



Research Paper

Education Performance Indicators and the Census: Accounting for 'Not Stated' Records

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Education Performance Indicators and the Census: Accounting for 'Not Stated' Records

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National Centre for Education and Training Statistics

AUSTRALIAN BUREAU OF STATISTICS

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INQUIRIES

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EDUCATION PERFORMANCE INDICATORS AND THE CENSUS: ACCOUNTING FOR 'NOT STATED' RECORDS

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ABSTRACT

When calculating educational attainment indicators for national reporting purposes, decisions need to be made on how best to deal with those people for whom information on educational qualifications is not available, i.e. 'Not stated'. This paper reviews the characteristics of people with 'Stated' and 'Not stated' levels of attainment by comparing 2006 Census data with corresponding survey data at the national and jurisdiction level, with a focus on the Aboriginal and Torres Strait Islander population. The impact of including and excluding the 'Not stated' records in the calculation of education indicators is examined, together with a third approach which explicitly examines the two components of the Census 'Not stated' group: imputed records and item non-responses. The paper concludes that, although there are some differences between the 'Stated' and 'Not stated' groups, it is nonetheless reasonable to claim that, *overall and on average*, they have similar characteristics. Consequently the paper proposes the continuation of the practical and transparent method of *excluding* 'Not stated' records in the calculation of the education indicators.

1. INTRODUCTION

Measures of educational attainment are essential to assess whether or not states and territories are meeting national education targets set in 2008 by the Council of Australian Governments (COAG). Such measures also provide a spotlight for what future reforms are needed to increase the country's level of educational attainment, as well as to close the gap in socioeconomic outcomes between Aboriginal and Torres Strait Islander (Indigenous) people and other Australians.

The five-yearly Census of Population and Housing is a useful source of data for monitoring educational attainment indicators because of its broad scope and potential for reporting at small geographic areas and for sub-populations, unlike sample surveys, which generally have insufficient data for this purpose. While the

Census aims to collect information on schooling and qualifications of the entire population, some people are inevitably missed at the time of counting. Others may return a Census form but not provide answers to all of the questions, perhaps because they regard certain questions as irrelevant, embarrassing or because they do not know the answers.

Of particular interest in this paper are those with ‘Not stated’ or ‘Inadequately described’ levels of education (hereafter referred to as the ‘Not stated’ group). A review of the way in which the ‘Not stated’ group is treated in calculations of attainment is important to ensure that performance measures derived from the Census are as accurate as possible at a given point in time and that, over time, they reflect real change in educational attainment rather than ‘statistical noise’.

This paper reviews the characteristics of people with ‘Stated’ and ‘Not stated’ levels of attainment and compares 2006 Census data with corresponding survey data at the national and jurisdiction level and by Indigenous status.¹ The paper determines whether the current ABS treatment of ‘Not stated’ records in the calculation of two COAG indicators on educational attainment is warranted, or, whether an alternative approach would be preferable.

The indicators under review are from two separate COAG agreements. The first is the National Education Agreement (NEA), the second is the National Agreement for Skills and Workforce Development (NASWD). From the NEA, the indicator of interest in this paper is indicator 7 (NEA 7 hereafter): The proportion of 20–24 year olds with Year 12 or equivalent or AQF Certificate II or above. From the NASWD, the indicator of interest in this paper is indicator 2 (NASWD 2 hereafter): The proportion of 20–64 year olds without AQF Certificate III or above.

The distribution of each indicator according to 2006 Census data shows that ‘Not stated’ education records make up around 9–14% of the 20–24 year old population under NEA 7 (total and Indigenous populations respectively) and 11–16% of 20–64 year olds under NASWD 2 (total and Indigenous populations respectively).² Depending on how the records are treated in each case, the difference in rates of attainment for these indicators can vary by up to eight percentage points at the national level. This is a critical difference when determining and standardising policy that aims to increase and monitor attainment rates over time.

1 The additional issue of missing responses to the Indigenous status question in the Census adds further complexity to the assessment of the characteristics of the Indigenous population, but this issue is not directly addressed in this paper.

2 Note that these figures include imputed records, which are discussed in Section 3.

In comparing two existing methods for the treatment of the ‘Not stated’ group when using Census data for both indicators – in short, ‘excluding’ (Method 1) or ‘including’ (Method 2), the first of which is now the accepted treatment for national reporting – this paper explores a third approach based on ‘modelling’ (Method 3), to determine which of the three methods is the most suitable for future use in the calculation of education attainment indicators. The justification for using Method 1 or Method 3 in preference to Method 2 forms the basis of this paper.

In the end, the gains from using Method 3 are termed to be minimal, and it is proposed that the current treatment of ‘Not stated’ records (Method 1) remains the most feasible due to its simplicity in calculation and ease of access to required Census data.

2. CURRENT METHODS OF TREATING ‘NOT STATED’ CENSUS RECORDS AND THEIR ALIGNMENT WITH SURVEY DATA

An important principle underpinning an inquiry into this issue is that *any* treatment of the ‘Not stated’ group makes assumptions about the characteristics of the people in that group. In other words, that they either have similar or different characteristics to the rest of the population (the ‘Stated’ group).

The current practice of excluding the ‘Not stated’ group from the denominator of attainment calculations, adopted in the National Education Agreement (NEA), is based on an assumption that, overall, this group was likely to have equal attainment to the ‘Stated’ group. For the purpose of this paper, this is referred to as ‘Method 1’.

The main alternative approach, initially adopted in the National Partnership Agreement on Youth Attainment and Transitions (NPYAT),³ includes ‘Not stated’ records in the calculation of indicators and assumes that *all* records with ‘Not stated’ levels of attainment had low attainment. This is referred to as ‘Method 2’ in this paper. See Section 2.1 for further explanation of these two methods and the specific treatment of the ‘Not stated’ group for each indicator under examination.

2.1 Two alternative methods of treating the ‘Not stated’ group

These two methods are often given the shorthand labels of ‘excluding Not stated records’ (Method 1) and ‘including Not stated records’ (Method 2) because of the algebraic treatment of the ‘Not stated’ group in each instance.

In the case of NEA 7, the ‘Not stated’ group is essentially subtracted in one case and not in the other. Here, for Method 1, ‘Not stated’ records are excluded from the denominator and for Method 2, they are included in the denominator:

$$\text{Method 1} = 100 \times \frac{\text{Year 12 / Certificate II or above attainment}}{(\text{Total} - \text{Not stated})}$$
$$\text{Method 2} = 100 \times \frac{\text{Year 12 / Certificate II or above attainment}}{\text{Total (includes Not stated)}}$$

For NASWD 2, Method 2 is slightly different. This slight variation on treatment is necessary because of the reversed nature of the NASWD 2 indicator, which measures *lack* of attainment rather than achievement. Therefore, if the ‘Not stated’ group is assumed to have low attainment it must be included in the numerator as well as the denominator. Method 1, however, remains the same as for NEA 7.

3 It is understood that the measurement of the indicator on Year 12 / Certificate II or above attainment among 20–24 year olds in both National Agreement and National Partnership reporting is now consistent and based on Method 1 when Census data are used.

The calculations for NASWD 2 are as follows:

$$\text{Method 1} = 100 \times \frac{\text{Below Certificate III attainment}}{(\text{Total} - \text{Not stated})}$$

$$\text{Method 2} = 100 \times \frac{\text{Below Certificate III attainment} + \text{Not stated}}{\text{Total (includes Not stated)}}$$

By nature of these formulae, Method 1 results in greater levels of attainment than does Method 2. Therefore, compared with Method 2, Method 1 will produce a *higher* value of *attainment* for NEA 7 and a *lower* value of *non-attainment* for NASWD 2. Under NEA 7, if a population contained 600 people who had Year 12 / Certificate II or above, 300 with below Year 12, and 100 with ‘Not stated’ levels of attainment, then:

$$\text{Method 1} = \frac{600}{900} = 66.7\% \text{ rate of Year 12 / Certificate II or above attainment}$$

$$\text{Method 2} = \frac{600}{1000} = 60\% \text{ rate of Year 12 / Certificate II or above attainment}$$

Under NASWD 2, if a population contained 200 people who had attainment at or above Certificate III, 700 with below Certificate III, and 100 with ‘Not stated’ levels of attainment, then for NASWD 2:

$$\text{Method 1} = \frac{700}{900} = 77.7\% \text{ rate of below Certificate III attainment}$$

$$\text{Method 2} = \frac{800}{1000} = 80\% \text{ rate of below Certificate III attainment}$$

Regardless of the specific algebraic treatment, the key distinction between the two approaches is their underlying assumptions. Whereas Method 1 assumes that, overall, the ‘Not stated’ group shares the average level of attainment of the rest of the population, Method 2 makes the stronger assumption that every person in the ‘Not stated’ group had low or no formal qualifications.

2.2 Evaluating the two main methods

The potential for difference in rates of attainment when using these two methods can be established by comparing Census and survey data. Since surveys are interview-based, they do not have the same issues with item non-response that are inherent in the self-enumerated Census questionnaire. Personal interview surveys, such as the four-yearly Survey of Education and Training (SET) and the six-yearly National Aboriginal and Torres Strait Islander Social Survey (NATSISS), provide a particularly direct source of information. This is because the person interviewed is answering questions about themselves, as opposed to the any responsible adult (ARA)

methodology used in the annual Survey of Education and Work (SEW), which sees one adult answer on behalf of other household members.

For both NEA 7 and NASWD 2, 2006 Census attainment rates for the total population align more closely with 2005 SET results when the 'Not stated' group is excluded from the calculation (Method 1) than when it is included (Method 2) (table 2.1).

2.1 The effect of alternative methods on the TOTAL population

	CENSUS		SURVEY	
	Method 1	Method 2 (a)	SET '05	SET '09
NEA 7 (Proportion 20–24 year olds with Year 12 / Certificate II or above)	82.8%	75.2%	81.7%	83.9%
NASWD 2 (Proportion 20–64 year olds without Certificate III or above)	50.8%	56.3%	49.8%	45.1%

(a) Method 2 is essentially the same method used to calculate the proportion of 20–24 year olds with Year 12 / Certificate II or above originally but no longer proposed in the National Partnership Agreement on Youth Attainment and Transitions (NPYAT), but with a slight variation in the treatment of 'Certificate not further defined' and 'Certificate I/II not further defined'. No real life appropriation of this method has existed for NASWD 2.

Likewise, for the Indigenous population, the two indicators from the 2006 Census are closer to results from the 2008 NATSISS when they are calculated under Method 1 than Method 2 (table 2.2).

2.2 The effect of alternative methods on the INDIGENOUS population

	CENSUS		SURVEY	
	Method 1	Method 2 (a)	NATSISS '02	NATSISS '08
NEA 7 (Proportion 20–24 year olds with Year 12 / Certificate II or above)	47.4%	40.7%	N/A (a)	45.4%
NASWD 2 (Proportion 20–64 year olds without Certificate III or above)	76.0%	79.7%	82.1%	73.6%

(a) NEA 7 cannot be calculated from 2002 NATSISS because Certificate I/II was collected as a combined group and its individual components cannot be separated.

The effect of the different methods on attainment rates in the states and territories is shown for the total population in figures 2.3(a) and 2.3(b) and for the Indigenous population in figures 2.4(a) and 2.4(b). While the pattern of alignment between method and survey result is not absolutely consistent across all states and territories, there is a clear indication that Method 1 generally produces Census results much more in line with survey estimates than does Method 2.

Visibly, 2006 Census rates for NEA 7 among the total population align more closely with 2005 SET data in New South Wales, Queensland, South Australia, Western Australia and the Northern Territory when Method 1 is used, but in the ACT when Method 2 is used. Victoria and Tasmania show no clear gain for either Method. A similar trend is observed in results for the Indigenous population, where Census rates appear to align more closely with the 2008 NATSISS data in Victoria, South Australia, Western Australia and the Northern Territory when Method 1 is adopted but with New South Wales, Queensland and the ACT under Method 2. There appears to be little gain either way with data for Tasmania.

