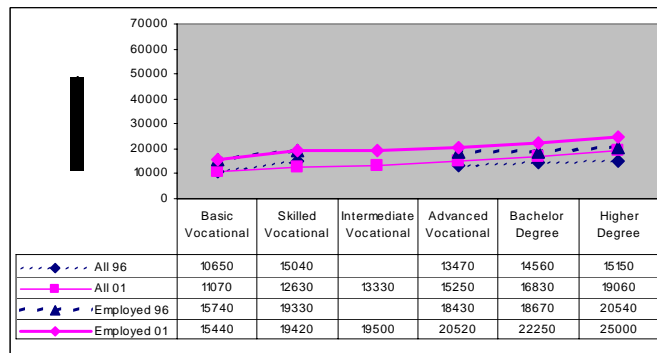
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Precision Instrument Makers and Related Workers	0.13%	1.59%	12.46	1.04%	8.96
Writers, Artists, Entertainment and Sports Associate Professionals	2.36%	25.43%	10.78	23.58%	8.11
Glass and Ceramics Kiln and Related Plant Operators	0.06%	0.57%	9.42	0.44%	8.64
Fashion and Other Models	0.01%	0.07%	7.89	0.07%	5.10
Chemical Products Machine Operators	0.07%	0.53%	7.78	0.76%	7.25
Optical and Electronic Equipment Controllers	0.52%	2.58%	4.98	2.50%	4.27
Textile Products Machine Operators	0.25%	1.17%	4.62	1.24%	5.16
Tailors and Dressmakers	0.24%	0.89%	3.78	0.93%	3.85
Salespersons and Demonstrators	3.15%	9.05%	2.87	12.51%	2.57
Archivists, Librarians and Related Information Professionals	0.44%	1.07%	2.46	0.70%	2.30
Secondary Teaching Professionals	2.26%	5.19%	2.29	3.22%	2.14
Housekeeping and Restaurant Services Workers	2.43%	5.20%	2.14	7.83%	1.75

**Figure 2.23-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Creative Arts and Design**

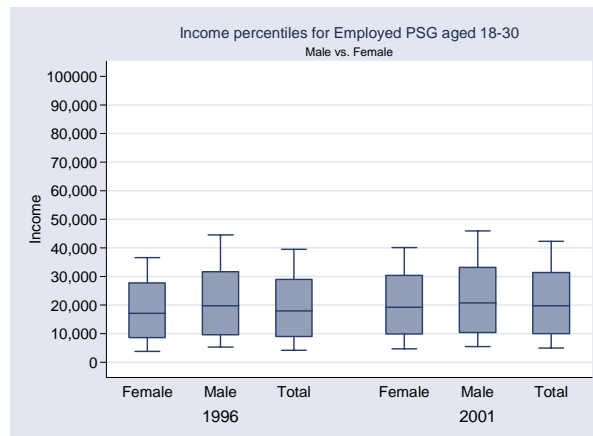


**Figure 2.23-2 Income level and dispersion for Creative Arts and Design aged 18-30**

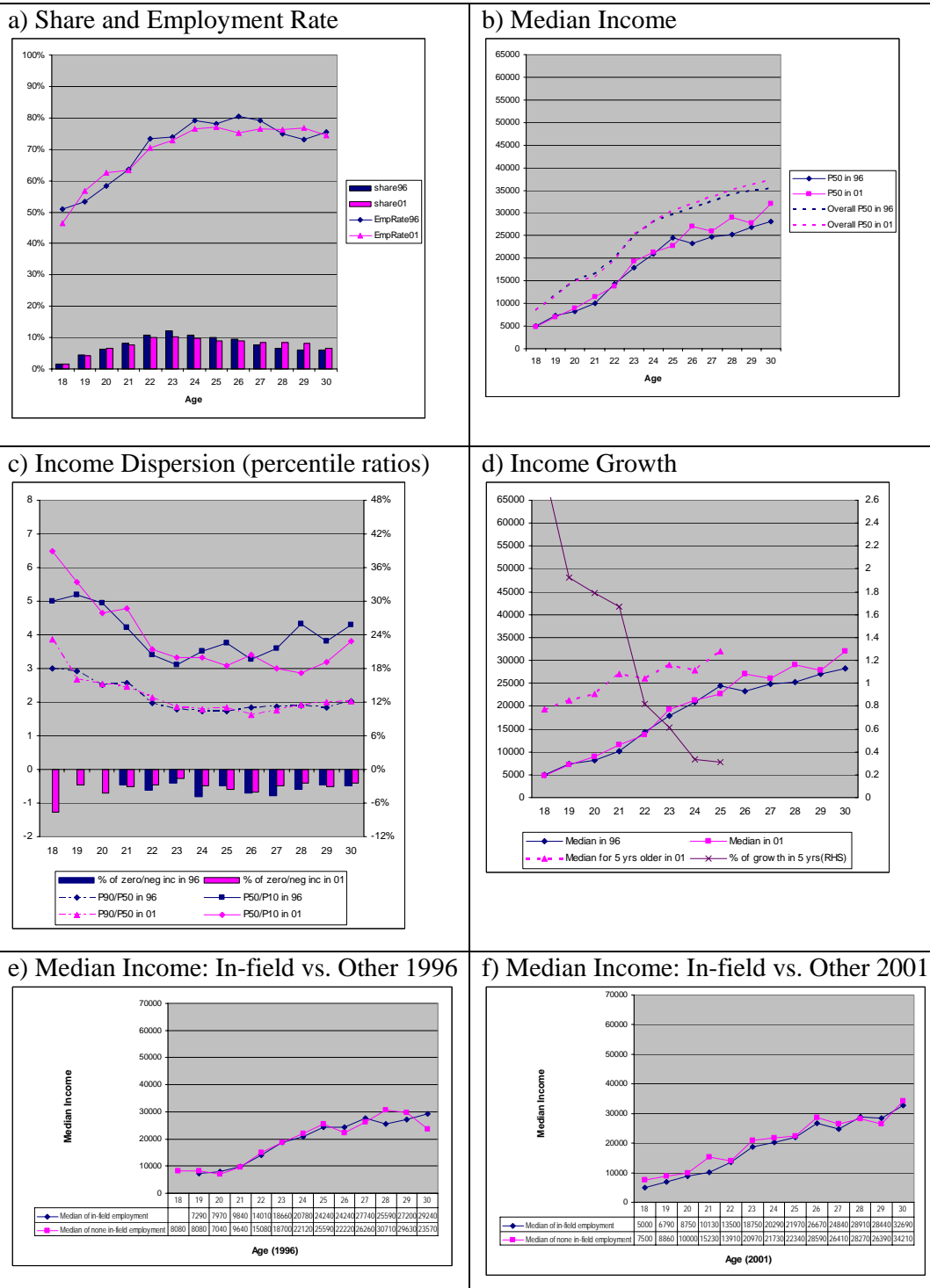
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.23-3 Age profiles for employed PSGs aged 18 to 30 - Creative Arts and Design**



## **2.24 Communication and Media Studies**

### **2.24.1 Commentary**

#### ***Number***

- The number of PSGs increased more than 50% (1800 in total) from 1996 to 2001 with an even larger increase of 65.9% among 18-year to 30-year olds (1200 PSGs).

#### ***Qualification Structure***

- Between 1996 and 2001 there was a shift from Basic Vocational (38.5% to 25.3%) to Bachelor Degree qualifications (16.4% to 40.1%).
- Median income was very similar between Advanced Vocational and Bachelor Degree, with Advanced Vocational slightly above Bachelor Degree.
- In 1996, PSGs holding a Bachelor degree had a relatively low median income, lower than Skilled Vocational. However, amongst employed PSGs, Bachelor Degree had a higher median income than Skilled Vocational. This indicates that Skilled Vocational had a higher employment rate than Bachelor Degree. In 2001 there was very little difference between the median income for all Bachelor Degrees and employed Bachelor Degree, but a larger difference for Skilled Vocational. This indicates that the employment rate improved relatively more for Bachelor degree between the two years.
- 12.9% of PSGs in this field held multiple qualifications, slightly more than for aggregated fields. A small proportion (2.1% in total) of these multiple qualifications were in the same field.

#### ***Gender***

- The female ratio is above 60%, and increased slightly from 1996 to 2001 (1.8 ppts). The increase in the proportion of females for young PSGs was less (0.7 ppts).
- Median income for females was lower than male median income in 1996. However, in 2001 females had a higher median income than males and only a very small disadvantage in the income of the top 10%.

