

Census Working Paper 96/1

**1991 CENSUS DATA QUALITY:
INCOME**

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Population Census Evaluation

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1. INTRODUCTION

Although Income was not originally chosen for analysis as part of the 1991 Census Working Paper Series, the Evaluation group has received a number of queries about the quality of Income data. Income was of interest because of a number of data quality problems observed with this variable in previous Censuses. These included the tendency for people to understate their income and a high non-response rate in relation to the other Census questions.

This paper provides a brief assessment of the quality of the data obtained from the Income question in the 1991 Census (Q.29). It should ensure users have a basic appreciation of the limitations of the data. The quality of the data was evaluated by considering intercensal changes, including non-response rates, and comparison with the 1990 Survey of Income and Housing Costs and Amenities. In addition, the changes to the question design implemented in the 1996 Census are described because they deal with a number of issues identified as data quality problems in the 1991 Census.

2. BACKGROUND

Income is an important socio-economic measure, providing an indication of individual, family and household well-being in different areas of Australia and between different population groups. It also provides information to assist policy makers determine which areas and social groups need social services. Income data is required by many Government departments (including the Department of Social Security, Department of Veteran's Affairs, and Department of Employment, Education and Training), academics and researchers, and welfare organisations, among others.

A question on Income was first included in the 1933 Census in response to the Great Depression of 1929. It was not included again until the 1976 Census but has been included in every subsequent Census. Since 1976, the Census has collected information on the gross income from all sources of people aged 15 years and over. Every Census question on income has asked respondents to select the range in which their gross income falls rather than writing in a numeric amount. This is to improve response rates as many people regard income as a sensitive topic. Also, many people may have difficulty in answering a question asking for an actual dollar amount.

Income was considered to be one of the more contentious questions within the 1991 Census. For the 1991 Census, 9.2% (216) of a sample of 2360 queries to the Census Hotline involved the Income question¹. In the same Census, debriefings of collectors and other feedback indicated that 'Income is seen as being too personal a question for some people, even though we only ask for an answer in ranges².

The Census Income question has been the subject of two previous Census Working Papers. The first, '*Working Paper No. T32, 1981 Census Development Programme - Topic Evaluation: Income*', examined the quality of data from the 1976 Census question and the results of testing for the 1981 Census. The second paper, '*Census Working Paper 89/3, 1986 Census Data Quality Assurance Review: Income*' focussed on the question used in the 1986 Census and the recommendations for the 1991 Census. These papers provided much useful background information for this report.

¹ Tables from 1991 Hotline Operations, NSW (Folio 46, File 91/1183)

² Evaluation of Census Forms and Information Booklet (Folio 47, File 91/1187)

3. COMPARISON OF THE 1991 CENSUS WITH THE 1986 CENSUS

3.1 Differences between the 1986 and 1991 Census Questions

Both the 1986 and 1991 Censuses collected Income data using a single question which provided a range of response options. However, there were a number of changes to the Income question in the 1991 Census. Copies of the questions used in the 1986 and the 1991 Censuses can be found in Appendix A.

While the same number of response options (fourteen) was used for both Censuses, the ranges within each Census varied. The new ranges reflected the effect of inflation between the two Censuses. Other changes, such as the levels of various Government benefits and allowances, were also taken into account when determining the ranges for the 1991 Census. The amounts paid for the most common benefits should fall well within ranges, rather than be around the boarder of two ranges, to improve the accuracy and usefulness of the data.

Aside from these adjustments, the major difference in the Income questions of the two Censuses involved the omission of a separate 'No income' response option in the 1991 Census. This change followed recommendations from the Household Income and Expenditure Section (HIES) within the ABS.³ HIES found that 1986 Census data for the 'No income' range was poor because many respondents who selected this range ignored certain sources of income, like interest payments. The inclusion of no income with a low income range was anticipated to provide more reliable data for the low income ranges. For this reason, the 'less than \$58 per week' range was introduced in the 1991 Census. This range also provided a legitimate response option for respondents with negative income, which was not available in the 1986 Census.

With the collapsing of the two lower income ranges for the 1991 Census it was feasible in terms of form design and processing to add an extra upper income range in this Census. The highest categories were slightly wider in 1986 than in 1991, even after inflation was taken into account.

The list of types of income to include was expanded in 1991 with the addition of 'family allowance supplement', 'student allowance' and 'maintenance (child support)'.⁴

The position of the Income question on the form varied between the two Censuses. In the 1986 Census the Income question was placed at the bottom of the page, whereas in the 1991 Census it was in the top half of the Census form. Previous Census testing has consistently shown that questions on the top of the page generally have a higher response rate than questions placed elsewhere on the form.⁴

3.2 Non-response to Income

In contrast to the expected results of the change in position, non-response rates for the Income question were significantly higher for the 1991 Census than for the 1986 Census. This can be seen in Table 3.1 on the following page. Both males and females had higher rates of non-response in 1991, although the increase in non-response was greater for females.

³ Census Working Paper 89/3, 1986 Census Data Quality Assurance Review: Income
⁴ OCR Test: Report on Form Design Issues, January 1993

TABLE 3.1: NON-RESPONSE TO INCOME: 1986 AND 1991

	<i>1986 Census</i> %	<i>1991 Census</i> %	<i>Difference</i> <i>Percentage points</i>
Males	5.8	7.5	1.7
Females	7.7	11.3	3.6
Persons	6.8	9.4	2.6

There were a number of possible reasons for the increase in non-response, including greater concern about privacy in the general community. As mentioned in Section 2, Income was a topic frequently asked about on the Hotline and collectors reported some respondents not completing the Income question because of their concerns about privacy.

Another possible factor in the increase in the non-response rate in the 1991 Census was the change in form design, particularly the omission of a 'No income' response option. In testing for the 1981 Census, people who did not respond to income were followed up. This showed that *'the reasons for not answering the income question were mainly related to persons thinking that the question was only to be answered by persons who worked'*⁵. In 1986, the presence of the 'No income' category may have prompted people who would otherwise have seen this question as irrelevant to respond. With the omission of this category in 1991, there was no such prompt and this may have been a factor in the increase in the non-response rate.