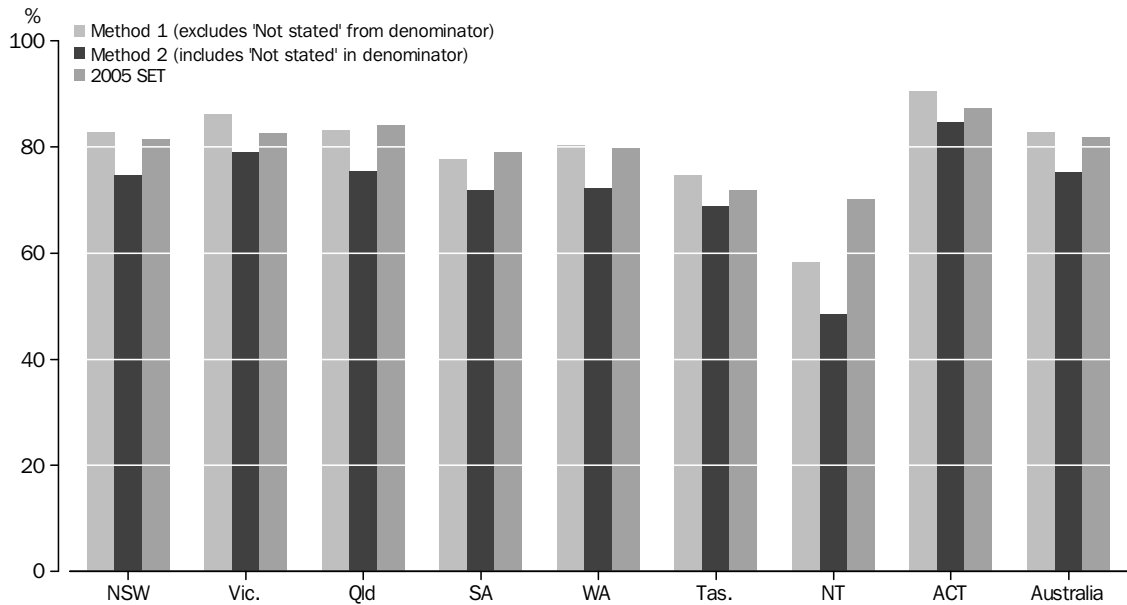
The pattern observed for NASWD2 is similar again, in that 2006 Census rates of attainment among the total population align more closely with 2005 SET data in all jurisdictions under Method 1. The same pattern is observed when comparing Census data on attainment among the Indigenous population with 2008 NATSISS data.

Due to this variation in alignment among the states for both indicators, sampling variability in the SET and NATSISS should be taken into account when comparing estimates of attainment between Census and survey data. When confidence intervals are considered, the result is still that the majority of jurisdictions fall within the confidence range of estimates from survey data under Method 1. For NEA 7, Census estimates of attainment in the total population fall within the confidence interval of the 2005 SET data for seven jurisdictions under Method 1 (all except Victoria) but for only two under Method 2 (Tasmania and the ACT). Likewise, for NASWD 2, estimates of below Certificate III attainment in the total population fall within the confidence interval of the 2005 SET data in six jurisdictions under Method 1 (all except Queensland and Western Australia) but only two under Method 2 (Tasmania and the ACT). A similar pattern was observed for the Indigenous population using confidence intervals based on 2008 NATSISS data although the difference was not as definitive for NEA 7 (NEA 7: eight under Method 1, six under Method 2; NASWD 2: six under Method 1, three under Method 2).

These observations confirm the initial assessment that Method 1 appears to be the more appropriate measure of Census attainment rates when the two methods are compared with personal interview data obtained from surveys. This applies to both NEA 7 and NASWD 2 for the total and Indigenous populations. See Appendix A for data on confidence intervals.

2.3 Attainment of the total population

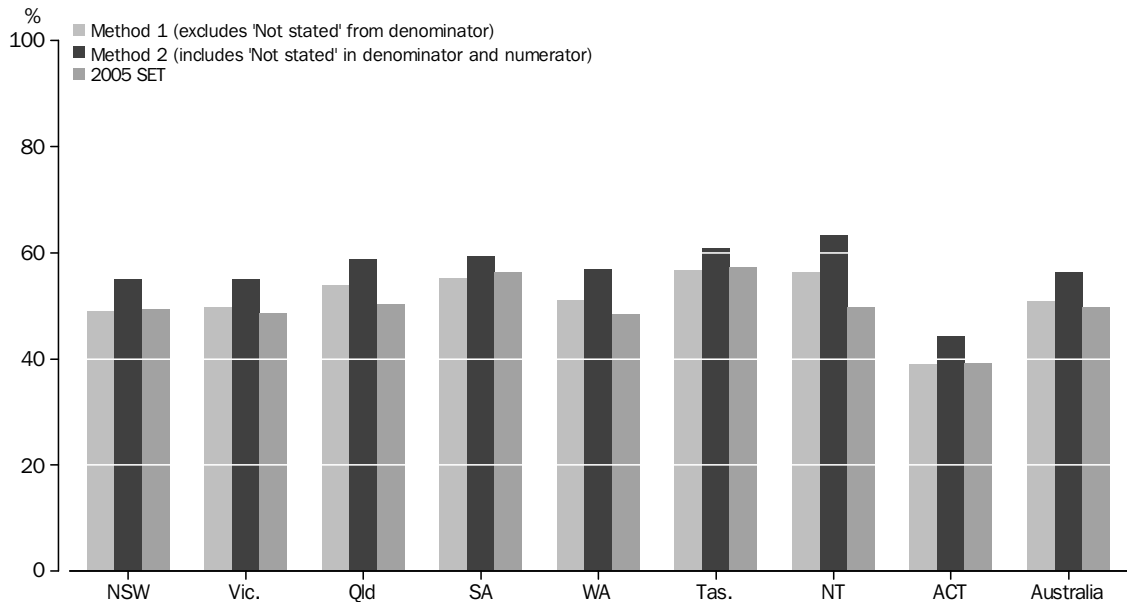
2.3(a) Proportion of the total population aged 20–24 with Year 12 / Certificate II or above (NEA 7), by states and territories



Note: For Census data, Australia includes 'Other territories'.

Source: 2006 Census of Population and Housing; 2005 Survey of Education and Training (SET)

2.3(b) Proportion of the total population aged 20–64 without Certificate III or above (NASWD 2), by states and territories

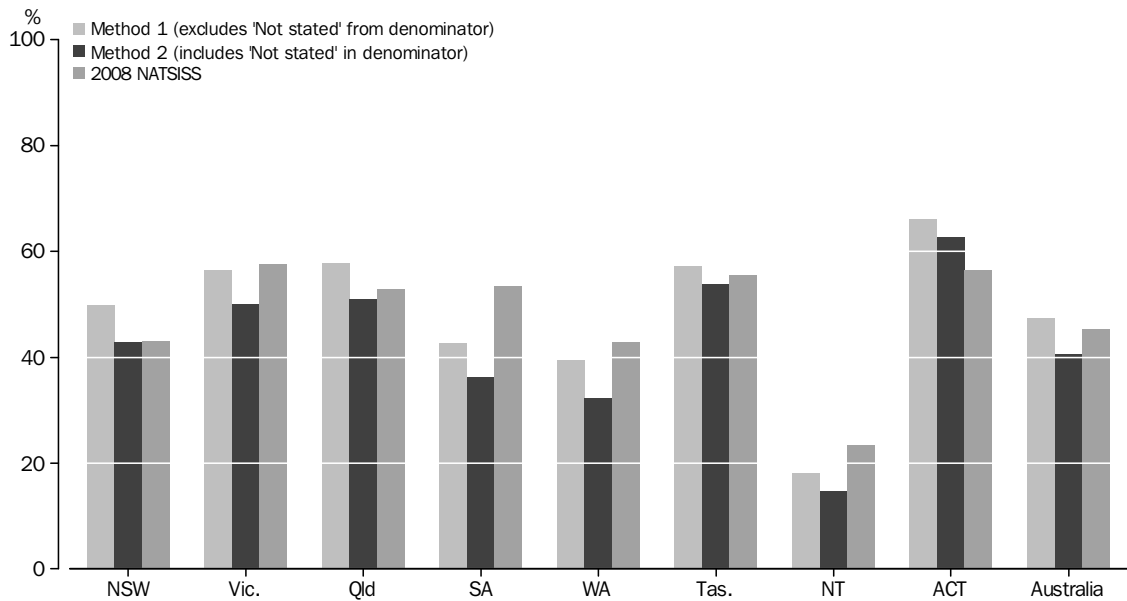


Note: For Census data, Australia includes 'Other territories'.

Source: 2006 Census of Population and Housing; 2005 Survey of Education and Training (SET)

2.4 Attainment of the Indigenous population

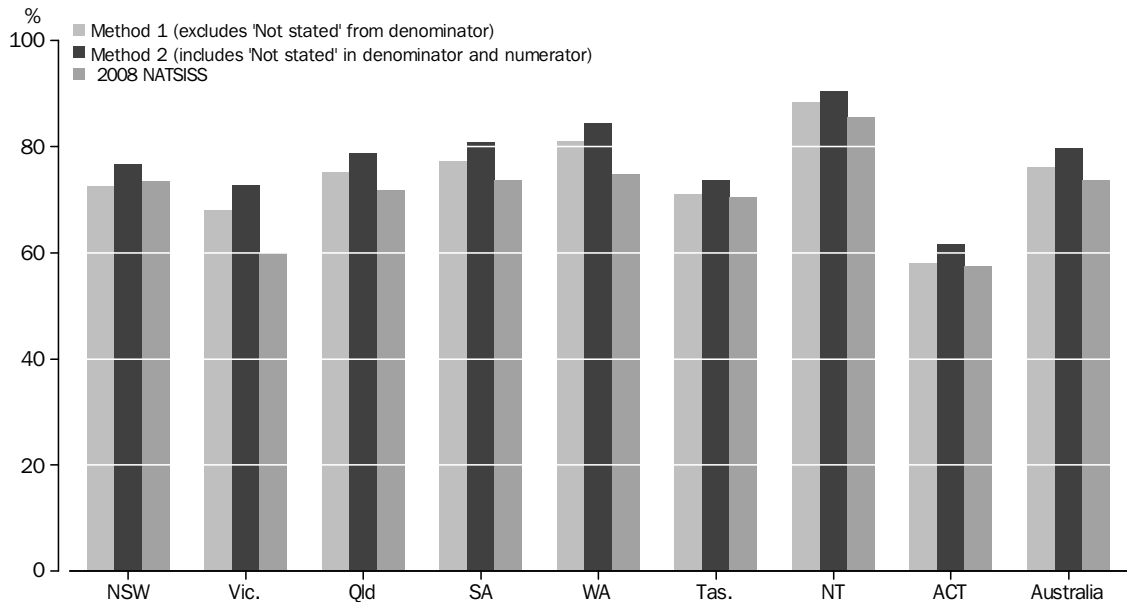
2.4(a) Proportion of the Indigenous population aged 20–24 with Year 12 / Certificate II or above (NEA 7), by states and territories



Note: For Census data, Australia includes 'Other territories'.

Source: 2006 Census of Population and Housing; 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS).

2.4(b) Proportion of the Indigenous population aged 20–64 without Certificate III or above (NASWD 2), by states and territories



Note: For Census data, Australia includes 'Other territories'.

Source: 2006 Census of Population and Housing; 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS).