#### ***Age profiles***

- The number of PSGs in each age bracket increased almost every age group between 18 and 30 between the two years, except for age 19. The largest increase in numbers occurred for age 27 (149%). In general, the increase in numbers was larger for those in their late twenties.
- Employment rates increased for those in their mid-twenties (age 23-28) between 1996 and 2001, but generally decreased for the other age groups.
- Median income for employed PSGs in this field was very similar to median income for employed PSGs in aggregated fields (Figure 2.24-3 b).

#### ***Specialisation***

- This is a moderately specialised field. All three specialisation indices decreased between 1996 and 2001.
- The total share of top 10 occupations increased 3.3% from 1996 to 2001. However, the share of the most relevant occupation decreased by 4.9%.



### ***In- and out-of-field employment***

- Although this field is not highly specialised, there were only 6 in-field occupations. The most relevant occupation was the largest occupation for the field, employing close to 30% of all PSGs (Writers, Artists, Entertainments and Sports Associate Professionals).
- The total share of in-field employment was quite low, only about 40% in 1996, and decreased to about 35% in 2001.
- Median income for in-field employment was higher than out-of-field employment. However, out-of-field income increased much more between 1996 and 2001: 8.9% compared with 1.1%. This difference was even larger for young PSGs (24.5% compared with 5.7%).

## 2.24.2 Tables and Figures

Table 2.24-1 Key changes for Communication and Media Studies PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	3207	4950	54.3%	1839	3051	65.9%
Female Proportion	61.4%	63.1%	1.7	62.6%	63.4%	0.8
Employment rate	78.5%	80.5%	2.0	77.2%	80.6%	3.4
Income						
• Mean	29950	30530	1.9%	22180	25330	14.2%
• Median	24400	26270	7.7%	19780	23390	18.3%
• P90-P50 ratio	2.53	2.32	-0.21	2.15	2.02	-0.13
• P50-P10 ratio	6.21	5.19	-1.02	5.78	5.08	-0.70
• Median as percentage of PSGs' median	83.6%	87.2%	3.60	81.2%	96.6%	15.38
% of people with second qualification in different field of study (6-digit level)	12.9	N/A	N/A	11.9	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	2.1	N/A	N/A	2.6	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	5.33	4.04	-1.29	5.01	3.75	-1.26
• by industry	3.16	2.63	-0.54	3.39	2.82	-0.57
• by industry and occupation	6.82	4.22	-2.60	6.80	4.22	-2.58
Supply and demand indices						
• Demand shock	N/A	N/A	9.8%	N/A	N/A	6.7%
• Supply shock	N/A	N/A	14.6%	N/A	N/A	12.5%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Writers, Artists, Entertainment and Sports Associate Professionals	35.2%	30.3%	-4.9	33.6%	28.3%	-5.3
• Specialised Managers	10.5%	11.4%	1.0	9.3%	10.9%	1.6
• Business Professionals	4.3%	6.8%	2.5	3.4%	6.2%	2.8
• Salespersons and Demonstrators	4.5%	5.3%	0.7	5.9%	6.7%	0.8
• Optical and Electronic Equipment Controllers	5.0%	4.7%	-0.3	6.8%	6.1%	-0.7
• Finance and Sales Associate Professionals	3.0%	4.3%	1.3	3.0%	4.9%	1.9
• Library, Mail and Related Clerks	2.9%	4.1%	1.3	3.8%	4.3%	0.5
• Housekeeping and Restaurant Services Workers	3.3%	3.3%	0.0	5.1%	4.9%	-0.2
• Computing Professionals	0.4%	2.3%	2.0	0.4%	2.4%	2.0
• Secretaries and Keyboard Operating Clerks	2.4%	2.1%	-0.3	2.1%	2.2%	0.1
• Total share of the top 10 occupations	71.4%	74.8%	3.3	73.4%	76.8%	3.5
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	41.7%	36.1%	-5.6	41.6%	35.3%	-6.3
• Median income if working in in-field occupations	33230	33600	1.1%	28210	29810	5.7%
• Median income if working in out-of-field occupations	26290	28630	8.9%	20370	25370	24.5%

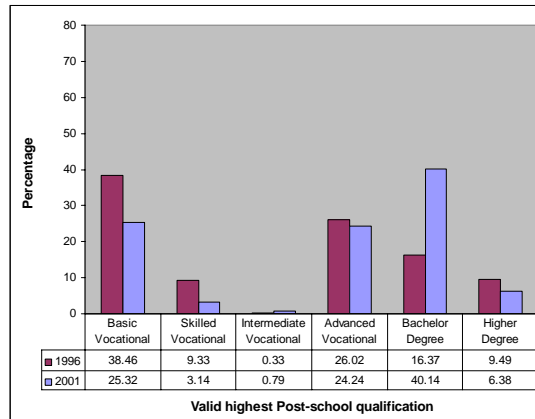
**Table 2.24-2 Age profiles for Communication and Media Studies PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	54	68.4	7000	55.6	38%	18.4	N/A	-1.6
19	99	63.6	7500	59.4	-20%	-3.0	4%	-3.4
20	183	59.0	8280	65.6	53%	1.5	-23%	-2.7
21	300	69.0	11430	75.2	54%	5.9	-2%	4.5
22	342	66.4	17920	79.5	61%	0.2	0%	-2.2
23	342	64.3	23910	86.8	68%	-0.9	18%	7.4
24	309	62.5	26000	83.7	66%	1.2	0%	7.8
25	264	60.9	31350	88.6	69%	-0.6	27%	7.9
26	276	60.9	31090	87.0	88%	-1.6	17%	7.4
27	261	62.1	29170	83.7	149%	-3.6	-2%	0.9
28	222	59.5	33000	86.5	76%	-3.3	13%	5.1
29	213	63.4	32670	77.1	87%	-2.4	17%	-1.2
30	192	64.1	33080	81.3	73%	10.0	2%	-2.5

**Table 2.24-3 In-field occupations for Communication and Media Studies**

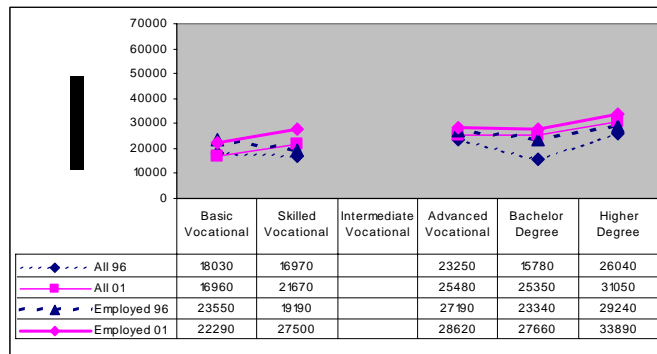
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Writers, Artists, Entertainment and Sports Associate Professionals	2.34%	32.20%	13.78	30.03%	10.45
Optical and Electronic Equipment Controllers	0.51%	4.89%	9.52	6.35%	11.05
Fashion and Other Models	0.01%	0.05%	5.31	0.00%	0.00
Chemical Products Machine Operators	0.07%	0.25%	3.45	0.33%	3.01
Senior Government Administrators	0.07%	0.19%	2.86	0.05%	1.55
Street Vendors	0.04%	0.09%	2.13	0.09%	2.05