3.3 Comparison of distributions of Income

Although income ranges differ between Censuses, comparison of income response distribution from the 1986 to the 1991 Census can be undertaken by factoring in inflation. When this is done, the ranges for the two Censuses can be approximately matched. This is explained in more detail in Appendix B. Certain ranges have been collapsed within each set of data to enable a more accurate comparison. The final ranges used in analysis are shown on the next page.

The collapsing of some of the ranges has meant that the upper income ranges can not be examined in detail. However, for both Censuses, the proportion of responses in each of these ranges was small. The 1991 categories are used in the tables in this section to refer to the equivalent 1986 and 1991 categories.

⁵ Working Paper No. T32, 1981 Census Development Program - Topic Evaluation: Income

Matched Income Ranges

<i>1986 Income Ranges</i>	<i>1991 Income Ranges</i>
♦ Nil income to \$38 per week <i>Includes: No income \$1 to \$38 per week</i>	♦ Less than \$58 per week
♦ \$39 to \$115 per week <i>Includes: \$39 to \$76 per week \$77 to \$115 per week</i>	♦ \$58 to \$154 per week <i>Includes: \$58 to \$96 per week \$97 to \$154 per week</i>
♦ \$116 to \$172 per week	♦ \$155 to \$230 per week
♦ \$173 to \$230 per week	♦ \$231 to \$308 per week
♦ \$231 to \$345 per week <i>Includes: \$231 to \$287 per week 288 to \$345 per week</i>	♦ \$309 to \$481 per week <i>Includes: \$309 to \$385 per week \$386 to \$481 per week</i>
♦ \$346 to \$421 per week	♦ \$482 to \$577 per week
♦ \$422 to \$498 per week	♦ \$578 to \$673 per week
♦ More than \$498 per week <i>Includes: \$499 to \$613 per week \$614 to \$766 per week \$767 to \$958 per week Over \$958 per week</i>	♦ More than \$674 per week <i>Includes: \$674 to \$769 per week \$770 to \$961 per week \$962 to \$1,154 per week \$1,155 to \$1,346 per week More than \$1,346 per week</i>

The table below presents a comparison of the 1986 and 1991 distributions using the matched ranges.

TABLE 3.2: DISTRIBUTIONS OF INCOME, PEOPLE AGED 15 AND OVER: 1986 AND 1991

<i>Income per week (1991 equivalent ranges)</i>	<i>1986 Census %</i>	<i>1991 Census %</i>	<i>Difference Percentage points</i>
Less than \$58	15.5	10.7	-4.8
\$58 to \$154	19.8	19.2	-0.6
\$155 to \$230	9.7	11.2	1.5
\$231 to \$308	8.3	8.4	0.1
\$309 to \$481	17.5	18.4	0.9
\$482 to \$577	8.5	7.4	-1.1
\$578 to \$673	5.0	5.0	0.0
\$674 and over	9.0	10.1	1.1
Not stated	6.8	9.4	2.6
Total	100.0	100.0	
Total ('000s)	11,965	13,086	

Even with the rough approximations made, the distributions of responses follow similar patterns in 1986 and 1991. The distributions are, however, significantly different with the main causes of this being the differences in non-response rates and in the lowest income category. Changes in response rates have already been discussed while the lowest income category will be explored further in the following sections.

3.4 Analysis by Sex and Labour Force Status

Table 3.3 below shows the distribution of responses to Income in 1986 and 1991 for males and females by Labour Force Status.

TABLE 3.3: DISTRIBUTIONS OF INCOME BY LABOUR FORCE STATUS AND SEX, PEOPLE AGED 15 AND OVER: 1986 AND 1991

<i>Income (1991 equivalent ranges)</i>	<i>1986</i>		<i>1991</i>		<i>Difference</i>	
	<i>Males %</i>	<i>Females %</i>	<i>Males %</i>	<i>Females %</i>	<i>Males Pct. Pts</i>	<i>Females Pct. Pts</i>
<i>Employed (unpaid helper)</i>						
< \$58 per week	34.1	51.1	27.4	34.3	-6.7	-16.8
\$58 and over	58.0	37.8	59.0	45.3	1.0	17.5
Not stated	7.9	11.2	13.6	20.4	5.7	9.3
Total	100.0	100.0	100.0	100.0	0.0	0.0
Total (000s)	15.8	44.9	19.9	42.6	-	-
<i>Other employed^(a)</i>						
< \$58 per week	1.6	4.4	2.0	4.4	0.3	0.0
\$58 and over	95.6	92.7	94.8	92.4	-0.8	-0.4
Not stated	2.8	2.8	3.2	3.2	0.4	0.4
Total	100.0	100.0	100.0	100.0	0.0	0.0
Total (000s)	3,936.1	2,516.7	4,062.1	2,984.7	-	-
<i>Unemployed</i>						
< \$58 per week	14.4	35.6	12.8	25.2	-1.6	-10.5
\$58 and over	80.9	57.5	80.1	61.9	-0.9	4.4
Not stated	4.6	6.9	7.1	12.9	2.5	6.0
Total	100.0	100.0	100.0	100.0	0.0	0.0
Total (000s)	390.4	272.7	574.6	357.0	-	-
<i>Not in the labour force</i>						
< \$58 per week	21.2	37.5	15.5	24.0	-5.8	-13.6
\$58 and over	70.1	53.2	72.8	61.4	2.7	8.2
Not stated	8.6	9.3	11.7	14.6	3.1	5.4
Total	100.0	100.0	100.0	100.0	0.0	0.0
Total (000s)	1,439.3	3,094.5	1,637.1	3,099.2	-	-
<i>Total^(b)</i>						
< \$58 per week	7.4	23.3	6.4	14.8	-1.0	-8.5
\$58 and over	86.8	69.0	86.0	73.9	-0.8	5.0
Not stated	5.8	7.7	7.5	11.3	1.8	3.5
Total	100.0	100.0	100.0	100.0	0.0	0.0
Total (000s)	5,904.2	6,061.0	6,430.3	6,655.3	-	-
(a) Wage or salary earner and self-employed						
(b) Includes labour force status 'not stated'.						