3. CENSUS DATA ISSUES AND THE COMPOSITION OF THE 'NOT STATED' GROUP

Although the Census is a complete count of the population, some people are inevitably missed. The ABS is aware of some of these at the time of the Census and so can impute a Census record. Others are identified in aggregate from a follow-up survey (the Census 'Post Enumeration Survey'), and this group is taken into account in estimates of the official population. As a consequence, this paper is only concerned with those people for whom a Census record exists, that is, the imputed and partially completed records.

Imputed records are instances in which the ABS has assessed that a person or household was missed in the Census and has made a statistical judgement about a small set of characteristics (age, sex, place of usual residence and registered marital status) for those who were not contacted. No data was ever collected from particular individuals, and therefore, very few assumptions can be made about their actual characteristics, educational or otherwise.

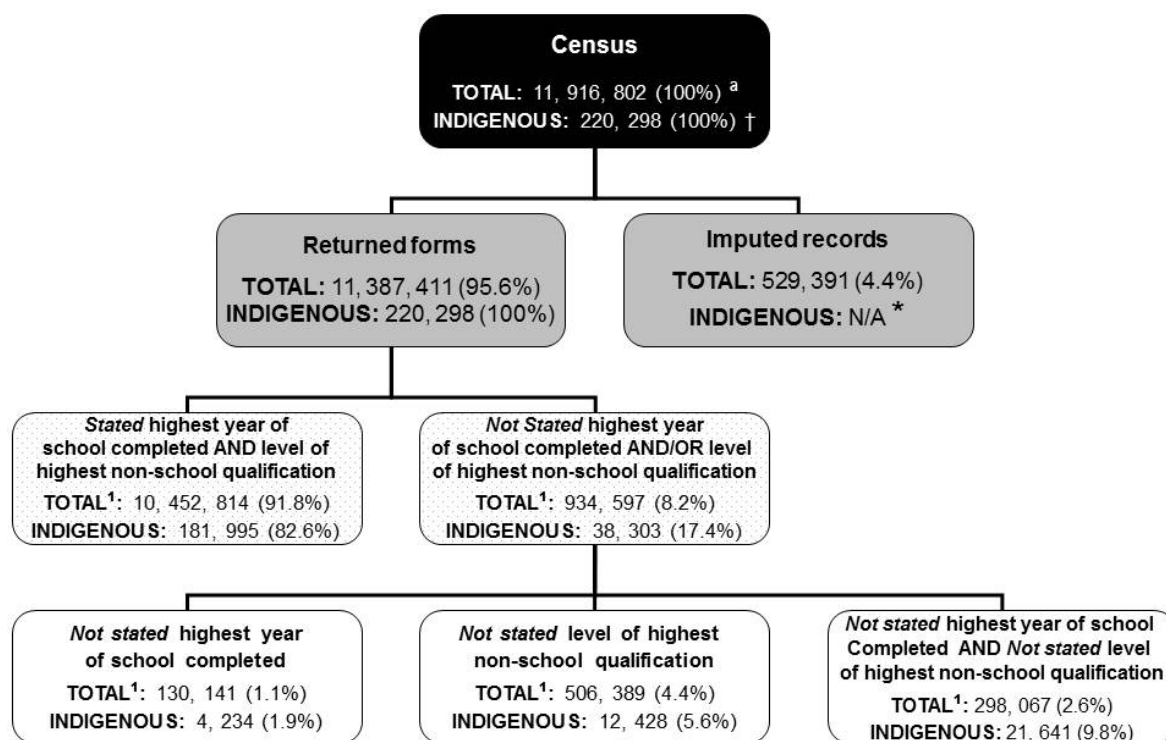
'Not stated' items from partially completed records, on the other hand, are examples of when people did fill in the Census form but failed to provide sufficient (or any) information on a topic for their responses to be coded to a particular category. In the case of educational attainment, these may be either non-responses or inadequately described responses to questions on highest year of school completed or level of highest non-school qualification. In these instances, other characteristics, such as occupation, labour force status and income, may be used to infer information about the educational characteristics of these people.

To clarify the different types of 'Not stated' responses, the composition of 2006 Census records discussed in this paper is illustrated in figure 3.1.

Figure 3.1 shows that the vast majority of 20–64 year olds returned a 2006 Census form and stated their schooling and qualification information. This is true for both the Indigenous population (83% of returned forms with 'Stated' education) and the total population (92% of returned forms with 'Stated' education).

While figure 3.1 emphasises the item non-response component of the 'Not stated' group, the following section discusses the composition of the 'Not stated' group for the two indicators as a whole; that is, the proportion of both imputed and item non-responses in the 'Not stated' group for NEA 7 and NASWD 2. It also highlights the importance of age in Census response rates.

3.1 Responses to education questions in the 2006 Census (20–64 year olds)



^a Excludes overseas visitors.

[†] Proportion relates to the total number of Indigenous people counted in the Census. Adjustments are made for under-enumeration.

¹ Returned forms only.

^{*} Indigenous status is not imputed.

3.1 Age profile

Among the total Census count for 20–24 year olds (1.35 million records), around 123,850 (9%) had ‘Not stated’ attainment according to the NEA indicator 7.⁴ Around 72,850 (59%) were from imputed records, and around 51,000 (41%) were from item non-response.

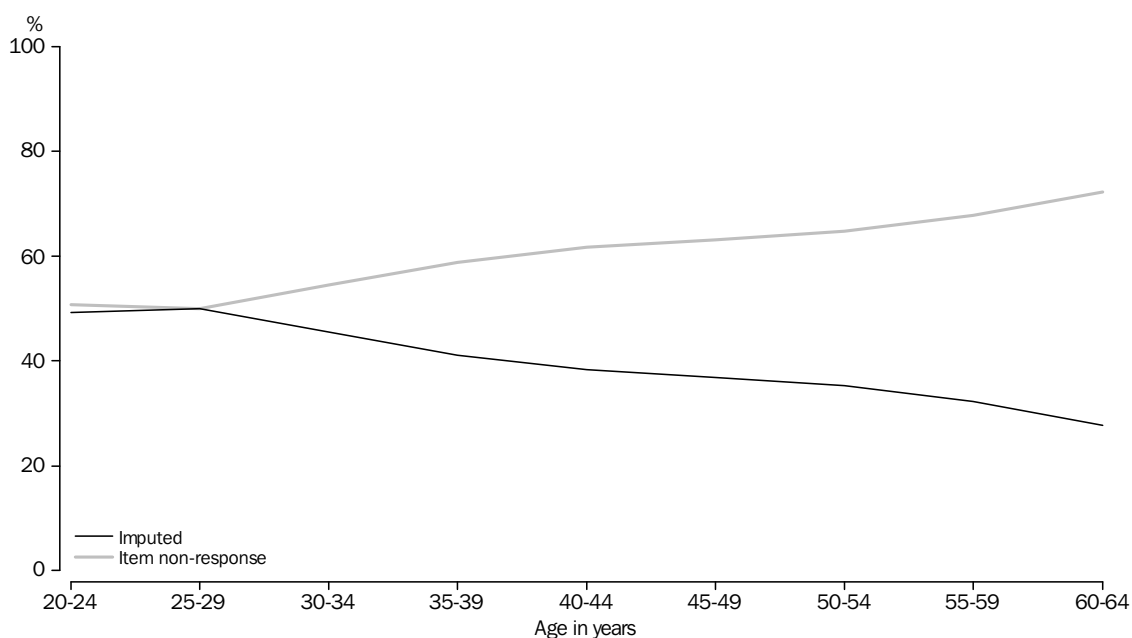
Among the total Census count for 20–64 year olds (11.92 million records), around 1.3 million (11%) had ‘Not stated’ attainment according to the NASWD 2 measure of attainment below Certificate III. In contrast to the NEA 7 measure of 20–24 year olds, the majority (60%) of the ‘Not stated’ group among the 20–64 year old population for NASWD 2 was made up from item non-responses (804,500).

⁴ ‘Not stated’ responses for attainment indicators differ from straightforward item non-response to Census questions. The NEA 7 measure for Year 12 attainment is built on responses to questions on Highest Year of School Completed and Level of Highest Non-School Qualification. The ‘Not stated’ group for this indicator is a post-collection edit which comprises of incomplete or topic non-response to either or both of these questions; it does not indicate non-response to a question on ‘educational attainment’ *per se*.

The differences in these figures suggest that younger people were more likely not to fill in a form altogether than they were to simply not respond to education questions. The distribution of 'Not stated' responses shown in figure 3.2 supports this view, illustrating that rates of imputation of Census records decreased with age, while rates of item non-response to level of qualification tended to increase.

Note that rates of non-response for 20–24 year olds in figure 3.2 are not intended to correspond with the distribution of 'Not stated' responses quoted for NEA 7 earlier in Section 3.1. Figure 3.2 is only concerned with 'Not stated' level of non-school qualification as measured in NASWD 2. It does not address non-response for highest year of school completed, which is an additional component of NEA 7.

3.2 'Not stated' level of qualification by age



Source: 2006 Census of Population and Housing

3.2 Socioeconomic status

The Socio-Economic Index for Areas (SEIFA) can be used to assess likely levels of disadvantage of people according to the socioeconomic conditions of the community or neighbourhood in which they live. This makes it a particularly useful tool for examining imputed records – that is, records for people assumed to be living in dwellings identified during the Census collection process but for whom no Census form was received.

Within the score ranges for the SEIFA Index of Relative Socio-economic Disadvantage (IRSD), upper quintiles are associated with the relatively least disadvantaged areas of Australia (higher socioeconomic status); whereas lower scores are associated with the relatively most disadvantaged areas (lower socioeconomic status). As the SEIFA

indexes do not directly measure the socioeconomic status of individuals but summarise the socioeconomic status of an area, there may be a diversity of socioeconomic status among individuals in areas with the same SEIFA score. Nevertheless, since low socioeconomic status is generally associated with lower levels of education attainment, a concentration of people in areas within the low SEIFA quintiles would likely indicate lower levels of attainment for the 'Not stated' group.

3.3 SEIFA IRSD distribution of the 'Not stated' group (%)

	<i>NEA 7 (20–24 year olds)</i>		<i>NASWD 2 (20–64 year olds)</i>	
	<i>Imputed</i>	<i>Item non-response</i>	<i>Imputed</i>	<i>Item non-response</i>
SEIFA quintile				
Q1	18.7	30.7	18.4	23.7
Q2	19.4	22.4	18.6	20.8
Q3	19.4	18.9	19.2	19.4
Q4	21.2	15.5	21.0	18.3
Q5	21.3	12.6	22.7	17.9
Total defined	100.0	100.0	100.0	100.0

As table 3.3 illustrates, there was a relatively even spread of imputed records across SEIFA quintiles, although with some indication that there was a slight positive association between increasing socioeconomic status and the distribution of imputed records. As a consequence, there would appear to be no grounds for assuming that the educational attainment of the imputed records, as a whole, would be systematically lower than that of the general population. Indeed, the subtle gradient for this distribution suggests that, based on the areas in which they occur, imputed records may well be associated with slightly higher educational attainment than the average.

In contrast, the negative association between socioeconomic status and non-response to education questions is quite pronounced for NEA 7. While the NASWD 2 group also has this negative association with item non-response and low socioeconomic status, it is not as strong. In spite of the difference in the degree of negative association between socioeconomic status and non-response rates, item non-responses for both indicators suggests that people who did not answer education questions were more likely to be relatively disadvantaged, and therefore, likely to have lower levels of education than the general population. Further discussion of the association between education level, item-non response and socioeconomic status is provided in Appendix D.

4. A METHOD THAT DISTINGUISHES BETWEEN IMPUTED RECORDS AND ITEM NON-RESPONSE

This section examines item non-response at the national level in greater depth. It is aimed at estimating the educational attainment of the item non-response group when other information is taken into account. To do this, a third estimation method, referred to as Method 3, is introduced and six Census variables associated with education are examined. These variables are remoteness, occupation, labour force status, type of educational institution attending, individual income, and proficiency in spoken English.⁵

While Methods 1 and 2 do not distinguish between imputed records and item non-response (simply grouping them together as one homogenous 'Not stated' group), Method 3 does make a distinction between the two groups. In line with the foregoing SEIFA analysis (Section 3.2), Method 3 assumes that imputed records have the same distribution of attainment as the general population and weights them accordingly. The treatment of item non-response, however, is more complex. It is based on the relationship between responses to educational attainment and other data items that have an association with education.