**Figure 2.24-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Communication and Media Studies**

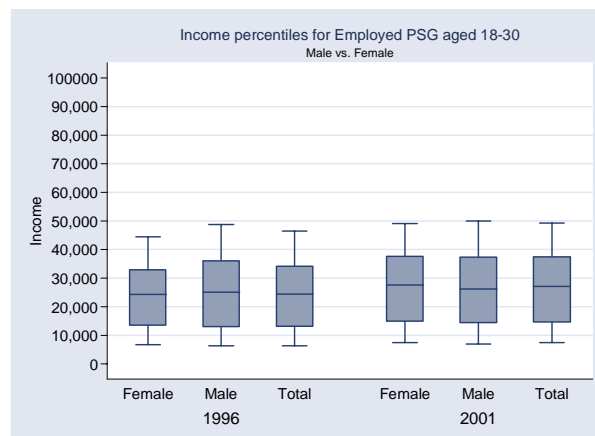


**Figure 2.24-2 Income level and dispersion for Communication and Media Studies aged 18-30**

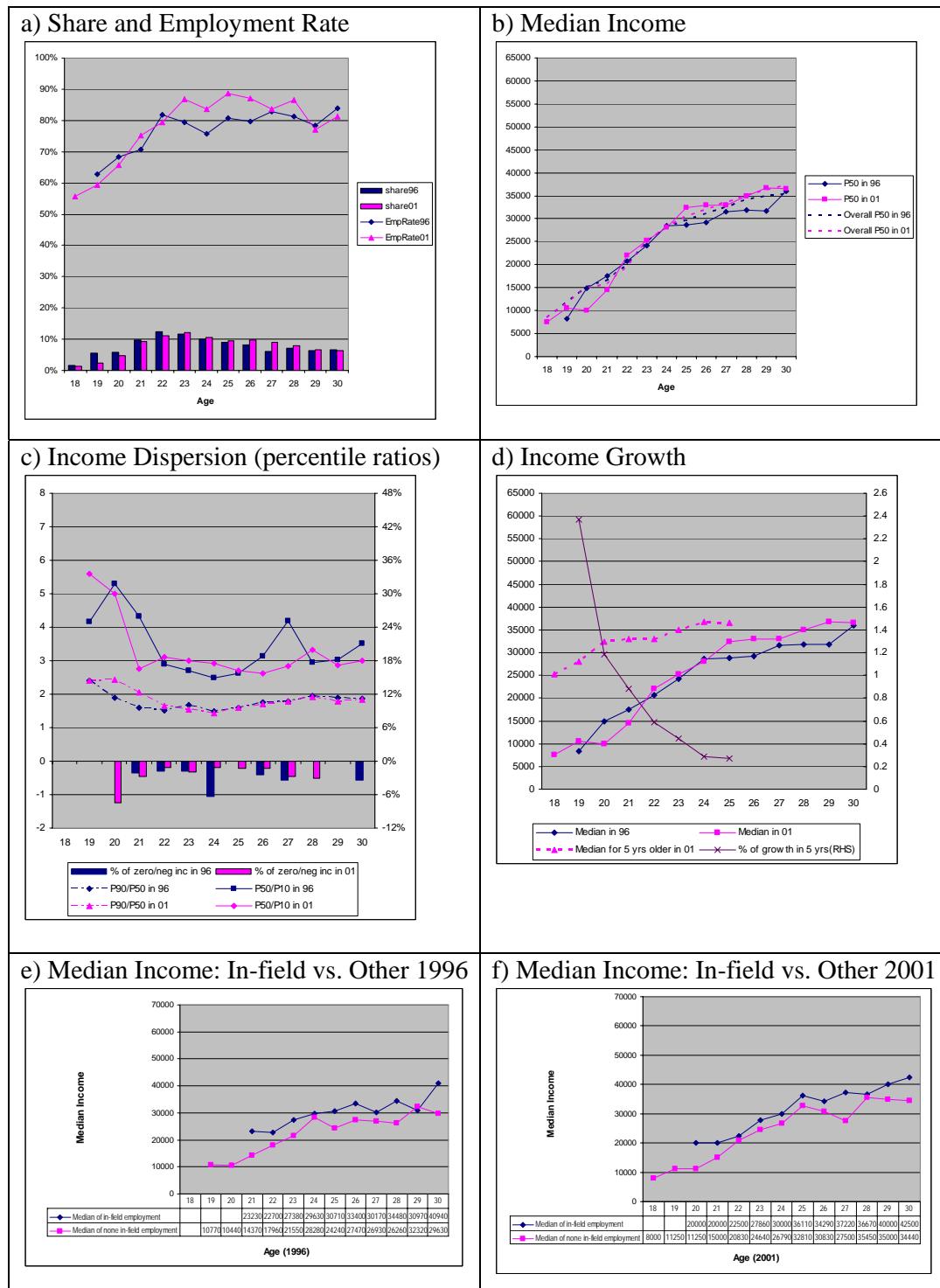
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.24-3 Age profiles for employed PSGs aged 18 to 30 - Communication and Media Studies**



## **2.25 Food, Hospitality and Tourism**

### **2.25.1 Commentary**

#### ***Number***

- The number of PSGs increased by about 20% for this field (4000) between 1996 and 2001, with the number of young PSGs increasing by over 25% (3000).

#### ***Qualification Structure***

- Qualification levels were quite low for this field. The most common qualification was Basic Vocational, accounting for nearly 50% of the PSGs in 1996. Skilled Vocational was the second highest qualification in 1996. Between 1996 and 2001 there was a decrease in Basic and Skilled Qualifications and an increase in Intermediate and Advanced Vocational Qualifications. The proportion with Bachelor Degree stayed relatively constant at just over 3%.
- Amongst employed PSGs in 1996, Skilled Vocational had the highest median income followed by Advanced Vocational. For employed PSGs in 2001, Bachelor Degree and Higher Degree had the highest median incomes.
- 11.2% of PSGs had multiple qualifications, slightly more than for aggregated fields (9.4%). 5.8% had secondary qualifications in a similar field. The proportion of multiple qualifications was almost identical between all PSGs and young PSGs in this field.

#### ***Gender***

- The proportion of females increased from 48.0% in 1996 to 61.3% in 2001, the largest increase among all individual fields. The increase for young PSGs was slightly less at 10.4 pts.
- Males had higher income than females in 1996. The gap between male and female median income narrowed between 1996 and 2001, indicating that female median income grew relatively more than male median income. The income increase did not happen for low-income groups. P10 for both genders decreased slightly between 1996 and 2001.

#### ***Age profiles***

- There were more PSGs in each age bracket between 19-26 than other age groups. The number of PSGs in each age group increased between 1996 and 2001.
- The employment rate decreased for most age groups between 1996 and 2001. There was no clear pattern in the change in median income between 1996 and 2001 by each age group.
- Median income by age did not show a strong upward trend. The 5-year growth rate for PSGs aged under 20 was quite large (Figure 2.25-3 d).
- Employed PSGs in this field had a higher income than the same age group in aggregated fields before the age of 23, but lower after that (Figure 2.25-3 b). An explanation may be the low share of Bachelor Degrees in this field as 18-24 is a common age range for people to study at university and hence have low income.

#### ***Specialisation***

- This field was moderately specialised. Young PSGs were slightly more specialised than all PSGs.

- About 70% of PSGs worked in the top 10 occupations. However, this was dominated by the top occupation, Housekeeping and Restaurant Services Workers, which employed over 20% of PSGs.

#### ***In-field employment***

- There are 12 in-field occupations. The most relevant occupation, Housekeeping and Restaurant Services Workers, has an in-field index almost double the second most relevant occupation.
- Approximately 50% of PSGs were employed in in-field occupations.
- Median income for in-field employment was lower than median income for out-of-field employment for both years and both groups of PSGs. This gap widened between 1996 and 2001, with in-field median income decreasing by 1.9% and out-of-field median income increasing by 1.4%.
- The graphs of in-field and out-of-field income by age group (Figure 2.25-3 e,f) show very little difference between the two types of employment for PSGs aged 18 to 30.

#### ***Demand and supply***

- There was a very weak positive demand shock (0.3%) and a moderate supply shock (8.7%). Median and mean incomes decreased for all PSGs and were static for young PSGs.