3.4.1 Analysis by Sex

In both Censuses, the proportions of women who didn't respond and who had a low income were higher than the corresponding proportions for men. Changes between the Censuses were also quite different for men and women. While the distribution of responses for men was similar in 1986 and 1991, the distribution for women changed considerably, with fewer women reporting a low income and more women not responding or reporting a higher income in 1991.

The higher non-response rate for females could be connected to the fact that they are more likely than males to have low or no income. As discussed in Section 3.2, people without an income related to employment (ie. wages, salary or business income) may be more likely to see the Income question as irrelevant and not answer it. Thus, analysis by Labour Force Status can reveal more about response patterns for this question.

3.4.2 Analysis by Labour Force Status

The numbers in each Labour Force Status category in Table 3.3 also show that while females were more likely than males to be an unpaid helper in a family business, or not in the labour force, men were more likely to be wage or salary earners, self-employed or unemployed. Between 1986 and 1991 there was little change in distribution of Income responses for both males and females in the 'Other employed' category (which included wage and salary earners and self-employed people). However, in all other categories there was greater variation between 1986 and 1991 and this change was greater for females than males.

The patterns for females discussed above - large proportion with low income, high non-response rate, large changes between 1986 and 1991 - can also be seen for males in the Unpaid helper, Unemployed and Not in the Labour Force groups. This further indicates a probable link between not having an earned income and not responding to the Income question.

While the pattern described above is seen for both males and females there were some trends that were different between the sexes. For females, in addition to the intercensal increase in the non-response rate, there was also a shift in responses towards some higher income categories. This shift could be related to the incomes received by women which are not related to employment - in particular, the Family Allowance Supplement and maintenance payments.

Between 1986 and 1991, there were significant changes to the Family Allowance Supplement and to the way maintenance was paid. The changes observed in the distribution of Income for females who are Unpaid helpers, Unemployed or Not in the Labour Force probably reflect these to some extent.

Table 3.4 on the next page provides more detailed data on the Income reported by women who are Unpaid helpers or Not in the Labour Force - the groups for which the change in distribution between 1986 and 1991 was greatest.

TABLE 3.4: DISTRIBUTIONS OF INCOME BY LABOUR FORCE STATUS, FEMALES AGED 15 AND OVER: 1986 AND 1991

<i>Income (1991 equivalent ranges)</i>	<i>Not in labour force</i>			<i>Unpaid helpers</i>		
	<i>1986 %</i>	<i>1991 %</i>	<i>Difference Pct. Points</i>	<i>1986 %</i>	<i>1991 %</i>	<i>Difference Pct. Points</i>
Less than \$58 per week	37.5	24.0	-13.6	51.1	34.3	-16.8
\$58-\$154 per week	32.8	31.9	-0.8	18.0	19.7	1.8
\$155-\$230 per week	12.2	17.1	4.9	7.1	8.8	1.7
\$231-\$308 per week	4.2	6.3	2.0	4.9	5.7	0.8
\$309-\$481 per week	2.4	3.8	1.5	4.3	6.2	1.9
\$482-\$577 per week	0.7	0.8	0.2	1.3	1.7	0.4
\$578-\$673 per week	0.3	0.5	0.1	0.7	1.0	0.3
\$674 and over	1.5	2.2	0.7	0.7	1.0	0.3
Not stated	11.2	20.4	9.3	9.3	14.6	5.4
Total	100.0	100.0	0.0	100.0	100.0	0.0
Total ('000s)	44.9	42.6	-	3,094.5	3,099.2	-

3.4.3 Family Allowance Supplement

The Family Allowance Supplement is paid to the primary caregiver (usually the mother) in families with children where certain eligibility requirements are satisfied. It is paid in addition to the Family Allowance. In 1986 there were 29,183 families who received the Supplement and five years later, after major changes to the scheme to ease the eligibility requirements and publicise the scheme more widely, there were 187,872 families receiving the supplement.

In addition to more people receiving the Supplement, the amount paid per family was considerably higher: in 1986 an eligible family with two children under 13 would have received \$55.35 per week Family Allowance and \$32 per week Supplement (and possibly Rent Assistance as well). In 1991, they would have received \$40 per week Allowance and \$106 Supplement (and possibly Rent Assistance), an increase greater than inflation. Thus, both the amount of income received and the number of people receiving it increased. This could have led to the reduction in the number of women responding in the lowest income categories and the increase in the higher categories (particularly the second and third categories, as observed in Table 3.4).

Another factor which may have affected the responses of some people was that in the 1991 Census the Family Allowance Supplement was included in the list of sources of Income to be included. In 1986 it had not been specifically mentioned in the list.

3.4.4 Maintenance payments

Maintenance payments are paid by non-custodial parents to custodial parents to contribute towards the care of the children. In 1988, the Government introduced the Child Support Scheme which had a major impact on maintenance eligibility, payment and levels. A crucial aspect of this scheme was the creation of the Child Support Agency which was responsible for the collection of maintenance payments. These initiatives were designed to ensure that a higher proportion of custodians were paid child support.

This too could have contributed to the increase in the proportion of women with an income in categories other than the lowest, particularly between \$58 and \$230 (the second and third categories).

As for the Family Allowance Supplement, it is also possible that income from maintenance was reported more accurately. In 1991, for the first time, 'maintenance' was mentioned on the form in the list for sources of income to be included.

3.5 Analysis for Full-time students

Another group of people for whom the distribution of income changed between 1986 and 1991 was full-time students. As can be seen in Table 3.5 below, non-response rates for Income increased substantially for full-time students from 15.9% in the 1986 Census to a non-response rate of 20.4% in the 1991 Census. The factors discussed in connection with the increase in non-response, such as an increase in concerns about privacy and the number of people seeing the question as irrelevant to them, may have also affected this population group (see Section 3.2).

TABLE 3.5 DISTRIBUTIONS OF INCOME, FULL-TIME STUDENTS AGED 15 AND OVER: 1986 AND 1991

<i>Income (1991 equivalent ranges)</i>	<i>1986 %</i>	<i>1991 %</i>	<i>Difference Percentage points</i>
Less than \$58 per week	61.8	43.5	-18.2
\$58-\$154 per week	15.0	25.7	10.7
155 and over per week	7.4	10.3	2.9
Not stated	15.9	20.4	4.6
Total	100.0	100.0	0.0
Total ('000s)	830.8	1,123.5	-

The shift in distribution demonstrated in Table 3.5, away from the lowest Income category, also indicates that there has been an increase from 1986 to 1991 in the proportion of full-time students receiving any income (or a higher income). The validity of this outcome is supported by the following analysis of changes in the income assistance provided to students.