Estimates of educational attainment for NEA 7 and NASWD 2 under Method 3 are therefore based on two components: an estimate for imputed records and an estimate for item non-response. Sections 4.1 and 4.2 describe the calculation for the item non-response component. Sections 4.3 and 4.4 combine this with the imputation component to produce the final estimates.

4.1 Overview of item non-response component of Method 3

The item non-response component of Method 3 looks at the relationship between educational attainment and six other Census variables, such as labour force status, that were assessed to have an association with education. For the 'Stated' group, educational attainment can be calculated, for instance, for each category of labour force status: employed, unemployed and not in the labour force. The educational attainment of the item non-response group in each category of labour force status could be assumed to be the same as that of the 'Stated' group. The attainment of the entire item non-response group could therefore be estimated as their weighted average of attainment by labour force category.

5 These characteristics are available in the Census and have been used in other contexts to examine education differentials (e.g. *Australian Social Trends*).

4.1 Rate of Year 12 / Certificate II or above attainment among 20–24 year olds (NEA 7) with ‘Stated’ educational attainment, as well as the distribution of people with both ‘Stated’ and ‘Not stated’ attainment by labour force status (a)

	A	B	C
	<i>Rate of Year 12 / Certificate II or above attainment among people who stated their education</i>	<i>Distribution of people with ‘Stated’ attainment</i>	<i>Distribution of people with ‘Not stated’ attainment (item non-response)</i>
Labour force status			
1 Employed	86.2	74.3	36.7
2 Unemployed, looking for work	69.3	6.6	6.0
3 Not in the labour force	74.4	18.6	32.4
4 Not stated	67.7	0.6	24.9
Total applicable population	82.8	100.0	100.0

(a) The labelling of columns and rows in this table is designed to assist interpretation of the formulae discussed in Section 4.2

To help illustrate this estimation process, table 4.1 shows the educational attainment measured by NEA 7 of the ‘Stated’ group in each category of labour force status and the population distributions across these categories for the ‘Stated’ and item non-response groups.

Table 4.2 presents the corresponding data for NASWD 2. We would expect a positive association between employment and education for both indicators, and this is confirmed with relatively high levels of attainment associated with people who were employed and lower levels for those who were not employed (i.e. unemployed or not in the labour force).

4.2 Rate of below Certificate III attainment among 20–64 year olds (NASWD 2) with ‘Stated’ educational attainment, as well as the distribution of people with both ‘Stated’ and ‘Not stated’ attainment by labour force status

	<i>Rate of below Certificate III attainment among people who stated their education</i>	<i>Distribution of people with ‘Stated’ attainment</i>	<i>Distribution of people with ‘Not stated’ attainment (item non-response)</i>
Labour force status			
Employed	44.7	74.2	55.0
Unemployed, looking for work	63.1	3.6	3.4
Not in the labour force	69.5	21.6	28.2
Not stated	68.5	0.6	13.3
Total applicable population	50.8	100.0	100.0

There are differences in the distribution of population by labour force status between those who stated their education (the 'Stated' group) and those who did not (the item non-response group). First, a much higher proportion of the 'Stated' group than item non-response group was employed. Second, while a very small proportion of the 'Stated' group (to education) failed to state their labour force status, a considerable proportion of people in the item non-response group (to education) also failed to answer the labour force question.

The group of people who not only failed to answer the education questions, but also failed to answer labour force and other questions are referred to here as multiple item non-respondents. While it is not immediately obvious how to estimate their educational attainment based on that of the 'Stated' group, the approach adopted in this study is outlined in Section 4.2.

4.2 Calculating the educational attainment of item non-response records

Using table 4.1, the estimated value of NEA 7 for the item non-response group can be calculated by multiplying the educational attainment level of the 'Stated' group in each category of labour force status (A1 to A4) by the corresponding population distribution of the item non-response group (C1 to C4) and then summing these to get the total across all groups. The result from this method of estimation is referred to as the weighted average of item non-response records under Scenario 1.

$$\begin{aligned} \text{NEA 7: Weighted average of 'item non-response' records (Scenario 1)} \\ &= A1 \times C1 + A2 \times C2 + A3 \times C3 + A4 \times C4 \\ &= 76.8\% \end{aligned}$$

Importantly, Scenario 1 assumes that the multiple item non-respondents had, on average, the same level of educational attainment as those who stated their education but failed to answer the labour force status question. An alternative assumption, however, might be made, namely, that multiple item non-respondents are a distinctive group who have a very different level of attainment to the 'Stated' group.

There may be a range of reasons why people skip multiple questions on the Census. For instance, they may regard the questions as irrelevant, they may not understand them, they may not know the answers (particularly when filling in the form on behalf of other household members), they may feel embarrassed and/or they may simply not bother answering. Whatever the reason, there is some evidence that multiple item non-respondents have lower levels of educational attainment on average than does the general population. In 2006, a higher proportion of multiple item non-respondents lived in the most disadvantaged areas according to the SEIFA Index of Relative Socio-economic Disadvantage (see Appendix D). As discussed

earlier in Section 3.2, there is an association between relative socioeconomic disadvantage and low educational attainment.

Taking this information into account, the worst case scenario (Scenario 2) would be that *none* (0%) of the multiple item non-respondents met the benchmarks set by the indicators. Under this scenario, results for NEA 7 would be based on the assumption that none of the multiple item non-respondents had educational attainment at or above Year 12 or Certificate II. The estimate for NEA 7 under Scenario 2, based on education and labour force status data from table 4.1, is as follows:

$$\begin{aligned} \text{NEA 7: Weighted average of 'item non-response' records (Scenario 2)} \\ &= A1 \times C1 + A2 \times C2 + A3 \times C3 + 0\% \times C4 \\ &= 59.9\% \end{aligned}$$

Essentially, the modelling process for Method 3 has faced the same dilemma that led to this paper, namely, whether or not the multiple non-response group is representative of the 'Stated' group (Scenario 1), or whether it is systematically lower and should be treated as such (Scenario 2). The resolution of this issue was to provide a range estimate of attainment rather than a single estimate under Method 3.

In the case of NEA 7, Scenario 1 produces an upper bound for the level of educational attainment of the item non-response group and Scenario 2 a lower bound. The same calculations can be applied to NASWD 2 based on the educational attainment and population distribution by labour force status shown in table 4.2. Since this indicator measures the proportion of people with *low* qualifications, this time Scenario 1 produces a lower bound of the educational attainment of the item non-response group and Scenario 2 (where 100% of multiple item-non respondents are assumed to have failed to meet the benchmark) an upper bound.

Results under both scenarios are presented in table 4.3 for the Indigenous and total populations. This table shows upper and lower bounds for estimates of attainment among the item non-response group for the two indicators NEA 7 and NASWD 2. This table presents estimates of educational attainment modelled on six variables. In addition to labour force status, attainment was based on categories of remoteness, individual income, occupation, type of educational institution attending and proficiency in spoken English. Note that not all of these variables apply to the whole population. For instance, occupation applies only to people who are employed (73% of the total population and 47% of the Indigenous population) and proficiency in spoken English applies only to people who mainly speak a language other than English at home (just over 20% in both the Indigenous and total populations). See Appendixes B and C for detailed analysis and calculations.

4.3 Estimated rates of attainment by 2006 Census variables (%)

Census variable	Applicable population	Stated attainment of applicable population	Weighted attainment of item non-response group	
			Lower-bound estimate	Upper-bound estimate
NEA 7				
INDIGENOUS POPULATION				
Remoteness (a)	100.0	47.4	N/A	45.9
Labour force status	100.0	47.4	27.3	37.7
Individual income	100.0	47.4	19.8	40.3
Occupation	47.1	61.7	48.6	55.1
Type of ed. institution attending	21.8	68.2	4.1	43.1
Proficiency in spoken English	21.1	25.6	5.7	37.3
TOTAL POPULATION				
Remoteness (a)	100.0	82.8	N/A	81.4
Labour force status	100.0	82.8	59.9	76.8
Individual income	100.0	82.8	48.8	79.4
Occupation	72.8	86.2	76.0	82.3
Type of ed. institution attending	36.5	93.2	25.4	79.7
Proficiency in spoken English	21.6	89.2	39.6	83.1
NASWD 2				
INDIGENOUS POPULATION				
Remoteness (a)	100.0	76.0	76.2	N/A
Labour force status	100.0	76.0	82.2	85.9
Individual income	100.0	76.0	81.8	88.3
Occupation	48.7	65.5	68.5	70.6
Proficiency in spoken English	20.4	87.1	85.1	96.8
Type of ed. institution attending	16.8	67.9	81.6	97.7
TOTAL POPULATION				
Remoteness (a)	100.0	50.8	51.1	N/A
Labour force status	100.0	50.8	55.5	59.7
Individual income	100.0	50.8	56.3	63.9
Occupation	72.8	44.7	49.7	51.8
Proficiency in spoken English	18.8	50.0	54.0	67.2
Type of ed. institution attending	12.0	50.6	58.5	89.3

(a) Remoteness variable has no 'Not stated' group, and therefore, no multiple non-response.

4.3 Assessment of Census variables in attainment rate estimates

To determine the best variable among the six examined for estimating the likely attainment of the item non-response group for both NEA 7 and NASWD 2 under Method 3, the applicability and incidence of multiple non-response for each variable must be taken into account.

Since 'type of educational institution attending' and 'proficiency in spoken English' were questions which applied to a relatively small proportion of people compared to the other variables (see table 4.3), they are unable to produce accurate estimates of attainment overall. Compounding the issue of limited information even further, both the proficiency and attendance variables have a high number of multiple non-responses (i.e. non-response to the variable and non-response to education). This is demonstrated by the particularly low rates of Year 12 / Certificate II or above attainment at the lower bound estimate, and therefore, the wide range between the upper and lower bound estimates.

In contrast to proficiency and attendance, type of occupation was shown to apply to more people in the population (around half of the Indigenous population and around two thirds of the total population). It also had a very small incidence of multiple non-response. As such, it produced a small range between upper and lower bound attainment estimates. Nevertheless, because type of occupation does not apply to people who are not employed, it cannot provide sufficient estimates of the likely rate of attainment of the entire 'Not stated' group.

The most appropriate summary estimate for rates of attainment among people who did not respond to education questions should, therefore, be based on a variable which applies to everybody. For the weighted estimates to be truly informative, rates of attainment must also differ across the categories within each variable and between 'Stated' and 'Not stated' groups.

Of the three variables which have 100% applicability examined in this analysis (remoteness, labour force status and individual income), labour force status was deemed the most suitable variable for estimating educational attainment. The reasoning behind this is twofold.

First, remoteness on its own is not suitable to provide overall estimates of attainment because it is assigned to individuals irrespective of what information they provide on Census forms. In other words, it only indicates where a person was on Census night, it does not necessarily provide any information on the characteristics of that person.

Second, compared to individual income, labour force status had a fairly good response rate among people who did not state their education. As Appendixes B and C show, the incidence of multiple non-response for labour force status was around half that of individual weekly income. This was true for NEA 7 (28% and 25% for

labour force status compared to 55% and 41% for individual weekly income, Indigenous and total populations respectively) and NASWD 2 (28% and 13% for labour force status compared to 46% and 20% for individual weekly income, Indigenous and total populations respectively). Labour force status produces a much smaller range between upper and lower bound estimates than does individual income because of this lower incidence of multiple non-response. This smaller range ensures greater confidence in the average of the modelled estimates being reflective of true levels of attainment.