## 2.25.2 Tables and Figures

Table 2.25-1 Key changes for Food, Hospitality and Tourism PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	19587	23406	19.5%	12354	15504	25.5%
Female Proportion	48.0%	61.3%	13.3	57.5%	68.0%	10.4
Employment rate	83.4%	80.1%	-3.3	82.3%	78.9%	-3.3
Income						
• Mean	25110	24290	-3.3%	20770	20970	1.0%
• Median	23340	22550	-3.4%	20370	20370	0.0%
• P90-P50 ratio	1.90	1.94	0.04	1.82	1.85	0.03
• P50-P10 ratio	4.35	5.15	0.80	4.48	5.31	0.82
• Median as percentage of PSGs' median	80.0%	74.8%	-5.12	83.7%	84.1%	0.48
% of people with second qualification in different field of study (6-digit level)	11.2	N/A	N/A	11.1	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	5.8	N/A	N/A	5.8	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	2.91	2.87	-0.04	3.52	3.31	-0.21
• by industry	2.02	2.08	0.07	2.45	2.44	-0.01
• by industry and occupation	3.44	3.99	0.55	4.86	5.11	0.26
Supply and demand indices						
• Demand shock	N/A	N/A	0.3%	N/A	N/A	1.5%
• Supply shock	N/A	N/A	8.7%	N/A	N/A	8.1%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Housekeeping and Restaurant Services Workers	20.8%	21.2%	0.4	24.9%	23.9%	-1.0
• Finance and Sales Associate Professionals	9.0%	12.2%	3.2	10.7%	13.8%	3.1
• Specialised Managers	10.8%	11.3%	0.5	7.9%	9.1%	1.2
• Salespersons and Demonstrators	4.9%	6.1%	1.2	6.1%	7.3%	1.2
• Food and Related Products Processing Trades Workers	8.9%	5.2%	-3.8	7.9%	4.0%	-3.9
• Client Information Clerks	3.9%	4.9%	1.0	5.5%	6.3%	0.8
• Library, Mail and Related Clerks	2.9%	3.5%	0.7	3.5%	4.0%	0.6
• Food and Related Products Processing Machine Operators	3.5%	2.6%	-0.9	2.6%	1.9%	-0.7
• Cashiers, Tellers and Related Clerks	1.7%	2.2%	0.4	2.5%	2.7%	0.2
• Secretaries and Keyboard Operating Clerks	1.7%	2.0%	0.3	1.9%	2.2%	0.2
• Total share of the top 10 occupations	68.1%	71.3%	3.2	73.4%	75.1%	1.7
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	52.2%	50.9%	-1.3	56.3%	54.5%	-1.9
• Median income if working in in-field occupations	25540	25050	-1.9%	22600	22850	1.1%
• Median income if working in out-of-field occupations	26120	26490	1.4%	22770	23850	4.7%



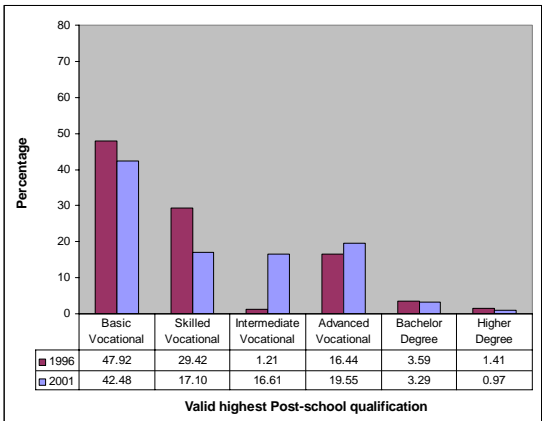
**Table 2.25-2 Age profiles for Food, Hospitality and Tourism PSGs**

Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	825	71.5	6300	69.0	46%	1.7	-7%	-1.5
19	1353	75.2	9340	70.9	29%	4.3	2%	-6.0
20	1515	70.3	14580	76.7	29%	2.2	1%	-4.2
21	1596	69.9	17560	79.3	16%	6.7	-3%	-4.3
22	1467	72.9	20980	82.2	18%	11.6	-2%	-1.4
23	1347	66.7	22930	83.3	19%	8.8	1%	0.6
24	1269	68.4	23460	80.9	16%	12.7	-2%	-3.8
25	1146	67.5	25560	80.9	12%	15.0	1%	-4.4
26	1203	64.1	26440	81.3	37%	15.1	1%	-2.6
27	984	64.4	27500	79.5	29%	14.6	2%	-5.9
28	930	64.5	27170	79.7	32%	16.7	-2%	-3.1
29	969	59.1	27900	81.1	39%	15.2	-1%	-1.2
30	894	61.9	27500	79.5	35%	18.9	-3%	-3.2

**Table 2.25-3 In-field occupations for Food, Hospitality and Tourism**

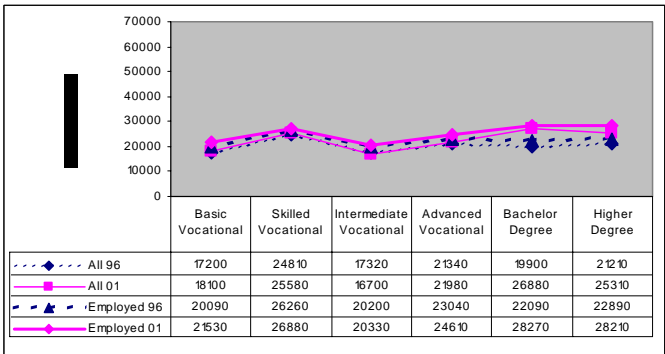
In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Food and Related Products Processing Trades Workers	0.39%	6.90%	17.60	5.68%	10.65
Housekeeping and Restaurant Services Workers	2.42%	21.34%	8.82	24.67%	5.55
Food and Related Products Processing Machine Operators	0.61%	3.03%	4.98	2.21%	3.12
Safety and Health Inspectors	0.36%	1.50%	4.12	0.44%	1.68
Travel Attendants and Guides	0.37%	1.39%	3.70	1.57%	3.14
Client Information Clerks	1.43%	4.52%	3.17	6.08%	2.69
Fashion and Other Models	0.01%	0.03%	2.96	0.03%	1.89
Messengers and Doorkeepers	0.23%	0.67%	2.86	0.79%	2.51
Street Vendors	0.04%	0.12%	2.76	0.07%	1.77
Finance and Sales Associate Professionals	4.00%	11.00%	2.75	12.74%	2.78
Environmental Protection Associate Professionals	0.02%	0.05%	2.37	0.04%	1.70
Packers and Freight Handlers	0.44%	0.89%	2.04	0.92%	1.62