3.5.1 AUSTUDY

There were a number of changes between 1986 and 1991 to the schemes provided by the government to assist full-time students. In 1987, the Tertiary Education Assistance Scheme (TEAS), the Secondary Allowances Scheme (SAS) and the Adult Secondary Education Assistance Scheme (ASEAS) were replaced with AUSTUDY. There were also a number of changes to eligibility requirements. This led to an increase in the number of recipients of these benefits: in 1986, there were 187,029 recipients (22.5% of the number of full-time students identified in the 1986 Census) while in 1991 there were 404,766 (36.0% of full-time students in the 1991 Census).

The increase in the proportion of students receiving benefits is the most significant of these numbers. With the level of benefits generally falling in the second income category in both the 1986 and 1991 Censuses, the change in Income distribution shown

in Table 3.5 probably reflects to a large degree the expansion of eligibility under the later scheme.

3.6 Summary

The main changes observed between 1986 and 1991 Income data were:

- an increase in the non-response rate
- a decrease in the proportion of people responding in the lowest category
- an increase in the proportion of people responding in some of the higher categories.

Some of these changes reflect changes in government policy, particularly amount and availability of the Family Allowance Supplement and AUSTUDY, and the arrangements to support maintenance payments. Therefore these changes have no implications for data quality.

The increase in non-response may have been caused partly by an increase in public concern about confidentiality of data provided. It is also possible that the omission of the 'No income' category may have resulted in a greater proportion of people with low or no income seeing the question as irrelevant and so not responding.

These issues are explored further in the next section where 1991 Census data are compared with data from the 1990 Income survey.

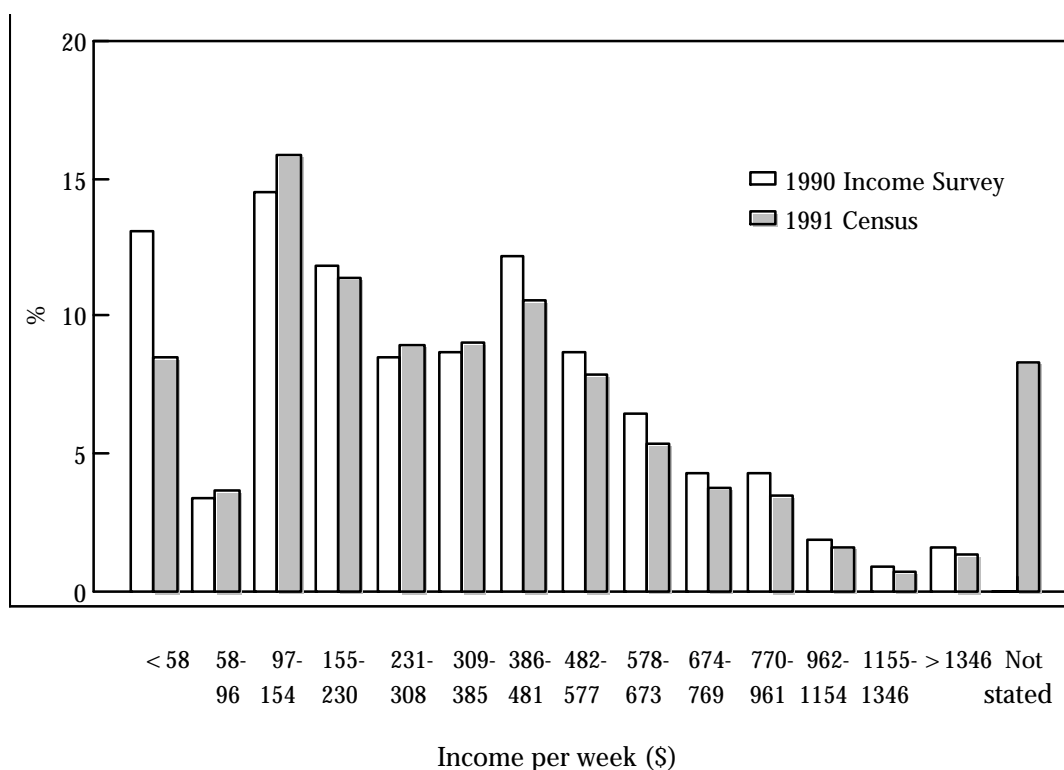
4. COMPARISON OF THE 1991 CENSUS AND the 1990 SURVEY OF INCOME

4.1 Differences between the 1990 Income Survey and the 1991 Census

The Survey of Income and Housing Costs and Amenities was conducted by the ABS from October to December 1990. This survey collected, among other items, information on current gross income from all sources. Income was collected in actual dollar amounts.

Differences in questionnaire design, scope and collection procedures need to be considered when making comparisons as these will affect the response distributions from the two collections. One important difference is that the 1991 Census form was a self-enumerated questionnaire whereas the 1990 Income Survey was conducted using interviewers. Another is that while the Census was to be completed for all people within Australia on the night of the Census, the 1990 Income Survey was based on a multi-stage area sample of private dwellings and non-private dwellings (20,378 in total) and covered about one third of one per cent of the population of Australia. Weights were then used

GRAPH 4.1: DISTRIBUTIONS OF INCOME FOR PEOPLE AGED 15 AND OVER: 1990 SURVEY AND 1991 CENSUS



to produce estimates for the total population.

The scope of the 1990 Income Survey was more limited than that of the 1991 Census. Both collections excluded persons aged under 15 years for the Income question. However, the 1990 Income Survey also excluded:

- boarding school students;
- persons in institutions such as hospitals, sanatoria, and inmates of jails, reformatories, etc; and

- persons aged 15 to 20 attending school at the time of interview.

To enable comparison between these two sources of data, the above population groups have, where possible, been excluded from the 1991 Census tables used. Appendix C contains a full list of these exclusions.