As table 4.3 demonstrates, among the total population for NEA 7, estimates of 'Not stated' attainment based on responses to the labour force variable ranged from 60% to 77% compared to 83% for the 'Stated' group. Among the Indigenous population, estimates of attainment of the 'Not stated' group ranged from 27% to 38% compared to 47% for the 'Stated' group. For NASWD 2, the range between upper and lower bound estimates was smaller, indicative of the lower rate of item non-response among older age groups (as discussed in Section 3.1). In this instance, rates of below Certificate III attainment for the 'Not stated' group among the total population ranged from 56% to 60% compared to 51% for the 'Stated' group. Among the Indigenous population, rates of low attainment ranged from 82% to 86%, while the rate of low attainment among the 'Stated' group was 76%.

4.4 Incorporating imputed records into estimates of attainment

The majority of the foregoing analysis has centred on partially complete Census records which have item non-responses to education questions. These records enable insight to be gained from responses to other non-education questions in a way that is not possible with imputed records that result from people who do not fill out a Census form. Nonetheless, for a complete assessment of attainment among the 'Not stated' group within the total population, imputed records must be taken into account.

Using the estimates from labour force status obtained from the modelling process outlined in Section 4.2, table 4.4 provides new lower and upper bound estimates of attainment calculated as new weighted averages according to the overall distribution of people within each relevant population (20–24 year olds for NEA 7; 20–64 year olds for NASWD 2). The overall distribution is divided into the proportion of people with stated education, item non-response to education and imputed records. By bringing imputed records into the final calculations, Method 3 becomes comparable with Methods 1 and 2.

4.4 Comparison of estimated rates of attainment

	<i>Estimated rate of attainment</i>	
	<i>Indigenous population</i>	<i>Total population</i>
NEA 7		
Distribution within 20–24 year old population for NEA 7 (%)		
Stated education	85.9	90.8
Item non-response to education question	14.1	3.8
Imputed record	N/A (a)	5.4
Method 1 – Rate of attainment (b)	47.4	82.8
Method 2 – Rate of attainment (c)	40.7	75.2
Method 3 – Rate of attainment (d)	44.5 – 46.0	81.9 – 82.6
NASWD 2		
Distribution within 20–64 year old population for NASWD 2 (%)		
Stated education	84.5	88.8
Item non-response to education question	15.5	6.8
Imputed record	N/A (a)	4.4
Method 1 – Rate of attainment (b)	76.0	50.8
Method 2 – Rate of attainment (c)	79.7	56.3
Method 3 – Rate of attainment (d)	77.0 – 77.6	51.1 – 51.4

(a) Indigenous status is not imputed

(b) Assumes that non-response occurs randomly and that the attainment of people with ‘Not stated’ attainment is likely to be, on average, similar to those who provided responses to education questions.

(c) Assumes that all records with ‘Not stated’ attainment have low or no qualifications.

(d) Lower and upper bound estimates of attainment are modelled on both the distribution of ‘Stated’ responses for labour force status (excluding imputed records), and then re-weighted according to the overall distribution of records within the relevant population (including imputed records).

As table 4.4 shows, both upper and lower bound estimates of attainment under Method 3 align more closely to rates calculated under Method 1 than under Method 2. For the total population, the NEA 7 estimates of attainment using Method 3 (modelling) ranged from 82% to 83%. These figures align more closely with the rate obtained using Method 1 (83%), which excludes ‘Not stated’ responses from the denominator, than they do with the rate obtained using Method 2 (75%), which includes ‘Not stated’ responses in the denominator. The same is true for the Indigenous population, for which the modelled estimates ranged from 45% to 46%. Here, the rate of attainment according to Method 1 was 47% while under Method 2 it was 41%.

Similar patterns of alignment were observed for NASWD 2.

The same approach used to calculate estimates for Method 3 in table 4.4 was used to calculate range estimates for Method 3 across all states and territories. This was done for both indicators and for total and Indigenous populations. Results showed that, at the state and territory level too, Method 3 aligns more closely with Method 1 than with Method 2. See Appendix A for jurisdiction level estimates obtained under Method 3.

5. CONCLUSION

This paper examined various options for dealing with 'Not stated' educational attainment in the construction of two COAG education performance measures using 2006 Census data. The measures examined were

- NEA 7: The proportion of 20–24 year olds with Year 12 or equivalent or AQF Certificate II or above, and
- NASWD 2: The proportion of 20–64 year olds without AQF Certificate III or above.

Three methods for dealing with Census records with 'Not stated' education were examined. They were as follows:

- Method 1, which excludes the entire 'Not stated' group from the denominator under the assumption of equal rates of attainment (and non-attainment), on average, among the 'Stated' and 'Not stated' groups.
- Method 2, which includes the entire 'Not stated' group in the calculations under the assumption that all people in this group have low or no qualifications.
- Method 3, which distinguishes between different types of 'Not stated' records and treats them accordingly, to produce an estimated range of attainment (consisting of an upper and lower bound).

The reasoning behind developing Method 3 is that there are two categories of missing Census data which comprise the 'Not stated' attainment group and they appear to have different characteristics:

- People missed by the Census (imputed records) tend to be younger and reasonably evenly spread across socioeconomic groups. SEIFA distributions indicate that, on average, they could be expected to reflect the educational status of those who stated their education in the Census.
- People included in the Census but who failed to answer education questions (item non-respondents) tend to be concentrated in more disadvantaged areas and could be expected to have a somewhat lower educational level than the general population, particularly if they failed to respond to multiple questions.

When using 2006 Census data, Method 1 produced results more in line with results from survey data, where non-response is minimised through personal interview, than did Method 2 for both the total and Indigenous populations at the national level.

Although there was some variability by state/territory, in general Method 1 appeared to provide results closer to the survey data.

Method 3, which involves more complex modelling, produced results closely aligned with Method 1. While it may offer more reliable estimates, Method 3 is not recommended for National Agreement reporting due to practical reasons. First, the difference between Method 3 and Method 1 was marginal at the national and state/territory level. Second, while information on imputed records required for Method 3 is available from the ABS on request, access to the data used in Method 1 is more readily available through standard Census output. Third, the calculation for Method 3 is more complex than appears warranted for the small gain in accuracy.

The concluding assessment is that, while it may not be a perfect measure, Method 1 appears to be the most appropriate for calculating educational attainment indicators from Census data. That is, although there are some differences between the 'Stated' and 'Not stated' groups, it is nonetheless reasonable to claim that, overall and on average, they have similar characteristics. Consequently, we recommend the continuation of the practical and transparent method of excluding 'Not stated' records in the calculation of Census-based education indicators for National Agreement reporting.

Although specifically addressing education measures, the conclusions from this paper have wider applicability to Census-based analysis in other fields as well where the practice of excluding 'Not stated' records is relatively commonplace.

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APPENDIXES

A. COMPARISON OF ALTERNATIVE METHODS BY STATE

A.1 Total population (comparison between 2006 Census and 2005 SET data)

(a) NEA 7 (% of 20–24 year olds with Year 12 / Certificate II or above)

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Australia
INDICATOR VALUE									
2005 SET	81.4	82.6	84.0	78.9	79.8	71.9	70.2	87.3	81.7
2006 Census Method 1	82.8*	86.1*	83.1*	77.8*	80.3*	74.6*	58.2*	90.6*	82.8*
2006 Census Method 2	74.7	78.9	75.5	71.9	72.2	68.8	48.5	84.6	75.2
2006 Census Method 3 (a)									
Upper bound	82.6	85.9	82.9	77.6	80.0	74.2	56.2	90.5	82.6
Lower bound	82.0	85.3	82.2	77.0	79.4	73.8	55.2	90.1	81.9
95% CONFIDENCE INTERVAL BASED ON 2005 SET									
Upper bound	84.8	85.5	88.5	85.0	84.3	82.6	86.6	95.3	84.0
Lower bound	77.9	79.6	79.5	72.8	75.4	61.1	53.8	79.3	79.4

(b) NASWD 2 (% of 20–64 year olds without Certificate III or above)

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Australia
INDICATOR VALUE									
2005 SET	49.2	48.7	50.3	56.2	48.4	57.2	49.6	39.3	49.8
2006 Census Method 1	48.9*	49.7*	53.8*	55.2*	51.1*	56.6*	56.2*	39.1*	50.8*
2006 Census Method 2	55.1	55.0	58.8	59.4	57.0	60.8	63.4	44.2	56.3
2006 Census Method 3 (a)									
Upper bound	49.6	50.2	54.4	55.7	51.6	57.2	57.7	39.4	51.4
Lower bound	49.3	49.9	54.1	55.5	51.3	56.9	57.2	39.3	51.1
95% CONFIDENCE INTERVAL BASED ON 2005 SET									
Upper bound	50.9	50.9	52.2	58.6	50.8	60.9	56.7	43.3	50.7
Lower bound	47.6	46.6	48.4	53.9	46.1	53.5	42.5	35.2	48.9

* Which of the existing approaches (Method 1 or 2) aligns more closely with Method 3

(a) Based on weighted averages according to labour force status

Census value lies within
95% confidence interval of
2005 SET estimate.

A.2 Indigenous population (comparison between 2006 Census and 2008 NATSISS data)

(a) NEA 7 (% of 20–24 year olds with Year 12 / Certificate II or above)

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Australia
INDICATOR VALUE									
2008 NATSISS	43.1	57.6	52.9	53.6	43.0	55.6	23.6	56.6	45.4
2006 Census Method 1	49.8*	56.4*	57.9*	42.7*	39.6*	57.3*	18.3*	66.1*	47.4*
2006 Census Method 2	42.8	50.1	51.0	36.4	32.4	53.9	14.7	62.7	40.7
2006 Census Method 3 (a)									
Upper bound	48.4	55.5	56.7	41.4	38.5	56.8	17.9	64.6	46.0
Lower bound	47.2	53.8	55.2	40.2	36.9	56.4	16.3	64.6	44.5
95% CONFIDENCE INTERVAL BASED ON 2008 NATSISS									
Upper bound	53.8	66.3	66.2	69.4	54.6	71.1	32.3	73.5	50.7
Lower bound	32.4	48.8	39.5	37.8	31.4	40.0	14.9	39.7	40.2

(b) NASWD 2 (% of 20–64 year olds without Certificate III)

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Australia
INDICATOR VALUE									
2008 NATSISS	73.5	60.0	71.7	73.7	74.7	70.4	85.4	57.5	73.6
2006 Census Method 1	72.5*	67.9*	75.2*	77.3*	81.0*	71.1*	88.3*	58.1*	76.0*
2006 Census Method 2	76.7	72.6	78.7	80.9	84.5	73.7	90.4	61.5	79.7
2006 Census Method 3 (a)									
Upper bound	74.1	69.7	76.5	78.7	82.5	71.7	89.5	59.3	77.6
Lower bound	73.7	68.9	75.9	78.2	81.9	71.4	89.0	58.7	77.0
95% CONFIDENCE INTERVAL BASED ON 2008 NATSISS									
Upper bound	77.6	64.0	76.7	78.5	78.8	76.0	88.7	64.9	75.5
Lower bound	69.3	56.0	66.7	68.8	70.6	64.8	82.1	50.0	71.6

* Which of the existing approaches (Method 1 or 2) aligns more closely with Method 3

(a) Based on weighted averages according to labour force status

Census value lies within
95% confidence interval of
2008 NATSISS estimate.

B. DISTRIBUTION OF ‘STATED’ AND ‘NOT STATED’ RECORDS FOR NEA 7 (% OF 20–24 YEAR OLDS WITH YEAR 12 / CERTIFICATE II OR ABOVE)

In 2006, around 1.27 million people aged 20–24 years returned a Census form. Of these, 4% had ‘Not stated’ levels of educational attainment according to NEA 7 – the proportion of 20–24 year olds who have attained Year 12 / Certificate II or above.