**Figure 2.25-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Food, Hospitality and Tourism**

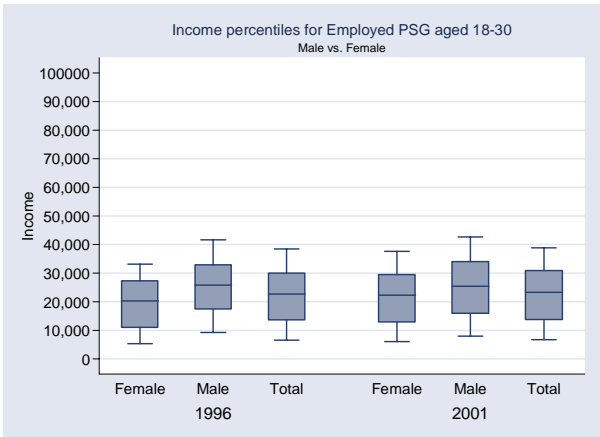


**Figure 2.25-2 Income level and dispersion for Food, Hospitality and Tourism aged 18-30**

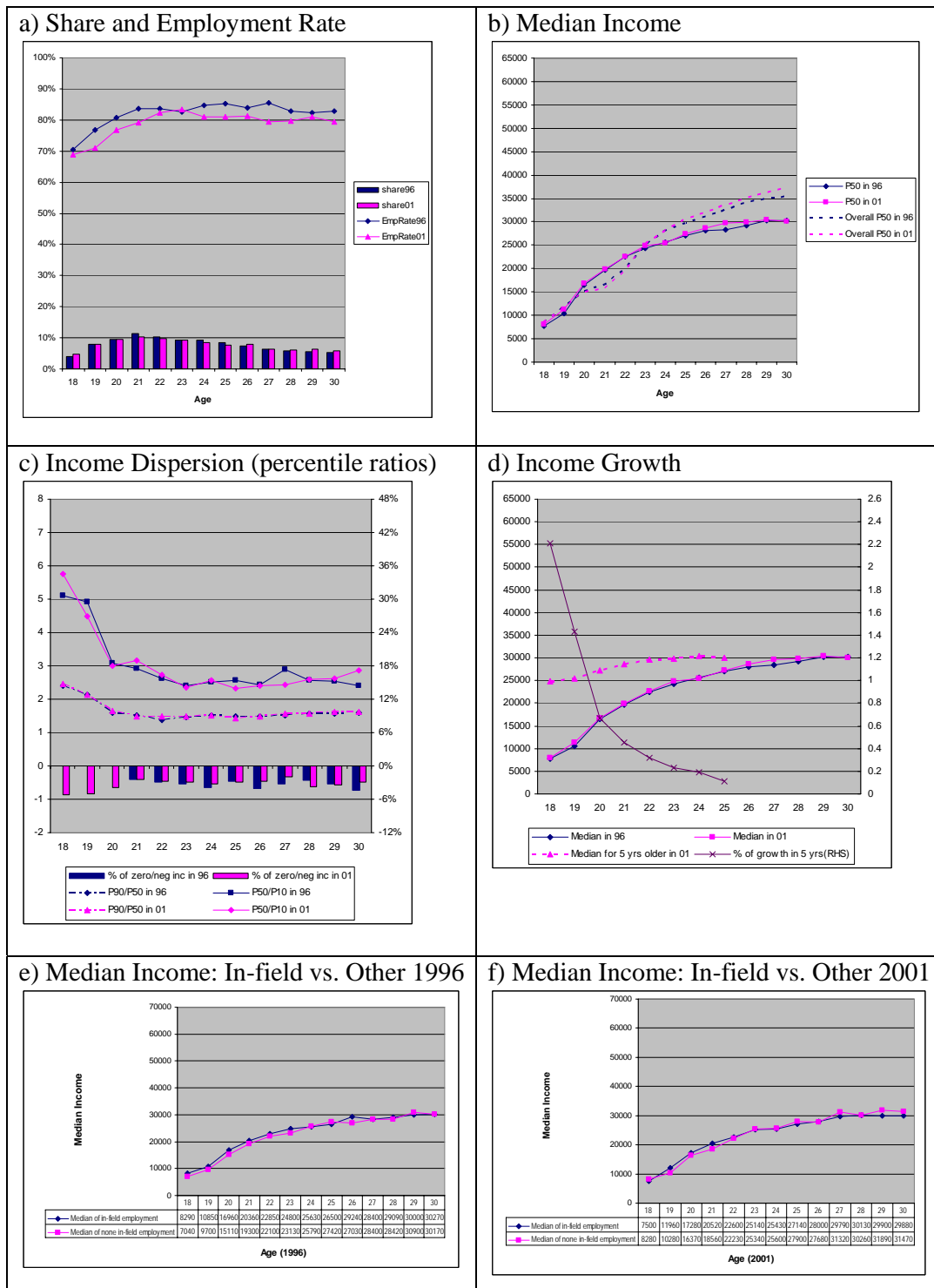
a) Median Income by highest level of attainment: All vs. Employed



b) Income percentiles: Male vs. Female vs. All



**Figure 2.25-3 Age profiles for employed PSGs aged 18 to 30 - Food, Hospitality and Tourism Study**



## **2.26 Beauty Service and Hairdressing**

### **2.26.1 Commentary**

#### ***Number***

- There was a very small decrease in the number of PSGs between 1996 and 2001 (0.2%). The decrease in young PSGs was larger (7.7%).

#### ***Qualification Structure***

- There was a low proportion of PSGs with multiple qualifications (5.2%), approximately half of these had the second qualification in a similar field.
- This field has a low level of qualifications. The structure changed a lot between 1996 and 2001, with a move away from Basic and Skilled Vocational (which had accounted for 95% of the PSGs) to Intermediate and Advanced Vocational, causing a roughly even distribution between the four types of Vocational Qualifications.
- Median incomes were very similar for all levels of qualifications. Between 1996 and 2001, median income for those holding an Intermediate Vocational Qualification decreased, whereas income for other qualifications increased. The large increase was for Advanced Vocational, the highest level of qualification.

#### ***Gender***

- This field had a very high female ratio, over 90%. The proportion of females increased slightly between 1996 and 2001.
- Females had lower income in all five percentiles than males for both 1996 and 2001. The increase of P10 from 1996 to 2001 was larger for males than for females. Figure 2.26-3 shows that the male income distribution had a longer right tail and shorter left tail in 2001 than in 1996, whereas female income distribution did not change much between the two years.

#### ***Age profiles***

- The number of PSGs in each age group between 18 and 30 is fairly evenly distributed. The largest increase in numbers between 1996 and 2001 were for ages 18 and 19. The number of PSGs aged between 21 and 26 decreased over the two years.
- Employment rates decreased for younger PSGs (less than 25) and increased for older ones. Median income followed a similar pattern.
- There was little increase in median income over the age period 18-30 years (the slope of the graphs was relatively flat for both 1996 and 2001). The 5-year growth rate of income was also relatively low (Figure 2.26-3 d).

#### ***Specialisation***

- This field had a high level of specialisation, with the industry and occupation index above 50 for all PSGs and above 70 for young PSGs in both census years.
- In general, specialisation decreased between 1996 and 2001, although the cross-specialisation index for all PSGs increased slightly.
- More than 80% of PSGs in this field worked in the top 10 occupations. Over 55% of all PSGs and over 60% of young PSGs were personal service workers, the most relevant occupation for this field. The share of PSGs working in both the top occupation and the top 10 occupations decreased slightly between 1996 and 2001.

### ***In and out employment***

- There are four in-field occupations. However, the most relevant in-field occupation, Other Personal Services Workers, accounts for almost all of the in-field employment.
- There was very little difference between in-field and out-of-field median income for both years and for both groups of PSGs.
- As Figures 2.26-3 e,f, show, there is no clear difference between in-field and out-of-field income by age group.

### ***Demand and supply***

- Demand decreased between 1996 and 2001 (-2.1%). There was a positive supply shock of 4.5%, but this was less than for aggregated fields.

## 2.26.2 Tables and Figures

Table 2.26-1 Key changes for Beauty Service and Hairdressing PSGs

	All PSG (aged 18-65)			Young PSG (aged 18-30)		
	1996	2001	Change	1996	2001	Change
Number of Graduates	7887	7869	-0.2%	4152	3834	-7.7%
Female Proportion	93.5%	94.3%	0.8	94.1%	94.1%	0.0
Employment rate	75.8%	73.8%	-2.0	77.8%	73.2%	-4.6
Income						
• Mean	18230	19250	5.6%	18300	18400	0.5%
• Median	16330	16610	1.7%	17690	17140	-3.1%
• P90-P50 ratio	2.08	2.23	0.16	1.79	1.98	0.19
• P50-P10 ratio	16.75	9.98	-6.77	7.68	6.67	-1.00
• Median as percentage of PSGs' median	55.9%	55.1%	-0.82	72.6%	70.8%	-1.85
% of people with second qualification in different field of study (6-digit level)	5.2	N/A	N/A	5.8	N/A	N/A
% of people with second qualification also in this aggregated field (subset of above)	2.9	N/A	N/A	3.5	N/A	N/A
Specialisation index (Relative to All PSGs aged 18 to 65 in all fields)						
• by occupation	11.54	10.47	-1.07	15.99	13.20	-2.79
• by industry	15.61	14.63	-0.98	22.04	19.04	-2.99
• by industry and occupation	51.19	53.86	2.67	74.72	70.44	-4.28
Supply and demand indices						
• Demand shock	N/A	N/A	-2.1%	N/A	N/A	-1.9%
• Supply shock	N/A	N/A	4.5%	N/A	N/A	4.3%
% in top 10 occupations (List as all PSGs in the field in 2001)						
• Other Personal Services Workers	55.5%	55.3%	-0.1	66.0%	62.5%	-3.5
• Salespersons and Demonstrators	5.8%	5.9%	0.2	5.1%	6.2%	1.1
• Specialised Managers	5.5%	5.1%	-0.4	4.2%	3.8%	-0.3
• Library, Mail and Related Clerks	3.4%	2.8%	-0.5	2.6%	1.8%	-0.8
• Housekeeping and Restaurant Services Workers	3.3%	2.7%	-0.6	3.5%	4.0%	0.4
• Finance and Sales Associate Professionals	2.5%	2.4%	-0.1	2.0%	2.4%	0.3
• Client Information Clerks	2.0%	2.3%	0.3	1.9%	2.5%	0.5
• Market Oriented Animal Producers	2.8%	2.0%	-0.8	1.7%	0.7%	-0.9
• Secretaries and Keyboard Operating Clerks	1.7%	1.6%	-0.2	1.1%	1.4%	0.3
• Social Work Associate Professionals	1.1%	1.6%	0.5	0.5%	0.5%	0.1
• Total share of the top 10 occupations	83.4%	81.8%	-1.7	88.6%	85.8%	-2.8
In- and out-of-field employment						
• Total share of PSGs working in in-field occupations	57.7%	57.7%	0.0	67.5%	64.2%	-3.3
• Median income if working in in-field occupations	19790	19820	0.2%	20390	20520	0.6%
• Median income if working in out-of-field occupations	19250	20540	6.7%	20020	20000	-0.1%