Another potential difficulty in comparing the two collections involves the effect of inflation from December 1990 to August 1991, the period between the collections. Initially analysis was undertaken involving adjustments to the figures to account for inflation. However, as inflation had little effect on the differences in distribution, the comparisons in this paper do not include such adjustments. Differences in seasonality between December and August could also have an impact on the comparisons but it is not possible to take such an effect into account in this analysis.

In the 1990 Income Survey, the Income variables were derived from a number of questions asking about specific types of income. In situations of partial response, the remaining responses were imputed. This was done using the mean of other respondents who had been matched on a number of characteristics (including state, area of state, occupation group, industry sector, age, sex and marital status). Editing of income from pensions and other government benefits and allowances was also done, using a Government benefit module based on Social Security entitlements, adjusted by relevant factors such as family structure and tenure type.

Where little or no information was provided, the record was excluded from the final estimation of the income variable. As a result, there was no non-response category in the 1990 Income Survey. No imputation or exclusion is done in the Census and Income data from the Census contains a non-response category. While the Census non-response category could be excluded for the comparisons, this is tantamount to assuming that non-response is equally spread across all ranges. The earlier intercensal analysis (see Section 3.4) indicated that non-response seems to be greatest for the lowest income range, so this assumption is not valid. As a result, Census non-response is included in the following analysis of income distributions between the two collections.

4.2 Comparison of distributions of Income

Distribution of Income for the 1991 Census was similar to that of the 1990 Income Survey except for the lowest range of the 1991 Census ('less than \$58 per week'). Only 8.5% of respondents in the 1991 Census stated their income within this range, 4.6 percentage points lower than the proportion in the 1990 Income Survey. This can be seen in Graph 4.1 (below) and Table 4.1 which both compare the income distributions of the two collections.

The lower proportion of response in the 1991 Census for the 'less than \$58 per week' range in conjunction with the Census's high non-response rate (8.3%), supports the earlier intercensal analysis (Section 3.4) that indicated that non-response was greatest among people with low or no income, who may have seen the question as irrelevant.

Another feature of the graph is that the Census had a greater proportion of people in most of the lower income groups while the Income Survey had a greater proportion in the higher income groups. There are several possible reasons for this. Whatever the reason, respondents in the Census are likely to have understated Income, as was found in the Census Content Check for the 1976 Census which found 'a continuous distortion

of income response in the Census with respondents consistently under-reporting their income'.

TABLE 4.1: DISTRIBUTIONS OF INCOME BY SEX, PEOPLE AGED 15 AND OVER: 1990 SURVEY AND 1991 CENSUS

<i>Income (per week)</i>	<i>Males</i>			<i>Females</i>			<i>Persons</i>		
	<i>1990 Survey</i>	<i>1991 Census</i>	<i>Diff.</i>	<i>1990 Survey</i>	<i>1991 Census</i>	<i>Diff.</i>	<i>1990 Survey</i>	<i>1991 Census</i>	<i>Diff.</i>
	<i>Pct.</i>			<i>Pct.</i>			<i>Pct.</i>		
	<i>%</i>	<i>%</i>	<i>Points</i>	<i>%</i>	<i>%</i>	<i>Points</i>	<i>%</i>	<i>%</i>	<i>Points</i>
Less than \$58	6.7	3.8	-2.9	19.4	13.0	-6.4	13.1	8.5	-4.6
\$58 to \$96	2.1	2.5	0.4	4.6	4.8	0.2	3.4	3.7	0.3
\$97 to \$154	11.4	13.4	2.0	17.6	18.2	0.6	14.5	15.8	1.3
\$155 to \$230	8.7	8.6	-0.1	14.9	14.0	-0.9	11.8	11.4	-0.4
\$231 to \$308	7.2	8.0	0.8	9.8	9.8	0.0	8.5	8.9	0.4
\$309 to \$385	8.5	9.7	1.2	8.8	8.4	-0.4	8.7	9.0	0.3
\$386 to \$481	14.5	12.7	-1.8	9.9	8.4	-1.5	12.1	10.5	-1.6
\$482 to \$577	11.3	10.5	-0.8	6.0	5.4	-0.6	8.6	7.9	-0.7
\$578 to \$673	8.9	7.4	-1.5	3.9	3.3	-0.6	6.4	5.3	-1.1
\$674 to \$769	6.4	5.4	-1.0	2.2	2.1	-0.1	4.2	3.7	-0.5
\$770 to \$961	6.9	5.6	-1.3	1.8	1.4	-0.4	4.3	3.5	-0.8
\$962 to \$1,154	3.3	2.7	-0.6	0.5	0.5	0.0	1.9	1.6	-0.3
\$1,155 to \$1,346	1.6	1.2	-0.4	0.2	0.2	0.0	0.9	0.7	-0.2
More than \$1346	2.6	2.2	-0.4	0.5	0.4	-0.1	1.6	1.3	-0.3
Not stated	—	6.3	6.3	—	10.3	10.3	—	8.3	8.3
Total	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0
Total ('000s)	6,153.4	6,026.3	—	6,301.7	6,212.5	—	12455.1	12238.8	—

Table 4.1 also contains income responses for males and females. While the trends observed were similar for males and females - with the Census having smaller proportions in the lowest category (Less than \$58) and higher categories and larger proportions in the middle categories - they were more extreme for females. As observed earlier, differences in participation in the labour force may be an important factor in this and the next section examines the comparison by Labour Force Status.

4.3 Analysis by Labour Force Status

For both the 1991 Census and the 1990 Income Survey, the distribution of Income varied considerably across Labour Force Status, as illustrated in Table 4.2 on the next page. The three highest categories are collapsed in this table as they contained few persons.

This comparison is limited by the differences in the derivation of Labour Force Status between the two collections. While adjustments to the applicable population have been made, as explained earlier, and the questions asked on Labour Force Status were similar, there are differences between the collections that are likely to affect comparisons.

These are explained in more detail in the Working Paper comparing Labour Force Survey and Census results⁶.