This section examines how information from Census variables other than (but associated with) education might be used to determine the likely educational profile of 20–24 year olds who returned a form but whose attainment is not known.

With imputed records excluded from the scope of the analysis, the remaining population is divided into two groups – those with ‘Stated’ and ‘Not stated’ levels of attainment (i.e. item non-respondents). The ‘Stated’ group comprises both those who had Year 12 / Certificate II or above and those whose attainment was stated as being below Year 12 / Certificate II. The ‘Not stated’ group comprises those with ‘Not stated’ and ‘inadequately described’ levels of attainment.

A systematic examination of the two groups is carried out across six variables associated with level of education – remoteness, occupation, labour force status, type of educational institution attending, individual income, and proficiency in English.

- First, a hypothesis of likely educational attainment for people in different categories of the variable is introduced (e.g. attainment of people in accessible versus remote locations).
- Second, some considerations associated with the variable that may further affect educational attainment are addressed (e.g. employment opportunities).
- Third, a table of relevant data from the 2006 Census is presented to compare rates of non-response among the Indigenous population and the total population.

These various stages are repeated in Appendix C for the examination of NASWD indicator 2 for 20–64 year olds.

B.1 Remoteness

Hypothesis

Given that educational attainment decreases with increasing remoteness, people with 'Not stated' levels of attainment living in remote areas are more likely to have education levels below Year 12 / Certificate II than are people living in urban areas (ABS, 2008a).

Considerations

Different geographical areas have different opportunities for employment and qualifications necessary or relevant for occupations in those areas. This can, in turn, influence people's decision to finish school. By the age of 24 years, people may have also left remote areas to undertake study and some, depending on their choice of career, may not return.

B.1 2006 Census rates of Year 12 / Certificate II or above attainment and the distribution of 'Stated' and 'Not stated' groups by remoteness (20–24 year olds, imputed records excluded)

	<i>Year 12 / Certificate II or above attainment</i>			
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Remoteness				
Major city	59.3	34.9	27.6	33.9
Inner regional	51.5	20.6	21.3	20.7
Outer regional	47.5	19.0	21.9	19.4
Remote	36.7	8.2	10.7	8.6
Very remote	22.5	16.7	18.1	16.9
Total (a)	47.4	100.0	100.0	100.0
Respondents ('000)	15.3	32.2	5.3	37.5
TOTAL POPULATION				
Remoteness				
Major city	85.8	74.6	66.0	74.2
Inner regional	76.5	15.9	18.9	16.0
Outer regional	72.5	7.1	10.1	7.3
Remote	68.2	1.2	2.1	1.3
Very remote	47.4	0.8	2.4	0.9
Total (a)	82.8	100.0	100.0	100.0
Respondents ('000)	1,013.2	1,223.5	51.0	1,274.5

(a) Includes people who are migratory and have no usual address.

Assessment

Among the total 20–24 year old population who returned a 2006 Census form, there were lower rates of Year 12 / Certificate II or above attainment in regional and remote areas than in major cities. For example, in major cities, the Year 12 / Certificate II or above attainment rate was 86%, while in inner regional to very remote areas it ranged from 77% to 47%.

Looking at the distribution of the 'Stated' and 'Not stated' groups of the total population, a higher proportion of the 'Not stated' group were living outside major cities, especially in regional areas. More specifically, 75% of the 'Stated' group were living in major cities compared to 66% of the 'Not stated' group. Given that the 'Not stated' group was more likely to live in more regional or remote areas, for the total population, the overall attainment of the 'Not stated' group was likely to be below that of the 'Stated' group.

There was also a gradient of decreasing educational attainment with increasing remoteness for the Indigenous population, and a higher proportion of people with 'Not stated' than 'Stated' responses in regional and remote areas. Therefore, the educational attainment of the 'Not stated' Indigenous group would also likely be lower than that of the 'Stated' group.

B.2 Labour force status

Hypothesis

Since a lack of qualifications is associated with unemployment and potentially lower engagement in the labour force, people who are unemployed or out of the labour force and have 'Not stated' levels of attainment are likely to have attainment below Year 12 / Certificate II (ABS, 2004).

Considerations

Some people may be outside the labour force because they are still studying for qualifications at or above Year 12 / Certificate II, or for family and caring reasons irrespective of educational attainment.

B.2 2006 Census rates of Year 12 / Certificate II or above attainment and the distribution of 'Stated' and 'Not stated' groups by labour force status (20–24 year olds, imputed records excluded)

	<i>Year 12 / Certificate II or above attainment</i>			
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Labour force status				
Employed	61.8	52.0	17.2	47.1
Unemployed	37.3	12.1	6.6	11.3
Not in the labour force	29.4	34.0	48.3	36.0
Not stated	37.4	1.9	27.9	5.5
Total	47.4	100.0	100.0	100.0
Respondents ('000)	15.3	32.2	5.3	37.5
TOTAL POPULATION				
Labour force status				
Employed	86.2	74.3	36.7	72.8
Unemployed	69.3	6.6	6.0	6.6
Not in the labour force	74.4	18.6	32.4	19.1
Not stated	67.7	0.6	24.9	1.5
Total	82.8	100.0	100.0	100.0
Respondents ('000)	1,013.2	1,223.5	51.0	1,274.5

Assessment

Among the Indigenous and total 20–24 year old populations who returned a 2006 Census form, people who were unemployed or out of the labour force had lower rates of Year 12 / Certificate II or above attainment than people who were employed.

For the total population, the proportion of unemployed was similar for the 'Not stated' and the 'Stated' groups (6% and 7%). Among the indigenous population, the 'Not stated' group had around half the proportion of unemployed than that of the 'Stated' group (7% compared to 12%). The proportion of employed people in both populations, however, differed considerably. Among the total population, the 'Not stated' group had 37% employed, while the 'Stated' group had 74% employed. Among the Indigenous population, 17% of the 'Not stated' group were employed compared to 52% of the 'Stated' group.

Those in the 'Not stated' group were also much more likely not to be in the labour force or to not have stated their labour force status at all. While multiple non-response is an issue to consider, on the whole it appears that people in the 'Not stated' group were likely to have had lower levels of attainment than people in the 'Stated' group.

B.3 Individual weekly income

Hypothesis

Since lower levels of educational attainment are associated with decreased employment opportunities and lower wages, people who have 'Not stated' levels of attainment and low income are likely to have below Year 12 / Certificate II attainment (ABS, 2004).

B.3 2006 Census rates of Year 12 / Certificate II or above attainment and the distribution of 'Stated' and 'Not stated' groups by individual weekly income (20–24 year olds, imputed records excluded)

	<i>Year 12 / Certificate II or above attainment</i>			
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Individual weekly income				
\$1–\$399	36.7	55.3	29.3	51.7
\$400–\$799	63.8	28.3	8.2	25.5
\$800–\$1,299	77.8	5.6	1.5	5.0
\$1,300–\$1,999	71.7	0.9	0.4	0.9
\$2,000 +	53.9	0.5	0.4	0.5
Nil income	40.8	4.5	4.7	4.5
Negative income	43.0	0.5	0.5	0.5
Not stated	37.5	4.4	55.0	11.5
Total	47.4	100.0	100.0	100.0
Respondents ('000)	15.3	32.2	5.3	37.5
TOTAL POPULATION				
Individual weekly income				
\$1–\$399	80.0	36.0	24.6	35.5
\$400–\$799	82.7	38.8	20.7	38.1
\$800–\$1,299	90.3	12.1	4.0	11.8
\$1,300–\$1,999	88.2	1.5	0.7	1.5
\$2,000 +	82.4	0.4	0.4	0.4
Nil income	86.0	8.2	7.9	8.2
Negative income	78.3	0.4	0.9	0.5
Not stated	75.0	2.5	40.9	4.1
Total	82.8	100.0	100.0	100.0
Respondents ('000)	1,013.2	1,223.5	51.0	1,274.5

Assessment

Among both the Indigenous and total 20–24 year old population who returned a 2006 Census form, rates of attainment peaked in the \$800 – \$1,999 weekly income range, not the highest income category (\$2,000 or more).

Among the total population, the 'Not stated' group generally recorded lower proportions of people in each weekly income bracket below \$2,000 and was slightly more likely to have negative income than the 'Stated' group. That said, the two groups had roughly equal proportions of people earning \$2,000 or more. Those with 'Not stated' levels of attainment were, however, far more likely than the 'Stated' group to not provide information on their income at all, making it difficult to estimate the likely level of attainment of the 'Not stated' group according to income distribution.

These observations of the total population also hold true for the Indigenous population.

B.4 Occupation

Hypothesis

Since people with higher levels of educational attainment are more likely to work in higher skill occupations (e.g. professionals) than are those with lower levels of education, people in low level occupations who have 'Not stated' levels of attainment are likely to have education levels below Year 12 / Certificate II (ABS, 1999).

Considerations

While only those who are employed are of interest for discussion here, people who are not employed (i.e. not applicable for type of occupation) are also included in the table to make totals comparable with other variables.

Assessment

Among 20–24 year olds who returned a 2006 Census form, the question regarding type of occupation applied to 47% of the Indigenous population and 73% of the total population. Among applicable respondents in both populations, people in low skill occupations (e.g. machinery operators and labourers) had lower rates of Year 12 / Certificate II or above attainment than did people in high skilled occupations (e.g. managers and professionals). Moreover, the 'Not stated' group in both populations had a greater proportion of people in these low skill occupation categories than did the 'Stated' group. Thus, educational attainment of the 'Not stated' group would likely be lower than that of the 'Stated' group in both the Indigenous population and total population.

B.4 2006 Census rates of Year 12 / Certificate II or above attainment and the distribution of 'Stated' and 'Not stated' groups by occupation (20–24 year olds, imputed records excluded)

<i>Year 12 / Certificate II or above attainment</i>				
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Occupation				
Managers	71.5	1.8	0.3	1.5
Professionals	82.7	3.4	0.7	3.0
Technicians & Trades Workers	71.1	8.5	1.8	7.6
Community & Personal Service Workers	71.1	7.6	2.0	6.8
Clerical & Administration Workers	78.3	7.1	1.7	6.3
Sales Workers	69.5	4.6	0.9	4.1
Machinery Operators & Drivers	53.3	3.2	1.3	2.9
Labourers	38.1	13.5	5.6	12.4
Not stated & Inadequately described	40.3	2.3	2.8	2.3
Total applicable	61.7	52.0	17.2	47.1
Not applicable	31.7	48.0	82.8	52.9
Total	47.4	100.0	100.0	100.0
Respondents ('000)	15.3	32.2	5.3	37.5
TOTAL POPULATION				
Occupation				
Managers	87.5	4.2	1.8	4.1
Professionals	98.1	10.3	1.8	10.0
Technicians & Trades Workers	84.3	13.7	6.4	13.4
Community & Personal Service Workers	90.9	10.0	4.4	9.8
Clerical & Administration Workers	90.9	11.1	4.0	10.8
Sales Workers	88.6	11.7	5.0	11.4
Machinery Operators & Drivers	67.3	3.6	3.0	3.6
Labourers	68.3	8.4	7.4	8.4
Not stated & Inadequately described	81.3	1.2	2.9	1.3
Total applicable	86.2	74.3	36.7	72.8
Not applicable	72.9	25.7	63.3	27.2
Total	82.8	100.0	100.0	100.0
Respondents ('000)	1,013.2	1,223.5	51.0	1,274.5

B.5 Type of educational institution attending

Hypothesis

Given that attendance at secondary school is indicative of below Year 12 attainment, it is expected that people with 'Not stated' levels of attainment who are attending secondary institutions are likely to have attainment below Year 12 (but may have completed a vocational qualification). Those attending tertiary education institutions, however, are likely to have successfully attained Year 12 or higher qualifications.