**Table 2.26-2 Age profiles for Beauty Service and Hairdressing PSGs**

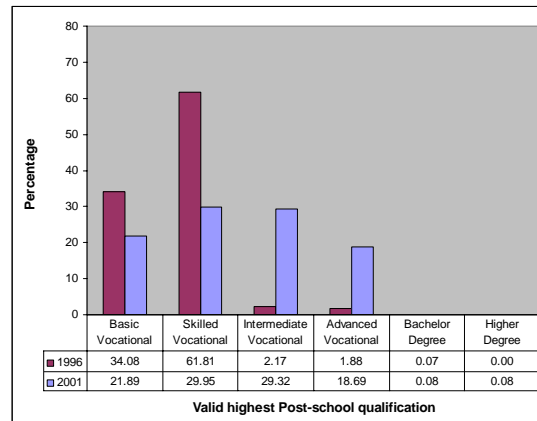
Age	2001				Change from 96 to 01			
	Number	Female Ratio (%)	Median Income	Employment Rate (%)	Change in Numbers (%)	FemaleRatio01-FemaleRatio96	Change in Median Income (%)	EmpRate01-EmpRate96
18	192	93.8	6880	63.5	73%	2.0	-3%	-6.0
19	240	93.8	9200	67.5	48%	1.2	-24%	-14.3
20	246	93.9	12660	67.1	17%	-0.4	4%	-12.9
21	291	94.8	15790	76.8	-7%	0.6	-11%	-9.7
22	234	96.2	17120	74.0	-41%	2.2	-5%	-7.0
23	282	92.6	17810	75.5	-27%	-2.0	-12%	-8.8
24	249	94.0	20280	75.3	-36%	-1.4	1%	-7.8
25	315	93.4	20600	75.5	-14%	0.8	-1%	-5.7
26	327	95.4	20180	81.7	-12%	2.7	-3%	1.7
27	381	93.7	20170	74.0	6%	2.0	6%	0.5
28	363	94.2	20470	74.2	-3%	-1.0	14%	3.8
29	369	93.5	18270	71.0	-6%	-1.1	7%	3.8
30	342	93.8	21760	71.9	6%	-2.5	38%	0.6

**Table 2.26-3 In-field occupations for Beauty Service and Hairdressing**

In-field Occupation	PSGs aged 18-65			PSGs aged 18-30	
	Share of Occupation	Weighted share	In-field Index	Weighted share	In-field Index
Other Personal Services Workers	1.64%	56.18%	34.28	65.07%	26.32
Glass Cutters and Related Workers <sup>1</sup>	0.01%	0.03%	3.35	0.05%	5.81
Fashion and Other Models	0.01%	0.03%	2.93	0.05%	3.49
Building Caretakers and Cleaners	0.67%	1.45%	2.15	0.92%	1.27

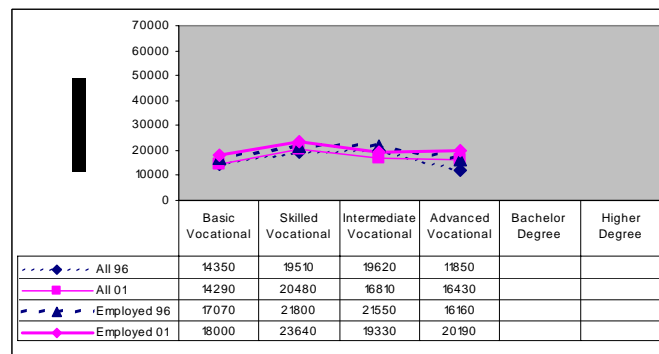
<sup>1</sup> Although the in-field index for Glass Cutters is high, this may be due to the very small size of the occupation, with Beauty Service and Hairdressing graduates relatively overrepresented for some reason.