The proportion of people who were coded as Employed was lower in the Census (58.5%) than in the Survey (62.1%), while the proportions of people Unemployed and Not in the Labour Force were higher. This could be because people overlooked jobs of only a few hours or on an irregular basis when completing their Census form (and so were coded as Unemployed or Not in the Labour Force), while in the Survey conducted by interview such jobs may have been included and a code of Employed given.

TABLE 4.2: DISTRIBUTIONS OF INCOME BY LABOUR FORCE STATUS, PEOPLE AGED 15 AND OVER: 1990 SURVEY AND 1991 CENSUS

<i>Income (per week)</i>	<i>Employed</i>			<i>Unemployed</i>			<i>Not in the Labour Force</i>		
	<i>1990 Survey</i>	<i>1991 Census</i>	<i>Diff.</i>	<i>1990 Survey</i>	<i>1991 Census</i>	<i>Diff.</i>	<i>1990 Survey</i>	<i>1991 Census</i>	<i>Diff.</i>
			<i>Pct.</i>			<i>Pct.</i>			<i>Pct.</i>
	<i>%</i>	<i>%</i>	<i>Points</i>	<i>%</i>	<i>%</i>	<i>Points</i>	<i>%</i>	<i>%</i>	<i>Points</i>
Less than \$58	3.5	2.3	-1.2	40.5	16.5	-24.0	26.5	17.6	-8.9
\$58 to \$96	2.0	2.3	0.3	5.1	8.6	3.5	5.7	5.1	-0.6
\$97 to \$154	3.8	4.8	1.0	28.5	34.6	6.1	32.8	31.3	-1.5
\$155 to \$230	7.2	8.0	0.8	9.7	9.7	0.0	21.2	18.0	-3.2
\$231 to \$308	9.1	9.9	0.8	11.0	10.1	-0.9	6.8	7.5	0.7
\$309 to \$385	12.3	13.1	0.8	4.3	6.3	2.0	2.5	3.3	0.8
\$386 to \$481	18.7	16.8	-1.9	0.6	2.3	1.7	1.5	2.4	0.9
\$482 to \$577	13.4	12.9	-0.5	0.1	1.2	1.1	1.0	1.4	0.4
\$578 to \$673	10.0	8.8	-1.2	0.1	0.6	0.5	0.6	0.8	0.2
\$674 to \$769	6.6	6.2	-0.4	0.0	0.3	0.3	0.4	0.5	0.1
\$770 to \$961	6.7	5.8	-0.9	0.0	0.3	0.3	0.4	0.4	0.0
More than \$962	6.7	5.8	-0.9	0.1	0.3	0.2	0.5	0.6	0.1
Not stated	–	3.3	3.3	–	9.1	9.1	–	11.1	11.1
Total	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0
Total ('000s)	7,738.1	6,959.6	–	774.8	904.9	–	3,942.2	4,078.4	–

The differences between the Census and the Survey vary considerably between the Labour Force Status categories. The differences are least for employed people, with only a 1.2 percentage points difference in the lowest category and a Census non-response rate of 3.3 per cent. The Census had a greater proportion of people in the categories between \$58 and \$385 but a lower proportion in the higher income categories. This indicates that some employed people understated their income in the Census. This may have been intentional or the result of unintentional errors such as the exclusion of additional sources of income, such as interest.

No such pattern of understating income was observed for the other two categories, Unemployed and Not in the Labour Force. Rather, the opposite trend appeared with the Census having a larger proportion of people in the higher income categories, although this may be mainly due to the differences in Labour Force Status derivation between the collections resulting in a larger proportion of people in the Census being given codes of Unemployed or Not in the Labour Force.

⁶ Census Working Paper 94/1, 1991 Census Data Quality: Labour Force Status

The pattern of fewer people in the lowest category in the Census and a high non-response rate is very strong for Unemployed and Not in the Labour Force groups, giving further weight to the theory that many people who do not respond to the Census Income question are people with a low or no income, who may see it as irrelevant.

Another noticeable difference for people who were Unemployed is in the category \$97 to \$154, which increased by 6.1 percentage points. The most likely cause of this is the change in the benefits paid to unemployed people. In June 1991, the old scheme of Unemployment Benefit and Job Search Allowance was replaced by a New Start Allowance and a revised Job Search Allowance. This led to an increase in the number of people receiving unemployment benefits. Rough calculations using the number of recipients and the number of unemployed people from the Labour Force Survey indicate that the proportion of unemployed people receiving benefits also increased - from 72.2 per cent in December 1990 to 88.9 per cent in August 1991. This could explain the smaller proportion of people in the lowest income category in the Census and the larger proportion in the category into which the benefits fall (\$97 to \$154 per week).

4.4 Summary

The distribution of income responses was reasonably similar in the Census and the Survey. A number of the differences that are observed are likely to have external causes such as changes in government benefits in the intervening period or differences in the collection methods. The main differences which concern the quality of Income data in the 1991 Census are:

- fewer Census responses in the lowest category (less than \$58) which was probably largely due to non-response by people on low or no income perceiving the question as irrelevant
- a smaller proportion of Census responses in the high income categories and a larger proportion in the low income categories, particularly among Employed people, indicating that some people in this group may have understated their income in the Census

5 THE 1996 CENSUS QUESTION

The Income question to be used in the 1996 Census is similar to that of the 1991 Census but with changes designed to improve quality of responses and to conform with newly developed ABS standards. Appendix A contains a reproduction of the 1996 question.

The main changes involve the reversal of the income response options, the inclusion of the 'No income' response option and the introduction of a 'Negative income' response option. The values within each response category have also been altered to account for inflation and are consistent with those recommended within the Interim Standard for Income.

The reversal of the order of response categories, with the first category now being the highest (\$1500 or more per week), is hoped to reduce the apparent tendency of respondents to understate their income. Past experience indicates that some people may mark the first appropriate category they see rather than read the whole list and such behaviour could have exacerbated the misstatements of Income. The reversing of the list may reduce any such tendency. The new order also fits in well with the inclusion of categories for Nil and Negative income. Placing these at the end of the list should help reduce the chance of these categories being marked erroneously.