B.5 2006 Census rates of Year 12 / Certificate II or above attainment and the distribution of 'Stated' and 'Not stated' groups by type of educational institution attending (20–24 year olds, imputed records excluded)

	Year 12 / Certificate II or above attainment			
	Attainment rate (%) calculated from stated responses	Distribution of responses (%)		Total
		Stated	Not stated	
INDIGENOUS POPULATION				
Type of educational institution attending				
Secondary school	37.2	0.5	1.0	0.5
Technical or Further Educational Institution (including TAFE)	61.0	5.7	1.7	5.2
University or other Tertiary Institutions	94.1	5.6	0.7	4.9
Other	65.4	1.1	0.4	1.0
Not stated	41.8	3.3	52.6	10.2
Total applicable	68.2	16.1	56.3	21.8
Not applicable	43.3	83.9	43.7	78.2
Total	47.4	100.0	100.0	100.0
Respondents ('000)	15.3	32.2	5.3	37.5
TOTAL POPULATION				
Type of educational institution attending				
Secondary school	48.9	0.4	1.9	0.4
Technical or Further Educational Institution (including TAFE)	83.7	8.0	4.2	7.8
University or other Tertiary Institutions	99.1	23.9	7.7	23.3
Other	83.5	1.6	1.5	1.6
Not stated	76.6	2.0	37.3	3.4
Total applicable	93.2	35.8	52.6	36.5
Not applicable	77.0	64.2	47.4	63.5
Total	82.8	100.0	100.0	100.0
Respondents ('000)	1,013.2	1,223.5	51.0	1,274.5

Considerations

While people with 'Not stated' levels of attainment may not have completed qualifications, they may be in the process of completing one at a particular institution. The type of institution may indicate the likelihood of having completed Year 12 or not.

Assessment

Among 20–24 year olds who returned a 2006 Census form, the question pertaining to type of educational institution attending was applicable for around 22% of the Indigenous population and 37% of the total population. Not surprisingly, among applicable respondents in both populations, those attending university or TAFE were more likely to have attained Year 12 or Certificate II or above than were those attending secondary school. That a number of 20–24 year olds (in both the 'Stated' and 'Not stated' groups) were attending a secondary school indicates that some people of this age were in the process of completing their schooling as mature age students. People in the 'Not stated' group attending TAFE or university, however, were likely to have already completed Year 12 or a Certificate II equivalent in order to be eligible to enrol at such institutions. Since the proportion of people in the 'Not stated' group attending university was lower than in the 'Stated' group, it may appear as though the 'Not stated' group had attainment below the 'Stated' group. Unfortunately, the large proportion of multiple non-respondents to the institution question makes likely attainment estimates of the 'Not stated' group rather inconclusive.

B.6 Proficiency in spoken English

Hypothesis

Given that limited proficiency in English can result in failure to meet necessary language requirements for successful completion of Australian high school certificates and AQF non-school qualifications, people with 'Not stated' levels of attainment and low proficiency in English may be expected to have low levels of educational attainment.

Considerations

The link between proficiency in English and qualification levels should not be confused as an indicator of the education levels of migrant populations. Research has shown that migrant groups, on average, tend to have higher levels of educational attainment than those born in Australia, especially if their proficiency in English is high (ABS, 1996; ABS, 2006).

B.6 2006 Census rates of Year 12 / Certificate II or above attainment and the distribution of 'Stated' and 'Not stated' groups by proficiency in English (20–24 year olds, imputed records excluded)

<i>Year 12 / Certificate II or above attainment</i>				
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		<i>Total</i>
		<i>Stated</i>	<i>Not stated</i>	
INDIGENOUS POPULATION				
Proficiency in spoken English of people who speak another language at home				
Speaks English well–very well	26.5	13.6	10.6	13.2
Does not speak English well	7.5	1.3	1.7	1.4
Does not speak English at all	32.8	0.2	0.3	0.2
Not stated	41.4	0.7	41.2	6.4
Total applicable	25.6	15.8	53.9	21.1
Not applicable	51.4	84.2	46.1	78.9
Total	47.4	100.0	100.0	100.0
Respondents ('000)	15.3	32.2	5.3	37.5
TOTAL POPULATION				
Proficiency in spoken English of people who speak another language at home				
Speaks English well–very well	90.7	18.9	17.4	18.8
Does not speak English well	73.1	1.1	2.3	1.2
Does not speak English at all	46.5	0.1	0.6	0.1
Not stated	79.4	0.5	24.5	1.4
Total applicable	89.2	20.6	44.8	21.6
Not applicable	81.1	79.4	55.2	78.4
Total	82.8	100.0	100.0	100.0
Respondents ('000)	1,013.2	1,223.5	51.0	1,274.5

Another issue to consider is that Indigenous people with low proficiency in English are likely to live in remote or very remote areas and thus be particularly disadvantaged and have low levels of educational attainment (ABS, 2008b).

Assessment

For 20–24 year olds who returned a 2006 Census form, the question on proficiency in spoken English was applicable for 21% of the Indigenous population and 22% of the total population.

Among the applicable respondents in the total population, those most likely to have attained at or above the level of Year 12 / Certificate II were people who spoke English well to very well. Of people who responded to the proficiency question, most of those in the 'Not stated' group had this level of proficiency. A large proportion of the 'Not stated' group, however, did not respond to the proficiency question.

Similar patterns were observed for the Indigenous population, except that the incidence of multiple non-response was almost double that of the total population (41% compared to 25%). Stated attainment rates were also much lower for Indigenous people than they were for the total population, even when proficiency in English was high (27% for the Indigenous population compared to 91% for the total population). Given that the question on proficiency in spoken English was only applicable to a relatively small proportion of the population, and a relatively large portion of these were multiple non-respondents, it is not possible to get conclusive estimates of the likely attainment of the 'Not stated' group based on this variable alone.

C. DISTRIBUTION OF ‘STATED’ AND ‘NOT STATED’ RECORDS FOR NASWD 2 (% OF 20–64 YEAR OLDS WITHOUT CERTIFICATE III OR ABOVE)

In 2006, there were around 11.39 million people aged 20–64 who returned a Census form. Of these, 7% had ‘Not stated’ levels of attainment according to NASWD indicator 2, i.e. the proportion of 20–64 year olds *without* Certificate III or above. It should be noted that, although the NASWD indicator 2 goes in the opposite direction to the NEA 7 indicator (that is, it measures the proportion of people below the attainment benchmark rather than above it), both indicators are essentially targeted at achieving the same goal. In effect, they both aim to establish rates of attainment at particular levels to help promote an increase in the number of people with those qualifications in the future.

To make sense of both indicators in this paper, the same analysis is applied to the population of interest once divided into two groups – those with ‘Stated’ and ‘Not stated’ levels of attainment. For the purposes of NASWD 2, the ‘Stated’ group comprises those who had attainment at, above or below Certificate III. The ‘Not stated’ group comprises those with ‘Not stated’ and ‘inadequately described’ levels of attainment.

Both of these groups are assessed here according to the same methodology and variables adopted in Appendix B. For this reason, hypotheses are generally excluded here to prevent repetition. Age-related considerations, however, are included.

C.1 Remoteness

Considerations

There are links between mobility and educational attainment, particularly in the context of labour market activity. Some older people may move away from cities once they retire from the labour force. Similarly, younger people may move away from rural areas to attend university/further their education or to pursue a career.

With regards to rates of attainment, it is important to consider that the composition of the total population living in very remote areas is far from homogenous. The Indigenous component of the total population living in very remote areas is very unlikely to have qualifications above Certificate III. A considerable proportion of non-Indigenous people living in very remote areas, however, are much more likely to have high level qualifications in order to be eligible to take up high paying job opportunities in those areas.

C.1 2006 Census rates of below Certificate III attainment and the distribution of 'Stated' and 'Not stated' groups by remoteness (20–64 year olds, imputed records excluded)

	<i>Below Certificate III attainment</i>			
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Remoteness				
Major city	68.2	33.1	29.7	32.6
Inner regional	72.4	20.6	20.9	20.7
Outer regional	77.7	20.8	23.8	21.3
Remote	83.2	8.7	10.6	9.0
Very remote	90.4	16.4	14.4	16.1
Total (a)	76.0	100.0	100.0	100.0
Respondents ('000)	141.6	186.2	34.1	220.3
TOTAL POPULATION				
Remoteness				
Major city	48.2	69.7	67.2	69.5
Inner regional	55.2	18.8	19.7	18.8
Outer regional	59.1	9.1	10.0	9.1
Remote	60.7	1.4	1.7	1.5
Very remote	69.2	0.7	1.1	0.8
Total (a)	50.8	100.0	100.0	100.0
Respondents ('000)	5,380.0	10,583.0	804.4	11,387.4

(a) Includes people who are migratory and have no usual address.

Assessment

Since the distribution of attainment of qualification by remoteness is similar for the 'Stated' and 'Not stated' groups, it is likely that the two groups would have had similar rates of attainment among 20–64 year olds in both the Indigenous and the total population.

C.2 Labour force status

Considerations

Some people, mostly in the young age range, may be outside the labour force because they are still studying. Some older people may be out of the labour force due to retirement rather than a lack of qualifications which has inhibited their capacity to get a job. Carers are also more likely to not be in the labour force and may retain their carer role throughout a large part of their lifetime.

C.2 2006 Census rates of below Certificate III attainment and the distribution of 'Stated' and 'Not stated' groups by labour force status (20–64 year olds, imputed records excluded)

	<i>Below Certificate III attainment</i>			
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Labour force status				
Employed	65.5	53.0	25.1	48.7
Unemployed	82.9	8.5	4.9	8.0
Not in the labour force	89.1	36.8	42.3	37.7
Not stated	86.7	1.7	27.8	5.7
Total	76.0	100.0	100.0	100.0
Respondents ('000)	141.6	186.2	34.1	220.3
TOTAL POPULATION				
Labour force status				
Employed	44.7	74.2	55.0	72.8
Unemployed	63.1	3.6	3.4	3.6
Not in the labour force	69.5	21.6	28.2	22.1
Not stated	68.5	0.6	13.3	1.5
Total	50.8	100.0	100.0	100.0
Respondents ('000)	5,380.0	10,583.0	804.4	11,387.4

Assessment

Data from the 2006 Census suggests there is a gradient of attainment from employed to unemployed and not in the labour force for 20–64 year olds. In each category, the proportion of people with qualifications below Certificate III was shown to increase. In addition, compared with the 'Stated' group, the 'Not stated' group was less likely to be employed and more likely to be not in the labour force.

C.3 Individual weekly income

Considerations

While level of educational attainment is associated with type of occupation and therefore income, other factors such as age and job experience are also important. Some younger people that may be studying may choose not to engage (or may be inhibited from engaging more fully) in the labour force and their income may be lower as a result. Older people may have had more time to progress up the career ladder, and thus, to a higher income bracket than they would have been in at an earlier age, even if their educational attainment was low and had not changed over time. Older people who have retired from the labour force, however, may record

little to no income. They may also be part of a previous generation for whom having a qualification was perhaps less of a career requirement than it is in the current economic climate.

Assessment

Among both the Indigenous and total 20–64 year old populations who returned a 2006 Census form, attainment increased alongside increases in individual weekly income. Generally, the ‘Not stated’ group had smaller proportions of people in the higher income categories than did the ‘Stated’ group, but also a higher rate of non-response.