**Figure 2.26-1 Distribution of highest level of attainment for PSGs aged 18 to 30 - Beauty Service and Hairdressing**

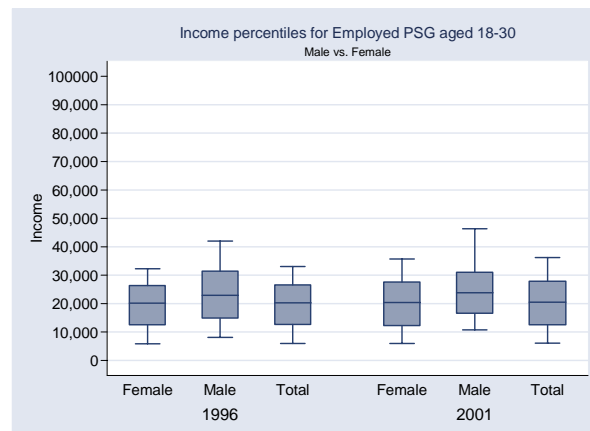


**Figure 2.26-2 Income level and dispersion for Beauty Service and Hairdressing aged 18-30**

a) Median Income by highest level of attainment: All vs. Employed

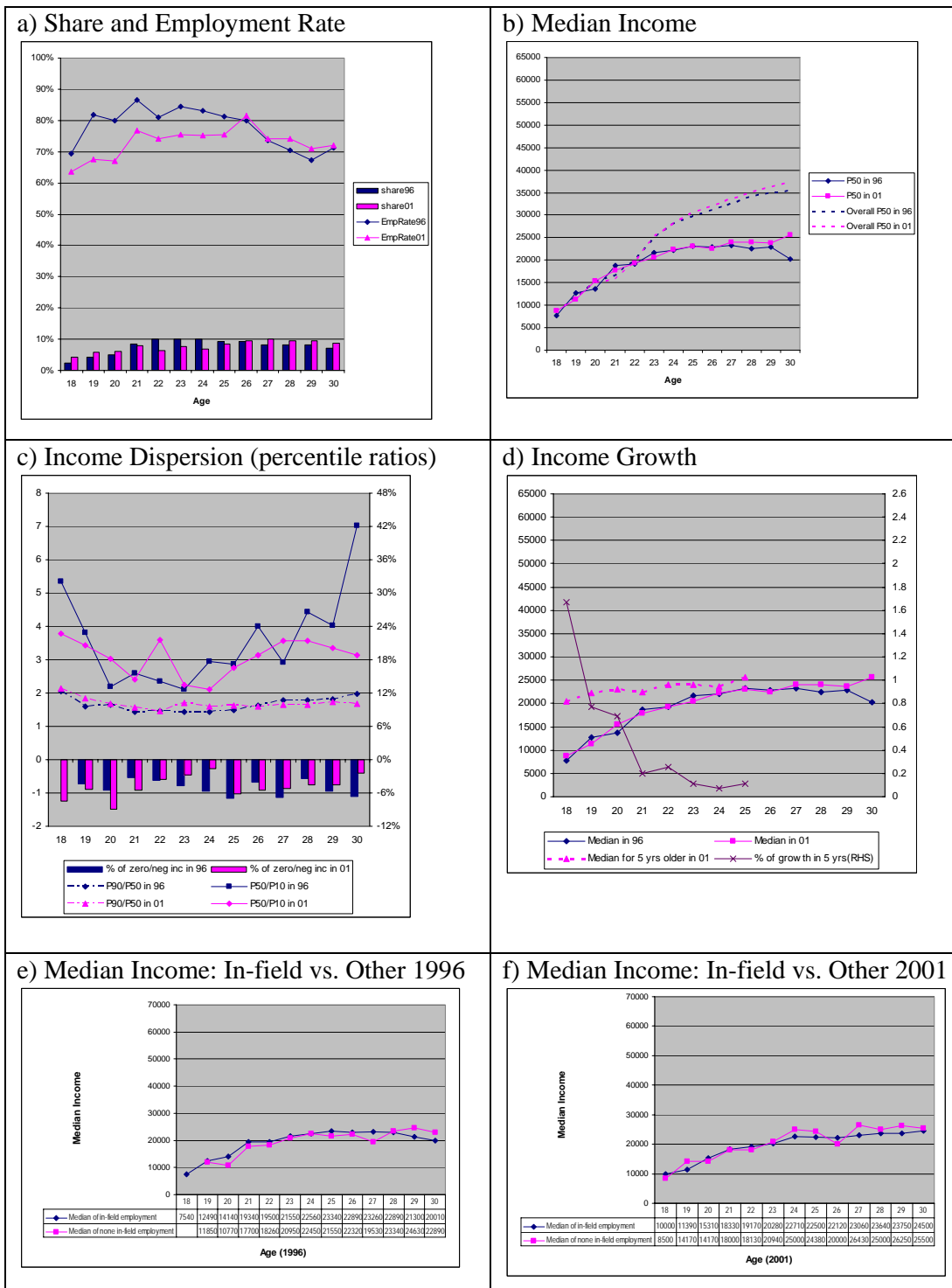


b) Income percentiles: Male vs. Female vs. All





**Figure 2.26-3 Age profiles for employed PSGs aged 18 to 30 - Beauty Service and Hairdressing**



## Appendix: Detailed fields in each aggregated field

Group Name	code01	name01	code96	name96
Physical and Natural Sciences	10300	Physics and Astronomy nfd	60201	Physics
	10301	Physics	60202	Chemistry
	10303	Astronomy	60203	Earth Science
	10500	Chemical Sciences nfd		
	10501	Organic Chemistry		
	10503	Inorganic Chemistry		
	10599	Chemical Sciences nec		
	10700	Earth Sciences nfd		
	10701	Atmospheric Sciences		
	10703	Geology		
	10705	Geophysics		
	10707	Geochemistry		
	10709	Soil Science		
	10711	Hydrology		
	10713	Oceanography		
	10799	Earth Sciences nec		
Biological Sciences	10900	Biological Sciences nfd	60100	Life Science, not further defined
	10901	Biochemistry and Cell Biology	60101	Biological Science
	10903	Botany	60102	Environmental Science
	10905	Ecology and Evolution	60199	Life Science, nec
	10907	Marine Science		
	10909	Genetics		
	10911	Microbiology		
	10913	Human Biology		
	10915	Zoology		
	10916	Neuroscience		
	10999	Biological Sciences nec		
	19999	Natural and Physical Sciences nec		
	39901	Environmental Engineering		
	50900	Environmental Studies nfd		
	50901	Land, Parks and Wildlife Management		
	50999	Environmental Studies nec		
Computer and Info Science	20000	Information Technology nfd	100000	Computing and Information Technology, not further defined
	20100	Computer Science nfd	100100	Computing, not further defined
	20103	Programming	100101	Generic Computing
	20105	Computational Theory	100102	Computer Science
	20111	Data Structures	100199	Computing, nec
	20113	Networks and Communications		
	20115	Computer Graphics		
	20117	Operating Systems		

	20119	Artificial Intelligence			
	20199	Computer Science nec			
	20300	Information Systems nfd			
	20305	Systems Analysis and Design			
	20307	Decision Support Systems			
	20399	Information Systems nec			
	29900	Other Information Technology nfd			
	29999	Information Technology nec			
	31305	Computer Engineering			
<b>Automotive Engineering</b>	30500	Automotive Engineering and Technology nfd	70500	Automotive Engineering, not further defined	
	30501	Automotive Engineering	70501	Automotive Electrics	
	30503	Vehicle Mechanics	70502	Vehicle Mechanics	
	30505	Automotive Electrics and Electronics	70503	Panel Beating	
	30507	Automotive Vehicle Refinishing	70504	Vehicle Painting	
	30509	Automotive Body Construction	70505	Vehicle Manufacture	
	30511	Panel Beating	70506	Vehicle Trimming	
	30513	Upholstery and Vehicle Trimming	70599	Automotive Engineering, nec	
	30599	Automotive Engineering and Technology nec			
<b>Mechanical/Industrial Engineer</b>	30515	Automotive Vehicle Operations	70300	Mechanical Engineering, not further defined	
	30700	Mechanical and Industrial Engineering and Technology nfd	70301	Mechanical Engineering Science	
	30701	Mechanical Engineering	70302	Tool making	
	30705	Tool making	70303	Fitting, Turning and Machining	
	30707	Metal Fitting, Turning and Machining	70304	Sheetmetal Engineering	
	30709	Sheetmetal Working	70305	Boilermaking and Welding	
	30711	Boiler-making and Welding	70306	Casting, Moulding and Pattern Making	
	30713	Metal Casting and Pattern Making	70307	Precision Metal Working	
	30715	Precision Metalworking	70399	Mechanical Engineering, nec	
	30717	Plant and Machine Operations	209901	Plant and Machine Operation	
	30799	Mechanical and Industrial Engineering & Technology nec			
<b>Electr Engineer/Tech</b>	30703	Industrial Engineering	70200	Electrical and Electronic Engineering, not further defined	
	31300	Electrical and Electronic Engineering and Technology nfd	70201	Electrical and Electronic Engineering Science	
	31301	Electrical Engineering	70202	Electricity Supply	
	31303	Electronic Engineering	70203	Electrical Engineering Trades	
	31307	Communications Technologies	70204	Heating, Ventilation, Air Conditioning and Refrigeration	
	31309	Communications Equipment Installation and Maintenance	70205	Telecommunications	
	31311	Power Line Installation and Maintenance	70206	Electronic Equipment Servicing and Maintenance	
	31313	Electrical Fitting, Electrical Mechanics	70299	Electrical and Electronic Engineering, nec	
	31315	Refrigeration, Heating and Air Conditioning			
	31317	Electronic Equipment Servicing			
	31399	Electrical and Electronic Engineering and Technology nec			
<b>Architecture &amp; Urban Environment</b>	40000	Architecture and Building nfd	80000	Architecture, Planning and Construction, not further defined	
	40100	Architecture and Urban Environment nfd	80100	Building Design, not further defined	

## Appendix

	40101	Architecture	80101	Architecture
	40103	Urban Design and Regional Planning	80102	Interior Design
	40105	Landscape Architecture	80199	Building Design, nec
	40107	Interior and Environmental Design	80301	Urban and Regional Planning
	40199	Architecture and Urban Environment nec	89900	Other Architecture, Planning and Construction, not further defined
<b>Building</b>	40300	Building nfd	80200	Building Construction, not further defined
	40301	Building Science and Technology	80201	Building Technology
	40303	Building Construction Management	80202	Carpentry and Joinery
	40305	Building Surveying (Inspection)	80203	Bricklaying and Masonry
	40307	Building Construction Economics (including Quantity Surveying)	80204	Painting, Decorating and Sign Making
	40309	Bricklaying and Stonemasonry	80205	Plastering and Tile Fixing
	40311	Carpentry and Joinery	80206	Plumbing, Gasfitting and Drain Laying
	40313	Ceiling, Wall and Floor Fixing	80207	Roof Finishing
	40315	Roof Fixing	80208	Floor Finishing
	40317	Plastering	80299	Building Construction, nec
	40321	Floor Coverings	89901	Glass and Glazing
	40323	Glazing	89902	Quantity Surveying
	40325	Painting, Decorating, Sign Writing and Other Finishes	89999	Other Architecture, Planning and Construction, nec
	40327	Plumbing, Gasfitting and Drainlaying		
	40329	Scaffolding and Rigging		
	40399	Building nec		
<b>Agriculture and Environmental</b>	50000	Agriculture, Environmental and Related Studies nfd	90000	Agriculture, Forestry and Fisheries, not further defined
	50100	Agriculture nfd	90100	Agriculture, not further defined
	50101	Agricultural Science	90101	Farming
	50103	Wool and Fibre Science	90102	Livestock Management
	50104	Beekeeping	90103	Equine
	50105	Animal Husbandry	90199	Agriculture, nec
	50106	Crop Production		
	50108	Equine Trades		
	50110	Wool and Fibre Harvesting		
	50112	General Land Skills		
	50199	Agriculture nec		
<b>Horticulture &amp; Viticulture</b>	50300	Horticulture and Viticulture nfd	90200	Horticulture, not further defined
	50301	Horticulture	90201	Horticulture
	50303	Viticulture		
<b>Medicine</b>	60100	Medical Studies nfd	30100	Medicine, not further defined
	60101	General Medicine	30101	General Medicine
	60103	Surgery	30102	Surgery
	60105	Psychiatry	30103	Psychiatry
	60107	Obstetrics and Gynaecology	30104	Obstetrics and Gynaecology
	60109	Paediatrics	30105	Anaesthesiology
	60111	Anaesthesiology	30106	Pathology