The 1991 category of 'Less than \$58 per week' did not appear to be effective, as analysis in this report has shown. The decrease in the proportion of people with no or low income and the increase in the non-response rate may have resulted from such people not seeing the question as relevant to them, whereas in 1986 they may have been prompted by the 'No income' category to respond. Feedback from the 1991 Census also indicated that some respondents did not immediately recognise the 'Less than \$58 per week' category as including negative income. In order to address these concerns, and in line with the new standard, 'Nil income' and 'Negative income' categories will be included in the 1996 Census.

There is one remaining concern about the new category of 'Negative income'. It is possible that some respondents marking 'Negative income' may also mark the income range corresponding to the amount by which their income is negative. Where a multiple response is given, the first response will be coded. This may result in negative income being understated as it is the last response option for the question. In order to reduce this problem the instruction 'Mark one box' has been included with the question. This is an aspect of data quality to be evaluated following the 1996 Census, even though the number of people with a negative income is likely to be small and analysis of dress rehearsal data has indicated that multiple marking is not likely to be a substantial problem.

6 CONCLUSION

The analysis of Income data presented in this paper shows that previously identified concerns about the quality of the data, in particular the high non-response rate and the tendency for some people to understate their income, are still apparent in the data from the 1991 Census. However, comparison of 1991 Census data with data from the 1986 Census and the 1990 Income Survey showed a close correspondence, indicating a continuing consistency over time and with other sources. The differences observed in these comparisons could largely be explained by known changes in Government benefits or differences in collection methodology.

The increase in the non-response rate between 1986 and 1991 may, in part, be due to an increase in privacy concerns among respondents. It may also be connected to the other main problem identified in the 1991 Census Income data which concerns the small proportion of people with no or low income. In the 1991 Census there may have been a tendency for people with no or low income to see the Income question as irrelevant (and so not respond), possibly more so than in 1986 because the 'No income' category had been replaced with a 'Less than \$58 per week' category. However, the decrease in the proportion of people with no or low income may also be partly due to an improvement in the quality of response following changes in form design between 1986 and 1991. The major change was the expansion of the list of sources of income to be included, which may have led to more accurate reporting of income.

The changes introduced for the 1996 Census question address some of these issues and should lead to better quality income data. However, the question is still likely to be of concern to respondents worried about privacy and the data will again be collected in ranges. Thus, the data is best used as a comparative indicator of income levels rather than an absolute measure. Despite these limitations, the Income question in the Census should provide valuable information for people using Census data for social research purposes.

APPENDIX A: THE 1986, 1991 AND 1996 CENSUS INCOME QUESTIONS

THE 1986 CENSUS INCOME QUESTION

<p>24. What is the gross income (including pensions and/or allowances) that the person usually receives each week from all sources?</p> <ul style="list-style-type: none"> • Count all including: family allowance (child endowment); pensions; unemployment benefits, etc; worker's compensation; superannuation; wages; salary; overtime; dividends; rents received; business or farm income (less expenses of operation); interest received. • Do not deduct tax, superannuation, health insurance etc. 	<p>01 <input type="checkbox"/> No income</p> <p>02 <input type="checkbox"/> \$1 to \$38 per week (\$1 to \$2,000 per year)</p> <p>03 <input type="checkbox"/> \$39 to \$76 per week (\$2,001 to \$4,000 per year)</p> <p>04 <input type="checkbox"/> \$77 to \$115 per week (\$4,001 to \$6,000 per year)</p> <p>05 <input type="checkbox"/> \$116 to \$172 per week (\$6,000 to \$9,000 per year)</p> <p>06 <input type="checkbox"/> \$173 to \$230 per week (\$9,001 to \$12,000 per year)</p> <p>07 <input type="checkbox"/> \$231 to \$287 per week (\$12,001 to \$15,000 per year)</p> <p>08 <input type="checkbox"/> \$288 to \$345 per week (\$15,001 to \$18,000 per year)</p> <p>09 <input type="checkbox"/> \$346 to \$421 per week (\$18,001 to \$22,000 per year)</p> <p>10 <input type="checkbox"/> \$422 to \$498 per week (\$22,001 to \$26,000 per year)</p> <p>11 <input type="checkbox"/> \$499 to \$613 per week (\$26,001 to \$32,000 per year)</p> <p>12 <input type="checkbox"/> \$614 to \$766 per week (\$32,001 to \$40,000 per year)</p> <p>13 <input type="checkbox"/> \$767 to \$958 per week (\$40,001 to \$50,000 per year)</p> <p>14 <input type="checkbox"/> Over \$958 per week (Over \$50,000 per year)</p>
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THE 1991 CENSUS INCOME QUESTION

29. What is the gross income (including pensions and allowances) that the person usually receives each week from all sources?

• Count all income including:

family allowance
family allowance supplement
pensions
unemployment benefits
student allowance
maintenance
(child support)
worker's compensation
superannuation
wages
salary
overtime
dividends
rents received
business or farm income
(less expense of operation)
interest received.

• Do not deduct:

tax
superannuation
health insurance

Less than \$58 per week
(Less than \$3,001 per year)

\$58 to \$96 per week
(\$3,001 to \$5,000 per year)

\$97 to \$154 per week
(\$5,001 to \$8,000 per year)

\$155 to \$230 per week
(\$8,001 to \$12,000 per year)

\$231 to \$308 per week
(\$12,001 to \$16,000 per year)

\$309 to \$385 per week
(\$16,001 to \$20,000 per year)

\$386 to \$481 per week
(\$20,001 to \$25,000 per year)

\$482 to \$577 per week
(\$25,001 to \$30,000 per year)

\$578 to \$673 per week
(\$30,001 to \$35,000 per year)

\$674 to \$769 per week
(\$35,001 to \$40,000 per year)

\$770 to \$961 per week
(\$40,001 to \$50,000 per year)

\$962 to \$1,154 per week
(\$50,001 to \$60,000 per year)

\$1,155 to \$1,346 per week
(\$60,001 to \$70,000 per year)

More than \$1,346 per week
(More than \$70,000 per year)

THE 1996 CENSUS INCOME QUESTION

29 What is the gross income (including pensions and allowances) that the person usually receives each week from all sources?