C.3 2006 Census rates of below Certificate III attainment and the distribution of ‘Stated’ and ‘Not stated’ groups by individual weekly income (20–64 year olds, imputed records excluded)

	<i>Below Certificate III attainment</i>			
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Individual weekly income				
\$1–\$399	87.1	49.6	31.7	46.8
\$400–\$799	70.5	26.5	13.3	24.4
\$800–\$1,299	48.7	11.3	4.1	10.2
\$1,300–\$1,999	37.9	3.5	1.1	3.1
\$2,000 +	49.4	1.1	0.7	1.0
Nil income	82.9	3.4	2.5	3.3
Negative income	80.0	0.5	0.5	0.5
Not stated	85.8	4.2	46.1	10.7
Total	76.0	100.0	100.0	100.0
Respondents ('000)	141.6	186.2	34.1	220.3
TOTAL POPULATION				
Individual weekly income				
\$1–\$399	69.0	27.0	27.6	27.1
\$400–\$799	55.5	29.7	25.6	29.4
\$800–\$1,299	35.8	21.4	13.0	20.8
\$1,300–\$1,999	23.5	9.4	4.6	9.0
\$2,000 +	18.9	4.7	2.5	4.6
Nil income	63.3	5.1	5.5	5.2
Negative income	61.5	0.4	0.7	0.5
Not stated	63.0	2.3	20.4	3.6
Total	50.8	100.0	100.0	100.0
Respondents ('000)	5,380.0	10,583.0	804.4	11,387.4

C.4 Occupation

C.4 2006 Census rates of below Certificate III attainment and the distribution of 'Stated' and 'Not stated' groups by occupation (20–64 year olds, imputed records excluded)

	<i>Below Certificate III attainment</i>			
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Occupation				
Managers	52.3	3.3	1.2	2.9
Professionals	34.3	6.7	2.5	6.1
Technicians & Trades Workers	43.9	6.2	2.0	5.6
Community & Personal Service Workers	62.9	8.3	4.5	7.7
Clerical & Administration Workers	66.7	7.0	2.8	6.3
Sales Workers	79.3	2.6	0.9	2.4
Machinery Operators & Drivers	81.0	4.6	2.4	4.3
Labourers	86.9	12.1	6.0	11.1
Not stated & Inadequately described	80.9	2.1	2.8	2.2
Total applicable	65.5	53.0	25.1	48.7
Not applicable	87.9	47.0	74.9	51.3
Total	76.0	100.0	100.0	100.0
Respondents ('000)	141.6	186.2	34.1	220.3
TOTAL POPULATION				
Occupation				
Managers	42.3	10.2	6.2	10.0
Professionals	12.3	16.0	8.0	15.4
Technicians & Trades Workers	29.4	10.8	6.1	10.5
Community & Personal Service Workers	48.3	6.3	6.6	6.3
Clerical & Administration Workers	60.6	11.5	9.2	11.4
Sales Workers	66.9	6.0	4.7	5.9
Machinery Operators & Drivers	71.7	5.1	4.6	5.0
Labourers	74.8	7.1	7.0	7.1
Not stated & Inadequately described	56.4	1.1	2.7	1.2
Total applicable	44.7	74.2	55.0	72.8
Not applicable	68.6	25.8	45.0	27.2
Total	50.8	100.0	100.0	100.0
Respondents ('000)	5,380.0	10,583.0	804.4	11,387.4

Assessment

Among 20–64 year olds who returned a 2006 Census form, the question on type of occupation was applicable for 49% of the Indigenous population and 73% of the total population. Among applicable respondents in the total population, there was a smaller proportion of people in professional occupations in the ‘Not stated’ group (8%) compared with the ‘Stated’ group (16%). The trend was similar for the Indigenous population.

C.5 Type of educational institution attending

C.5 2006 Census rates of below Certificate III attainment and the distribution of ‘Stated’ and ‘Not stated’ groups by type of educational institution attending (20–64 year olds, imputed records excluded)

	<i>Below Certificate III attainment</i>			
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Type of educational institution attending				
Secondary school	88.3	0.2	0.5	0.3
Technical or Further Educational Institution (including TAFE)	67.8	3.6	1.7	3.3
University or other Tertiary Institutions	52.1	3.1	0.7	2.7
Other	62.4	0.8	0.5	0.7
Not stated	82.7	3.3	45.7	9.8
Total applicable	67.9	10.9	49.1	16.8
Not applicable	77.0	89.1	50.9	83.2
Total	76.0	100.0	100.0	100.0
Respondents ('000)	141.6	186.2	34.1	220.3
TOTAL POPULATION				
Type of educational institution attending				
Secondary school	83.6	0.1	0.4	0.1
Technical or Further Educational Institution (including TAFE)	53.7	2.8	2.1	2.8
University or other Tertiary Institutions	46.1	5.5	2.3	5.3
Other	46.1	0.9	0.9	0.9
Not stated	60.4	1.7	19.5	3.0
Total applicable	50.6	11.1	25.1	12.0
Not applicable	50.9	88.9	74.9	88.0
Total	50.8	100.0	100.0	100.0
Respondents ('000)	5,380.0	10,583.0	804.4	11,387.4

Considerations

Attendance at an educational institution is generally more likely for younger people than it is for older groups who are likely to have already completed their formal education.

Assessment

Among 20–64 year olds who returned a 2006 Census form, the question on type of educational institution attending was applicable to 17% of the Indigenous population and 12% of the total population. Among the applicable respondents, multiple item non-response was common, especially among the Indigenous population. Low applicability and high multiple non-response mean that it is difficult to make generalised conclusions. That said, from the information available it appears that because the ‘Not stated’ group had a higher proportion at secondary school and lower proportion at university than the ‘Stated’ group, the ‘Not stated’ group was likely to have had the lower attainment of the two.

C.6 Proficiency in spoken English

Considerations

Young international students are likely to have a higher degree of proficiency in English as a requirement for studying in Australia than some older migrant populations, who may not have had the same kind of opportunities or requirements to improve their English speaking skills. As such, younger migrants may be more likely to have or be studying towards qualifications than are older migrants.

Similarly, younger Indigenous people may be more likely to have a higher proficiency in English than older generations for whom current education policy initiatives to improve the literacy and qualifications of young Indigenous Australians did not apply.

Assessment

Among 20–64 year olds who returned a 2006 Census form, the question on proficiency in English applied to 20% of the Indigenous population and 19% of the total population. Among applicable respondents, people in the total population who spoke English well to very well were least likely to have attainment below the Certificate III level. The same pattern was true for the Indigenous population. Similar to the observation made for NEA 7, among people who spoke English well or very well, Indigenous people were still about twice as likely to have below Certificate III attainment as the total population.

C.6 2006 Census rates of below Certificate III attainment and the distribution of 'Stated' and 'Not stated' groups by proficiency in English (20–64 year olds, imputed records excluded)

<i>Below Certificate III attainment</i>				
	<i>Attainment rate (%) calculated from stated responses</i>	<i>Distribution of responses (%)</i>		
		<i>Stated</i>	<i>Not stated</i>	<i>Total</i>
INDIGENOUS POPULATION				
Proficiency in spoken English of people who speak another language at home				
Speaks English well–very well	86.2	13.5	10.0	13.0
Does not speak English well	95.3	1.5	1.1	1.4
Does not speak English at all	94.3	0.2	0.2	0.2
Not stated	84.4	0.7	33.8	5.8
Total applicable	87.1	15.9	45.1	20.4
Not applicable	73.9	84.1	54.9	79.6
Total	76.0	100.0	100.0	100.0
Respondents ('000)	141.6	186.2	34.1	220.3
TOTAL POPULATION				
Proficiency in spoken English of people who speak another language at home				
Speaks English well–very well	44.7	15.1	17.9	15.3
Does not speak English well	80.7	2.1	3.1	2.2
Does not speak English at all	91.9	0.3	0.5	0.3
Not stated	60.2	0.4	10.7	1.1
Total applicable	50.0	17.8	32.2	18.8
Not applicable	51.0	82.2	67.8	81.2
Total	50.8	100.0	100.0	100.0
Respondents ('000)	5,380.0	10,583.0	804.4	11,387.4

D. ASSESSMENT OF MULTIPLE ITEM NON-RESPONSE

Table D.1 examines people who did not respond to the education item questions relevant to the two indicators, NEA 7 and NASWD 2, as well as the distribution of additional item non-response by this group for each of the five variables analysed in Appendixes B and C. The top section of the table provides the rate of item non-response separately for each of the five variables, while the bottom section provides the incidence of multiple item non-response across all five variables. This ranges from zero to five, where zero means that while the person did not respond to the education question(s), they did answer each of the five other questions.

Of people who did not respond to the education question(s), the variables they were also most likely not to respond to were individual income and type of educational institution attending. In addition, Indigenous people with non-response to education indicators were more likely to produce non-response to the other items overall than was the total population, particularly with regards to proficiency in spoken English.

D.1 Persons who did not respond to questions for education indicators, multiple item non-response by Indigenous status (a)

	<i>Not stated for NEA 7 (%)</i>		<i>Not stated for NASWD 2 (%)</i>	
	<i>Indigenous</i>	<i>Total</i>	<i>Indigenous</i>	<i>Total</i>
Not stated item				
Occupation (b)	2.8	2.9	2.8	2.7
Labour force status	28.0	24.8	27.7	13.3
Proficiency in spoken English	41.2	24.5	33.8	10.7
Type of educational institution attending	52.6	37.3	45.7	19.5
Individual Income	55.0	40.9	46.1	20.4
Number of item non-responses in addition to education indicator				
0	33.6	48.2	40.3	69.2
1	11.8	14.6	12.8	12.5
2	9.2	9.3	9.2	6.2
3	32.3	14.4	25.7	6.5
4	13.1	13.5	12.0	5.5
5 or more	0.0	0.0	0.0	0.0
	100.0	100.0	100.0	100.0
Total persons who did not respond to question(s) for education indicator ('000)	5.3	51.0	34.1	804.5
Average no. of non-responses	1.8	1.3	1.6	0.7

(a) To facilitate comparisons, this table examines the proportion of item non-responses irrespective of whether or not the item was applicable to the respondent. For each indicator, it shows how many questions were missed in addition to the education questions.

(b) Includes those for whom occupation was 'inadequately described'.

Further investigation into the likelihood of delivering multiple non-responses highlighted the impact of socioeconomic status on response rates. Using the ABS SEIFA Index of Relative Socio-economic Disadvantage, table D.2 illustrates how people residing in the relatively most disadvantaged collection districts in Australia (quintile 1) were more likely to skip multiple questions than were people residing in the relatively least disadvantaged collection districts in Australia (quintile 5).

D.2 Multiple item non-response (%) for NASWD2 (20–64 year olds) by SEIFA IRSD (a)

	<i>SEIFA Index of Relative Socio-economic Disadvantage</i>				
	Q1	Q2	Q3	Q4	Q5
Number of item non-responses in addition to education question for NASWD 2					
0	63.2	69.9	73.6	76.5	80.6
1	14.8	13.1	12.2	11.1	9.8
2	8.6	6.7	5.7	4.8	4.0
3	5.4	4.2	3.4	3.3	1.9
4	7.9	6.1	5.0	4.3	3.6
5 or more	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0
Persons ('000)	183.3	160.7	150.1	141.7	138.7
Average no. of non-responses	0.8	0.6	0.5	0.5	0.4

(a) Only includes people living in areas for which a SEIFA score was defined.

D.1 Sensitivity and understanding

While it is impossible to determine whether non-response was due to deliberate omission or accidental oversight, it may be argued that deliberate omission may be more likely for the variables examined in this paper since they all have a degree of sensitivity associated with them. Whatever the reason behind the non-response, it is clear that 'Not stated' and 'Stated' groups do have different characteristics which could effect their responses to education questions, such as their ability to understand what information the Census is actually asking them to supply.

Although questions on proficiency in spoken English may not necessarily provide much insight into the educational profile of the 'Not stated' group, the distribution for this variable indicates that people in the 'Not stated' group were more likely to speak a language other than English at home than were those with 'Stated' levels of attainment. Whether this difference translates into a difference in levels of education is not clear, since there is a large non-response rate for this variable. Nevertheless, proficiency in English is a factor which should inform analyses of 'Not stated' responses as it brings to light the issue of fundamentally understanding Census questions, an issue that may otherwise be overlooked.

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