	60113	Pathology	30107	Radiology
	60115	Radiology	30108	Internal Medicine
	60117	Internal Medicine	30199	Medicine, nec
	60119	General Practice Medicine	30304	Radiography
	60199	Medical Studies nec		
	61311	Epidemiology		
	61501	Medical Imaging Technology (Radiography) and Radiation Therapy		
	61711	Massage Therapy		
Nursing	60300	Nursing nfd	30200	Nursing, not further defined
	60301	Nursing	30201	General Nursing
	60303	Midwifery	30202	Midwifery
	60308	Health Care Assistant	30203	Mothercraft Nursing
	60399	Nursing nec	30204	Psychiatric and Psychopaedic Nursing
			30299	Nursing, nec
Pharmacy, Therapy, etc.	19901	Medical Science	30000	Health, not further defined
	19907	Pharmacology	30300	Health Sciences, not further defined
	39902	Orthotics and Prosthetics	30301	Pharmacy
	39903	Biomedical Engineering	30302	Physiotherapy
	60000	Health nfd	30303	Occupational Therapy
	60501	Pharmacy	30306	Chiropractic
	61700	Rehabilitation Therapies nfd	30307	Speech Pathology
	61701	Physiotherapy	30308	Nutrition and Dietetics
	61703	Occupational Therapy	30309	Podiatry
	61705	Chiropractic and Osteopathy	30399	Health Science nec
	61707	Speech Pathology		
	61709	Audiology		
	61713	Podiatry		
	61799	Rehabilitation Therapies nec		
	69901	Nutrition and Dietetics		
	69905	Paramedical Studies		
	69907	First Aid		
	69999	Health nec		
Teacher Education	70100	Teacher Education nfd	40100	School Teacher Education, not further defined
	70101	Teacher Education: Early Childhood (Pre-Service)	40101	Early Childhood Education
	70103	Teacher Education: Primary (Pre-Service)	40102	Primary School Teaching
	70105	Teacher Education: Secondary (Pre-Service)	40103	Secondary School Teaching
	70106	Teacher Education: Tertiary	40104	Tertiary Teaching
	70108	Teacher Education: General (Pre-Service)	40200	Specialist Education, not further defined
	70113	Teacher Education: Special Education	40201	Teaching English as a Second Language
	70115	English Language Teaching (ESOL/EFL)	40202	Special Education
	70116	Te Mātauranga Māori me te Whakangungu (Māori Education)	40203	Physical Education and Fitness Teaching
	70120	Immersion Early Childhood Teacher Training (Pre-Service)	49900	Other Education, not further defined
	70122	Bilingual Primary Teacher Training (Pre-Service)	49901	Child Care

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	70124	Immersion Primary Teacher Training (Pre-Service)	49999	Other Education, nec
	70130	Teacher Professional Development		
	70199	Teacher Education nec		
	70300	Curriculum and Education Studies nfd		
	70301	Curriculum Studies		
	70303	Education Studies		
	79900	Other Education nfd		
	79999	Education nec		
	90503	Nannying and Early Childhood Care		
<b>Accounting</b>	80100	Accountancy nfd	20401	Accounting
	80101	Accounting		
	80199	Accountancy nec		
<b>Business and Management</b>	80300	Business and Management nfd	20100	Management, not further defined
	80301	Business Management	20101	Business Management
	80303	Human Resource Management	20102	Public Sector
	80305	Personal Management Training	20103	Human Resources Development
	80307	Organisation Management	20199	Management nec
	80309	Industrial Relations		
	80311	International Business		
	80312	Education Administration		
	80313	Public and Health Care Administration		
	80315	Project Management		
	80317	Quality Management		
	80320	Racing and Gaming Management		
	80321	Farm Management and Agribusiness		
	80399	Business and Management nec		
	89999	Management and Commerce nec		
<b>Sales and Marketing</b>	80500	Sales and Marketing nfd	20300	Sales and Marketing, not further defined
	80501	Sales	20301	Distribution
	80503	Real Estate	20302	Marketing & Public Relations
	80505	Marketing	20303	Real Estate
	80507	Advertising	20399	Sales and Marketing nec
	80509	Public Relations		
	80599	Sales and Marketing nec		
	89901	Purchasing, Warehousing and Distribution		
	89903	Valuation		
<b>Office Studies</b>	80900	Office Studies nfd	20200	Management Support Services, not further defined
	80901	Secretarial and Office Studies	20201	Office Systems
	80904	Text Processing and Office Tools	20299	Management Support Services nec
	80999	Office Studies nec		
<b>Social Science</b>	90301	Sociology	10102	Tikanga [Customs]

	90303	Anthropology	50102	Sociology
	90305	History	50104	History
	90307	Archaeology	50105	Geography
	90309	Human Geography		
	90314	Tikanga - Māori Customs		
<b>Psychology</b>	90700	Behavioural Science nfd	50101	Psychology
	90701	Psychology		
	90900	Law nfd	200400	Law, not further defined
	90901	Business and Commercial Law	200401	Law
	90903	Constitutional Law	200499	Law, nec
	90905	Criminal Law		
	90907	Family Law		
	90909	International Law		
	90911	Taxation Law		
	90913	Legal Practice		
	90999	Law nec		
	91100	Justice and Law Enforcement nfd		
	91101	Justice Administration		
	91103	Legal Studies		
	91105	Police Studies		
	91199	Justice and Law Enforcement nec		
	99903	Criminology		
	99905	Security Services		
	90308	Classics	10101	Reo Maori [Language]
	91500	Language and Literature nfd	50300	Language and Area Studies, not further defined
	91501	English Language	50301	Literature Studies
	91502	Te Reo Māori	50302	Languages
	91504	Foreign Languages	50303	Classical Studies
	91506	English for Speakers of Other Languages	50399	Language and Area Studies, nec
	91519	Translating and Interpreting		
	91521	Linguistics		
	91523	Literature		
	91599	Language and Literature nec		
<b>Creative Arts and Design</b>	90306	Art History	10200	Nga Mahi Toi, not further defined
	100000	Creative Arts nfd	10201	Raranga [Weaving]
	100100	Performing Arts nfd	10202	Whakairo [Carving]
	100101	Music	10299	Nga Mahi Toi nec
	100103	Drama and Theatre Studies	10301	Nga Mahi a Rehia [Performing]
	100105	Dance	120100	Visual and Performing Arts, not further defined
	100106	Ngā Mahi a Rēhia (Māori Performing Arts)	120101	Music
	100199	Performing Arts nec	120102	Art and Craft
	100300	Visual Arts and Crafts nfd	120103	Photography

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	100301	Fine Arts	120104	Graphic Design
	100303	Photography	120105	Fashion Design
	100305	Crafts	120106	Performing Arts
	100306	Mana Whakairo (Māori Carving)	120199	Visual and Performing Arts, nec
	100307	Jewellery Making		
	100309	Floristry		
	100399	Visual Arts and Crafts nec		
	100500	Graphic and Design Studies nfd		
	100501	Graphic Arts and Design Studies		
	100503	Textile Design		
	100505	Fashion Design		
	100506	Ngā Mahi a te Whare Pora (Māori Weaving)		
	100599	Graphic and Design Studies nec		
	109900	Other Creative Arts nfd		
	109999	Creative Arts nec		
<b>Communication and Media Studies</b>	100700	Communication and Media Studies nfd	200501	Communication
	100701	Audio Visual Studies	200502	Journalism
	100703	Journalism, Communication and Media Studies	200503	Film and Electronic Media
	100705	Written Communication	200599	Mass Communication, nec
	100707	Verbal Communication		
	100799	Communication and Media Studies nec		
<b>Food, Hospitality and Tourism</b>	80319	Hospitality Management	110101	Baking and Pastry Making
	80323	Tourism Management	110701	Meat Processing
	80701	Tourism Studies	200200	Hospitality Services, not further defined
	110000	Food, Hospitality and Personal Services nfd	200201	Cooking
	110100	Food and Hospitality nfd	200202	Tourism and Hospitality
	110101	Hospitality	200203	Waiting and Bar Service
	110103	Food and Beverage Service	200299	Hospitality Services, nec
	110105	Butchery		
	110107	Baking and Pastry Making		
	110109	Cookery		
	110111	Food Hygiene		
	110199	Food and Hospitality nec		
<b>Beauty Service and Hairdressing</b>	110300	Personal Services nfd	200100	Beauty Services, not further defined
	110301	Beauty Therapy	200101	Hairdressing
	110303	Hairdressing	200102	Beauty Therapy Services
	110399	Personal Services nec	200199	Beauty Services, nec