• **Mark one box only.**

• **Count all income for each person including:**

family payment
additional family payment
rental assistance
pensions
unemployment benefits
student allowance
maintenance
(child support)
worker's compensation
superannuation
wages
salary
overtime
commissions and bonuses
interest received
dividends
rents received
(less expenses of operation)

• **Do not deduct:**

tax
superannuation
health insurance

-)\$1,500 or more per week
(\$78,000 or more per year)
-)\$1,000 - \$1,499 per week
(\$52,000 - \$77,999 per year)
-)\$800 - \$999 per week
(\$41,600 - \$51,999 per year)
-)\$700 - \$799 per week
(\$36,400 - \$41,599 per year)
-)\$600 - \$699 per week
(\$31,200 - \$36,399 per year)
-)\$500 - \$599 per week
(\$26,000 - \$31,199 per year)
-)\$400 - \$499 per week
(\$20,800 - \$25,900 per year)
-)\$300 - \$399 per week
(\$15,600 - \$20,799 per year)
-)\$200 - \$299 per week
(\$10,400 - \$15,599 per year)
-)\$160 - \$199 per week
(\$8,320 - \$10,399 per year)
-)\$120 - \$159 per week
(\$4,160 - \$6,329 per year)
-)\$80 - \$119 per week
(\$4,160 - \$6,329 per year)
-)\$40 - \$79 per week
(\$2,080 - \$4,159 per year)
-)\$1 - \$39 per week
(\$1 - 2,079 per year)
-) Nil income
-) Negative income

APPENDIX B: MATCHING THE INCOME RANGES OF THE 1986 CENSUS WITH THOSE IN THE 1991 CENSUS

The rates of inflation used to calculate income ranges for 1991 that would have been equivalent to those of the 1986 Census were based on Consumer Price Index figures (weighted average of eight capital cities), September 1987 to September 1991). These rates were:

Change between September quarter 1986 and September quarter 1987 = + 8.3%

Change between September quarter 1987 and September quarter 1988 = + 7.3%

Change between September quarter 1988 and September quarter 1989 = + 8.0%

Change between September quarter 1989 and September quarter 1990 = + 6.0%

Change between September quarter 1990 and September quarter 1991 = + 3.3%

The table below illustrates how these inflation rates were used to match the 1986 Census income ranges with the 1991 Census income ranges.

MATCHING OF 1991 CENSUS INCOME RANGES TO 1986 CENSUS INCOME RANGES

<i>1986 Income Ranges</i>	<i>1986 Income Ranges adjusted for inflation</i>	<i>Best matching 1991 income ranges</i>
No income plus	No income	Less than \$58 per week
\$1 to \$38 per week	\$1 to \$53 per week	
\$39 to \$76 per week	\$54 to \$105 per week	(\$58 to \$96 per week
\$77 to \$115 per week	\$106 to \$160 per week	(\$97 to \$154 per week
\$116 to \$172 per week	\$161 to \$239 per week	\$155 to \$230 per week
\$173 to \$230 per week	\$240 to \$319 per week	\$231 to \$308 per week
\$231 to \$287 per week	\$320 to \$398 per week	(\$309 to \$385 per week
\$288 to \$345 per week	\$399 to \$479 per week	(\$386 to \$481 per week
\$246 to \$421 per week	\$480 to \$584 per week	\$482 to \$577 per week
\$422 to \$498 per week	\$585 to \$691 per week	\$578 to \$673 per week
\$499 to \$613 per week	\$692 to \$850 per week	(\$674 to \$769 per week
\$614 to \$766 per week	\$851 to \$1,062 per week	(\$770 to \$961 per week
\$767 to \$958 per week	\$1063 to \$1,329 per week	(\$962 to \$1,154 per week
More than \$958 per week	More than \$1,329 per week	(\$1,155 to \$1,346 per week
		(Over \$1,346 per week

APPENDIX C: EXCLUSIONS USED IN COMPARISON OF THE 1991 CENSUS AND THE 1990 INCOME SURVEY

Income distribution figures generated using Census data were based on records which excluded several categories of respondents. These exclusions were chosen to replicate, as accurately as possible, the exclusions used in the 1990 Income Survey.

The scope exclusions used in the Income Survey and their Census counterparts are listed below :

<i>1990 Income Survey</i>	<i>1991 Census</i>
Boarding school students	Persons with Relationship in Non Private Dwelling (RLNP) of Inmates, Patients, Boarders etc., and Usual Residence and Internal Migration Indicator (URIP) indicating usual residence at the dwelling of enumeration, and Type of Non-Private Dwelling (NPDD) of Boarding School.
Persons in institutions such as hospitals, sanatoria, and inmates of jails, reformatories etc.	Persons with Relationship in Non Private Dwelling (RLNP) of Inmates, Patients, Boarders etc., and Usual Residence and Internal Migration Indicator (URIP) indicating usual residence at the dwelling of enumeration, and Type of Non-Private Dwelling (NPDD) of : Residential Colleges, Halls of Residence Public Hospitals Private Hospitals Psychiatric Hospitals Hostels for the Disabled Nursing Homes Homes for the Aged Hostels for the Homeless, Night Shelters & Refuges Childcare Institutions Corrective Institutions for Children Other Welfare Institutions Prisons, Corrective and Detention Institutions for adults Other and not Classifiable
Persons under 15 years of age	Persons under 15 years of age
Persons aged 15-20 attending school full-time at the time of interview. Note: the Income Survey definition of 'attending school full-time' is attending school at an institution below tertiary level.	Persons aged 15-20 with Type of Educational Institution Attending (TYPP) of : Secondary Government or Secondary Non-Government

Estimates of the applicable population used in the Income Survey also incorporated several exclusions. These were :

(a) certain diplomatic personnel of overseas governments customarily excluded from Census and estimated populations;

(b) overseas residents in Australia; and

(c) members of non-Australian defence forces (and their dependants) stationed in Australia.

As noted above, persons excluded from population estimates by (a) are customarily excluded from Census figures. Therefore no adjustment to Census data was necessary as a result of this exclusion.

To take into account exclusion (b), persons with a Statistical Local Area of Usual Residence (RLCP) of Overseas were excluded from the figures generated using Census data.

Exclusion (c) relates to a category of people who cannot be identified in Census data. For this reason no exclusions were performed on members of non-Australian defence forces and their dependants in Census calculations.